

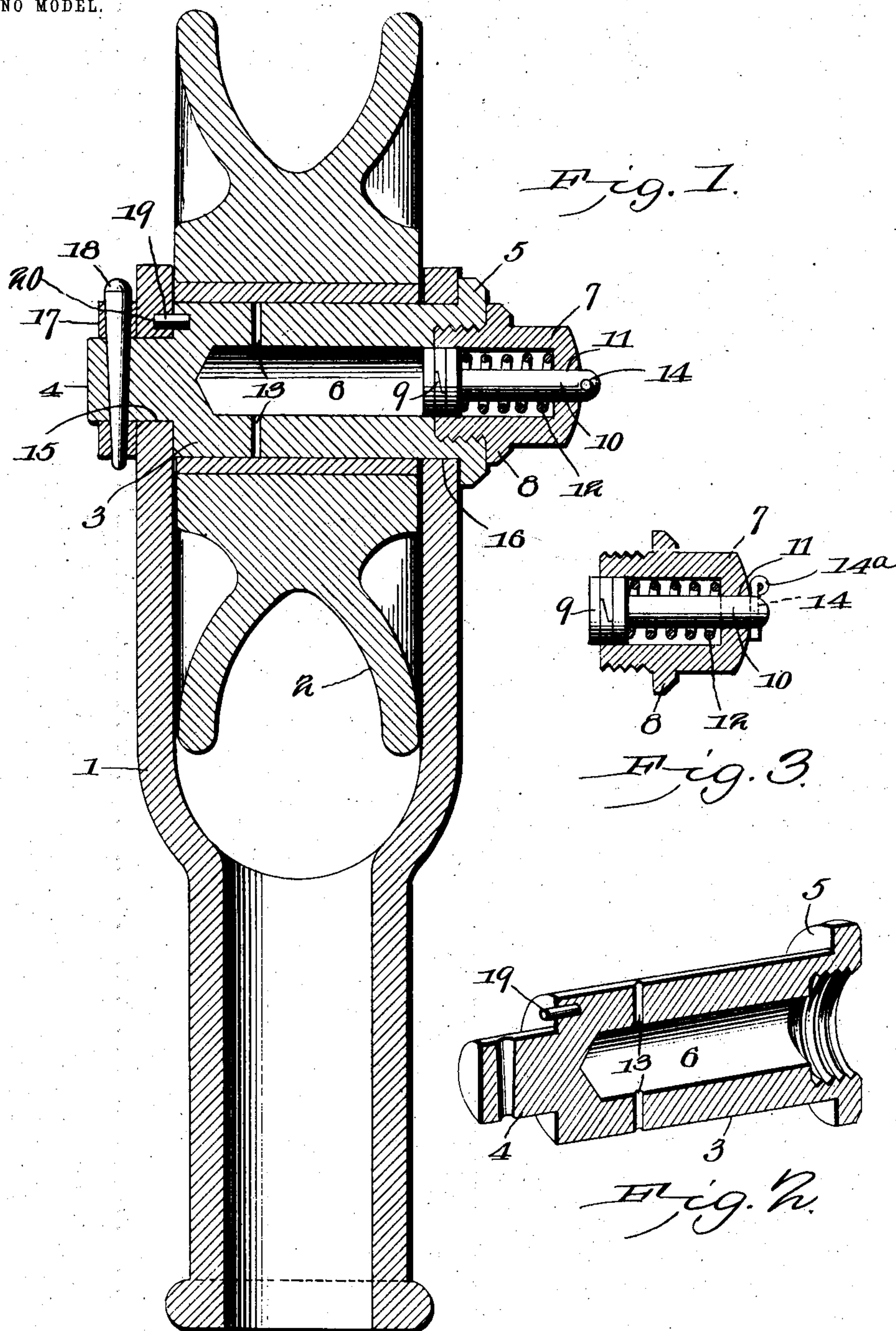
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P. McNAUGHTON.
LUBRICATING AXLE.

APPLICATION FILED MAY 24, 1904.

NO MODEL.



Witnesses

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UNITED STATES PATENT OFFICE.

PETER McNAUGHTON, OF CHARLOTTE, MICHIGAN.

LUBRICATING-AXLE.

SPECIFICATION forming part of Letters Patent No. 771,318, dated October 4, 1904.

Application filed May 24, 1904. Serial No. 209,492. (No model.)

To all whom it may concern:

Be it known that I, PETER McNAUGHTON, a citizen of the United States, residing at Charlotte, in the county of Eaton and State of Michigan, have invented a new and useful Lubricating-Axle, of which the following is a specification.

This invention relates to lubricators, and is designed to provide an improved lubricating-axle capable of general use, but particularly designed for the support of a trolley-wheel.

It is an important object of the invention to arrange the axle to contain a lubricating-grease under pressure, so as to obtain a forced feed thereof to the bearing-surfaces of the axle and the wheel, and to afford convenient access to the interior of the axle for introducing the lubricant.

Another object of the invention is to have the axle arranged for convenient assemblage with an ordinary trolley harp and wheel and to provide for the quick removal of the axle for purposes of repair and the like.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a longitudinal sectional view of a trolley wheel and harp equipped with the axle of the present invention. Fig. 2 is a detail sectional perspective view of the axle removed. Fig. 3 is a detail sectional view of the removable cap which carries the spring-pressed plunger for applying pressure to the lubricant.

Like characters of reference designate corresponding parts in each and every figure of the drawings.

While the present invention is capable of general use, it has been especially designed for trolley-wheels, and to illustrate this embodiment of the invention there have been shown in the accompanying drawings an or-

inary form of trolley-harp 1 and a conventional wheel 2, mounted upon the harp by means of the present axle.

In carrying out the present invention there is provided an axle or spindle 3, terminating at one end in a reduced stud 4 and having its opposite end provided with an annular flange 5. Throughout the longitudinal center of the axle extends a bore or chamber 6 to contain the lubricating-grease. The inner and closed end of this chamber is next to the stud 4, while its opposite end pierces the flanged end of the axle and is enlarged and screw-threaded. A tubular closure-plug 7 has its inner end externally screw-threaded to fit the screw-threaded socket in the axle and is provided with an external annular flange 8 to bear against the flanged end of the axle. Within this tubular plug works a follower or plunger 9, which is provided with a stem 10, slidably projected through an opening 11 in the outer end of the plug, with a helical spring 12 embracing the stem and bearing in opposite directions against the plunger and the closed end of the cap, thereby to maintain a tension upon the plunger, which in turn presses against the lubricating-grease within the chamber 6, so as to force the grease outwardly through one or more radial openings 13, formed through the axle. It will of course be understood that the closure plug or cap 7 is removed from the axle to permit of the lubricating-grease being introduced into the chamber 6, and to facilitate this operation the stem of the plunger is provided with an opening 14 for the reception of a suitable pin 14^a to lie against the outer end of the closure and hold the plunger within the cap against the tension of the spring, and thereby to maintain the plunger assembled with the cap when removing and applying the same. After the cap has been fitted to the axle the pin should of course be removed, so as to free the spring and permit the plunger to press against the lubricating-grease. It will here be explained that the projected end of the stem 10 is accessible for manual adjustment to overcome sticking of the plunger.

To accommodate the present axle to a trolley-harp, the arms thereof are provided with aligned openings 15 and 16, of which the open-

ing 16 corresponds substantially in diameter to the axle or spindle in order that the latter may be passed endwise through the opening 16 and the hub of the trolley-wheel, with its stud 4 projected through the smaller opening 15. A washer 17 is then fitted upon the projected portion of the stud, and a tapered pin 18 is driven through corresponding openings in the washer and the stud. It will here be observed that the flange 5 lies at the outer side of one of the members of the trolley-harp, while the washer 17 lies at the outer side of the other member, whereby the axle or spindle is held against endwise movement, but is capable of being removed by driving out the pin 18 and removing the washer 17. To prevent rotation of the axle or spindle, a pin or projection 19 is provided upon the end which has the stud 4, and the inner face of the adjacent trolley-harp member is provided with a socket 20 for the reception of the pin. When the members have thus been assembled, the axle or spindle forms the desired stationary pivotal support for the trolley-wheel and at the same time is capable of containing a lubricating-grease under a forced feed to insure an effective lubrication of the bearing of the wheel. When required, additional grease may be conveniently introduced into the chamber 6 by removing the closure 7 in the manner hereinbefore described without removing the axle or spindle, and therefore the trolley-wheel may be maintained in a proper lubricated condition.

Among the important advantages of this invention it will be noted that no change whatsoever is necessary in the trolley-wheel and no material change is required in the trolley-harp other than having one of the bearing-openings therein larger than the other and to provide the socket 20 for the reception of the pin 19. Furthermore, pressure is constantly applied to the lubricant, so as to secure a forced feed thereof, and there are no external projections liable to become broken when the trolley-wheel jumps the trolley-wire.

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

1. A lubricating-axle having an internal lubricant-containing chamber with a passage leading therefrom to the exterior of the axle, a removable closure for the chamber, a plunger working in the chamber and having a stem slidably projected through an opening in the closure, and a helical spring embracing the stem and bearing against the closure and the plunger to maintain a pressure upon the lubricant and effect a forced feed thereof, the projected end of the stem being accessible for manual adjustment to prevent sticking of the plunger.

2. A lubricating-axle having an internal lu-

bricant-containing chamber piercing one end thereof, a tubular closure-plug fitted in the open end of the chamber, a plunger working in the hollow closure and provided with a stem working slidably through an opening in the outer end of said closure, and a spring interposed between the plunger and the closed end of the closure to effect a pressure upon the lubricant, the outer end of the stem being accessible for manual adjustment to overcome sticking of the plunger.

3. The combination with a trolley-harp having corresponding openings of different diameters, of a trolley-wheel, an axle having one end fitted in the larger opening of the harp and its opposite end provided with a reduced stud fitting in the smaller opening, a socket and projection connection between the stud end of the axle and the adjacent trolley-harp member, means upon the projected end of the stud to prevent endwise displacement of the axle, said axle being provided with an internal lubricant-containing chamber with a passage leading therefrom to the exterior of the axle, said chamber piercing the larger end of the axle, a removable closure for the open end of the chamber, and a spring-pressed plunger carried by the closure and working in the chamber to effect a forced feed of the lubricant.

4. A lubricating-axle having an external flange at one end and reduced stud at the opposite end, said axle also being provided with a lubricant-containing chamber piercing the flanged end of the axle and having a passage leading from the chamber to the exterior of the axle, a tubular closure-plug removably fitted in the open end of the chamber, a plunger working in the closure-plug and having a stem projected through an opening in the closed outer end thereof, a spring within the plug and bearing against the latter and the plunger to effect a forced feed of the lubricant, and a projection upon the stud end of the axle.

5. A lubricating-axle having an internal lubricant-containing chamber with a passage leading therefrom to the exterior of the axle, a removable closure for one end of the chamber, and a spring-pressed plunger having its stem working slidably through an opening in the closure and provided with a transverse opening capable of being located upon the outer side of the closure by withdrawing the plunger to receive a pin for holding the plunger upon the closure against the action of the spring.

6. A lubricating-axle having an internal lubricant-containing chamber with a passage leading therefrom to the exterior of the axle, a removable closure for the outer end of the chamber, a spring-pressed plunger having its stem working slidably through an opening in the closure with its outer end exposed for manual adjustment and provided with a trans-

verse perforation capable of being located
upon the outer side of the closure by with-
drawing the plunger, and a pin for removable
insertion into the perforation to engage the
5 outer side of the closure and thereby retain
the plunger upon the closure when the latter
has been removed from the axle.

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

PETER McNAUGHTON.

Witnesses:

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