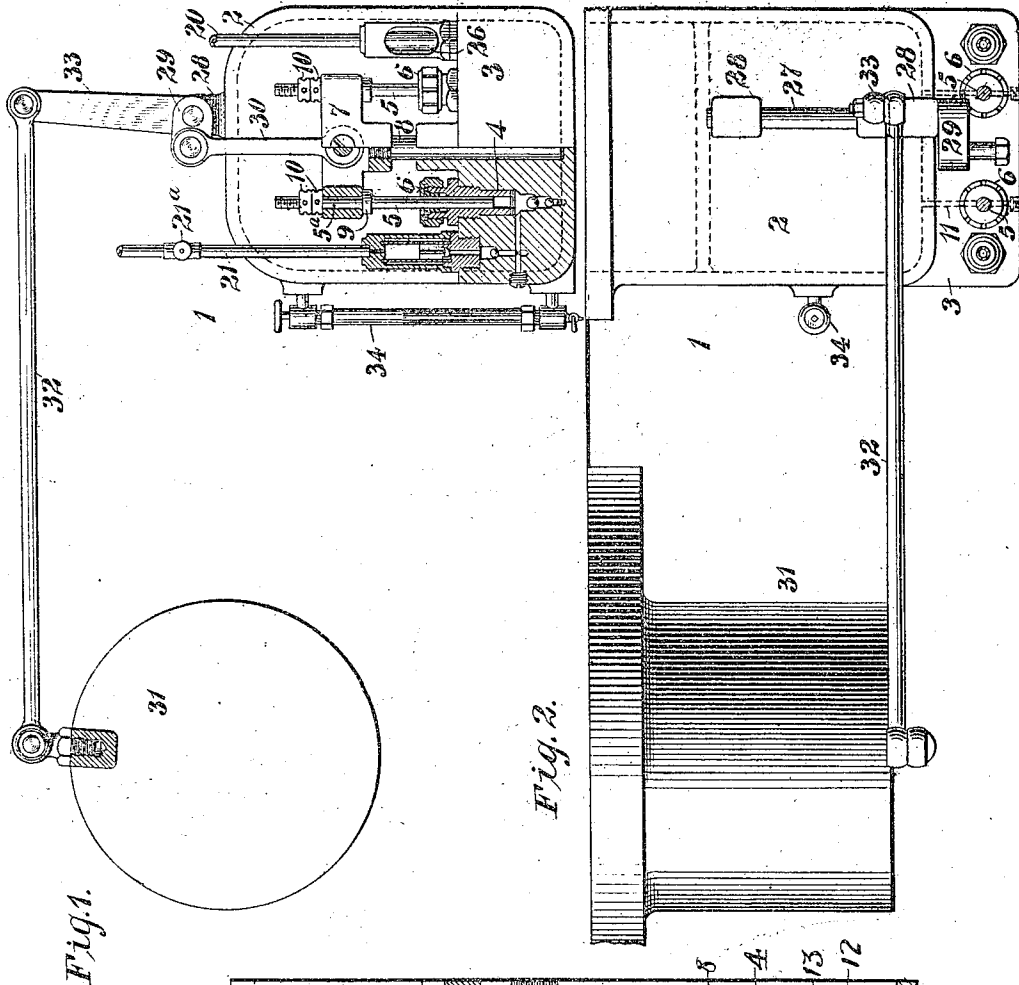


No. 757,499.

PATENTED APR. 19, 1904.

C. ROBINSON.
OIL PUMPING APPARATUS.
APPLICATION FILED MAY 23, 1900.

NO MODEL



WITNESSES:

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CYRUS ROBINSON, OF EDGEWOOD PARK, PENNSYLVANIA, ASSIGNOR TO
THE WESTINGHOUSE MACHINE COMPANY, A CORPORATION OF PENN-
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OIL-PUMPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 757,499, dated April 19, 1904.

Application filed May 23, 1900. Serial No. 17,774. (No model.)

To all whom it may concern:

Be it known that I, CYRUS ROBINSON, a subject of the Queen of Great Britain, residing at Edgewood Park, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Oil-Pumping Apparatus, of which the following is a specification.

My invention relates to oil-pumping apparatus, and has particular reference to pumps employed for supplying oil to steam-supply pipes and cylinders of steam-engines for lubricating purposes, though not necessarily restricted to this use.

The object of my invention is to provide a pumping apparatus which shall be simple and compact in construction and efficient in operation and also one which will permit of a ready inspection to determine whether or not the pump is properly performing its functions and an easy adjustment of the stroke of the pump-piston.

In the accompanying drawings, Figure 1 is a view, partially in end elevation and partially in section, of my pumping apparatus and the part of the steam-engine to which it is attached. Fig. 2 is a view, mainly in plan, but partially in section, of the parts shown in Fig. 1. Fig. 3 is a vertical sectional view of one-half of the pump shown in Figs. 1 and 2, and Fig. 4 is a detail sectional view of a valve for one of the oil-pipes.

The details of construction as shown in the drawings are as follows:

The pumping apparatus 1 comprises an oil tank or receptacle 2, a casting 3, either formed integral with the tank 2 or bolted thereto, and the operating parts mounted on said tank and casting. As shown, the pump comprises two cylinders 4, in which operate the pistons 5 through suitable stuffing-boxes 6. The stems 5^a of the pistons 5 are mounted in the ends of a suitable cross-head 7, having a guide-rod 8, that moves in a guide-socket in the casting 3. Each piston-stem 5^a is enlarged below the cross-head to form a shoulder 9, and the portion that projects above the cross-head is screw-threaded and provided with nuts 10, the adjustment of which on the stem will pro-

vide more or less lost motion between the piston and the head 7, and thus vary the length of stroke of the pistons. The oil is drawn from the tank 2 into the cylinders 4 through passages 11 and valve-chambers 12 and 13, ball check-valves 14 and 15 being located, respectively, in the chambers 12 and 13 to prevent backflow of oil when the pistons descend. The oil drawn from the tank into the cylinders 4 by the upward movement of the pistons 5 is forced out by the downward movement of the pistons through passages 16 and 17, valve-chambers 18 and 19, and pipes 20 and 21, all of the passages, valves, valve-chambers, &c., being duplicated on the two sides of the guide-rod 8 for the cross-head 7. The valve-chamber 18 contains a ball check-valve 22 for preventing backflow of oil when the corresponding piston moves upward. The valve-chamber 19 contains a valve 23 and has transparent side walls, preferably in the form of a glass tube 24, this tube being set in a metal casing 25, cut away at one side, as indicated at 26, so that the flow of oil may be determined by inspection. Since the oil employed is generally of dark color and the valve 23 is in contact with the glass walls of the chamber at a plurality of points, the movement of the valve in the chamber may be readily seen.

When the double apparatus shown in the drawings is employed, either the pipe 20 or the pipe 21 may lead to the engine-cylinder and the other to the steam-inlet pipe. Assuming that the pipe 21 leads to the engine-cylinder, if the engine is of the condensing type the pipe 21, leading to its cylinder, will be provided with a check-valve 21^a, so as to provide a positive pressure against the action of the pump, and thus insure the proper operation of the other valves.

As a means for operating the cross-heads I provide a rock-shaft 27, mounted in suitable bearings 28 on the casting or framework of the apparatus, one end of this shaft being connected to the cross-head 7 by means of a crank-arm 29 and a link or pitman 30. The rock-shaft 27 is actuated from a moving part of the engine—such as, for example, the wrist-plate 31—through a rod 32 and an arm 33, one

end of the latter being pivoted to the rod 32 and the other end rigidly joined to the rock-shaft 27.

It will be readily understood from the foregoing description of the apparatus that the rotation of the wrist-plate will serve to rock the shaft 27, and thus alternately raise and depress the pistons 5, that as the pistons are raised the oil will be drawn into the cylinders from the tank by suction, and that when a further movement of the wrist-plate depresses the pistons the oil will be forced from the cylinders through the passages 16 and 17, valve-chambers 18 and 19, and pipes 20 and 21. As the oil is forced through the chambers 19 it will move the valves 23 upward, this movement being readily seen through the sight-openings 26 and the glass walls of the valve-chambers. When the pistons are again raised, gravity and the back pressure of steam will force the valves 23 downward to their seats. This sight-feed construction and arrangement is a desirable and valuable feature, for the reason that it enables the user of the apparatus to readily and instantly determine by a simple inspection whether the apparatus is in order and properly supplying lubricating material to the engine.

For the purpose of enabling the user of the apparatus to readily ascertain at any time the amount of oil in the reservoir 2 I provide a sight-glass 34 of usual construction and function.

I desire it to be understood that my invention is not limited to the details of the construction shown and described, since various changes may be made therein without materially modifying the mode of operation or the result obtained.

I claim as my invention—

1. The combination with an oil-reservoir, of a pump-cylinder communicating with said reservoir by means of a valved passage, a piston operating in said cylinder, a discharge-

pipe communicating with said cylinder by a valved passage and an interposed transparent tube containing a freely-movable device, the movement of which indicates the flow of oil.

2. The combination with an oil-reservoir and a cylinder communicating therewith, of a piston operating in said cylinder, operating mechanism for said piston, means for providing more or less lost motion between the piston and its operating mechanism, a discharge pipe and passage leading from the cylinder, a transparent tube interposed between said passage and the discharge-pipe and a valve in said tube for indicating the flow of oil.

3. In a lubricating-pump for steam-engines, the combination with an oil-reservoir and means for drawing oil therefrom and forcing it into the part requiring lubrication, of a pipe or passage through which the oil passes, having a transparent section and a movable indicator located in the transparent section and actuated by the oil forced therethrough.

4. The combination with an oil-reservoir and a series of connecting-passages leading therefrom, of a piston and check-valves cooperating to draw oil through the first of said passages and to force it through the succeeding passages, one of which has a transparent section and a movable device in said transparent section that is actuated by the flow of oil to afford a visible indication thereof.

5. A sight-feed for a force-feed lubricator, comprising in combination, an oil-duct, a transparent portion thereof, and a movable indicator contiguous to said transparent portion, moved by the movement of the oil, and adapted by its position to indicate the flow or non-flow of the oil, substantially as set forth.

In testimony whereof I have hereunto subscribed my name this 16th day of May, 1900.

CYRUS ROBINSON.

Witnesses:

A. B. GRANGE,
JAMES B. YOUNG.