

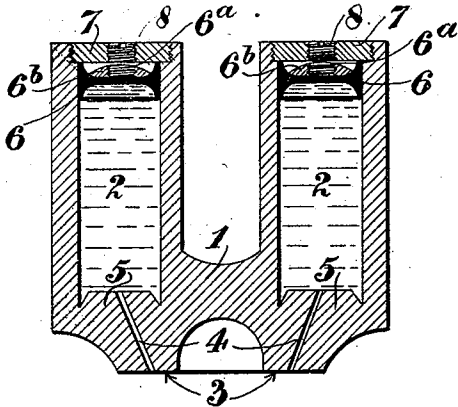
(No Model.)

J. CURRAN.  
LUBRICATING VALVE.

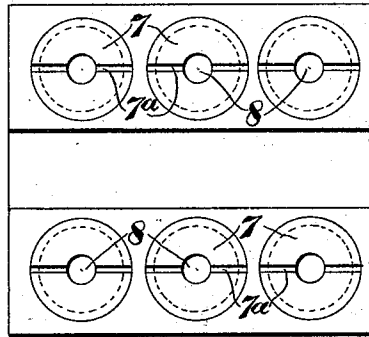
No. 553,553.

Patented Jan. 28, 1896.

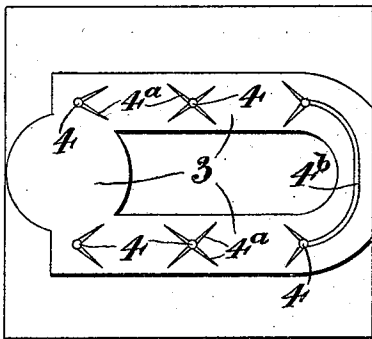
*Fig.1..*



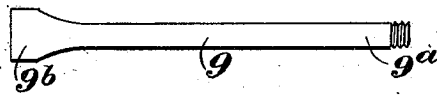
*Fig.2.*



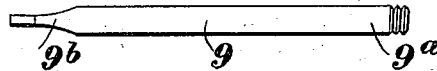
*Fig.3.*



*Fig.4.*



*Fig.5.*



Witnesses.

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# UNITED STATES PATENT OFFICE.

JAMES CURRAN, OF LONDON, ENGLAND.

## LUBRICATING VALVES.

SPECIFICATION forming part of Letters Patent No. 553,553, dated January 28, 1896.

Application filed May 16, 1895. Serial No. 549,544. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES CURRAN, a subject of the Queen of Great Britain and Ireland, residing at Spa Road, Bermondsey, London, in the county of London, England, have invented Improvements in Lubricating Valves, of which the following is a specification.

The object of this invention is to provide efficient means for automatically lubricating the working surfaces of slide-valves used in hydraulic and other motive-fluid engines. For this purpose the valve is provided with one or more lubricant-receptacles in communication with the surface to be lubricated and provided, or each provided, with a piston arranged to be acted upon by the fluid under pressure within the valve-chest in which the valve is to work, the arrangement being such that the piston, or each piston, will, in consequence of the pressure thereon, cause lubricant to flow from the receptacle to the surface to be lubricated.

In the accompanying drawings, Figures 1, 2, and 3 are respectively a cross-section, a plan, and an under-side view showing, by way of example, a hydraulic valve provided with means according to this invention for lubricating its working surface, and consequently also the surface upon which it works. Figs. 4 and 5 are elevations at right angles to each other showing a tool hereinafter more particularly referred to.

In the body 1 of the valve there are formed chambers 2, which are adapted to serve as receptacles for lubricant and which communicate with the rubbing-surface 3 of the valve through ducts 4, which at their upper ends open into the bottoms of the chambers 2 through raised parts 5 and at their lower ends communicate with distributing-grooves 4<sup>a</sup> formed in the said rubbing-surface 3. Each chamber 2 is made cylindrical and is provided with a well-fitting piston 6, of any suitable material—for example, lead—arranged to work therein. Each piston when at the bottom of its stroke rests by its central portion upon the raised part 5 at the bottom of the cylinder, whereby the periphery of the piston, especially when of soft metal, such as lead, is prevented from being damaged by pressure against the bottom of the chamber. The chambers 2 are provided with covers 7,

which are screwed into the valve-body 1 and each of which has a hole 8 through it to enable the water or other fluid under pressure in which the valve works to reach the upper face of the piston 6, and so force the lubricant from the chamber 2 through the duct 4 to the surface on which the valve slides.

In order to refill the chambers 2, the covers 7 and pistons 6 are removed by means of a suitable tool inserted through holes (normally closed by plugs or equivalent means) provided for the purpose in the cover of the valve-chest, the tool being adapted to suitably engage with the said covers and pistons. For this purpose, assuming the screw-thread on the periphery of each cover to be right-handed, the hole 8 in each cover may be provided with a left-handed screw-thread to receive a corresponding screw-thread on one end, 9<sup>a</sup>, of a rod 9, Figs. 4 and 5, the other end, 9<sup>b</sup>, of which may be formed as a screw-driver to enter a notch 7<sup>a</sup> in the top of the cover 7. With this arrangement, assuming the covers to be in place, it will be seen that by screwing the rod 9 tightly into the hole 8 of each cover in turn and continuing to turn the rod after it has been fully screwed in the cover can be unscrewed from the body of the valve and removed, and that the cover can be afterward returned by and partly screwed into place by the rod, the end 9<sup>b</sup> of which may be used to complete the screwing up, if necessary.

Each piston 6 may be provided with a similar screw-threaded hole 6<sup>a</sup> to permit of its being inserted in place and removed by a tool of the kind referred to. When the piston is of a soft metal, such as lead or white metal, which I consider advantageous, the said screw-threaded hole may be formed in a brass socket-piece 6<sup>b</sup>, suitably secured to the top of the piston, as by soldering.

The terminal-ducts 4 of the rows of ducts on opposite sides of the valve are, or may be, connected at that end of the valve which does not cross the ports to be controlled by a groove 4<sup>b</sup> made in the under side of the valve. The lubricant used is preferably of a semi-liquid or pasty consistency.

The covers 7 may be dispensed with, but I consider their use advantageous, as they serve to keep the pistons in place when the valve

is removed from the valve-chest, and to contract the outer ends of the lubricant-chambers and prevent ready access of dirt thereto.

As will be obvious, the number of lubricant-chambers 2 with pistons 6, as hereinbefore described, can be varied to suit circumstances. Thus in some cases there may be less or more than the number shown, according to the size and type of valve with which they are used.

It will be understood that the feeding of the lubricant from the chamber or chambers 2 will cease automatically when the supply of motive fluid is cut off from the valve-chest in which the valve works.

What I claim is—

1. The combination, in a prime-mover valve, of a receptacle for lubricant, a piston adapted to work in the said receptacle and arranged to be acted upon in the valve-chest by the motive fluid contained therein, and a duct forming a communication between the said receptacle and the surface of the valve to be lubricated, substantially as set forth.

2. A valve provided with a lubricant receptacle having a perforated removable cover, and connected by a duct with the working face of the valve, and a piston adapted to work in said receptacle and arranged to be acted upon

by fluid under pressure admitted through said cover, substantially as described.

3. The combination with a slide valve of lubricators each consisting of a lubricant receptacle connected by a duct with the working face of the valve and provided with a piston adapted to work therein arranged to be acted upon by fluid under pressure and provided with an internally screw-threaded hole, and a perforated cover screwed into one end of the said receptacle and provided with a screw-threaded hole, substantially as herein described for the purposes specified.

4. A valve having a number of lubricant receptacles 2 formed in the body thereof and also ducts 4 connecting said receptacles with its working face, pistons 6 arranged to work in said chambers, and removable perforated covers 7 screwed into the top of said receptacles, substantially as herein described for the purpose specified.

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

JAMES CURRAN.

Witnesses:

M. A. V. LONDON,  
HUGH HUGHES.