(No Model.)

J. MULLIGAN.

AXLE LUBRICATOR.

No. 490,300. Patented Jan. 24, 1893.

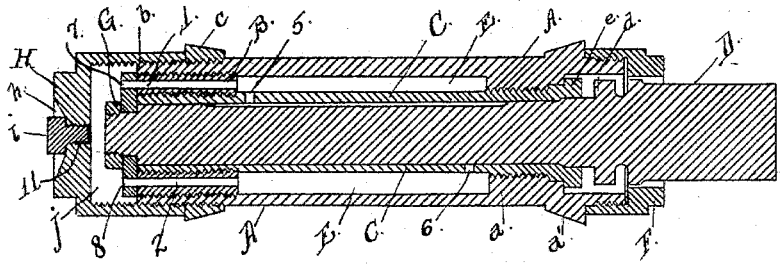

FIG. 1.

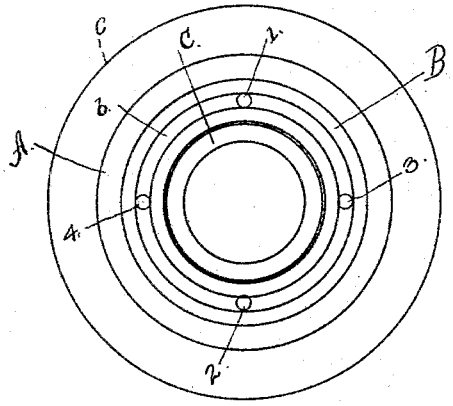

FIG. 2.

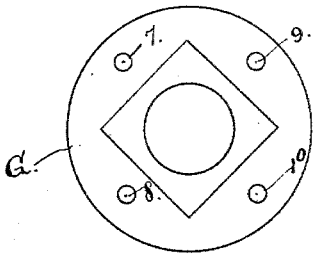

FIG. 3.

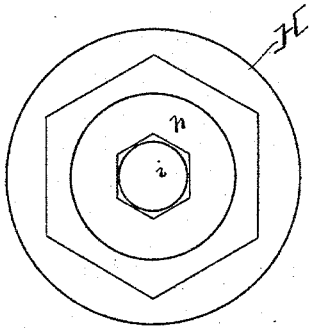

FIG. 4.

WITNESSES.

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AXLE-LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 490,300, dated January 24, 1893.

Application filed May 11, 1892. Serial No. 432,688. (No model.)

To all whom it may concern:

Be it known that I, JOHN MULLIGAN, a citizen of the United States, residing at the Soldier's Home, in the county of Montgomery and State of Ohio, have invented a new and useful Improvement to the Self-Oiling Wheel (Patent No. 436,876) of which I am the inventor, and the following is a specification.

My invention relates to useful improvements in axle-boxing, and more particularly to axle-lubricating boxes.

The object of said improvements is to furnish an axle-box susceptible of a practicable, therefore general use, in connection with any manner of hub,—either of wood or iron; in the latter application it is adapted to use on tram cars, in mining regions; in the former, it is adapted to use on road vehicle wheels of all kinds.

To suit my improved axle-box to any of the various uses that it may be applied, but slight modifications in the external configurations, are required, and which may be made without departing from the essential features of my invention.

Chiefly, my improvements consist of means for introducing a lubricating substance to the spindle of an axle, through an exterior inlet that is always in the same accessible position, regardless of the turn of the wheel or the position of the hub. In order to have the inlet in a convenient position, for the introduction of the lubricant, to the channels leading to the chambers or reservoirs, I have located it on a horizontal plane with the axis of the spindle, thereby obviating the necessity of having an undesirable projection extending beyond the outer periphery of the box or hub, or of detaching any of the caps when it becomes necessary to charge the oil chambers.

Proceeding now to a minute description, attention is directed to the drawings forming a supplement to the specification, on which will be found the same letters and figures referring to corresponding parts throughout the several views.

Figure 1, is a longitudinal section of the box with the spindle incased therein. Fig. 2 an end view, full size, of the box, with the screw-cap, nut washer, and spindle detached. Fig. 3, a plan view, full size, of the nut-washer, detached. Fig. 4, a plan view full size, of the screw-cap, detached.

The letter A, represents the box, the inner end constructed with a shoulder (*a*) projecting inwardly from the interior surface thereof, and screw-threaded, and a flange (*a'*) extending around the outer surface of said box. This end of the box is also provided with the well known features common to all devices of this character, therefore not shown in the drawings; the outer end of the box is provided with internal and external screw-threads, and a detachable screw-threaded flange (*c*).

B, represents an internally and externally threaded detachable shoulder engaging with similar threads on the interior of the box, and forming an interior shoulder in this end of said box, similar in extent and form, to the shoulder (*a*); this shoulder has an annular channel or groove (*b*) on the outer front end, from which extend a series of horizontal passage ways or conduits 1, 2, 3, 4. This shoulder may or may not be made integral with the box, the drawings show it as detachable, but I do not desire to limit myself to this separate construction. This completes a description of the box or outer casing.

C, is an inner tube, provided with openings 5, and 6, in the opposite sides thereof, and screw-threads on both ends, which are adapted, respectively, to engage with the screw-threads of the interior shoulder (*a*) and shoulder B, this tube has a flange (*e*) abutting against the shoulder (*a*). By the conjunction of the said shoulders and the tube, an oil chamber or reservoir E, is formed by the inclosed space between the outer surface of the tube and the inner surface of the box, and the shoulders.

An axle spindle D, with a flange (*d*) abutting against flange (*e*) of the inner tube. A screw cap F, having means for detaching it, incloses this end of the box; at the outer end of the box, a nut-washer G, is designed to engage with the threads on the outer end of the spindle D, and be tightened against the end of the box. This nut-washer is provided with a series of apertures 7, 8, 9, 10, corresponding to the passage-ways or conduits in the shoulder B, and which, when the washer is secured

against the box as just described, open into the annular channel in the shoulder B; finally, H, represents a screw cap designed to inclose this end of the box and afford means for introducing oil there-through; this cap is provided with a hexagon-shaped extension on the outer end, cupped out in a manner forming a concaved surface (*h*)—through the center of this cap an aperture 11, extends which is opened or closed by means of a nut (*i*) and through this opening the lubricant is fed, to what may be termed, the primary chamber (*j*). In the application of the box to tram cars, or other iron hubs, it would be necessary to provide means for unscrewing the cap H, on the outer periphery thereof, thus dispensing with the hexagon extension on the end, but the central aperture 11, would remain as herein described. This completes a perfect dust-proof, and otherwise practical axle-lubricator. The head of the nut (*i*) need not project beyond the surface of the cap, therefore it will be protected from breaking or accidental loosening by coming in contact with anything that would lead to these results.

From the foregoing description, the manner of carrying out the objects of the invention is apparent,—but briefly stated,—the lubricant is introduced through the aperture 11, to the primary chamber (*j*) thence through the apertures 7, 8, 9, 10, and passage ways or conduits 1, 2, 3, 4, to the secondary chamber E, thence through openings 5, and 6, in the inner tube C, to the spindle D.

It has been found by experience that an inner tube provided with these outlets is most satisfactory, and supplies the spindle with all necessary lubricant.

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

1. In an axle-lubricator, the combination with the box and the shoulders *a* and B, the latter provided with the annular channel *b*, in the outer end thereof, and horizontal longitudinal passage-ways extending from said channel, of the nut-washer G, provided with apertures registering with the passage-ways in said shoulder, and a screw cap provided with a central opening, said screw cap adapted to inclose the outer end of the box, thereby forming the primary oil chamber *j*, and an inner tube provided with openings 5 and 6, said tube adapted to engage at both ends with the interior shoulders *a* and B, and thereby form the secondary oil chamber E, substantially as herein described.

2. In an axle-lubricator, the combination with the spindle, of a box provided with an interior shoulder at its inner end and the interior shoulder B at its outer end, the latter shoulder provided with the annular channel *b*, and passage-ways or conduits extending longitudinally from said channel, and the nut-washer G provided with apertures registering with the passage-ways in the shoulder B, an inner tube provided with openings 5 and 6, said tube adapted to engage with the shoulders of the box and thereby form the secondary oil chamber E, between the inner surface of the box and the outer surface of the tube, the screw cap provided with a central opening, and the concave surface *h*, said screw cap adapted to inclose the outer end of the box thereby forming the primary oil chamber *j*, between the outer surface of the nut washer and the inner surface of the cap, substantially as herein described.

3. An axle boxing consisting of the outer casing A provided with interior screw threaded shoulders *a* and B, the latter shoulder provided with the annular channel *b* in the outer end thereof, and the longitudinal passage-ways 1 2 3 4 leading from said channel, the inner tube with openings 5 and 6 and flange *e*, said tube secured in the outer casing by its screw threaded ends engaging with the shoulders of the casing, whereby the secondary oil chamber E is formed between the tube and the casing, the nut washer G provided with apertures registering with the passage-ways in shoulder B, said nut washer adapted to engage with the spindle and maintain the same within the box, a screw cap adapted to inclose the outer end of the box, and form the primary oil chamber *j*, said screw cap provided with a nut-closing central opening through which the oil is conveyed to the primary chamber from whence it is conveyed to the secondary oil chamber through the herein described passage-ways, as set forth.

4. The combination with the outer casing provided with an interior screw threaded shoulder at its inner end, and the screw threaded shoulder B, at its outer end, the latter provided with the annular channel *b*, and horizontal longitudinal passage-ways or conduits extending from said channel, the nut washer provided with apertures registering with the passage-ways in said shoulder B, when said nut washer is engaged with the spindle, the screw cap H, with central opening, adapted to inclose the outer end of the box and thereby form the primary oil chamber *j*, the tube C with flange *e* at its inner extremity and screw threads on the ends thereof, to engage with the shoulders of the outer casing, whereby the secondary chamber E is formed, and the openings 5 and 6 in said tube through which the oil is conveyed from said secondary chamber to the spindle, substantially as herein described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN MULLIGAN.

Witnesses:
S. F. HARVEY,
RUFUS CONGROVE.