

No. 754,485.

PATENTED MAR. 15, 1904.

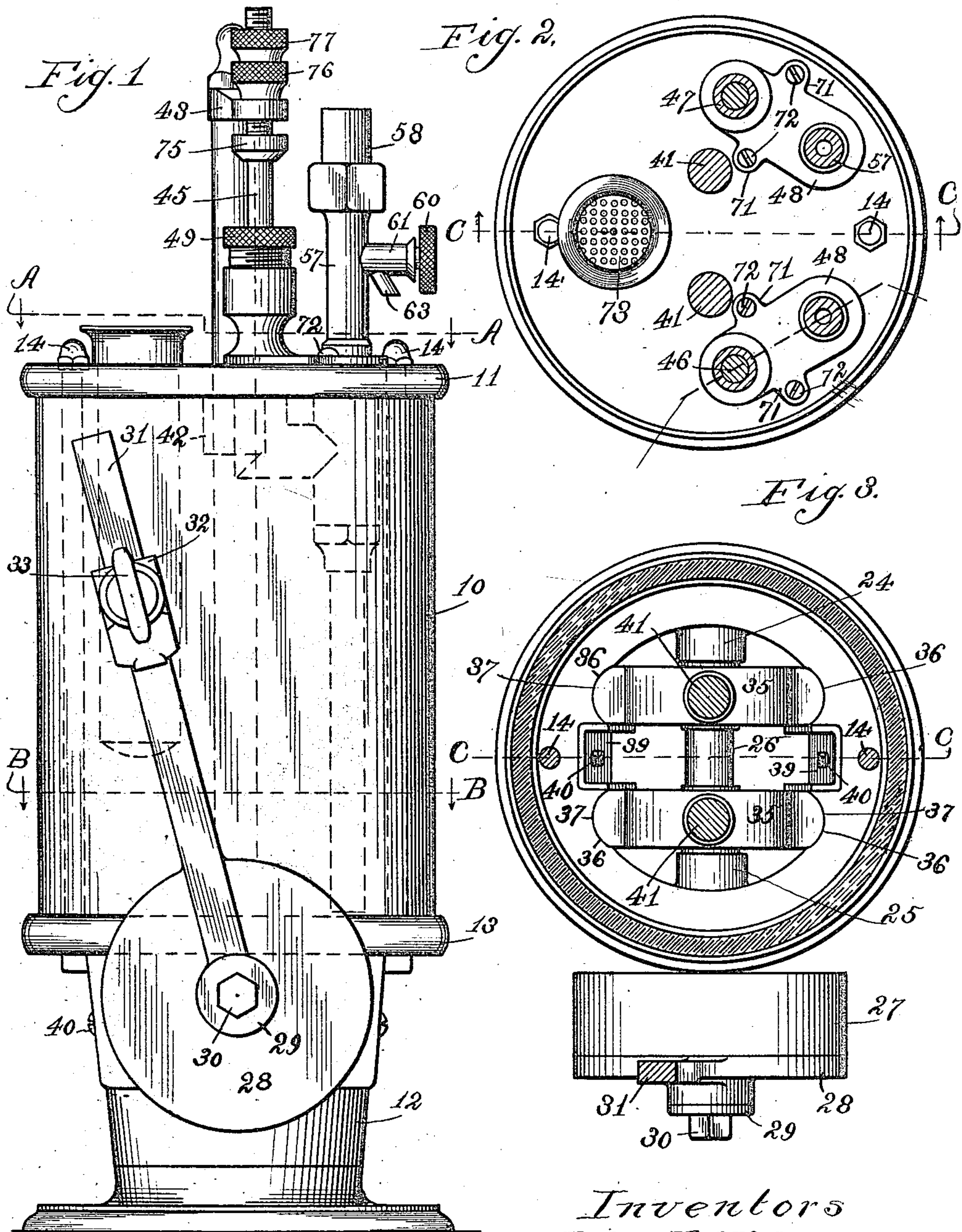
J. F. McCANNA & J. R. MARKLE.

LUBRICATING PUMP.

APPLICATION FILED JUNE 20, 1900.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
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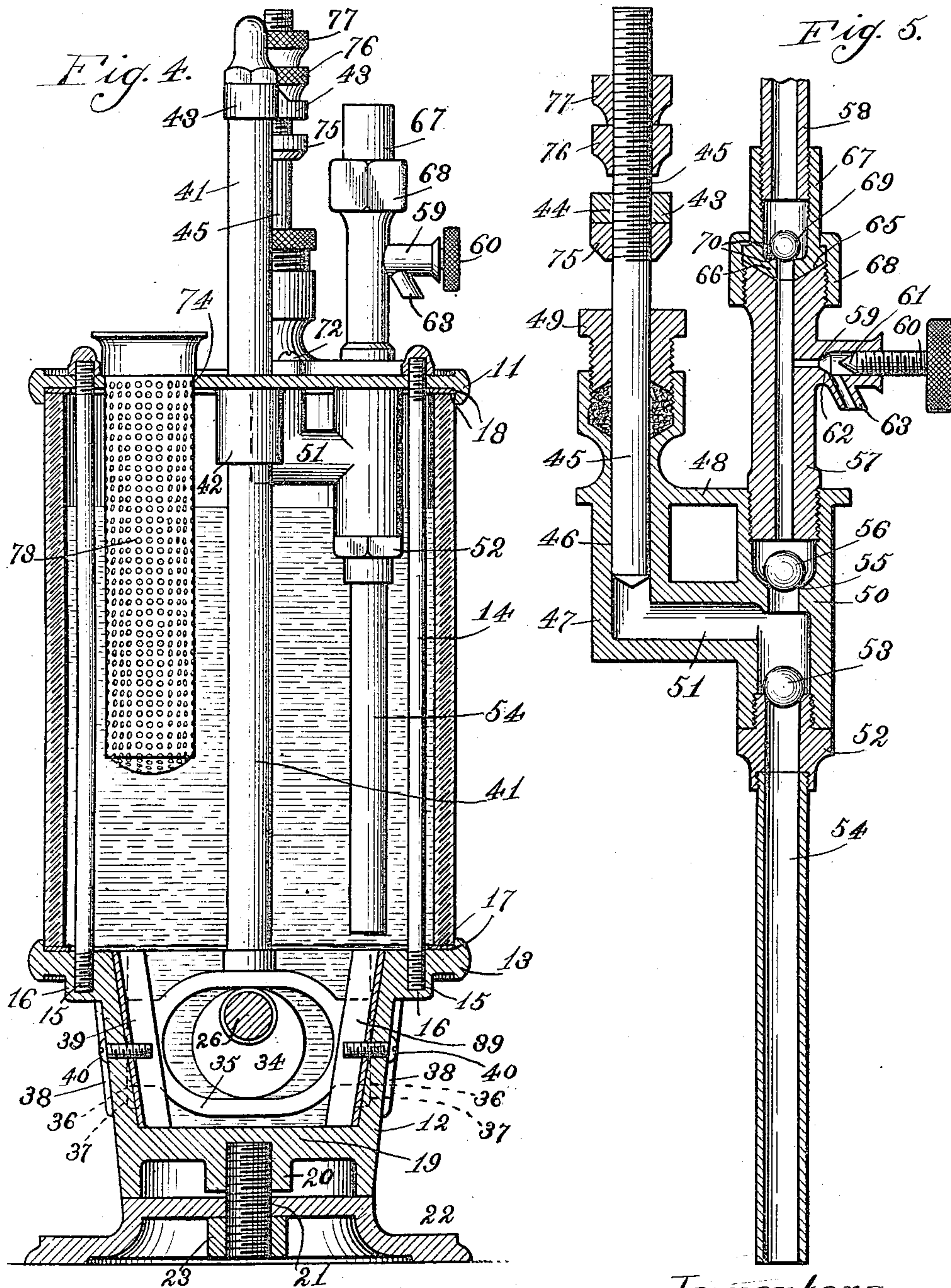
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UNITED STATES PATENT OFFICE.

JOHN F. McCANNA AND JOHN R. MARKLE, OF CHICAGO, ILLINOIS,
ASSIGNORS TO THE JOHN F. McCANNA COMPANY, OF CHICAGO,
ILLINOIS, A CORPORATION OF ILLINOIS.

LUBRICATING-PUMP.

SPECIFICATION forming part of Letters Patent No. 754,485, dated March 15, 1904.

Application filed June 20, 1900. Serial No. 20,960. (No model.)

To all whom it may concern:

Be it known that we, JOHN F. McCANNA and JOHN R. MARKLE, residents of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lubricating-Pumps, of which the following is a specification.

Our invention relates to certain new and useful improvements in lubricating-pumps which are designed to force oil or any other lubricant in regular quantities to any moving mechanism at a rate varying with its speed of movement, and is designed to produce a pump or system of pumps that shall be simple in construction, accurate in operation, capable of adjustment to any desired rate of feed, and operating with the least possible degree of friction in the moving parts, thus securing extreme durability. Where a plurality of pumps are employed, they are constructed so that any or all of them can be thrown out of operation without disturbing the action of the remaining pumps in the system.

In carrying out the purposes of our invention we have devised a novel construction in which all the mechanism for transforming the rotary movement of the main driving-shaft to the reciprocating movement desired for operating the pump-pistons is mounted in the cup, so as to be immersed in the oil or other lubricant, where it will necessarily operate with little friction and practically no wear.

Our invention further resides in certain details of construction, all of which will be fully and at length set out in the claims annexed hereto.

Referring now to the accompanying two sheets of drawings, in which the same reference characters are used to designate identical parts in all the figures, Figure 1 is a front elevation of the cup arranged in accordance with our invention and provided with two pumps. Fig. 2 is a plan view of the same in section on the line A A of Fig. 1. Fig. 3 is a similar view in section on the line B B of Fig. 1. Fig. 4 is a central section on the line C C of Figs. 2 and 3, and Fig. 5 is a central

section through one of the pumps detached from the cup.

The cup has its principal portion 10 of a cylindrical shape, with a vertical axis, and we preferably construct its sides of a hollow glass cylinder which is secured between the disk-shaped top piece 11 and the cup-like base 12, which is provided with the annular flange 13 at its top upon which the glass cylinder 10 rests. The parts are held together by the bolts 14, extending through the cap inside of the cylinder and screwed into apertures 15, formed in the projection 16, extending downward from the flange 13. Suitable gaskets 17 and 18 are interposed between the bottom and top of the cylinder and the flange 13 and the cap 11, respectively, so as to render the cup oil-tight. The cup-like base 12 is preferably shaped like an inverted truncated cone and is provided with the bottom 19, which has the lug 20 therein, adapted to receive the screw-threaded bolt 21, by which it is secured to the base-piece 22 or any other desired part by means of the nut 23.

Journaled at one end in the hollow bearing 24, formed in the cup-base, and at the other end in the similar bearing 25, which, however, extends entirely through the wall of the cup, is the shaft 26, which has the flanged disk 27, operated by the disk 28, loosely mounted upon the outer end of the shaft 26 and secured in place by the washer 29 and the nut 30. The disk 28 has secured thereto the arm 31, which has the customary block 32, which is adjustable thereon by the set-screw 33 and is arranged to receive a clamp and connecting-rod which is secured at its other end to some moving part of the engine or machinery, so that the arm 31 will be reciprocated at a rate of speed varying with the speed of the engine or other part being lubricated. Clutch mechanism, such as is shown and described in the patent to McCanna, No. 648,628, dated May 1, 1900, for a lubricating-pump, is interposed between the disk 28 and the flanged disk 27, secured to the shaft 26, so that the intermittent swinging movement of the arm 31 will be trans-

formed to an intermittent rotary movement in one direction of the shaft 26. This shaft 26 has rigidly secured thereon by any desired means two or more eccentric disks 34, depending upon the number of pumps to be operated. These eccentric disks 34 are placed upon the shaft 26 at different angular positions, so that the power from shaft 26 will be applied to the yokes 35, which embrace said eccentrics at different times, so that the stress on the parts will be distributed uniformly. The yokes 35 have their ends 36 arranged vertically and fitting somewhat accurately in the correspondingly-shaped ways 37, which are formed in the sides of the cup 12, the outer surface of the cup having the projections 38, adapted to accommodate the ways without cutting entirely through the body of the cup. These yokes 35 are held from lateral displacement by means of the U-shaped channel-pieces 39, which are secured upon the slanting inner edges of the cups between the bearings 37 by means of the set-screws 40, passing through the edge of the cup and into said channel-pieces. Each of the yokes 35 has a vertically-reciprocating rod 41 screwed into or otherwise rigidly secured to its upper side and extending up through the bearing 42, formed in the cap 11 of the casing and above said cap, as clearly shown. The upper end of each of the rods 41 is provided with the arm 43, which may be secured thereon in any desired manner and which has an aperture 44 in the end thereof, through which passes the screw-threaded upper end of the piston-rod 45. In the construction herein shown we have employed only one pump in connection with each rod 41; but it will be understood that the part 43 might have as many arms as might be necessary to accommodate any number of pumps that it might be desired to operate from one rod.

The construction of the pump is best shown in Fig. 5, where it will be seen that the piston-barrel 46 is located in the vertical tube 47, that extends through the top plate 48 of the pump, the upper end of the tube 47 being provided with the packing-gland 49, through which the piston 45 reciprocates. Parallel with the tube 47 is another tube 50, which is connected with the tube 47 by the top plate 48, as well as by the cross-tube 51. The tube 50 has screwed into its lower end the nut 52, the top of the aperture passing through this nut furnishing the seat for the check-valve 53, which is preferably of the customary ball construction. This nut 52 may have screwed into the lower end thereof or formed integral therewith the tube 54, which extends down to the bottom of the cylindrical portion of the cup, so that the pump can exhaust practically all the contents of the reservoir. A valve-seat 55 is formed in the tube 50 by contracting its bore just above the place where it is

entered by the cross-tube 51, and the preferably spherical check-valve 56 cooperates with this valve-seat.

The operation of this pumping mechanism will be readily apparent, as while the piston ascends the valve 53 is raised to permit the pump to be filled, while the pressure of the oil above holds the valve 56 closed. As the piston descends the valve 53 is closed and the valve 56 is opened, so that the oil forced out of the pump by the piston will ascend into the connecting-tube 57, which is screwed into the upper end of the tube 50 and leads to the discharge-pipe 58. This connection 57 has an opening into the drain-pipe 59 at right angles thereto, the opening of which is closed by the screw-valve 60, which has its preferably conical end 61 cooperating with the seat 62 in the passage leading through the connection 57. The drain-pipe 59 has the spout 63 leading therefrom to deliver the oil at any desired position. The connection 57 has its enlarged upper end screw-threaded on the outside, and the interior of its upper end is of a hollow cone shape, as seen at 65, to cooperate with the conical end 66 of the joint 67, by which the connection 57 is joined to the discharge-pipe 58. The nut 68 serves to hold the joint 67 securely upon the connection 57, and to prevent any backward flow of the oil through the drain-pipe when it is opened the check-valve 69 is provided and seats itself upon the shoulder formed at 70 by contracting the diameter of the passage through the joint 67. The lower end of the discharge-pipe 58, fitting into the joint 67, serves to prevent the valve 69 from being forced away from its proper position. When it is desired to ascertain the rate of feed of any of the pumps, all that has to be done is to open the screw-valve 60, when the weight of the oil above the check-valve 69 will hold it closed, and the oil forced out by the pump will be discharged in drops through the spout 63, where they can be readily counted. The top plate 48 may be provided with the ears 71, through which the screws 72 pass to secure the top plate in place over the apertures formed in the cap 11 to admit the pumps.

The strainer 73 will be placed in the aperture 74 in the cap-plate 11, through which aperture the cup is filled.

The piston-rod 45 has secured upon it beneath the arm 43 the stationary abutment 75, and the length of stroke of the piston-rod and the consequent rate of feed of the pump is regulated by the movable abutment 76, which takes the form of a nut and which is secured in any desired position of adjustment by the locking-nut 77. If it is desired to throw any of the pumps out of action, it will be readily apparent that all that is necessary is to adjust the nut 76 so far above the fixed abutment 75 that the space between them will exceed the stroke of the rod 41. By bringing the nut

76 nearer to the fixed abutment 75 any desired portion of the stroke of the rod 41 may be utilized.

While we have shown our invention as embodied in the form which we at present consider best adapted to carry out its purposes, it will be understood that it is capable of some modifications and that we do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the art.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a device of the class described, the combination with the top plate 48 having the tubes 47 and 50 secured thereto, the two valve-seats formed in the tube 50, and the cross-tube 51 connecting the tube 47 with the tube 50 between said valve-seats, the check-valves 53 and 56 cooperating with said seats, the piston 45 in the tube 47, and the connection 57 screwed into the upper end of the tube 50 and serving to prevent the displacement of the check-valve 56, and having the channel extending there-through, the drain-pipe 59 opening into said channel, a seat in said drain-pipe, the screw-valve 60 cooperating with said seat, the spout 63 opening into the drain-pipe 59 outside of the seat, and a check-valve cooperating with said connection located beyond the drain-pipe, substantially as and for the purpose described.

2. In a device of the class described, the combination with a cup, of an operating-shaft therein having eccentrics thereon, the rods 41 reciprocated by said shaft, the yokes 35 secured to the inner ends of said rods 41, the ways 37 formed on the inside of the cup in which said yokes 35 reciprocate and by which they are guided, and the channel-bars 39 secured to the casing between the ways 37.

3. In a device of the class described, a cup consisting of the glass cylinder 10 seated upon the flange forming the outer edge of the cup-like base and having the cap-piece upon its upper end, with an operating-shaft mounted in said base portion and having eccentrics thereon, the rods 41 reciprocated thereby and passing through the cap-piece at their outer ends, the yokes 35 secured to the inner ends of said

rods, the ways 37 formed on the inside of the base portion of the cup in which the yokes 35 reciprocate and by which they are guided, and the channel-bars 39 secured to the inside of said base between the yokes, substantially as and for the purpose described.

4. In a device of the class described, the cup consisting of the cylinder seated upon the flange forming the upper and outer edge of the cup-like base and having the cap-piece on its upper end which is provided with an aperture, with the pump seated in said aperture and having its piston outside of the cup, the reciprocating rod for actuating the pump-piston passing from the interior of the cup through the cap-piece, connections between the reciprocating rod and piston outside of the cup and adjustable for varying the stroke given to the piston by the uniform stroke of the rod, an operating-shaft in the cup-like base, and connections for transforming the rotary movement of the operating-shaft to the reciprocating movement of the rod.

5. In a device of the class described, the cup consisting of the cylinder seated upon the flange forming the upper and outer edge of the cup-like base and having the cap-piece on its upper end which is provided with an aperture, with the pump seated in said aperture and having its piston outside of the cup, the reciprocating rod for actuating the pump-piston passing from the interior of the cup through the cap-piece, connections between the reciprocating rod and piston outside of the cup and adjustable for varying the stroke given to the piston by the uniform stroke of the rod, an operating-shaft in the cup-like base, and connections for transforming the rotary movement of the operating-shaft to the reciprocating movement of the rod, said connections comprising an eccentric mounted upon the shaft and cooperating with a yoke secured to the lower end of the rod.

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