J. J. Hoyt.

Lubricator.

No. 97,091. Patented Nov. 23, 1869.

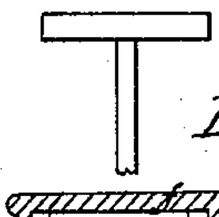


Fig. 1.

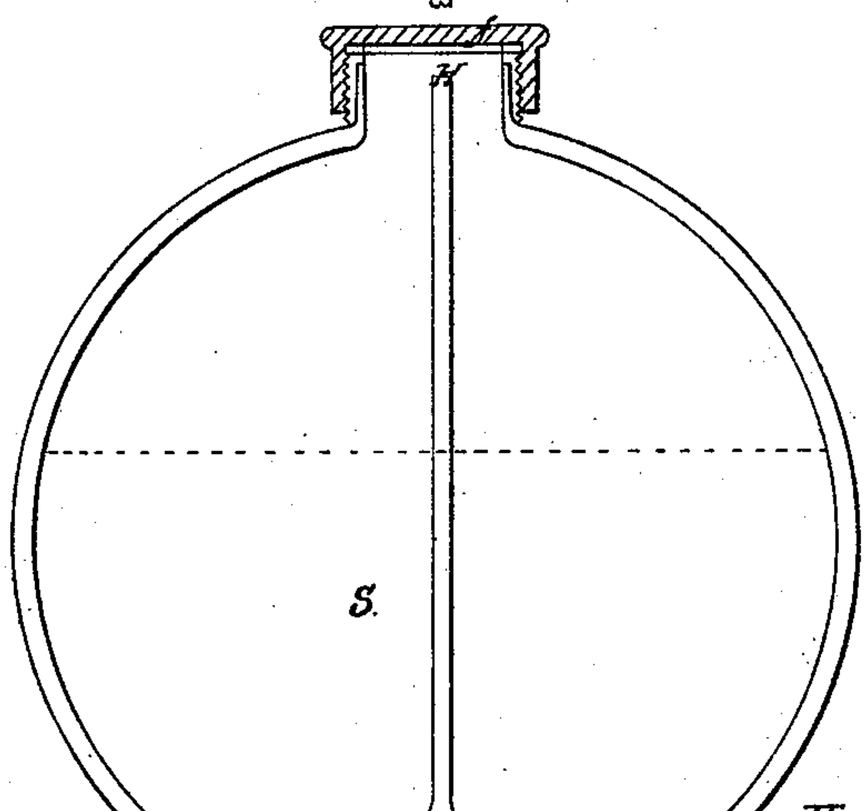


Fig. 3.

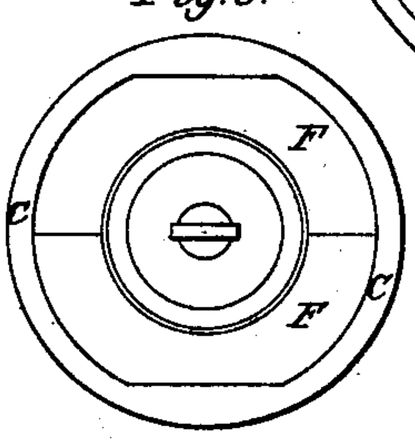
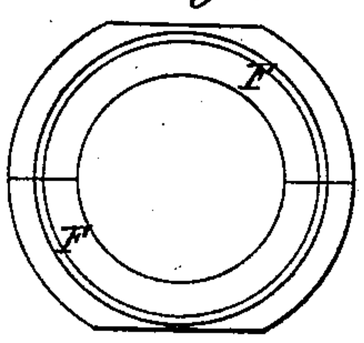


Fig. 4



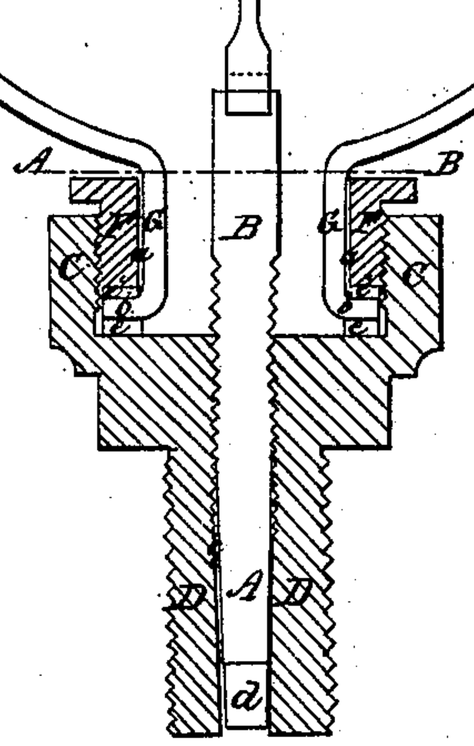


Fig. 5.

Fig. 6.

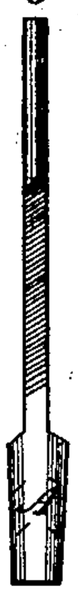
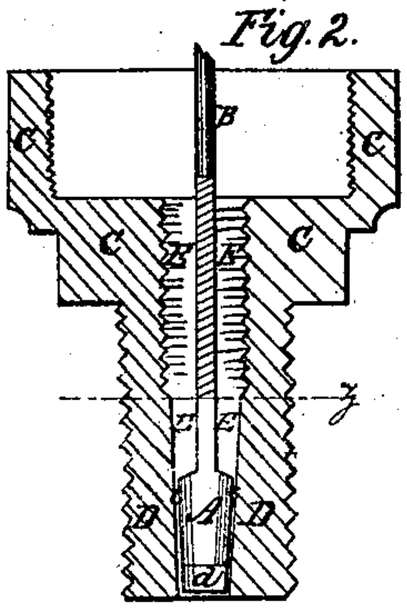


Fig. 2.



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JONATHAN J. HOYT, OF CHELMSFORD, MASSACHUSETTS.

Letters Patent No. 97,091, *dated November* 23, 1869.

IMPROVED LUBRICATOR.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JONATHAN J. HOYT, of Chelmsford, in the county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Oil-Cups, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a central vertical section.

Figure 2, a similar but transverse section of a detached socket, which forms the lower part of the apparatus.

Figure 3 is a horizontal section on the line A B of fig. 1.

Figure 4 is a bottom end view of a detached, divided nut, F, shown in figs. 1 and 3.

Figures 5 and 6 represent a side and edge view of the adjustable regulating screw-plug, which controls the flow of oil through the central passage.

This invention relates to that kind of oil-cups which is used for feeding oil to the bearings or journals of revolving shafts or other rotating or reciprocating movers, and has for its object not only to furnish or supply the bearing with the proper quantity, and prevent waste of oil or other lubricant, but to furnish a very simple, cheap, efficient, and reliable oiler; one that can be made tight, and not liable to leak without breaking or straining the glass globe which contains the oil; an oiler that can be charged or refilled, applied to the shaft-box or the cap of the box, detached, removed, and reattached to the same box, or to another adjusted for the delivery of any quantity, grade, or consistency of oil within the capacity of the device, all with ease and facility

This invention consists—

First, in the adjustable regulating-plug, which has a tapering lower end, A, and a flattened shank, B, armed with a screw-thread in both its edges, when combined with the socket C and screw-plug D, having a central passage, the lower end *d* of which is tapering like the lower end A of the plug, which, when screwed down, fits and fills the same, and when raised and screwed upward, leaves an annular oil-passage, *c*, around the tapering end A of the plug, and a semicircular oil-passage, E, at each side of the shank B, the latter leading to or communicating with the former, as clearly shown in fig. 2.

Second, my invention consists of the divided nut, or two half nuts F, which surround the neck G of the glass globe, leaving an annular space, *a*, between them.

The flange *b* of the neck rests on a leather washer, *e*, and a similar washer, *e'*, may be placed on the top of the flange. These two leather washers, or the lower one, will protect the flange and prevent it being broken or injured when the half nuts are screwed down, while the annular space *a* provides for keeping the metal nut away from the glass, and thus prevents the neck of the globe being broken by contact with the metal.

The lower washer *e* forms a packing, and is compressed by screwing down the half nuts, thus preventing the escape of oil beneath the flange *b*.

A whole nut or an undivided nut could not be applied to the neck of the globe above the flange, and a strip of metal bent round the neck would be liable to fracture the glass by contact therewith, besides being too expensive and uncertain in its action or effect to compress the leather washer and prevent leakage.

I consider the two half nuts, constructed, applied, and arranged as shown and described, by far the cheapest, the most simple and efficient device for this purpose, the result of their application and use, being not only to compress the lower washer, and prevent leakage, but to protect the neck of the globe.

Should a glass globe get broken or injured, so as to necessitate its removal, and the substitution of a sound one, the half nuts are easily unscrewed and removed, and placed on the neck of the sound globe, and placed in the socket and screwed down, as clearly shown in fig. 1.

A considerable portion of the upper part of the adjustable regulating-plug is flattened on two sides, and a screw is cut in the edges which fits the screw-thread in the upper part of the central passage.

The lower end, or about one-half of the central passage within the screw-plug D, is tapering, and the lower end A of the regulating-plug is formed on the same taper. and when screwed down, fits and fills the same.

When this regulating-plug is unscrewed or turned upward, the lower tapering end rises in the central passage to where its diameter is enlarged, and this leaves an annular space, *c*, around the plug. This space *c* may be increased or diminished to any reasonable extent, and thereby allow oil to flow through the space in large, small, or in any quantity which may be necessary to properly lubricate the journal or other moving-device beneath the lower end of the screw-plug D, which plug screws into the cap of the journal-box, and all by simply adjusting the regulating-plug, that is, by screwing it upward or downward, and this is effected by a forked wrench or a forked turn-screw inserted through the top or filling-nose H, first removing the screw-cap *f*, which in practice is packed with a disk of leather, and thereby rendered air-tight, or nearly so.

A semicircular oil-space or passage, E, at each side of the shank B, is the result of flattening the upper part of the adjustable regulating-plug. Each of these spaces extends downward in proportion to the length

flattened, which should be below the lower terminus of the screw-thread within the plug D, that is, below the line *z*, all as clearly shown in fig. 2.

These spaces form partial reservoirs or large ducts, leading from the main fountain S, and greatly facilitate the supply of oil to the journal, as soon as the regulating-plug is raised.

The length of the round, tapering portion A of the plug, below the space E, should not be too great, and I have found, by experiment, that from one-half of an inch to one inch, is sufficient for the length of this portion of the plug. When made shorter than one-half of an inch, this tapering end of the plug will regulate well, but if more than one and a half inch in length, the annular space *c* seems too much elongated, the effect of which is to retard the flow of oil through the thus elongated annular space.

This necessitates a more extensive or wider adjustment of the regulating-plug, which is objectionable, particularly with oil which in any considerable degree is heavy, or which is not thin and limpid, as none but comparatively thin, light oil will run through a narrow space, and if this space is too long, it is difficult to regulate the flow.

My invention is automatic in its operation, but not self-adjusting or self-regulating, as is claimed for most of the oiling-devices intended for the same purpose; but I consider my invention capable of finer, more accurate, and certain adjustment and regulation than any of the others, besides being cheaper, more durable, and less liable to get broken or injured, and much more convenient of manufacture and use.

I have stated that the spaces E form reservoirs or large ducts, and greatly facilitate the supply of oil to the journal. I will here state, that the flattening of the shank B, and the consequent formation of such spaces, is all-important to bring the column of oil sufficiently near the rotary or other mover, in order that such oil may be drawn or sucked through the space *c* when the shaft is in motion, and cease to flow when the motion of the shaft ceases. The intensity of the sucking-action I have found to be in proportion to the velocity of the shaft, the nearness of the column of oil to the line of action, or surface of the shaft or bearing, and to the proper and relative adjustment of the lower end A of the plug to the surface of the bearing. The space *c* being of necessity a limited space, will not admit the passage of oil from the air-tight fountain *s*, unless drawn or sucked down by the action of the moving-shaft, and it is evident that the oil-fountain is supplied with air through the space *c*, and the space between the shaft and the cap, as air-bubbles are seen to rise and burst on the surface of the oil in the fountain when the shaft is in motion.

In practice, the lower end of the regulating-plug should not be raised above the shaft a greater distance than one-half its diameter, otherwise the space *c* would be too much enlarged, and the sucking-action of the moving-shaft would be materially weakened, which I wish to avoid, and this, I wish to be distinctly understood, is the most particular and important part or element in my invention.

My improved device or apparatus is very efficient as an oil-tester to determine the fluidity or density, and the lubricating-qualities of oil or other lubricant, taking sperm-oil as the standard with the regulating-plug properly adjusted, then by substituting any other oil, and noting the difference in the quantity drawn through the space *c* by the action of the moving-shaft.

The glass tube is an old device; so also is a socket to hold its lower end and support it; so with a central passage and a straight wire inserted to control or regulate the flow of oil by substituting a larger or a smaller wire.

I disclaim the devices last above described; but

I do claim, as my invention—

1. The adjustable regulating-plug, when constructed, applied, and arranged to operate substantially in the manner and for the purpose specified.

2 The combination of all the effective parts specified, viz, the adjustable regulating-plug, having a flattened shank, B, and a tapering lower end, A, the socket *c* and screw-plug D, the half nuts F, and the washer *e*, and the glass globe, all constructed, combined, and arranged for action and effect, as and for the purpose specified.

JONA. J. HOYT.

Witnesses:

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