

No. 887,881.

PATENTED MAY 19, 1908.

L. S. WATRES.
LUBRICATING DEVICE.
APPLICATION FILED FEB. 23, 1906.

Fig. 1.

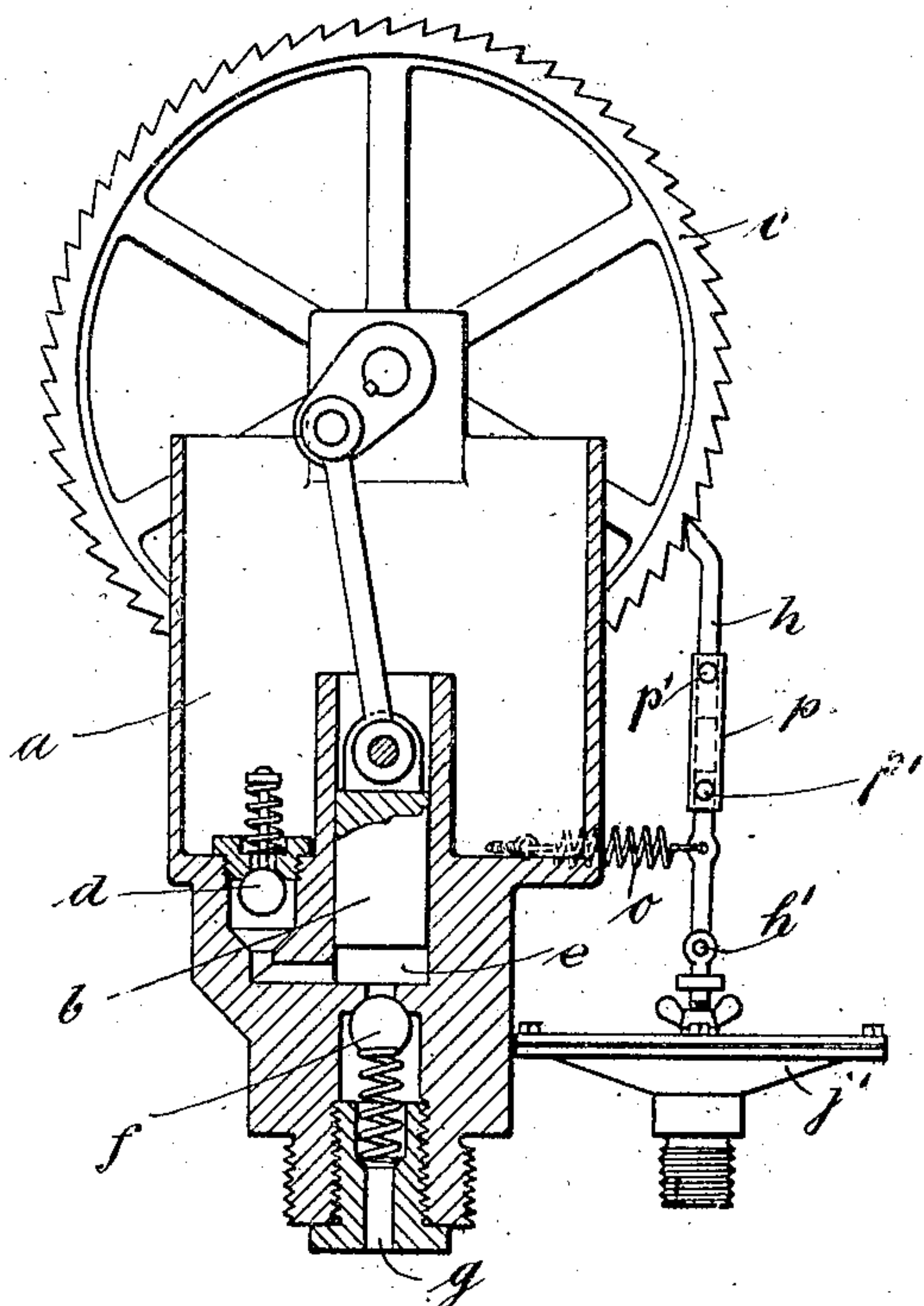
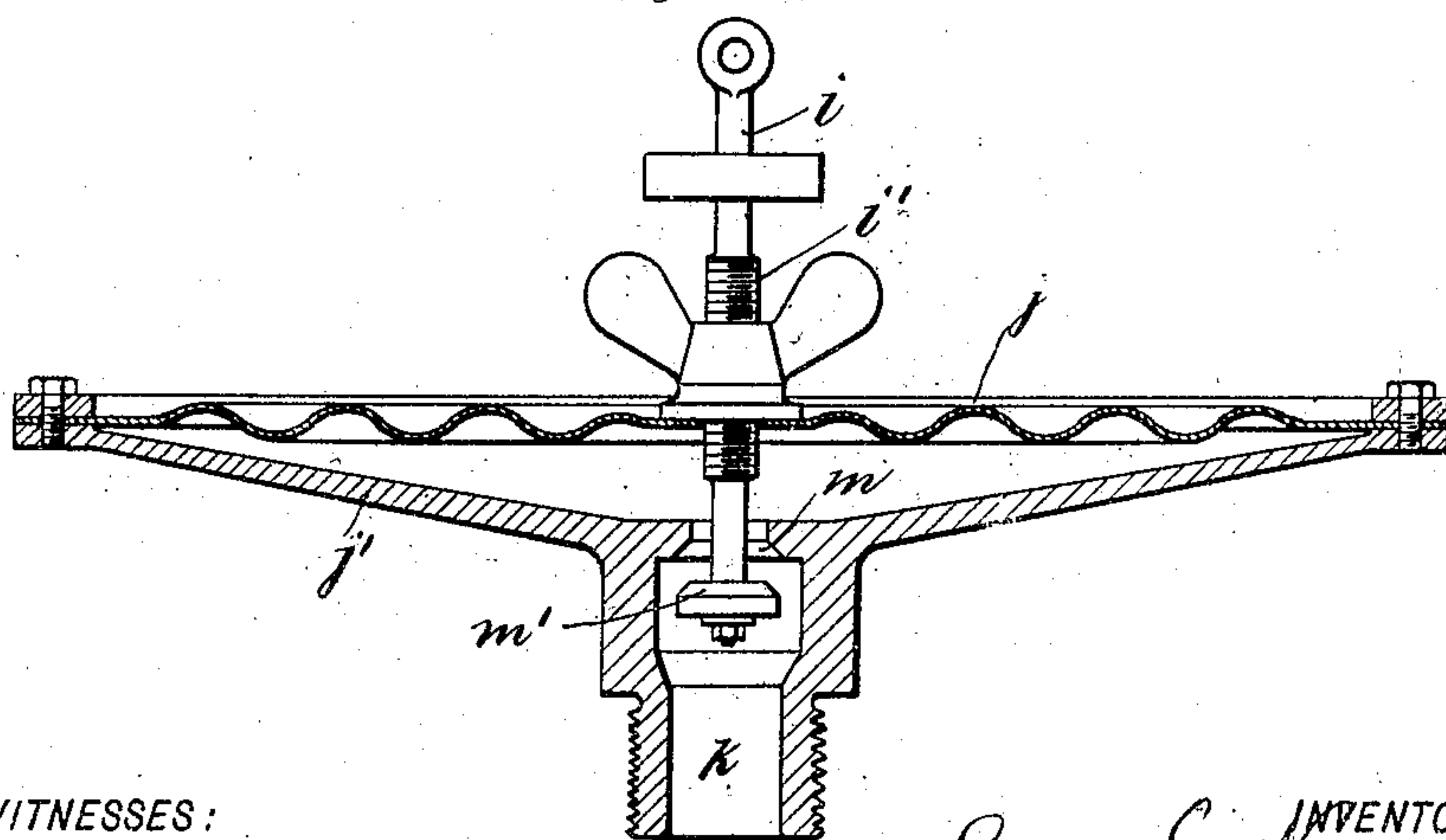


Fig. 2.



WITNESSES:

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LEWIS S. WATRES, OF SCRANTON, PENNSYLVANIA, ASSIGNOR OF FIFTY-ONE ONE-HUNDREDTHS TO ROBERT C. ADAMS, OF SCRANTON, PENNSYLVANIA.

LUBRICATING DEVICE.

No. 887,881.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed February 23, 1906. Serial No. 302,335.

To all whom it may concern:

Be it known that I, LEWIS S. WATRES, a citizen of the United States, residing at Scranton, county of Lackawanna, State of Pennsylvania, have invented certain new and useful Improvements in Lubricating Devices, of which the following is a specification.

This invention comprises a forced feed lubricator in which the motive power for effecting the feed is obtained from expansion of fluid under pressure without connection with any moving part of the engine or apparatus to which it is applied. To this end, I drive the lubricant feed devices, through pawl and ratchet devices, by power obtained from an expansible diaphragm operated intermittently by pressure of an engine exhaust, or by pressure of the fluid constituting the motive power of an engine, or by pressure of a fluid handled by the apparatus to be lubricated. The pressure side of the diaphragm may be in connection with the end of the cylinder of a steam engine, gas engine, or of a pressure or liquid force pump.

The accompanying drawing shows the invention embodied in a practical and efficient form.

Figure 1 is an elevation partly in section: and Fig. 2, a section through the expansible diaphragm and some associated parts.

a indicates an oil receptacle, and *b* an oil pump plunger coupled by a connecting rod with a crank on the shaft of a ratchet wheel *c*. In the bottom of the oil tank is a downwardly opening spring supported valve *d* which, when unseated by the suction of the pump plunger, permits passage of oil to the chamber *e* below the plunger. An aperture in the bottom of this chamber is closed by an upwardly spring-pressed valve *f* which is unseated on the downward stroke of the plunger and permits oil to pass by the passage *g* to the part of the apparatus to be lubricated. The ratchet wheel is driven by a push pawl rod *h* pivoted at *h'* to a valve stem *i* that passes through an expansible diaphragm *j* confined at its edges in a circular frame *j'* forming a pressure chamber on the under side of the diaphragm. The passage way *k* to this chamber is formed with a valve seat *m* and on the stem *i* is a downwardly opening valve *m'* adapted to close against said seat when the diaphragm is lifted by pressure of fluid entering through *k*. The

stem *i* where it passes through the diaphragm is screw threaded as shown at *i'* and has applied to it an adjusting nut by means of which the valve *m'* may be regulated with reference to its seat so as to shut off the fluid pressure after a determined extent of expansion of the diaphragm has occurred. A spring *o* of any appropriate character, a coiled spring being shown, is applied to the pawl rod *h* and serves to maintain it in contact with the periphery of the ratchet wheel. On each accession of pressure of fluid in the passage *k*, the diaphragm is raised causing the pawl *h* to drive the ratchet wheel through one step or increment of movement. Successive steps of movement of the ratchet wheel alternately will produce reciprocation of the oil pump plunger.

In order to regulate the distance through which the ratchet wheel will be rotated on each actuation of the pawl rod *h*, that rod is made adjustable to any length so that it may be caused to engage the ratchet wheel at different points. Such adjustment may readily be accomplished by making the pawl rod *h* in two parts telescoping in a coupling sleeve *p* and held in desired position therein by cross pins or bolts *p'*.

I claim as my invention:

1. Forced feed lubricating devices for engines and like apparatus comprising the combination of a lubricant receptacle, an oil pump, appropriate valves, a ratchet wheel by which the oil pump is operated, a pawl rod engaging the ratchet wheel to effect its step by step rotation, an expansible diaphragm mounted upon a stationary part of the apparatus and connected with a chamber adapted to be subjected to variable fluid pressure and means operated by the expansion of the diaphragm to shut off the fluid pressure from the diaphragm when a desired degree of expansion of the latter has been obtained.

2. Forced feed lubricating devices for engines and like apparatus, comprising the combination of a lubricant receptacle, an oil pump, appropriate valves, a ratchet wheel by which the oil pump is operated, a pawl rod engaging the ratchet wheel to effect its step by step rotation, means for adjusting the length of the pawl rod to regulate the point at which it engages the ratchet wheel, an expansible diaphragm mounted upon a stationary part of the apparatus and con-

nected with a chamber adapted to be subjected to variable fluid pressure.

3. Forced feed lubricating devices for engines and like apparatus, comprising the
5 combination of a lubricant receptacle, an oil pump, appropriate valves, a ratchet wheel by which the oil pump is operated, a pawl rod adjustable in length engaging the toothed wheel to effect its step by step rotation, an
10 expansible diaphragm mounted upon a stationary part of the apparatus and connected with a chamber adapted to be subjected to variable fluid pressure.

4. Forced feed lubricating devices for engines and like apparatus, comprising an ex-
15 pansible diaphragm mounted upon a sta-

tionary part of the apparatus and adapted to be subjected to intermittent fluid pressure whereby its intermittent expansion and contraction is caused, oil feed devices connected
20 with the diaphragm and intermittently operated thereby and a valve operating to cut off the fluid pressure from the diaphragm when a desired degree of expansion of the
25 latter has been attained.

In testimony whereof, I have hereunto subscribed my name.

LEWIS S. WATRES:

Witnesses:

EVA M. WINBERG,

SAMUEL A. JENKINS.