

J. WHEELOCK.
Lubricating Apparatus for Steam Engine Cylinders.
No. 232,865. Patented Oct. 5, 1880.

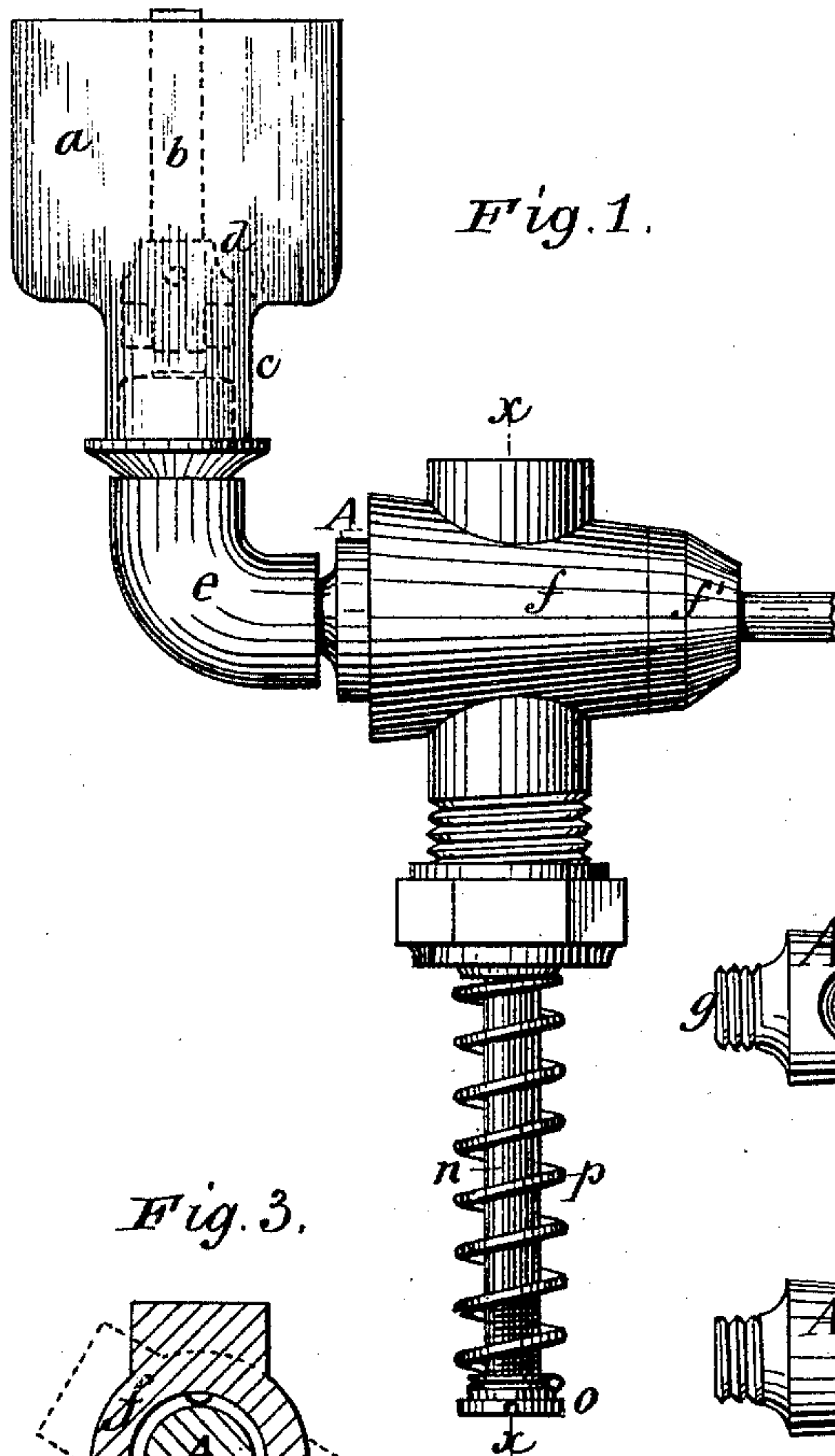


Fig. 1.

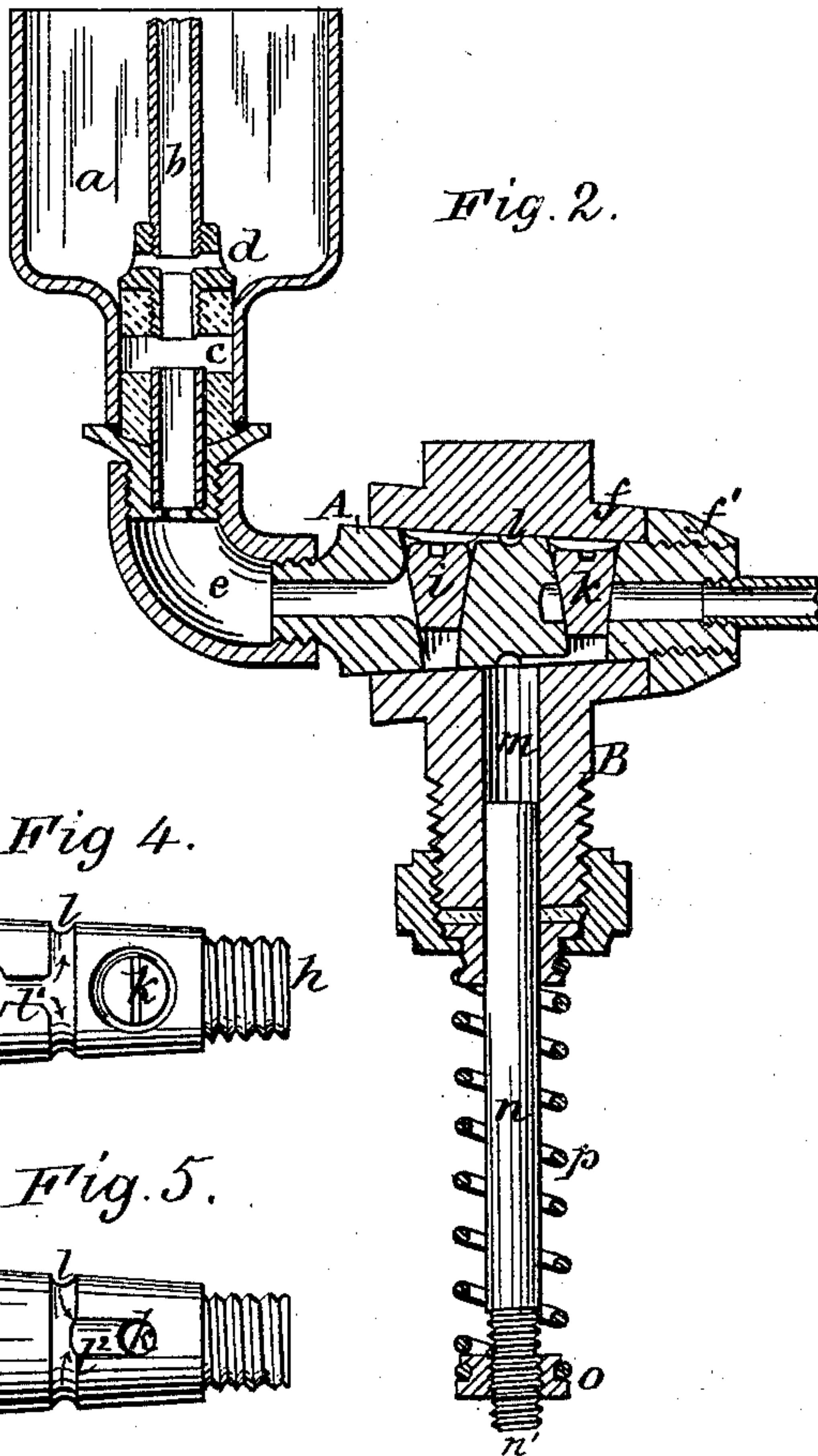


Fig. 2.

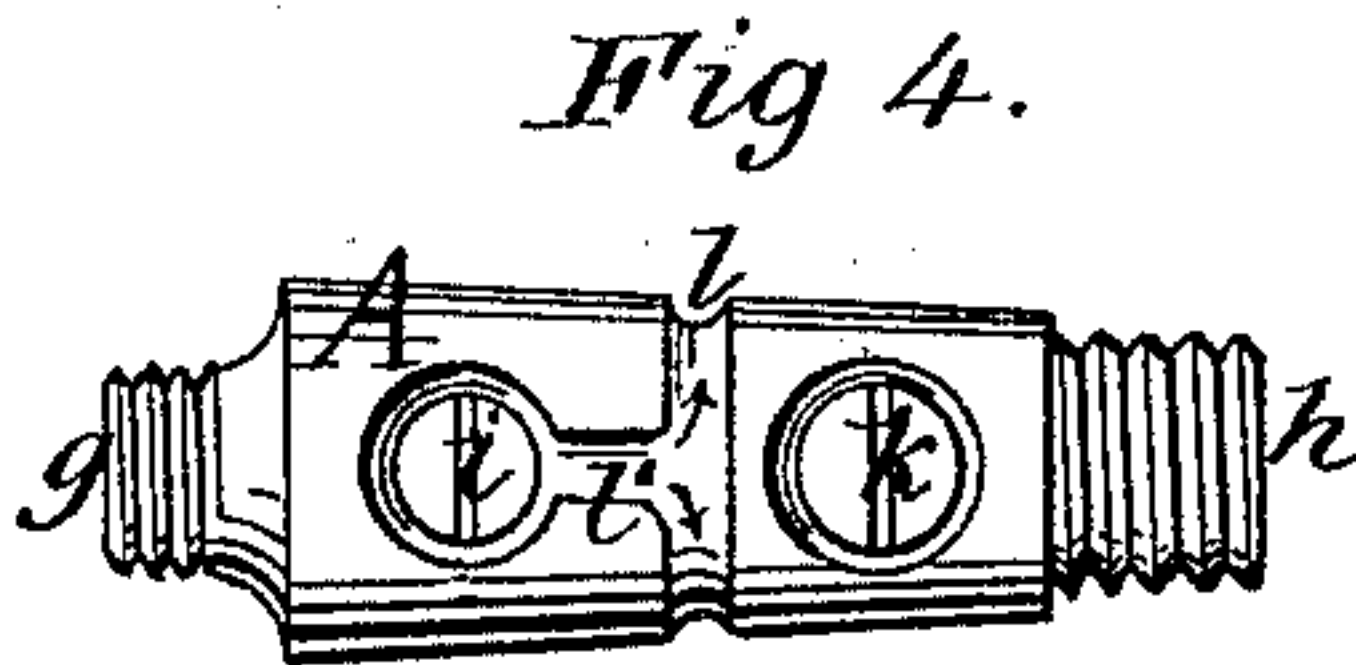


Fig. 4.

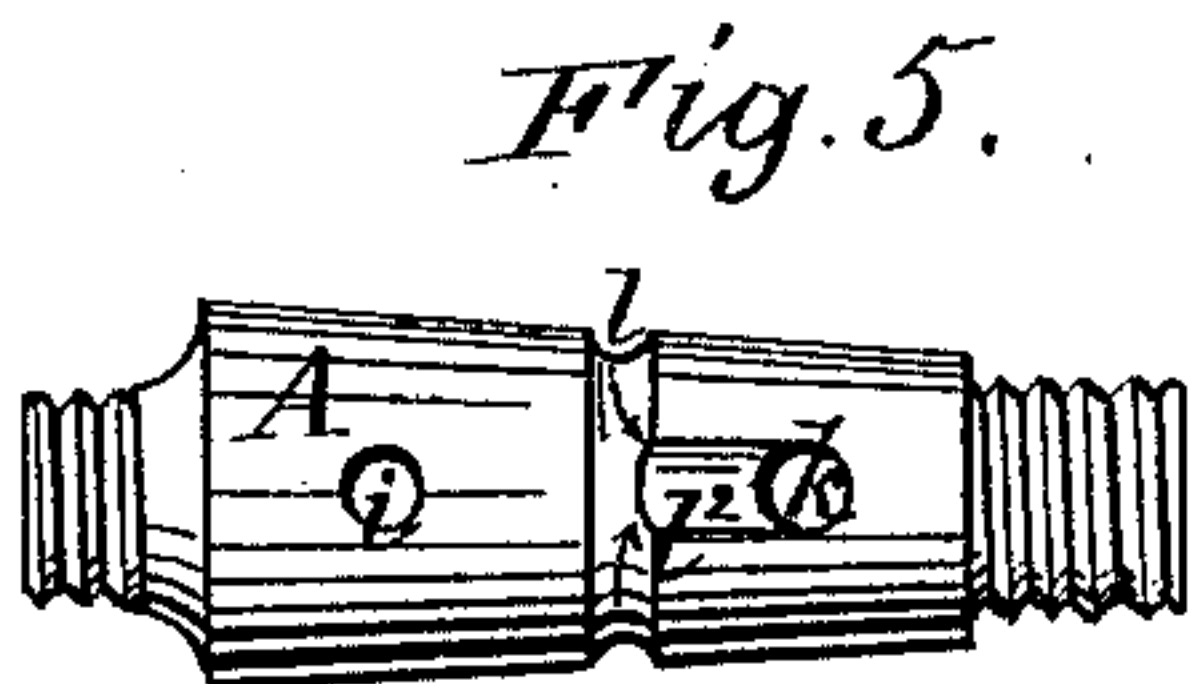


Fig. 5.

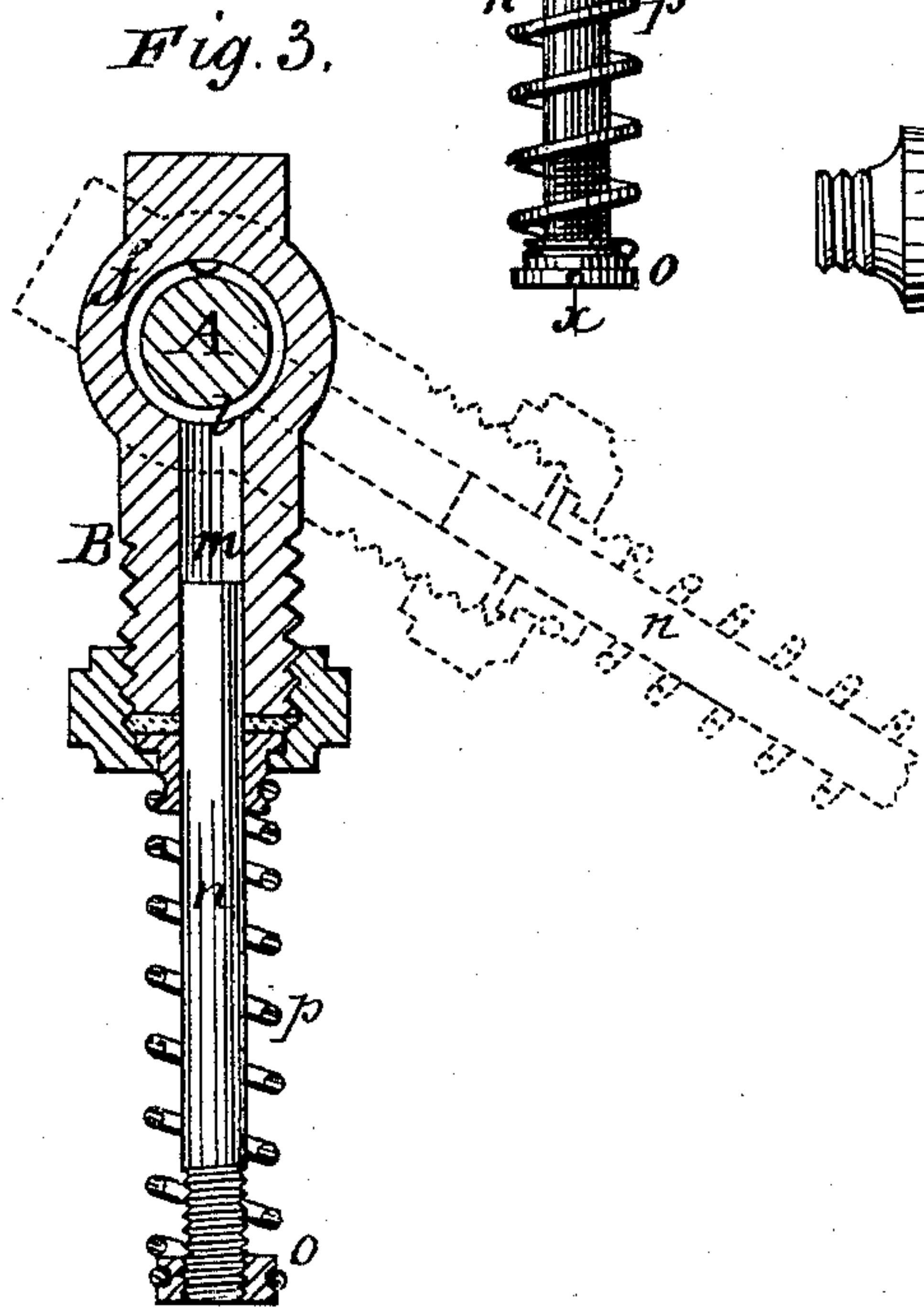


Fig. 3.

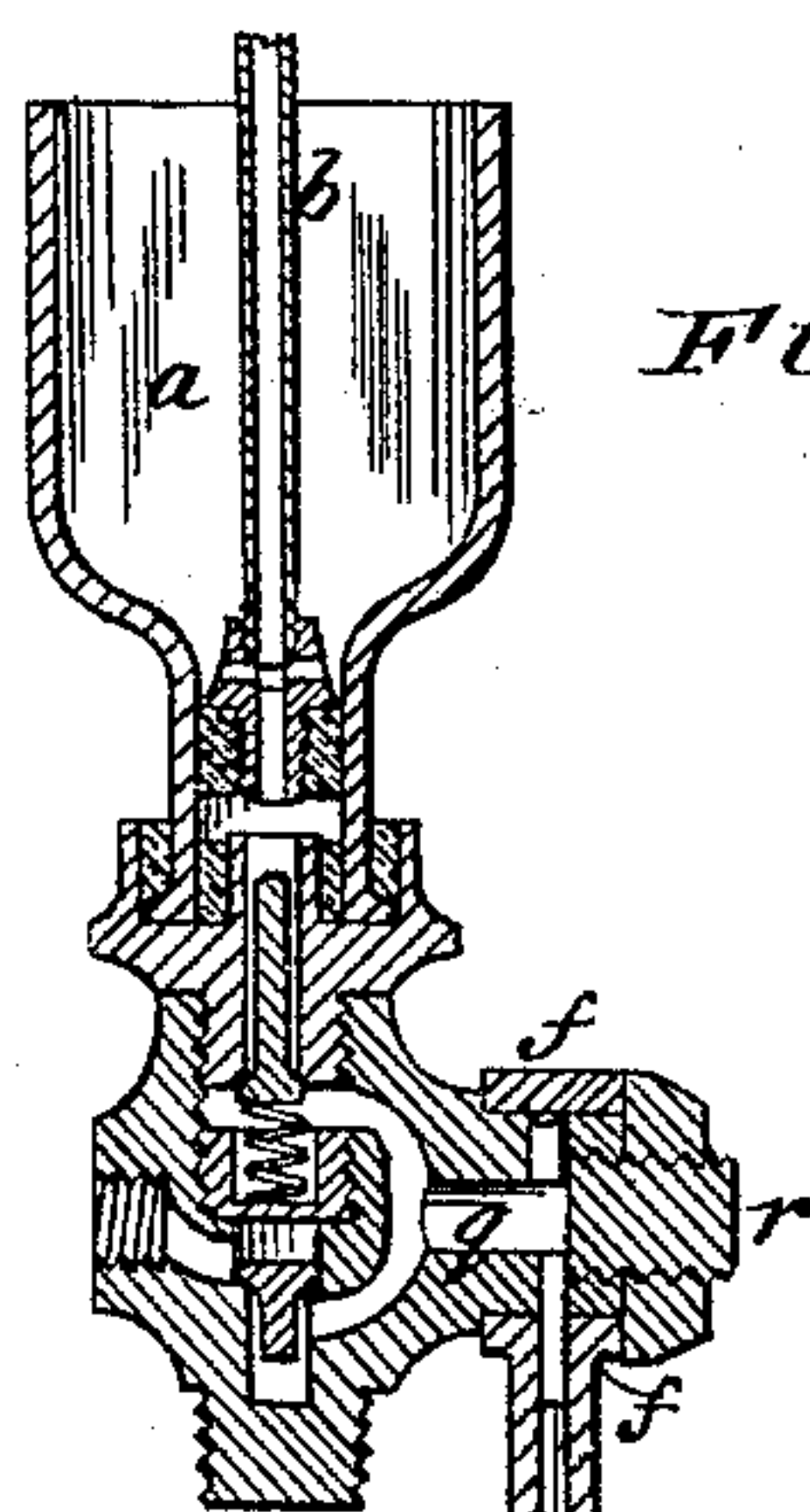


Fig. 6.

Witnesses:
Philip F. Lerner,
Howell Baxter.

Inventor:
Jerome Wheelock
By M. B. Wood,
Attorney.

UNITED STATES PATENT OFFICE.

JEROME WHEELOCK, OF WORCESTER, MASSACHUSETTS.

LUBRICATING APPARATUS FOR STEAM-ENGINE CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 232,865, dated October 5, 1880.

Application filed November 13, 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
5 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
10 a clear, true, and complete description of the several features of my invention.

My present apparatus in its preferred form delivers oil to the cylinder in variable quantities by means of a piston-pump, as heretofore, and it is constructed in many respects
15 substantially in accordance with certain portions of the invention shown, described, and claimed in certain Letters Patent issued to me October 28, A. D. 1879, No. 221,132.

20 In my former apparatus the position of the pump with relation to the oil-reservoir is fixed and determined, and although it is practicable to vary the relative positions of these two parts of said apparatus, it can only be done
25 by providing therefor in the patterns used for casting, thus necessitating a special construction for each unusual application of the apparatus.

It is obvious that power could be applied
30 differently to the pump and from a different part of the engine in a horizontal than in a vertical engine; and also, if motion for the pump be derived from the valve-gear, that different varieties of valve-gear would involve
35 a more or less varied position of the pump-barrel with relation to the reservoir, this latter being usually and preferably in a practically vertical position. It is also desirable that the pump-barrel be capable of adjustment in
40 various positions without affecting or changing the position of the valves.

The main feature of my present invention has for its object a capacity for varied adjustment of the pump-barrel to adapt it to be operated under the varied conditions incident to
45 its application and use; and the main feature of my present invention consists in the combination, with an oil-reservoir and valves, of a pump-barrel which is swiveled or jointed to
50 the base or standard of the reservoir, whereby the pump-barrel and its piston will co-operate

with the valves and reservoir regardless of the variation in the position of the pump-barrel with relation to the reservoir. Under this main feature of invention my former apparatus
55 may be provided with a part of my present improvements, as hereinafter set forth.

I also hereinafter show and describe an arrangement of valves and valve-chambers which I believe to be less expensive and better
60 suited for use with my present improvements than those shown in my prior Letters Patent referred to. This novel arrangement of valves and valve-chambers constitutes in part another feature of my invention, which
65 consists in an oil-reservoir, a stationary plug, preferably conical, drilled longitudinally and laterally, and scored circumferentially and longitudinally to afford oil-passages and valve-chambers, in combination with a piston and a
70 pump-barrel which is rotatively mounted upon the plug. It is desirable that the valves be simple in their construction, and capable of closing by their own weight without the aid
75 of springs, and with my conical plug the induction and eduction valves are located side by side, and both are lifted in opening and dropped in closing.

A plug containing radial valves and central and exterior oilways, in combination with
80 a pump-barrel provided with a sleeve which embraces the plug, constitutes another feature of my invention.

So far as my knowledge extends all steam-cylinder lubricators embodying a pump have
85 had pistons positively operated to and fro, and this of necessity requires closely-fitted connections with the moving part of the engine from which the pumping power is derived.
90

Another portion of my invention consists in the combination, with the piston of a lubricating-pump, of automatic valves and a spring for imparting to the piston its return or backward
95 movement, whereby power is only required for forcing the piston inward and delivering oil to the cylinder, thus enabling me to use operative mechanism of the simplest and most economical character.

It is obviously important that the piston of
100 the pump be limited in its outward or suction movement to correspond generally with the

quantity of oil required to be delivered—as, for instance, a new engine requires more liberal oiling than after it has been considerably operated; and I have, therefore, so constructed my piston that it may be longitudinally adjusted with relation to the pump-barrel, so that while in all cases its inner end will occupy the same position at the termination of its forcing-stroke, it may be made to retire to various points, as may from time to time be required.

In that connection my invention further consists in the combination, with the pump of a lubricating apparatus, of automatic valves, a longitudinally-adjustable piston, and a spring which imparts a return movement to the piston. The longitudinal adjustment of the piston is preferably provided for by me in threading it at its outer end and fitting thereto a threaded sleeve or cap, with which the spring directly engages.

With reference to the spring employed by me in the combinations herein stated, it is to be understood that I am well aware that springs have heretofore been employed with pistons or plugs of lubricators which rely upon gravity for filling the chamber occupied by the piston, and an instance of that type of lubricators will be found in English Letters Patent No. 778, A. D. 1856. In my lubricator, however, the spring is in combination with automatic valves, one of which is opened by the return movement of the piston when forced backward by the spring, so that the latter not only effects the return movement of the piston, but its power is relied upon for opening the induction-valve and drawing inward the required charge of oil.

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

Figure 1 represents, in side view, a lubricating apparatus embodying the several features of my present invention. Fig. 2 represents the same in section on a plane including the axial lines of the pump-barrel and the valve-plug. Fig. 3 represents the same on line *x*, Fig. 1, and illustrates, in dotted lines, how the angular position of the pump-barrel may be varied. Fig. 4 is a top view of the valve-plug detached. Fig. 5 is a bottom view of the valve-plug. Fig. 6 represents a swiveled pump-barrel applied, in accordance with a portion of my present invention, to my previously-patented apparatus.

The glass reservoir *a*, air-duct *b*, transparent drop-chamber *c*, and the oil-cock *d* are substantially as shown in my prior Letters Patent, to which reference may be had. It is only necessary herein to state that by raising the air-duct tube *b* on the screw-thread at its base the oil-cock *d* is opened and the oil delivered as may be required, either in drops at long or short intervals or in a continuous stream, and that the passage of oil is always observable through the glass drop-chamber, and that air is always free to pass down the duct to supply

the pump when operating on small quantities of oil.

The reservoir and its cock, &c., are mounted on the elbow-pipe *e*, which, in turn, is coupled to the valve-plug A. This plug A is firmly fixed in position, and is a part of the base or standard for the reservoir, and may be mounted in or connected with a separate standard for attachment to a cylinder, or even to the wall of an engine-room, or other point adjacent to the cylinder, if it be desirable to operate the oil-pump from some adjacent shafting. The exterior of the plug is conical, so as to secure an oil-tight joint between it and the pump-barrel B, which has at its end a sleeve, *f*, fitted to receive said plug, and thereby to admit of a rotative adjustment thereon. The conical plug is drilled centrally from its large end to afford an induction oil-passage, *g*, and from its opposite end to provide an eduction-passage, *h*. Said plug is also drilled diametrically to afford valve-chambers to receive the induction-valve *i* and eduction-valve *k*, which are automatic in their action, and respectively communicate with and control the central passages, *g* and *h*. The oilways from one valve to the other are all provided for by channels cut in the outer surface of the plug, the inner surface of the pump-barrel sleeve *f* serving as one side or wall for each of these oilways.

Midway between the two valves the plug is provided with an annular groove, *l*, which is always coincident with the bore *m* of the pump-barrel, regardless of its rotative adjustment on the plug.

The oil through valve *i* passes into the annular passage *via* a longitudinal duct, *l'*, Figs. 2, 3, and 4, and from duct *l*, *via* longitudinal duct *l''* on the bottom of the plug, to valve *k*, as seen in Fig. 5, the course of the oil being indicated by the several arrows.

The screw-thread on the outer end of the plug and the nut *f'* thereon admit of such an adjustment of the pump-sleeve *f* as to secure an oil-tight joint; but as no movement of the pump-barrel is required after the apparatus has been mounted, the conical feature may be dispensed with and an oil-tight joint be otherwise attained.

The piston *n* of the pump is threaded at its outer end at *n'* and provided with a flanged sleeve, *o*. An expansive spiral spring, *p*, surrounds the piston, taking bearing upon a collar on the stuffing-box, and also on the under side of the flange of the sleeve *o*. The spring secures the return movement of the piston after it has been forced inward for delivering oil to a cylinder, and the thread on the piston and flanged sleeve admit of the longitudinal adjustment of the piston with relation to the pump-barrel.

The capacity of this pump to operate with drops of oil or with a continuous stream from the reservoir is the same as in my prior apparatus; and it will be seen that the pump-barrel may be set on any radial line with reference to the axial line of the conical plug with-

out in any manner affecting its capacity, and that neither of the valves in the plug requires a spring, as is required in the upper valve of my former apparatus.

5 It will also be seen that this construction of the plug and valves and the several oil-ducts is extremely simple and inexpensive, and that the pump-barrel may be set at any desired angle with reference to the vertical line of the
10 reservoir.

The peculiar arrangement of the valves and oilways within a pump-barrel sleeve is of value, whether the pump-barrel be rotatively mounted on said plug or not, on account of the simplicity thereof and its attendant economy in
15 construction.

I Fig. 6 I have shown how a pump-barrel with its sleeve *f* can be employed with a set of valves constructed and arranged precisely
20 as shown in my former Letters Patent.

The oilway *q* is located within a tapered plug projecting from the outside of the valve-chamber, and upon this plug the sleeve of the pump-barrel is located. A screw, *r*, is inserted
25 into the outer end of the plug, and is provided with a nut by which the sleeve may be tightened on the plug, as before described. This plug has an annular oilway communicating by several radial ducts with the oilway in the center of the plug, so that, as in the case of the
30 plug which contains the valves, the pump-barrel will always be in an operative position regardless of the radial line occupied by it with relation to the axial line of the plug.

35 There is found in my former apparatus, patented October 29, 1879, as well as in still older forms of lubricator, a vertical standard having a pump-barrel rigidly attached thereto, or to a part thereof, which enables an adjustment
40 of the pump-barrel so that it may occupy any radial position in a horizontal plane; whereas in lubricators involving my present improvement the pump-barrel is not only adjustable in any position within a horizontal plane, as heretofore, but it is also adjustable in any
45 position in a vertical plane, because it is mounted upon a swivel-joint.

It is obvious that the mechanical construction of apparatus of this class may be largely varied without departing from my invention, 50 and I do not therefore limit myself to the precise construction and arrangement of its several parts which I have selected for the purpose of illustrating my several improvements; nor do I limit my present invention in whole 55 or in part to any particular variety of reservoir or oil-cock, for they can be of any desired construction, although I prefer those which I have particularly shown and described.

Having thus described my invention, I claim 60 as new and desire to secure by Letters Patent—

1. The combination, substantially as hereinbefore described, of an oil-reservoir and valves with a pump having a barrel which is 65 swiveled or jointed with reference to the reservoir, whereby the pump-barrel and its piston may be set and adjusted for operation, as set forth.

2. The combination, in a lubricating apparatus, of a plug containing oil-passages and valves with a pump having its barrel rotatively mounted on said plug, substantially as described, and for the purposes specified. 70

3. The combination, with the plug containing the valves and oilways, of the pump-barrel provided with a sleeve which embraces the plug, substantially as described. 75

4. The combination, with the forcing-piston of a lubricating-pump and automatic valves 80 for co-operating therewith, of a spring for effecting the backward or return movement of the piston, substantially as described.

5. The combination, in a lubricating-pump, of automatic valves, a forcing-piston which 85 controls said valves and is longitudinally adjustable with reference to the pump-barrel, and a spring which effects the return or backward movement of the piston, substantially as described.

JEROME WHEELLOCK.

Witnesses:

GEO. H. SOUTHWICK,
CHARLES F. MAY.