

J. A. FRETWELL.

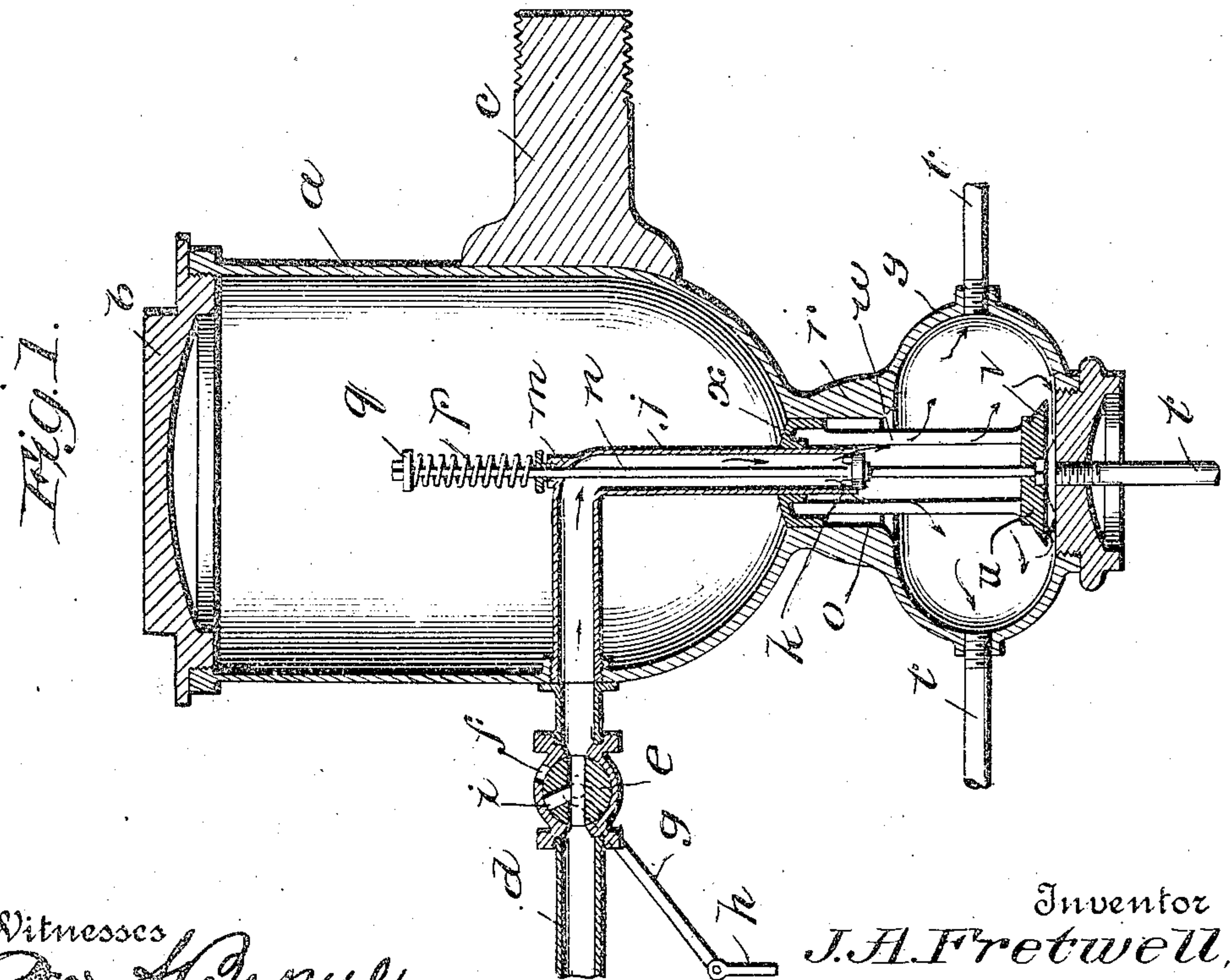
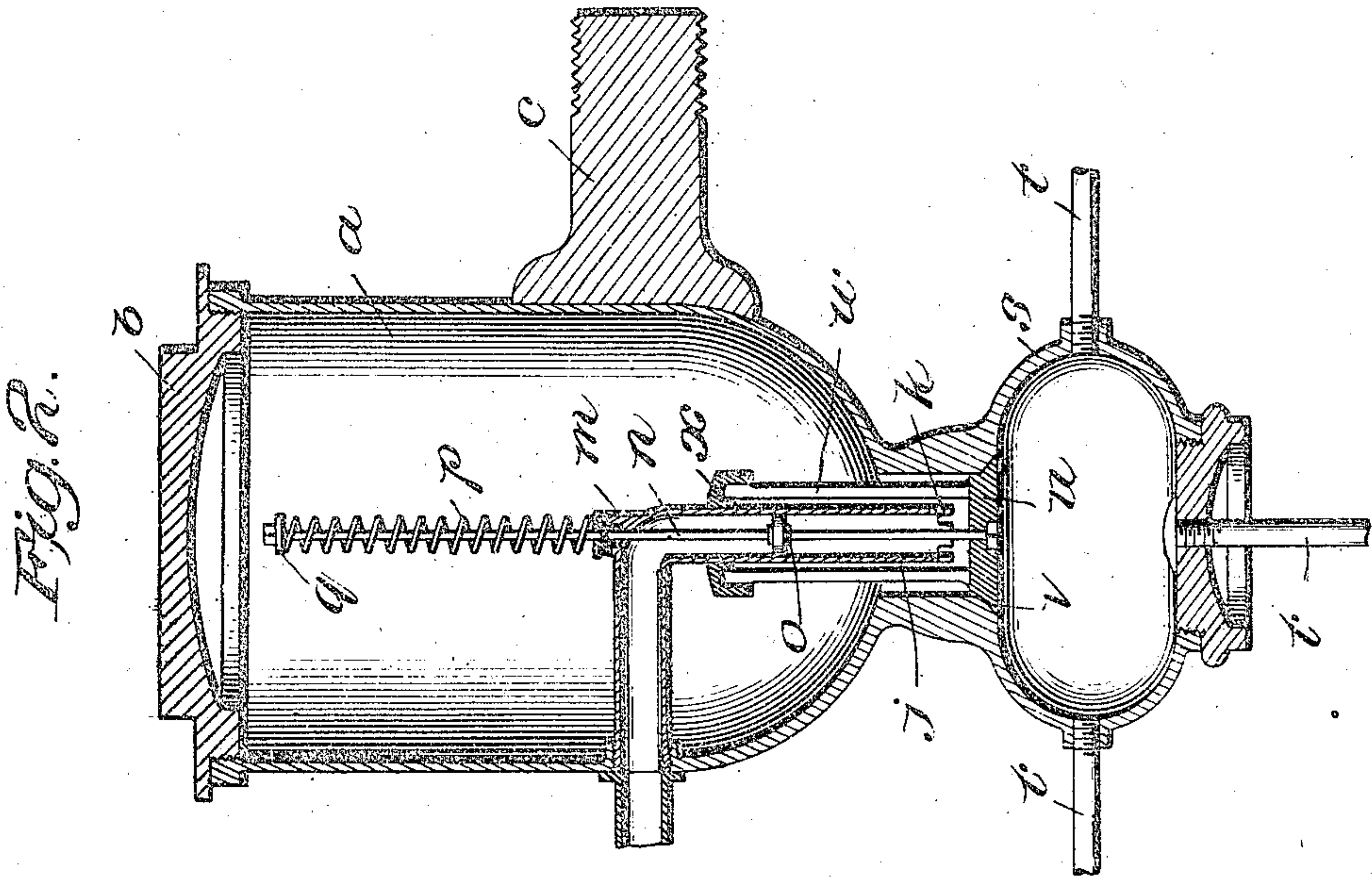
LUBRICATOR.

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929,576.

Patented July 27, 1909.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JOHN A. FRETWELL, OF LITTLE ROCK, ARKANSAS.

LUBRICATOR.

No. 929,576.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN A. FRETWELL, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Lubricators; and I do hereby declare the following to be a full clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in lubricators, and is especially designed to feed a measured charge of powdered lubricant at regular intervals to the parts to be lubricated.

The object of my invention is to produce a simple and inexpensive device whereby a charge of powdered lubricant is fed either by a blast or suction at intervals, although it can be used with liquid lubricants.

With this object in view my invention consists in the construction and combinations of parts as hereinafter described and claimed.

In the accompanying drawings—Figure 1 is a vertical cross section of my invention in the position assumed when the charge of lubricant is being delivered. Fig. 2 is a similar section, the air pipe being broken off, of the same in its non-operative position. Fig. 3 is a vertical section of a modification operated by suction. Fig. 4 is a cross section, on a larger scale, of the measuring valve shown in Fig. 3.

a represents a cup or reservoir for containing the lubricant, which is preferably powdered. The top of this cup is closed by a removable cover *b* adapted to be screwed into the cup.

c represents an extension attached to or made integral with the cup by means of which it may be secured to the engine or other device to be lubricated.

Entering the side of the cup or reservoir *a* is an air pipe *d* provided with a three-way cock *e* inclosed in a valve casing having an opening *f* communicating with the atmosphere. The valve *e* has a stem projecting out through the casing to which is connected an arm *g* for partially rotating said valve.

To the arm *g* is pivotally connected the end of a link *h* which is operated by the engine at suitable intervals by any desired connection (not shown) to shift the parts from the position shown in Fig. 1, to that in which the opening *i* in the valve will register with the opening *f*, and back again.

The pipe *d* enters the cylinder *a* and passes nearly to its center where it is bent, forming a downward extension *j* open at the bottom, the edges of the pipe near the bottom being slotted, as shown at *k*. A boss *m* is located at the angle of this pipe and this boss is perforated. Through the perforation passes a piston rod *n* provided with a piston *o*, which reciprocates in the part *j* of the air pipe, in which it closely fits. The upper part of the rod *n* is surrounded by a spiral spring *p* adjustable by means of a nut *q* on the top of the piston rod *n*.

The lower end of the cup *a* is provided with an extension *r*, centrally perforated, which delivers into an expanded chamber, the wall of which is represented by *s* and which is provided with a series of pipes *t* leading to the various parts to be lubricated.

Within the extension *r* is mounted the measuring valve adapted to slide up and down, from the position shown in Fig. 1 to the position shown in Fig. 2 and back again. This valve is provided at its lower end with a stop plate *u* to which the piston rod *n* is fastened, which stop plate is beveled, as shown at *v*, and fits against a valve seat in the lower part of the extension *r*. The measuring valve is tubular in shape, with slots cut in its sides, leaving upright connecting portions *w* which are connected to the plate *u* and to the top *x* of the valve which is centrally perforated and slides upon the part *j* of the air pipe which acts as a guide therefor.

The operation is as follows:—The parts being in the position shown in Fig. 2 and the three-way valve closed, the lubricant of its own weight falls and fills the measuring valve, the three-way valve being then shifted into the position shown in Fig. 1 a blast of air comes in through the air pipe and forces the piston *o* down to the position shown in

Fig. 1. The air blast then escapes through the slots *k* and forces the measuring valve down into the position shown in Fig. 1 and immediately thereafter forces the charge of lubricant carried by said measuring valve into the distributing chamber, from whence it passes through the pipes *t* to the parts to be lubricated.

In Figs. 3 and 4 is shown a modified form especially designed to be applied to the relief valves of locomotives. In this modification, in which the measuring valve is operated by suction, 1 indicates a pipe connected with the relief valve; 2 indicates a cylinder screwed into the upturned end of said pipe and provided with vent holes 3. The cylinder is provided with a downwardly extending perforated portion 4 which acts as a guide for the stem 5 which carries the measuring valve, and is also provided with a stop valve 6 having a beveled edge 7 adapted to strike against a valve seat on the lower open end of the cylinder 2 at certain times. The upper part of the cylinder 2 is provided with a perforated extension 8 screw-threaded on the outside for the reception of an extension 9 on the cup 10 which contains the lubricant. The cup or reservoir 10 is adapted to be closed by a screw-threaded cap 11, and the extension 9 is perforated as shown at 12. In this perforated extension works the measuring valve 13 of substantially the form already described. Within the cup or reservoir 10 is an air pipe having a horizontal portion 14 and a vertical portion 15 which serves as a guide for the measuring valve, and within the portion 15 of the air pipe is mounted a piston rod 16 carrying a piston 17 adjustably controlled by the spring 18, as already described. The lower end of the vertical portion 15 of the air pipe is provided with slots 19. The operation of this modification is substantially the same as already described, except that it is operated by suction, a vacuum being produced at intervals in the pipe 1. When the vacuum is broken the spring 18 moves the measuring valve and the parts attached thereto upward until the inclined faces on the measuring valve and stop valve contact with their respective seats. In this reverse motion, to prevent compression occurring in the cylinder 2, I have provided said cylinder with the slots 3 through which the air in said cylinder may escape.

While I have thus described my invention, I wish it to be distinctly understood that I do not limit myself to the exact details shown and described, as these may be varied in many respects without departing from the spirit of my invention.

I claim:—

1. In a lubricator, the combination of a reservoir for containing a lubricant and pro-

vided with a perforated extension, an air pipe passing through one wall of said reservoir and down into said perforated extension, a measuring valve adapted to slide on said air pipe, a piston rod carrying a piston mounted so as to slide in a part of said air pipe, and a spring for returning said piston rod to its original position when the air pressure is released, substantially as described.

2. In a lubricator, the combination of a reservoir adapted to contain a lubricant and provided with a perforated extension, an air pipe entering said reservoir and bent downwardly into said extension, a piston rod provided with a piston adapted to slide in the vertical portion of said air pipe, a measuring valve attached to said piston rod, a spring normally holding said measuring valve in its highest position, and a valve for admitting air under pressure into said pipe, substantially as described.

3. In a lubricator, the combination of a lubricant reservoir provided with a perforated extension having a valve seat thereon, an air pipe entering through the wall of said reservoir and being bent forming a vertical portion leading down into said extension, a measuring valve adapted to slide upon the vertical portion of said pipe and provided with a portion adapted to fit against said valve seat, a piston rod connected to said measuring valve passing through the vertical portion of said pipe, a piston on said piston rod and adapted to slide within the vertical portion of said pipe, a spring for normally lifting said piston and said measuring valve, a three-way valve for admitting air at intervals into the air pipe in said reservoir, and devices for operating said three-way valve at intervals, substantially as described.

4. In a lubricator, the combination of a lubricant reservoir having a screw cap and an extension by means of which said reservoir may be attached to the machine to be lubricated, said reservoir being provided with a perforated extension terminating in a distributing chamber and having a valve seat thereon, distributing pipes connected with said receiving chamber, an air pipe entering the wall of said reservoir and bent downwardly forming a vertical portion, said vertical portion being slotted at its lower end, a measuring valve adapted to slide on the vertical portion of said air pipe and provided with a part adapted to fit against the valve seat in said extension, said measuring valve consisting of a tube cut away at the sides and having a stop plate at the bottom and a perforated top fitting around the vertical portion of said air pipe, a piston rod attached to said measuring valve, a piston on said rod adapted to slide in the vertical portion of said air pipe, said piston rod pass-

ing out through a perforation in said air pipe, a spring for normally lifting said measuring valve encircling said piston rod, means for adjusting said spring, a three-way valve located in said air pipe outside of said reservoir, and devices for operating said valve, substantially as described.

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

JOHN A. FRETWELL.

Witnesses:

S. L. MAYNARD,

Mrs. J. A. FRETWELL.