

No. 623. "Description of an improved form of the Journals of the Axles for Railways." By Captain Elias Robison Handcock.

Improved
Railway
Axles.

The paper commences by enumerating the principal disadvantages of the common railway axles, noticing particularly, the great consumption of oil; the wear and tear, not only of the axles, but also of the boxes and the brasses; the oscillation occasioned by the wearing away in length of the latter, producing destructive effects alike to the engine, carriages and rails, as well as being disagreeable to the passengers.

It then describes the new form of axle, which it is contended is calculated to remove these evils. The chief peculiarities of its form, consist in substituting for the abrupt shoulder at either end of the journal, two cones; the outer one, which is loose on the axle, is capable of being forced forward by a screw on the extremity; it is prevented from revolving on the journal by means of a tongue, and is secured by a screw-nut, and key. The two antifriction collars of hard brass, which take the places of the ordinary journal brasses, are about $\frac{3}{8}$ ths of an inch in thickness, and are fitted on the journal sufficiently loose to enable them to turn freely in the bored cast-iron boxes which support them; these collars extend over both the cones and along the journal till their ends meet within about a quarter of an inch in the centre, and acting as an independent moveable power between the journal and the cast-iron box into which they are fitted, they reduce the amount of friction when it becomes greatest. Among the advantages derived from this new form, are the uniform smooth and steady motion, consequently reducing the wear and tear; allowing the collars to be at all times tightened, avoiding the lateral action, which is detrimental to the carriages, and to the line of rails; the smaller consumption of oil; one pound of oil being found sufficient to lubricate a six-wheeled engine and four-wheeled tender, while running a distance of nearly a thousand miles, and the absence of any tendency to heat. The paper concludes, by expatiating on the benefits already found by experience to result from their use.

Captain
E. R.
Handcock.

Captain Handcock exhibited the journal of a common railway axle, with its box and brasses, which had been in use, and pointed out that the principal abrasion had taken place at the ends, that a new brass for the same journal would require to be nearly an inch longer, and therefore, that the oscillation of the carriage must necessarily be great, whenever the brasses began to wear. He explained that it was usual, in order to save the expense of new brasses, to weld an iron ring upon the journal against the collar, and showed one, which