(Model.)

E. E. WITTER.

LUBRICATOR.

No. 491,153. Patented Feb. 7, 1893.

FIG. I.

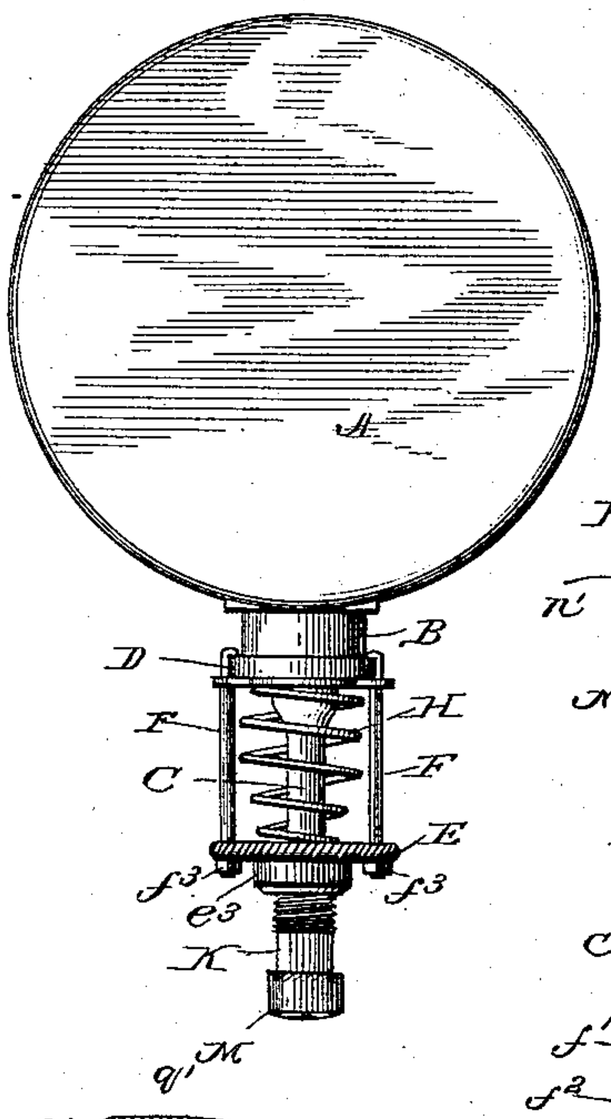


FIG. II.

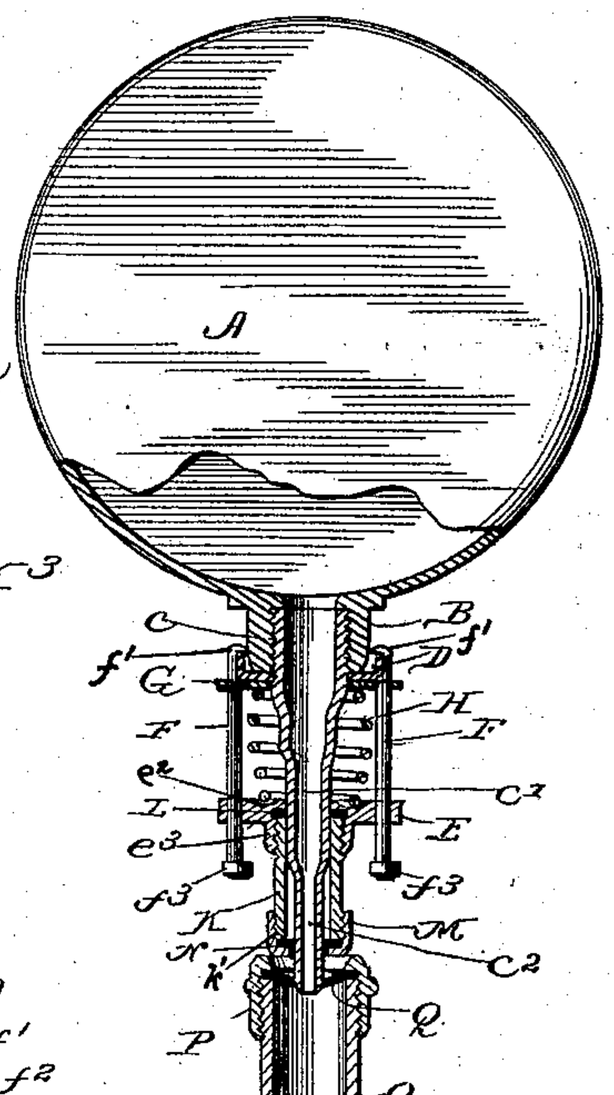


FIG. III.a

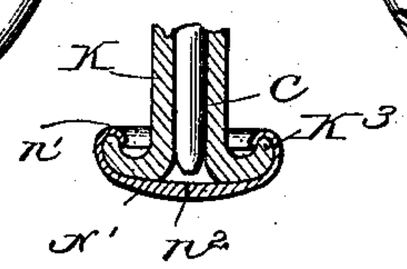


FIG. III.

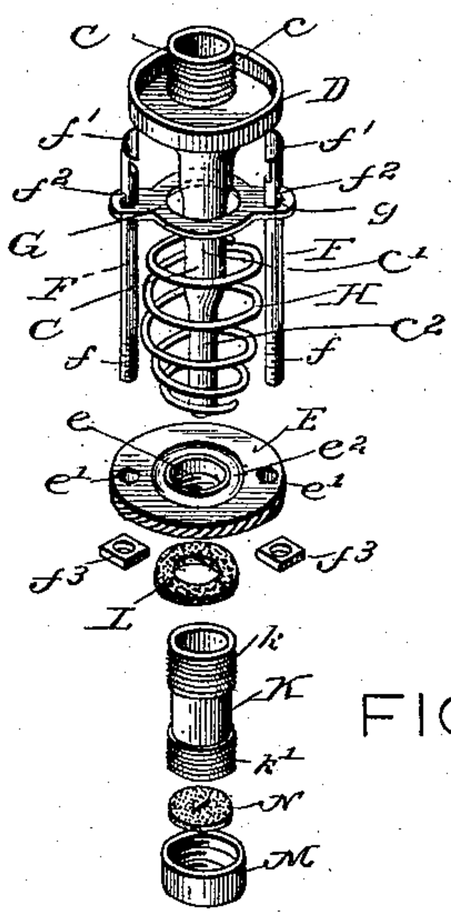


FIG. VIII.a

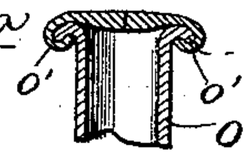


FIG. VIII.b

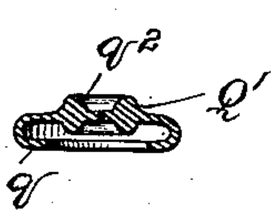


FIG. IV.

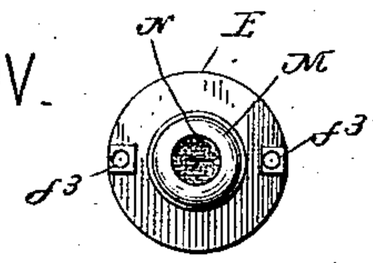


FIG. V.

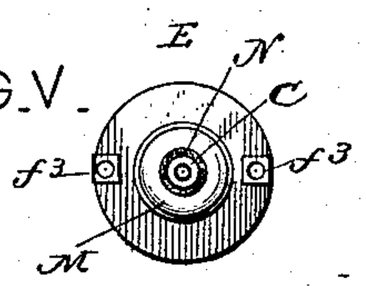


FIG. VI.

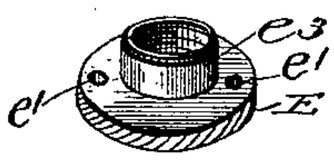


FIG. VII.

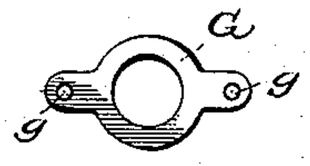


FIG. IX.

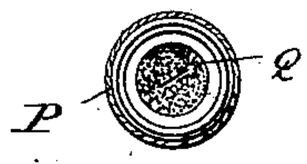
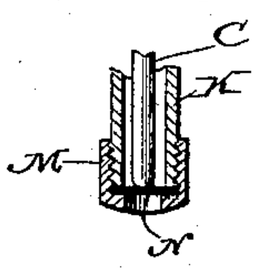


FIG. X.



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UNITED STATES PATENT OFFICE.

EZRA E. WITTER, OF MILFORD CENTRE, OHIO.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 491,153, dated February 7, 1893.

Application filed March 24, 1891. Renewed June 30, 1892. Serial No. 438,637. (Model.)

To all whom it may concern:

Be it known that I, EZRA E. WITTER, a citizen of the United States, residing at Milford Centre, Union county, Ohio, have invented certain new and useful Improvements in Lubricators, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the construction and arrangement of automatic valves for lubricators, and has for its object to provide means which will effectually exclude all foreign substances from the lubricators and bearings in combination with which they are employed.

Broadly considered my invention consists of a perforated flexible disk applied to the inlet or exit opening of a lubricator, the elasticity of the disk keeping the perforation normally closed but allowing it to be opened for the admission of the lubricant.

I will first describe my invention with reference to the accompanying drawings and then more particularly point out in the claims what I deem as new therein.

In said drawings:—Figure I is a side elevation of an oil can having my improvements applied to the nozzle thereof. Fig. II is a sectional view of an oil can and lubricator cup having my improvements attached, the parts being in operative position. Fig. III is a perspective view of the oil can nozzle and attachments, all of the parts being detached from their normal positions. Fig. III^a is a modified form of nozzle attachment. Fig. IV is a top view of the nozzle attachment in its normal or closed position. Fig. V is a similar view showing the nozzle protruding. Fig. VI is a perspective view of the perforated plate for supporting the automatic valve on the nozzle. Fig. VII is a plan view of the yoke. Fig. VIII is a plan view of one form of my improved lubricator cup. Figs. VIII^a and VIII^b are detail views showing the preferred form of my lubricator cup. Fig. IX is a detail sectional view showing the relative position of the screw cap, carrying the flexible disk, to the end of the nozzle.

Similar letters of reference indicate the same parts throughout the several views.

I have shown my invention as applied to the nozzle of an oil can, and also as applied to the ordinary form of oil cup such as is used for bicycle bearings.

A is the oil can, having the customary internally screw threaded neck B formed integral therewith.

C is the nozzle provided with an externally screw-threaded base *c* adapted to engage in the neck B, and a flanged ring or collar D fitting around said neck. This nozzle C is preferably of the peculiar shape as shown in the drawings; it is formed with an enlarged base *c* as usual, but instead of the customary tapered form it has a contracted central tubular portion *c'*, and a still further contracted tubular portion c^2 at the end. The purpose of this peculiar construction will be hereinafter pointed out and though it is not essential to the operation of the device it is preferred.

E is a circular plate having a central perforation *e* through which the nozzle C passes, two smaller perforations *e'*, *e'* through which suitable guide rods pass and an annular groove e^2 surrounding the central perforation *e* on its upper side for the reception of the coiled end of a spiral spring.

F, F, are two guide rods provided with screw threaded ends *f* beveled notched ends or heads *f'* and notches f^2.

G is a centrally perforated yoke adapted to fit over the nozzle C and provided with perforated projections or lugs *g*, *g*, through the perforations of which the rods F pass. The notches of the heads *f'* of the rods F fit over the edge of the collar D and the perforated lugs *g*, *g* of the yoke G engage in the notches f^2 and thereby firmly secure said rods to the collar D and brace them against endwise movement so that they will always assume the proper position. The heads *f'* are beveled on their ends to prevent interfering with the neck B.

H is a spiral spring surrounding the nozzle C and confined thereon between the yoke G and the circular plate E, said plate E being confined by means of the screw nuts f^3 which engage with the screw threaded ends of the guide rods. The plate E has formed on its under surface an internally screw threaded annular collar e^3 as shown in Fig. VI.

K is a tubular sleeve having screw threaded portions *k*, *k'* at its ends, the end *k* being adapted to engage in the screw threaded col-

lar e^3 of the plate E and confine between it and the base of said plate a perforated flexible washer L, which fits snugly around the central cylindrical portion c' of the nozzle C and prevents the entrance of any foreign substance into the sleeve K.

M is a cap-piece internally screw-threaded and adapted to engage the outer end k' of said sleeve K.

N is a slit or perforated flexible disk confined between said sleeve K and the cap-piece M, the perforation of said disk being preferably in the form of a short slit.

In Fig. III[a] I have shown a modified construction of the outer end of the sleeve K. Instead of the screw-threaded portion k^2 and the screw-cap M carrying the disk N, in this modification of the sleeve K is formed with an outwardly and upwardly curved flange k^3 and a rubber or other suitable elastic cap or thimble N′ is provided having a contracted neck n' for engaging with the collar or flange k^3. This thimble N′ is provided with a slit n^2 as in the flexible disk N. C represents the nozzle as in the other views, the operation of the parts being substantially the same. When the parts are in their closed or normal position as shown in Figs. I, III[a], IV and IX, the end of the nozzle is just inside of the flexible disk N, the slit in said disk being closed, by its elasticity. When it is desired to use the oil, the nozzle is thrust through the slit in the flexible disk N, into the lubricator cup O, against the action of the spring H, by pressing the edge of the cap M (carried by the sleeve K and plate E) against the edge of the lubricator cup, (as shown in Fig. II) which allows the oil to flow out into the cup, the nozzle and guide rods sliding through their respective perforations in the plate E. After the required amount of oil has passed, the pressure is removed and the spiral spring forces the parts back to their normal position, the perforated flexible disk N fitting snugly around the end of the nozzle and removing all dirt which may have adhered thereto when it was inserted in the oil cup or other journal lubricator. The flexible washers or disks L and N rest respectively upon the tubular portions c' and c^2 of the nozzle around which they fit snugly and prevent the entry of any dirt into the sleeve K and consequently into the nozzle tube C.

When my improved oil can is to be used without the aid of the oil cup, the plate E carrying the sleeve K and cap-piece M, is pushed inwardly against the action of the spring H, by means of the thumb and finger, until the end of the nozzle protrudes through the slit in the flexible disk Q and the oil flows out as usual.

Referring to Figs. II and VIII, O is an oil cup provided with the customary screw threaded contracted portion o whereby it is attached to the casing R of the shaft S to be lubricated. P is an internally screw threaded cap fitting on the screw threaded top of the oil cup and securing between it and the oil cup a perforated flexible disk Q; which disk is of the same form and structure as the disk N. The object of the perforated or slit flexible disk in this instance is the same, that is to exclude the entrance of foreign substances. But my preferred form of lubricator cup is shown in Figs. VIII[a] and VIII[b]. In this form the cup O is provided with an outwardly and downwardly curved flange o' at top, over which an elastic cap or thimble Q′ is adapted to fit, said thimble being provided with a contracted retaining neck q for engaging with the flange o' and securely holding the thimble in place. It is obvious that the elasticity of the thimble will hold it in place. This thimble Q′ is made much thicker at q' where it is perforated for the reception of an oil can nozzle. If it is desired the thimble Q′ can be made very satisfactorily as shown in Fig. VIII[b], with a cup or annular flange q^2 formed integral therewith. This form is advantageous for catching any oil drips from the nozzle and thereby preventing the waste of oil, and it also serves to strengthen the thimble.

When the lubricant is to be inserted in an oil cup of my improved construction the nozzle C of an oil can is thrust through the slit as shown in Fig. II, the flexibility of the disk allowing the perforation to expand for this purpose, and the elasticity of the disk automatically closing the perforation when the nozzle is withdrawn.

It is obvious that my invention could be employed in combination with various forms and constructions of lubricators, which are not herein shown, without departing from the spirit thereof.

Having thus described my invention the following is what I claim as new therein and desire to secure by Letters Patent:—

1. The combination in a lubricator, of a suitable oil receptacle, a perforated flexible cap or thimble fitting over the mouth of said receptacle, and provided with an annular flange or thickened portion around said perforation in the thimble for strengthening it around said perforation, substantially as and for the purpose set forth.

2. The combination of an oil can, and its nozzle, with a suitable perforated valve-carrying device supported on said nozzle, and a perforated flexible disk or valve carried by said device, the perforation in said disk being normally closed to guard the exit opening of the nozzle, and the nozzle being adapted to slide through said device for opening the valve, substantially as set forth.

3. The combination of an oil can, and its nozzle, with a suitable perforated valve-carrying device confined on the nozzle, a perforated flexible disk or valve carried by said device, and a spiral spring confined between the base of the nozzle and said valve-carrying

device for holding it normally at the outer end of the nozzle, the perforation of said disk or valve being normally closed, and the nozzle being adapted to slide through said device for opening the valve, substantially as herein set forth.

4. The combination of an oil can, and its nozzle, with a perforated valve-carrying device, a flexible disk or valve having a normally closed outlet and carried by said device, guide rods supported from the nozzle and passed through suitable perforations in the valve carrying device, and a spiral spring confined between the base of said nozzle and said device, substantially as set forth.

5. The combination of an oil can, and its nozzle, with the plate E having an opening *e* through its center and perforations *e'*, *e'*, to the side of the central opening, a perforated flexible disk carried by said plate, guide rods F secured to the base of the nozzle and passing through the perforations *e' e'*, the yoke G for bracing the rods, the spiral spring H surrounding the nozzle and confined between the base thereof and the plate E, and means for confining the plate E on the guide rods and nozzle, substantially as set forth.

6. The combination of an oil can and its nozzle, a sleeve mounted upon said nozzle, perforated flexible disks secured to the opposite ends of said sleeve and also mounted on said nozzle, and means for confining said sleeve on the nozzle, whereby the nozzle can slide through said sleeve and perforated disks, substantially as set forth.

7. The combination of an oil can, and its nozzle, a sleeve mounted upon said nozzle, perforated flexible disks secured to the opposite ends of said sleeve and fitting snugly around the nozzle, a spiral spring between the base of the nozzle and said sleeve for keeping it normally out at the end of the nozzle, and means for confining said sleeve on the nozzle, substantially as set forth.

8. The combination of an oil can, the sleeve carrying the perforated flexible disks, the nozzle C having two contracted tubular portions *c'*, and *c²*, around which the flexible disks are respectively snugly fitted, and means for confining the sleeve on the nozzle, substantially as set forth.

9. The combination of an oil can, and its nozzle, the plate E supported on the nozzle, the sleeve K, the perforated flexible disks L and N, a spiral spring confined between the plate E and the base of the nozzle, guide rods supported from the base of the nozzle and passing through suitable perforations in the plate E, and means for confining the plate E, upon the nozzle and guide rods, substantially as set forth.

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