

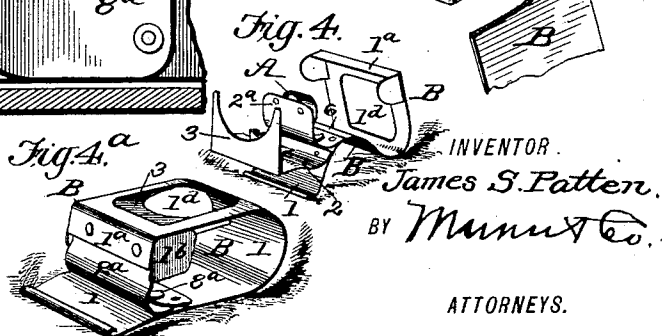
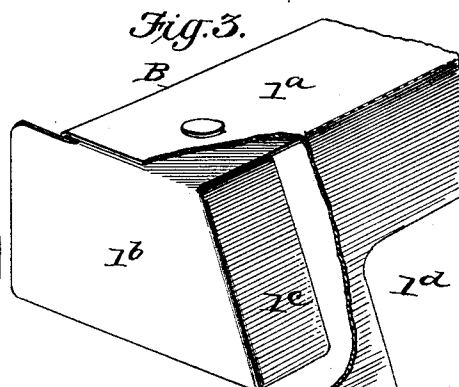
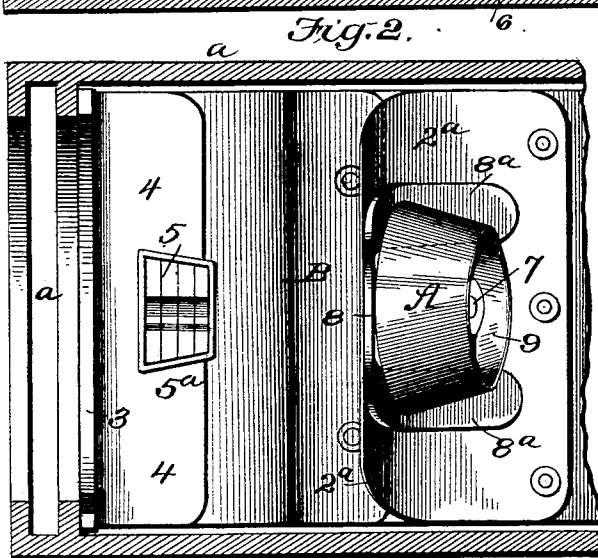
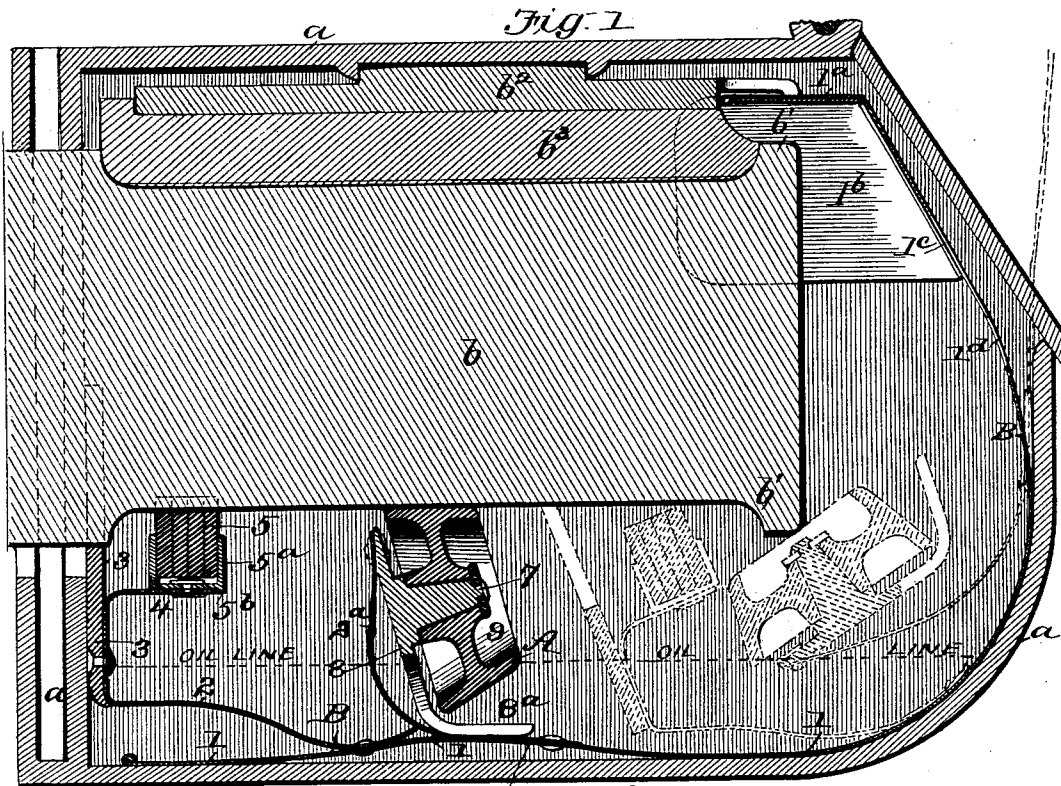
(No Model.)

3 Sheets—Sheet 1.

J. S. PATTEN.
CAR AXLE LUBRICATOR.

No. 586,272.

Patented July 13, 1897.



WITNESSES:
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ATTORNEYS.

(No Model.)

3 Sheets—Sheet 2.

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a *Fig. 5.*

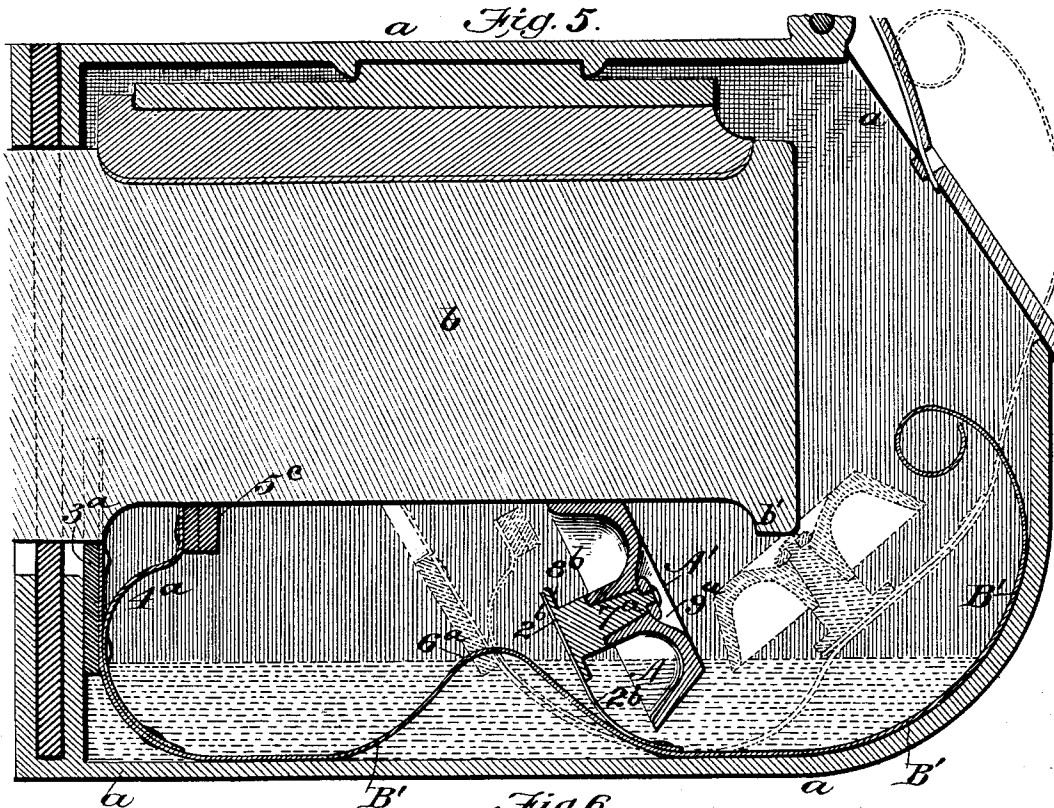
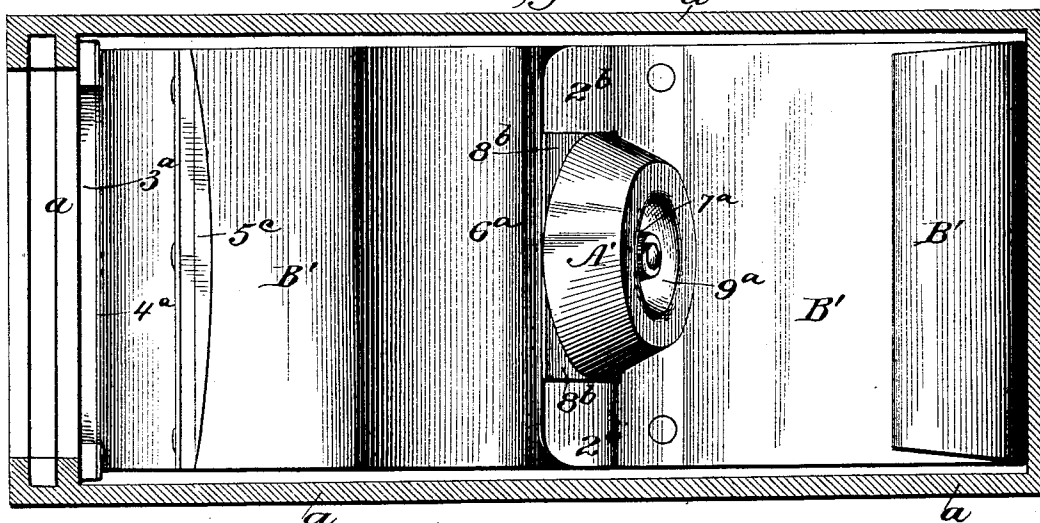


Fig. 6.



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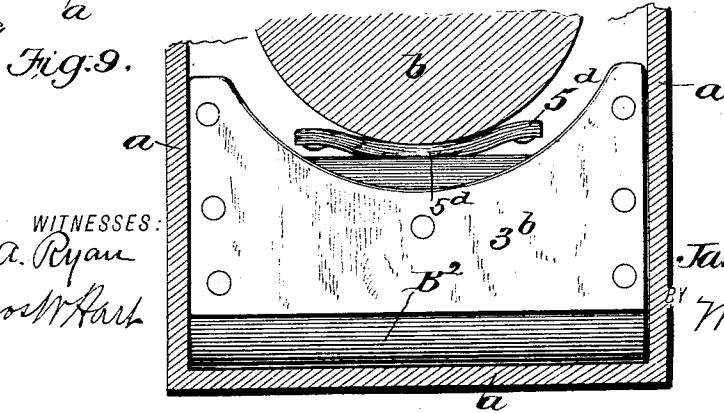
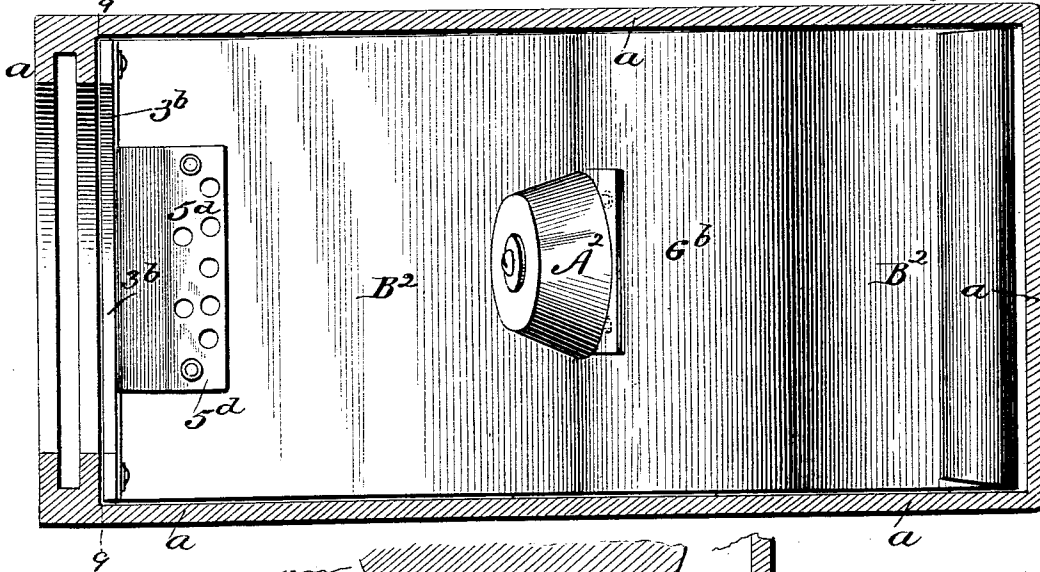
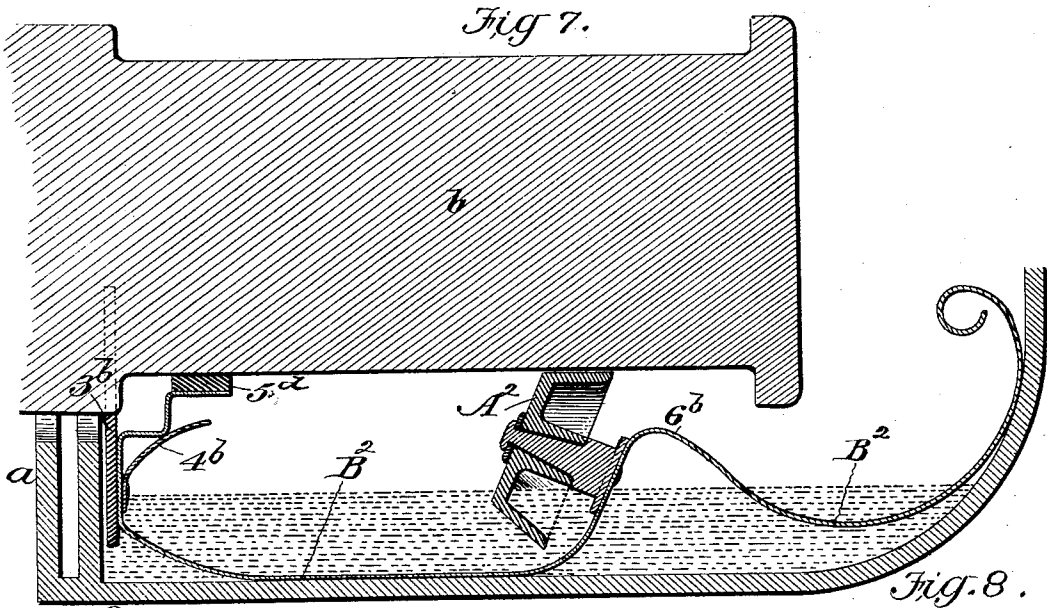
(No Model.)

3 Sheets—Sheet 3.

J. S. PATTEN.
CAR AXLE LUBRICATOR.

No. 586,272.

Patented July 13, 1897.



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UNITED STATES PATENT OFFICE.

JAMES S. PATTEN, OF BALTIMORE, MARYLAND.

CAR-AXLE LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 586,272, dated July 13, 1897.

Application filed October 21, 1896. Serial No. 609,500. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. PATTEN, of Baltimore city, in the State of Maryland, have invented a new and Improved Car-Axle Lubricator, of which the following is a specification.

I have made various practically successful improvements in lubricators of the class in which rollers are employed for taking up oil and transferring it to an axle-journal. Rollers are very effective for this purpose when properly arranged and elastically supported. It is, however, a matter of great importance economically, as well as one of still greater difficulty mechanically, to prevent escape of the lubricant at the ends of the axle-box, which occurs either by its "creeping" along the journal or by overflow when the car-truck lurches or sways laterally. To prevent such result and the consequent waste of oil, I have adopted various expedients, the chief and most successful being devices in the nature of baffle-plates arranged in the axle-box and wipers or scrapers acting on the journal.

In my present invention I have aimed, first, at combining in one simple and durable appliance the best construction and arrangement of a roller for applying lubricant to an axle-journal with the best means, in the form of baffles and wipers, for preventing its escape and waste, and, secondly, I have adapted such appliance to be easily inserted in and removed from an ordinary car-axle box, which serves as the lubricant-holder, and to retain its due working position therein without the aid of supplemental fastenings of any kind.

To these ends I have devised and put in successful practical use on cars in actual service the appliance hereinafter described, and shown in accompanying drawings, in which—

Figure 1 is a central longitudinal vertical section of a car-axle journal and box with my preferred form of lubricator arranged therein. Fig. 2 is a horizontal section of a portion of the axle-box and a portion of my improved appliance in plan. Fig. 3 is a broken perspective view of an end portion of the appliance. Figs. 4 and 4^a are perspective views of the lubricating appliance, showing it normal and folded, respectively. Fig. 5, Sheet 2, is a central longitudinal section of a car-axle box with a modified form of appliance. Fig. 6 is

a horizontal section of the parts shown in Fig. 5. Fig. 7, Sheet 3, is a central vertical longitudinal section showing another modification. Fig. 8 is a horizontal section of the parts shown in Fig. 7. Fig. 9 is a vertical transverse section on line 9 9 of Fig. 8.

I will first describe the preferred form of my invention, which is shown in Figs. 1, 2, 3, 60 and 4.

The axle-box *a* and journal *b* are of the usual kind or type in use on steam-railroads, the axle-box being utilized as the holder or reservoir for the lubricant and waste or packing entirely dispensed with.

Referring to Fig. 1, the chief parts of my invention are a roller *A* and a plate-spring *B*, which is so curved and otherwise constructed as to form a series of baffles or oil-guards, the whole constituting an appliance that may be readily inserted in and removed from the axle-box *a*, but retaining its due position therein without supplementary fastenings. The plate-spring *B* is of nearly the same width as the chamber of the axle-box *a*, but of greater length, its upturned ends being so constructed as to perform certain functions, as hereinafter described.

My preferred form of spring is composed of the body or main portion 1, a rear end portion 2, that supports a dust-guard 3 and wiper 5, and an upward-projecting middle portion 2^a, that supports the roller *A*. The said main portion or body 1 of spring *B* has normally an S shape, as shown in Fig. 4; but when in use and under tension, as shown in Fig. 1, the central bend 6 is depressed and the form of the spring otherwise changed.

The supplemental roller-supporting spring 2^a has a horizontal base or flange which is riveted to the bend 6 of the main spring 1. The roller *A* is mounted on a journal 7, which projects from a metal plate 8, preferably a casting, that is riveted to the free upper end of the supplemental spring 2^a. The journal 7 is shown formed integrally with the body of the casting 8, and the latter is bifurcated, its divergent branches 8^a being curved and extended forward and resting on the base or flange of the roller-supporting spring 2^a. Thus the branches 8^a resist the tendency of the spring 2^a to carry the roller *A* forward out of due position, and space is provided be-

tween said branches for the lower edge of the roller.

The journal 7 projects upward at a slight angle and toward the front of the axle-box *a* and is tapered and fits in a corresponding hub in the roller A, so that wear of the parts due to rotation of the roller will be taken up automatically by the latter as it moves back on the journal.

The roller may be secured on its journal 7 by a washer and upsetting or riveting the outer end of the journal, as shown; but it is obvious a nut or other fastening may be employed. The roller A has the form of a truncated cone, which adapts its periphery to run in flat contact with the axle-journal *b*. It is recessed at both ends for sake of lightness and economy of material; but the recess 9 in the smaller end subserves two functions in that it enables the roller to more easily pass the collar *b'* of the journal when the appliance is being inserted in or removed from the axle-box, and it serves as a holder for partly congealed or solidified oil, which when a car begins to move soon becomes warmed and liquefied as the roller rotates, so that the journal *b* is sooner lubricated than would be otherwise practicable.

The supplemental rear spring 2 is riveted to the main spring 1 at a point just in rear of the roller-spring 2^a, and its free end is recurved or bent angularly backward to form a flat end portion, to which the dust-guard is riveted, and a horizontal flange or ledge 4, upon which the wiper 5 is supported. The dust-guard 3 is preferably formed of a plate of vulcanite, while the wiper 5 is composed of pieces of leather forced into a metal box or socket 5^a, that is secured to the flange 4 by a single rivet and provided with a base lip or flange 5^b, that overhangs and abuts the free edge of said flange 4, Fig. 1, so that the socket is prevented from turning. When the leather pieces 5 become worn, so as to be no longer serviceable, they may be readily extracted and new ones substituted.

The dust-guard 3 works in contact with the shoulder of the axle, and the wiper 5 with the journal proper, *b*, so that the function of the wiper in removing lubricant is supplemented by the dust-guard. In other words, the wiper 5 removes the main portion of the surplus oil from the journal, and the dust-guard 3 prevents escape of such portion as is not removed by the wiper.

In addition to the functions of the springs 2 and 2^a, as before stated, they serve also as oil-baffles for obstructing the flow or rush of oil in the axle-box *a* when the car-truck lurches or sways laterally and preventing its access to the shoulder of the journal. It is further noted that the slight upward bend 6 of the body 1 of spring B likewise contributes to this result.

The front end of the main spring 1 extends above the journal-collar *b'* and has a horizontal or flat top 1^a, that overlies said collar

and abuts the wedge *b*², resting on the brass or bearing *b*³, as shown in Fig. 1. Said top has pendent side pieces 1^b, which are provided with rear flanges 1^c, that are parallel to and in contact with the body 1 of the spring. Thus the top portion of the latter is so constructed as to form practically a hood, which incloses the upper end portion of the journal *b* and serves to prevent oil being thrown off from the latter against the top or sides of the axle-box *a*, and thereby prevents it reaching the axle-box lid and escaping through the opening at that point.

The front central portion of the spring is cut out at 1^d to allow visual inspection of the axle-box for ascertaining the depth of the oil and to permit convenient introduction of an additional supply of oil when required. It will be noted, however, (see Fig. 1,) that the said opening 1^d does not extend below that in the front of the axle-box *a* and that the spring 1 curves toward the axle-journal *b*, so that the part immediately below said opening forms a baffle, which aids in preventing escape of oil at that point when the truck lurches.

From the foregoing description it is apparent that the roller A rotates in elastic contact with the axle-journal *b*, and its lower edge being always immersed to a greater or less depth in the oil the latter is constantly taken up and transferred to the journal in copious degree; further, that the main portion of the oil which flows or "creeps" inward along the journal will be scraped off or removed by the spring-supported wiper 5, and such other portion as escapes the latter is obstructed and removed by the combined wiper and baffle or dust-guard 3, while the escape of oil at the front of the axle-box is also prevented.

The appliance as a whole retains its place in the axle-box *a* by reason of the elastic pressure of the end portions 1 and 4 of the spring B against those of the box and the elastic pressure of the roller A on the journal *b*, and the same end pressure causes the hood to press backward against the wedge *b*². Hence supplemental fastenings or devices of any kind for holding the appliance in due working position are wholly unnecessary.

The removal of the appliance from the axle-box *a* is effected by drawing the hood of the spring B outward and forward through the front opening of the axle-box and then pulling upward. (See dotted lines, Fig. 1.) In such case the supplemental springs 2, 2^a, and 4, supporting the roller and wiper, are depressed and the bend 6 flattened in passing the collar *b'* of the axle-journal *b*. The operation is greatly facilitated by the cavity or conical depression 9 in the smaller end of the roller A, which receives the convexity of the collar *b'*, as shown.

The operation of inserting the appliance in the axle-box is practically the reverse of the extraction, pressure being applied to the curved front end of the spring 1, which lat-

ter is depressed and flattened, as in the case of removal.

I thus provide a simple, economical, durable, and functionally-effective lubricating appliance for use in an ordinary axle-box, which removes surplus oil from the journal and prevents its waste, besides being easily insertible and removable and adapted to keep its normal position by reason of the construction and arrangement of the same parts that lubricate and wipe the journal and confine the oil in the box.

When the appliance is to be transported or stored, it may be folded as shown in Fig. 4^a, and thus made more compact as well as adapted to resist pressure and be handled easily and safely. In such case the flange 4 hooks over the small end of roller A, and the top portion 1^a of the hood hooks over a portion of spring 2 and remains self-locked or fastened.

In the modification shown in Figs. 5 and 6, Sheet 2, the following changes are made: The body of the spring B has a more abrupt upward bend 6^a and an integral rear end portion 4^a, which supports the dust-guard 3^a. The roller A' is attached to a casting 8^b, having no branches, and the supporting-spring 2^b is riveted to the main spring at a point in front of the bend 6^a, while the journal-hood is dispensed with and the front end of the spring curved inward and rolled to form a baffle, and likewise a handle for convenience in withdrawing and inserting the appliance. The wiper 5^a is also supported by a supplemental spring that is riveted to the main spring. The journal 7^a is also shown constructed separately from the casting 8^b and riveted to it. The cavity 9^a in the smaller end of the roller A' is also of less depth and capacity than that illustrated in Figs. 1 and 2.

In Figs. 7 and 8, Sheet 3, the roller A² is attached directly to rear side of the abrupt bend 6^b of the spring B², and the rear end of the latter is formed and the dust-guard 3^b riveted to it, substantially as shown in Figs. 1 and 2. A curved supplemental baffle-plate 4^b, Fig. 7, is attached below the wiper 5^a, which consists of a piece of perforated leather arranged and held stretched horizontally, as shown in Figs. 8 and 9.

The main features of operation and manipulation of both the modified forms of lubricating appliance are substantially the same as those of the preferred form, and will be readily understood without further description.

I desire it understood that I do not propose to limit myself in all cases to the details of construction, arrangement, and combination above described, since variations may be made within the broad scope of my invention. For example, so far as relates to certain features and functions, I may substitute for the roller, as a means for transferring lubricant to the journal, some fibrous or absorbent ma-

terial, which may be pendent in the oil and carry it up into contact with the axle by capillary attraction, and the lubricating appliance may be used in a form of lubricant-holder other than an ordinary car-axle box.

What I claim is—

1. The improvement in journal-lubricating appliances, which comprises a plate adapted to fit loosely in an axle-box and having its rear end projected upward and rearward, and extended inward, thus forming a baffle, as shown and described.

2. A baffle for a car-axle box which comprises a removable spring-plate, made of practically uniform width, and adapted to fit in said box, and having upward-projecting end portions and a centrally-projecting portion, whereby three transverse baffles are produced that extend across the box, as shown and described.

3. A lubricating appliance for use as specified, which comprises a removable plate-spring having an upturned end portion, whereby it is adapted to serve as a baffle, and a device permanently attached to and carried by said spring, for taking up and transferring lubricant to the journal, substantially as shown and described.

4. A lubricating appliance for use as specified, which comprises a plate-spring adapted to rest on the bottom of the axle-box and having an upturned end portion to serve as a baffle, and a roller permanently attached to and elastically supported by the spring, substantially as shown and described.

5. A lubricating appliance comprising a spring-plate having a body portion provided with a central upward bend, an upward-curved spring a² attached to such body portion, and a lubricant-applying device attached to such upward-curved spring, as shown and described.

6. A lubricating appliance for use as specified, which comprises a spring having its ends upturned to serve as baffles, and a roller permanently attached to and elastically supported in an inclined position by said spring, substantially as shown and described.

7. A lubricating appliance for use as specified, which comprises a conical roller arranged with its axis inclined upward, and a spring-support for said roller, substantially as shown and described.

8. A lubricating appliance for use as specified, which comprises a spring adapted to rest upon the bottom of an axle-box, and having its ends extended and curved upward, to serve as baffle-plates, and provided with a transverse, central, upward bend, and a conical truncated roller mounted upon an inclined journal, supported on the spring, substantially as shown and described.

9. A lubricating appliance for use as specified, which comprises a spring adapted to rest upon the bottom of an axle-box, a journal attached to the spring, and inclined upward and

tapered as specified, and a conical roller having a taper-bore hub and mounted on said journal, as shown and described.

10. A lubricating appliance, comprising a
5 plate-spring adapted to be used in an axle-box, and having an upward-projecting transverse portion, a metal piece secured to the upper end of such transverse portion, and provided with a journal, and a horizontal base
10 or foot that bears on the spring proper, and a roller mounted on said journal, as shown and described.

11. A lubricating appliance for use as specified, which comprises a plate-spring having
15 a central, upward-projecting portion 2^a, attached to it, for supporting a roller, and a rear spring 2, which is secured to the main spring adjacent to such central portion, and whose front end projects beneath and into
20 contact with spring 2^a, as and for the purpose specified.

12. A lubricating appliance for use as specified, which comprises a spring and a conical, truncated roller having a recess in its face or
25 narrower side, as and for the purposes specified.

13. A lubricating appliance for use as specified, which comprises a plate-spring having its front end upturned and recurved, as shown
30 and described, to adapt it to serve as a hood, oil-guard, and handle, as specified.

14. A combined spring-baffle and oil-guard, comprising a spring-plate adapted to fit in an axle-box, and having an upward-extended
35 front portion which overlies the upper portion of the journal, as shown and described.

15. A lubricating appliance comprising a spring-plate whose body portion is adapted to rest upon the bottom of an axle-box, and
40 having its front end extended upward and

provided with a top flange and pendent side flanges, or wings, constituting a hood for the end of the axle-journal, as shown and described.

16. The plate-spring for use in an axle-box as specified, having its front end provided with pendent wings having lateral flanges that are adjacent to or bear upon the main portion of the spring, as shown and described.

17. A lubricating appliance for use as specified, which comprises a plate-spring having its rear end curved and extended upward, and a combined baffle and wiper, or dust-guard, elastically supported thereby, and fitting the axle, substantially as shown and described.

18. A lubricating appliance for use as specified, which comprises a plate-spring having its rear end upturned and curved inward, a wiper secured to the extremity of the same, and adapted to bear upon the journal, as shown and described.

19. An appliance or device which is freely insertible in and removable from an axle-box, and comprising parts performing the functions of a lubricant-applier, wiper, baffle, and dust-guard, such parts being permanently connected, substantially as shown and described.

20. A lubricating appliance, composed of a plate-spring having an upward-projecting portion and a roller attached to the same, and end portions which are curved inward or hooked, whereby the appliance is adapted to fold and retain its folded position, as shown and described.

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Witnesses:

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M. D. BLONDEL.