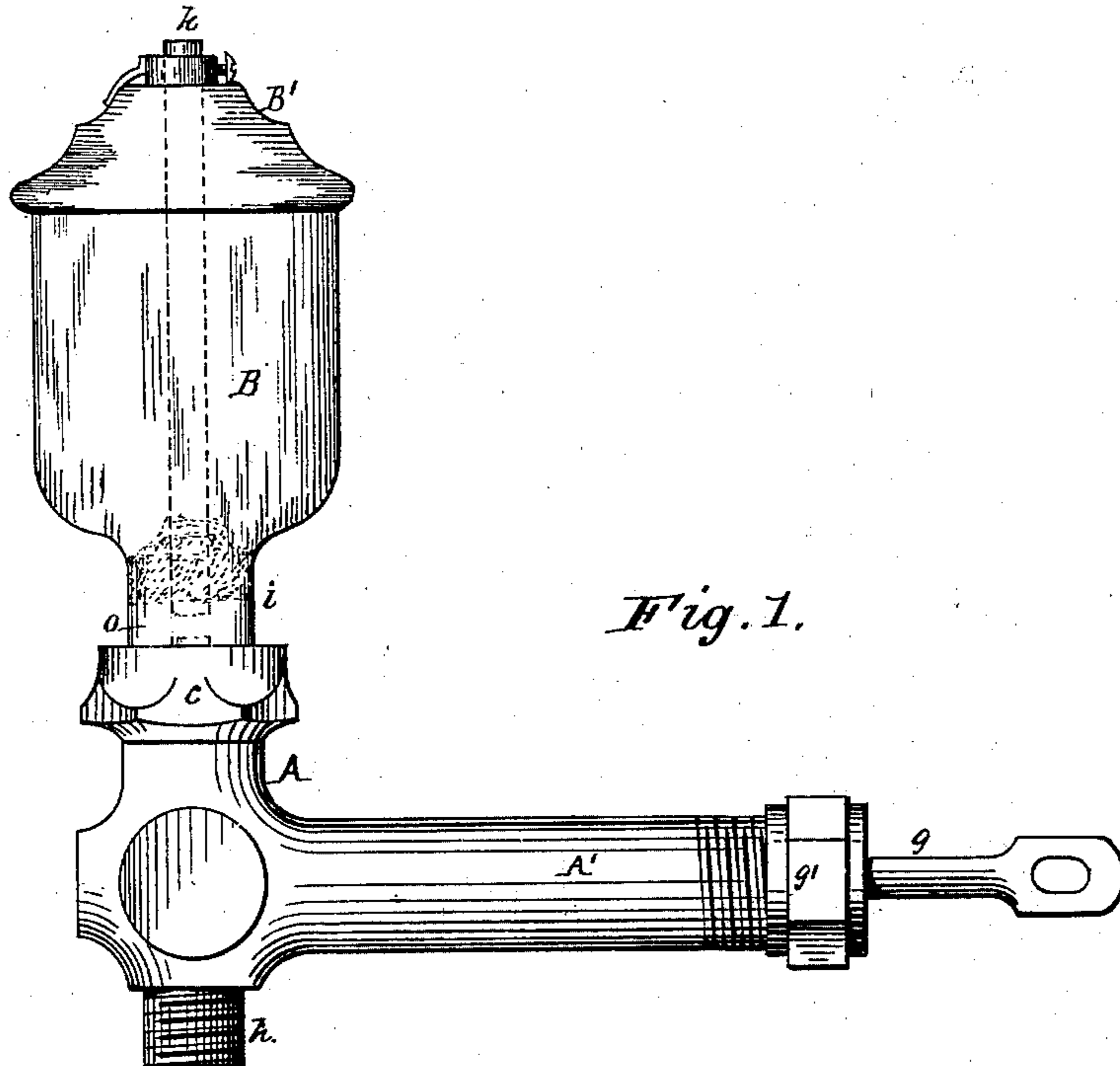


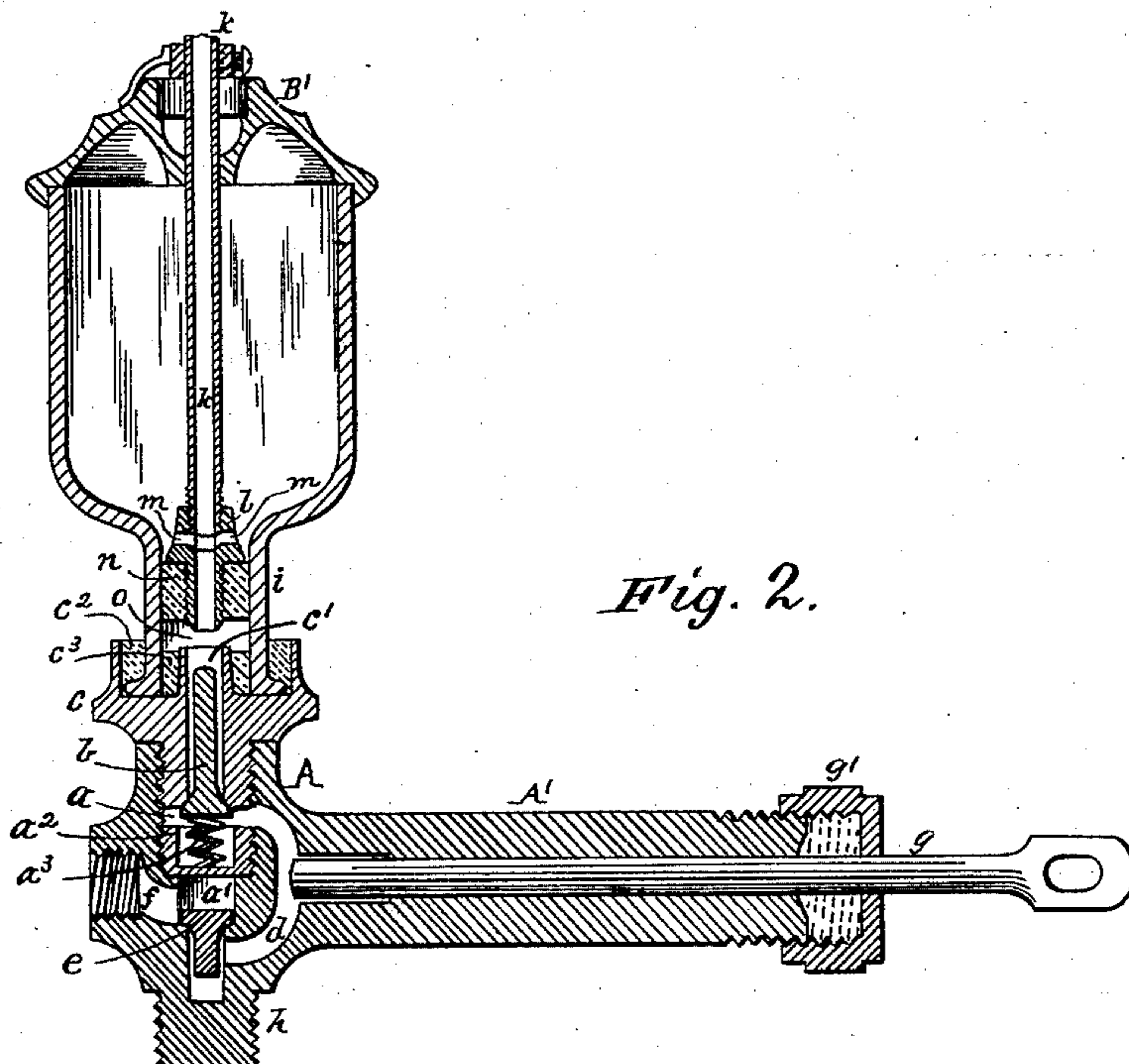
J. WHEELOCK.  
Lubricating Apparatus for Steam-Engine Cylinders.

No. 221,132.

Patented Oct. 28, 1879.



*Fig. 1.*



*Fig. 2.*

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# UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN LUBRICATING APPARATUS FOR STEAM-ENGINE CYLINDERS.

Specification forming part of Letters Patent No. **221,132**, dated October 28, 1879; application filed September 25, 1879.

*To all whom it may concern:*

Be it known that I, JEROME WHEELOCK, of the city and county of Worcester, in the State of Massachusetts, have invented certain new and useful Improvements in Lubricating Apparatus for Steam-Engine Cylinders; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part thereof, is a clear, true, and complete description of my invention.

My apparatus in delivering oil to the cylinder is positively operated, as heretofore, by means of a pump, the piston of which is reciprocated by mechanism connected with some moving portion of the engine; but in the delivery of oil from a reservoir to the pump, I employ an oil-cock and an air-duct, whereby the oil may be delivered to the pump in drops at long or short intervals, or in a stream, according to varied requirements, and whenever the quantity of oil is less than the space vacated by the retirement of the piston within the pump, sufficient air will be supplied by way of the induction-valve to insure a discharge of oil from the pump to the cylinder in quantities and at intervals corresponding substantially with the quantities dropped and the intervals between the drops from the reservoir.

The oil-reservoir is composed of glass, as heretofore, to enable the quantity of oil therein to be at all times readily observable. The oil-cock which delivers oil to the pump is also inclosed within a glass chamber, so that the delivery of oil to the pump may be readily graduated and observed while protected from dust and dirt.

In the construction of my apparatus, I have also devised a certain arrangement of the valve-chambers and interior ducts, whereby the clearance of the pump is reduced to a minimum, and it is enabled to operate effectually in delivering oil equally well, whether in a continuous stream or in a minimum quantity at intervals.

The several features of my invention which I hereby seek to protect by Letters Patent, are specifically pointed out at the end of this specification.

To more particularly describe my invention I will refer to the accompanying drawings, in

which Figure 1 represents one of my lubricators in side view. Fig. 2 represents the same in central vertical longitudinal section.

The main body A of the apparatus is of cast metal, and is provided with a vertical central chamber divided into an upper and a lower valve-chamber, designated as *a* and *a'*, respectively. The central chamber is tubular, and is threaded for the greater portion of its length, and contains a threaded plug, *a*<sup>2</sup>, which separates the two valve-chambers, and which also serves as a base for supporting a spiral spring, *a*<sup>3</sup>, which supports and holds it to its seat, the upper or induction valve *b* being housed centrally in a crown-plug, *c*, and provided with an oil-duct, *c'*. The upper and lower valve-chambers are connected by an oilway, *d*, provided for in casting. The lower or eduction-valve *e* is seated in the lower portion of the central chamber, its upper surface being quite closely adjacent to the lower side of the threaded plug *a*<sup>2</sup>, and both of the valve-chambers, as well as the oilway *d*, are reduced in their dimensions, as far as is practicable, in view of the minute quantities of oil to be delivered by the apparatus.

The lower valve-chamber communicates by way of duct or passage *f* to a suitable pipe or tube, (not shown,) which communicates with the interior of the steam-cylinder. The threaded plug *a*<sup>2</sup> has a squared recess for holding the spiral spring, and this recess enables the plug to be turned in or out of the central chamber by means of a square key fitted to enter the recess and operate as a wrench.

The body A has a lateral tubular chamber, A', which communicates at its inner end with the oilway *d*. Said tubular chamber contains a piston, *g*, provided with a stuffing-box, *g'*, and at its outer end with a means for attachment to some moving part of the engine for securing the requisite reciprocating movement. As thus far described, it will be readily understood that if oil be supplied to the duct *c'*, and the piston operated, the oil will pass, *via* valve *b*, to bottom of way *d*, thence through valve *e*, *via* duct *f*, to the steam-cylinder, and it will be observed that the clearance of the pump is practically reduced to a minimum, which is an important consideration in a pump intended to deliver oil in quantities of from a single drop upward.

The apparatus is provided with a threaded

foot, *h*, whereby it may be attached to a cylinder or to a suitable standard.

The reservoir B is composed of glass. A bottomless bottle may be used for this purpose, its neck *i* being inserted within an annular recess in the crown-plug *c*, and secured therein by cement *c*<sup>2</sup>, of any suitable variety, and oil may be kept from said cement by means of a cork washer, *c*<sup>3</sup>, tightly inclosing the oil-duct *c*<sup>1</sup>, and snugly filling the lower portion of the neck of the reservoir.

The oil-cock for delivering oil from the reservoir to the pump may be variously constructed without departing from the main feature of my invention. The one shown is inclosed, yet visible, and is capable of being graduated to deliver the oil in minute quantities.

The oil-cock preferred by me embodies a central tube, *k*, which extends above the cap B' of the reservoir, and is screw-threaded externally at its lower end and fitted to a tube, *l*, threaded internally, and provided near its upper end with lateral oil-passages *m*, which are guarded by the lower end of the tube *l*, which, on being turned so as to move it up or down on its thread within tube *l*, will open or close said passages and permit much or little oil to pass from the reservoir downward. The upper end of the tube *k* being open permits air to freely enter to facilitate the free dropping of the oil, and also to pass downward to the pump.

The tube *l* is housed in a cork packing, *n*, which snugly fills the neck of the reservoir and prevents oil from passing below, except by way of the oil-cock.

The glass walls of what I will term the "drop-chamber" *o* enable frequent and convenient observation as to the delivery of oil, and the tube *k* is readily accessible for varying the delivery at will, either in a constant stream or in drops at desired intervals.

It will be readily seen that the oil will be delivered by the pump to the cylinder in proportion as it is supplied from the reservoir, and that if a quantity of oil be supplied which is less in bulk than the space vacated by the piston in its backward movement, air will be freely permitted to enter *via* pipe *k*, tube *l*, and valve *b*, so that when the piston next moves forward the oil received and more or less air will be driven through valve *e* to the cylinder.

It will also be seen that the location of both valve-chambers within the central chamber,

which is divided by the central plug, admits of great economy in construction.

For preventing the air-tube *k* from being accidentally turned, any well-known mechanical means may be employed, as, for instance, the cap B' may be secured to the reservoir, and a set-screw in its top arranged to engage with said tube.

I do not limit myself to the precise construction of parts shown and described, nor to their precise arrangement with relation to each other which I have adopted, for I am well aware that much variation may be made therein without departing from my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, substantially as hereinbefore described, of a lubricating oil-pump, an oil-reservoir, an oil-cock for delivering oil from the reservoir to the pump in any desired quantity, and an air-duct communicating with said pump, whereby the delivery of oil to the pump may be varied at will to meet varied requirements, and the pump, by the aid of air in its chamber be enabled to eject the oil therefrom drop by drop, or in any desired greater quantity up to its fullest capacity, as set forth.

2. The combination, substantially as hereinbefore described, of a lubricating-oil pump, an oil-reservoir, and an oil-cock externally controllable but located within a glass chamber, whereby the quantity of oil delivered by the cock to the pump may be readily graduated and the dropping or the flow of oil be under convenient observation, as set forth.

3. A lubricating apparatus provided with the central chamber, the plug *a*<sup>2</sup> dividing the same into upper and lower valve-chambers, the oilway connecting said valve-chambers, a piston and chamber communicating with said oilway, and suitable induction and eduction valves and passages, the whole constituting a lubricating-pump, substantially as shown and described, for the attainment of a minimum of clearance and economy in construction, as set forth.

4. The combination, with the reservoir of a lubricating apparatus, of the threaded air-pipe and the threaded tube provided with lateral oil-passages, substantially as described.

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Witnesses:

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