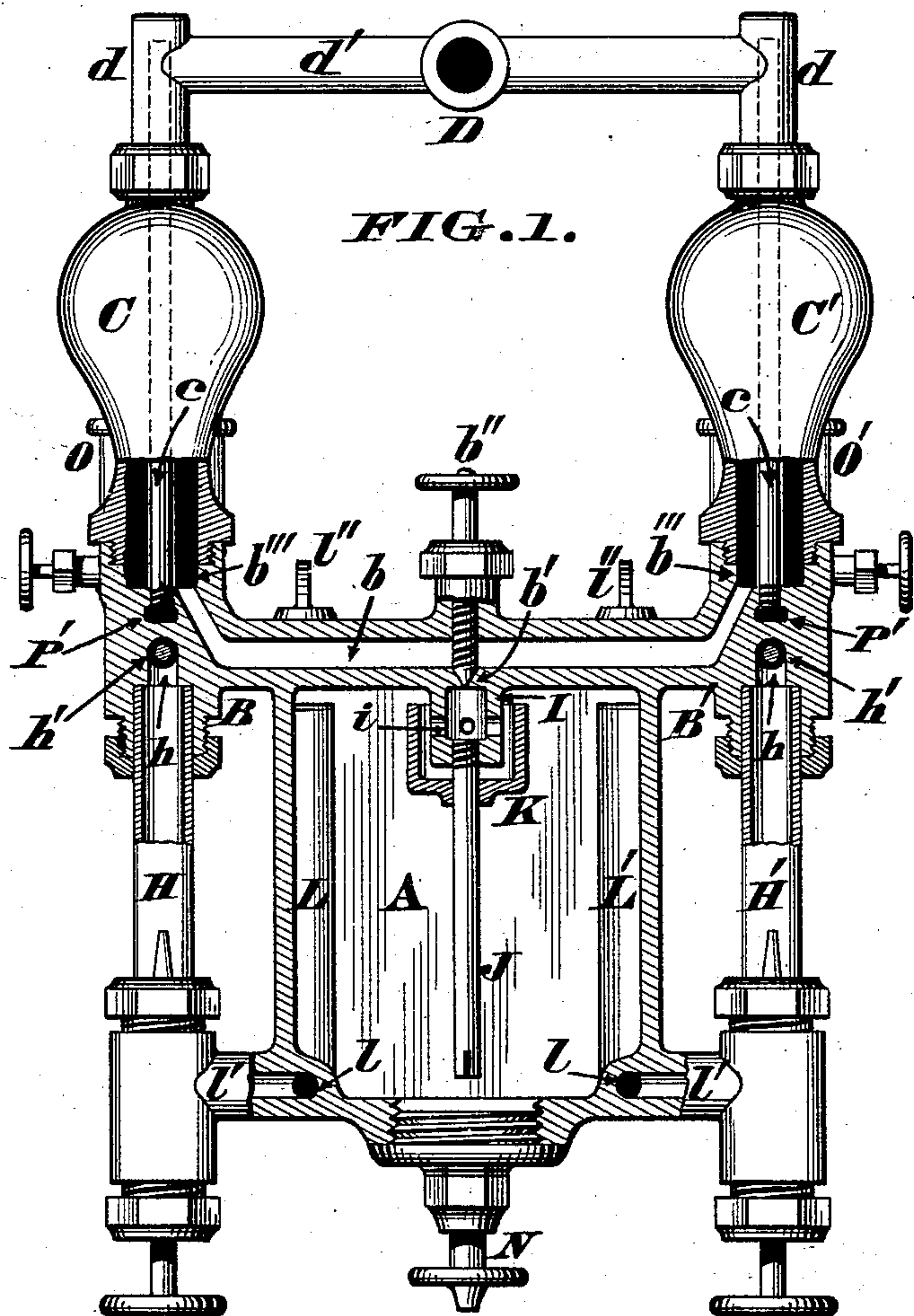


(No Model.)

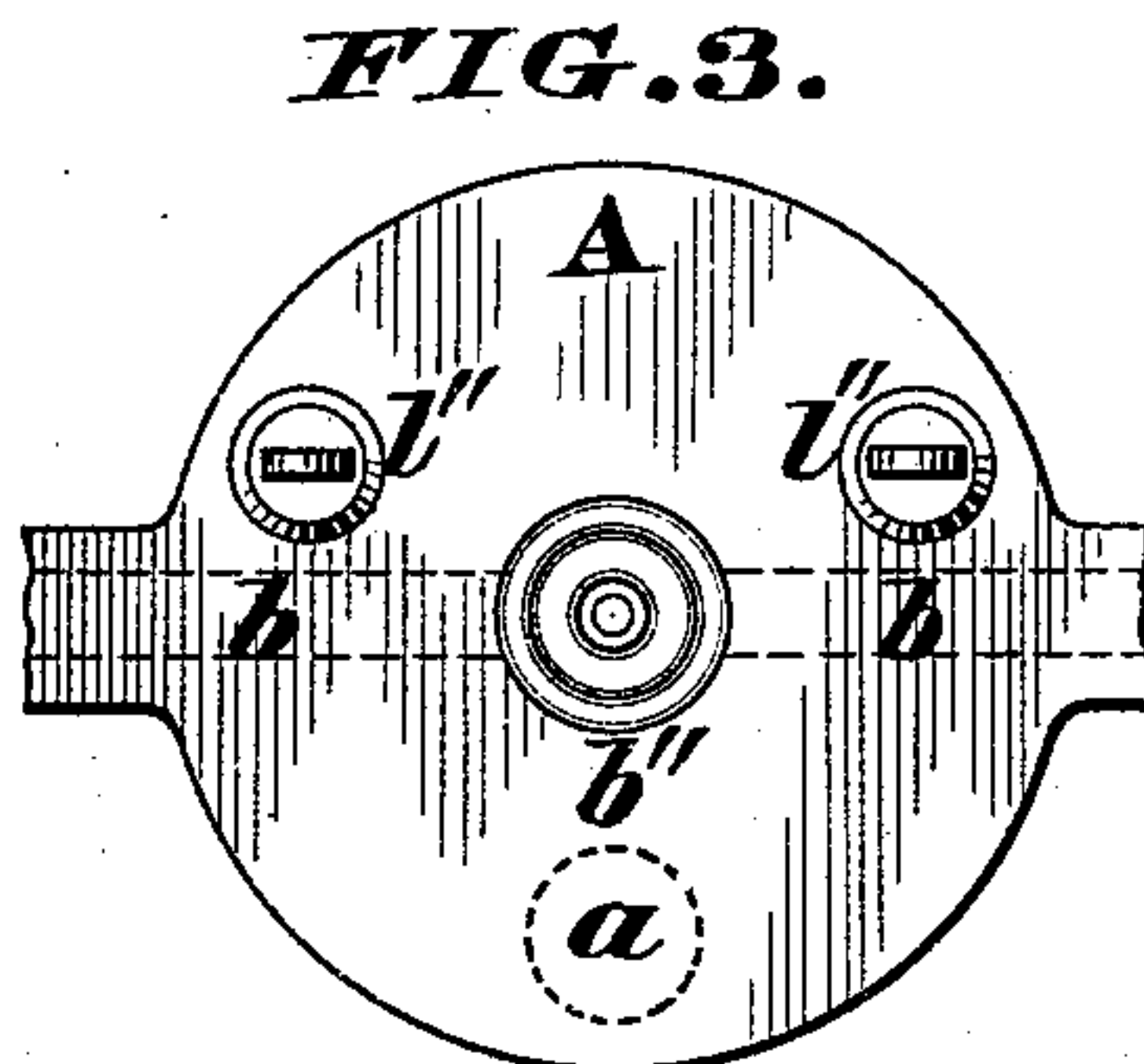
J. POWELL.  
LUBRICATOR.

No. 534,006.

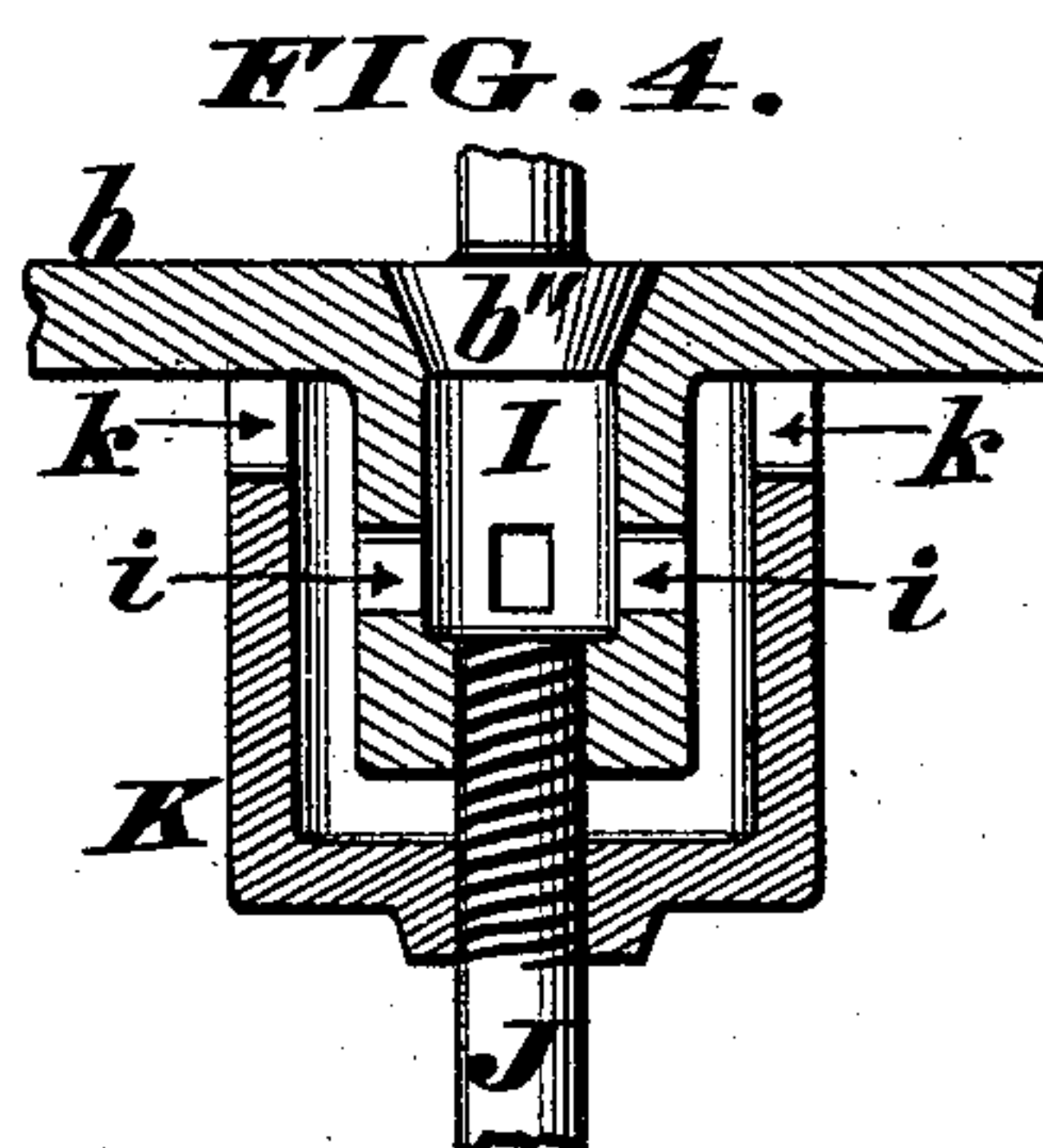
Patented Feb. 12, 1895.



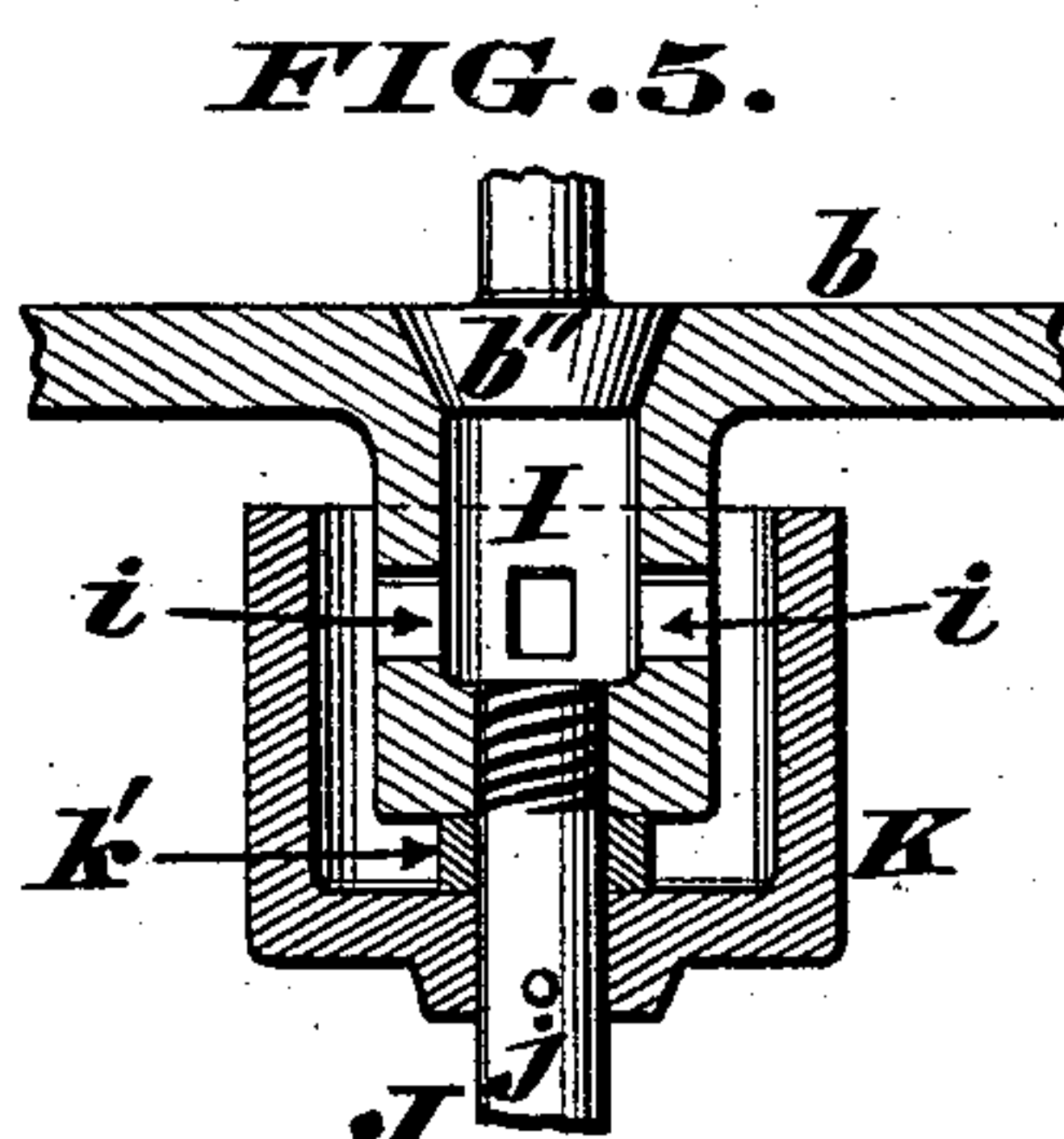
**FIG. 1.**



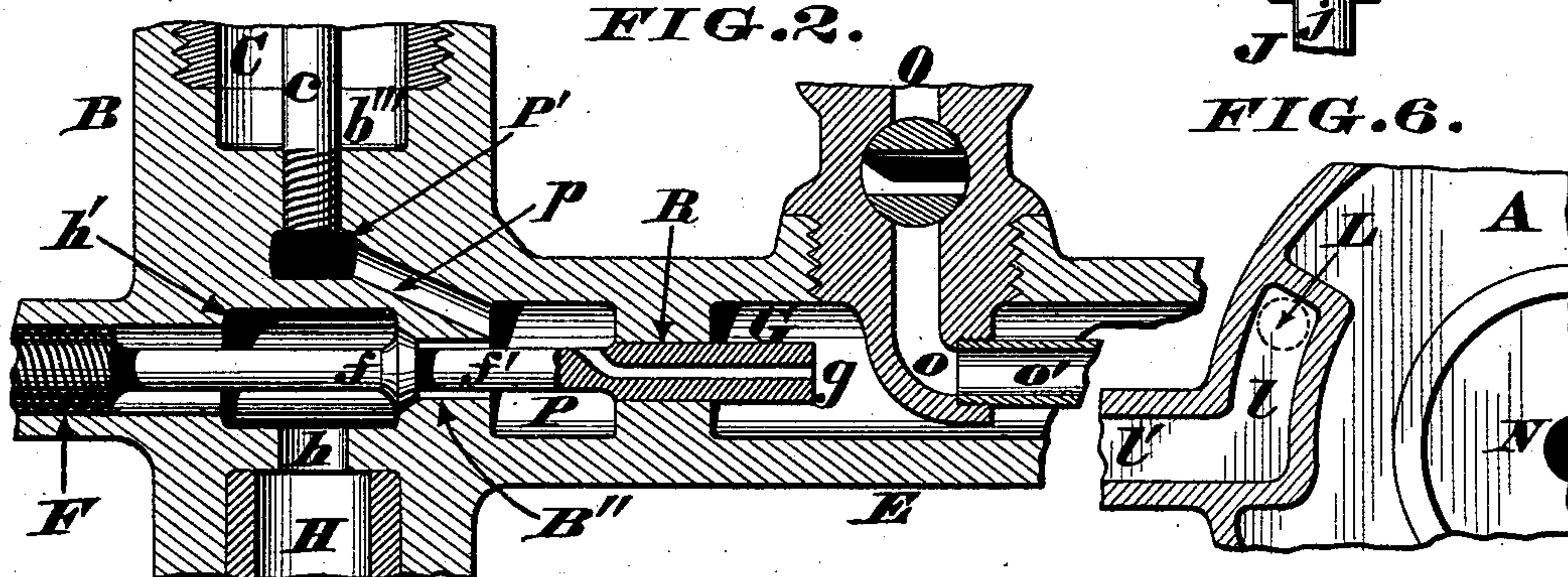
**FIG. 3.**



**FIG. 4.**



**FIG. 5.**



**FIG. 2.**

**FIG. 6.**

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*Arthur Moore*  
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*James Powell*  
*By James H. Layman.*  
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# UNITED STATES PATENT OFFICE.

JAMES POWELL, OF AVONDALE, OHIO.

## LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 534,006, dated February 12, 1895.

Application filed September 10, 1894. Serial No. 522,675. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES POWELL, a citizen of the United States, residing at Avondale, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Lubricators; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the annexed drawings, which form part of this specification.

The object of this invention is to improve the construction, diminish the cost of manufacture, and increase the efficiency and utility of the peculiar form of up-feed sight-lubricator described and claimed in Letters Patent No. 463,320, granted to me November 17, 1891; the first part of my present improvements being confined to an auxiliary condense-water pocket, which supplies water to the sight glass of the device.

The second part of my present improvements consists in providing a special shut off between the live-steam pipe of the condenser, and the top of the sight chamber of the lubricator.

The third part of my present improvements consists in providing means for insuring a better discharge of lubricant from the auxiliary oil-cup to an engine cylinder.

The fourth part of my present improvements consists in a novel and efficient discharge of "condense water" from the condensers into the main oil-chamber, or fount, so as to prevent the contents of said chamber being siphoned out, in certain emergencies.

In the annexed drawings, Figure 1 is a sectionized elevation of my improved lubricator. Fig. 2 is a greatly enlarged axial-section through one of the injector valves and its accessories. Fig. 3 is a plan of a portion of the lubricator. Figs. 4 and 5 are enlarged vertical-sections of two different forms of the water-trap of the device. Fig. 6 is an enlarged horizontal section through a portion of one side of the reservoir or fount.

The reservoir or oil-fount A, heads B, B', common water-channel b, central opening b', valve b'', counterbores b''', condensers C, C', steam-tubes c, c, steam-pipe D, branches d, connection d', oil-discharge pipe E, valve F f, injector-nozzle G g, sight-chambers H, H', vent valve N, and auxiliary oil cups O, O',

being the same in general construction and operation as those described in my patent just referred to, except as to certain improvements hereinafter set forth, require no further explanation in this specification.

The opening b', of water channel b, communicates with a nipple I, having one or more lateral-ports i, and screw threaded at its lower end to permit a ready attachment of a water-discharge tube J, that reaches down nearly to the bottom of the fount A, so as to conduct into the latter all water that generates within the condensers C, C'. Attached to this tube, as seen in Fig. 1, is a cup K, whose open, upper end is a sufficient distance below the top of the fount to permit a free passage of steam or air, in certain emergencies. In this construction, the tube is run into the nipple as far as the thread on said tube will go, and the passage above the top of the cup is determined accordingly, but, as seen in Fig. 4, the cup is also screwed to the tube, and the latter is advanced or elevated until it comes in contact with the fount; channels k being provided to take the place of said passage; but in the modification, seen in Fig. 5, the cup is attached to the tube by a pin j, and a ring k' is fitted loosely around said tube, to determine the distance between said cup and the bottom of the nipple.

The tubes I, I', that supply oil to the sight-chamber nozzles, in the usual way, are open at top, but connect at bottom with side-passages l, as more clearly seen in Fig. 6. From these side-passages, other channels l' lead to the nozzles; the devices L l' being integral with the fount A. Furthermore, the vertical tubes L, L', are situated at the side of channel b, as seen in Fig. 3, plugs l'' being screwed into the top of the fount and directly above the open, upper ends of said tubes. These plugs can be unscrewed at any time, to enable the removal of sediment from the oil-tubes, and are more fully described and claimed in my Patent No. 348,170, issued August 24, 1886.

The sight chambers communicate, at top, by short, vertical ducts h, with enlarged bores h' of the heads B, B', at the ends of which bores are seats for shut off valves f, one of these valves being seen in Fig. 2. Valve f is carried by the spindle portion f', of a screw-threaded stem F. A channel B'', of some



what greater diameter than the spindle leads from this bore  $h'$  to a water-pocket P, which is connected to a more elevated pocket P', by an inclined passage  $p$ , this upper pocket P, being in communication solely with the steam-tube  $c$ .

R is a bore, leading from the pocket P into the oil-discharge pipe E, and traversed by the snugly-fitting injector-nozzle G, having a small, longitudinal passage  $g$ , whose steam-receiving end is at all times within said pocket, although one or more external flutes or grooves of the nozzle may be used, instead of said passage  $g$ .

The auxiliary oil-cup O is secured to the upper side of the oil-discharge pipe E, and has a bend or elbow  $o$ , into which latter is screwed a short pipe  $o'$ . By this arrangement, the pipe  $o'$  gives direction to the oil which is driven forward by steam issuing from the nozzle G, and also prevents the lubricant being blown up and out of the auxiliary reservoir O when a cock or valve of the latter is opened.

The dotted circle  $a$  in Fig. 3 indicates where a filling-plug may be screwed into the top of the fount, but it can be charged in the same manner as described in my Patent No. 463,320, issued November 17, 1891.

From the above description it is evident that as fast as steam is condensed within the vessels C, C', the water thus generated will traverse the common channel  $b$ , and when valve  $b''$  is opened, will descend the tube J, escape at the lower end thereof, and thereby find its way into the fount or reservoir A. Consequently, this "condense water" will gradually displace the oil, and as the lubricant is elevated, it flows over the open, upper ends of the supply tubes L, L', descends within them, and then enters the side passages  $l'l'$ . The oil then traverses the passages  $l'l'$ , ascends within the sight-chambers H, H', passes through the duct  $h$  into the bore  $h'$ , and as soon as valve  $f$  is opened, the oil traverses the channel B'', and naturally collects within the upper portion of the water pocket P, the lower portion of which is constantly filled with "condense water."

The live steam, that descends the pipe  $c$ , and enters the upper pocket P', flows down the inclined channel  $p$ , into the lower pocket P, and being now brought in direct contact with the oil, ejects it along the nozzle-channel  $g$ , and thus drives the lubricant into the discharge pipe E. The oil is finally conducted into any piece of machinery, &c., with which the pipe E communicates; but usually it is connected to one of a pair of locomotive cylinders, for which service this lubricator is especially adapted.

If, from any cause whatever, an unusual draft should be made on the fount, and more oil be extracted from it than the engine actually needs, the oil will soon be lowered to the level of the nipple-ports  $i$ , and the very instant this level is reached, live steam, or

air, will flow through said ports, and fill the upper portion of said fount and all passages and other channels communicating therewith. Therefore, the flow of lubricant is automatically cut off, and all danger of "siphonage" prevented; but when this unusual draft ceases, the oil is again gradually displaced by the "condense water," and the normal action of the lubricator is resumed.

The drawings show an oil fount having a pair of separate and distinct condensers, so as to render the lubricator especially adapted for locomotive use where an independent supply is required for each cylinder, but it is obvious that the same general construction would apply equally as well to a single condenser for a stationary engine. Finally, it is also obvious that all the functions of nozzle-channel  $g$  could be performed by a groove cut along the upper part of the bore R.

I claim as my invention—

1. The combination, in a lubricator, of a reservoir A, having a condenser C; an oil-discharge pipe E; a water-channel  $b$ , near the top of said reservoir, and leading to said condenser; a nipple I, having a port  $i$ , and communicating with said channel  $b$  by a valve-guarded opening  $b'$ ; a water-discharge tube J, depending from said nipple; and a cup K, carried by said tube; the receiving end of said cup being above the level of said port  $i$ , substantially as herein described.

2. The combination, in a lubricator, of a reservoir A, having an oil-discharge pipe E; a pair of condensers C, C'; a common water-channel  $b$ , near the top of said reservoir, and connecting said condensers; a nipple I, having a port  $i$ , and communicating with said channel  $b$ , by a valve-guarded opening  $b'$ ; a water-discharge tube J, depending from said nipple; and a cup K, carried by said tube; the receiving end of said cup being above the level of said port  $i$ , for the purpose described.

3. A lubricator-reservoir provided with a steam-pipe  $c$ ; oil-discharge pipe E; sight-chamber H; bore  $h'$ ; duct  $h$ , connecting said chamber and bore; lower pocket P; channel B'', connecting said bore and pocket, and having a valve seat at one end; a bore R connecting the pocket P with said discharge-pipe E; an upper pocket P', with which said steam-pipe  $c$  communicates; and a passage  $p$ , connecting said pockets; in combination with a screw-threaded stem F, having a valve  $f$ , spindle  $f'$ , and an injector nozzle G, having a longitudinal-passage  $g$ , said spindle  $f'$  being of relatively less diameter than said channel B'', for the purpose stated.

4. A lubricator provided with an oil-discharge pipe E, and an auxiliary oil-cup O, secured to said pipe, and furnished with a bent-tube within said pipe E, and projecting in the direction of the discharge; in combination with an injector nozzle that drives the oil forward; as herein described.

5. The combination, in a lubricator, of a



5 fount; an oil-discharge pipe a condenser; a water-channel leading therefrom; a ported nipple, communicating with said channel; a cup below said nipple; and a tube leading from said nipple, and carried down within said fount, for the purpose described.

10 6. The combination, in a lubricator, of an oil-reservoir an oil-discharge pipe; a condenser; a water channel communicating with said condenser; a nipple communicating with said channel and having a port; a water-discharge tube depending from said nipple; and a cup carried by said tube; the receiving end of said cup being above the level of said port, 15 for the purpose stated.

7. The combination, in a lubricator, of a reservoir; a condenser; an oil-discharge pipe a water-channel; a ported nipple, communicating therewith; a water-tube depending from said nipple; and a cup carried by the tube, the receiving end of said cup being above the level of the port of the nipple, for the purpose described. 20

In testimony whereof I affix my signature in presence of two witnesses.

JAMES POWELL.

Witnesses:

JAMES H. LAYMAN,  
ARTHUR MOORE.