No. 812,362. PATENTED FEB. 13, 1906.

J. POWELL.

CONSTRUCTION OF OIL CUPS.

APPLICATION FILED MAY 31, 1905.

Fig. 1.

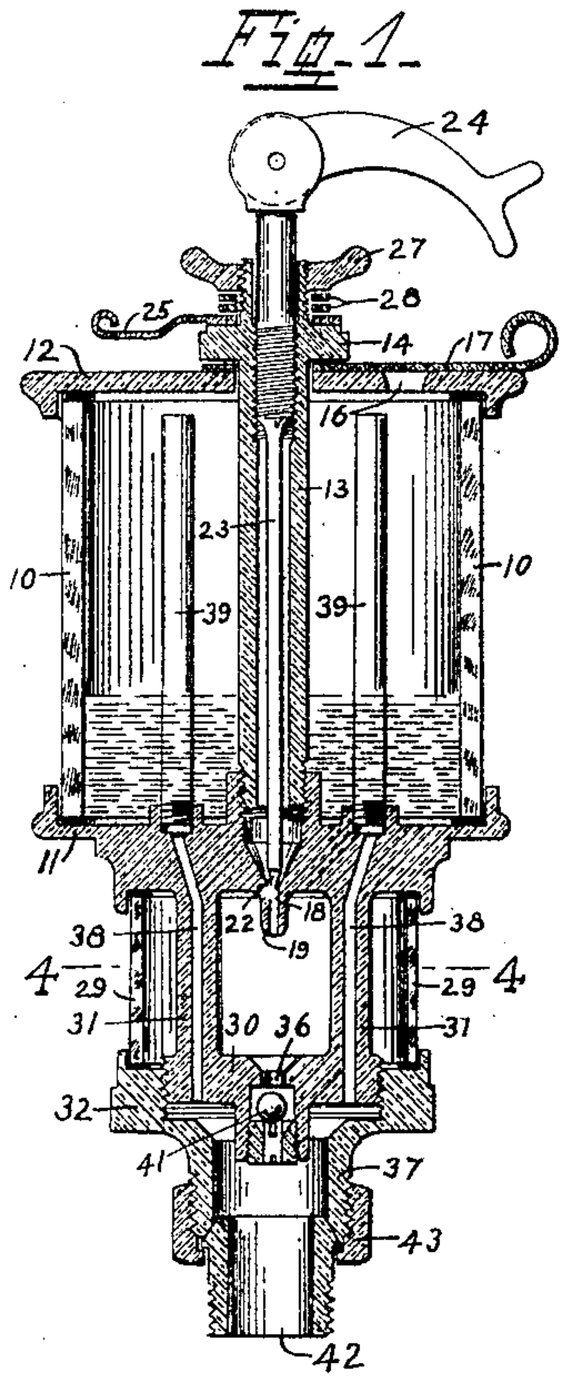


Fig. 2.

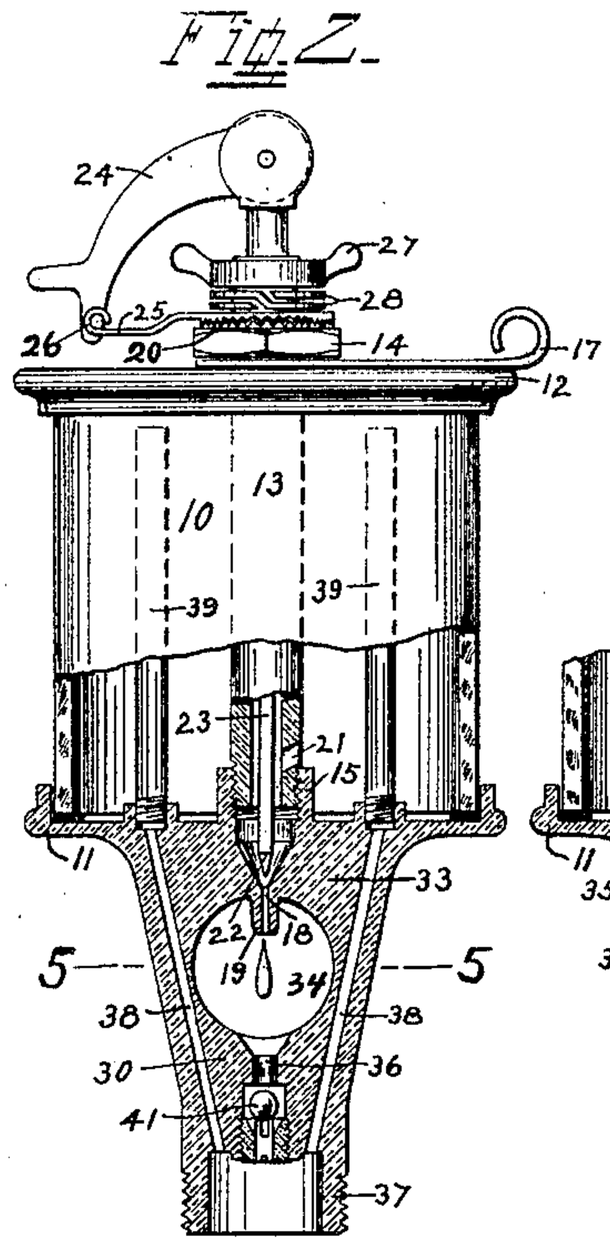


Fig. 3.

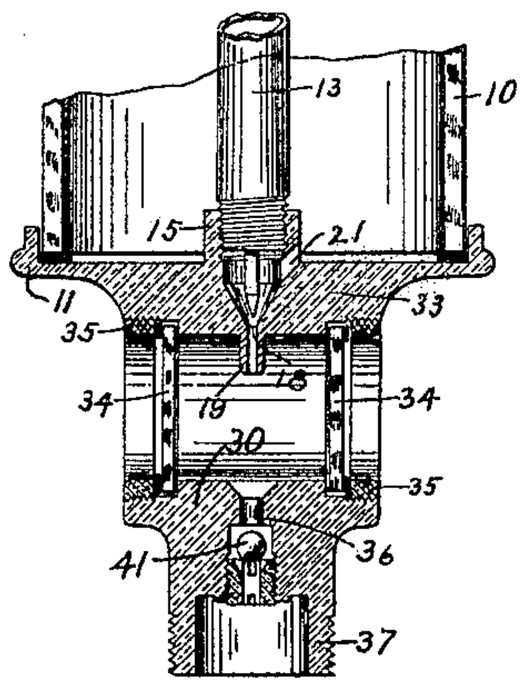


Fig. 4.

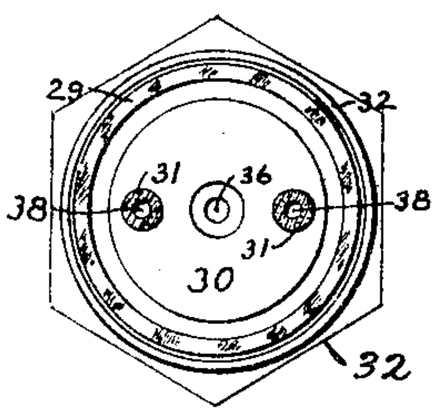


Fig. 5.

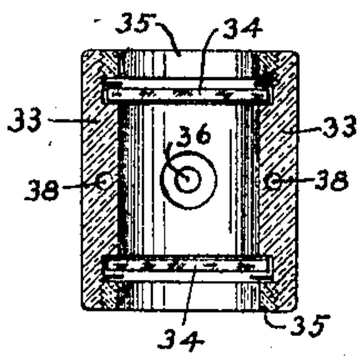


Fig. 6.

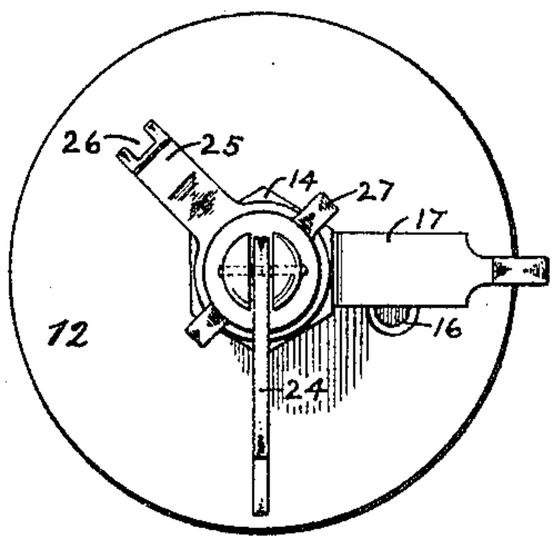
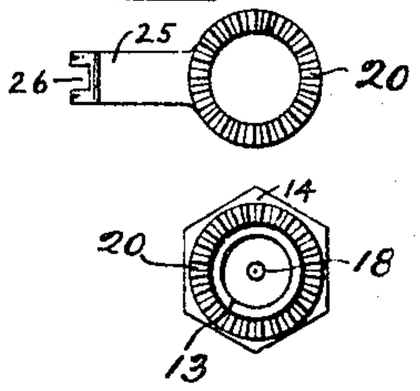


Fig. 7.



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UNITED STATES PATENT OFFICE.

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CONSTRUCTION OF OIL-CUPS.

No. 812,362. Specification of Letters Patent. Patented Feb. 13, 1906.

Application filed May 31, 1905. Serial No. 263,008.

To all whom it may concern:

Be it known that I, JAMES POWELL, a citizen of the United States, residing in Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Oil-Cup Constructions; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawings, with the reference characters marked thereon, which form also a part of this specification.

This invention concerns lubricators or oil-cups used for supplying lubricant to moving and operating parts of machinery, and relates more particularly to devices of the type known as "gravity-feed" cups. They are usually provided with a sight-feed chamber, which permits observation of the feed action, and they have a valve whereby the flow of the oil may be regulated as to the quantity passing and also entirely cut off. A stem is provided for the manipulation of the valve, the operation for the purpose being a rotary one.

The invention consists of certain features of construction, as hereinafter explained, the object of one of which is to control the manipulation of the valve-stem when used for opening or for closing the valve in a manner that a certain set adjustment of the valve to feed at a fixed rate is always positively maintained against disturbance of any kind or by these manipulations themselves for opening or closing, and whereby whenever the valve is reopened after closing it also opens always to the previously set adjustment.

Another feature embodied in my improvements causes the oil-cup to become also adapted for use in connection with explosive-motors—as, for instance, gas-engines—to supply oil to the cylinder thereof.

In the following specification, and particularly pointed out in the claims, is found a full description of this invention, together with its operation, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 in a vertical section shows an oil-cup provided with the features contemplated by my invention. Fig. 2 in a similar view illustrates certain modifications. Fig. 3 shows the lower part of the preceding figure, the section being taken in a plane at right angles thereto. Fig. 4 is a horizontal section on line 4 4 of Fig. 1. Fig. 5 is a horizontal section on line 5 5 of Fig. 2. Fig. 6 is a top view of the oil-cup. Fig. 7 shows the engaging opposite surfaces of the complementary locking members for holding the valve-stem in its adjusted position.

In the drawings, 10 indicates a cylindrical shell usually of glass and closed at opposite ends by a bottom 11 and a top 12, the three forming an inclosure which constitutes the oil-reservoir. They are held together by a tie-post 13, which has a flange or nut 14 formed around the outside of its upper end and is threaded at its lower end for insertion into and connection to a threaded socket 15, formed on the inner side of bottom 11. This tie-post is inserted through an opening in top 12 and engages this socket in the bottom, the two being held together with shell 10 between them, and thus form the inclosure mentioned. The oil is supplied through a fill-opening 16, a swinging cover or scutcheon 17 being provided for its closure which is mounted on the projecting upper end of the tie-post and below nut 14 thereon, by which it is held down. The outlet-opening 18 from the reservoir is formed in bottom 11 and contained in socket 15 thereon, a drip-nose 19 being formed below to concentrate the flow of the oil and cause it to discharge in drops. The oil reaches this outlet-opening through one or more ports 21 in the wall of socket 15 or in post 13. Its discharge is controlled by a valve 22 at the lower end of a stem 23, which latter is contained in tie-post 13, the same being hollow for such purpose. The upper end of this stem projects beyond the upper open end of post 13 to be accessible thereat for manipulation of the valve. A handle 24 is provided for such purpose, the manipulation being by rotation, the stem being for such purpose seated within hollow post 13 by means of a screw-thread. Rotation in one direction lowers valve 22 to close the outlet and in opposite direction it opens the same. The quantity of oil passing out is of course dependent on the extent of this opening or lift of the valve and is arranged and adjusted to suit particular requirements existing at the time, the valve by means of handle 24 being manipulated accordingly.

It is preferable to provide means to hold the position of the valve after once regulated

to a certain adjustment against accidental disturbance, such means to serve also for the purpose of finding quickly the intended previously-adjusted position whenever the valve is reopened after temporary closure. Various means have been used for such purpose. I provide a locking-arm 25, mounted on a boss constituted by the upper projecting end of post 13, but above nut 14 thereon, which forms a shoulder for it on which it rests. The outer end of this arm is notched, as shown at 26, and its length, together with the length of handle 24, are so arranged that this handle (it being pivotally attached to the upper end of stem 23) may when dropped engage the notched end of this locking-arm. The procedure for manipulation is now as follows: For opening the valve its handle is rotated to the left, it having first been raised up from the locking-arm, as shown in Fig. 1, to disengage it therefrom. When the proper adjustment is found, as the flow of the oil from drip-nose 19 will show, the handle is left in the particular position in which it has arrived and locking-arm 25 is brought up to it, after which the handle is dropped to engage the notch in said arm, whereby it is held thereafter. This presumes and requires, of course, that this locking-arm is also held immovable thereafter. Such may be done by a clamping-nut 27, mounted on the threaded upper end of post 13, said nut having been loosened before the parts were turned for adjustment and is now retightened. To make this engagement more positive, the engaging opposite surfaces, they being the under side of the hub of the locking-arm and the upper side of nut 14, on which it rests, may be serrated, as shown at 20. (See Figs. 2 and 7.) The engagement may also be a mere frictional one—that is to say, one which permits movement of arm 25 without loosening nut 27, the arm being held against ordinary and accidental disturbance by the pressure of an interposed spring-washer 28, which is the form shown in the drawings. The intensity of the frictional pressure of this engagement may be regulated by nut 27 and made positive at any time by merely tightening this nut. If it is now desirable to close the valve for the purpose of shutting off the oil-supply, it is merely necessary to lift handle 24 out of the notch in the locking-arm, leaving the same undisturbed in its position, and to rotate the valve-stem accordingly. When reopening thereafter, it is then not necessary to experiment again for the purpose of adjusting the valve to permit discharge of oil at the desired rate, as previously found, and the handle after the valve is opened is simply dropped again into the notch of the locking-arm, which at once fixes the proper position.

In order to observe the action of the device for purposes of obtaining this adjustment primarily as well as at any time thereafter, the usual sight-feed chamber is provided below the drip-nose, it consisting, as shown in Figs. 1 and 4, of a cylindrical glass shell 29, held against the under side of bottom 11 of the oil-reservoir by means involving a screw connection. In detail this construction is as follows: Bottom 30 of the sight-feed chamber in the form shown in Figs. 1 and 4 is held to bottom 11 by means of two posts 31. The edge of this bottom is threaded to receive a nut 32, which latter holds shell 29 against bottom 11 above. As shown in Figs. 2, 3, and 5, the wall of the sight-feed chamber consists partly of glass and partly of metal, opposite metal parts 33 being extended downwardly from the under side of bottom 11 of the oil-reservoir and provided between them with glass windows 34, the glass being held in place by screw-rings 35. Below these windows and between these metal parts there is again the bottom 30 of this sight-feed chamber, the same as shown in Fig. 1. The final outlet 36 is in this bottom 30 in each case, and below it there is the attaching-nipple 37, whereby the oil-cup is connected in position.

To insure a free flow of oil, it is of course necessary to vent the oil-reservoir, which is usually done by providing a vent-opening in top 12. When such oil-cups are to be used in connection with devices causing back pressure on the oiler—as, for instance, in explosive-engines—venting in this manner is not feasible, since a vent-opening in the oil-cup would also permit escape of pressure and gases, causing odor and also forcing the oil out. Hence whenever this oiler is to be used in such connection the reservoir is closed entirely and the pressure medium or gases from the engine-cylinder are used to vent the cup, they being admitted through vent-ducts 38, starting within the attaching-nipple and terminating in the upper part of the oil-reservoir, so as to open above the oil. These ducts pass in each case through bottoms 30 and 11, and their upper part consists of tubes 39, set in bottom 11. Between these two bottoms the ducts pass through the sight-feed chamber, they passing through posts 31 in the construction shown in Figs. 1 and 4 and through the metal parts 33, which form part of the sight-feed chamber as the construction of the same is shown in Figs. 2, 3, and 5. To prevent in explosive-engines reaction from the gases exploded within the cylinder, a check-valve 41 is provided in the final discharge-outlet 36 and so located as not to interfere with the action of the vent-ducts, the lower ends of which open into the attaching-nipple laterally of the final outlet, so as to be independent of the check-valve therein. In view of this arrangement, whereby the final outlet-opening and the lower ends of the vent-ducts come together in the attaching-nipple, it has become necessary to make

this latter larger diametrically than would otherwise be necessary. This size is brought down again by a reducing-nipple 42, held in place by a coupling-nut 43.

Having described my invention, I claim as new—

1. In an oil-cup, the combination of an oil-reservoir, consisting of a top, a bottom provided with an outlet-opening and an intervenient shell, a tie-post seated in the bottom and projecting above the top, a nut provided thereat to hold the parts of the cup together, a valve controlling the outlet, a rotary stem for actuating this valve, a pivotally-attached handle to manipulate this stem, a notched locking-arm adjustably mounted on the projecting end of the tie-post and above the nut thereon and adapted to engage the handle to hold the valve-stem against rotation and a clamping-nut also fitted on the projecting end of the tie-post above the locking-arm to hold the same in its adjusted position.

2. In an oil-cup, the combination of an oil-reservoir consisting of a top, a bottom provided with an outlet-opening and an intervenient shell, a tie-post seated in the bottom and projecting above the top with a nut provided thereat to hold the parts of the cup together, a valve controlling the outlet, a rotary stem for actuating the same, a pivotally-attached handle to manipulate this stem, a notched locking-arm adjustably mounted on the projecting end of the tie-post and above the nut thereat mentioned and adapted to engage the handle to hold the valve-stem against rotation, a spring-washer and a clamping-nut both mounted above the projecting part of the tie-post to hold the locking-arm in its adjusted position with a yielding pressure.

3. In an oil-cup, the combination of an oil-reservoir provided with an outlet-opening, a valve controlling this outlet, a rotary stem for actuating this valve, a handle pivotally attached to the upper end of this stem to manipulate the same, a locking-arm pivotally mounted and provided with serrations around its hub and with a notch in its free end adapted to engage the valve-handle to hold the valve-stem against rotation, a boss which forms the pivot for this locking-arm and has a projecting shoulder also serrated upon which the serrated part of the locking-arm rests, a spring-washer adapted to act against this serrated part of the locking-arm and means to hold the spring-washer in place.

4. In an oil-cup, the combination of an oil-reservoir and a sight-feed chamber below the same, the bottom of the former constituting also the top of the latter and dividing the two, there being a valve-controlled passage in this dividing-bottom whereby the oil-reservoir communicates with the sight-feed chamber, and a final outlet provided in the bottom of this latter and vent-ducts provided within the general structure which are open to this final outlet below the sight-feed chamber and communicating directly and independently with the interior of the oil-reservoir.

5. In an oil-cup, the combination of an oil-reservoir provided with a valve-controlled outlet, a sight-feed chamber below this outlet having a final outlet in its bottom, a check-valve controlling this final outlet and vent-ducts provided within the general structure which communicate with this final outlet independent of the check-valve therein and open to the interior of the oil-reservoir.

6. In an oil-cup, the combination of an oil-reservoir provided with a valve-controlled outlet in its bottom, a sight-feed chamber below this bottom having a final outlet in its bottom, connecting means to hold its bottom to the bottom of the oil-reservoir, continuous perforations being provided in the two bottoms and in the means connecting them which form vent-ducts and the open ends of which communicate with the final outlet and with the oil-reservoir and tubes mounted within this latter and on the upper ends of these perforations.

7. In an oil-cup, the combination of an oil-reservoir provided with a valve-controlled outlet in its bottom, a sight-feed chamber below this bottom consisting of a shell and a bottom which has a final outlet and connecting means within and surrounded by this shell to hold the bottom of the sight-feed chamber to the under side of the bottom of this oil-reservoir with the shell mentioned clamped between the two bottoms.

8. In an oil-cup, the combination of an oil-reservoir provided with a valve-controlled outlet in its bottom, a sight-feed chamber below this bottom consisting of a shell and a bottom which has a final outlet, posts within this shell to hold the bottom of the sight-feed chamber to the under side of the bottom of the oil-reservoir with the shell mentioned held between the two bottoms, continuous perforations being provided in these two latter and in the posts connecting them which form vent-ducts and the open ends of which communicate with the final outlet and with the oil-reservoir and tubes mounted within this latter and on the upper end of these perforations.

9. In an oil-cup, the combination of an oil-reservoir and a sight-feed chamber below it, both in communication by a valve-controlled passage between the two, an attaching-nipple below the sight-feed chamber, there being a passage whereby this latter communicates with the attaching-nipple, a reducing-nipple below this latter and a coupling-nut to connect the two nipples.

10. In an oil-cup, the combination of an oil-reservoir and a sight-feed chamber below it, both in communication by a valve-controlled passage between the two, an attach-

ing-nipple below the sight-feed chamber, there being a passage whereby this latter communicates with the attaching-nipple, a check-valve controlling this passage in one direction and vent-ducts provided within the general structure whereby the attaching-nipple communicates with the interior of the oil-cup independent of the check-valve.

11. In an oil-cup, the combination of an oil-reservoir and a sight-feed chamber below it, both in communication by a valve-controlled passage between the two, an attaching-nipple below the sight-feed chamber, there being a passage provided within the general structure whereby the attaching-nipple communicates with the sight-feed chamber and independent vent-ducts whereby this latter communicates with the interior of the oil-cup.

12. In an oil-cup, the combination of an oil-reservoir and a sight-feed chamber below it, both in communication by a valve-controlled passage between the two, an attaching-nipple below the sight-feed chamber, there being passages provided within the general structure whereby this attaching-nipple communicates with the sight-feed chamber and independently with the interior of the oil-cup, a reducing-nipple below this attaching-nipple and means to connect the two nipples.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JAMES POWELL.

Witnesses:
C. SPENGEL,
C. MEYER.