No. 791,696. PATENTED JUNE 6, 1905.

B. IVOR & J. S. WARD.

SIGHT AND FORCE FEED LUBRICATOR.

APPLICATION FILED MAY 19, 1904.

2 SHEETS—SHEET 1.

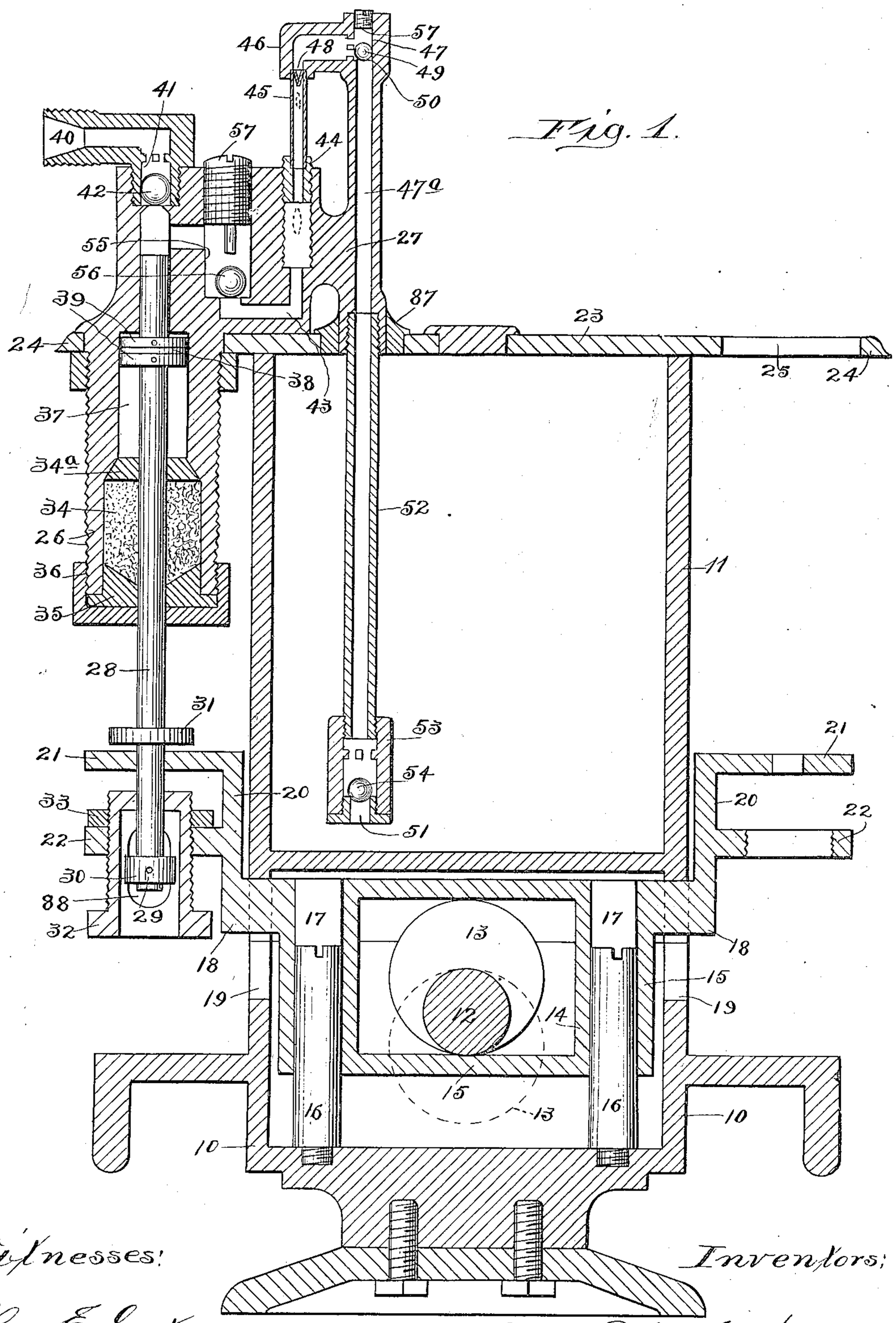

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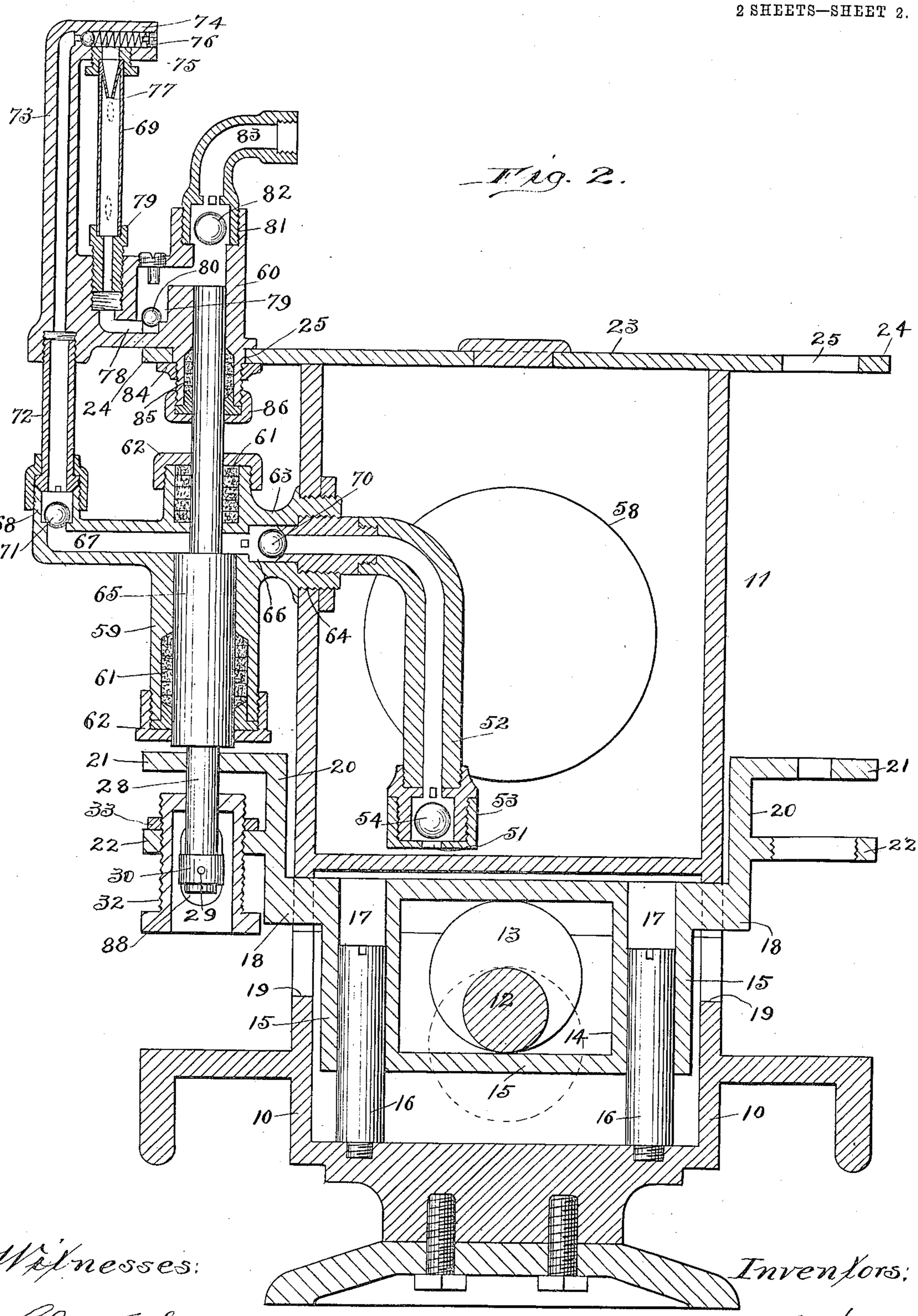
Fig. 2.



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UNITED STATES PATENT OFFICE.

BARRY IVOR AND JOHN S. WARD, OF CHICAGO, ILLINOIS; SAID IVOR ASSIGNOR TO SAID WARD.

SIGHT AND FORCE FEED LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 791,696, dated June 6, 1905.

Application filed May 19, 1904. Serial No. 208,676.

To all whom it may concern:

Be it known that we, BARRY IVOR and JOHN S. WARD, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sight and Force Feed Lubricators, of which the following is a specification.

Our present invention relates to improvements in a lubricator or an oil-feeding mechanism of the type known as "sight and force feed," somewhat similar to that shown in our application filed March 21, 1904, Serial No. 199,132; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

One of the objects of our invention is to provide a lubricator or oil-pump for lubricating cylinders, valves, pistons, journals, and other parts of simple and inexpensive construction in which the rate of feed may be seen at all times and readily regulated to the desired degree and there maintained.

Another object of the invention is to so construct the device that one pump only will be required for drawing the oil from the reservoir and distributing it under pressure to one or more points where it is needed for lubrication, thus simplifying and lessening the cost of manufacture, as well as rendering the apparatus more compact in form.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which our invention pertains to make and use the same, we will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 represents a central vertical sectional view of a lubricator embodying one form of our invention, and Fig. 2 is a similar view showing a modification in the construction thereof.

Like numerals of reference refer to corresponding parts throughout the different views of the drawings.

The reference-numeral 10 indicates the base portion of the main or supporting frame, which may be made of any suitable form and material, but preferably rectangular and hollow, as shown. Mounted on this base and secured thereto in any suitable manner is an oil receptacle or reservoir 11, which constitutes a part of the main or supporting frame.

Extending through the base portion 10 and journaled therein is a driving-shaft 12, on which is mounted an eccentric 13, which operates in a rectangular opening 14 of an operating-bar 15, which is located in the hollow of the base 10 and is guided in its vertical movements by means of pins or rods 16, which are secured at one of their ends to the base 10 within its cavity. These pins fit in suitable vertical openings 17 in and near the ends of the operating-bar 15, which is shown as having at each of its ends a lateral extension 18, which project through slots or openings 19 in the side walls of the base portion of the main frame. As shown, each of the lateral extensions 18 has an upward projection 20, each of which is provided with two lateral apertured arms 21 and 22 for the purpose to be presently explained.

The top or cover 23 of the reservoir 11 is provided at each of its sides with an extension 24, having an opening 25, in one or both of which may be located a pump-cylinder 26, which has near its upper end an extension 27, which projects over the top or cover 23, as shown in Fig. 1 of the drawings. Located in the cylinder 26 is a piston 28, which has secured on its lower end, by means of a pin 29 or otherwise, a collar or projection 30, and above this collar or projection the piston is also provided with a flange or projection 31. The opening in each of the arms 22 on the extensions 20 of the operating-bar is screw-threaded to receive and engage the screw-threads of an adjusting-sleeve 32, which surrounds the piston between the projections 30 and 31 thereon. Located on the sleeve 32, above the arm 22, is a locking-nut 33, used for securing said sleeve in the desired position so as to regulate the stroke of the piston, and thereby the rate of feed. This ad-

istment may be effected by screwing the eeve up or down in its bearing and there ocking the same by means of the locking-ut 33 thereon. For instance, if it is desired iat the piston shall have its full stroke and large quantity of oil pumped the sleeve 32 ould be screwed down until its upper end ests on the stop 30 and there fastened, while ie extension 21 will rest against the lower urface of the flange or stop 31 on the piston. 'o decrease the flow of oil or shorten the troke of the piston, it is only necessary to crew up the sleeve 32 and fasten it, by means f the lock-nut 33, so that there will be a space r "play" between the upper end of the sleeve nd the upper surface of the stop 30 or lower top.

The lower end of the cylinder 26 is pro-ided with suitable packing 34, which is held n place by means of a gland 35 and a follower 6 of the ordinary construction.

As shown in Fig. 1, the cylinder 26 is pro-ided with a chamber 37 between its upper nd lower ends, and the piston 28 is provided n said chamber with a packing-ring 38, which s held in position thereon by means of rings r collars 39 in order to prevent the passage f oil between the upper end of the piston 28 nd its bore on account of wear.

Communicating with the upper end of the ump-cylinder 26 is a distributing-pipe 40, vhich may have a number of branch pipes not shown) leading to the points or parts to e lubricated. The upper end of the pump-ylinder at its juncture with the distributing-ipe is provided with a valve-casing 41, in vhich is seated a ball-valve 42 to prevent the eturn of oil on the downward stroke of the iston. The extension 27 of the pump-cylinder is provided with a channel 43, the upper end of which is internally screw-threaded o receive and engage the screw-threads on a ipple 44, with which the sight-feed tube or ylinder 45 engages at its lower end. This ight-feed tube is preferably in the form of vertical glass cylinder, but may be of other hape, and engages and communicates at its pper end with a short extension 46, which has valve-chamber 47, which communicates, hrough an opening 48, with the cavity of the ight-feed tube 45, as shown. Located in the alve-chamber 47 is a ball-valve 49, which loses the port 50 in the lower portion of the alve-chamber 47. Communicating with the ower portion of the channel 47^a in the exten-ion 27, which channel leads to the valve-hamber 47, is an oil-supply pipe 52, which xtends to near the bottom of the reservoir 11 nd has on its lower end a valve-casing 53, vhich is provided with a ball-valve 54 to close he inlet opening or port 51 therein. That nd of the channel 43 which communicates vith the upper portion of the pump-cylinder 6 is formed with an oil-chamber 55, in which s located a ball-valve 56 to close said channel on the upward stroke of the piston, and thereby prevent oil being forced back into the reservoir. Each of the valve-chambers 47 and 55 is provided with a screw-plug 57 to permit of the insertion of the ball-valves therein.

In Fig. 2 of the drawings we have shown a modification in the construction of our lubricator, which consists in employing a main or supporting frame, driving-shaft, and operating-bar of the construction illustrated in Fig. 1 and above described, except that the reservoir 11 may be provided in its front and rear walls with an opening 58, in which may be located a glass disk to permit of the contents of the reservoir being seen. In this modified construction the means for adjusting the piston 28 is the same as that shown in Fig. 1 and above described; but the pump-cylinder is made in two parts 59 and 60, the former of which is provided at each of its ends with suitable packing 61 and caps or followers 62 to hold the same in position. The part 59, as shown in Fig. 2, is located on one side of the reservoir 11 and has a boss or projection 63 screw-threaded at its outer end to engage an opening 64 in the wall of the reservoir. Connected to the inner portion of the boss or projection 63 is a supply-pipe 52, which has at its lower end a valve-casing 53, in which is located a ball-valve 54 to close the inlet port or opening 51 therein. As shown in Fig. 2, the cylinder or part 59 is provided with an opening through which the piston 28 passes, which piston is formed or provided in said chamber with an enlargement 65, employed to draw the oil from the reservoir through the supply-pipe 52 and valve-chamber 66 and to force it through the oil-chamber 67 and valve-chamber 68 to the sight-feed 69, which in the present instance receives the oil by the upward or forcing action of the pump, while the sight-feed shown in the construction illustrated in Fig. 1 receives the oil by the downward or exhaust action of the pump. The valve-chamber 66 in the boss or projection 63 is provided with a ball-valve 70 to close the port leading to the supply-pipe 52 in the upward movement of the piston 28 and the head or enlargement 65 thereon, and the valve-chamber 68 is provided with a ball-valve 71 to close the port in said chamber on the downward stroke of the piston. Leading from the valve-chamber 68 upwardly is a pipe 72, which communicates at its upper end with the lower portion of a channeled extension 73, with which the part 60 or supply portion of the pump is provided. The upper portion of the extension 73 is provided with a valve-chamber 74, in which is located a ball-valve 75, which is normally held to close the port in said chamber by means of a spiral spring 76 located therein. Communicating at its upper end with the valve-chamber 74 is a sight-feed cylinder or tube 69, of glass, which is preferably provided at its upper end with a tapered nipple 77, through which the oil may

pass in drops. The lower portion of the extension 73 is formed with a channel 78, in the upper end of which is located a tubular plug 79, with which the lower end of the sight-tube 69 engages, and through its opening communicates with the channel 78, which also communicates with a valve-chamber 79 in the part 60 of the pump. The valve-chamber 79 is provided with a ball-valve 80 to close the port therein on the upward stroke of the piston. The upper end of the part 60 of the pump is provided with a valve-chamber 81, in which is located a ball-valve 82, and communicating with said chamber is a supply-pipe 83, which may have a number of branch pipes (not shown) leading to the parts to be lubricated. As shown in Fig. 2, the lower portion of the part 60 of the pump is located in one of the openings 25 of the top or cover 23 of the reservoir and is held in place thereon by means of a nut 84 engaging screw-threads thereon. The lower portion of the part 60 is also provided with suitable packing 85 and a cap or follower 86 to hold the same in position.

While we have shown in each of the drawings the operating-bar 15 as being equipped at each of its ends with the arms 21 and 22 for engagement with the pistons of the pumps and have illustrated a pump on one side only of the main or supporting frame, yet it is apparent that we may employ a pump on both sides thereof or we may omit the arms 21 and 22 from one end of the operating-bar and use one pump only. It is further evident that a series of operating-bars adapted to operate one or two pumps may be arranged on the main frame, so as to be operated by the driving-shaft 12 and the eccentric thereon.

It will be understood that in both of the constructions shown and above described the reservoir 11, which forms a part of the main or supporting frame, is detachably mounted on the base 10, so that the operating-bar 15 may be placed in the hollow of said base.

In assembling the parts of the construction illustrated in Fig. 1 of the drawings the slip-nut 87 is placed on the lower portion of the channeled part 47^a of the extension 27, when the supply-pipe 52 may be connected to said part. The piston 28, with the enlargements 39 thereon, is then inserted into the chamber 37 from the bottom of the cylinder 26, after which the packing 34 and the beveled plug 34^a, which rests on the top of the same, may be inserted in the lower portion of the cylinder and held therein by means of the gland 35 and follower 36. The cylinder 26 is then passed through one of the openings 25 in the cover 23, and at the same time the pipe 52 is passed through the opening in the cover therefor. In this operation the lower portion of the piston 28 will pass vertically through the openings in the arm 21 and sleeve 32, when the collar or projection 30 may be fastened on the lower end of the piston by means of a pin 29 passed through an opening 88, formed in the sleeve for said purpose. When the parts are thus seated, it is apparent that the slip-nut 87 will close the opening in the cover 23 for the reception of the supply-pipe. It is apparent that the discharge-pipe 40 and sight-feed tube 45 may be secured in place either before or after the cylinder is seated on the cover.

In assembling the parts of the construction shown in Fig. 2 of the drawings the reservoir 11 is removed from the base and the top or cover 23 may be removed from the reservoir, when the part 60 may be fitted in one of the openings 25 of the cover and held therein by means of a nut 84 screwed on its lower portion. The part 59, with the supply-pipe 52 secured thereto, may then be screwed into the opening 64, the said pipe being first passed through said opening and the reservoir being large enough to permit of the pipe turning therein. The parts 59 and 60 are then arranged in alinement, when the piston 28, having the enlargement 65 thereon, may be inserted into the openings of the cylinder parts 59 and 60, as shown in the drawings, after which the followers 62 and 86 may be screwed so as to tighten the packing around the piston. The lower portion of the extension 73 on the part 60 may then be connected, by means of the coupling-piece 72, with the upper portion of the valve-chamber 68. It is obvious that the discharge-pipe 83 and sight-feed tube 69 may be placed in position either before or after the parts 59 and 60 are connected. When thus assembled, the reservoir 11 is placed on the upper surface of the base, in which operation the lower portion of the piston 28 may be passed through the openings in the arm 21 and sleeve 32, when the collar 30 may be secured in place thereon by means of a pin 29 inserted through the opening 88 in said sleeve for this purpose.

From the foregoing and by reference to the drawings it will be clearly seen and readily understood that the shaft 12 may be driven by any suitable means and that in its rotation the operating-bar 15 will be given reciprocatory movement by reason of the engagement therewith of the eccentric 13 on the driving-shaft. In this operation it is evident that when the construction illustrated in Fig. 1 of the drawings is employed the oil will be brought through the pipe 52, sight-feed 45, and chamber 55 by suction or the downward stroke of the piston 28 and that the oil will be forced through the distributing-pipe 40 by the upward stroke of said piston, while in the construction shown in Fig. 2 of the drawings the oil will be transferred from the reservoir 11 to the oil-chamber 67 by the downward stroke of the piston and will be forced through the sight-feed and distributing-pipe on the upward stroke thereof. It will also be noted that in Fig. 2 there are two oil-chambers 67 and 78, each of which is supplied at its inlet

and outlet openings with a valve to control the flow of oil.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a lubricator, the combination with the main frame, of an operating-bar movably mounted thereon and carrying apertured extensions located in alinement, a pump having communication with a supply of oil and provided with an oil-chamber, an inlet and outlet valve in said chamber, a distributing-pipe communicating with said pump, a piston in the pump and extending through said apertured extensions and having spaced projections, a sleeve encircling the piston and one of said projections and adjustably secured in the opening of one of the extensions, means to reciprocate the operating-bar, and a sight-feed in communication with the pump between the oil-reservoir and the distributing-pipe, substantially as described.

2. In a lubricator, the combination with the main frame, of a pump having an oil-chamber, an inlet and an outlet valve in said chamber, a supply-pipe communicating at one of its ends with a supply of oil and at its other end with the inlet of the oil-chamber, a sight-feed located between the supply-pipe and said inlet, a distributing-pipe communicating with the outlet of said oil-chamber, a piston located in said pump, and means to reciprocate the piston, substantially as described.

3. In a lubricator, the combination with the main frame, of an operating-bar movably mounted thereon and carrying apertured extensions located in alinement, a pump mounted on the main frame at one side thereof and having a channeled projection extending above the top of the main frame and provided with an oil-chamber, an inlet and an outlet valve in said chamber, a supply-pipe communicating at one of its ends with a supply of oil, a sight-feed connecting the other end of the supply-pipe with the said channeled extension, a distributing-pipe communicating with the outlet of the oil-chamber, a piston in said pump and extending through said apertured extensions and having spaced projections, a sleeve encircling the piston and one of said projections and adjustably secured in the opening of one of the extensions, and means to reciprocate the operating-bar, substantially as described.

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