No. 831,899. PATENTED SEPT. 25, 1906.

J. J. SLAGEL.

LUBRICATOR.

APPLICATION FILED AUG. 10, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

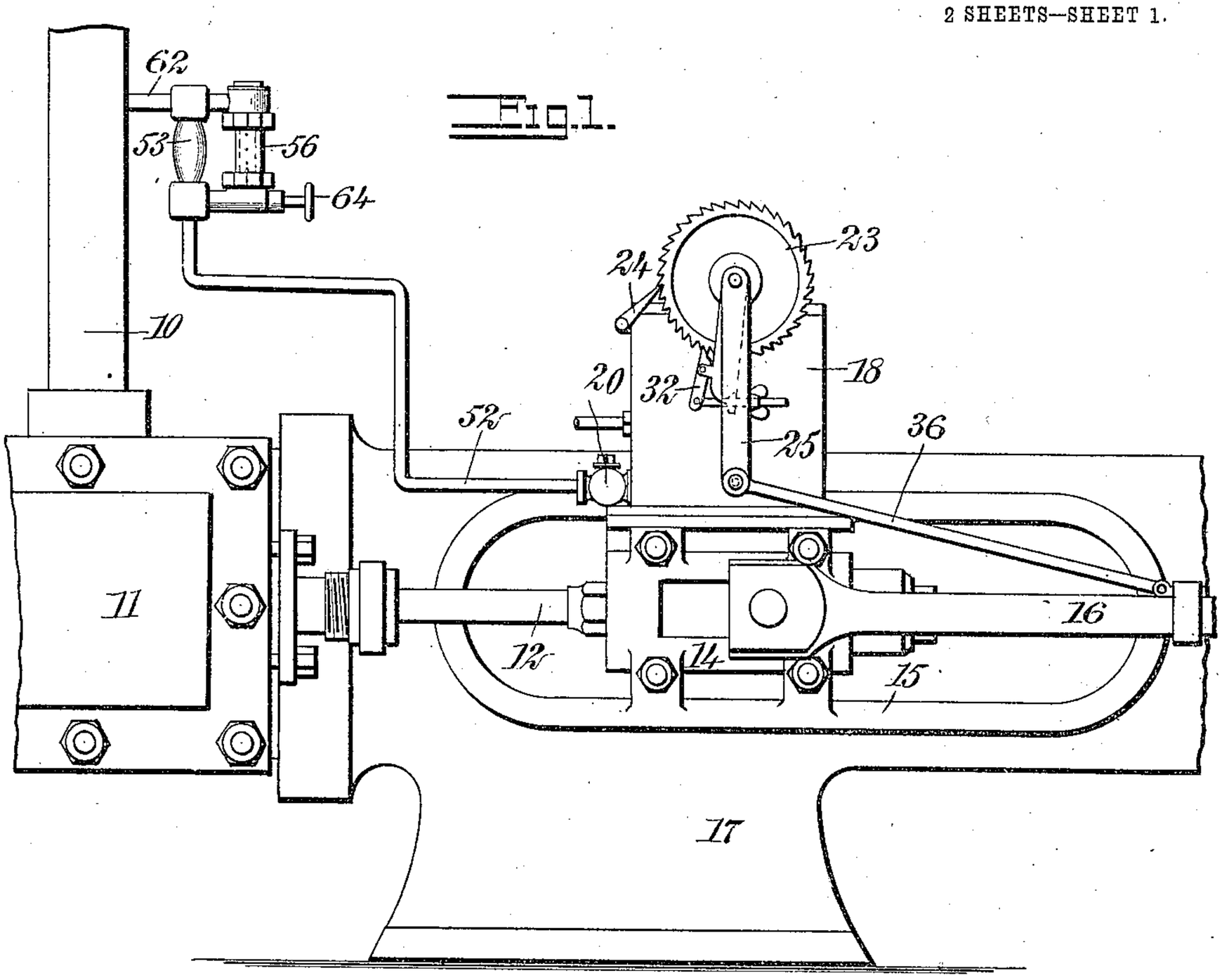
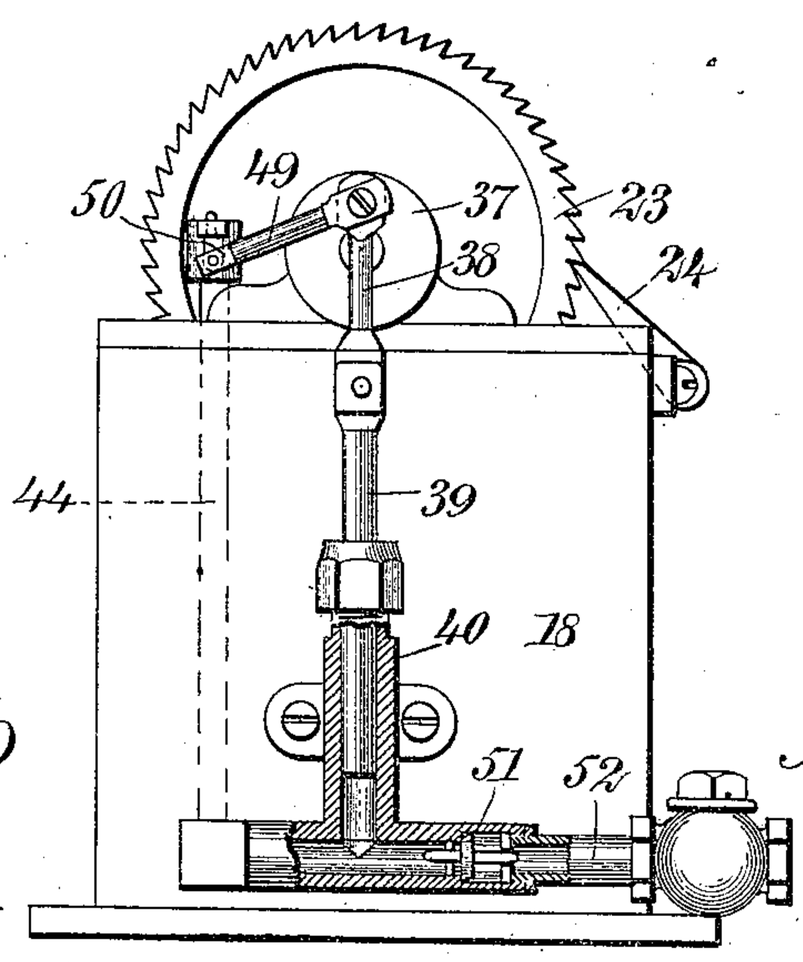


Fig. 2.



WITNESSES:

L. Almquist.

Isaac B. Owens.

INVENTOR

Joseph J. Slagel

BY Munn & Co

ATTORNEYS

No. 831,899. PATENTED SEPT. 25, 1906.

J. J. SLAGEL.

LUBRICATOR.

APPLICATION FILED AUG. 10, 1905.

2 SHEETS—SHEET 2.

Fig. 3.

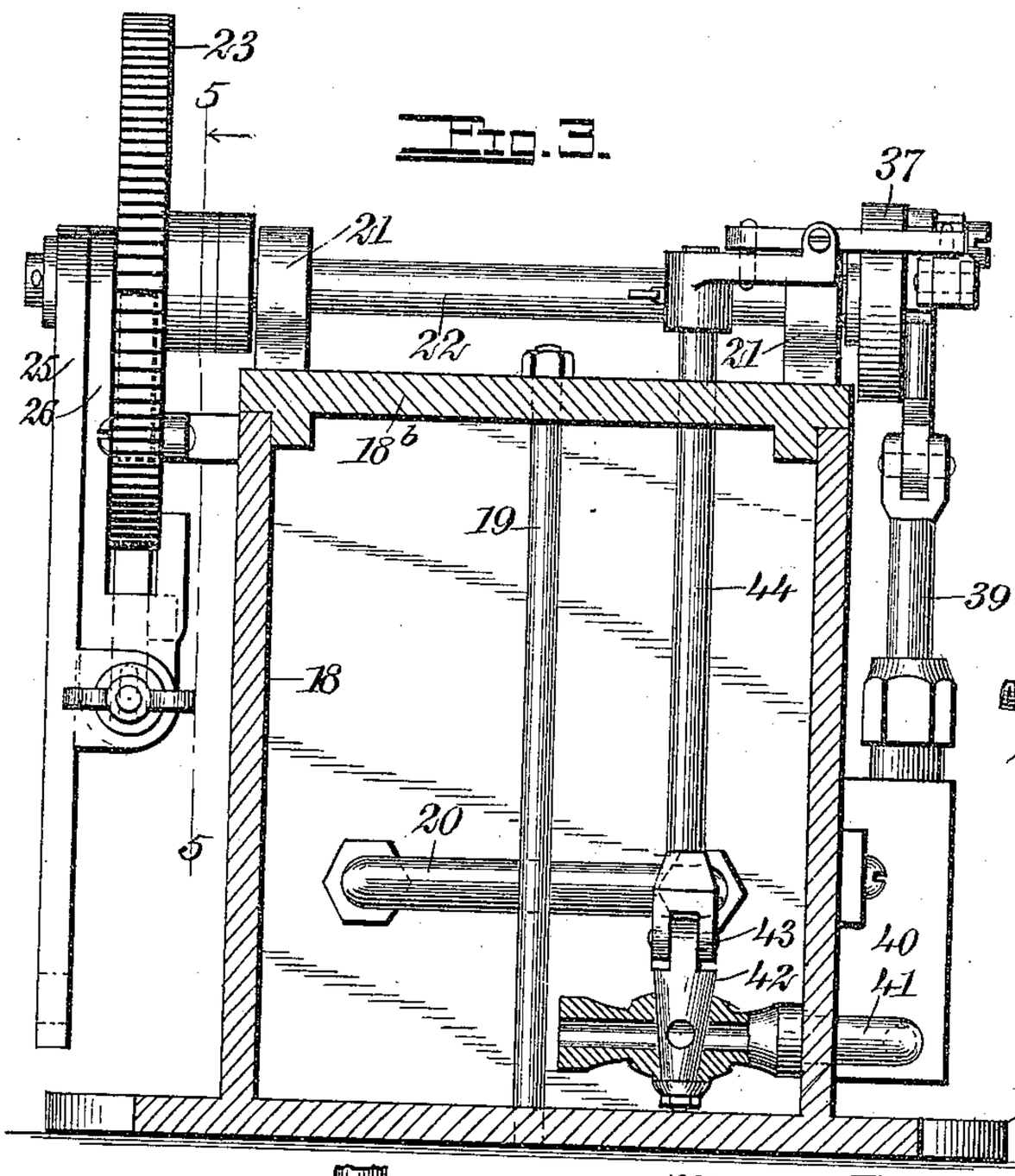


Fig. 5.

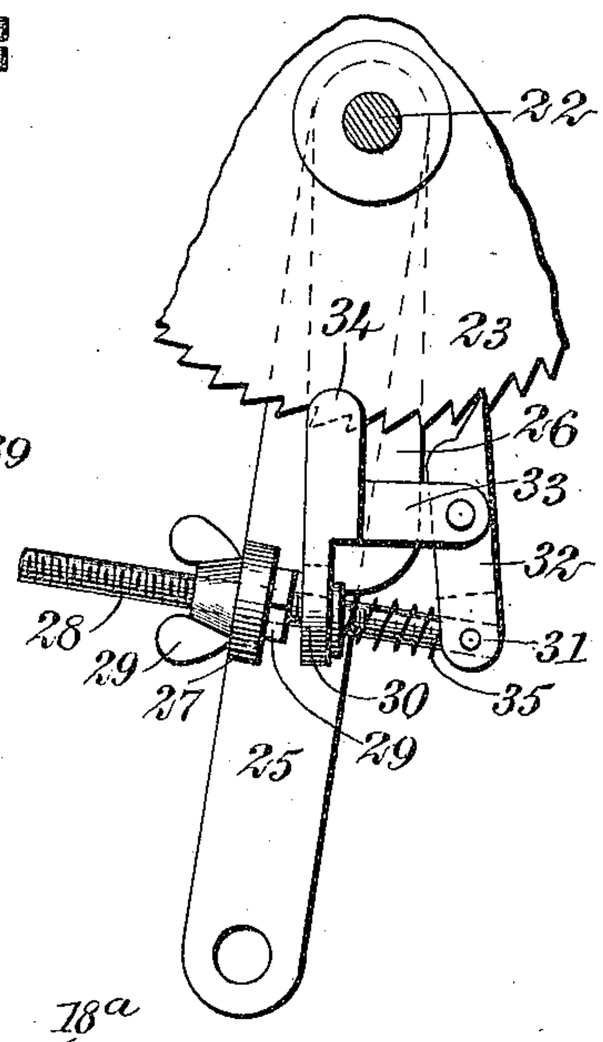


Fig. 4.

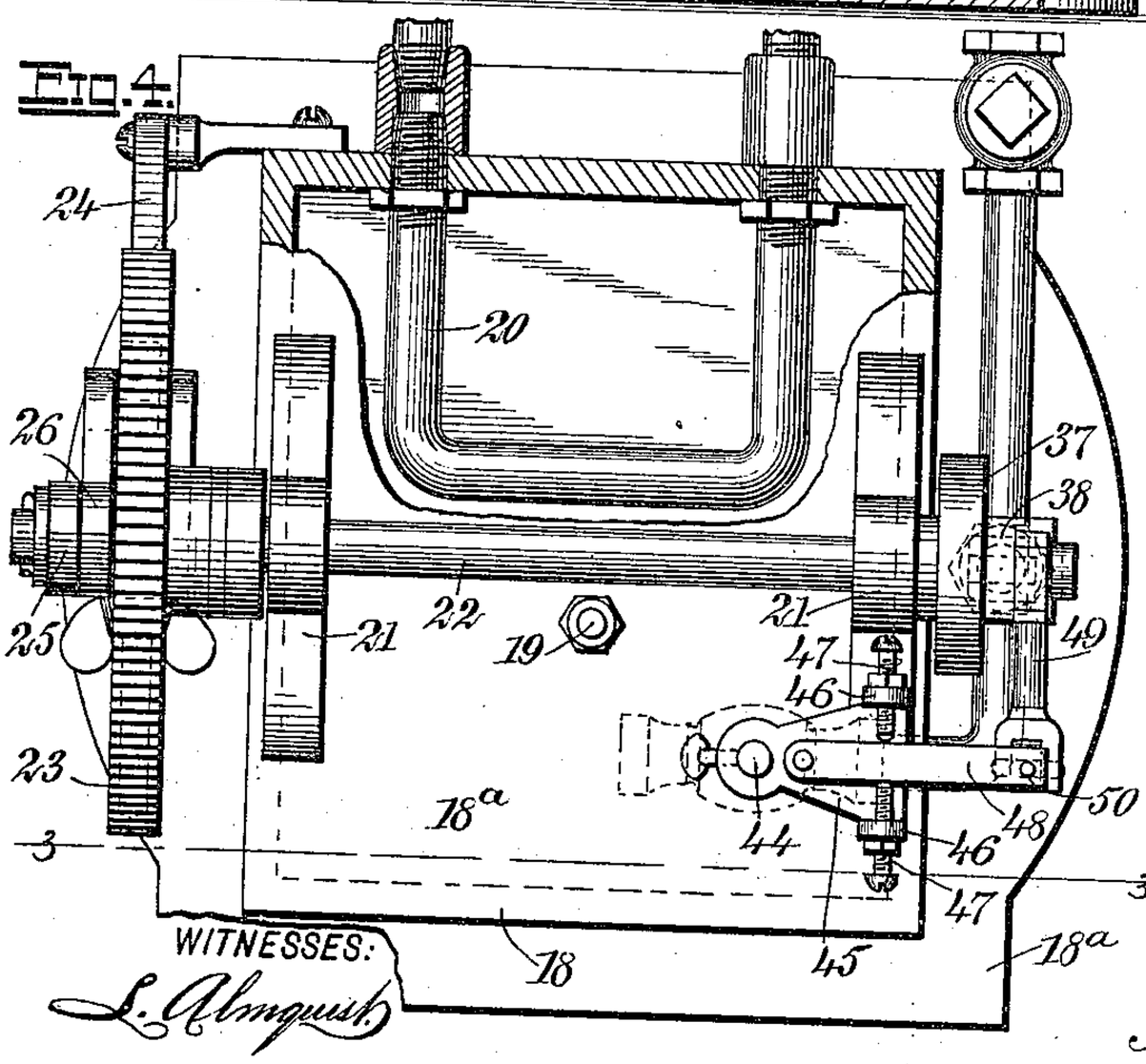
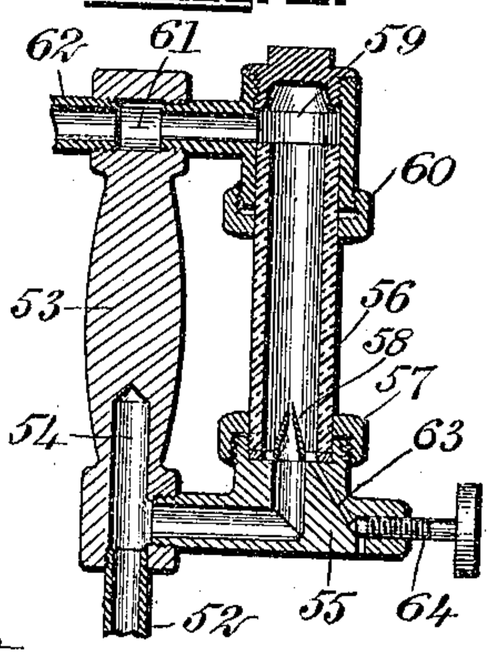


Fig. 6.



WITNESSES:

L. Almquist

Isaac B. Owens.

INVENTOR

Joseph J. Slagel

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

JOSEPH J. SLAGEL, OF FAIRBURY, ILLINOIS.

LUBRICATOR.

No. 831,899. Specification of Letters Patent. Patented Sept. 25, 1906.

Application filed August 10, 1905. Serial No. 273,554.

To all whom it may concern:

Be it known that I, JOSEPH J. SLAGEL, a citizen of the United States, and a resident of Fairbury, in the county of Livingston and State of Illinois, have invented a new and Improved Lubricator, of which the following is a full, clear, and exact description.

The invention relates to a lubricator of that type used in connection with engines, particularly steam-engines, and embodying a pump for forcing the lubricant through a sight-feed device and from thence into the steam-pipe or other part of the engine, so that the oil passing into the engine with the steam lubricates the valves and cylinder.

The object of the invention is to provide a device which will serve effectually to force the oil from the reservoir and to permit of a wide range of adjustment of the oil-forcing devices.

It is also an object of the invention to insure the proper action of the valves associated with the pump.

A further object of the invention is to improve the device for driving the pump from a moving part of the engine.

To these ends the invention resides in certain special features of construction and relative arrangement of parts, which will be fully set forth hereinafter and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings, which illustrate as an example the preferred embodiment of my invention, in which—

Figure 1 is an elevational view showing the invention applied to an engine. Fig. 2 is a side elevation of the reservoir, showing the pump in section. Fig. 3 is an enlarged section taken vertically through the reservoir on the line 3 3 in Fig. 4 and showing the admission-valve of the pump in section. Fig. 4 is a plan view with parts in section. Fig. 5 is a detail view of the ratchet and the peculiar pawl for driving the pump and valve, with part in section on the line 5 5 in Fig. 3; and Fig. 6 is a section showing the sight-feed device.

Referring to Fig. 1, 10 indicates the steam-pipe of an engine, of which 11 is the cylinder; 12, the piston-rod; 14, the cross-head; 15, the cross-head guide; 16, the connecting-rod, and 17 the frame.

18 indicates the reservoir, adapted to contain the lubricant. This reservoir is provided with a base 18^a, enabling it to be firmly bolted in place on the frame of the engine. The reservoir also has a cover 18^b, which is secured by a tie-rod 19, passing through the cover and down to the bottom of the reservoir.

20 indicates a heating-pipe, which is preferably U-shaped, as shown in Fig. 4, and passes into the reservoir. This pipe is adapted to have steam circulated through it so as to keep the lubricant in the reservoir at the proper degree of fluidity.

The cover 18^b carries bearings 21, in which a revoluble shaft 22 is mounted, this shaft passing horizontally over the reservoir, as shown. At one end this shaft is provided with a ratchet-wheel 23, and this is engaged by a pawl 24, suitably mounted on the reservoir and serving to prevent back movement of the shaft and ratchet. Loosely mounted on the shaft 22, alongside of the ratchet 23, are two arms 25 and 26. These arms lie alongside of each other directly adjacent to the ratchet-wheel. As shown best in Fig. 5, the arm 25 has a lug 27, in which a screw 28 is adjustably held by nuts 29. The arm 26 has a bracket 30, having an orifice therein loosely receiving the screw 28, and the adjacent end of the screw is pivoted, as indicated at 31, to a pawl 32, which is itself pivoted between lugs 33, projecting, respectively, from the bracket 30 and the lever 26. The bracket 30 also has an arm 34 projecting therefrom, which arm lies over the ratchet 23 at the side opposite that on which the levers 25 and 26 are located, the arm serving to hold the levers in parallelism with the ratchet and preventing lateral movement of the parts. A spring 35 encircles the screw 28 and bears between the bracket 30 and pawl 32, normally holding the parts in the position shown in Fig. 5. By this arrangement the pawl 32 is held in proper engagement with the ratchet 23, allowing the pawl to move idly over the ratchet as the levers 25 and 26 swing from right to left, (referring to Fig. 5,) but causing the pawl firmly to engage the ratchet upon the reversal of the movement of the levers. During the idle movement of the pawl the lever 26 is swung relatively to the lever 25, the free end of the lever and the pivoted end of the pawl coming into proximity with each other, and upon the active movement of the pawl the parts reassume the position shown in Fig. 5. The lower end of the lever 25 is connected by a link 36 with a moving part of the engine—for example, the con-

necting-rod 16—so that the levers 25 and 26 and their attachment will be given a vibrating motion in time with the operation of the engine, which vibration through the ratchet devices above described is transmitted to the shaft 22 in the form of a step-by-step rotary movement. By adjusting the nut 29 the thread of the pawl may be regulated.

The shaft 22 carries at the end opposite the ratchet 23 a crank-disk 37, to which a connecting-rod 38 is joined. The connecting-rod 38 is articulated to the plunger 39 of the oil-pump 40, which is fastened to the outside of the reservoir 18. The oil-pump 40 is fed from the reservoir through the pipe 41, the receiving end of which is controlled by a rotating plug-valve 42. This valve has a joint 43, connecting it with a rock-shaft 44. The rock-shaft passes up through the cover 18^b of the reservoir and has a crank-arm 45, attached to its upper end. This crank-arm has two lugs 46, in which operate adjusting-screws 47. To the arm 45 is pivoted an arm 48. This arm extends between the adjusting-screws 47, so that by manipulating the screws the position of the arm 48 relative to the arm 45 may be changed at will. The arm 48 is joined to the pin connecting the link 36 to the crank-disk 37 by means of a link 49, having pivotal connection with said pin, and a universal connection with the arm 48, said universal connection being indicated at 50 in Fig. 4. Consequently upon the rotation of the shaft 22 to operate the pump-plunger 39 the shaft 44 will be rocked and the valve-plug 42 will be opened. By proper positioning of the parts this opening of the valve may be timed to take place at the correct period—which is to say, the suction period of the pump. By providing a positively-operating valve I am assured of correct and certain operation, and the trouble due to clogging of the valve and pump by impurities in the oil is avoided.

51 indicates a check-valve controlling the discharge from the pump, and 52 indicates a pipe carrying the oil to the sight-feed device.

The sight-feed device comprises a body part 53, having a passage 54 therein, to which the pipe 52 leads. Communicating with this passage is a tubular branch 55, in engagement with which a glass tube 56 is held by means of a collar 57. 58 indicates a nipple through which the oil is forced into the sight-tube 56. The upper end of the tube 56 is engaged by a tubular branch 59. 60 indicates a gland which operates on a part of the tubular branch 59 and serves to effect a tight joint between the tubular branches. The tubular branch 59 leads to a passage 61 in the upper end of the body part 53, and from this passage a tube 62 passes to the steam-pipe 10 of the engine. With this arrangement upon the operation of the pump 40 the lubricant is forced in pulsations through the pipe 52 and entering the sight-feed device passes in drops from the nipple 58 through the pipe, where the feeding action may be observed by the person in charge, and thence to the engine. The device may be regulated to regulate the amount of oil forced into the engine, thus placing the lubricator under perfect control.

63 indicates a drain-passage in the branch 55, and 64 indicates a needle-valve controlling the same.

Having thus described the preferred form of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a pump, a rotating shaft, a crank thereon, a connection between the crank and pump to operate the latter, an admission-valve for the pump, a rock-shaft in connection with the admission-valve, an arm in connection with the rock-shaft, and a link connecting the arm with said crank for the purpose specified.

2. The combination of a pump, a rotating shaft, a crank thereon, a connection between the crank and pump, an admission-valve for the pump, a rock-shaft in connection with said valve, an arm attached to the rock-shaft, a second arm pivoted on the first arm, means for adjustably holding said arms in fixed relation, and a link connecting the second-named arm with said crank, for the purpose specified.

3. In a force-feed lubricator, the combination of a rock-shaft, a crank thereon, a pump-cylinder, a plunger operating therein, a connection between the plunger and crank, a lubricant-reservoir, an admission-valve to the pump located in the reservoir, a rock-shaft in connection with the valve, the rock-shaft extending outside of the reservoir, an arm connected to the rock-shaft, and a link joining the arm with said crank, whereby to operate the valve in unison with the pump, for the purpose specified.

4. In a force-feed lubricator, the combination of a rotary shaft, a crank thereon, a pump having connection with the crank to be operated thereby, an admission-valve to the pump, a rock-shaft in connection with the said valve, an arm attached to the rock-shaft, adjustable stops on the arm, an arm pivoted to the first-named arm and extending between said stops, and a link connecting the second-named arm with the crank.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH J. SLAGEL.

Witnesses:

JOSEPH G. SWING,

SAM FENDRICK.