No. 845,416. PATENTED FEB. 26, 1907.

C. B. HODGES.

DEVICE FOR VISUALLY FEEDING MEASURED QUANTITIES OF LIQUID.

APPLICATION FILED DEC. 9, 1905.

2 SHEETS—SHEET 1.

FIG. 2.

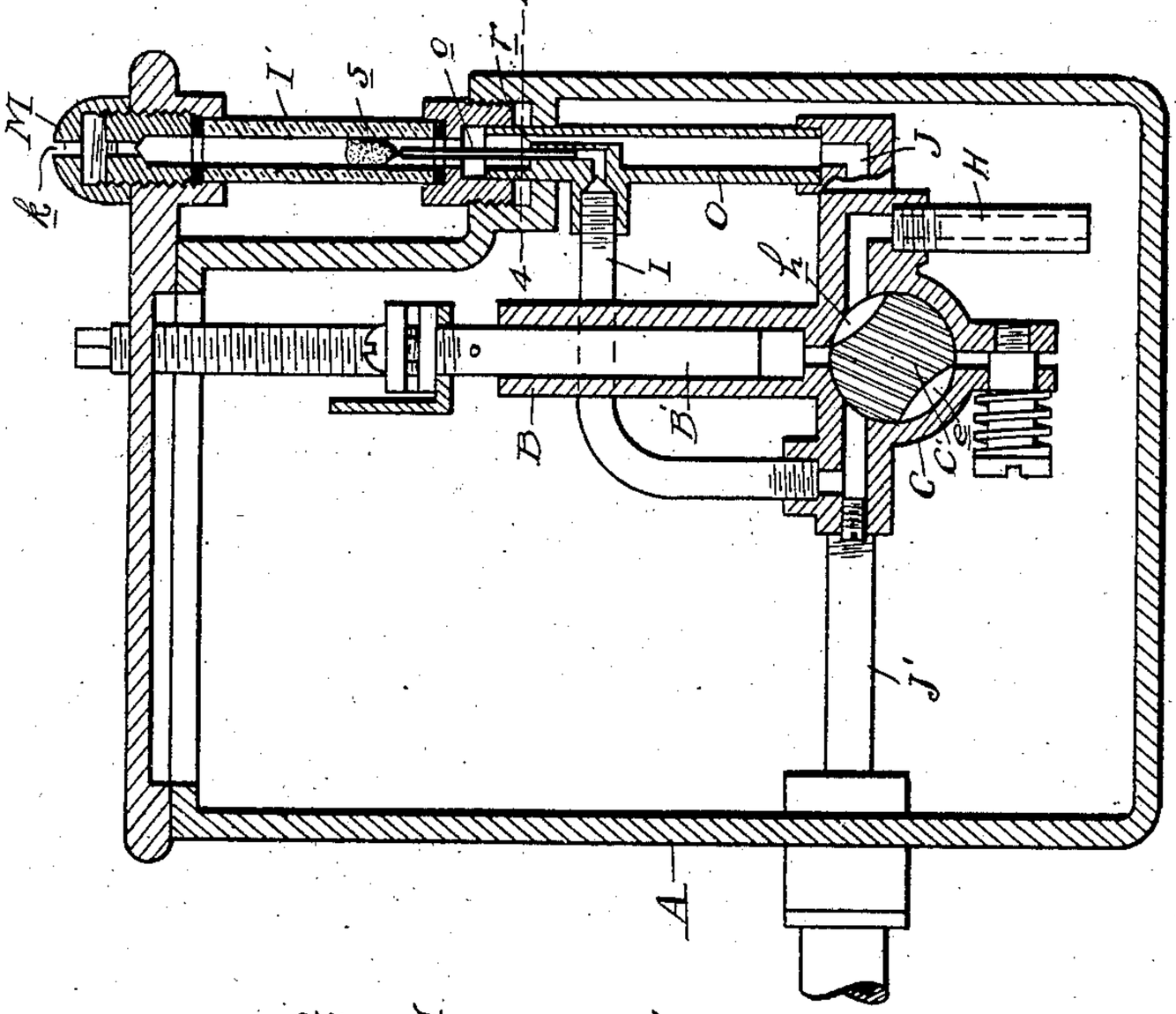

FIG. 1.

WITNESSES

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2 SHEETS—SHEET 2.

FIG. 4.

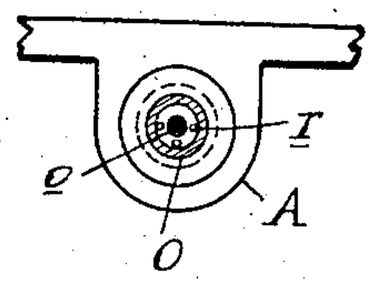
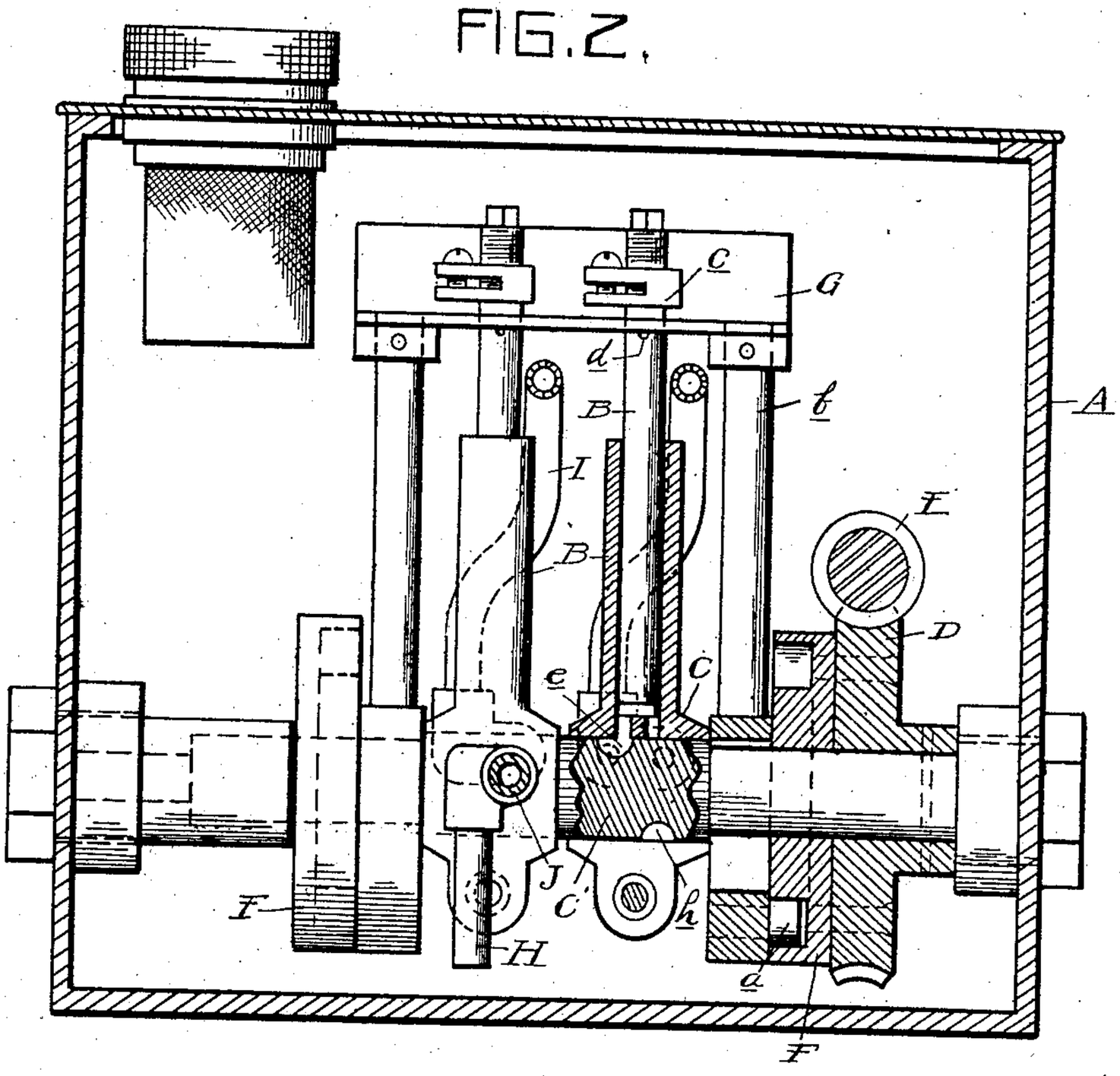


FIG. 2.



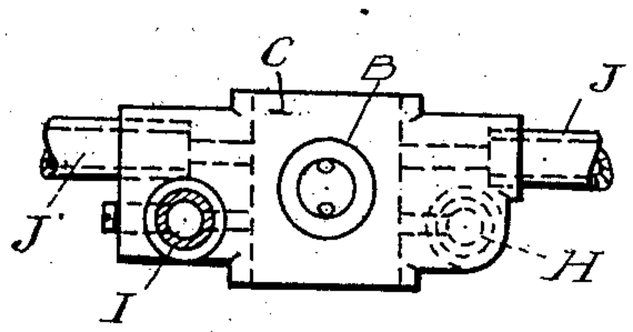


FIG. 5.

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UNITED STATES PATENT OFFICE.

CLARENCE B. HODGES, OF DETROIT, MICHIGAN, ASSIGNOR TO DETROIT LUBRICATOR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

DEVICE FOR VISUALLY FEEDING MEASURED QUANTITIES OF LIQUID.

No. 845,416. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed December 9, 1905. Serial No. 291,021.

To all whom it may concern:

Be it known that I, CLARENCE B. HODGES, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new useful Improvements in Devices for Visually Feeding Measured Quantities of Liquid, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to the construction of a device for visually feeding measured quantities of liquids, and particularly to such a device for sight-feeding oil.

It consists in a visual or sight-feed chamber, to which charges of liquid are fed to fill a portion or section of such chamber where it may be seen and where it is held in sight long enough to determine the size of the charge or feed and is then moved away to the point to be lubricated.

Sight-feeds heretofore have almost always consisted of a visual chamber through which drops of oil, either ascending or descending, were fed free from the sides of the chamber, either dropping through an air-space in the chamber or ascending through water. In these devices the operator must watch the drops as they are fed through the space, which requires close inspection.

With my device the sight-feed chamber, preferably having transparent wall or walls, is partially filled or a section is filled for each charge, so that the liquid being in contact with the transparent wall is readily observable, and the size of the feed and the rapidity of feed can easily and quickly be observed. With the preferred forms this can be seen at quite a distance. For instance, if my device is used for lubricating an automobile it may be placed on the dashboard, and the chauffeur sitting on the seat can readily observe all the feeds instantly without getting down and peering into the glasses at short range.

While I have shown my device for feeding oil as a sight-feed lubricator, it is obvious that it may be used for feeding other liquids for other purposes.

The specific form of pump and valve mechanism herein shown is no part of my invention, but is illustrated to show one of the preferred forms of device to which my invention may be applied.

In the drawings, Figure 1 is a transverse section through a lubricator embodying my invention. Fig. 2 is a longitudinal section through the reservoir, showing the pumps partly in section. Fig. 3 is a section similar to Fig. 1 of a modified structure. Fig. 4 is a section on line 4 4, Fig. 3; and Fig. 5 is a top plan view of the pump, showing connections to same.

A represents an oil-reservoir, and in this embodiment of my invention I have shown the pumps (two being here shown) arranged therein, each pump consisting of the cylinder B and piston B′. The valve-casing C below the pump, preferably formed integral with the cylinder, has the rotary valve C′ therein. This valve is a shaft which is suitably journaled in the casing and has the worm-wheel D, driven by the worm E, driven from any suitable source of power. On the valve-shaft are cams F, having camways, in which roller-wrists *a* on the connecting-rods *b* engage, these connecting-rods connecting to the cross-head G, through which the pistons pass. Each piston preferably has the nut *c* adjustably screwed thereon above the cross-head and the pin or shoulder *d* below the cross-head, the cross-head striking these two as it moves up and down and actuating the pistons, the distance between the nut and pin determining the throw of the piston, and hence the amount of the feed or charge.

The valve-shaft is provided with the two ports (shown as segmental notches) *e h* for each pump, these ports being in different planes longitudinally of the shaft. One port is adapted to first connect the inlet or suction pipe H with the cylinder and then to connect the cylinder with the conduit I, leading to the sight-feed. The other port is adapted to connect the cylinder first with the return-conduit J from the sight-feed and then to connect the cylinder with the discharge-conduit J′ to the point to be lubricated. Thus the pump takes oil from the reservoir, delivers it to the sight-feed, then takes it from the sight-feed, and delivers it to the point to be lubricated, the oil being fed in regulated charges or feeds, depending upon

the amount of throw or travel of the piston of each pump.

The sight-feed which is the subject of my invention may be of various types or forms. I have shown it as comprising a tubular glass in both modifications; but it is to be understood that the bull's-eye or other form of sight-feed may be employed without departing from the spirit of my invention. In the construction snown in Fig. 1 the conduit I leads into the top casing K, at the bottom of which is the tubular glass I′, which at the bottom engages the bottom casing or bracket L, to which connects the return-conduit J. The glass is held in position by the annular nut *i*. The top of the casing K is provided with the cap M, having air-inlet ports *k*. In this construction of device I construct the camways *a*, so that the pistons will have a slightly-greater travel for the stroke that takes the charge from the sight-feed than that which takes the oil from the reservoir and delivers it to the sight-feed.

The operation is as follows: A pump withdraws oil from the reservoir, delivers it into the conduit I, whence it is fed to the top casing K, and according to the travel of the piston at each reciprocation a measured quantity is dropped into the top of the sight-feed glass. Tne next reciprocation of the pump will draw it down into the glass, and with it air entering the ports *k* will also be drawn in, so that the charges or feeds will be separated by air-spaces *m*, as shown in Fig. 1.

It will be observed that a section of the passage-way through the glass tube I′ is entirely filled by each charge, and it has been found in practice that these separated charges will be drawn through the sight-feed, as shown in Fig. 1, being held to view for quite a period and plainly visible even at a distance of several feet.

In the construction shown in Fig. 3 instead of taking the charge in at the top and drawing it down the whole length the charge is fed into the bottom, filling the bottom section of the sight-feed chamber held there between feeds, then drawn away before another is fed in. In this construction the pipe I leads into a nozzle *o* within the pipe O and projects to or into the lower end of the sight-feed chamber, (shown as the tubular glass type,) the same as I′, with an air-ported cap M. The nozzle *o* is smaller than the bore of the pipe O, having a passage-way *r* around it. The charge of oil is fed in by the pump and fills a portion of the lower part of the oil-chamber, as shown at *s*, (its size being determined by the travel of the piston,) and is held there until it is drawn down into the pipe O by the next reciprocation of the pump, when the valve connects it with the return-pipe from the sight-feed chamber. The differential action of the pump is not required for this construction.

What I claim as my invention is—

1. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed feature having a chamber and means for filling a section of the chamber for each feed.

2. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed feature having an observation-chamber, means for filling a section of the chamber for each feed and for moving the charge away from the observation-point.

3. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed chamber and means for successively filling sections of the chamber for each feed and for feeding the charges separately therefrom.

4. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed chamber, means for feeding successive oil charges therein and for holding the charge in view between feeds.

5. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed chamber, means for successively filling a section thereof and for holding the charge in view between feeds.

6. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed chamber, means for feeding successive separated charges therein, each charge filling a section of such chamber.

7. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed chamber, means for feeding oil charges therein, each filling a section of the chamber and for separating the charges by air-spaces.

8. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed chamber and means for feeding therein separated sections of oil and air.

9. In a device for visibly feeding liquid in measured quantities, the combination of an observation-chamber, means for intermittently filling a section of the chamber and holding the charge in view between operations, and then withdrawing such charge.

10. In a device for visibly feeding liquid in measured quantities, a sight-feed chamber open to the atmosphere and means for intermittently filling a section of the chamber for each feed.

11. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed chamber, means for intermittently filling a section of the chamber and for withdrawing the fed charge therefrom.

12. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed chamber, means for delivering separated charges therein, each filling a section of the chamber and for withdrawing the charges therefrom.

13. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed chamber open to the air and differentially-acting pumps to feed charges into and withdraw the same from the chamber, for the purpose described.

14. In a device for visibly feeding liquid in measured quantities, the combination of a sight-feed chamber open to the air, a single pump delivering oil to and withdrawing it from said chamber and means for differentially actuating said pump, for the purpose described.

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

CLARENCE B. HODGES.

Witnesses:

AMELIA WILLIAMS,

JAMES P. BARRY.