

No. 647,397.

Patented Apr. 10, 1900.

R. GASCOIGNE.

APPARATUS FOR LEVELING BOILERS OF ROAD LOCOMOTIVES

(Application filed Feb. 27, 1899.)

(No Model.)

3 Sheets—Sheet 1.

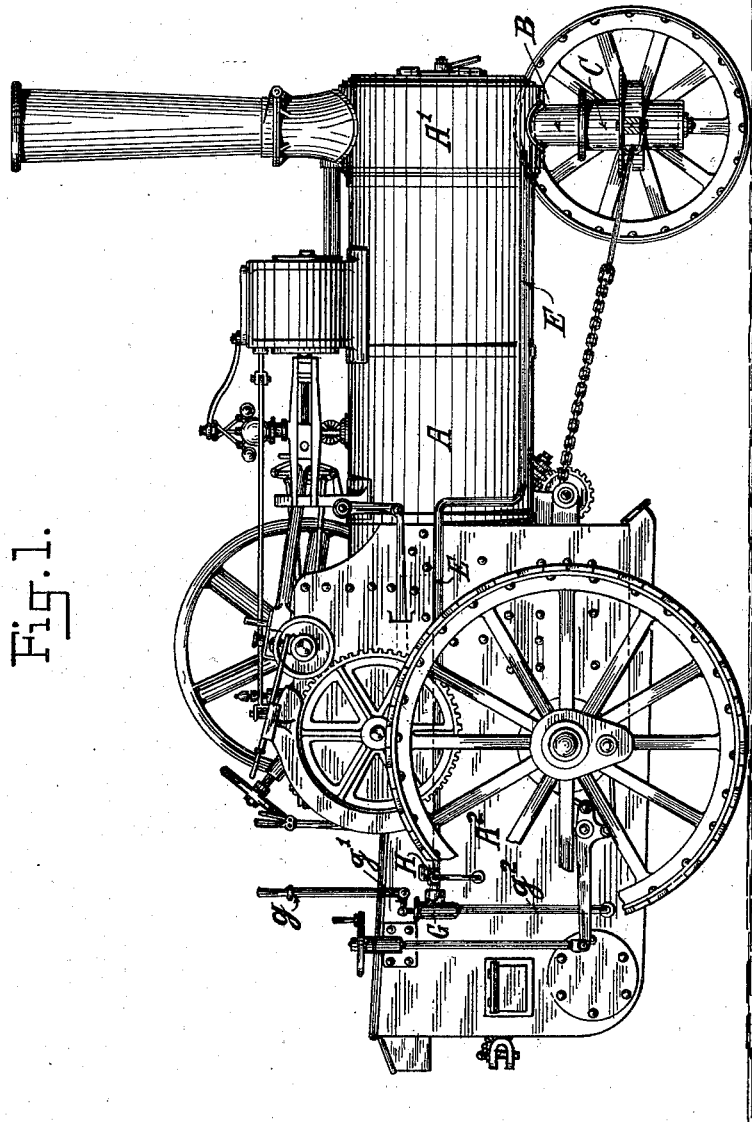


Fig. 1.

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Fig. 3.

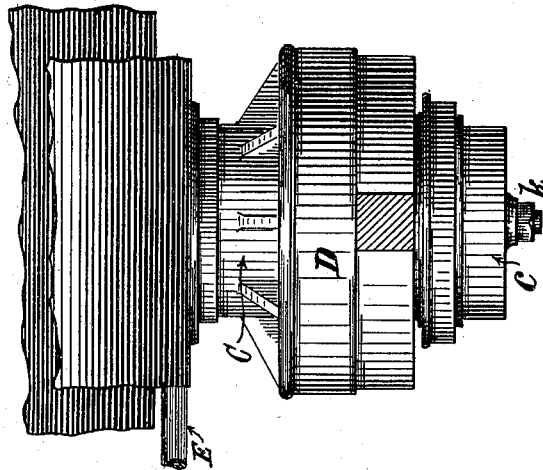
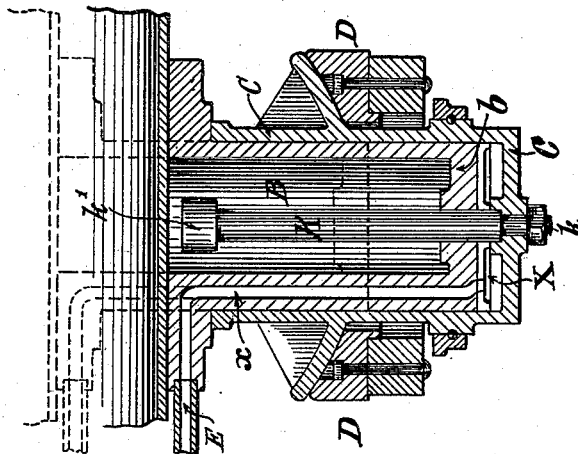


Fig. 2.



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Fig. 4.

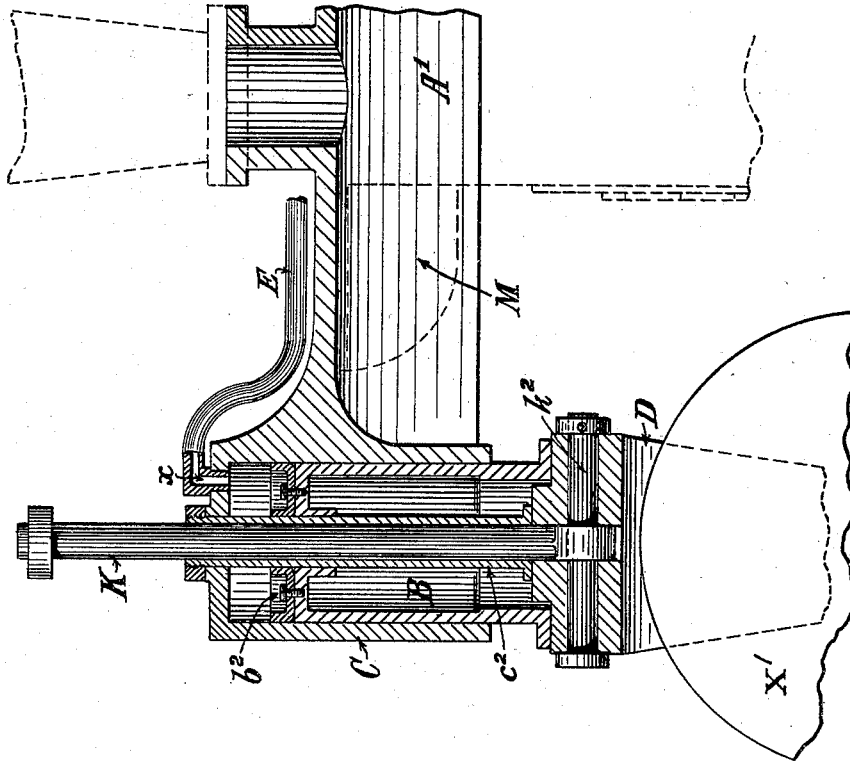
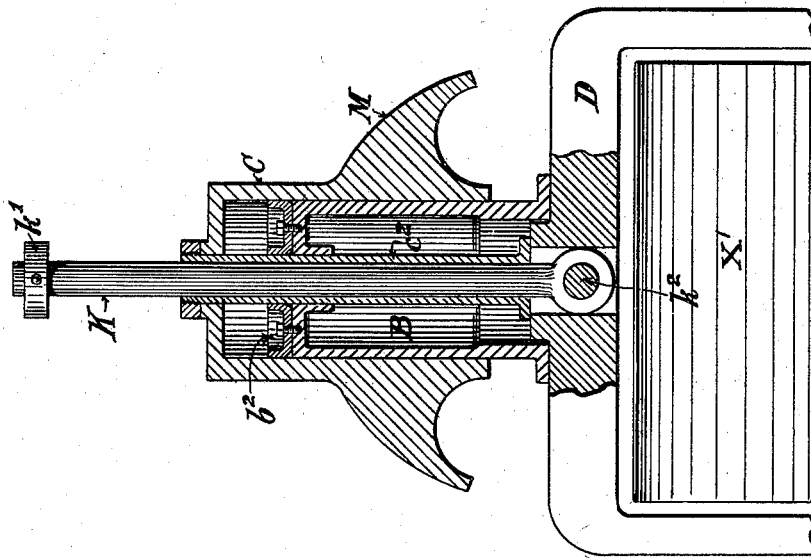


Fig. 5.



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UNITED STATES PATENT OFFICE.

RICHARD GASCOIGNE, OF WORKSOP, ENGLAND.

APPARATUS FOR LEVELING BOILERS OF ROAD-LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 647,397, dated April 10, 1900.

Application filed February 27, 1899. Serial No. 707,017. (No model.)

To all whom it may concern:

Be it known that I, RICHARD GASCOIGNE, a subject of the Queen of Great Britain and Ireland, and a resident of 84 Sandy Lane, Worksop, in the county of Nottingham, England, have invented a certain new and useful Apparatus for Maintaining an Approximately-Horizontal Position in Road-Locomotives, (for which I have obtained a patent in Great Britain, No. 27,343, bearing date December 27, 1898,) of which the following is a specification.

This invention relates to road-locomotives or traction-engines which are used for traveling over common roads. In engines of this type the boiler is arranged parallel to the surface of the road over which it is traveling, and consequently when ascending a hill the water flows back toward the fire-box, leaving the smoke-box end of the upper tubes uncovered by the water, with some risk of explosion. Much more dangerous is the position when descending a long hill, as in this case the water leaves the top of the fire-box uncovered, with consequent risk of either the top of the fire-box being burned out or the safety-plug melted. This invention entirely obviates this difficulty by means of simple mechanism, which can be easily and conveniently operated, which is efficient in action, and which can be adapted to new or existing engines at a low first cost.

In order that my invention may be fully understood, I append drawings, in which—

Figure 1 is an elevation of a traction-engine of the ordinary type with my invention applied thereto. Fig. 2 is a section, on a larger scale, of the cylinders and attached parts. Fig. 3 is an elevation of same. Fig. 4 is a longitudinal vertical section of a modification. Fig. 5 is a transverse vertical section of same.

A indicates the boiler, A' the smoke-box, and A² the fire-box end of the boiler. As the boiler, engine, wheels, and propelling mechanism are of the ordinary description, it is not necessary further to refer to these. To the under side of the smoke-box is rigidly attached a cylinder B, which has its lower end *b* solid and forms a plunger or piston capable of sliding freely in a concentric cylinder C, which is rigidly attached to the under car-

riage D, to which is affixed the axle upon which the front wheels are free to rotate. These two concentric cylinders are vertically disposed, and the inner cylinder B is caused in any convenient manner to make an airtight joint with the outer cylinder, the lower end of which is closed by a solid end or cover *c*. The space X between the ends *b* and *c* of the cylinder B and C communicates by a passage *x* and a tube E with a force-pump G, arranged at the furnace end of the engine and in convenient proximity to the hand of the engine-driver, who can operate the same by means of a handle *g* and a bell-crank lever *g'* in such manner as to draw water from the tank or other convenient source and force it through the tube E and passage *x* into the space X between the ends of the two concentric cylinders. If desired, this pump may be operated by the engine instead of by the hand of the driver. It is obvious that if water under pressure be forced into this space the inner piston B will rise and with it the smoke-box A' and front end of the boiler, and, conversely, when the water is allowed to escape the smoke-box and front end of the boiler will descend. Consequently the engine-driver has the power to raise or lower the front end of the boiler at will, as a stop-cock H is arranged on the tube E in such position that it can be easily and conveniently opened or closed by the engine-driver. It follows then that whether ascending or descending a hill a horizontal or approximately-horizontal position of the boiler can be maintained, thus securing that the tube ends and fire-box shall always be covered with water as long as the boiler contains a proper quantity.

In some cases I affix centrally in the bottom of the outer cylinder a vertically-disposed bolt K by means of a nut *k*, and the end *b* of the inner cylinder B is bored, so as to be capable of sliding on this bolt, which thus forms a guide, while the enlarged end *k'* limits the rise of the inner cylinder and prevents it being forced out of the outer cylinder should too much water be pumped in.

In Fig. 2 the partly-raised position of the inner cylinder is shown in dotted lines.

The positions may be reversed and the inner cylinder attached to the fore carriage and the outer cylinder attached to the boiler end, or

the cylinders may be applied between the axle of the back wheels and the back end of the boiler, without departing from my invention; but I prefer the arrangement shown in the drawings. Two or more of these devices may be applied side by side, and instead of water air can be forced into the outside cylinder, answering the same purpose and serving in addition as a spring, which secures easy running of that end of the engine to which it is attached.

In Figs. 4 and 5 the principle remains the same, but the details are modified in such manner as to render it suitable for application to a steam road-roller. In this case a bracket M is rigidly fixed to the front end of the boiler, projecting beyond the smoke-box A'. Formed integrally with this bracket is the outside cylinder C, which is open at its lower end and in which slides the cylindrical plunger or piston B, the lower end of which is in contact with and presses upon the under carriage D. The latter in this case takes the form of a bracket, in which is pivoted the roller X'. The outer cylinder C has rigidly fixed concentrically inside it a sleeve c², in which is free to slide a vertical guide-bolt K, which is pivoted at k² to the under carriage or bracket D, thus enabling the latter (with the roller X') to accommodate itself to lateral inclinations of the surface over which it is traveling. The upper end of the piston B is packed by a cup-leather b², as shown. The space in the upper end of the cylinder C communicates with the force-pump by means of a tube E, which enters the cylinder C by a passage x. This arrangement of parts en-

ables the engine-driver to control the admission of water or air to the cylinder C in the same manner as hereinbefore described.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a road-locomotive of a cylinder C, a piston or plunger B, and means for forcing water or air into a space X, between the two; and for governing the exit of the same therefrom, substantially as shown and described.

2. The combination with a road-locomotive of the cylinder C; attached to the under carriage, the plunger or piston B, attached to the under side of the boiler and capable of sliding in the cylinder C, the guide-bolt K, the passage x, the tube E, the pump G, and means for operating the same, and the cock H, substantially as shown and described.

3. The combination with a road-locomotive or steam-roller of the cylinder C, attached to the front part of the boiler, the piston or plunger B attached to the fore carriage or to the roller-frame and capable of sliding freely in the cylinder C, the passage x, the tube E and means for forcing water or air into the cylinder C, and for governing the exit of the same therefrom, substantially as shown and described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

RICHARD GASCOIGNE.

Witnesses:

CHAS. E. DAFFEN,
GEO. STAUCER.