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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. <u>3803</u>	Press Mis.
<u>144-145</u>	
Dated <u>9-12-</u>	<u>1864.</u>

Not to be folded or roughly handled

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*Proceedings of the Madras Government, Public Works Department,
9th December 1864.*

No. 144. Read the following letter from Lieutenant-Colonel J. CARPENDALE, R. E.,
Mint Master, to Colonel C. A. ORR, R. E., Secretary to Government, Department
Public Works, dated Mint, 3rd December 1864, No. 265 :—

SIR,

1. I have the honor to report the result of my examination of Lieutenant Begbie's proposed plan for pulling punkahs agreeably to Order of Government No. 1,894, of 29th June last.

2. The distinguishing features of Lieutenant Begbie's scheme are, that he reduces the dimensions and the weight of his punkahs to a *minimum* : substitutes rigid iron rods for the ropes in common use, and removes the point of suspension to a distance of three feet or more below the ceiling to allow of the punkah being counterpoised by a weight fixed at the top of an iron rod, by which arrangement he considers that he reduces very considerably the work to be done, and that the power exerted by a descending weight passing through thirty-five feet in five hours, will be able to keep in motion a number of punkahs in a Barrack room or the Ward of a Hospital. It is unnecessary here to notice several ingenious contrivances in the details of construction, as the important point to be determined is, whether by the arrangement proposed, the descending weight will be a practicable one.

3. I first tried the effect of counterpoising a punkah by passing a light cord attached to a wheel and crank, with a punkah weighing $18\frac{1}{2}$ lbs. in connection with it, over a pulley, and I found that a 4 lb. weight ran down in ten seconds, the wheel and punkah making five revolutions ; on partially counterpoising the punkah by fixing a ball of lead weighing 26 lbs. to the top of the iron rod rising three feet above, the result was exactly the same.

4. I afterwards had an opportunity of testing the same principle by means of a miniature steam engine made in the Mint of $\frac{3}{16}$ th H.-P., and I found that the only effect of counterbalancing a punkah was a slight increase of work apparently due to friction.

5. To ascertain approximately what descending weight would be required to keep in motion one or more punkahs, I set up a train of wheels (five brass English made wheels) according to Lieutenant Begbie's proposal, with driving wheel, drum, and a crank six inches long. It required 676 lbs. in the pan to keep the crank alone in motion at the rate of twenty-four revolutions per minute; with one of Mr. Begbie's small punkahs weighing only $4\frac{1}{2}$ lbs. attached, the weight increased to 878 lbs., the revolutions being eighteen per minute; and with three such punkahs the weight was 1,124 lbs., the revolutions remaining eighteen per minute; results which I believe will be found to correspond tolerably with Moseley's formulæ. The crank was six inches long, and the bottoms of the punkahs were moving through a space of $2\frac{1}{2}$ feet only, which at eighteen revolutions per minute was for the purposes of a punkah useless, as a punkah to be effective should move at a velocity of about five feet per second.

6. I next finding the wheels in use incapable of standing any greater strain, re-placed them by a similar train of larger and stronger, but yet fine cut wheels, for the purpose of driving a wheel with a two feet crank, and I found that a weight of 1,200 lbs. was not only insufficient to move the large crank without any punkah at all, but also not enough to keep the small crank in motion on account of the greater friction and loss of power by using the larger wheels: as this weight was equivalent to a strain of more than a ton on the beam of a roof, I feared to increase it.

7. The conclusion at which I have arrived is, that the proposed plan is quite unsuitable for the punkahs of a Barrack or a Hospital, but that it may answer for single punkahs in private houses, if it is not inconvenient to give up the space required for the machinery which is considerable; that the wheels must be substantial iron ones; and that the descending weight will be as much as 4,000 or 5,000 lbs.

No. 145. ORDER THEREON, 9th December 1864, No. 3,503.

Communicated to Lieutenant Begbie for any remarks that he may have to offer.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To Lieutenant E. Begbie.

Exd. S. T. Augustin.

N^o 265.

Fort St. George,
Mint 3rd Decr 1864.

From

Lieut. Col. J. Carpendale R.E.

To Mint Master

The Secretary to Govt.

Sir, S. P. W.

Para 1. I have the honor to report
the result of my examination of
Lieut. Begbie's proposed plan for
pulling Punjabs agreeably to order
of Government N^o 1894 of 29th
June last.

2. The distinguishing features
of Lieut. Begbie's scheme are,
that he reduces the dimensions and
the weight of his Punjabs to a
minimum, substitutes rigid iron
rods for the ropes in common use,
and removes the point of suspension
to a distance of three feet or more
below the ceiling to allow of the
Punjab

Punkah being Counterpoised by a weight fixed at the top of an iron rod, by which arrangement he considers that he reduces very considerably the work to be done, and that the power exerted by a descending weight passing through thirty five feet in five hours, will be able to keep in motion a number of Punkahs in a barrack room or the ward of a Hospital. It is unnecessary here to notice several ingenious contrivances in the details of construction, as the important point to be determined is, whether by the arrangement proposed the descending weight will be a practicable one.

3. I first tried the effect of Counterpoising a Punkah by passing a light Cord attached to a wheel and Crank, with a Punkah weighing $18\frac{1}{2}$ lb in connection with it, over a Pulley, and I found that

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that a 4 lb weight ran down in 10 seconds, the wheel and Punkah making five revolutions: on partially Counterpoising the Punkah by fixing a ball of lead weighing 26 lb to the top of the iron rod rising ^{3 feet} just above, the result was exactly the same.

4. I afterwards had an opportunity of testing the same principle by means of a Miniature Steam Engine made in the Mint of $\frac{1}{300}$ th H.P. and I found that the only effect of Counterbalancing a Punkah was a slight increase of work apparently due to friction.

5. To ascertain approximately what descending weight would be required to keep in motion one or more Punkahs, I set up a train of wheels (five brass English made wheels) according to Lieut. Begbie's proposal, with driving wheel, drum, and a Crank six inches long

long. It required 676 lb in the
paw to keep the Crank alone in
motion at the rate of 24 revolutions
per Minute. With one of Mr.
Begbie's small Puntahs
weighing only $4\frac{1}{2}$ lb attached,
the weight increased to 878 lb
the revolutions being 18 per Minute,
and with three such Puntahs
the weight was 1124 lb the
revolutions remaining 18 per
Minute, results which I believe
will be found to correspond
tolerably with Mosely's Formulae.
The Crank was six inches long
and the bottoms of the Puntahs
were moving through a space of
 $2\frac{1}{2}$ feet only, which at 18 revolutions
per Minute, was for the purposes
of a Puntah useless, as a Puntah
to be effective should move at a
velocity of about five feet per
second.

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6. Next, finding the wheels
in use, incapable of standing
any greater strain, replaced them
by a similar train of larger
and stronger, but yet fine cut
wheels, for the purpose of driving
a wheel with a two feet Crank;
and I found that a weight of
1200 lb was not only insufficient
to move the large Crank with-
out any Puntah at all, but
also not enough to keep the small
Crank in motion on account of
the greater friction and loss of
power by using the larger wheels.
As this weight was equivalent to
a strain of more than a ton on
the beam of a roof, I feared to
increase it.

7. The conclusion at which
I have arrived is, that the
proposed Plan is quite unsuitable
for the Puntahs of a barrack

or a Hospital but that it may
answer for single Puntahs in private
houses if it is not inconvenient to
give up the space required for
the Machinery which is consider-
able; that the wheels must be
substantial Iron ones; and that
the descending weight will be as
much as four or five thousand lb.

I have the honor to be,

Sir,

Your most obedient Servt,

J. Munroe

Mint Master

Colonel R. S.
Secretary of War

Enclosed in the
Government

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Dec 22 23

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Dec 4 to 4 p.m.

Dated 3.

Dec 5 3 Dec 15/64

N. 265

Adm. registered in Govt. Order
119894 of 29 June 1864,
re: facts the result after
examination of South
Delegated proposed plan
for pulling Buffalo.

For Orders
No. 3503-9 Dec 1864

Post
No. 3503

Communicated
to the Reg. for
any remarks that
he may have to
offer

Dec 22 1864

Dec 22 1864

Dec 22 1864