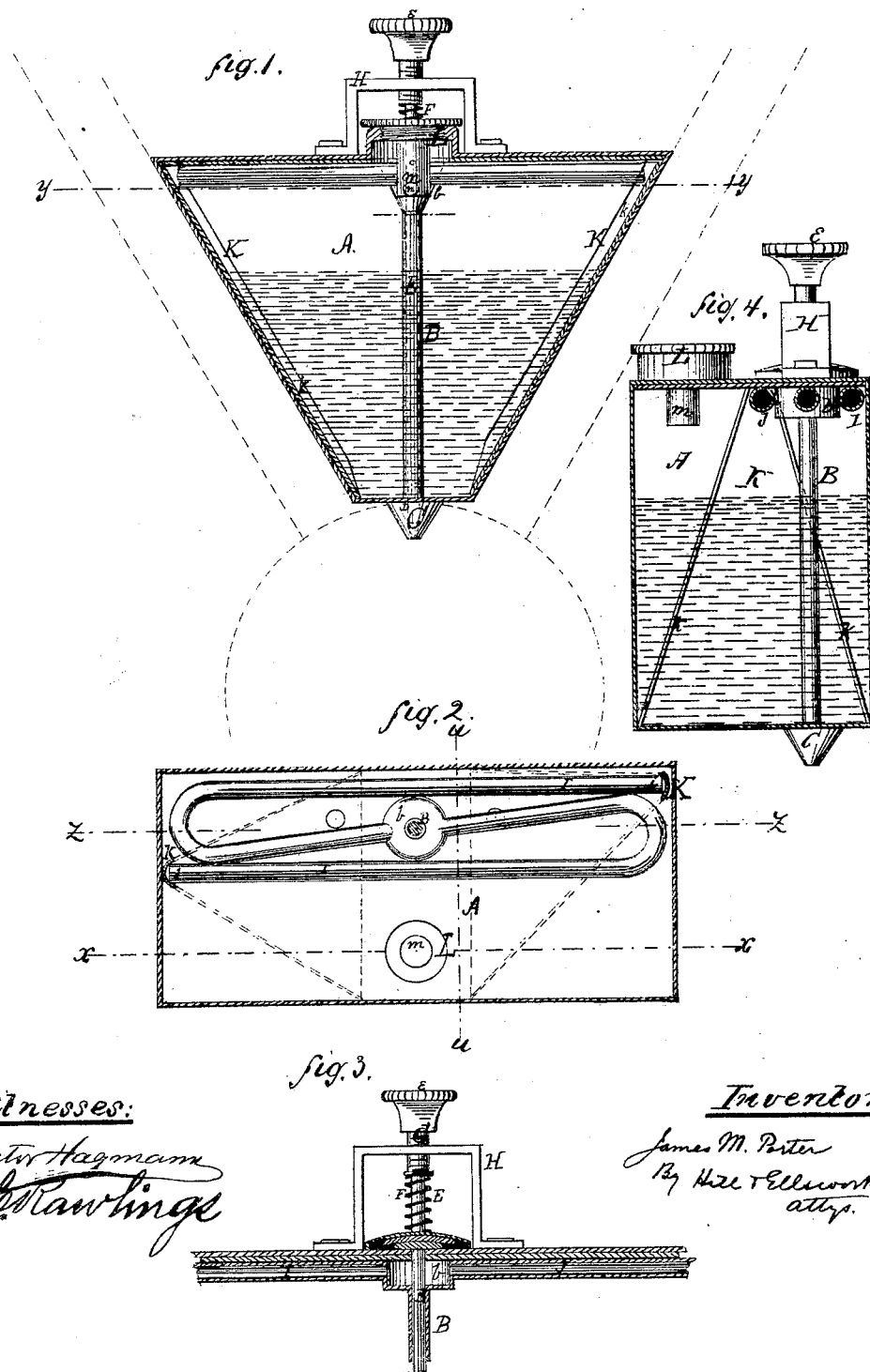


JAMES M. PORTER.

Improvement in Lubricators for Car-Wheels.

No. 114,473.

Patented May 2, 1871.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JAMES M. PORTER, OF FROSTBURG, MARYLAND.

## IMPROVEMENT IN LUBRICATORS FOR CAR-WHEELS.

Specification forming part of Letters Patent No. 111,473, dated May 2, 1871.

*To all whom it may concern:*

Be it known that I, JAMES M. PORTER, of Frostburg, in the county of Alleghany and State of Maryland, have invented a new and Improved Lubricating-Box for Car-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section in line  $xx$  of Fig. 2. Fig. 3 is a cross-section in line  $yy$  of Fig. 1. Fig. 3 is a section in line  $zz$  of Fig. 2, showing only a portion of the apparatus; and Fig. 4 is a vertical section in line  $uu$  of Fig. 2.

Similar letters of reference in the accompanying drawings indicate corresponding parts.

Car-wheels may be divided into two classes—viz., those that are fixed to and revolve with their axles, and those which revolve upon an axle that is itself immovable. No difficulty has been experienced in providing successful lubricators for the former class, since the box is necessarily fixed, and the oil can be drawn up from a reservoir below the axle by wicks or other suitable means, or a thicker lubricant may be employed, which will not drip from the wheel when the latter is at rest. Not so, however, with the class of car and carriage wheels that revolve on a fixed axle. If lubricating-boxes are used with them at all, they must revolve with the wheel, and when the latter stops they are likely to be in position to discharge their contents upon the journal while it is at rest, and not in want of a lubricant at all. The result is that where such boxes have been used, either the attendants must go round and stop the flow of oil by means of screw-plugs or other appliance for the purpose, or else they must suffer the contents of all the lubricators to be wasted, and renew them again when the train is ready to start. The waste of time, labor, and money involved in this is so great that railroad companies have generally preferred to have their employes go round at suitable intervals and oil the bearings, pouring the oil into a tube in the hub until they see it dripping from the end of the wheel. This also is expensive and wasteful, consuming a great deal of time, and only imperfectly answering the purpose after all.

The object of my invention is to remedy these difficulties by providing a lubricating-box which can be attached to and revolve with the wheel, and which will cause the oil to flow to the bearing while the cars are in motion.

To this end I construct the body  $A$  of the lubricating-box preferably in a triangular shape, to adapt it to be set between the spokes, and to accommodate the conducting-tubes, hereinafter described, having its lower end resting upon or extending into the hub, as shown in Fig. 1, where the hub and spoke are represented in dotted lines, and the lubricating apparatus, considerably magnified in proportion to the wheel, in dark lines. Through the center of this box rises a tube,  $B$ , terminating at its upper end in a small chamber or bulb,  $b$ , of any suitable shape. The tube is firmly attached to the bottom and top of the box, its lower end directly over a conical discharge-valve,  $C$ , and its upper end open to receive the stem  $E$  of a plug-valve,  $D$ , that operates in connection with the conical seat  $C$ , and regulates the flow of oil from the box. A spring,  $F$ , may be employed to raise the stem and valve, and an independent screw,  $G$ , bearing upon the end of the stem to depress them; or simply a screw-thread on the upper end of the stem, operating in connection with a female screw in the supporting-yoke  $H$ , may be used both to seat and unseat the valve. A thumb-piece,  $e$ , is formed upon the end of the rod or screw above the supporting-frame  $H$ , and a suitable packing is employed around the stem where it enters the box, to prevent the oil from escaping.

The oil from the chamber  $A$  can get to the bearings to lubricate them only by passing through the tube  $B$ ; and the main feature of my invention consists in conducting it from the chamber to the tube by means of one or more conduits,  $I$   $J$ , so constructed as to allow the free passage from the chamber to the tube while the cars are in motion, and to render such passage impossible when they are not in motion. Each tube extends from the side of the bulb  $b$  to the side wall of the box, where it bends and thence extends directly back past the bulb to the opposite side of the box, terminating there in an open mouth. One or more of the tubes may be employed, accordingly as the wheel is to rotate only in one direction or in both; and, if thought necessary, pairs of tubes

may be employed on each side of the bulb, so that if one gets stopped up the other will be likely to remain open.

The tubes may be constructed of any suitable material and applied in any convenient manner to the box, and their form may be such that their cross-section will be a square or triangle, or any other figure than a circle, if preferred. They extend in the line of the wheel's revolution, and their movement is endwise in a curved line around the axis of the hub. Now, when the wheel is at rest, it is evident that the oil cannot possibly escape from the box to the bearing, for if at rest in the position shown in Fig. 1 the whole body of the tubes I J is above the surface of the fluid. If bottom up, the conical outlet C is above the surface of the fluid, while if in an inclined position anywhere between these extremes, the mouth *i* of the tube I will be above the surface of the fluid, and all that enters the submerged mouth *j* of the other tube will before it can get to the bulb *b* be obliged to pass over the bend at the opposite end of the tube, which is also above the surface of the fluid, and effectually prevents the passage of the oil to the bulb in that direction. There is therefore no escape for the oil while the car is at rest, but while it is in motion the open mouths of the tubes will be continually dipping up the oil, which, as the wheel revolves, will run down the tube, pass over the bend, and reach the central tube, B, without hindrance.

It will be observed that the triangular shape of the box A not only adapts it to fit between the spokes, but renders the apparatus much more effective and certain of operation by enabling the tubes I J to be made longer and bringing their open mouths at the acute angle where the slightest inclination of the box raises one of them out of the fluid, no matter how full the box may be. When the oil is nearly exhausted, there might sometimes be a difficulty in its not running into the tubes in sufficient quantities to answer the purpose. To remedy this, inclined guides K K may be used, consisting of triangular-shaped plates having their lateral edges turned up slightly, as shown at *k k*, so as to form a kind of triangular chute, the end of which is directly in front of the open end of the tube on that side of the box. Whatever oil may run down on one side of chamber A when the wheel is in motion will run upon these guide-plates and be conducted to the end of the tube, into which

it will be poured as the wheel continues to rotate.

A filling-tube and screw-cap, L, are employed for the purpose of enabling the attendant to replenish the oil, and in the same part of the apparatus the air-vent may be placed.

The air-vent consists of a tube, *m*, closed at its lower end, and fixed to the cap L at its upper end containing a ball-valve, *n*, and having a minute air-hole about midway between its extremities and another through the cap L. When the box is in the upright position shown in Fig. 1, the ball drops below both holes and the air passes freely in to occupy the place of the lubricant that is fed to the journal, and when the box is inverted the ball lodges between the two air-holes and prevents the escape of the oil.

The lubricating apparatus herein described, although designed particularly for car-wheels, may be employed for ordinary carriage-wheels, and, indeed, for any wheel that rotates on a fixed axle.

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

1. The arrangement of one or more bent tubes, I J, or their equivalents, in a lubricating-box, in connection with an outlet through which the oil is delivered to the bearings of the wheel, when said tubes are constructed to operate as described, for the purpose specified.
2. The combination of one or more bent tubes, I J, as described, with the central tube, B, substantially as and for the purposes set forth.
3. The triangular box A, in combination with the central tube, B, and the conducting-tubes I J, when said parts are constructed to operate as described, and for the purposes set forth.
4. The combination of the box A, the straight tube B, the bent tubes I J, the stem E, and the plug-valve D, when constructed to operate as herein set forth.
5. The combined air-vent and filling-tube, consisting, essentially, of the screw-cap L, tube *m*, and valve *n*, all constructed to operate substantially as and for the purposes described.

J. M. PORTER.

Witnesses:

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