

Public Works (1899) Department.

RAILWAY BRANCH.

G.O., No. 675. Ry

DATED 17th June 1899

[Despatch Abstract.]

Automatic Vacuum Brake.

Coming to the Ry. A. S. concerned, Memorandum from the Govt of India forwarding certain Correspondence containing a report by Captain C. Shackwell, R.E. on a new apparatus for communication between passengers, drivers and guard by means of the — and results of experiments made with a carriage fitted with an old pattern of inter-communication on Valve.

BACK PAPERS.

FURTHER PAPERS.

A.C.B.

Report on a new apparatus for communication between passengers, driver and guard on the Eastern Bengal State Railway by means of the automatic vacuum brake.

On the 13th August 1898, experiments were made on the Eastern Bengal State Railway, with a new pattern of communication, the only difference from the old pattern being the increased size of the hole by which (on pulling the handle) air is admitted into the train pipe.

The Manager, Traffic Superintendent, and Acting Carriage and Loco. Superintendent, Eastern Bengal State Railway, were present, as well as a representative of Messrs. Heatly, Gresham & Co., the Calcutta Agents of the Automatic Vacuum Brake Company. The train on which the experiments were made was of the same composition as the ordinary Darjeeling mail, consisting of 12 carriages and 2 brakes, the carriage on which the new apparatus was fitted being in rear of the train.

The first experiment tried was to test the time taken for the brakes to go on from end to end of train, this was done when the train was at a stand. The handle being pulled in the rear coach of the train, it was found that the brakes went on the engine in $1\frac{1}{5}$ seconds from time of pulling the handle.

Two experiments were then made with the train travelling at 30 to 40 miles an hour, the instructions to the driver being to whistle as soon as he perceived (by dropping of vacuum gauge or slackening of speed) that the handle had been pulled, and then to keep on steam, but not to use his ejector to make up the vacuum. It was found that the driver became aware of communication having been made, in one case in $2\frac{4}{5}$ seconds, and in the other in $3\frac{4}{5}$ seconds, from the time of pulling the handle. The

train

train ran $\frac{1}{4}$ mile in 38 seconds before stopping, steam not being shut off till after the train came to a stand.

The next experiment was to determine whether the driver could keep the train moving by using the big ejector in addition to keeping on steam. In this case it was found that he could only keep the train going for $\frac{1}{4}$ a mile from the place where the handle was pulled, i.e., $\frac{1}{4}$ mile further than in the last experiment, the time taken to run that $\frac{1}{4}$ mile being 1 minute 45 seconds.

In all these experiments the gauge on the engine dropped rapidly, and the slackening of speed of the train gave an unmistakable indication to the driver that the brake had been applied.

An experiment was also made with the old apparatus, the driver being instructed to keep on steam, but not to use his ejector. In this case 10 seconds elapsed before the driver's attention was called, and the train ran for 1 mile in 2 minutes 12 seconds before coming to a stand. The speed of the train at the time when the communication was applied was practically the same (38 to 40 miles an hour) in all cases.

These experiments show clearly that new apparatus brings the train to a stop without the driver's hands (i.e., in other words, that he must be able to keep the train going indefinitely has been urged that absolute power of choosing his place of stopping must be left in the driver's hands i.e., in other words, that he must be able to keep the train going indefinitely by the use of his ejector), in order that the train may not be brought to a stand in an awkward place, such as a long bridge or tunnel. This condition does not, however, appear to me to be imperative, as in that case the guard can always get to the carriage concerned along the foot-boards, and he has only to refix the handle by means of a key he carries with him, to enable the brakes to be taken off, and the train to be

pulled

pulled on to a more convenient place.

I think, however, that the best solution (short of an invention by which a slight application of the brake will give an audible signal to the driver) will be found in an apparatus, with an air-hole larger than that in the old, and smaller than that in the new apparatus, the effect of which would be, while still giving an unmistakable indication to the driver, to yet enable him to choose his place of stopping up to a limit of, say, 1 mile, instead of only $\frac{1}{4}$ mile as in the new apparatus. 10th August 1898.

It should be mentioned that in no case was any jar felt on the application of the brake.

I understand that 50 sets of the new apparatus have been supplied to the Eastern Bengal State Railway, and are about to be fitted to first and second class carriages; and I see no reason for objecting to its use, especially since whatever force may be given to the objection that the driver has only $\frac{1}{4}$ mile choice of stopping place, I understand that there are no bridges, tunnels or cuttings on this Railway more than $\frac{1}{4}$ mile in length.

O. THACKWELL, Capt., R.E.,
Government Inspector of Rys.

Calcutta;

The 15th August 1898.

No.1088 R.T.,dated 5th October 1898.

From-The Government of India,Public Works Department,
To-The Senior Government Inspector of Railways,Calcutta.

I am directed to acknowledge the receipt of the report,dated the 15th August 1898,by Captain O.Thackwell, R.E.,on a new apparatus for communication between passenger driver and guard on the Eastern Bengal State Railway,by means of the automatic vacuum brake,forwarded with your memorandum,No.3259 $\frac{1}{2}$,dated the 20th August 1898.

2. In reply I am directed to state that the Government of India,while concurring in the opinion expressed by Captain Thackwell,that the use of the new apparatus on the Eastern Bengal State Railway need not be objected to since 50 sets have,it is understood,been supplied to the railway and are being fitted to first and second class carriages,desire that the new apparatus should be further experimented on with an air-hole intermediate in size between that in the old and in the new apparatus,and the results reported to this office.

No. 488 R.T.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

Railway Traffic.

All communications
should be addressed
to the Secretary.

Simla, the 25th May 1899.

The under-mentioned papers are forwarded to the
Joint Secretary to the Government of Madras, Public Works
Department, Railway Branch, for information.

By order,

W. J. Macleod Captain R.E.,
Offg. Under Secretary.

W. J. Macleod

Documents referred to.

- (i) Memorandum No. 3259 $\frac{1}{2}$, dated 20th August 1898, from the
Senior Government Inspector of Railways, Calcutta, and
of its enclosures.
- (ii) Copy of Government of India letter No. 1088 R.T.,
dated 5th October 1898.
- (iii) Copy of Memorandum No. 1783, dated the 26th April 1899,
from the Senior Government Inspector of Railways,
Calcutta, and of its enclosure.

Eastern Bengal State Railway.

Report by Captain O. Thackwell, R.E. on a new apparatus
for communication between passengers, driver and guard by
means of the automatic vacuum brake and results of
experiment made with a carriage fitted with an old pattern
intercommunication valve.

A.C.B.

