

L. A. SANFORD.
LUBRICATING DEVICE.
APPLICATION FILED DEC. 17, 1910.

1,017,020.

Patented Feb. 13, 1912.

2 SHEETS—SHEET 1.

Fig. 2.

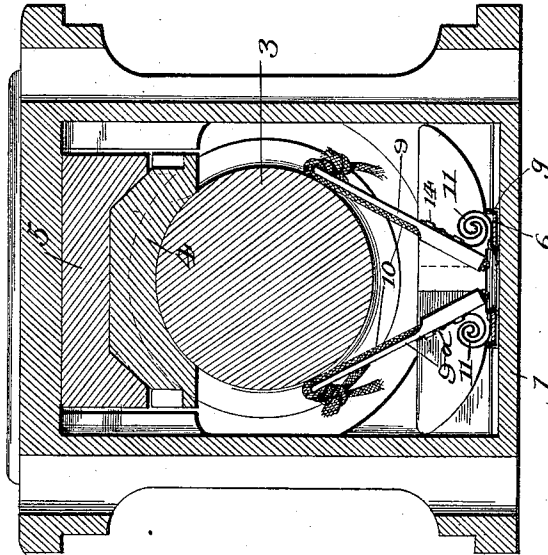
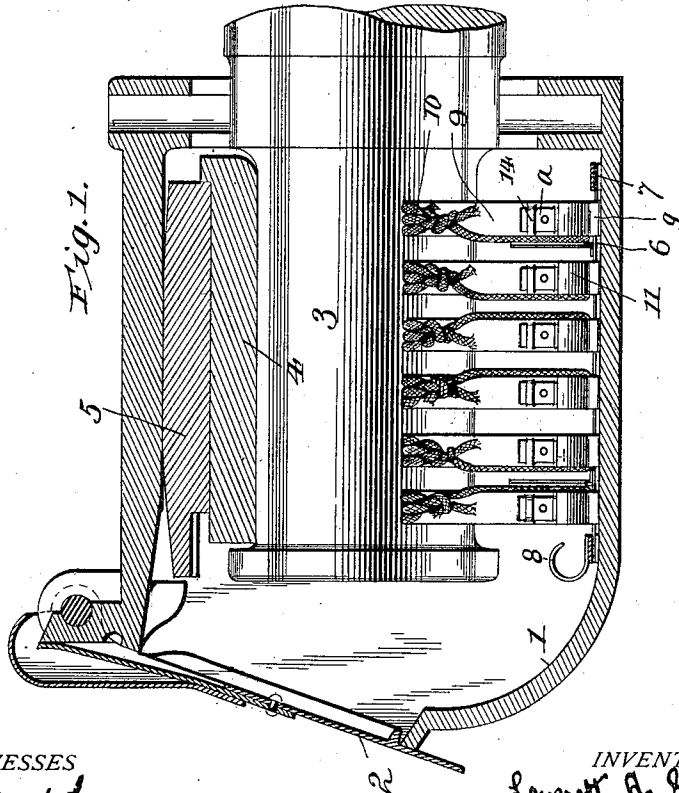


Fig. 1.



WITNESSES
H. B. Leonard
Fannie Hise

INVENTOR:
Leverett A. Sanford,
by Dodge and Sons,
Attorneys.

L. A. SANFORD.
LUBRICATING DEVICE.
APPLICATION FILED DEC. 17, 1910.

1,017,020.

Patented Feb. 13, 1912.

2 SHEETS—SHEET 2.

Fig. 3.

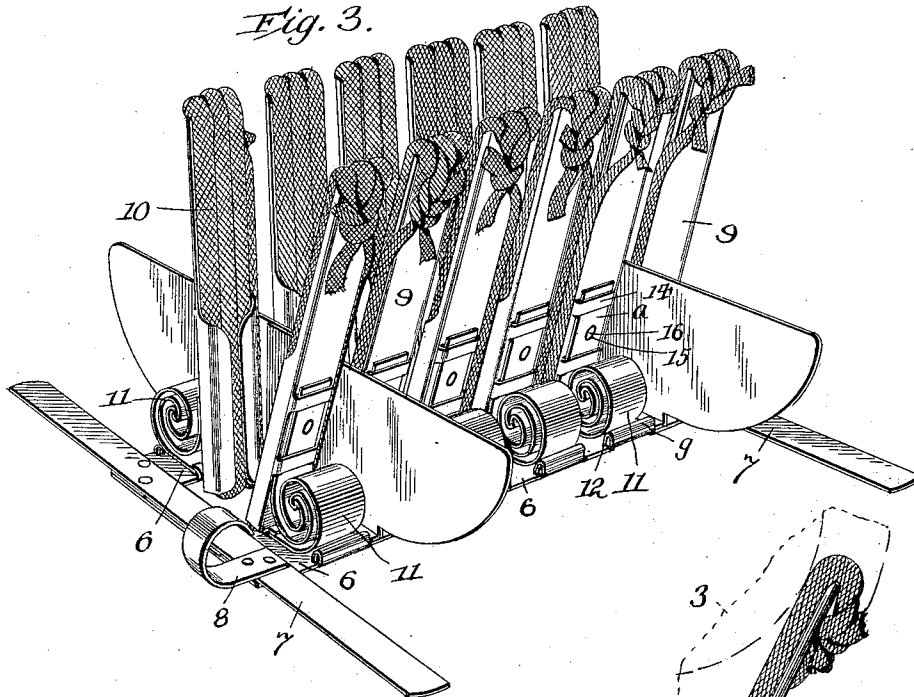


Fig. 6.

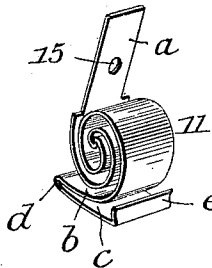


Fig. 4.

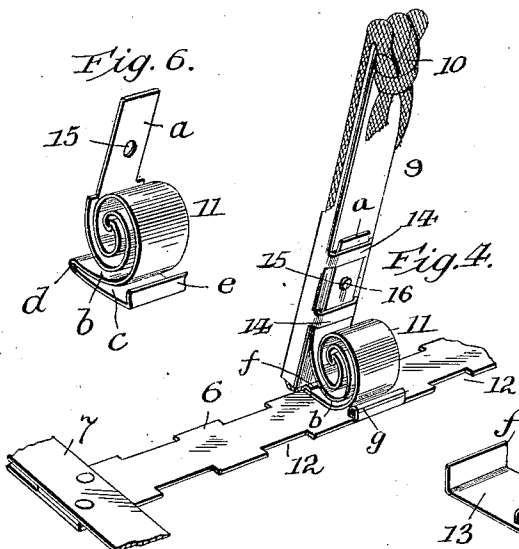


Fig. 5.

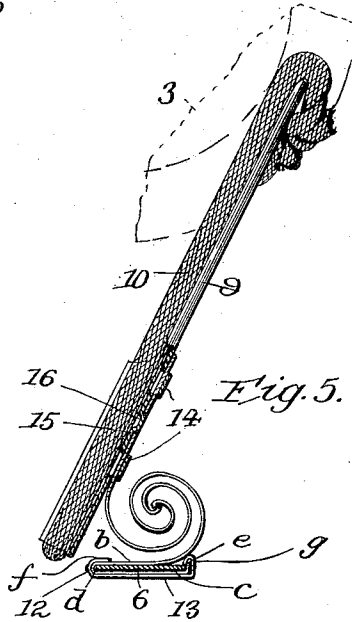
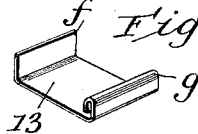


Fig. 7.



WITNESSES

H. B. Leonard.
Fleming Wise

INVENTOR:

Leverett A. Sanford,
by Dodge and Sons
Attorneys.

UNITED STATES PATENT OFFICE.

LEVERETT ARTHUR SANFORD, OF BRISTOL, CONNECTICUT, ASSIGNOR TO EDWARD J. MILLSPAUGH AND JOHN F. MAYNARD, OF UTICA, NEW YORK.

LUBRICATING DEVICE.

1,017,020.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed December 17, 1910. Serial No. 597,858.

To all whom it may concern:

Be it known that I, LEVERETT A. SANFORD, a citizen of the United States, residing at Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Lubricating Devices, of which the following is a specification.

My invention has reference to lubricating devices for journals, and consists primarily in a spring of novel form and construction designed to support a lubricant feeding member, and to connect it with a base-frame made to carry a series of such feeders.

The invention also includes details of construction hereinafter set forth, whereby the base-frame is adapted to receive and hold in place the several springs; the fastenings for retaining said springs, and other features, details and combinations that will duly appear in the following description, and are illustrated in the accompanying drawings.

In said drawings: Figure 1 is a longitudinal vertical section of a car axle box equipped with the improved lubricator; Fig. 2, a transverse vertical section of the same; Fig. 3, a perspective view of the lubricating device complete, removed from the journal box; Fig. 4, a perspective view of one of the lubricant feeders, showing also a portion of the base-frame, to which the feeder is attached; Fig. 5, a side elevation of the same, the base-frame member being shown in section; Fig. 6, a perspective view of one of the improved springs; Fig. 7, a perspective view of one of the clips employed to fasten the springs to the base-frame.

The general features of construction herein disclosed are not of my invention, which resides in the features above outlined, and hereinafter more fully set forth and definitely claimed.

In the drawings, 1 indicates a car axle journal box, provided with the usual hinged lid 2, and 3 indicates a journal extending into the box and having above it the customary brass 4, in turn surmounted by the saddle or block 5, which bears beneath the top wall of the box 1.

The lubricating device comprises a base-frame preferably consisting of flexible and resilient longitudinal strips 6, of suitable metal, connected by transverse end strips 7, and furnished with a loop or finger-hold 8, by which to withdraw the frame from the

box, or to replace it therein; and a series of fingers 9 of sheet metal, carrying lubricant feeders 10, and connected with the base-frame by springs 11.

My invention resides primarily in these springs, and in the means of their attachment to the base-frame and to the fingers 9, the object being to provide a highly elastic connection between the frame and the fingers, admitting of ready removal and replacement of individual fingers, but precluding accidental displacement, breakage or other disarrangement or injury. This provision is rendered necessary and important by the fact that other types of connection, such as hinge-joints with separate coiled springs, flat leaf springs, constituting what may be termed spring-leaf connections, and the like, have been found to develop serious faults under the severe conditions of railway use. By the use of springs having a high degree of resilience, and in which the bending or flexure is distributed over quite a considerable length of metal, so that the distortion or flexure at any given point is very slight, I am enabled to overcome the difficulties hitherto experienced, and to insure a more perfect and constant contact of the feeders with the surface of the journal.

As best shown in Fig. 4, the longitudinal strips 6 of the base-frame are notched at intervals on both inner and outer edges, as shown at 12, the notches being of measurement equal to or slightly greater than the width of the springs 11. Each spring 11 consists of a flat strip of steel or other resilient material, first folded transversely at a point near its midlength to cause the two portions on opposite sides of the fold or bend to lie face to face or substantially parallel to each other, and at a slight distance apart, the folded strip being then coiled through one complete turn or volute coil, more or less, its two leaves being then carried in divergent directions to form an upstanding member *a*, and a substantially horizontal base member comprising an upper leaf *b* and a lower leaf *c*, connected by a bend or fold *d*, the lower leaf terminating in an upturned lip *e*. The lower leaf *c* of the base member of the spring is of a length from bend *d* to lip *e* to receive the reduced portion of strip 6 of the base frame of the lubricating device, that is, the portion of said strip between the front and rear notches

12; the fold or bend *d* abutting against the edge of said strip at the bottom of one notch, and the lip *e* similarly abutting against the edge of the strip at the bottom of the corresponding notch. If the upper and lower leaves *b* and *c* are formed to lie close together, so as to clasp the strip 6 closely, other means of fastening may be dispensed with; but I prefer to add a clip or clamping plate 13, initially of the form shown in Fig. 7, but which when in use is bent down to the form illustrated in Fig. 5. This clip 13 consists simply of a flat strip of malleable sheet metal of about the width of the spring, and having upturned ends *f* and *g* at a distance apart just sufficient to receive between them the length of the lower leaf *c* of the base member of the spring, the lip *g* having an overturned edge to hook or engage over the lip *e* of the spring. After said member has its upper and lower leaves passed respectively above and below the strip 6 of the base frame from the inner side thereof, and pressed outward until the bend *d* encounters the inner edge and lip *e* engages the outer edge of said strip, the clip 13 has its hook-shaped lip *g* engaged over the lip *e* of the spring, and is then pressed upward into contact with the under face of leaf *c* of the spring, the upstanding edge *f* being finally pressed down upon the upper face of leaf *b*, as best indicated in Fig. 5.

The shoulders or end walls of the notches 12 preclude lateral play of the base member of the spring, while the fold *d* and lip *e* prevent play at right angles to strip 6 of the base frame. Finally, the clip or clamp 13 binds the spring and the base-frame so firmly together that there is no liability of their becoming accidentally separated, or of the spring shifting its position. The great elasticity of the spring enables it to yield readily to any play of the journal, the lubricator or the box, and hence to maintain close and constant contact with the journal. Breakage of springs or severance of connection between the lubricator feeders and the base-frame is prevented, and the device is thus maintained in perfect working condition.

Each finger 9 is supplied with a lubricant feeder 10 of any suitable type or character, here represented as braided wicking, which is held by the finger in contact with the journal. To attach the finger to the spring, I preferably cut or punch two pairs of transverse slits in its back, and press slightly outward the bar between each pair of slits, as shown in Figs. 1, 2, 3 and 5, to form loops or straps 14 of proper dimensions to receive or encompass the upstanding member *a* of the spring 11. By forming two such straps or loops at suitable distances apart a firm hold is afforded, and play or displacement of the finger relatively to the spring is pre-

vented. Any finger may, however, be readily slipped off its spring, to permit renewal of the feeder or of the finger itself.

If at any time a spring becomes broken or defective, or if one of greater or lesser stiffness be desired, the end *f* of the clip 13 may be bent upward away from the base member of the spring, the lip *e* can be forced down clear of the edge of strip 6, and the spring can then be withdrawn from said strip, carrying with it the finger 9.

The material of which the spring is made may vary as desired; the number and dimensions of its coils may be greater or fewer; and generally, the details may be modified as found expedient, provided the salient features above set forth be retained in substance. Some of the features may be omitted in given cases or situations, if deemed expedient so to do.

In the event that it be desired or is deemed expedient to make a more secure attachment of the finger to the spring, the latter may be provided with a hole or perforation 15, and the metal of the finger forced into the same by means of a blunt ended punch, producing a stud or teat 16, as shown in Fig. 5. This will preclude accidental displacement of the finger, which may, however, be disconnected by applying the punch to the opposite side and forcing the metal back.

It will be noted upon referring to Fig. 6 that the leaves *b*, *c*, are slightly curved in the direction of their length, this form tending, when the spring is forced to position, to cause a closer hugging or binding of the leaves *b*, *c*, on the base-plate strip 6.

While I have shown and described the strip 6 of the base-frame as having both edges notched, it is obvious that the notching of either edge alone would be effective to prevent lateral displacement of the spring. I therefore do not intend to restrict myself to the notching of both edges.

Having thus described my invention, what I claim is:—

1. In a lubricating device for journals, the combination of a journal box adapted to contain a supply of lubricant; a base-frame or support located within said box; a series of feeders for the lubricant, extending from the lubricant space to the journal; a series of fingers or holders for said feeders; and springs, one for each finger, each spring comprising a leaf or strip of metal folded upon itself at a point between its ends and thence coiled into circular form, the free ends being thence separated and one carried upward to form an upstanding finger-bearing arm, and the other carried horizontally in one direction and thence bent backward to form two slightly separated parallel members, adapted to clasp between them a member of the base-frame.

2. In a lubricating device, the combination of a feeder-carrying finger; and a connecting spring consisting of a strip of resilient material folded upon itself and coiled in such folded form into a circular coil, one of the free ends of the strip being carried thence forward in substantially horizontal plane, there bent sharply backward, to produce two substantially parallel and slightly separated leaves or members to clasp the base-frame, and the other end being carried in an upward direction to form an upstanding arm to receive and support the feeder-carrying finger.

3. In a lubricating device for journals, a support for a feeder-carrying finger, consisting of a strip of resilient material first doubled or folded upon itself, thence coiled into a substantially circular form, the two leaves being thence separated and one carried upward to form an upstanding arm, and the other being carried first forward in substantially horizontal plane, thence sharply bent backward and carried beneath and parallel to the horizontal portion, and finally bent sharply upward to form a retaining lip or catch, substantially as described and shown.

4. In a lubricating device for journals, a support for a feeder-carrying finger, consisting of a folded strip of resilient material coiled in its folded condition into substantially circular form, the two leaves diverging from said coil and carried, one in an upward direction to form an upstanding arm *a*, and the other in a substantially horizontal position to form a leaf *b*, thence folded back beneath said leaf *b* to form a parallel leaf *c*, and terminating in a sharply upturned lip *e*.

5. In combination with a base-frame having a strip or member provided with notches in its front and rear edges, a flat spring, having one of its end portions folded back upon itself to form two parallel leaves, and its extremity turned sharply at an angle to its face; whereby it is adapted to clasp the base-frame, and to retain itself in place thereon.

6. In combination with a base-frame hav-

ing a strip provided with a notched edge, a feeder-supporting spring having its lower portion folded sharply back upon itself to receive between the two folds the notched portion of said strip, and having its extremity upturned to engage one edge of said strip.

7. In combination with a supporting frame having one of its strip members notched, a lubricant feeder support consisting of a coiled spring having its lower extremity folded back upon itself and provided with a sharply upturned lip or edge, whereby it is adapted to clasp the notched strip, to enter said notch, and to be held against displacement.

8. In a lubricating device of the character described, the combination of a feeder-supporting finger having loops to receive a spring, a supporting spring for said finger provided with an opening, and a teat or projection pressed from the body of the finger into said opening, substantially as described.

9. In a lubricating device, the combination of a supporting frame having a flat strip or member, a feeder-supporting spring provided with upper and lower leaves to clasp said strip or member, and a clip of malleable metal extending beneath the bottom leaf of the spring and having its ends bent inward to overhang the supporting strip and the interposed strip-clasping portion of the spring.

10. In a lubricating device of the character described, the combination with a supporting strip 6, a feeder-supporting spring provided with upper and lower leaves *b* and *c* and upturned lip *e*, and a clip or fastening 13 having a hook-shaped lip *g* engaging the lip *e* and a lip *f* bent down upon the leaf *b*, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

L. ARTHUR SANFORD.

Witnesses:

CHARLES E. DUNBAR,

WILLIAM H. GRAHAM.