



# UNITED STATES PATENT OFFICE.

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## AXLE-LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 557,580, dated April 7, 1896.

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*To all whom it may concern:*

Be it known that we, WILLIAM H. HANNA and ALBERT H. MORROW, of South Omaha, in the county of Douglas and State of Nebraska, have invented certain useful Improvements in Axle-Lubricators; and we do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention has relation to a new and novel improved axle-lubricator which is more particularly adapted to be used in connection with that class of vehicles having hollow axles.

The object of this invention is to provide an axle-lubricator that shall be provided with a controllable oil-magazine, as will be described more fully hereinafter.

In the accompanying drawings, Figure 1 shows a central sectional view of a hollow axle, showing the hub in section, embodying our invention. Fig. 2 shows a front view thereof. Fig. 3 shows a detached view of the supporting-tube, while Fig. 4 is a sectional view of the magazine.

A represents a hollow tubular axle, of any suitable size and material, which is provided with the usual tapering axle-spindle B. At its forward end the spindle is provided with an interior screw-thread B' and the nut C, which threads into the spindle and prevents the hub working off. Working upon the spindle B is the hub D, provided with the usual bearing-box *b*, which works upon the spindle and is provided with a circumferential chamber *m*, which communicates with an oil-magazine F by tubes *e' e'*, as is clearly shown in Fig. 1. This chamber *m* of the bearing-box serves as a housing in retaining the lubricant, the feed-tubes *e' e'* communicating with the same.

Working within the forward threaded end of the spindle B is the tubular magazine-support E, a detail of which is shown in Fig. 3. In front this magazine-support is provided with the exteriorly and interiorly threaded collar *e*, which works within the threaded forward end of the spindle B. This magazine-

support is further provided with the two outwardly-extending feed-tubes *e' e'*, which pass through suitable openings of the spindle and so support the tubes within the forward end of the axle, said tubes preferably extending upward and into the chamber *m*, above mentioned as being formed by the spindle and bearing-box *b*.

Removably held within the stationary magazine-support E is the oil or lubricating magazine F, which properly comprises a thin metallic tube divided interiorly into two chambers 1 and 2 by means of the central disk *g*, as is shown in Figs. 1 and 4. At the forward end this tube is provided with a screw-cap *h*, adapted to thread within the collar *e*, and at the other end the tube is provided with the solid bottom *h'*. Revolvably held within the cap *h*, the central disk *g*, and the bottom *h'* is the feed-screw F', preferably of two diameters, as shown in Fig. 1, each diameter being threaded its entire length. This screw is preferably positioned slightly to one side of the center and is provided with the sliding packing-heads H' H', which thread upon the feed-screw F', one head being within each of the chambers 1 and 2. These heads are provided with the packing-rings *i*, so that a snug fit is insured within the chambers. When the screw F' is turned in either direction, the two packing-heads H' H' will be fed either forward or rearward within their respective chambers.

The magazine-tube has four openings (marked *k k* and *k' k'*), the first two, *k k*, being vent-holes near one end, respectively, of each of the chambers, and the remaining two near the remaining and preferably rearward end, respectively, of each of the chambers, the openings *k' k'* to register with the feed-tubes *e' e'* communicating with the circumferential chamber *m*.

The double-diametered screw F' is actuated until the disks H' H' within the chambers are forced into their farthest rearward position, the forward packing-disk abutting against the central dividing-disk *g*, while the rear disk abuts against the bottom *h* of the magazine. The screw F is given a double diameter, so that it can be readily worked through the first and into the second disk H'. It

is understood, however, that, if desired, this screw could be of one diameter, it simply being a mechanical convenience to give the same a double diameter, as shown. In this position  
 5 these disks would close the openings  $k k$ , which openings are nothing more or less than vent-openings. The disk  $g$  is provided with an opening  $x$  which leads into the rear chamber 2, the screw-plug  $n'$  closing this opening, while  
 10 the front cap  $h$  is also provided with a screw-plug  $n$  and feed-opening  $x$ . In charging the magazine it is first removed from the spindle. The screw-plugs  $n n'$  are then removed and the packing-heads  $H' H'$  are then forced  
 15 into their rear extreme positions by means of the screw  $F'$ , when the magazine is charged with a suitable lubricant through the feed-openings  $x x$  closed by means of the plugs  $n n'$ . The air-holes  $k k$  are in this position  
 20 closed by the disk  $H' H'$ . When the axle-spindle is to be lubricated, it is simply necessary to turn the screw  $F$ , when the disks  $H' H'$  will be fed forward, forcing the oil out of the magazine through holes  $k' k'$  into the  
 25 tubes  $e' e'$  and into the chamber  $m$ . To prevent these chambers 1 and 2 from becoming air-bound, we have provided the vent-openings  $k k$ , as is shown in Fig. 1. The magazine can be readily removed and recharged.  
 30 The axle, if desired, can be provided with an ordinary sand-cap  $C$ , as is shown in Fig. 1.

If desired, the supporting-tube  $E$  could be eliminated and the magazine-tube could be supported directly within the spindle. The

axle in this case could be provided with perforated rings which would have openings communicating with the chamber  $m$ . However, we prefer using the device as disclosed.

Now having thus described our said invention, what we claim as new, and desire to secure by United States Letters Patent, is—

1. The combination with a hollow axle-spindle, of a double-chambered lubricating-magazine removably held within said spindle and provided with air-vents and with feed-tubes leading from said magazine to without  
 45 said axle-spindle, a feed-screw within said magazine, and heads threading upon said screw, all substantially as and for the purpose set forth.

2. The combination with a hollow axle-spindle, of a tubular magazine-support within said hollow axle-spindle, a tube leading from said magazine-support to without said  
 55 hollow axle-spindle, a magazine removably held within said tubular magazine-support, and having an air-vent and an opening registering with said tube, an operating-screw within said magazine and a head removable  
 60 upon said screw, all substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM H. HANNA.  
 ALBERT H. MORROW.

Witnesses:

A. J. SCHMIT,  
 G. W. SUES.