P. F. AERTS, Sr.

RAILWAY ROLLING STOCK, &c.

No 24,914. Patented Aug. 2, 1859.

Fig. 1.

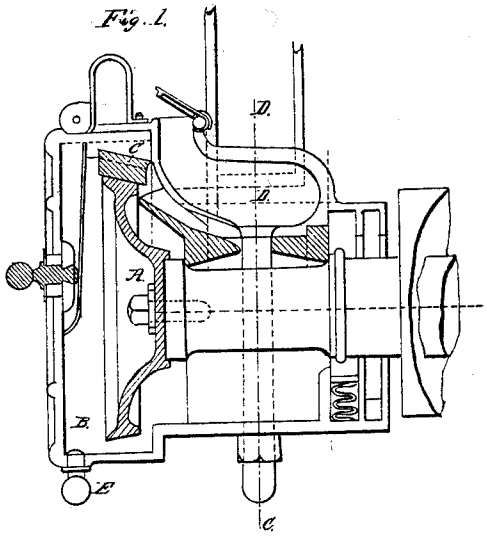


Fig. 2.

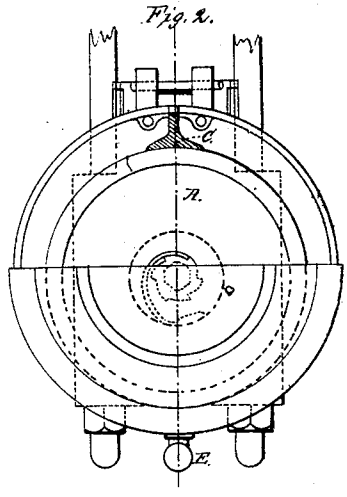


Fig. 3.

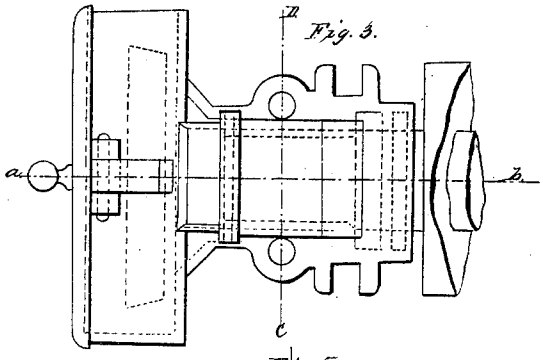


Fig. 4.

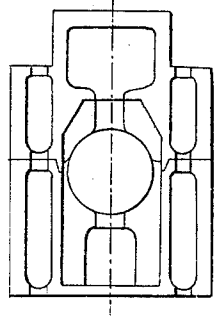


Fig. 5.

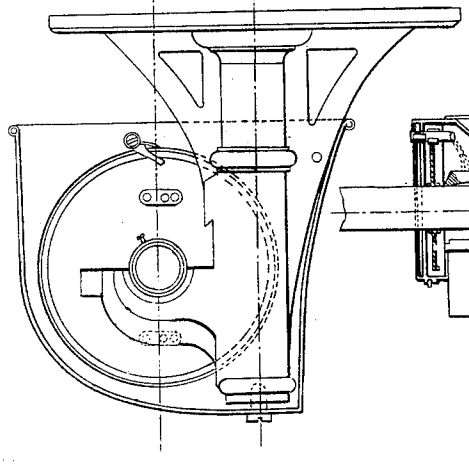


Fig. 6.

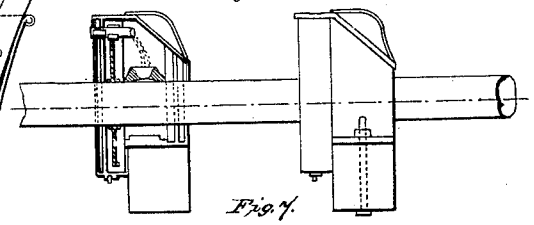
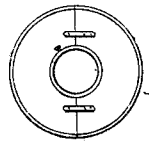


Fig. 7.



Inventor.

P. F. Aerts Sr.

UNITED STATES PATENT OFFICE.

PAUL FRANCOIS AERTS, OF LONDON, ENGLAND.

IMPROVEMENT IN AXLE-BOXES FOR LUBRICATING RAILWAY ROLLING-STOCK, &c.

SPECIFICATION forming part of Letters Patent No. 24,914, dated August 2, 1859.

To all whom it may concern:

Be it known that I, PAUL FRANCOIS AERTS, formerly of Brussels, in the Kingdom of Belgium, but now residing in London, England, mechanical engineer, have invented a new Mode of Lubricating Railway Rolling-Stock and other Moving Parts of Machinery; and I do hereby declare that the following is a full and exact description of the same.

My invention consists in a novel mode of lubricating the journals of railway rolling-stock and the moving parts of machinery working in fixed bearings. The lubricator I use is water.

The mode of applying my system to the journals of railway-carriages will be understood by reference to Figures 1, 2, 3, and 4 in the annexed drawings, Fig. 1 being a longitudinal section of an axle-box, taken through the line A B, Fig. 3; Fig. 2, a front view of same; Fig. 3, a plan view, and Fig. 4 a cross-section through the line C D of Figs. 1 and 3.

Similar letters of reference are placed upon and denote similar parts where such parts appear or may be seen at each of the figures, respectively, *a* being a circular plate or wheel of cast-iron securely fixed to the end of the axle-tree and dipping into a reservoir of water *b* at the lower part of the axle-box. As soon as the carriage is in motion this wheel turns with the axle, and by means of the centrifugal force produced by such rotation it carries a portion of the water to the upper part of the axle-box, where it is discharged against the double-fronted piece *c*, Figs. 1 and 2, which I call a "divergent" and by which it is conducted (whichever way the wheel may rotate) in a continuous stream over the journal of the axle. The divergent may be made of zinc or other suitable material and either placed so as to be free to move up and down or fixed a short distance above the rim of the said wheel and connected therewith by means of light movable flaps. By this arrangement lubrication commences as soon as the carriage is in motion and the supply of water is in direct relation to the demand, for the quicker the rotation the more abundant will be the supply of water carried up by the wheel and dispersed by means of the divergent. It will be observed that the water which has acted as a lubricator falls again into the reservoir, from whence it is continuously carried over the journal without other waste than such as arises from insensible evaporation. Any dirt or grit which might reach the journal and which under the ordinary system is one of the causes of the heating of axles is immediately washed off and falls to the bottom of the reservoir. As a protection against the escape of the water from accident or from neglect to renew the supply at proper intervals I prefer to retain the axle-box in ordinary use *d*, Fig. 1, in which the grease will remain unaffected so long as there is water in the reservoir, but be ready to come into action as soon as the axle becomes warmed by friction.

For the purpose of cleaning the boxes the plug or screw *e e* is to be removed, when the dirty water will escape and by means of a syringe the box may be thoroughly cleaned and the plug or screw replaced, or a tap may be used. The water can be supplied from an opening with close-fitting lid in the upper part of the box.

The mode in which this system of lubrication may be conveniently applied to the bearings of machinery will be understood by reference to Figs. 5, 6, and 7. Figs. 5 and 6 show cross and longitudinal sections of a shaft, such as is in ordinary use in factories, with one of its supports and bearings. Fig. 6 is a zinc box affixed to the support of the shaft and entirely inclosing the bearing. A cast-iron wheel is securely fixed to the shaft at the side of the bearing and rotating with it carries a copious stream of water into the hollow cylinder or divergent, from whence it flows or is conducted over the bearing.

For all bearings except such as are at the ends of shafts the wheel must be made in two parts and united together at the time of fixing it to the shaft. A convenient mode of making such union is shown in Fig. 7. It will be found advantageous to grease the bearings before applying the system and, except in case of neglect to renew the supply of water when evaporated, no further greasing will be required. The principle of the system consists in causing the flow of water over the axle or bearing in quantities proportioned to the varying demand for lubrication.

Having now described the nature of my said invention, in combination with the journal-box, as described, I claim—

The wheel *a* fixed on the end of the journal in railway rolling-stock raising water by centrifugal force and the divergent *c* for conducting the water over the greased surface of the journal or moving parts of machinery working in fixed bearings when constructed and arranged substantially as set forth.

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