Rec'd 11795

FROM

THE DIRECTOR GENERAL
OF RAILWAYS,

No 3688 W d/21st Nov

To

Communicated
to officers of the P.W.
Dept in continuation
of G. O. No 2410 W dated
8th August 1888.

WCB
19.11.88

Circular No. 20.

Dated Simla, the 5th October, 1888.

Received 17/11/88

No. 3688 W d/21st Nov
1888

Supty Engrs
E.A. to Govt
Exam P.W.A
Consg Engr for Kyo

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INDIAN STATE RAILWAYS.

Rate List Class C—Workshop Machinery and Heavy Tools—for 1886.

G. C. Press, Simla.—No. 828 P. W. D.—22-10-88.—1,200.

[*General Distribution.*]

Circular No. 20.

FROM

THE DIRECTOR GENERAL OF RAILWAYS,

TO

THE DIRECTOR, NORTH-WESTERN RAILWAY.

THE ENGINEERS-IN-CHIEF, SIND-PISHIN STATE RAILWAY AND BANNU RAILWAY SURVEY.

THE SUPERINTENDENT OF WAY AND WORKS, CUDDAPAH-NELLORE STATE RAILWAY.

THE PORT STOREKEEPERS, STATE RAILWAY DEPARTMENT, CALCUTTA AND BOMBAY.

Simla, the 5th October, 1888.

SIR,

I have the honour to forward, for information and guidance, a printed statement showing the rates *free on board* in England, *the gross weight* and *the entire sea freight per ton* to Indian Ports of C Class State Railway Stores—"Workshop Machinery and Heavy Tools,—" contracted for by the India Office during the year 1886.

2. The rates for landing State Railway Stores from vessels at the several ports in India and the official rate of exchange during the past financial year are given in the circulars quoted on the margin. An insurance charge of one per cent. should be added in addition to other incidental charges to arrive at the cost of stores delivered at Port.

Director-General of Railways' Circular No. 2 of 12th April 1888.
Director-General of Railways' Circular No. 6 of 22nd June 1888.

I have the honour to be,

SIR,

Your most obedient servant,

L. CONWAY-GORDON,
Director General.

Document accompanying.
Rate List Class C—Workshop Machinery and Heavy Tools,—for 1886.

The Secretaries to the Governments of Madras, Bombay, Bengal, the North-Western Provinces and Oudh, and the Punjab, Public Works Department.
The Secretaries to the Chief Commissioners of the Central Provinces, Burma, Assam, and Coorg, Public Works Department.
The Secretaries to the Residents, Hyderabad and Mysore, Public Works Department.
The Secretaries to the Agents to the Governor General, Rajputana, Central India, and Baluchistan, Public Works Department.
The Superintendent of Port Blair and Chief Commissioner, Andaman and Nicobar Islands.
The Director General of Telegraphs.
The Inspector General of Military Works.
The Superintendent of Works, Simla Imperial Circle.
The Accountant General, Public Works Department.
The Comptroller General.
The Accountant General, Bengal.
The Consulting Engineers for Railways, Madras and Bombay.
The Consulting Engineers to the Government of India for Railways, Calcutta and Lucknow.
The Consulting Engineer to the Government of India for Railways, Central Division, Jubbulpore.
The Agent and General Manager, Assam Railways and Trading Company, Limited.

Copy forwarded to the Local Governments, Administrations and Officers marginally noted for information.

H. F. Walker Captain R.E.
for Director General.

SECRETARY TO GOVERNMENT
17 NOV 88
P.W. DEPARTMENT, MADRAS.

To The Secretary to the Government of Madras, Public Works Department

Spare Copy of Circular will follow

Enclosure to Director General of Railways' Circular No. 20 of 1888.

RATE LIST.

CLASS C.

WORKSHOP MACHINERY AND HEAVY TOOLS

FOR 1886.

(CONTRACT NOS. C 407 TO C 441.)

Enclosure to Director General of Railways' Circular No. 20 of 1888.

RATE LIST.

CLASS C.

WORKSHOP MACHINERY AND HEAVY TOOLS

FOR 1886.

(CONTRACT NOS. C 407 TO C 441.)

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any). Original C.	Completion C.	Gross weight of the number contracted for.	Entire Sea freight per ton. Rate.	Port.	Remarks.
												T. Cwt. qr. lbs.	s.		
411	10th April 1886 ...	Punjab Northern ...	Bellows.	Smiths' 36". The bellows are to be Allday's patent "screw pipe" for Smiths' 36" wide and are to be fitted with a nozzle and pipe 3 ft. long	No. 3	13	7	6	Each	...	...	3 2 2 0	15	K.	
431	22nd July 1886 ...	Eastern Bengal ...	Blower.	Root's patent, of power sufficient to blow 44 forges cupola, &c., as per tracing No. 185 W. M. The revolvers to be of sheet steel	No. 1	145	0	0	Total	...	...	...	...	...	Contract since cancelled.
425	11th June 1886 ...	Wardha-Coal ...	Boilers, steam.	Cornish: each with fittings, &c., complete. The boilers are to be of the Cornish type, with steam dome, and are each to be 26' long, 5' 3" diameter, with one flue 32 inches diameter. The flues are each to have 3 conical water tubes. The boilers are to be so arranged, that they can be worked separately or together, and in connection with either engine.	No. 2	740	0	0	Total	800	827 1—2	17 0 0 0 8 5 0 0	60 15	B.	
408	4th February 1886 ...	Ditto ...		Vertical, with fittings, &c., complete ... The boilers are to be of the vertical type, and are to work at a pressure of 60lbs. per square inch. Each boiler is to be 4 ft. external diameter and 9 ft. high, with three conical water tubes in the fire-box.	" 2	165	0	0	Each	...	...	6 10 1 0	25	B.	£3-6-0 for tracings and photos.
436	13th October 1886 ...	Eastern Bengal ...		Vertical, with injector and fittings ...	" 1	130	10	0	"	...	...	2 11 3 0	20	C.	

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount.	Unit.	India Office drawings (if any.) Original C.	Completion C.	Gross weight of the number contracted for.	Entire Sea freight per ton. Rate.	Port.	Remarks.
G-1463	30th April 1886 ...	Sind, Punjab & Delhi ...	Boiler, steam. fittings for—	Balances, spring. Salters,' small, for 10 H.-P. boilers, working @ 100 lbs. for safety valves	No. 2	£ 1 2 6	Each	...	...	T. Cwt. qr. lbs. (a) 2 0 0 0	s. d. ...	K.	(a) Net weight.
440	26th November 1886 ...	Nagpur-Chhattisgarh ...		Tubes 5′ 2″ long × 3¼″ outside diameter 9 B. W. G. for stationary boilers supplied on No. C-221 of 1882. The tubes are of metal similar to that known as "homogeneous" made by Messrs. Howell and Co., Brook Steel Works, Sheffield	No. 225	105 0 0	Total	...	...	3 9 2 0	12 6	B.	
415	17th April 1886 ...	Eastern-Bengal ...	Cranes.	Hand-power, overhead, travelling, to lift 30 tons. (Approximate weight 29 tons)	No. 1	840 0 0	Each	797	...				
Do.	Ditto ...	Ditto ...		540 ft. of steel rails, in lengths of 18 ft. ...	6 tons.	40 0 0	Total	349	...				
Do.	Ditto ...	Ditto ...		Rolled Iron Beams—									
Do.	Ditto ...	Ditto ...		28 ft. long × 18″ × 6″ × ⅝″ = 270 cwt.	No. 18	247 0 0	,,	...	...	68 6 3 13	27 6	C.	The Hydraulic Engineering Company.
Do.	Ditto ...	Ditto ...		18 ,, × 18″ × 6″ × ⅝″ = 20¼ ,,	,, 2								
Do.	Ditto ...	Ditto ...		Main girders for hydraulic crane with rails for cross traverse of crane	,, 2	197 0 0	,,	...	...				
Do.	Ditto ...	Ditto ...		Main cross traversing with brackets complete, arranged for increased length of girder.	Shafts 2	46 0 0	,,	...	...				
				The crane is to be worked by hand-power, and is to have wrought-iron main and end girders, and is to be capable of lifting, traversing, and lowering a load of 30 tons. The crane is to run on a rail pathway 46 ft. 7 in. centres.									
Do.	Ditto ...	Ditto ...		The girders to be each 44′ 7″ long and 3′ 6″ deep at centre, tapering to 1′ 11″ deep at each end, where they are secured to the end carriages.									
				The wheels are to be 2′ 3″ diameter with steel tyres.									

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount.	Unit.	India Office drawings (if any.) Original C.	Completion C.	Gross weight of the number contracted for.	Entire Sea freight per ton. Rate.	Port.	Remarks.
429	8th July 1886 ...	Eastern Bengal ...	Cranes—*concld.*	Hand-geared to lift 30 tons similar to that supplied on Contract No. C-415 of 1886	No. 1	£ 840 0 0	Total	797 & 349	...	T. Cwt. qr. lbs. 28 17 1 10	s. 21	C.	
				Span 46′ 7″ centre to centre of rails ...									
				Pipes not required									
412	10th April 1886 ...	Punjab Northern ...		Steam-coal whipping with boiler and wrought-iron carriage complete, to lift a load of 1 ton (weight of crane 330 cwts.)	No. 1	556 0 0	Each	...	825/1—4	18 12 3 0	15	K.	Cowans, Sheldon and Company. [£6-15-0 for tracings and photos.]
,,	Ditto ...	Ditto ...		Tipping buckets for ditto, to hold ½ ton each (10 cwt. each) ...	,, 6	16 0 0	,,						
				The crane is to be mounted on a wrought-iron carriage, running on four wheels on a 5-feet 6-inch gauge railway, and made to hoist, traverse, and swing by steam-power, and lower a weight of one ton at a radius of jib of 25 feet from the centre of the pillar to the centre of the load. The crane is to be fitted with an engine having two steam cylinders ...									
				Description of crane-gearing spur and bevel—									
				Diameter of each cylinder ... 6 inches ...									
				Length of piston stroke ... 10 ,, ...									
				Revolutions per minute ... 120 ,, ...									
				Length of boiler barrel ... 7 feet ...									
				External diameter of boiler barrel 3 feet 2 inches									
				Length of fire-box 3 feet 10 inches ...									

INDIAN STATE RAILWAYS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any.) Original C.	Completion C.	Gross weight of the number contracted for.	Entire Sea freight per ton. Rate.	Port.	Remarks.
						£	s.	d.				T. Cwt. qr. lbs.	s. d.		
432	3rd August 1886 ...	Burma ...	Drills, twist.	Tapered— $\frac{1}{2}$", $\frac{9}{16}$", $\frac{5}{8}$", $\frac{11}{16}$", $\frac{1}{1}\frac{3}{6}$", $\frac{7}{8}$", 1", $1\frac{1}{4}$" & $1\frac{1}{2}$" ...	Sets 2										
„	Ditto ...	Do. ...		Tapered— $\frac{1}{2}$", $\frac{9}{16}$", $\frac{5}{8}$", $\frac{11}{16}$", $\frac{3}{4}$", $\frac{13}{16}$", $\frac{7}{8}$" & 1" ...	„ 10	18	17	0	Total	...	...	0 1 2 0	27·6	R.	This contract should have been let under *G-a.*—Tools.
421	13th May 1886 ...	Wardha-Coal ...	Fire-boxes.	For Tangye's vertical boilers with two Galloway tubes ...	No. 2	43	0	0	Total	...	...	0 12 3 24	12·0	B.	
410	30th March 1886 ...	Northern Bengal ...	Gauge.	Hydraulic pressure, to record up to 5 tons to the inch	No. 1	3	0	0	Each	...	...	0 0 0 24	18·0	C.	Charged by measurement as 1 cubic ft. = $\frac{1}{40}$ of a ton.
G 1331	23rd February 1886 ...	Punjab Northern ...	Grindstones; spare stones for—	48" diameter, 6" thick, with hole in centre 3" diameter	No. 2	2	2	0	Each	...	...	1 0 2 0	22·0	K.	
„ 1653	18th December 1886 ...	Nagpur-Chhattisgarh ...		3 feet diameter without trough. Finest Newcastle, of a suitable degree of hardness and very regular grit so that the grindstones may not glaze; and to wear as evenly as practicable without requiring very frequent dressing up	„ 6	0	16	0	„	...	...	1 7 0 0	20·0	B.	

INDIAN STATE RAILWAYS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

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Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any.) Original C.	Completion C.	Gross weight of the number contracted for.	Entire Sea freight per ton. Rate.	Port.	
						£	s.	d.				T. Cwt. qr. lb.	s. d.		
423	28th May 1886 ...	Bolan	Hammers, Steam.	5 cwt. double-acting Steam Hammer, with pipes and duplicate parts complete ...	No. 1	139	0	0	Each	...	$\frac{820}{1-3}$	4 18 3 0	16·6	K.	
422	20th May 1886 ...	Punjab Northern ...	Hammers, Steam; parts of—	Blocks, top and bottom, for 3 Cwt. Steam Hammers	Sets 3	11	0	0	Total	...	...	1 17 0 0	15 3	K.	
				Blocks, top and bottom, for 6 Cwt. Steam Hammers	„ 3	24	0	0	„						
				Blocks, top and bottom, for 20 Cwt. Steam Hammers	„ 3	46	0	0	„						
				Shipments as per completion report—											
				3 top and 3 bottom Pallets for 3 Cwt. Steam Hammer											
				3 top and 3 bottom Pallets for 6 Cwt. Steam Hammer											
				3 top and 3 bottom Pallets for 20 Cwt. Steam Hammer											
433	3rd August 1886 ...	Burma		Piston rod for 10 Cwt. Steam Hammer ...	No. 1	18	0	0	„	...	...	*0 7 0 2	...	R.	Net weight.
				Piston rings for ditto ditto ...	„ 2										

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any.) Original. C.	Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lbs.	Entire Sea freight per ton. Rate. s.	Port.	Remarks.
G.-1404	6th April 1886 ...	Nagpur-Chhattisgarh ...	Indicators' Steam.	Richards' Patent	Set 1	8	0	0	Each			T. Cwt. qr. lbs.	s.		
				Springs and scales for, as under:—											
				No. 1 1/8 15 × 10 ...											
				„ 2 1/12 15 × 22 ...											
				„ 3 1/16 15 × 35 ...											
				„ 4 1/20 15 × 47 ...											
				„ 5 1/24 15 × 60 ...	Set 1	5	0	0	Set	...	...	0 0 0 24	15	B.	
				„ 6 1/30 15 × 80 ...											
				„ 7 1/32 15 × 85 ...											
				„ 8 1/40 15 × 125 ...											
				„ 9 1/48 15 × 150 ...											
				„ 10 1/60 15 × 175 ...											
„	Ditto ...	Ditto ...		Diagram card packets for— ...	„ 2	0	8	0	Total						
				Springs, steel, to suit Richards' Indicator, *viz.*:—											
				No. 3 for pressures lbs. — 15 to lbs. + 35 ...											
				„ 4 do. + 15 to + 47 ...											
				„ 5 do. — 15 to + 60 ...											
G.-1637	19th October 1886 ...	Northern Bengal ...		„ 6 do. 0 to + 86 ...	„ 2	3	3	0	Set	...	...	0 0 0 2½	...	C.	Received per Parcel Post, 20th December 1886.
				„ 7 do. 0 to + 100 ...											
				„ 8 do. 0 to + 125 ...											
				„ 9 do. 0 to + 150 ...											

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any). Original. C.	Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lbs.	Entire Sea freight per ton. Rate. s.	Port.	Remarks.
426	24th June 1886 ...	Jorhat ...	Lathe power self-acting wheel.	2′ 6″ to take 5′ 6′ between the centres. To turn wheels 36″ diameter and to take 50″ axles. The wheel lathe is to be adapted to turn without torsional strain of axle, a pair of wheels varying from 2 feet to 2 feet 6 inches diameter on their own axle, on axles from 3 feet to 5 feet 6 inches long, or to bore two tyres, or to boss or bore two wheels, or to boss and bore a wheel on one face, and to bore a tyre on the other at the same time.	No. 1	375	0	0	Each	...	828 1—5	9 8 2 0	30	C	
435	21st September 1886 ...	Eastern Bengal ...	Lathe power self-acting; head stock and slide rests for—	Head stocks for 24″ centre gap lathe ...	No. 2	88	0	0	Each	...	...	9 6 2 0	30	C	
„	Ditto	Ditto		Slide rests for 24″ centre gap lathe ...	„ 2	86	0	0	„						
				Two head stocks, double geared 24″ centres to suit beds of gap lathes (gap 4′ × 2′ 6″, 14″ centres). Each head stock to be fitted with a strong face plate for turning, boring and facing wheel centres, or boring tyres of 3′ 7″ carriage wheels. The slide rests will be worked self-acting by the gearing of the existing head stock, or will be worked by hand only.											
419	30th April 1886 ...	Wardha-Coal ...	Lubricators, needle.	No. 1, Lienwain's Patent	No. 24	0	17	0	Total	...	...	0 0 2 0	13	B	

Statement showing free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any). Original. C.	Completion. C.	Gross weight of the number contracted for.	Entire Sea freight per ton. Rate.	Port.	Remarks.
407	26th January 1886 ...	Wardha-Coal ...	Machines.	Boring.	Boring bar and heads, each to hold four cutters, self-acting feed to bore 10′ long and from 12″ to 16″ diameter.	No. 1	95	0	0	Each	...	809 / 1—2	T. Cwt. qr. lbs. 2 10 0 0	s. d. 12-0	B	
437	12th October 1886 ...	Eastern Bengal ...		Drilling.	Wheel and tyre for drilling holes from ¾ inch up to 1⅛ inch diameter in a pair of locomotive, carriage or wagon wheels upon their own axles at the same time. The gauge of the wheels is to be 5 feet 6 inches.	„ 1	169	12	0	Each	E-1945	...	3 3 2 0	25-0	C	
					Split drum, or main shaft drum, 2 feet diameter and 12 inches wide.	„ 1	15	10	0	„	...					
					Photos. for ditto, per copy	...	0	3	0	„						
					Tracings	...	4	0	0	Set						
416	20th April 1886 ...	Nagpur-Chhattisgarh ...		Emery Grinding.	For facing up work. The machine to be of the description known, as a "Universal Surface and Periphery Grinder" with an adjustable side table. The machine spindle is to be fitted with an emery disc 12″ diameter and 2″ thick at one end, and with a surfacing emery wheel 10″×4″ mounted in an adjustable shield at the other. The machine is to be supplied with countershaft and belt shafting gear complete.	No. 1	38	0	0	Each	...	810 / 1—4	1 10 1 0	13	B	L. Sterne & Co.
438	2nd November 1886 ...	Burma ...			Twist drills (Thomson and Sterne's) same as in Contract No. C-59 of 1876.	No. 1	48	15	0	„	...	...	1 0 0 0	27-6	R	Less 10 per cent.=£4 17 6
414	16th April 1886 ...	Sind, Punjab and Delhi			Emery discs ¼″ thick 12″ diameter ...	„ 24	3	14	0	Total	...	...	0 5 1 0	16-3	K	Less 10 per cent.
					Ditto ⅜″ ditto ...	„ 24	5	10	0	„						
					Ditto ½″ ditto ...	„ 12	3	13	6	„						
					Ditto ⅝″ ditto ...	„ 12	4	12	0	„						
					Ditto ¾″ ditto ...	„ 12	5	10	6	„						
					Spindle hole in each to be one inch diameter.											

INDIAN STATE RAILWAYS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any). Original. C.	Completion. C.	Gross weight of the number contracted for.	Entire Sea freight per ton. Rate.	Port.	Remarks.
427	25th June 1886 ...	Wardha-Coal ...	Machines—*contd.*	Emery grinding.	Emery discs, 12″ diameter × ¼″ thick, diameter of spindle ⅜″	No. 6	1	7	0	Total	...	...	T. Cwt. qr. lb. 0 0 1 3	s. d. 10-9	B.	
417	22nd April 1886 ...	Nagpur-Chhattisgarh...		Grinding Twist drill.	Combined Tool and Twist Drill grinder. The machine to be for drills ⅜″ to 2″ rising by ⅛″. The machine to be supplied with countershaft and belt shifting gear complete.	No. 1	116	6	8	Each	...	823 / 1—3	2 19 0 0	12-0	B.	
428	1st July 1886 ...	Northern Bengal ...			Patent Twist Drill grinding apparatus, to grind drills from ⅜″ to 2″ for firing to side of a 48″ grindstone.	„ 1	33	0	0	„	...	...	0 5 3 4	16-0	C.	Charged by measurement as 16 cub. feet=$\frac{16}{40}$ tons.
434	4th September 1886 ...	Sind-Sagar and Sind-Pishin.		Sawing.	Circular, cold, hand-power for sawing rails by Messrs. Selig, Sonnenthal & Co. To be suitable for cutting steel rails of Vignole's and double-headed sections weighing 75 lbs. per yard, each machine to be fitted with a drilling arrangement and six spare drills and with a compound slide rest; no trolly is required.	No. 7	41	10	0	Each	...	...	5 14 1 22	25-0	K.	Includes gross weight of 4 saw sharpening machines and 9 spare saws.
441	1st December 1886 ...	Bellary-Kistna ...			Circular, cold, hand-power for sawing rails. The machines are of the same description as those included in Contract No. C-434 above.	„ 2	41	10	0	„	...	...	2 7 2 0	18-0	M.	Includes gross weight of 2 saw sharpening machines,

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any.) Original C.	Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lbs.	Entire Sea freight per ton. Rate. s. d.	Port.	Remarks.
434	4th September 1886 ...	Sind-Sagar and Sind-Pishin.	Machines—*contd.* Saw Sharpenings.	Cold, for sharpening the saws of sawing Circular cold supplied under this contract.	No. 4	4	7	6	Each	...	...				
"	Ditto ...	Ditto ...		Saws, spare, for above 4-18″ diameter and 5-20″ diameter.	" 9	17	0	0	Total	...	...	5 14 1 22	25-0	K.	
441	1st December 1886 ...	Bellary-Kistna ...		Cold, for sharpening saws supplied under this contract.	" 2	4	7	6	Each						
				With spare emery discs	" 6	0	6	6	"	...	...				
430	22nd July 1886 ...	Burma		Saws, spare, 18″ diameter	" 5	1	15	0	"			2 7 2 0	18-0	M.	Includes gross weight of 2 sawing machines.
				Emery discs for, as under—											
				12″ × ⅛″	" 24	5	14	0	Total						
				12″ × ¼″	" 24	7	12	0	"						
				12″ × ⅜″	24	9	12	0	"	...	...	0 7 1 0	18-4	B.	Less 12½ % discount.
				12″ × ½″	" 24	11	8	0	"						
439	12th November 1886 ...	Nagpur-Chhattisgarh ...	Screwing.	Spiral springs for Seller's Patent Screwing machine—											
				No. 428 to screw from ¼″ to 1″.											
				*The spirings are 12″ long by B. W. 3. No. 10, diameter outside ⅛″.	No. 24	0	2	0	Each	...	...	0 0 2 0	16-0	B.	

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any.) Original. C.	Completion. C.	Gross weight of the number contracted for. T. Cwt. qr. lb.	Entire Sea freight per ton. Rate. s. d.	Port.	Remarks.
424	10th June 1886 ...	Bilaspur-Etawah, Katni-Umaria Section.	Pump.	Hydraulic—for testing boilers with pipes and connections complete, "No. 1 B."	No. 1	21	0	0	Each.	367,368 369,370	821	0 7 2 0	12-0	B.	
				For photos and tracings ...	...	1	10	0							
420	29th April 1886 ...	Wardha-Coal ...	Steam, jet.	Korting's patent under grate of boilers with spindle size number 1.	No. 1	14	0	0	Total	...	...	0 2 0 14	12	B.	
															Contracts should have been let under class G.—
409	12th February 1886 ...	Punjab Northern ...	Stocks, taps and dies.	Blank dies to suit stock by Whitworth marked B-893 ¼″ to ⅜″ advancing by $\frac{1}{16}$″.	Sets 6	0	10	6	Set.	...	...	0 10 2 0	16 3	K.	Includes also the gross weight of another set of the standard thread supplied under the same contract as well as of 6 hot iron saws 36″ diameter on Contract No. G. 1389.
"	Ditto ...	Ditto ...		Blank dies to suit stock by Whitworth marked D-3487-½″ to 1″ advancing by ⅛″.	" 6	1	12	6	"	...	...				
413	10th April 1886 ...	Nagpur-Chhattisgarh...		Stocks, taps and dies. Gas thread to screw from ⅜″ to 2″ inclusive.	" 1	38	5	0	"	...	...	0 14 2 0	15-9	B.	Includes gross weight of a set of master-tap and a set of die nuts.
															Cwt. qr. lbs.
409	12th February 1886 ...	Punjab-Northern ...		Stocks, taps and dies. Standard thread ¼″ to 1½″ rising by ⅛′ fitted into a box with lock and key.	" 1	28	0	0	"	...	...	*	16-3	K.	*Included in the 10 2 0 vs.
413	10th April 1886 ...	Nagpur-Chhattisgarh ...		Taps, master, gas thread ¼″ to 2″, rising by ⅛″ inclusive.	" 1	13	15	0	"	...	...	0 14 2 0	15-9	B.	Includes gross weight of a set of tap screw ⅜″ to 2″ and a set of die nuts.
409	12th February 1886 ...	Eastern Bengal ...		Taps, steel, for engine and mud plug holes, each consisting of 9.	" 3	9	0	0	"	...	...	0 0 3 0	17-0	C.	

INDIAN STATE RAILWAYS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—concld.

CONTRACTS. No. C.	CONTRACTS. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	RATE F. O. B. IN ENGLAND. Amount. £	s.	d.	Unit.	INDIA OFFICE DRAWINGS (IF ANY). Original C.	Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lbs.	ENTIRE SEA FREIGHT PER TON. Rate. s.	Port.	REMARKS.
413	10th April 1886 ...	Nagpur-Chhattisgarh...	Stocks, taps and dies —*contd.*	Die nuts ¼″ to 2″ (rising by ⅛″) inclusive	Set 1	11	5	0	Set	...	...	0 14 2 0	15-9	B.	Includes gross weight of a set of Tap screw and a set of master tap.
418	30th April 1886 ...	Wardha-Coal ...	Tool holders.	Smith and Coventry's patent ⅝″ left hand Ditto ⅝″ right hand The dimensions given is the diameter of the cutters in the holders, the size of holder required for them is 1¼″ square in the shank, and suitable for 12″ centre lathe.	No. 3 „ 3	2 2	12 12	0 0	Total „	... ...	... ...	0 0 2 4	12-0	B.	

Ports :—B—Bombay. C—Calcutta K—Kurrachee. M—Madras. R—Rangoon.

L. CONWAY-GORDON,
Director General of Railways.

Enclosure to Director General of Railways' Circular No. 20 of 1888.

RATE LIST.

CLASS C.

WORKSHOP MACHINERY AND HEAVY TOOLS

FOR 1886.

(CONTRACT NOS. C 407 TO C 441.)

Enclosure to Director General of Railways' Circular No. 20 of 1888.

RATE LIST.

CLASS C.

WORKSHOP MACHINERY AND HEAVY TOOLS

FOR 1886.

(CONTRACT NOS. C 407 TO C 441.)

INDIAN STATE RAILWAYS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886.

CONTRACTS. No. C.	CONTRACTS. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	RATE F. O. B. IN ENGLAND. Amount. £	s.	d.	Unit.	INDIA OFFICE DRAWINGS (IF ANY). Original C.	Completion C.	Gross weight of the number contracted for.	ENTIRE SEA FREIGHT PER TON. Rate.	Port.	REMARKS.
						£	s.	d.				T. Cwt. qr. lbs.	s.		
411	10th April 1886 ...	Punjab Northern ...	Bellows.	Smiths' 36". The bellows are to be Allday's patent "screw pipe" for Smiths' 36" wide and are to be fitted with a nozzle and pipe 3 ft. long	No. 3	13	7	6	Each	....	...	3 2 2 0	15	K.	
431	22nd July 1886 ...	Eastern Bengal ...	Blower.	Root's patent, of power sufficient to blow 44 forges cupola, &c., as per tracing No. 185 W. M. The revolvers to be of sheet steel	No. 1	145	0	0	Total	...	...	...	...	...	Contract since cancelled.
425	11th June 1886 ...	Wardha-Coal ...	Boilers, steam.	Cornish: each with fittings, &c., complete. The boilers are to be of the Cornish type, with steam dome, and are each to be 26' long, 5' 3" diameter, with one flue 32 inches diameter. The flues are each to have 3 conical water tubes. The boilers are to be so arranged, that they can be worked separately or together, and in connection with either engine.	No. 2	740	0	0	Total	800	827 / 1—2	17 0 0 0 8 5 0 0	60 15	B.	
408	4th February 1886 ...	Ditto ...		Vertical, with fittings, &c., complete ... The boilers are to be of the vertical type, and are to work at a pressure of 60lbs. per square inch. Each boiler is to be 4 ft. external diameter and 9 ft. high, with three conical water tubes in the fire-box.	„ 2	165	0	0	Each	...	...	6 10 1 0	25	B.	£3-6-0 for tracings and photos.
436	13th October 1886 ...	Eastern Bengal ...		Vertical, with injector and fittings ...	„ 1	130	10	0	„	...	...	2 11 3 0	20	C.	

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any.) Original C.	Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lbs.	Entire Sea freight per ton. Rate. s. d.	Port.	Remarks.
G-1463	30th April 1886 ...	Sind, Punjab & Delhi ...	Boiler, steam. fittings for—	Balances, spring. Salters,' small, for 10 H.-P. boilers, working @ 100 lbs. for safety valves	No. 2	1	2	6	Each	...	...	(a) 2 0 0 0	...	K.	(a) Net weight.
440	26th November 1886 ...	Nagpur-Chhattisgarh ...		Tubes 5′ 2″ long × 3¼″ outside diameter 9 B. W. G. for stationary boilers supplied on No. C-221 of 1882. The tubes are of metal similar to that known as "homogeneous" made by Messrs. Howell and Co., Brook Steel Works, Sheffield	No. 225	105	0	0	Total	...	...	3 9 2 0	12 6	B.	
415	17th April 1886 ...	Eastern-Bengal ...	Cranes.	Hand-power, overhead, travelling, to lift 30 tons. (Approximate weight 29 tons)	No. 1	840	0	0	Each	797	...	68 6 3 13	27 6	C.	The Hydraulic Engineering Company.
Do.	Ditto ...	Ditto ...		540 ft. of steel rails, in lengths of 18 ft. ...	6 tons.	40	0	0	Total	349	...				
Do.	Ditto ...	Ditto ...		Rolled Iron Beams—											
Do.	Ditto ...	Ditto ...		28 ft. long × 18″ × 6″ × ⅝″ = 270 cwt.	No. 18	247	0	0	,,	...	...				
				18 ,, × 18″ × 6″ × ⅝″ = 20¼ ,,	,, 2										
Do.	Ditto ...	Ditto ...		Main girders for hydraulic crane with rails for cross traverse of crane	,, 2	197	0	0	,,	...	...				
Do.	Ditto ...	Ditto ...		Main cross traversing with brackets complete, arranged for increased length of girder.	Shafts 2	46	0	0	,,	...	...				
				The crane is to be worked by hand-power, and is to have wrought-iron main and end girders, and is to be capable of lifting, traversing, and lowering a load of 30 tons. The crane is to run on a rail pathway 46 ft. 7 in. centres.											
Do.	Ditto ...	Ditto ...		The girders to be each 44′ 7″ long and 3′ 6″ deep at centre, tapering to 1′ 11″ deep at each end, where they are secured to the end carriages.											
				The wheels are to be 2′ 3″ diameter with steel tyres.											

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s	d	Unit.	India Office drawings (if any.) Original C.	Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lbs.	Entire Sea freight per ton. Rate. s.	Port.	Remarks.
429	8th July 1886 ...	Eastern Bengal ...	Cranes—*concld.*	Hand-geared to lift 30 tons similar to that supplied on Contract No. C-415 of 1886	No. 1	840	0	0	Total	797 & 349	...	28 17 1 10	21	C.	
				Span 46′ 7″ centre to centre of rails ...											
				Pipes not required											
412	10th April 1886 ...	Punjab Northern ...		Steam-coal whipping with boiler and wrought-iron carriage complete, to lift a load of 1 ton (weight of crane 330 cwts.)	No. 1	556	0	0	Each						
,,	Ditto ...	Ditto ...		Tipping buckets for ditto, to hold ½ ton each (10 cwt. each) ...	,, 6	16	0	0	,,	...	825 / 1—4	18 12 3 0	15	K.	Cowans, Sheldon and Company. [£6-15-0 for tracings and photos.]
				The crane is to be mounted on a wrought-iron carriage, running on four wheels on a 5-feet 6-inch gauge railway, and made to hoist, traverse, and swing by steam-power, and lower a weight of one ton at a radius of jib of 25 feet from the centre of the pillar to the centre of the load. The crane is to be fitted with an engine having two steam cylinders ...											
				Description of crane-gearing spur and bevel—											
				Diameter of each cylinder ... 6 inches ...											
				Length of piston stroke ... 10 ,, ...											
				Revolutions per minute ... 120 ,, ...											
				Length of boiler barrel ... 7 feet ...											
				External diameter of boiler barrel 3 feet 2 inches											
				Length of fire-box 3 feet 10 inches ...											

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any.) Original C.	Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lbs.	Entire Sea freight per ton. Rate. s. d.	Port.	Remarks.
432	3rd August 1886 ...	Burma ...	Drills, twist.	Tapered— $\frac{1}{2}$", $\frac{9}{16}$", $\frac{5}{8}$", $\frac{11}{16}$", $\frac{1}{1}\frac{3}{6}$", $\frac{7}{8}$", 1", 1$\frac{1}{4}$" & 1$\frac{1}{2}$" ...	Sets 2	18	17	0	Total	...	...	0 1 2 0	27-6	R.	This contract should have been let under G-a.—Tools.
„	Ditto ...	Do. ...		Tapered— $\frac{1}{2}$", $\frac{9}{16}$", $\frac{5}{8}$", $\frac{11}{16}$", $\frac{3}{4}$", $\frac{1}{1}\frac{3}{6}$", $\frac{7}{8}$" & 1" ...	„ 10										
421	13th May 1886 ...	Wardha-Coal ...	Fire-boxes.	For Tangye's vertical boilers with two Galloway tubes ...	No. 2	43	0	0	Total	...	...	0 12 3 24	12-0	B.	
410	30th March 1886 ...	Northern Bengal ...	Gauge.	Hydraulic pressure, to record up to 5 tons to the inch	No. 1	3	0	0	Each	...	...	0 0 0 24	18-0	C.	Charged by measurement as 1 cubic ft. = $\frac{1}{40}$ of a ton.
G 1331	23rd February 1886 ...	Punjab Northern ...	Grindstones; spare stones for—	48" diameter, 8" thick, with hole in centre 3" diameter	No. 2	2	2	0	Each	...	...	1 0 2 0	22-0	K.	
„ 1653	18th December 1886 ...	Nagpur Chhattisgarh ...		3 feet diameter without trough. Finest Newcastle, of a suitable degree of hardness and very regular grit so that the grindstones may not glaze; and to wear as evenly as practicable without requiring very frequent dressing up	„ 6	0	16	0	„	...	...	1 7 0 0	20-0	B.	

INDIAN STATE RAILWAYS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any.) Original C.	Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lb.	Entire Sea freight per ton. Rate. s. d.	Port.	Remarks.
423	28th May 1886 ...	Bolan	Hammers, Steam.	5 cwt. double-acting Steam Hammer, with pipes and duplicate parts complete ...	No. 1	139	0	0	Each	...	$\frac{820}{1-3}$	4 18 3 0	16-6	K.	
422	20th May 1886 ...	Punjab Northern ...	Hammers, Steam; parts of—	Blocks, top and bottom, for 3 Cwt. Steam Hammers	Sets 3	11	0	0	Total	...	...	1 17 0 0	15 3	K.	
				Blocks, top and bottom, for 6 Cwt. Steam Hammers	„ 3	24	0	0	„						
				Blocks, top and bottom, for 20 Cwt. Steam Hammers	„ 3	46	0	0	„						
				Shipments as per completion report—											
				3 top and 3 bottom Pallets for 3 Cwt. Steam Hammer											
				3 top and 3 bottom Pallets for 6 Cwt. Steam Hammer											
				3 top and 3 bottom Pallets for 20 Cwt. Steam Hammer											
433	3rd August 1886 ...	Burma		Piston rod for 10 Cwt. Steam Hammer ...	No. 1	18	0	0	„	...	...	*0 7 0 2	...	R.	Net weight.
				Piston rings for ditto ditto ...	„ 2										

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £ s. d.	Rate F. O. B. in England. Unit.	India Office drawings (if any.) Original C.	India Office drawings (if any.) Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lbs.	Entire Sea freight per ton. Rate. s.	Entire Sea freight per ton. Port.	Remarks.
G.-1404	6th April 1886 ...	Nagpur-Chhattisgarh ...	Indicators' Steam. —	Richards' Patent	Set 1	8 0 0	Each			T. Cwt. qr. lbs.	s.		
				Springs and scales for, as under:—									
				No. 1 1/8 15 × 10 ...									
				„ 2 1/12 15 × 22 ...									
				„ 3 1/16 15 × 35 ...									
				„ 4 1/20 15 × 47 ...									
				„ 5 1/24 15 × 60 ...	Set 1	5 0 0	Set	...	...	0 0 0 24	J5	B.	
				„ 6 1/30 15 × 80 ...									
				„ 7 1/32 15 × 85 ...									
				„ 8 1/40 15 × 125 ...									
				„ 9 1/48 15 × 150 ...									
				„ 10 1/60 15 × 175 ...									
„	Ditto ...	Ditto ...		Diagram card packets for— ...	„ 2	0 8 0	Total						
				Springs, steel, to suit Richards' Indicator, *viz.*:—									
				No. 3 for pressures lbs. — 15 to lbs. + 35 ...									
				„ 4 do. + 15 to + 47 ...									
				„ 5 do. — 15 to + 60 ...									
G.-1637	19th October 1886 ...	Northern Bengal ...		„ 6 do. 0 to + 86 ...	„ 2	3 3 0	Set	...	...	0 0 0 2½	...	C.	Received per Parcel Post, 20th December 1886.
				„ 7 do. 0 to + 100 ...									
				„ 8 do. 0 to + 125 ...									
				„ 9 do. 0 to + 150 ...									

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £ s. d.	Rate F. O. B. in England. Unit.	India Office drawings (if any.) Original. C.	India Office drawings (if any.) Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lbs.	Entire Sea freight per ton. Rate. s.	Entire Sea freight per ton. Port.	Remarks.
426	24th June 1886 ...	Jorhat ...	Lathe power self-acting wheel.	2′ 6″ to take 5′ 6′ between the centres. To turn wheels 30″ diameter and to take 50″ axles. The wheel lathe is to be adapted to turn without torsional strain of axle, a pair of wheels varying from 2 feet to 2 feet 6 inches diameter on their own axle, on axles from 3 feet to 5 feet 6 inches long, or to bore two tyres, or to boss or bore two wheels, or to boss and bore a wheel on one face, and to bore a tyre on the other at the same time.	No. 1	375 0 0	Each	...	828 1—5	9 8 2 0	30	C	
435	21st September 1886 ...	Eastern Bengal ...	Lathe power self-acting; head stock and slide rests for—	Head stocks for 24″ centre gap lathe ...	No. 2	88 0 0	Each	...	...	9 6 2 0	30	C	
„	Ditto	Ditto		Slide rests for 24″ centre gap lathe ...	„ 2	86 0 0	„						
				Two head stocks, double geared 24″ centres to suit beds of gap lathes (gap 4′ × 2′ 6″, 14″ centres). Each head stock to be fitted with a strong face plate for turning, boring and facing wheel centres, or boring tyres of 3′ 7″ carriage wheels. The slide rests will be worked self-acting by the gearing of the existing head stock, or will be worked by hand only.								
419	30th April 1886 ...	Wardha-Coal ...	Lubricators, needle.	No. 1, Lienwain's Patent	No. 24	0 17 0	Total	...	...	0 0 2 0	13	B	

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any). Original. C.	Completion. C.	Gross weight of the number contracted for.	Entire Sea Freight per ton. Rate.	Port.	Remarks.
													T. Cwt. qr. lbs.	s. d.		
407	26th January 1886 ...	Wardha-Coal ...	Machines.	Boring.	Boring bar and heads, each to hold four cutters, self-acting feed to bore 10′ long and from 12″ to 16″ diameter.	No. 1	95	0	0	Each	...	809 / 1—2	2 10 0 0	12-0	B	
437	12th October 1886 ...	Eastern Bengal ...		Drilling.	Wheel and tyre for drilling holes from ¾ inch up to 1⅛ inch diameter in a pair of locomotive, carriage or wagon wheels upon their own axles at the same time. The gauge of the wheels is to be 5 feet 6 inches.	„ 1	169	12	0	Each	E-1945	...	3 3 2 0	25-0	C	
					Split drum, or main shaft drum, 2 feet diameter and 12 inches wide.	„ 1	15	10	0	„	...					
					Photos. for ditto, per copy	...	0	3	0	„						
					Tracings	...	4	0	0	Set						
416	20th April 1886 ...	Nagpur-Chhattisgarh ...		Emery Grinding.	For facing up work. The machine to be of the description known, as a "Universal Surface and Periphery Grinder" with an adjustable side table. The machine spindle is to be fitted with an emery disc 12″ diameter and 2″ thick at one end, and with a surfacing emery wheel 10″×4″ mounted in an adjustable shield at the other. The machine is to be supplied with countershaft and belt shafting gear complete.	No. 1	38	0	0	Each	...	810 / 1—4	1 10 1 0	13	B	L. Sterne & Co.
438	2nd November 1886 ...	Burma ...			Twist drills (Thomson and Sterne's) same as in Contract No. C-59 of 1876.	No. 1	48	15	0	„	...	...	1 0 0 0	27-6	R	£ s. d. Less 10 per cent.=4 17 6
414	16th April 1886 ...	Sind, Punjab and Delhi			Emery discs ¼″ thick 12″ diameter ...	„ 24	3	14	0	Total						
					Ditto ⅜″ ditto ...	„ 24	5	10	0	„						
					Ditto ½″ ditto ...	„ 12	3	13	6	„	...	...	0 5 1 0	16-3	K	Less 10 per cent.
					Ditto ⅝″ ditto ...	„ 12	4	12	0	„						
					Ditto ¾″ ditto ...	„ 12	5	10	6	„						
					Spindle hole in each to be one inch diameter.											

INDIAN STATE RAILWAYS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any). Original. C.	Completion. C.	Gross weight of the number contracted for.	Entire Sea Freight per ton. Rate.	Port.	Remarks.
													T. Cwt. qr. lb.	s. d.		
427	25th June 1886 ...	Wardha-Coal ...	Machines—*contd.*	Emery grinding.	Emery discs, 12″ diameter × ¼″ thick, diameter of spindle ¾″	No. 6	1	7	0	Total	...	...	0 0 1 3	10-9	B.	
417	22nd April 1886 ...	Nagpur-Chhattisgarh...		Grinding Twist drill.	Combined Tool and Twist Drill grinder. The machine to be for drills ⅜″ to 2″ rising by ⅛″.	No. 1	116	6	8	Each	...	823 / 1—3	2 19 0 0	12-0	B.	
					The machine to be supplied with countershaft and belt shifting gear complete.											
428	1st July 1886 ...	Northern Bengal ...			Patent Twist Drill grinding apparatus, to grind drills from ⅛″ to 2″ for firing to side of a 48″ grindstone.	„ 1	33	0	0	„	...	...	0 5 3 4	16-0	C.	Charged by measurement as 16 cub. feet=$\frac{1}{40}$ tons.
434	4th September 1886 ...	Sind-Sagar and Sind-Pishin.		Sawing.	Circular, cold, hand-power for sawing rails by Messrs. Selig, Sonnenthal & Co. To be suitable for cutting steel rails of Vignole's and double-headed sections weighing 75 lbs. per yard, each machine to be fitted with a drilling arrangement and six spare drills and with a compound slide rest; no trolly is required.	No. 7	41	10	0	Each	...	...	5 14 1 22	25-0	K.	Includes gross weight of 4 saw sharpening machines and 9 spare saws.
441	1st December 1886 ...	Bellary-Kistna ...			Circular, cold, hand-power for sawing rails. The machines are of the same description as those included in Contract No. C-434 above.	„ 2	41	10	0	„	...	...	2 7 2 0	18-0	M.	Includes gross weight of 2 saw sharpening machines,

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any). Original C.	Completion C.	Gross weight of the number contracted for. T. Cwt. qr. lbs.	Entire Sea freight per ton. Rate. s. d.	Port.	Remarks.
434	4th September 1886 ...	Sind-Sagar and Sind-Pishin.	Machines—*contd.*	Saw Sharpenings.	Cold, for sharpening the saws of sawing Circular cold supplied under this contract.	No. 4	4	7	6	Each	...	...	5 14 1 22	25-0	K.	
„	Ditto ...	Ditto ...			Saws, spare, for above 4-18″ diameter and 5-20″ diameter.	„ 9	17	0	0	Total	...	...				
441	1st December 1886 ...	Bellary-Kistna ...			Cold, for sharpening saws supplied under this contract.	„ 2	4	7	6	Each			2 7 2 0	18-0	M.	Includes gross weight of 2 sawing machines.
					With spare emery discs	„ 6	0	6	6	„	...	...				
					Saws, spare, 18″ diameter	„ 5	1	15	0	„						
430	22nd July 1886 ...	Burma			Emery discs for, as under—											
					12″ × ⅜″	„ 24	5	14	0	Total						
					12″ × ½″	„ 24	7	12	0	„	...	...	0 7 1 0	18-4	R.	Less 12½ % discount.
					12″ × ⅝″	24	9	12	0	„						
					12″ × ¾″	„ 24	11	8	0	„						
439	12th November 1886 ...	Nagpur-Chhattisgarh ...		Screwing.	Spiral springs for Seller's Patent Screwing machine—											
					No. 428 to screw from ¼″ to 1″. The spirings are 12″ long by B. W. G. No. 10, diameter outside ⅝″.	No. 24	0	2	0	Each	...	...	0 0 2 0	16-0	B.	

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—contd.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any). Original. C.	Completion. C.	Gross weight of the number contracted for. T. Cwt. qr. lb.	Entire Sea freight per ton. Rate. s. d.	Port.	Remarks.
424	10th June 1886 ...	Bilaspur-Etawah, Katni-Umaria Section.	Pump.	Hydraulic—for testing boilers with pipes and connections complete, "No. 1 B."	No. 1	21	0	0	Each.	367,368 369,370	821	0 7 2 0	12-0	B.	
				For photos and tracings ...	...	1	10	0							
420	29th April 1886 ...	Wardha-Coal ...	Steam, jet.	Korting's patent under grate of boilers with spindle size number 1.	No. 1	14	0	0	Total	...	...	0 2 0 14	12	B.	
															Contracts should have been let under class G.—
409	12th February 1886 ...	Punjab Northern ...	Stocks, taps and dies.	Blank dies to suit stock by Whitworth marked B-893 ¼″ to ⅜″ advancing by $\frac{1}{16}$″.	Sets 6	0	10	6	Set.	...	...	0 10 2 0	16-3	K.	Includes also the gross weight of another set of the standard thread supplied under the same contract as well as of 6 hot iron saws 36″ diameter on Contract No. G. 1389.
„	Ditto ...	Ditto ...		Blank dies to suit stock by Whitworth marked D-3487-½″ to 1″ advancing by ⅛″.	„ 6	1	12	6	„	...	...				
413	10th April 1886 ...	Nagpur-Chhattisgarh...		Stocks, taps and dies. Gas thread to screw from ⅜″ to 2″ inclusive.	„ 1	38	5	0	„	...	...	0 14 2 0	15-9	B.	Includes gross weight of a set of master-tap and a set of die nuts.
															Cwt. qr. lbs.
409	12th February 1886 ...	Punjab-Northern ...		Stocks, taps and dies. Standard thread ¼″ to 1½″ rising by ⅛′ fitted into a box with lock and key.	„ 1	28	0	0	„	...	...	*	16-3	K.	*Included in the 10 2 0 above.
413	10th April 1886 ...	Nagpur-Chhattisgarh ...		Taps, master, gas thread ¼″ to 2″, rising by ⅛″ inclusive.	„ 1	13	15	0	„	...	...	0 14 2 0	15-9	B.	Includes gross weight of a set of tap screw ⅜″ to 2″ and a set of die nuts.
409	12th February 1886 ...	Eastern Bengal ...		Taps, steel, for engine and mud plug holes, each consisting of 9.	„ 3	9	0	0	„	...	...	0 0 3 0	17-0	C.	

INDIAN STATE RAILWAYS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on board in England, gross weight, and Sea freight per ton, of articles contracted for by the India Office from January to December 1886—concld.

Contracts. No. C.	Contracts. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount. £	s.	d.	Unit.	India Office drawings (if any). Original C.	Completion C.	Gross weight of the number contracted for.	Entire Sea freight per ton. Rate.	Port.	Remarks.
												T. Cwt. qr. lbs.	s.		
413	10th April 1886 ...	Nagpur-Chhattisgarh...	Stocks, taps and dies —*contd.*	Die nuts ¼″ to 2″ (rising by ⅛″) inclusive	Set 1	11	5	0	Set	...	...	0 14 2 0	15·9	B.	Includes gross weight of a set of Tap screw and a set of master tap.
418	30th April 1886 ...	Wardha-Coal ...	Tool holders.	Smith and Coventry's patent ⅜″ left hand Ditto ⅝″ right hand The dimensions given is the diameter of the cutters in the holders, the size of holder required for them is 1¼″ square in the shank, and suitable for 12″ centre lathe.	No. 3 „ 3	2 2	12 12	0 0	Total „	... ...	... ...	0 0 2 4	12·0	B.	

Ports :—B—Bombay. C—Calcutta K—Kurrachee. M—Madras. R—Rangoon.

L. CONWAY-GORDON,
Director General of Railways.

FROM

THE DIRECTOR GENERAL
OF RAILWAYS,

TO

Order thereon No 3688 W. of 21st Nov 1888

Communicated to officers of the P.W. Department, in continuation of G. O. no 2410 W dated 8th August 1888.

of N. Rly.

W.

No 3688 W. of 21st Nov 1888

S. E.
C. A. to Govt
Exam P.W. as
Consy Engr for Rys

Circular No. 20.

Dated Simla, the 5th October, 1888.

Received

INDIAN STATE RAILWAYS.

Rate List Class C—Workshop Machinery and Heavy Tools—for 1886.

G. C. Press, Simla.—No. 828 P. W. D.—22-10-88.—1,200.

[*General Distribution.*]

Circular No. 20.

FROM

THE DIRECTOR GENERAL OF RAILWAYS,

To

THE DIRECTOR, NORTH-WESTERN RAILWAY.

THE ENGINEERS-IN-CHIEF, SIND-PISHIN STATE RAILWAY AND BANNU RAILWAY SURVEY.

THE SUPERINTENDENT OF WAY AND WORKS, CUDDAPAH-NELLORE STATE RAILWAY.

THE PORT STOREKEEPERS, STATE RAILWAY DEPARTMENT, CALCUTTA AND BOMBAY.

Simla, the 5th October, 1888.

SIR,

I have the honour to forward, for information and guidance, a printed statement showing the rates *free on board* in England, *the gross weight* and *the entire sea freight per ton* to Indian Ports of C Class State Railway Stores—"Workshop Machinery and Heavy Tools,—" contracted for by the India Office during the year 1886.

2. The rates for landing State Railway Stores from vessels at the several ports in India and the official rate of exchange during the past financial year are given in the circulars quoted on the margin. An insurance charge of one per cent. should be added in addition to other incidental charges to arrive at the cost of stores delivered at Port.

Director-General of Railways' Circular No. 2 of 12th April 1888.
Director-General of Railways' Circular No. 6 of 22nd June 1888.

I have the honour to be,

SIR,

Your most obedient servant,

L. CONWAY-GORDON,
Director General.

Document accompanying.
Rate List Class C—Workshop Machinery and Heavy Tools,—for 1886.

The Secretaries to the Governments of Madras, Bombay, Bengal, the North-Western Provinces and Oudh, and the Punjab, Public Works Department.
The Secretaries to the Chief Commissioners of the Central Provinces, Burma, Assam, and Coorg, Public Works Department.
The Secretaries to the Residents, Hyderabad and Mysore, Public Works Department.
The Secretaries to the Agents to the Governor General, Rajputana, Central India, and Baluchistan, Public Works Department.
The Superintendent of Port Blair and Chief Commissioner, Andaman and Nicobar Islands.
The Director General of Telegraphs.
The Inspector General of Military Works.
The Superintendent of Works, Simla Imperial Circle.
The Accountant General, Public Works Department.
The Comptroller General.
The Accountant General, Bengal.
The Consulting Engineers for Railways, Madras and Bombay.
The Consulting Engineers to the Government of India for Railways, Calcutta and Lucknow.
The Consulting Engineer to the Government of India for Railways, Central Division, Jubbulpore.
The Agent and General Manager, Assam Railways and Trading Company, Limited.

Copy forwarded to the Local Governments, Administrations and Officers marginally noted for information.

L. CONWAY-GORDON,
Director General.

FROM
THE DIRECTOR GENERAL
OF RAILWAYS,

To

Circular No. 20.

Dated Simla, the 5th October, 1888.

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The Secretaries to the Agents to the Governor General, Rajputana, Central India, and Baluchistan, Public Works Department.
The Superintendent of Port Blair and Chief Commissioner, Andaman and Nicobar Islands.
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Director General.

[*General Distribution.*]

Circular No. 20.

FROM

THE DIRECTOR GENERAL OF RAILWAYS,

TO

THE DIRECTOR, NORTH-WESTERN RAILWAY.

THE ENGINEERS-IN-CHIEF, SIND-PISHIN STATE RAILWAY AND BANNU RAILWAY SURVEY.

THE SUPERINTENDENT OF WAY AND WORKS, CUDDAPAH-NELLORE STATE RAILWAY.

THE PORT STOREKEEPERS, STATE RAILWAY DEPARTMENT, CALCUTTA AND BOMBAY.

Simla, the 5th October, 1888.

SIR,

I have the honour to forward, for information and guidance, a printed statement showing the rates *free on board* in England, *the gross weight* and *the entire sea freight per ton* to Indian Ports of C Class State Railway Stores—"Workshop Machinery and Heavy Tools,—" contracted for by the India Office during the year 1886.

2. The rates for landing State Railway Stores from vessels at the several ports in India and the official rate of exchange during the past financial year are given in the circulars quoted on the margin. An insurance charge of one per cent. should be added in addition to other incidental charges to arrive at the cost of stores delivered at Port.

Director-General of Railways' Circular No. 2 of 12th April 1888.
Director-General of Railways' Circular No. 6 of 22nd June 1888.

I have the honour to be,

SIR,

Your most obedient servant,

L. CONWAY-GORDON,
Director General.

Document accompanying.
Rate List Class C—Workshop Machinery and Heavy Tools,—for 1886.

The Secretaries to the Governments of Madras, Bombay, Bengal, the North-Western Provinces and Oudh, and the Punjab, Public Works Department.
The Secretaries to the Chief Commissioners of the Central Provinces, Burma, Assam, and Coorg, Public Works Department.
The Secretaries to the Residents, Hyderabad and Mysore, Public Works Department.
The Secretaries to the Agents to the Governor General, Rajputana, Central India, and Baluchistan, Public Works Department.
The Superintendent of Port Blair and Chief Commissioner, Andaman and Nicobar Islands.
The Director General of Telegraphs.
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Copy forwarded to the Local Governments, Administrations and Officers marginally noted for information.

L. CONWAY-GORDON,
Director General.

FROM

THE DIRECTOR GENERAL
OF RAILWAYS,

To

Circular No. 20.

Dated Simla, the 5th October, 1888.

Received

INDIAN STATE RAILWAYS.

Rate List Class C—Workshop Machinery and Heavy Tools—for 1886.

G. C. Press, Simla.—No. 828 P. W. D.—22-10-88.—1,200.

[*General Distribution.*]

Circular No. 20.

FROM

THE DIRECTOR GENERAL OF RAILWAYS,

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THE ENGINEERS-IN-CHIEF, SIND-PISHIN STATE RAILWAY AND BANNU RAILWAY SURVEY.

THE SUPERINTENDENT OF WAY AND WORKS, CUDDAPAH-NELLORE STATE RAILWAY.

THE PORT STOREKEEPERS, STATE RAILWAY DEPARTMENT, CALCUTTA AND BOMBAY.

Simla, the 5th October, 1888.

SIR,

I have the honour to forward, for information and guidance, a printed statement showing the rates *free on board* in England, *the gross weight* and *the entire sea freight per ton* to Indian Ports of C Class State Railway Stores—"Workshop Machinery and Heavy Tools,—" contracted for by the India Office during the year 1886.

2. The rates for landing State Railway Stores from vessels at the several ports in India and the official rate of exchange during the past financial year are given in the circulars quoted on the margin. An insurance charge of one per cent. should be added in addition to other incidental charges to arrive at the cost of stores delivered at Port.

Director-General of Railways' Circular No. 2 of 12th April 1888.
Director-General of Railways' Circular No. 6 of 22nd June 1888.

I have the honour to be,

SIR,

Your most obedient servant,

L. CONWAY-GORDON,
Director General.

Document accompanying.
Rate List Class C—Workshop Machinery and Heavy Tools,—for 1886.

FROM

THE DIRECTOR GENERAL
OF RAILWAYS.

Order thereon. No 2410 W/ 8th August 1888

Communicated to officers of the P.W. Department for information, in continuation of G. O. No 403R dated 15th May 1888 and 82W dated 10th January 1888

SD/ J.O.H.

TO

Circular No. 6.

Dated Simla, the 22nd June, 1888.

Received

No 2410 W/ 8th August 1888

Supdg Engrs
C. Dr to Govt
Exr P.W.D.
Consy Engr for Rys

INDIAN STATE RAILWAYS.

Rate List, class B.—"Engineer's Plant (excluding Petty Tools)," for 1886.

G. C. Press, Simla.—No. 351 P. W. D.—4-7-88.—1,200.

[*General Distribution.*]

Circular No 6.

FROM

THE DIRECTOR GENERAL OF RAILWAYS,

TO

THE DIRECTOR, NORTH-WESTERN RAILWAY.

THE ENGINEERS-IN-CHIEF, SIND-PISHIN STATE RAILWAY AND BANNU RAILWAY SURVEY.

THE SUPERINTENDENT OF WAY AND WORKS, CUDDAPAH-NELLORE STATE RAILWAY.

THE PORT STOREKEEPERS, STATE RAILWAY DEPARTMENT, CALCUTTA AND BOMBAY.

Simla, the 22nd June, 1888.

SIR,

I have the honour to forward, for information and guidance, a printed statement showing the rates free on board in England, the gross weight and the entire sea-freight per ton for B class State Railway Stores "Engineer's Plant (excluding Petty Tools)" contracted for by the India Office from January to December 1886.

2. The rates for landing State Railway Stores from vessels at the several ports in India are given in Director General of Railways' Circular No. 22, dated 16th December 1885.

3. The official rate of exchange during the financial year 1886-87 was 1*s.* 6*d.* per rupee.

4. In order to arrive at the total cost of materials landed at Port, an Insurance charge of one per cent. on the original cost *plus* entire sea-freight should be added in addition to the other incidental charges.

5. In ordering stores only four-fifths of the entire sea-freight should be entered in Indents as payable in England.

I have the honour to be,

SIR,

Your most obedient Servant,

G. F. WILSON, Captain, R.E.,
for Director General.

Document accompanying.

Rate List, class B.—"Engineer's Plant (excluding Petty Tools)," for 1886.

The Secretaries to the Governments of Madras, Bombay, Bengal, the North-Western Provinces and Oudh, and the Punjab, Public Works Department.
The Secretaries to the Chief Commissioners of the Central Provinces, Burma, Assam, and Coorg, Public Works Department.
The Secretaries to the Residents, Hyderabad and Mysore, Public Works Department.
The Secretaries to the Agents to the Governor General, Rajputana, Central India, and Baluchistan, Public Works Department.
The Superintendent of Port Blair and Chief Commissioner, Andaman and Nicobar Islands.
The Director General of Telegraphs.
The Inspector General of Military Works.
The Superintendent of Works, Simla Imperial Circle.
The Accountant General, Public Works Department.
The Director, Persian Gulf Telegraph.
The Comptroller General.
The Accountant General, Bengal.
The Consulting Engineers for Railways, Madras and Bombay.
The Consulting Engineers to the Government of India for Railways, Calcutta and Lucknow.
The Consulting Engineer to the Government of India for Railways, Central Division, Jubbulpore.
The Agent and General Manager, Assam Railways and Trading Company, Limited.

Copy forwarded to the Local Governments, Administrations and Officers, noted on the margin, for information.

G. F. WILSON, Captain, R.E.,
for Director General.

Enclosure to Director General of Railways' Circular No. 6 of 1888.

RATE LIST.

CLASS B.

ENGINEER'S PLANT

(EXCLUDING PETTY TOOLS).

FOR 1886.

Enclosure to Director General of Railways' Circular No. 6 of 1888.

RATE LIST.

CLASS B.

ENGINEER'S PLANT

(EXCLUDING PETTY TOOLS)

FOR 1886.

Enclosure to Director General of Railways' Circular No. 6 of 1888.

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS)

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £	s.	d.	Unit.	Gross weight. Weight. T.	c.	q.	Unit.	Entire sea freight per ton to port. Rate. s.	d.	Port.	Remarks.
152	22nd April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Accumulator.	Hydraulic, 4″ × 6′, complete with fittings.	...	...	No. 1	130	0	0	Each	Not known				22	0	K.	
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Blocks.	Differential, pulley, with chain complete to lift 4 tons.	...	...	No. 4	9	2	6	Each	Not known				16	6	K.	
					4½″ (single, double, treble and snatch)	...	...	Sets 4	9	10	0	Set	1	6	(a) 0	Total	20	0	K.	(a) Includes the gross weight of 9″ blocks on this contract (see below).
					6″, one sheave	...	...	„ 4	15	10	0	„	1	3	2	„	20	0	K.	
					6″, two „															
					6″, three „															
					6″, snatch															
					9″, one sheave	...	...	„ 1	28	10	0	„	Included in (a)			...	20	0	K.	
					9″, two „															
					9″, three „															
					9″, snatch															
164	7th September 1886...	69 of 1885	Northern Bengal ...	Boats, Cargo.	Built in steel, galvanised and of the following dimensions:— Feet. Inches. Length on main deck ... 130 0; Beam, moulded... 29 0; Depth at centre from top of beam to top of keel ... 4 8; Draught of water with all stores and general equipment on board ... about 0 11. The plating is of mild steel, Seimen's Martin.	169	...	No. 2	1,680	0	0	Each	116	14	2	Total	20	0	C.	The total cost of each of these Boats ready for service was approximately Rs. 33,700.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight.	Gross weight. Unit.	Entire sea freight per ton to port. Rate.	Entire sea freight per ton to port. Port.	Remarks.
						B.	B.		£ s. d.		T. c. q.		s. d.		
163	9th September 1886...	82 of 1885	Sind-Sagar ...	Boats, Cargo—*concld.*	(Or Barges). Built in steel, galvanized and of the following dimensions :— Feet. Inches. Length on deck 82 0; Beam moulded ... 16 0; Depth at centre from top of beam to top of keel ... 4 0; Draught of water with all necessary equipment and 20 tons of cargo on board 1 4. The plating is of mild steel, Seimen's Martin.	170	209	No. 8	399 0 0	Each	124 19 1	Total	35 0	K.	
143	23rd February 1886...	74 of 1885	Wardha Coal ...	Boilers, steam.	Complete with iron fire-box, 25 H.P. nominal, semi-portable, locomotive type, with solid iron-bar, foundation ring, Ramsbottom safety valves, two spare fire-boxes and 50 spare tubes, iron, lap-welded. The boiler shell is fitted with a large dome and the internal steam pipe provided with a special arrangement to prevent priming. The steam pipe branch is of the usual size for the boiler, but it is fitted with a flange to connect to a wrought-iron gas pipe of 2″ bore. Contract was let for "Steel shell" and "Lowmoor fire-box."	...	171 1—4 and photo.	No. 2	470 0 0	Each	25 11 2	Total	£ 35 s. 17 d. 8 Total. (Paid in England in full.)	B.	

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight.	Gross weight. Unit.	Entire sea freight per ton to port. Rate.	Entire sea freight per ton to port. Port.	Remarks.
						B.	B.		£ s. d.		T. c. q.		s. d.		
157	3rd August 1886 ...	68 of 1884	Cawnpore-Kalpi ...	Boilers, steam; Fire-boxes for—	Of Lowmoor iron with foundation ring for each fire-box, for boilers supplied with 5-ton steam hoist under Contract B116, dated 13th January 1885, (*vide* Rate List, Class B, for 1885). The boilers for which these fire-boxes are required are vertical, and are each 3 feet 9 inches diameter, and 8 feet 6 inches high, with a fire-box 3 feet 5 inches diameter and 4 feet 8 inches high.	...	177	No. 2	31 0 0	Each	10 4 0	Total	21 0	C.	
175	24th December 1886	1 of 1886	Toungoo-Mandalay Railway.	Cranes.	Portable, 3 ton, handpower, with wrought iron trucks and steel crane framings. The crane is carried on a wrought iron truck to run on metre gauge railway, to lift and slue a weight of 3 tons at a maximum radius of 14 feet and a height of 14 feet from the rail with a loose link motion for lowering the Jib. The frame of the truck is 9′-6″ long, 5′-6″ wide, 12″ deep, made of channel iron 12″ × 3½″ × ⅝″ and the sides of truck have wrought iron outside brackets for supporting planking. The truck is carried on 4 cast iron wheels 1′-6″ diameter, turned on the tread, keyed on to steel axles 4″ diameter in the middle. The framing is fitted with a cast iron balance box, mounted on four cast iron wheels. The chain is of Lowmoor iron $\frac{9}{16}$ inch diameter fitted with swivel hook and return block and of sufficient length for a lift of 30 feet. The crane is tested with a weight 25 per cent. more than that which it is intended to lift.	...	211 1-7	No. 2	165 0 0	Each	13 7 1	Total	40 0	R.	

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number. B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original. B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight. T. c. q.	Gross weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
153	28th April 1886	36 of 1883	Indus Valley (Sukkur Bridge).	Cranes—*contd.*	Portable, 6 ton, handpower, on low lorries, 5′ 6″ gauge, with 16 feet radius, all in wrought iron.	...	...	No. 2.	254 0 0	Each	19 17 0	Total	16 0	K.	Net weight.
175	24th December 1886.	1 of 1886	Toungoo-Mandalay Railway.		Travelling, 5 ton, steam. The crane is mounted on a wrought iron carriage made to run on a metre gauge railway and made to hoist and lower through a distance of 60 feet, and revolve and traverse a weight of five tons at a maximum radius of Jib of 16 feet from the centre of the pillar to the centre of the load and a maximum height at work of 14 feet from the rail level to the sheave in the Jib-head. The crane is fitted with tension rods and links for lowering the Jib to a total fixed height not exceeding 10 feet 6 inches from the rail level. A pair of engines of the most approved type are fitted to the crane with vertical boiler, tank and coal box on the working platform. The leading dimensions of the crane are as follows:—	E 1095/1 and E 1095/2	216/1-3	No. 1	730 0 0	Each.	27 11 0	Each.	38 6	R.	Net weight 20 12 1 27

Diameter of each cylinder	Feet.	Inches.
	... ...	6
Length of piston stroke	... ...	10
Diameter of crank shaft	... ...	2⅞
Length of boiler barrel	... 6	6
Diameter of boiler barrel	... 3	6
Length of fire-box	3	5
Mean diameter of fire-box	... 3	3
Size of chain	... ...	15/16

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original. B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight. T. c. q.	Gross weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Derricks.	Iron work only for safety hand Derricks to lift 6 tons with 35 feet radius for wire rope gear to lift from 40 feet below ground line.	...	...	Sets 2	81 0 0	Set	6 3 3	Total	16 0	K.	Net weight.
„	„ „ „	„ „	„ „		Special twin Derrick for erecting No. 3 Strut, Sukkur Bridge.	...	198/1—6	No. 1	315 0 0	each	9 15 3	Total	20 0	K.	
166	12th October 1886 ...	30 of 1886	Sind-Sagar (Jhelum Bridge).		Portable with supporting clips (for the erection of Sullivan's staging, *vide* page 14).	...	...	„ 2	12 0 0	Total	Included in that of staging contract under this (*vide* page 14).		15 0	K.	
158	11th August 1886	41 of 1885	Wardha Coal ...	Differential gear.	Davey's patent, for Warora Colliery Works, as per ferro. No. B152.	...	...	Sets 2 (one right and one left).	400 0 0	Total	1 12 0	Total	10 0	B.	
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Drifts.	Parallel, steel ... 6¾″×1″ ... No. 7764; 5¾″×1″ ... „ 1262; 7¾″×1″ ... „ 120	... ...	... ...	Tons 5	18 0 0	Ton	5 11 0	Total	22 0	K.	Drifts are classified in the Nomenclature and Classification of State Railway Stores under Class G—a—Tools.

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Contract. Number. B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight. T. c. q.	Gross weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
E 1111	4th December 1886	1 of 1886	Toungoo-Mandalay Railway.	Earth-wagons.	Ironwork only for earth-wagons, end tip, metre gauge, to hold 2 yards, including complete set of bolts and nuts for each wagon with 20 per cent. extra.	..	...	Sets 6	18 15 0	Set	58 3 2	Total	25 0	R.	
					Ironwork only for earth-wagons, side tip, metre gauge, to hold 2 yards, including complete set of bolts and nuts for each wagon with 20 per cent. extra.	...	...	„ 48	18 15 0	„					
171	1st December 1886	1 of 1886	Toungoo-Mandalay Railway.	Engine, steam, portable.	12 H. P., double cylinder, not reversible.	...	202 1—9 and photo.	No. 1.	299 0 0	Each	10 6 1	Each	30 0	R.	T. c. q. lbs. Net weight 8 16 0 25
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Expanders, Strut.	Special as per drawing ...	...	193	No. 4.	6 0 0	Each	Not known		Not known	K.	
172	29th November 1886	1 of 1886	Toungoo-Mandalay Railway.	Forges, portable.	24 inches. All days' patent, similar to those supplied under Contract C 298, dated 21st December 1883, except that the blower is attached to the back of the forge without chain or belt driving gear.	...	213 1—2	No. 6.	10 5 0	Each	2 13 2	Total	27 6	R.	Net weight of each cwt. 4 qr. 1 lbs. 23.
					6 photos and 3 tracings.	...	...	...	2 2 6	Total					

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Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS)

Contract. Number. B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight. T. c. q.	Gross weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
161	12th August 1886	36 of 1883	Indus Valley (Sukkur Bridge).	Gauge, pressure, hydraulic.	In box, suppplied by Messrs. Westwood & Co.	...	...	No. 1.	2 12 6	Each	Not known	...	22 0	K	
175	24th December 1886	1 of 1886	Toungoo-Mandalay Railway.	Hoists, steam.	Each to lift 3 tons by direct pull from the barrel. The Steam Hoists are of the description known as "ships" and are each fitted with two steam cylinders and link-reversing gear fixed to a vertical boiler. The lifting gear is double purchase. The barrel is fitted with two capstan ends, chain wheel for messenger chains and hand shaft. Each Hoist and boiler is mounted on a wrought iron carriage, part of which is fitted as a water-tank for feeding the boiler. The carriage is mounted on four cast-iron wheels. Each tested with a load of 25 per cent. more weight than they are specified to lift.	...	215 1—15	No. 2	340 0 0	Each	29 18 0	Total	38 6	R.	T. c. q. lbs. Net weight 13 10 3 4

The following are the leading dimensions of the hoists:—

	Feet.	Inches.
Diameter of each cylinder ...	0	6
Length of piston stroke ...	0	10
Diameter of crank shaft ..	0	2⅞
Length of boiler barrel ...	7	0
Diameter of ditto	3	2
Length of fire-box	3	10
Mean diameter of fire-box ...	2	9

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Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Unit.	Gross weight. Weight. T. c. q.	Unit.	Entire sea freight per ton to port. Rate. s. d.	Port.	Remarks.
162	18th August 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Hoists, steam—*contd.*	Each to lift 4 tons by direct pull from the barrel.	...	196 1—14	No. 2	480 0 0	Each	26 7 2	Total	16 0	K.	
173	6th December 1886 ...	32 of 1886	Bellary-Kistna ...		Hydraulic, lifting and traversing, with cast steel cylinders, to lift 60 tons each. The bases and screws of the traversing jacks are of forged steel or puddled iron bars.	...	...	No. 6	19 0 0	Each	1 14 1	Total	22 0	M.	
173	6th December 1886 ...	32 of 1886	Bellary-Kistna ...		Hydraulic, ship, with cast steel cylinders and safety valves to lift 200 tons each.	...	...	„ 4	19 10 0	„	1 4 1	„	22 0	M.	
159	9th August 1886 ...	2 of 1886	North-Western ...	Jacks.	Screw, traversing, 10 tons, (Traversing screw Bottle Jacks with levers, *as per report on completion of contract*).	...	...	„ 40	160 0 0	Total	2 17 0	„	12 6	K.	
165	22nd September 1886	3 of 1886	North-Western ...		Screw, traversing, 12 tons. The Jacks are of the pattern known as bottle-traversing, and each has a traverse of 12 inches by screw and ratchet lever.	172	...	„ 90	3 16 6	Each	7 14 0	„	14 8 16 0 16 6	K.	
149	25th March 1886 ...	72 of 1885	Punjab Northern ...		Screw, traversing, to lift 30 tons ...	...	...	„ 2	5 17 6	„	0 5 3	„	12 0	K.	
G 1536	6th July 1886 ...	3 of 1886	Eastern Bengal ...		Jacks, screw, traversing; spare ratchet handles for :— With 1 inch square holes ...	...	...	„ 24	0 4 9	„	Not known		Not known		Net weight ... T. c. q. lb. 0 1 0 8
165	22nd September 1886	5 of 1886	Eastern Bengal ...		With ⅞ inch ditto ...	...	...	„ 24	0 3 6	„					„ „ ... 0 0 3 12
					With 1 inch ditto ...	...	...	„ 24	0 4 6	„					
					With ⅞ inch ditto ...	...	...	„ 24	0 3 6	„	0 3 0	„	21 0	C.	

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Unit.	Gross weight. Weight. T. c. q.	Unit.	Entire sea freight per ton to port. Rate. s. d.	Port.	Remarks.
150	1st April 1886 ...	72 and 79 of 1885.	Punjab Northern and Nagpur Chhattisgurh.	Jimcrows.	With levers for 41½ lb. rails ...	...	...	No. 4	2 5 0	Each	0 1 ¾*	Each	16 6 15 0	K. B.	* Net weight.
170	17th November 1886	1 of 1886.	Toungoo-Mandalay Railway.		With screws and levers for 50 lb. flat-footed rails.	...	...	„ 4	2 10 6	„	0 3 3	Total	15 0	R.	
150	1st April 1886 ...	16 of 1885 (from Chief Storekeeper).	Sind, Punjab and Dehli.		With levers for 60 lb. rails ...	...	...	„ 6	3 7 6	„	... ...	...	...	K.	Weight and rate of sea freight not known.
„	„	72 of 1885.	Punjab Northern ...		With levers for 62 lb. rails ...	...	...	„ 6	3 7 6	„	... 1 2¼*	Each	16 6	K.	
168	27th October 1886 ...	28 of 1886.	Sind-Sagar ...		With levers for bending 75 lb. steel flat-footed rails and strong enough to bend rails weighing up to 90 lbs. per yard.	...	...	„ 25	2 18 6	„	3 12 1	Total	18 6	K.	
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Ladders.	.....	...	...	L. ft. 500	0 1 0	Foot	Not known		16 6	K.	

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount.	Unit.	Gross weight. Weight.	Unit.	Entire sea freight per ton to port. Rate.	Port.	Remarks.
									£ s. d.		T. c. q.		s. d.		
152	22nd April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Lifts.	Hydraulic, 2 feet lift ...	...	...	No. 6	20 0 0	Each	Not known		22 0	K.	
167	15th October 1886 ..	6 of 1883	Indus Valley (Sukkur Bridge).	Light, Lucigen; Apparatus for—	Belt driven compressor and receiver for 7 lights.	...	...	No. 2	94 10 0	Total					
					Small lamps, 2 angle and 1 straight	...	...	„ 3	28 7 0	„					
					Large lamps, 2 angle and 1 straight	...	...	„ 3	41 5 0	„					
					Main pipe to convey the first discharge of compressor 400 feet for distribution from the end including 7 tees $1\frac{1}{4}'' \times \frac{1}{2}''$.	...	...	L. ft. 400	7 19 6	„					
					Flexible pipe to each lamp, 3 ply ...	...	...	„ 300	15 10 0	„	3 0 0	Total	17 6	K.	
					Unions to take off lamps where required with blank flanges when not in use including hand lamp and wire gauze filler for oil tank.	...	...	No. 7	2 2 6	„					
					Freight, Dock Dues, &c. ...	...	...	...	5 15 6	„					
					Total ...	...	...	...	195 9 6						
152	22nd April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Machines, rivetting (or Riveters).	Hydraulic 18″ × 24″, (Tweddell's) having gaps of 18″ and fitted with patent hanging gear.	...	210 1—6	No. 6	100 0 0	Each	Not known	...	22 0	K.	
152	22nd April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).		Rivet Carriers ...	...	...	No. 6	1 10 0	Each					
169	6th December 1886 ...	„	Indus Valley (Sukkur Bridge).		Snaps, spare for 1″ rivets for above machine.	...	...	Sets 6	12 0 0	Total	Not known	...	22 0	K	
„	„	„	Indus Valley (Sukkur Bridge).		Stop valves for ditto ...	...	...	No. 8	20 0 0	„					

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number. B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount.	Unit.	Gross weight. Weight.	Unit.	Entire sea freight per ton to port. Rate.	Port.	Remarks.
									£ s. d.		T. c. q.		s. d.		
152	22nd April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Mains.	Hydraulic, flexible, copper, with couplings by Tweddell.	...	...	...	308 0 0	Total	Not known	...	22 0	K.	
160	9th August 1886 ...	4 of 1885-86.	Wardha Coal ...	Mill, pulverising, fire clay.	Fitted with self acting feed and delivery arrangements and supplied with 4 spare screens with meshes. This mill was preferred by Sir A. M. Rendel to Carr's Disintegrator No. 4 asked for on Wardha Coal State Railway indent No. 4 of 1885-86.	...	181 1—7 & photo.	No. 1	313 0 0	Each	13 19 3	Each	15 0	B.	
G. 1538	12th July 1886 ...	2 of 1886	Northern Bengal ...	Oars, Ash.	14 ft. long, at $6\frac{1}{2}d.$ per lineal ft. ...	...	...	No. 24	9 2 0	Total	0 9 2	Total	21 0	C.	
E. 1042	22nd July 1886 ...	5 of 1886	Wardha Coal ...	Pit tubs.	Cast steel wheels and axles for pit tubs without pedestals, diameter of wheel overtread 10″, gauge clear 1′ 10″, Hadfield's patent.	...	E. 2046	Pairs 100	0 12 6	Pair	1 17 2	Total	16 0	B.	T. c. q. lbs. Net weight ... 1 17 2 6
161	12th August 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Plant, Miscellaneous, for the erection of Sukkur Bridge.	Netting, Manilla, safety, 12 feet wide in convenient lengths.	...	...	L. ft. 300	30 0 0	Total	Not known	...	22 0	K.	
					Netting wire, Galvanized 12′×6′, No. 16 gauge, 1″ mesh.	...	...	Pieces 20	15 0 0	„	2 0 0	Total	22 0	K.	
					Wire, binding, galvanized 16 B.W.G.	...	...	Yards 200	0 5 0	„					
174	6th December 1886 ...	36 of 1886	Indus Valley (Sukkur Bridge).		Engine driving belt (cotton) ...	...	...	Ft. 120	0	1 9	Foot				
					Winch „ „ „ ...	...	...	„ 300	0	0 6	„				
					Rope driving belt „ ...	...	...	„ 2,400	0						
								T.c. q. lbs.							
					W. I. Countershafts No. 4	...	...	0 12 1 8	30	0 0	Ton				
					„ driving shafts „ 2	...	...	0 7 1 6							
					„ Winch shafts „ 6	...	...	0 3 1 2	60	0 0	„				
					„ Winch shafts „ 2	...	...	0 1 1 4							
					Bolts and nuts for bearing blocks „ 6	...	...	0 0 2 4	60	0 0	„				
					Straps for guide pulleys „ 16	...	...	0 13 2 8	38	0 0	„				
					Turned pins for guide pulleys „ 16	...	...	0 0 3 12	50	0 0	„				
					Collars and set screws „ 28	...	...	0 0 3 14	100	0 0	„				
					C. I. bearing blocks counter shafts „ 12	...	...	0 2 2 8	80	0 0	„				
					C. I. bearing blocks driving shafts, „ 6	...	...	0 1 3 26							

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per Contract. Amount.			Unit.	Gross weight. Weight.			Unit.	Entire sea freight per ton to port. Rate.	Port.	Remarks.
								T. c. q. lbs.	£	*s.*	*d.*						*s. d.*		
174	6th December 1888...	36 of 1883	Indus Valley (Sukkur Bridge).	Plant, Miscellaneous for the erection of Sukkur Bridge—*concld.*	C. I. rope pulleys 4 ft. No. 6	...	...	0 12 2 22	40	0	0	Ton.	Not known.				Not known.	K	
					„ guide „ 2 „ „ 16	...	...	0 15 1 14	32	0	0	„							
					„ driving „ 18 inch „ 2	...	...	0 1 2 0											
					„ counter „ 15 „ „ 8	...	...	0 10 0 24	50	0	0	„							
					„ Winch „ 3 ft. „ 24	...	...	1 6 3 4											
					Gun metal bearings for counter-shafts Sets 12	...	...	0 0 2 14											
					Gun metal bearings for driving shafts „ 6	...	...	0 0 1 4	0	2	6	lb.							
					Gun metal bushes for guide pulleys No. 16	...	...	0 0 2 8											
					Needle lubricators	...	...	No. 18	0	2	0	Each							
					Super fire tiles 30″×12″×2″ ...	...	...	ft. 400	0	1	6	Foot							
161	12th August 1886.	36 of 1883	Indus Valley (Sukkur Bridge).	Plumbobs.	In boxes, 50 lbs. each with 400 feet patent flexible steel wire sash cord $\frac{3}{8}$″ with 2 wire clips.	...	...	No. 2	3	0	0	Total.	Not known	...	...		22 0	K.	
153	28th April 1886.	36 of 1883	Indus Valley (Sukkur Bridge).	Pullers.	Hydraulic, Tangye's 8 tons pull, 4 feet stroke.	...	...	No. 4	21	0	0	Each.	Not known.	...	...		Not known.		
152	22nd April 1886.	36 of 1883	Indus Valley (Sukkur Bridge)	Pump.	Hydraulic, 2″×5,″ driven by Belting, with fast and loose pulleys.	...	...	No. 1	125	0	0	Each.	Not known	...	...		22 0	K.	

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if ny). Original B.	India Office Drawings (if ny). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per Contract. Amount.			Unit.	Gross weight. Weight.			Unit.	Entire sea freight per ton to port. Rate.	Port.	Remarks.
									£	*s.*	*d.*		*T.*	*c.*	*q.*		*s. d.*		
141	29th January 1886.	74 of 1885	Wardha Coal.	Pump, bucket; spare materials for—	Brass linings for bucket pump working barrels 12″ diameter inside, 4 feet long, 12¾″ outside diameter.	....	...	No. 4	70	5	10	Total	2	11	0	Total	9 9	B.	*T. c. q. lbs.* Net weight 1 2 2 20
„	„	„	„		Brass linings for bucket pump working barrels 12″ inside diameter, 5 feet long, turned outside.	...	...	No. 4	102	1	3	„							
155	22nd July 1886 ...	5 of 1886	Wardha Coal.	Rope, wire, steel.	Conductor, 3½″ circumference and each 275 feet long. These ropes are hosed at one end only, and made of Siemen's Martin steel wire core ⅜″ rod, round which six $\frac{5}{16}$″ rods are wound.	...	...	No. 10	57	0	0	Total	3	11	2*	Total	Not known.	B.	* Net weight.
151 & 156	15th April 1886, and 17th August 1886.	36 of 1883	Indus Valley (Sukkur Bridge).	Ropes, wire, steel, with special appliances.	To take 60 tons breaking strain each 225′ with special fittings in each end of each.	...	...	No. 8	For cost, weight, &c., see page 14										Detailed cost is not known.
					To take 60 tons breaking strain each 270′-3″, with special fittings in each end of each.	...	...	„ 12											
					To take 36 tons breaking strain each 800′ with fittings at each end.	...	...	„ 6											
					To take 36 tons breaking strain each 1,000′ with fittings at each end.	...	...	2											
					To take 36 tons breaking strain each 510′ with fittings at each end.	...	...	„ 2											
					To take 36 tons breaking strain each 37′ with fittings at each end.	...	...	„ 2											
					To take 36 tons breaking strain each 150′ with fittings at each end	...	...	„ 2											

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS). CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross Weight. Weight. T. c. q.	Gross Weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
151 & 156	15th April 1886 and 17th August 1886.	36 of 1883.	Indus Valley (Sukkur Bridge).	Ropes wire, steel, with special appliances—*concld.*	To take 36 tons breaking strain, sling 12′.	...	...	No. 1							
					To take 7 tons breaking strain each 210′ long fitted with thimble and hook in one end and thimble in the other.	...	...	„ 10							
					Hawsers, steel, wire, Bullivant's patent, flexible, each 180 fathoms, 4½″, with an improved patent Automatic Nipper for each.	...	...	„ 4							
					Strops	...	...	„ 4							
					Hawsers, each 80 fms., 4″ circumference.	...	...	„ 2	1,587 0 0	Total	31 10 3	Total	22 4	K.	The figures shown here include the cost and weight of the ropes on page 13. Detailed cost is not known.
					Hawsers, each 60 fms., 4″ circumference.	...	...	„ 2							
					Clamps special for main ties ...	...	...	Sets 8							
					Clamps special for suspension ties ...	...	...	„ 8							Sets of 3 blocks.
					Couplings, screw, special ...	...	...	No. 8							Sets of 3 blocks for tails.
					Tongs special for Hydraulics ...	...	...	„ 4							
156	17th August 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).		Head pulleys for 8 tons ...	...	...	No. 10	19 10 0	Each	Included in above		22 4	K.	
					Travellers for 5¼ tons ...	...	...	„ 6	19 10 0	„					
					Sling pulley for 10½ tons ...	...	...	„ 1	25 0 0	„					
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Screws, stretching.	1½″ diameter	...	...	No. 6	2 0 0	Each	Not known		Not known.		
166	12th October 1886 ...	30 of 1886	Sind-Sagar (Jhelum Bridge).	Staging, Sullivan's, for erecting Bridge.	Wrought iron, for erection of girders 150 feet span, complete in all respects with necessary fittings and spare parts and with one extra base. (*For schedule of quantities required, vide appendix A.*)	...	183 1—5	Groups 8	1,262 0 0	Total	63 13 0*	Total	15 0	K	* Includes the weight of two Derricks—(*vide* page 5). Detailed cost not known.

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INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS). CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross Weight. Weight. T. c. q.	Gross Weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
154	6th July 1886 ...	82 of 1885	Sind-Sagar ...	Steamers, stern wheel paddle.	With surface high pressure non-condensing engines and boilers and fittings complete. The vessels are not to exceed 150 feet in length exclusive of the wheel, or 30 feet in breadth, and it is essential that they shall be capable of steaming at least 12 statute miles per hour, and that their draught with boilers full and with 60 tons of cargo on board shall be as little above 1 foot 6 inches as possible, having regard to the requisite speed and strength of the boats. The fuel used with these boats will be wood, and a sufficient quantity for 12 hours will have to be carried at this draught. Steamer to be able to steam ahead or a stern with two flats alongside against a current of 10 miles an hour. All fittings of every kind except wood work are to be supplied.	...	203 204 & 205	No. 4	4,800 0 0	Each	125 9 3	Each	18 6	K.	In addition to £ 4,800, £ 200 was paid for increased size of boiler and £ 133-11-2 for additional weight of steel used for each steamer.
154	6th July 1886 ...	69 of 1885	Northern-Bengal ...		With compound surface condensing engines and boilers and fittings complete. The vessel is to be about 137 feet over all, 120 feet between the perpendiculars, 24 feet breadth moulded, and 29 feet breadth extreme. It is essential that her draught, light with waters in boilers and coal for 12 hours steaming on board and generally in complete working order, but without paying load shall be as little in excess of 15 inches as the requisite strength of the vessel, and a speed of not less than 12 statute miles per hour when loaded for a depth of 9 inches below her light load line will	...	206 207 & 208	No. 1	4,300 0 0	Each	115 2 2	Each	42 6	C.	Cost f. o. b. of the steamer including a model as per Invoice was £4,531-7-2 and the total cost ready for service was approximately Rs. 85,400.

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Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate. F. O. B. in England as per Contract. Amount.			Unit.	Gross weight. Weight.	Gross weight. Unit.	Entire sea freight per ton to port. Rate.	Entire sea freight per ton to port. Port.	Remarks.
154	6th July 1886 ...	69 of 1885	Northern Bengal ...	Steamer, stern wheel paddle—*concld.*	permit. The fuel used with this boat will be coal. The paddle wheel of the vessel must be radial, and the vessel is to be supplied with a hurricane deck and sun awning.										s. d.		
147	27th February 1886	Bengal Marine Indent No. 121 of 1885.	Eastern Bengal State Railway (for despatch service between Goalundo and Narainganj).	Steamers, paddle wheel; materials for—	Engines, paddle wheel, compound diagonal direct acting, fitted with surface condensers and feathering wheels with independent centrifugal pumps for circulating water in condensers—cylinders to be two in number for each pair of engine, the high pressure cylinder to be 28 inches in diameter and the low pressure cylinder 53 inches in diameter, both cylinders arranged for a 48 inches stroke. The diameter of paddle wheel to centre of motion to be 14 feet. The working pressure on boiler to be 90 lbs. per square inch. For a list of spare gear and spare tools sufficient in quantity for two pairs of Engines supplied under this contract, *see Appendix B.*	...	178 179 & 180	Pairs 2 (one pair to be placed in each vessel.)	£ 5,000	s. 0	d. 0	Pair in Glasgow.	Not known.		Not known.		
145	3rd March 1886 ...	Ditto	Ditto ...		Iron bars, half-round, segmental ...	...	...	*T. c. q. lbs.* 61 5 1 9	563	3	6	Total					
					Iron bars, round, for bolt staves ...												
					Iron plates, Boiler												
144	1st April 1886 ...	Ditto	Ditto ...		Iron bars, round	...	...	13 19 2 1	1,064	2	5	„					
					Iron plate, Boiler	...	...	31 13 0 2									
					Iron rivets	...	...	9 8 0 0									
146	Ditto ...	Ditto	Ditto ...		Iron, rivets, panheaded and straight neck 1″ × ⅞″ diameter.	...	...	0 3 0 0	16	2	0	„					
					Iron, rivets, panheaded and straight neck ⅞″ × ¾″ diameter.	...	...	1 0 0 0									

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate. F. O. B. in England as per Contract. Amount.			Unit.	Gross weight. Weight.	Gross weight. Unit.	Entire sea freight per ton to port. Rate.	Entire sea freight per ton to port. Port.	Remarks.
148	6th March 1886 ...	Bengal Marine Indent No. 121 of 1885.	Eastern Bengal State Railway (for despatch service between Goalundo and Narainganj).	Steamers, paddle wheel; materials for—*concld.*	Steel plates, mild, assorted ...	...	...	No. 1,354	£ 1,963	s. 5	d. 7	Total	Not known.		Not known.		
					„ angles	...	...	„ 1,664									
					„ Tees	...	...	„ 16									

The size and capacity for both passengers and goods on board the two steamers for which the above materials are required are given below. The two steamers were built at the Kidderpore Dockyard.

Description.	Size or clear space.	No. of passengers and quantity of goods.
Lower deck saloon	17′×10′	19 1st class passengers.
Upper ditto	32′×14′	49 1st class passengers.
Lower deck cabin ...	2′×7′×11′	17 Reserved.
Lower deck ...	4,143 sq. ft.	926 deck passengers.
Upper deck ...	4,190 sq. ft.	
Capacity for aft hold	60′×24′×6′ = 8,640 c. ft.	161·28 tons of goods.
Ditto for fore hold	52′×24′×6′ = 7,488 c. ft.	

Statement showing rates free on Board in England, gross weight an d rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—concld.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per Contract. Amount.	s.	d.	Unit.	Gross weight. Weight.	T.	c.	q.	Unit.	Entire sea freight per ton to port. Rate.	Port.	Remarks.
B 142	25th February 1886	59 of 1885	Wardha Coal ...	Tools, well boring.	As per list *vide* appendix C. Extra cost of thicker pipes.	157	...	As per list.	858	0	0	Total								
B142 Extension.	15th April 1886 ...	Ditto	Ditto						57	0	0	,,								
					Driving collars for 3½″ pipes ...	...	...	ring No. 2	1	8	0	,,								
					,, ,, ,, 4½″ ,, ...	...	...	,, 2	1	12	0	,,								
					,, ,, ,, 5½″ ,, ...	...	...	,, 2	2	0	0	,,	9	12	0	Total	10 0	B.		
					,, ,, ,, 6½″ ,, ...	...	...	,, 2	2	10	0	,,								
					,, ,, ,, 7½″ ,, ...	...	...	,, 2	3	0	0	,,								
E1113	6th December 1886...	1 of 1886	Toungoo-Mandalay Extension (Metre Gauge).	Trollies.	Sets of ironwork complete for Platelayers' trollies, with heavy wheels with cast steel bea s, exactly to drawing E 439.	E 439	...	Sets 36(*a*)	6	9	8	Set.	35	9	2	Total	27 6	R.	The wheels are of cast steel. T. c. q. lbs. (*a*) Net weight 5- 5-1-20 (*b*) ,, ,, 1-13-1- 8. (*c*) ,, ,, 0-18-2-18.
					Ditto ditto with light wheels with cast steel bearings, exactly to drawing E 439.	E 439	...	,, 12(*b*)	6	5	0	,,	11	16	2	,,	27 6	R	
E1103	22nd November 1886	4 of 1886	Northern Bengal ...		Wheels, steel, on axles for Platelayers' light trollies. Diameter on tread 15⅝″ ... Width of tread 2⅝″ ... Depth of flange 1″ ... Width of flange ¾″ ...	...	...	Sets 10 (*c*) (or Pairs 20).	4	13	3	Set	9	17	0	,,	21 0	C.	For trollies see also E class rate list for 1886.
B153	28th April 1886 ...	36 of 1883	Indus valley (Sukkur Bridge).	Winches.	To lift 6 tons as per drawing (2 for 400 feet wire rope and 6 for 200 feet wire rope). For materials for the winches under contracts B 153 and B 174, see Appendix D.	...	186 and 187	No. 8	90	0	0	Each	Not	known		...	Not known	n.		

Note—B. Bombay, C. Calcutta, K. Kurrachee, M. Madras, R. Rangoon. F. O. B. Free on board. For rates for landing State Railway Stores at the different ports in India *vide* Director General of Railways' Circular No. 22, dated 16th December 1885.

G. F. WILSON, Captain, R.E.,

for Director General of Railways.

Rate List, Class B., Engineers' Plant (excluding Petty Tools), for 1886.

Appendix A.

Schedule of quantities required for Sullivan's Staging for the erection of Jhelum Bridge girders 150-feet span (Contract B 166).

Tubes 5″ outside diameter, $\frac{7}{16}$″ thick, each 5′ 2″ long, wrought-iron. Tubes thickened up at ends and bored out to instructions with collar 2½″ × ⅝″ shrunk on each end	...	144 in No.
Tubes 2½″ outside diameter, 2″ bore, each 9 feet long, wrought-iron, faced at ends	...	124 ,, ,,
Malleable 2 way castings	...	72 ,, ,,
Do. 3 ,, ,,	...	36 ,, ,,
Do. bottom ,,	...	58 ,, ,,
Do. top ,,	...	48 ,, ,,
Wrought-iron cleats, 4″ hole, riveted joints	...	96 ,, ,,
Do. 5″ ,, ,,	...	96 ,, ,,
Do. rings ...	...	170 ,, ,,
Bottom plates ...	...	54 ,, ,,
Top ,, ...	...	48 ,, ,,
Bolts with 2 nuts ...	...	140 ,, ,,
Do. head and nut ...	...	140 ,, ,,
Set eye bars for 6 feet stage, 5 feet long	...	384 ,, ,,
Straight ,, ,, 5′ 3½″ ,,	...	192 ,, ,,
1″ rods 14′ 2″ long, 2 nuts on each	...	72 ,, ,,
Joists 12″ × 5″ × 29′ 6″ for bases	...	36 ,, ,,
Do. 10″ × 4½″ × 9′ 0″ ,, ,,	...	27 ,, ,,
Do. 10″ × 5″ × 26′ 0″ ,, tops	...	16 ,, ,,
Do. 8″ × 4″ × 9′ 5½″ ,, ,,	...	24 ,, ,,
⅞″ bolts and nuts, 2¾″ long for tops and bottoms	...	425 ,, ,,
¾″ ,, ,, 7½″ ,, ,, bottom cleats	...	216 ,, ,,
¾″ ,, ,, 6½″ ,, ,, distance pieces	...	216 ,, ,,
¾″ ,, ,, 2½″ ,, ,, top cleats	...	192 ,, ,,
¾″ rivets, 2½″ long, for bottom plates	...	648 ,, ,,
¾″ ,, 2¼″ ,, ,, top ,,	...	385 ,, ,,
Cast-iron distance pieces	...	108 ,, ,,
¾″ rivets, 2¾″ long, used in rivetting cleats to joists	...	270 ,, ,,

Rate List, Class B., Engineers' Plant (excluding Petty Tools), for 1886.

Appendix B.

List of spare gear and spare tools supplied with each pair of Paddle-wheel Engines for Steamers (*Contract B. 147*).

List of Spare Gear.

1	Spare connecting rod, complete.
1	„ piston rod, complete.
1	„ slide rod, for each engine.
1	„ set junk ring bolts.
½	„ set of piston springs.
1	„ paddle float with brackets, pins, &c., complete
2	„ paddle arms.
2	„ wheel radius rods.
1	„ air-pump plunger rod.
2	„ quadrant blocks.

List of Spare Tools.

Ratchet braces	2	in No.
Drills, of sorts	12	„ „
Iron bench, with two vices	1	„ „
Small drilling post for bench	1	„ „
Engine-room lamps	8	„ „
Stoke-hole lamps	4	„ „
Engine-room globe hanging lamps	2	„ „
Hand-lamps, stoke-hole	6	„ „
Hand oil-feeders	8	„ „
Gallon measure, stamped	1	„ „
Half gallon measure, stamped	1	„ „
Filler, medium	1	„ „
Do. small	1	„ „
Oil-feeder pan, with loose perforated tray	2	„ „
Hand vices	2	„ „
Blocks, three and two, with 4 inch fall	1	pair.
Do. „ „ „ 3 inch „	1	„
Water Bucket, galvanized	8	in No.
Screw-drivers	2	„ „
Copper hammers, 5 lbs. and 10 lbs. each	2	„ „
Chipping hammers	4	„ „
Sledge hammers, 14 lbs.	2	„ „
Flogging hammers, 7 lbs.	2	„ „
Coal hammers, 7 lbs.	4	„ „
Chisels and cross cuts	12	„ „
Crow bars	2	„ „
Tommies, steel	2	„ „
Mallets, wood	2	„ „
Plane, jack	1	„ „
Chisels, carpenters'	4	„ „
Saw hand	1	„ „

II

List of spare Tools—*concld.*

Hatchet	1	in No.
Augers, of sorts	6	„ „
Brace and bits, carpenters', complete	1	„ „
Packing screws	2	sets.
Do. Sticks	2	„
Do. Knives	4	in No.
Spanners, polished	1	set.
Spanner racks, polished	1	in. No.
Eye bolts to suit engines	2	sets.
Thermometers	2	in. No.
Lubricating pipes	2	sets.
Taps and dies with box, complete, ¼ inch up to 1 inch ...	1	set
English screw plate with taps	1	in No.
Buckets, ash, small	4	„ „
Shovels, trimming	8	„ „
Do. firing	8	„ „
Differential blocks, 2 tons (Weston's)	1	„ „
Indicators, complete, with springs (6 in No.) ...	2	„ „
Engine counters and gear (6 figures)	2	„ „
Injectors No. 8, of the latest improved design ...	2	„ „
Bilge ejectors	2	„ „

Appendix C.

SCHEDULE OF WELL-BORING TOOLS SUPPLIED UNDER CONTRACT B. 142.

Description of Work.	No. required.
Augers, clay, 2 feet long, for 8-inch holes	3
„ „ „ „ „ 7 „ „	3
„ „ „ „ „ 6 „ „	3
„ „ „ „ „ 5 „ „	2
„ „ „ „ „ 4 „ „	1
„ „ „ „ „ 3 „ „	1
Augers, shell or wimple scoup, 2 feet long, for 8-inch hole...	3
„ „ 2 feet long, for 7-inch hole ...	3
„ „ „ „ „ 6 „ „	2
„ „ „ „ „ 5 „ „	1
„ „ „ „ „ 4 „ „	1
„ „ „ „ „ 3 „ „	2
Augers, shell, another type, 2 feet long, for 8-inch hole ...	2
„ „ 2 feet long, for 7-inch hole	2
„ „ „ „ „ 6 „ „	1
„ „ „ „ „ 5 „ „	1
„ „ „ „ „ 4 „ „	1
„ „ „ „ „ 3 „ „	2
Augers, worm, short, 2 feet long, for 8-inch hole	2
„ „ „ „ „ 7 „ „	2
„ „ „ „ „ 6 „ „	1
„ „ „ „ „ 5 „ „	1
„ „ „ „ „ 4 „ „	1
„ „ „ „ „ 3 „ „	2
Augers, worm, long, 2, feet long, for 8-inch hole ...	2
„ „ „ „ 7 „ „ ...	2
„ „ „ „ 6 „ „ ...	1
„ „ „ „ 5 „ „ ...	

Schedule of well boring Tools supplied under contract B 142—*contd.*

Description of Work.	No. required.
Augers, worm, long, 2 feet long, for 4-inch hole ...	1
„ „ „ „ „ 3 „ „ ...	1
Ball valve sludger, 2 feet long, for 7½-inch hole ...	1
„ „ „ „ „ 6½ „ „ ...	1
„ „ „ „ „ 5½ „ „ ...	2
„ „ „ „ „ 4½ „ „ ...	2
„ „ „ „ „ 3½ „ „ ...	2
„ „ „ „ „ 2½ „ „ ...	2
„ „ „ auger, 2 feet long, for 7½-inch hole ...	3
„ „ „ „ „ 6½ „ „ ...	3
„ „ „ „ „ 5½ „ „ ...	2
„ „ „ „ „ 4½ „ „ ...	2
„ „ „ „ „ 3½ „ „ ...	2
„ „ „ „ „ 2½ „ „ ...	2
Bell screw, or screw box, 2 feet long, for 7½-inch hole ...	1
„ „ „ „ 6½ „ „ ...	1
„ „ „ „ 5½ „ „ ...	1
„ „ „ „ 4½ „ „ ...	1
„ „ „ „ 3½ „ „ ...	1
„ „ „ „ 2½ „ „ ...	1
Bottles for samples of stone from bore hole, capacity 4 oz., wide cork mouthed, 3½ inches high, about 2¼ inches diamter	600
Chisels, flat or straight bits, 2 feet long, for 8-inch hole ...	1
„ „ „ „ „ 7 „ „ ...	1
„ „ „ „ „ 6 „ „ ...	2
„ „ „ „ „ 5 „ „ ...	2
„ „ „ „ „ 4 „ „ ...	4
„ „ „ „ „ 3 „ „ ...	4
Chisels, T, 2 feet long, for 8-inch hole	1
„ „ „ 7 „ „	1
„ „ „ 6 „ „	2
„ „ „ 5 „ „	2
„ „ „ 4 „ „	3

Schedule of well-boring Tools supplied under contract B 142—*contd.*

Description of Work.	No. required.
Chisels, T, 2 feet long, for 3-inch hole ...	3
„ double T, 2 feet long, for 6 „ „ ...	1
„ „ „ 5 „ „ ...	1
„ „ „ 4 „ „ ...	2
„ „ „ 3 „ „ ...	2
„ V, or diamond point drill, 2 feet long, for 6-inch holes.	2
„ „ „ „ 5 „ „ ...	2
„ „ „ „ 4 „ „ ...	4
„ „ „ „ 3 „ „ ...	4
Common clack sludger, 2 feet long, for 7½-inch holes ...	1
„ „ „ „ 6½ „ „ ...	1
„ „ „ „ 5½ „ „ ...	2
„ „ „ „ 4½ „ „ ...	2
„ „ „ „ 3½ „ „ ...	2
„ „ „ „ 2½ „ „ ...	2
Crow's feet, 2 feet long, for 7½-inch holes	1
„ „ „ 6½ „ „	1
„ „ „ 5½ „ „	1
„ „ „ 4½ „ „	1
„ „ „ 3½ „ „	1
„ „ „ 2½ „ „	1
Dogs, hand, to fit 1¼-inch square rods	4
„ lifting „ „ „	6
Frame broaching bit, 2 feet long, for 8-inch holes ...	1
„ „ „ „ 7 „ „ ...	1
„ „ „ „ 6 „ „ ...	1
„ „ „ „ 5 „ „ ...	1
„ „ „ „ 4 „ „ ...	1
„ „ „ „ 3 „ „ ...	1
Kind's plug to raise tubes, 7-inch hole	1
„ „ „ 6 „ „	1
„ „ „ 5 „ „	1
„ „ „ 4 „ „	1
„ „ „ 3 „ „	1

Schedule of well-boring Tools supplied under contract B 142—*contd.*

Description of Work.	No. required.
Lengthening pieces of 1½-inch square iron, with loop swivel top: one 1 ft., one 2 ft., one 4 ft., one 6 ft., and one 8 ft. long	5
Nipping forks or tigers, to fit 1¼-inch square rods ...	4
Pipe clamps, 7½-inch	2
„ „ 6½ „	2
„ „ 5½ „	2
„ „ 4½ „	2
„ „ 3½ „	2
Pipes, swivel tops, with loop hook to hang on rope, 7½-inch	2
„ „ „ „ „ „ „ 6½ „	2
„ „ „ „ „ „ „ 5½ „	2
„ „ „ „ „ „ „ 4½ „	2
„ „ „ „ „ „ „ 3½ „	2
Rods, 1¼-inch square, mild steel, each 10 ft. long ...	700 feet
Ropes, Craddock's, best plough steel, patent laid rope, ¾-inch circumference	800 „
Ropes, Craddock's, best plough steel, patent laid rope, 1½-inch circumference	300 „
Solid broaching bit, 2 ft. long, for 8-inch hole ...	1
„ „ „ „ „ 7 „ „	1
„ „ „ „ „ 6 „ „	1
„ „ „ „ „ 5 „ „	1
„ „ „ „ „ 4 „ „	1
„ „ „ „ „ 3 „ „	1
Stone breaker, 2 ft. long, for 8-inch hole	1
„ „ „ „ 7 „ „	1
„ „ „ „ 6 „ „	1
„ „ „ „ 5 „ „	1
„ „ „ „ 4 „ „	1
„ „ „ „ 3 „ „	1
* Steel shoes to fix in end of tubes, 7½-inch holes ...	2
„ „ „ „ 6½ „ „	2
„ „ „ „ 5½ „ „	2
„ „ „ „ 4½ „ „	2

* The shoes are required for the tubes, in order to pierce the strata when lining the bore hole.

Schedule of well-boring Tools supplied under contract B 142—*concld.*

Description of Work.	No. required.
Steel shoes to fix in end of tubes, 3½-inch holes ...	2
Sliding joint or free fall	2
Stirrups, with one foot of clear running screw... ...	2
Tillers or brace head, to fit 1¼-inch square rods ...	2
Tube cutter, 7½-inch	1
„ „ 6½ „	1
„ „ 5½ „	1
„ „ 4½ „	1
„ „ 3½ „	1
Tubes, flush outside, screw joints, in 10-ft. lengths, 7½-inch external diameter	100 feet
Ditto ditto, 6½-inch external diameter ...	200 „
„ „ 5½ „ „ „ ...	200 „
„ „ 4½ „ „ „ ...	100 „
„ „ 3½ „ „ „ ...	100 „
Wad coil, 2 ft. long, for 7½-inch holes	1
„ „ „ 6½ „ „	1
„ „ „ 5½ „ „	1
„ „ „ 4½ „ „	1
„ „ „ 3½ „ „	1
„ „ „ 2½ „ „	1
Wad coil, long, 2 ft. long, for 7½-inch holes	1
„ „ „ „ 6½ „ „	1
„ „ „ „ 5½ „ „	1
„ „ „ „ 4½ „ „	1
„ „ „ „ 3½ „ „	1
„ „ „ „ 2½ „ „	1
Wimble, with auger point, 2 ft. long, for 8-inch holes ...	3
„ „ „ „ „ 7 „ „ ...	3
„ „ „ „ „ 6 „ „ ...	3
„ „ „ „ „ 5 „ „ ...	1
„ „ „ „ „ 4 „ „ ...	1
„ „ „ „ „ 3 „ „ ...	1

Note—All dimensions are outside diameters.

APPENDIX D.

Materials for the Winches for the Sukkur Bridge, under contracts B 153 and B 174, as per invoices of S. S. "Westborne" and "Kangra."

Description.	Quantity.	Cost f. o. b.	Remarks.
Two Winches for 400 foot wire rope—	Tons cwt. qrs. lbs.	£ *s.* *d.*	
Cast-iron at £32 per ton ...	6 11 3 10	210 18 10	
Wrought-iron shafts at £50 per ton	0 10 1 6	25 15 2	
Brass bearings at 2*s.* 6*d.* per lb. ...	0 1 0 22	16 15 0	
Extra cost of two new worms and turning, including new pattern ...	.....	9 15 0	Gross weight including that of the additional gearing for supplying steam-power (*see below*) is Tons 8, cwt. 1.
Spare gear—			
Cast-iron	0 5 0 24	14 12 0	
Wrought-iron	0 1 1 22	4 6 9	
		282 2 9	
Six Winches for 200 foot wire rope—			
Cast-iron	17 2 3 24	548 14 10	
Wrought-iron shafts, &c. ...	1 5 0 20	62 18 11	
Brass bearings	0 3 2 10	50 5 0	
Extra for turning worms, including new casting and pattern ...	.....	29 5 0	
Spare gear—			Gross weight:— Tons 22, cwt. 0, qr. 1.
Cast-iron	0 16 0 14	45 3 0	
Wrought-iron	0 3 2 22	11 1 9	
Best cotton driving rope, 2,400 feet, at 6*d.* per foot	.....	60 0 0	
		807 8 6	
Additional gearing for suppyling steam-power to Winches (Contract B 174)	.....	218 8 5	

FROM

THE DIRECTOR GENERAL OF RAILWAYS,

To

Circular No. 12.

Dated Simla, November 4, 1887.

Received

INDIAN STATE RAILWAYS.

Rate List Class C,—"Workshop Machinery and Heavy Tools" for 1885.

G. C. Press, Simla.—No. 256 D. G. R.—29-11-87.—1,500.

[*General Distribution.*]

Circular No. 12.

FROM

THE DIRECTOR GENERAL OF RAILWAYS.

To

THE DIRECTOR, NORTH WESTERN RAILWAY.
THE ENGINEER-IN-CHIEF, SIND-PISHIN STATE RAILWAY.
THE ENGINEER-IN-CHIEF, BELLARY-KISTNA STATE RAILWAY.
THE ENGINEER-IN-CHIEF, CUDDAPAH-NELLORE STATE RAILWAY.
THE ENGINEER-IN-CHIEF, TOUNGHOO-MANDALAY EXTENSION, BURMA STATE RAILWAY.
THE PORT STOREKEEPERS, STATE RAILWAY DEPARTMENT, CALCUTTA AND BOMBAY.

Simla, November 4, 1887.

SIR,

I have the honor to forward for information and guidance, a printed statement shewing the rates *free on board* in England, the gross weight and the entire sea freight per ton to Indian ports for C class State Railway Stores "Workshop Machinery and Heavy Tools" contracted for by the India Office from January to December 1885.

2. The rates for landing State Railway Stores from vessels at the several ports in India are given in Director General of Railways' Circular No. 22, dated 16th December 1885.

3. The official rate of exchange during the financial year 1885-86 was 1*s.* $7\frac{1}{4}$*d.* per rupee.

4. In order to arrive at the total cost of materials landed at port, an Insurance charge of one per cent. on the original cost *plus* entire sea freight should be added in addition to the other incidental charges.

5. In ordering stores, only $\frac{4}{5}$ths of the entire sea-freight should be entered in Indents as payable in England.

I have the honor to be,

SIR,

Your most obedient servant,

G. F. WILSON, Captain, R.E.,
for Director General.

Document accompanying.

Rate List, Class C—"Workshop Machinery and Heavy Tools" for 1885.

The Secretaries to the Governments of Madras, Bombay, Bengal, the North-Western Provinces and Oudh, and the Punjab, Public Works Department.
The Secretaries to the Chief Commissioners of the Central Provinces, Burma, Assam and Coorg, Public Works Department.
The Secretaries to the Residents, Hyderabad and Mysore, Public Works Department.
The Secretaries to the Agents to the Governor General, Rajputana, Central India, and Baluchistan, Public Works Department.
The Superintendent of Port Blair and Chief Commissioner, Andaman and Nicobar Islands.
The Director General of Telegraphs.
The Inspector General of Military Works.
The Superintendent of Works, Simla Imperial Circle.
The Accountant General, Public Works Department.
The Director, Persian Gulf Telegraph.
The Director, Persian Telegraph Department.
The Comptroller General.
The Accountant General, Bengal.
The Consulting Engineers for Railways, Madras and Bombay.
The Consulting Engineers to the Government of India for Railways, Calcutta and Lucknow.
The Consulting Engineer to the Government of India for Railways, Central Division, Agra.
The Agent and Chief Engineer, Bengal and North-Western Railway Company, Limited.
The Agent and General Manager, Assam Railways and Trading Company, Limited.

COPY forwarded to the Local Governments, Administrations and Officers marginally noted, for information.

Captain, R.E.,
for Director General.

To
The Secretary to the Govt.
of Madras

60 spare copies

Enclosure to Director General of Railways' Circular No. 12 of 1887.

RATE LIST.

CLASS C.

WORKSHOP MACHINERY AND HEAVY TOOLS.

FOR 1885.

G. C. Press, Simla.—No. 256 D. G. R.—30-11-87.—1,500.

Enclosure to Director General of Railways' Circular No. 12 of 1887.

RATE LIST.

CLASS C.

WORKSHOP MACHINERY AND HEAVY TOOLS.

FOR 1885.

INDIAN STATE RAILWAYS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate f. o. b. in England. Amount.	Rate f. o. b. in England. Unit.	India Office drawings (if any). Original C.	India Office drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
						£ s. d.				T. Cwt. Qr. lbs.	s. d.		
371	26th June 1885 ...	Nagpur-Chhattisgarh ...	Anvils.	Smith's (or pike and arch) (2 cwt. 0 qr. 10lbs.)...	No. 1	3 15 0	Each	...	...	0 3 0 0	18 0	B.	
399	29th Oct. 1885 ...	Ditto ...		Ditto ditto (2 cwt.) ...	No. 1	3 10 0	„	...	...	0 3 0 0	22 6	B.	
363	14th May 1885 ...	Rajputana-Malwa ...	Belting, leather.	Link, 12″ × ¾″ thick, oak-tanned ...	L.ft. 200	0 9 0	L. foot	...	...	0 11 0 8	13 0	B.	
				„ 10″ × ⅝″ „ „ ...	„ 200	0 6 6	„	...	...	0 8 0 12			
				„ 5″ × ½″ „ orange tanned ...	„ 500	0 2 11	„	...	...	0 8 2 20			
				Packing in 8 cases	...	6 0 0	Total	...	...				
388	2nd Sept. 1885 ...	Eastern Bengal ...	Boilers, steam.	Fairbairn, Beeley's patent, complete with fittings. Similar to that supplied on contract C 175 of 1881. Capable of supplying full steam for two high-pressure engines with cylinders, 10-inch diameter and a piston stroke of 18″, running at a speed of 120 revolutions per minute, or say, 80 indicated horse-power each.	No. 2	1,280 0 0	Total	...	787 / 1—2 and Photo.	33 5 1 0	45 0	C.	
356	26th Feb. 1885 ...	Rajputana-Malwa ...	Boilers, steam; spare parts of.	Tubes, wrought-iron 4′ 4″ long, 2⅜″ internal diameter for Fairbairn Beeley's boiler.	No. 168	57 10 0	Total	...	...	2 17 2 0	16 0	B.	
				Tubes, wrought-iron 10′ long 2 15/16″ internal diameter for ferrules.	No. 4	2 10 0	„		...				
368	16th June 1885 ...	Wardha Coal ...	Boilers, vertical.	Each on a cast iron standard, with fittings complete. The boilers are of the vertical type and work at a pressure of 60lbs. per square inch. Each boiler is 3′ 4″ external diameter and 7′ 6″ high, with two conical water tubes in the fire box. The chimney is 7 feet high and 11 inches internal diameter, made of best boiler plate No. 5 B.W.G. thick. Each boiler is tested in steam to a pressure of 60lbs. and by hydraulic pressure to 120lbs. per square inch with all fittings on. The piping is tested to a pressure of 200lbs. per square inch.	No. 2	108 0 0	Each	753	777 / 1—3	5 15 2 0	18 9	B.	

INDIAN STATE RAILWAYS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contract. No. C.	Contract. Date.	For what Railway.	Article.	Details.	Number or quantity contracted for.	Rate f. o. b. in England. Amount.	Rate f. o. b. in England. Unit.	India Office drawings (if any). Original C.	India Office drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
						£ s. d.				T. Cwt. Qr.	s. d.		
362	12th May 1885 ...	Rajputana-Malwa	Forges.	Portable, 2′ 9″ × 2′ × 2′ 6″—Allday's improved. The forges are made entirely of wrought-iron except the blower pipe, hand wheel and water trough, which are of cast iron. The blower is of sufficient capacity to deliver 65 cubic feet of air per minute.	No. 4	8 10 9	Each	748	783	1 6 0	18 0	B.	
379	6th August 1885 ...	Eastern Bengal ...		Smith's. The forges are of cast iron, with hoods, air-valves with wrought-iron handles, and pipes, and bolts and nuts suitable for connecting with the pipe from the blower, water tanks, slack troughs, tuyeres, fire bricks and vertical wrought-iron chimney, 24 feet high from floor level to each forge.	No. 44	17 5 0	Each	759	780 / 1—2	32 7 3 (a) / 53 6 0 (b)	27 6 / 17 6	C	(a) Gross weight of 22 Forges calculated by actual weight. (b) Gross weight of 22 Forges calculated by measurement.
389	11th September 1885	Eastern Bengal ...	Furnace	Fletcher's, hot air, No. X, with 6 plumbago stands and 12 crucibles No. 40 and 12 No. 60.	No. 1	80 19 6	Each	...	...	1 16 0 / 0 18 3	22 6 / 20 0	C.	
391	15th September 1885	Eastern Bengal ...	Gauge, standard.	8 feet long, Section 4″×$\frac{3}{4}$″, and marked as follows:—The whole is marked in feet, inches and quarter inches. The first two feet are marked in eighths; the first foot is marked in sixteenths; the first six inches in thirty-seconds; and the first three inches in sixty-fourths. Is fitted with two sliding gauges working perfectly true and square on the rule with faced jaws, the face of the jaws working perfectly true and square with the Index line on the rule, so that gauges may be made and fitted between the jaws. The sliding gauges are fixed in place by thumbscrews after the same manner as a trammel. The rule is supported at short intervals in such a manner that the slides may be worked short distances while the gauge is lying in its place. The gauge is a standard at 75° Fahrenheit.	No. 1	34 0 0	Each	...	...	0 9 0	20 0	C.	

INDIAN STATE RAILWAYS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

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						£ s. d.				T. Cwt. Qr.	s. d.		
G 1109	3rd July 1885 ...	Nagpur-Chhattisgarh ...	Grindstone, complete with trough.	Fitted with water of Ayr stone and slide rests complete and suitable for grinding and sharpening plane iron. The trough is of cast iron in one piece and fitted with a door at the bottom for cleaning it out. The stone is Newcastle or Derbyshire, 3′ feet diameter, and 6″ inches thick.	No. 1	27 0 0	Each	...	G 46	1 16 2	17 0	B.	
G 950	12th February 1885.	Rajputana-Malwa ...	Grindstones; spare stones for—	Of best quality, with edges bevelled, 4′ 6″ × 10″ thick.	No. 9 ...	3 1 6	Each	...	...	7 4 0	14 10	B	
„	Ditto ...	Ditto		Of best quality, with edges bevelled, 4′ 6″ × 12″ thick.	„ 9 ...	3 8 6	„	...	...	9 0 0			
G 985	18th March 1885 ...	Ditto		72″ × 12″	„ 6 ...	85 17 6	Total	...	...	10 16 0	12 0	B.	
				30″ × 4½″	„ 6 ..					0 12 0			
				42″ × 6″	„ 6 ...					1 16 0			
				48″ × 8″	„ 6 ...					3 0 0			
394	17th September 1885.	Eastern Bengal ...	Hammers, steam.	Size 1½ cwt., single standard, double action to work self-acting or by hand. Diameter of Cylinder 5½ inches and length of stroke 14 inches.	No. 1 ...	76 3 6	Each	...	793 / 1—3	6 15 3	25 0	C.	Net weight 2 Tons, 10 Cwt., 3 Qrs., 10 lbs.
394	Ditto	Ditto		Size 3 cwt. single standard, double action to work self-acting or by hand. Diameter of Cylinder 7½ inches and length of stroke 17 inches.	„ 1 ...	109 11 6	„	...	794 / 1—3				Net weight 4 Tons, 1 Cwt., 0 Qrs., 10 lbs.
355	16th February 1885	Northern Bengal ...		Size 10 cwt., single standard, double acting, with pipes and duplicate parts complete. The steam Cylinder is 11 inches diameter and 22 inches stroke of piston.	„ 1 ...	205 0 0	„	408	760	10 7 1	19 0	C.	

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate f. o. b. in England. Amount.	Rate f. o. b. in England. Unit.	India Office drawings (if any.) Original C.	India Office drawings (if any.) Completion. C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
						£ s. d.				T. Cwt. qr.	s. d.		
370	26th June 1885 ...	Wardha Coal ...	Hammers, steam.	Size 10 cwt., single standard, double acting, with pipes and duplicate parts complete. The steam Cylinder is 11 inches diameter and 22 inches stroke of piston. With each 10 cwt. steam hammer the following duplicates are supplied:—One spare steel anvil, one spare steel hammer, one spare set of piston and valve rings and 50 feet of steam and 25 feet of wrought-iron exhaust piping and two right angle bends with wrought-iron flanges and all necessary bolts and nuts.	No. 1 ...	205 0 0	Each	...	767 / 1—3	9 0 2	25 0	B.	
402	11th Nov. 1885 ...	Nagpur-Chhattisgarh ...	Hammers, steam; spare parts of—	Piston and rod with hammer head and piston rings complete for 5 cwt. hammer supplied under contract C 117 of 1880.	No. 1	27 0 0	Each	...	...	(a) 0 6 1	22 6	B.	(a) Weight calculated by actual weight.
404	5th Nov. 1885 ...	Ditto ...		Piston rod for 15 cwt. steam hammer supplied by Messrs. B. and S. Massey under Contract C 211 of 1882. The piston is finished and fitted with springs complete.	No. 1	18 0 0	„	...	...	(b) 0 9 0	14 0	B.	(b) Weight calculated by measurement.
362	12th May 1885 ...	Indus Valley ...	Hearths.	Circular, cast-iron, 2′ 6″ diameter outside the iron case, suitable for nail-making and light forgings.	No. 6	16 16 0	Each	747	784	15 4 3	17 6	K.	
392	18th Sept. 1885 ...	Ferozepore Bridge Works ...	Lathes, power, self-acting.	Gap, screw-cutting, 8½″ centre. The bed is of sufficient length to admit of 6 feet between the centres, the gap in the bed is of sufficient depth to admit of a diameter of 2′ 7″ and a width of 9″. The diameter of the large face-plate is 2′. The machine is complete in every respect including a complete set of tools.	No. 2	202 0 0	Each	...	...	8 16 2	18 0	K.	
382	27th Aug. 1885 ...	Nagpur-Chhattisgarh ...		Gap, screw-cutting and surfacing, 5″ centres, to take 8 feet between centres, and complete in every respect with tools.	No. 2	161 0 0	„	...	...	5 2 0	13 6	B.	

INDIAN STATE RAILWAYS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate f. o. b. in England. Amount.	Rate f. o. b. in England. Unit.	India Office drawings (if any.) Original C.	India Office drawings (if any.) Completion. C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
						£ s. d.				T. Cwt. Qr.	s. d.		
387	27th August 1885 ...	Eastern Bengal ...	Lathes, power, self-acting—contd.	Screw cutting and surfacing, 8″ centres, to take 8′ between centres. The bed is 12′ 9″ long, 17″ wide over V's and 11¼″ deep, and supported on 3 strong cast-iron standards 21″ high, 9″ wide, and 2′ 9″ across the base. The guide screw is 2⅜″ diameter. The fast and loose headstocks are interchangeable on the bed, and the top rests interchangeable on the bottom rest. The lathe is complete in every respect with tools.	No. 3	233 10 0	Each	...	...	9 16 3	22 6	C.	Gross weight as per packing account.
352	19th January 1885 ...	Rajputana-Malwa ...		Screw cutting and surfacing, 6″ centres to take 6′ between the centres. The fast headstock is 18″ long and 8″ wide, and is double geared. The bed is 9′ 3″ long, 12″ wide over the V's and 8″ deep, and is supported on 3 strong cast-iron standards 4½″ wide and 30″ across the base. The guide screw is 1¼″ diameter. The lathe is complete in every respect and is supplied with the necessary tools.	No. 6	193 10 0	„	...	762 / 1—4	10 10 3	13 0	B.	Ditto.
352	Ditto ...	Ditto ...		Screw cutting and surfacing, 8½″ centres, to take 10′ between centres. The bed is 14′ 9″ long, 17″ wide over the V's and 11½″ deep, and is supported on 3 strong cast-iron standards 6″ wide and 34″ across the base. The guide screw is 2¾″ diameter. The lathe is complete in every respect with tools.	No. 6	281 0 0	„	...	763 / 1—4	22 1 0	15 6	B.	
352	Ditto ...	Ditto ...		Turning and chasing bolts and studs from ½″ to 1½″ diameter; 7″ centre. The lathe is complete in every respect and is supplied with 5 sets of chasers from ½″ to 1½″ both inclusive, rising by ⅛″, one cone chuck for gripping work, 1 set of conical holders to fit cone chuck, one set of extra conical holders for gripping black bar iron, one set of fine steel tool-holders, one rymer for tapering the chaser dies, one Clements' driver 8″ diameter and 3 steel centres for the loose headstock. The saddle of the lathe is fitted with a zinc water can, to hold half a gallon with gun metal tap, pipe and stand.	No. 1	152 10 0	„	...	782 / 1—3	2 2 0	20 0	B.	

INDIAN STATE RAILWAYS.

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Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate f. o. b. in England. Amount.	Rate f. o. b. in England. Unit.	India Office Drawings (if any). Original. C.	India Office Drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire Sea Freight per ton. Unit.	Entire Sea Freight per ton. Port.	Remarks.
						£ s. d.				T. Cwt. Qr.	s. d.		
387	27th August 1885 ...	Eastern Bengal ...	Lathes, power, self-acting—(contd).	Turning, heading, pointing and chasing, bolts, studs and screws: 7″ centre. The three sets of headstocks are fixed on one continuous bed 19′ 3″ long. It is cast solid in the bottom to form a reservoir to receive the water and cuttings, and supported on four strong standards. The following tools are supplied with the lathe :— For the turning and sliding lathe—Eleven sets of conical holders to fit the cone chuck in sizes from ¼″ to 1½″, rising by ⅛th inch, one Clements' driver, two steel swivel tool holders and six tools for each ; six Whitworth's Clam Carriers. For the heading and pointing lathe—Ten sets of conical holders for work ⅜″ to 1½″ diameter rising by ⅛″, five steel tool-holders and 30 tools for capstan rest. For the chasing lathe—One self-acting chuck, twenty-two sets of screw chasers (two of each size), in sizes from ¼″ to 1½″, rising by ⅛″, one rymer for tapering the chaser dies, one slide rest for taking the place of the chaser when using the lathe for plain turning, and two steel tool-holders with 6 steel cutters for each.	No. 1	383 0 0	Each	312—3	818 / 1—3	4 12 3	22 6	C.	Gross weight as per packing account.
352	19th January 1885	Rajputana-Malwa ...		Turret, 8″ centre, for brass finishing. The fast headstock has a base about 23″ long and 10¾″ wide and is double geared. The bed is of sufficient length to take in 6′ between the centres and is not less than 9½″ wide over the V's and 8¼″ deep. The lathe is complete in every respect and is supplied with the additional parts.	No. 1	244 10 0	Each	...	774 / 1—4	2 5 3	22 6	B.	
398	23rd October 1885 ...	Eastern Bengal ...		Turret, 8″ centre, for brass finishing ...	No. 3	568 1 0	Total	...	812 and Photo.	9 5 2	20 0	C.	

INDIAN STATE RAILWAYS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

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Statement showing rates free on board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate f. o. b. in England. Amount.	Rate f. o. b. in England. Unit.	India Office Drawings (if any). Original. C.	India Office Drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire Sea Freight per ton. Rate.	Entire Sea Freight per ton. Port.	Remarks.
						£ s. d.				T. Cwt. Qr.	s. d.		
385	26th August 1885 ...	Burma	Lathes, power, self-acting—*concld.*	Wheel, carriage, 2′ 6″, to take in 5′ 6″ between the centres, with feed motion below, diameter of face 3 feet and similar to that supplied under Contract C 120 of 1880.	No. 2	350 0 0	Each	...	791 / 1—1 (and 802 for countershaft)	19 14 2	40 0	R.	
367	4th June 1885 ...	Wardha Coal ...		Wheel, wagon, 4 feet, to take in 8′ 3″ between the centres, similar to those supplied on Contract C 317 of 1884. (*Vide* Rate List, class C, for 1884).	No. 1	530 0 0	,,	...	776 / 1—9 and Photo	5 7 3 10 14 3 3 10 3	50 0 35 0 20 0	B.	
365	14th May 1885 ...	Indus Valley ...	Lathes, power, self-acting; headstocks and fittings for—	One double geared fast headstock complete, 1 loose headstock complete, one compound slide rest and saddle with self-acting rack motion complete, one universal 4 jaw chuck, each jaw traversed by a screw, one back stay and one top driving apparatus consisting of countershaft, pullies, brackets and belt-shifting gear complete, for each of the following lathes by Sir J. Whitworth and Company.									
				Supplied under contracts C 137 and C 248. — 12″ lathe, maker's No. 962 ...	Set 1	162 0 0	Total	...	...				
				12″ Ditto ,, ,, 961 ...	,, 1	162 0 0	,,	...	...				
				12″ Ditto ,, ,, 963 ...	,, 1	162 0 0	,,	...	...	14 1 2	14 6	K.	The new headstocks are 12″ centres.
				12″ Ditto ,, ,, 917 ...	,, 1	162 0 0	,,	...	...				
				12″ Ditto ,, ,, 921 ...	,, 1	162 0 0	,,	...	...				
				Supplied under contracts C 137 and C 248. — 14″ lathe, maker's No. 393 ...	,, 1	194 0 0	,,	...	...				
				14″ Ditto ,, ,, 390 ...	,, 1	194 0 0	,,	...	...	8 6 2	35 0	K.	
				14″ Ditto ,, ,, 391 ...	,, 1	194 0 0	,,	...	...				
				14″ Ditto ,, ,, 415 ...	,, 1	204 0 0	,,	...	...				The new headstocks are 14″ centres.
				14″ Ditto ,, ,, 416 ...	,, 1	204 0 0	,,	...	...				
				14″ Ditto ,, ,, 417 ...	,, 1	204 0 0	,,	...	...	14 11 2	22 6	K.	
				14″ Ditto ,, ,, 418 ...	,, 1	204 0 0	,,	...	...				
				Supplied under contract C 137 — 15″ lathe, maker's No. 387 ...	,, 1	209 0 0	,,	...	...				
				15″ Ditto ,, ,, 388 ...	,, 1	209 0 0	,,	...	...	11 4 0	20 0	K.	The new headstocks are 15″ centres, being 1″ higher than those supplied with the lathes.
				15″ Ditto ,, ,, 389 ...	,, 1	209 0 0	,,	...	...				

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount.	Rate F. O. B. in England. Unit.	India Office drawings (if any). Original. C.	India Office drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
						£ s. d.				T. Cwt. Qr.	s. d.		
G 956	26th February 1885...	Rajputana-Malwa ...	Lubricators, needle.	No. 1 size	No. 59	5 2 5	Total	...	...	0 3 0	14 0	B.	
				„ 3 „	„ 90								
				„ 4 „	„ 40								
G1190	23rd September 1885	Indus Valley ...		„ 1 „	„ 50	1 9 2	„	...	...	0 1 1	22 0	K.	These lubricators are of the description known as Lieuvain's patent.
				„ 2 „	„ 50	1 9 2	„	...	...				
				„ 3 „	„ 50	1 9 2	„	...	...				
				„ 4 „	„ 50	1 9 2	„	...	...				
397	19th October 1885 ...	Eastern Bengal ...	Machines	Boring, Vertical. The machine is suitable for boring or mortising with augers, work up to 3″ diameter and 16″ deep. The machine is complete in every respect and is supplied with 40 twist mortising augers and one set of 15 boring augers, both of different sizes.	No. 1	83 14 6	Each	764	796 1-3	1 14 2	32 6	C.	
„	„ „ „ ...	„ „ ...		Main shaft drum for above machine to fit 3½″ shafting and similar in other respects to the one supplied on contract C 396, *vide* page 14.	„ 1	4 9 6	„	...	...				

Statement showing rates free on Board in England, gross weight and sea freigth per ton of articles contracted for by the India Office from January to December 1885—contd.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount.	Rate F. O. B. in England. Unit.	India Office drawings (if any). Original. C.	India Office drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
						£ s. d				T. Cwt. Qr.	s. d.		
360	11th April 1885 ...	Rangoon and Sittang Valley ...	Machines—*contd.* Briquette; apparatus for—	Grinding, mixing and heating apparatus for the manufacture of patent or compressed fuel by the pitch and dry heat process, required for the Briquette machine supplied under contract C 340 of 1884. *For details*, vide *Appendix A.*	Set 1	455 0 0	Set	749	768-769 and 770.	12 13 3	50 0	R.	
„	„ „ „ ...	„ „ ...		Driving belt and bolts for Briquette machine.	„ 1	5 0 0	„						
382	27th August 1885 ...	Nagpur-Chhattisgarh ...	Drilling, bench.	The machine is single-geared, suitable for being driven by hand and power, and is capable of drilling holes out of the solid 1″ diameter and 5″ deep. The machine is of sufficient capacity to admit work on the table up to 18″ diameter. The machine is complete in every respect and is supplied with a complete set of 10 twist drills and sockets from ½″ to 1¼″ rising by ⅛″.	No. 2	61 0 0	Each	...	817	3 0 1	12 0	B.	
386	26th August 1885 ...	Eastern Bengal ...	Drilling and boring, vertical.	The machine is double geared and suitable for drilling holes out of the solid 3½″ diameter and 18″ deep with a traverse of 1″ in 90 revolutions, and boring holes up to 8″ diameter at a distance of 2′ from the edge of work, 1′ 6″ deep on the table. The distance from the upper face of the base plate to the end of the drill spindle is 5′ 6″. The machine is complete in every respect, and is supplied with one main shaft drum, one set of 17 "Morse" twist drills and sockets, and one set of 17 standard rymers (to fit the drill sockets) of Whitworth's manufacture or other approved maker.	No. 1	240 0 0	Each	...	797 1-7 799 1-7 and Photo.	8 5 0	32 6	C.	
369	2nd July 1885 ...	Eastern Bengal ...	Emery buffing.	The machine is made suitable for buffing and polishing metals. The spindle is carried in a strong hollow casting 30″ long, 24″ wide across the base, and 18″ high to the centre of the spindle. Similar to that supplied under contract No. C169 of 1881.	No. 1	60 0 0	Each	...	766 1-4 and Photo.	1 12 0	15 0	C.	

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

Contract. No.	Contract. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate f. o. b. in England. Amount.	Rate f. o. b. in England. Unit.	India Office drawings (if any). Original C.	India Office drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
							£ s. d.				T. Cwt. Qr. lbs	s. d.		
372	8th July 1885 ...	Eastern Bengal ...	Machines—*contd.*	Emery-Grinding (universal).	With laps on ends of spindle for lapping motion. The machine is intended for shaping metals, the discs are of best consolidated emery suitable for cutting either brass, cast iron, wrought iron or steel. The machine frame is a strong hollow iron casting with a base about 3′ long, 3′ 6″ wide and 36″ high from the base to the centre of the spindle. The spindle is of steel, 2½″ diameter in the necks and 3¼″ in the body. One emery disc 24″ diameter and 3″ thick is fitted to each end of the spindle.	No. 1	130 0 0	Each	...	779/1—7	*1 16 3 10	20 0	C.	The price quoted is subject to 10% discount. *These are net weight. Gross weight not known.
372	8th July 1885 ...	Eastern Bengal ...		Grinding tool, emery	Similar to those supplied under Contract C 223 of 1882. Details not known.	No. 4	34 16 0	Total	...	778	*0 10 0 12	20 0	C.	The price quoted is subject to 10% discount.
374	21st July 1885 ...	Wardha Coal ...			The machine is fitted with an emery disc 36″ diameter × 3″ thick. The countershaft and belt-shifting gear is attached to the machine frame. The machine is intended for grinding lathe and other machine cutters in a locomotive workshop. The machine is supplied with 100 feet of leather belting, pulleys, brackets, &c.	No. 1	57 12 7	Each	...	773/1—5	†5 6 2 0	21 0	B.	†Includes the weight of 6 emery wheels (*vide* page 11), and one diamond tool holder (*vide* page 18).
					Slide rest No. 3.	No. 1	4 19 6	„	...	...	...	...		
377	4th August 1885 ...	Northern Bengal ...		Grinding, emery and tool emery; spare discs for—	7½″ diameter × ⅜″ wide, diameter of hole 1⅜″ ...	No. 3	0 3 6	Each	...	...	0 0 0 10	15 0	C.	Freight was charged for 1 quarter.
372	8th July 1885 ...	Eastern Bengal ...			8″ × 1″ trued up	„ 4	0 7 4½	„	...	...	*0 0 1 17	20 0	C.	
„	„ ...	„ ...			8″ × 1½″ „ „	„ 4	0 9 10½	„	...	...				
354	5th February 1885 ...	Rajputana-Malwa ...			12″ × ¼″	„ 6	6 6 0	Total	...	...	0 2 0 0	16 0	B.	
					12″ × ⅜″	„ 6								
					12″ × ½″	„ 6								
					12″ × ⅝″	„ 6								

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate f. o. b. in England. Amount.	Rate f. o. b. in England. Unit.	India Office Drawings (if any). Original C.	India Office Drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
							£ s. d.				T. C. Qr. lbs.	s. d.		
350	7th January 1885 ...	Northern Bengal ...	Machines—*contd.*	Grinding emery and tool emery; spare discs for—*contd.*	13″ × ½″ with 5″ hole	No. 12	0 7 0	Each	...	...	0 2 0 0	12 6	C.	Ton Cwt. qr. lbs.
359	31st March 1885 ...	Indus Valley ...			14″ × 1½″ with 1″ hole	„ 12	1 5 2½	„	...	...	0 3 2 0	20 0	K.	Net weight 0 2 1 3.
372	8th July 1885 ...	Eastern Bengal ...			14″ diameter × 1⅛″ thick	„ 3	1 8 4	„	...	...	*0 0 2 7	20 0	C.	
395	23rd September 1885	Indus Valley ...			14″ diameter × 1¾″ thick × 1½″ hole ...	„ 8	1 16 6	„	...	...	0 2 3 0	29 0	K.	Net weight 0-1-3-21.
372	8th July 1885 ...	Eastern Bengal ...			20″ diameter, 2″ thick at the edge and 2⅞″ thick in the middle.	„ 6	3 12 8	„	...	...	*0 2 3 17	20 0	C.	* These are net weight. Gross weight not known.
375	29th July 1885 ...	Northern Bengal ...			20″ diameter × 3″ wide × 10″, fine ...	„ 2	6 10 0	„	...	...	0 3 3 24	13 5	C.	Packing £1.
					„ „ coarse ...	„ 2	6 10 0	„	...	...				
374	21st July 1885 ...	Wardha Coal ...			36″ diameter × 3″ thick, trued up with washers	„ 6	16 3 4	„	...	...	...	21 0	B.	Weight included in that of Emery Tool grinding machine under contract C374. (*vide* page 10).
390	11th Sept. 1885 ...	Nagpur-Chhattishgarh ...		Mortising and boring combined.	Suitable for mortising and boring work up to 12″ wide × 6″ deep and with 15 mortising chisels and 15 augers of sizes and countershafts, pulleys and belt-shifting gear for the chisel and auger spindles.	No. 1	124 18 0	Each	...	788	†3 3 2 0	10 0	B.	†Includes the weight of one Fly Press under contract C 390 (*vide* page 17).
400	11th Nov. 1885 ...	Northern Bengal ...			Suitable for mortising and boring work up to 12″ wide and 6″ thick and supplied with 6 sets of augers and chisels, *viz.*, 42 augers and 42 chisels from ¼″ to 1″ inclusive, rising by ⅛″. The machine does not require a wall countershaft or brackets, but it is supplied with two main shaft driving pulleys suitable for a main shaft 3″ diameter running 100 revolutions per minute.	„ 1	103 4 9	„	...	809/1—2	1 18 0 0	17 0	C.	Gross weight as per packing account.
„	„ ...	„ ...			Extra counter-shaft for above machine ...	... 3	15 0 0	Total	...	...				
					Main Riggers		17 0 0	„	...					
353	20th January 1885 ...	Rajputana-Malwa ...		Planing	Crank, with quick return motion to the table to plane 18″ long, 16″ wide, and 15″ high. The machine is complete in every respect and supplied with over head driving apparatus, suitable belt-shifting gear, 100′ of leather belting, six laces, one set of spanners, complete set of tools, &c.	No. 1	80 0 0	Each	461	757/1—3	‡4 17 0 0	15 0	B.	‡This is the weight of both the planing machines under contract C 353. *Vide* page 12.

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate f. o. b. in England. Amount.	Rate f. o. b. in England. Unit.	India Office drawings (if any). Original C.	India Office drawings (if any). Completion C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
							£ s. d.				T. Cwt Qr.	s. d.		
353	20th January 1885 ...	Rajputana-Malwa ...	Machines—*contd.*	Planing—*concld.*	Crank, with quick return motion to the table to plane 2′ long, 2′ wide and 18″ high, and complete in every respect and supplied with all appliances and tools described above.	No. 1 ...	108 0 0	Each	462	758 / 1—4	4 17 3*	15 C	B.	This is the weight of both the planing machines under contract C353. *Vide* page 11.
397	19th October 1885 ...	Eastern Bengal ...		Planing and moulding combined.	Suitable for planing work up to 16″ × 6″ thick and for cutting single or double mouldings of any pattern or to groove, tongue, edge, thickness and bead, boarding, &c., at one operation. The machine is fitted with top, bottom, and two side cutter blocks, so as to work simultaneously on all four sides of the wood or on each side singly if required. The machine is complete in every respect and supplied with usual sets of cutters.	No. 1 ...	226 5 0	Each	764	804 / 1—4	7 6 2	18 0	C.	
397	19th October 1885 ...	Eastern Bengal ...			Main shaft drum for above machine to fit 3¼″ shafting accurately, and similar in other respects to the one supplied under contract C396, *vide* page 14.	„ 1 ...	4 9 6	„	...	...				
400	11th November 1885	Northern Bengal ...			Suitable for timber 9″×3″. The machine has the countershaft attached to the frame (no wall countershaft or brackets are required). In all other respects the machine is similar to the above one.	„ 1 ...	144 1 0	„	764	805 / 1—2	3 19 2	17 0	C.	Gross weight as per packing account.
366	4th June 1885 ...	Wardha Coal ...		Plate-bending.	The machine is made suitable for bending iron plates 6′ wide and ⅝″ thick. The machine has three rollers each 7″ diameter and 6′ 6″ long within the end frames. The rollers are either of wrought iron or of cast iron with a wrought iron spindle 4″ diameter turned and fitted the entire length.	No. 1 ...	155 0 0	Each	...	765 / 1—6	4 9 2	22 6	B.	

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contract. No. C	Contract. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate f. o. b. in England. Amount.	Rate f. o. b. in England. Unit.	India Office drawings (if any). Original C.	India Office drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
							£ s. d.				T. Cwt. Qr.	s. d.		
403	5th November 1885 ..	Nagpur-Chhattisgarh	Machines—*contd.*	Sawing, Circular, Bench.	The saw bench is of the description known as "plain" 5′ 6″ long, 2′ 9″ wide, and made suitable for circular saws up to 36″ diameter. The bench is complete in every respect and supplied with one circular saw 36″ diameter × 11 B. W. G thick, two 30″ diameter × 12 B. W. G. thick, two 24″ diameter × 13 B. W. G. thick, and one 18″ diameter × 15 B. W. G. thick, and with all necessary spanners. The bench does not require a countershaft or bracket.	No. 1	*31 10 0	Each	...	792	1 15 0	10 0	B.	* Cost of the Bench ... £ 21 10 0. „ 6 spare saws .. £ 10 0 0. Total ... £ 31 10 0.
357	9th March 1885 ...	Northern Bengal ...		Sawing, Circular, cold-iron.	The machine is suitable for cutting iron bars cold up to 4 inches square, the rag off die forgings and similar work in a smith's shop. The saddle carrying the spindle is fitted to V slides on the frame, and has a self-acting and hand traverse of 16″ along the bed with a quick return motion by hand. The saw is 36″ diameter. The surface cutting speed of the saw is 46′ per minute, and the feed motion has a variable adjustable feed from 1/16″ to ½″ per revolution of the saw. The machine is complete in every respect and supplied with three spare saws.	No. 1	190 0 0	Each.	408	775 / 1—3				
„	„	„			Split drum for above machine of suitable diameter for driving the circular saw through a countershaft, and of 18″ width on the rim, and cast in two pieces and planed on the face.	„ 1	17 10 0	„	„	„	4 16 0	22 0	C.	
406	24th November 1885	Eastern Bengal ...			The machine is exactly similar to the above one	„ 1	190 0 0	„	„	813 / 1—3				
„	„	„			Split drum as above.	„ 1	17 10 0	„	„	...	4 15 2	17 0	C.	

INDIAN STATE RAILWAYS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount.	Rate F. O. B. in England. Unit.	India Office Drawings (if any). Original C.	India Office Drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire sea freight per ton. Rate.	Entire sea freight per ton. Port.	Remarks.
							£ s. d.				T. C. Qr.	s. d.		
396	19th October 1885 ...	Eastern Bengal	Machines—*contd.*	Sawing and Tenoning, Bench.	The machine has a rising and falling saw spindle. It is fitted with a false and a parallel fence, the latter adjustable by screws and bevil gear, and with suitable arrangement for holding the timber close to the fence. The bench is arranged to take saws up to 36 inches diameter and is fitted with vertical tenoning spindles for shouldering. The machine is complete in every respect and supplied with 18 circular saws of different sizes varying from 10″ to 36,″ two drunken saws complete, a double set of tenoning saws for the vertical tenoning spindles and two countershafts.	No. 1	117 19 0	Each	...	795/1—4			
,,	,,	,,			Main shaft drum for above machine 3′ diameter 12″ wide on the rim, cast in 2 pieces and planed on the face. The boss is 9″ long and bored out the full length to fit the 3″ shafting accurately.	,, 1	4 13 0	,,	...	...	3 13 0	16 0	C.	
351	19th January 1885 ..	Rajputana-Malwa ...		Screwing.	Single-geared, Brown's patent, for screwing bolts and tapping nuts ¼″ to 1″ diameter, inclusive, by once passing through the dies. The driving cone has 3 speeds 7¼″, 10½″, and 13½″ diameter, each step 3½″ wide. The bed of the machine is of sufficient length to enable a screw being cut for a distance of 12″ at one operation. The machine is complete in every respect and is supplied with complete set of taps and dies, belting, spanners, countershaft, &c.	No. 1	85 0 0	Each	...	756/1—4	1 8 3	16 0	B.	
383	26th August 1885 ...	Eastern Bengal ...			Brown's patent, suitable, for screwing bolts and tapping nuts from ¾″ to 2″ diameter, both inclusive, by once passing through the dies. The machine is double-geared, but so constructed that it may be used as a single-geared machine. The driving cone has 4 or more speeds, each being 4 inches wide. The machine is complete in every respect, and supplied with one main shaft drum and 2 sets of suitable taps and dies.	No. 1	163 10 0	Each	...	785/1—2	4 3 0	27 6	C.	

INDIAN STATE RAILWAYS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.		Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount.	Rate F. O. B. in England. Unit.	India Office Drawings (if any). Original C.	India Office Drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire sea Freight per ton. Rate.	Entire sea Freight per ton. Port.	Remarks.
							£. s. d.				T. Cwt. Qr.	s. d.		
382	27th August 1885 ...	Nagpur-Chhattisgarh ...	Machines—*contd.*	Shaping.	The machine has a variable stroke up to 6½″ and has a quick return motion. The bed is a strong hollow casting not less than 3′ long, 37″ high, 18″ across the V's, 20½″ across the body and 32″ across the base. The machine is complete in every respect and is provided with complete set of vices, jaws, headstocks, cutting tools, spanners, &c.	No. 2	179 0 0	Each	...	816/1—3	7 13 2	12 6	B.	
387	27th August 1885 ...	Eastern Bengal ...		Slot drilling.	"Double." The bed is 12′ long, 3′ 4″ high, 20″ wide across the V's and 3′ across the base. The bed is fitted with two independent headstocks and gearing for cutting automatically slots or key beds from ¼″ to 2″ wide and 2″ to 48″ long, drilling holes out of the solid from ¼″ to 2″ diameter, and boring up to 5″ diameter and 12″ deep. The bed is fitted with 2 saddles having V slides on the top to receive the ram slide. The saddles or headstocks are worked along the bed and reversed by means of an automatic clutch arrangement on each end of the bed. The drill spindles are of steel 2½″ diameter and fitted into a 6″ octagonal ram. The machine is complete in every respect and supplied with 2 main shaft drums, 2 parallel vices six steel boring bars, one set of 17 slot drills with sockets, and one set of 17 standard fluted rymers to fit the drill sockets.	No. 1	579 10 0	Each	...	819/1—3	9 14 1	17 0	C.	
384	26th August 1885 ...	Eastern Bengal ...		Tenoning.	With self-acting table to cut single or double tenons on wood of any length and of any size up to 18″ by 6″. The machine is complete in every respect and supplied with 3 spare sets of saws for each spindle, and also with 3 plain cutters for the vertical spindle; also provided with one full set of screw keys and the requisite belt guide including countershaft.	No. 1	119 0 0	Each	...	786/1—4	5 3 0	35 0	C.	

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount.	Rate F. O. B. in England. Unit.	India Office Drawings (if any). Original C.	India Office Drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire Sea Freight per T.N. Rate.	Entire Sea Freight per T.N. Port.	Remarks.
						£ s. d.				T. Cwt. Qr.	s. d.		
401	11th November 1885	Northern Bengal ...	Machines—*concld.* Tenoning—*concld.*	This machine is intended for general use and to cut single tenons 14″ wide and 8″ long, and double tenons 14″ wide and 5″ long. The machine is complete in every respect and supplied with 2 spare sets of cutters for each spindle.	No. 1	* 96 18 6	Each	...	807 / 1-2	† 2 0 1	17 0	C.	* Includes £ 2-11-0 for 3 sets of tracings and 6 Photos. † Gross weight as per packing account.
387	27th August 1885 ...	Eastern Bengal ...	Testing, spring.	Worked by hydraulic pressure, capable of testing locomotive or carriage springs up to 6′ in length and to a pressure of 20 tons. The machine is complete in every respect and supplied with all necessary appliances for working it, 4 spare sets of leather for the machine and pump and a set of dies.	No. 1	114 10 0	Each	717 / 1-2	803 / 1-2	2 6 0	17 0	C.	
393	17th September 1885	Eastern Bengal ...	Tin-working.	Beading	No. 1	64 0 0	Total	...	...	1 5 1	21 0	C.	
				Burring Jenny	„ 1								
				Circle cutting	„ 1								
				Folding	„ 1								
				Punching	„ 1								
				Rolls plate-bending	Set 1								
				Shears, Guillotine	„ 1								
361	8th May 1885 ...	Indus Valley ...	Magnet brass boring cleaner.	It is of suitable size to clean 1½ cwt. per hour, and is fitted with a pulley and hand wheel to drive by hand or power. The test of the machine is 100 lbs. of brass borings mixed with 5 lbs. of iron or steel, the iron or steel remaining in the brass borings, after they have once passed through the machine, should not exceed one per cent.	No. 1	21 0 0	Each	...	...	1 9 0	20 0	K.	

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—contd.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contract. No. C.	Contract. Date.	For what Railway.	Articles.	Details.	Number or quantity contracted for.	Rate F. O. B. in England. Amount.	Rate F. O. B. in England. Unit.	India Office drawings (if any). Original C.	India Office drawings (if any). Completion. C.	Gross weight of the number contracted for.	Entire Sea Freight per ton. Rate.	Entire Sea Freight per ton. Port.	Remarks.
						£ s. d.				T. Cwt. Qr.	s. d.		
390	11th September 1885	Nagpur-Chhattisgarh ...	Press, fly.	With tools for mill saw gulleting, suitable for gulleting circular saws up to 48 inches diameter. The Press is complete in every respect.	No. 1	24 2 0	Each	...	789	...	10 0	B.	Weight included in that of combined mortising and boring machine under contract C 390. (*Vide* page. 11.)
380	7th August 1885 ...	Northern Bengal ...	Saws.	Band, Perrin's French, 19′ 8″ long, 1¼″ wide, 19 B. W. G. thick.	No. 3	1 19 1	Total	...	...	0 2 0	13 5	C.	
„	„ ...	„ ...		Ditto ditto ditto 19′ 8″ long, 1″ wide, 19 B. W. G. thick.	„ 3	1 13 3	„	...	...				
376	29th July 1885 ...	„ ...		Circular, 22″ diameter, 11 B. W. G. thick, centre hole 1⅛″.	„ 4	0 13 6	Each	...	...	0 4 2	13 5	C.	
„	„ ...	„ ...		Ditto 48″ diameter, 9 B. W. G. thick, centre hole 2″.	„ 1	4 2 0	„	...	...				
358	25th March 1885 ...	Tirhoot	Shafting.	Bright turned, 3¼″ diameter, for driving hydraulic crane, gauged throughout. (This does not include the end piece which goes through the wall.)	L. ft. 186	155 0 0	Total	...	...	9 7 0	13 5	C.	
				End piece to go through wall	„ 5	10 0 0	„	...	...				
				Cast iron sliding bearings and brackets for carrying main shaft.	No. 18	135 0 0	„	...	...				
				Pulleys and brackets for driving gear, together with 2 plummer blocks, bolts and 2 pulleys.	Set 1	45 0 0	„	...	...				
373	8th July 1885 ...	Eastern Bengal ...	Stocks, Taps and Dies.	Whitworth's standard threads, from ¼″ to ½″, rising by $\frac{1}{16}$″ and from ½″ to 1½″ rising by ⅛″, complete.	Sets 2	31 10 0	Set	...	...	0 10 0	25 0	C.	
381	7th August 1885 ...	Northern Bengal ...		¼″ to ⅜″ as follows :—¼″, $\frac{5}{16}$″ and ⅜″ ...	„ 4	5 2 6	„	...	...	(a) 0 9 0	18 0	C.	(a) Includes the weight of taps under same contract. See page 18.
				½″ to 1″ as follows :— ½″, ⅝″, ¾″, ⅞″ and 1″ ...	„ 4	11 6 6	„	...	...				
405	18th November 1885	Nagpur-Chhattisgarh ...		Whitworth's, ½″. The set consists of one die stock, one set of ½″ dies, 3 taps (taper, second and plug), and one tap wrench F size.	Set 1	2 19 6	„	...	...	0 0 2	20 0	B.	

INDIAN STATE RAILWAYS.

CLASS C—WORKSHOP MACHINERY AND HEAVY TOOLS.

Statement showing rates free on Board in England, gross weight and sea freight per ton of articles contracted for by the India Office from January to December 1885—concld.

CONTRACT. No. C.	Date.	For what Railway.	Articles.	Details,	Number or quantity contracted for.	Rate F. O. B. IN ENGLAND. Amount.	Unit.	INDIA OFFICE DRAWINGS (IF ANY). Original C.	Completion C.	Gross weight of the number contracted for.	ENTIRE SEA FREIGHT PER TON. Rate.	Port.	Remarks.
				Threads per inch.		£ s. d.				T. Cwt. Qr.	s. d.		
364	19th May 1885	Northern Bengal	Taps.	Standard $\frac{5}{16}$"	Sets 6	0 6 0	Set	...	...				
				Ditto $\frac{3}{8}$"	" 3	0 6 0	"	...	...				
				Ditto $\frac{1}{2}$"	" 3	0 7 6	"	...	...				
				Ditto $\frac{5}{8}$"	" 3	0 9 0	"	...	...	0 0 2	20 0	C.	
				Ditto $\frac{3}{4}$"	" 3	0 10 6	"	...	...				
				Ditto $\frac{7}{8}$"	" 3	0 12 0	"	...	...				
				Ditto 1"	" 2	0 13 6	"	...	...				
				Each set of above taps consists of one taper, one second and one plug.									
281	7th August 1885	Northern Bengal	Taps.	Standard $\frac{5}{16}$"	Sets 6	0 6 0	Set	...	...				
				Ditto $\frac{3}{8}$"	" 3	0 6 0	"	...	...				
				Ditto $\frac{1}{2}$"	" 3	0 7 6	"	...	...				
				Ditto $\frac{5}{8}$"	" 3	0 9 0	"	...	...				
				Ditto $\frac{3}{4}$"	" 3	0 10 6	"	...	...	+	18 0	C.	† Weight included in (*a*). See page 17.
				Ditto $\frac{7}{8}$"	" 3	0 12 0	"	...	...				
				Ditto 1"	" 2	0 13 6	"	...	...				
				Each set of above taps consists of one taper, one second and one plug.									
				Taps for mud plugs to drawing	No. 12	10 10 0	Total	...	...				
274	21st July 1885	Wardha Coal	Tool-holders.	Diamond, *for emery tool grinding machine* ...	No. 1	2 14 0	Total	...	...	...	21 0	B.	Weight included in that of Emery and grinding machine under contract C374, *vide* page 10.
378	7th August 1885	Northern Bengal		Swivel, for 8" lathe, each with 24 tools, shank 1" square.	" 6	6 0 6	"	...	...	0 3 1	23 0	C.	
"	"	"		Swivel, for 18" lathe, each with 24 tools, shank $1\frac{1}{4}$" square	" 3	11 17 0	"	...	...				

Note B.—Bombay, C.—Calcutta, K.—Karachi, M.—Madras, B.—Bangoon.

G. F. WILSON, Captain, R.E.,
for Director General.

Accompaniment to Director General of Railways' Circular No. 12 of 1887.

RATE LIST CLASS C.—WORKSHOP MACHINERY AND HEAVY TOOLS.

Contract C 360.

APPENDIX.

Specification of grinding, mixing, and heating machinery for the manufacture of patent or compressed fuel by the Pitch and Dry Heat process as herein specified and described, the above being the necessary accompanying parts to the patent Briquette machine supplied under contract C. 340 of 7th November 1884. (Vide *page 5 of Rate List Class C. for 1884. Director General of Railways Circular No. 24 of 1885.*)

The work comprised in this contract includes the make and delivery of the machinery herein specified alongside vessel at London, Liverpool, or Birkenhead, the inspection, marking, and packing of the various pieces being subject to the general conditions of contract.

The workmanship, materials, and design to be of the best description for the purpose, and to include all the recent improvements.

One set of plans (tracings) to be furnished with this contract, showing the buildings, timber work, foundations and general arrangement of the plant; but this contract shall not include any brick, stone, or timber work, nor any other work not mentioned in this specification.

One patent disintegrator (C) to be fully capable of grinding pitch at the rate of one ton per hour with countershaft (K) brackets, and driving pulleys.

One set of improved mixing apparatus (D and E) for mixing the coal and pitch in proper proportions, with cone, pulleys, internal shafts and knives, and driving gear.

One set of improved elevators (F) for raising the same, with bottom box and pulley, endless belt, set of buckets, top pulley and brackets, driving and tightening gear.

One (Adgie's) Patent dry-heating Apparatus, consisting of compressor (H), receiver (G), with safety valve; super-heating furnace (I) (ironwork only), with heating pipes and junctions, pyrometer, fire door and frame damper, bearers and tie rods.

One improved jacketted heating cylinder (B) with hopper, internal shaft and knives and driving gear.

One line of slided shafting (L) $3\frac{1}{2}$" diameter, running the full length of the machine house, with wall boxes, pedestals and plates, couplings and bolts, and all the driving pulleys (in halves) required in the machine house for driving the above machinery.

All the following cast and wrought iron piping, *viz.*; all the pipes and connections to connect the air—compressor, receiver, super-heating furnace, heating cylinder and pugmill of Briquette machine; and all the cold water piping and connections inside the machine house for the Briquette machine ram.

All the best leather belting required in the machine-house for connecting and driving the above machinery; with all the foundation and other bolts for properly securing the same, and also the belting, holding down bolts and washer plates required for the Briquette machine.

The whole of the above machinery to be made proportionate throughout, and to be fully capable, when erected, along with the Briquette machine, and working, of making Briquettes (patent fuel) at the rate of five tons per hour.

For instructions to assist in the erection and starting of the machinery, See page II.

II.

Instructions for working the Briquette Machine.

After having erected the Briquette Machine as per tracing No. C, 749 turn the driving shaft K round several times *by hand* to see that all the different motions are accurately adjusted without anything catching. The mould plate A is held in a stationary position by the Detent B, whilst the two pressing rams C C, the charging ram D, and the pushing-out ram E are all working. The canted nut L has a right and left hand screw; and this, with the slot hole in the quadrant O are for adjusting the exact position of the pawl M, which moves the mould plate to its proper position to meet the Detent B.

When the machine is first started, let the driving belt be *slack* until all is found tight and properly adjusted. When the material (coal and pitch) is delivered into the Pugmill F, adjust the stroke of the sliding can G, until a full charge of material is delivered and compressed into the mould at H, adjust the double nuts at P P until each of the pressing rams C C enter into the (empty) mould $\frac{3}{8}''$ to begin with; a little more afterwards if found necessary. Adjust the amount of pressure to be put on the Briquette tightening up the nuts of the (2) bolts II, carrying the (4) springs J J J J taking care not to tighten them too much. Cold water must be brought in a (say $\frac{1}{2}''$) pipe to the machine, and connected to the (hollow) pressing rams C C running slowly through; also allowing a small quantity to trickle over the edges or *faces* of these rams, so as by keeping them cold and wet, to put a smooth face on the surface of the Briquettes and prevent the pitch from adhering to the ram faces. A small drain pipe should be fixed under the foundation of the machine to carry away the waste water.

The bolts N N of the pushing-out ram E only require to be sufficiently tight to push out the briquettes, but slack enough to slip if the ram should come in contract with the plate. The weight at the end of the lever R requires to drop on a wood or brick box, a little before the end of the lever touches the bed. Steam is to be connected to the pipes of the jacket of the Pugmill F to keep the material warm. This Pugmill is made *in halves*, with faced joints and these joints must be made steam-tight before working the machine.