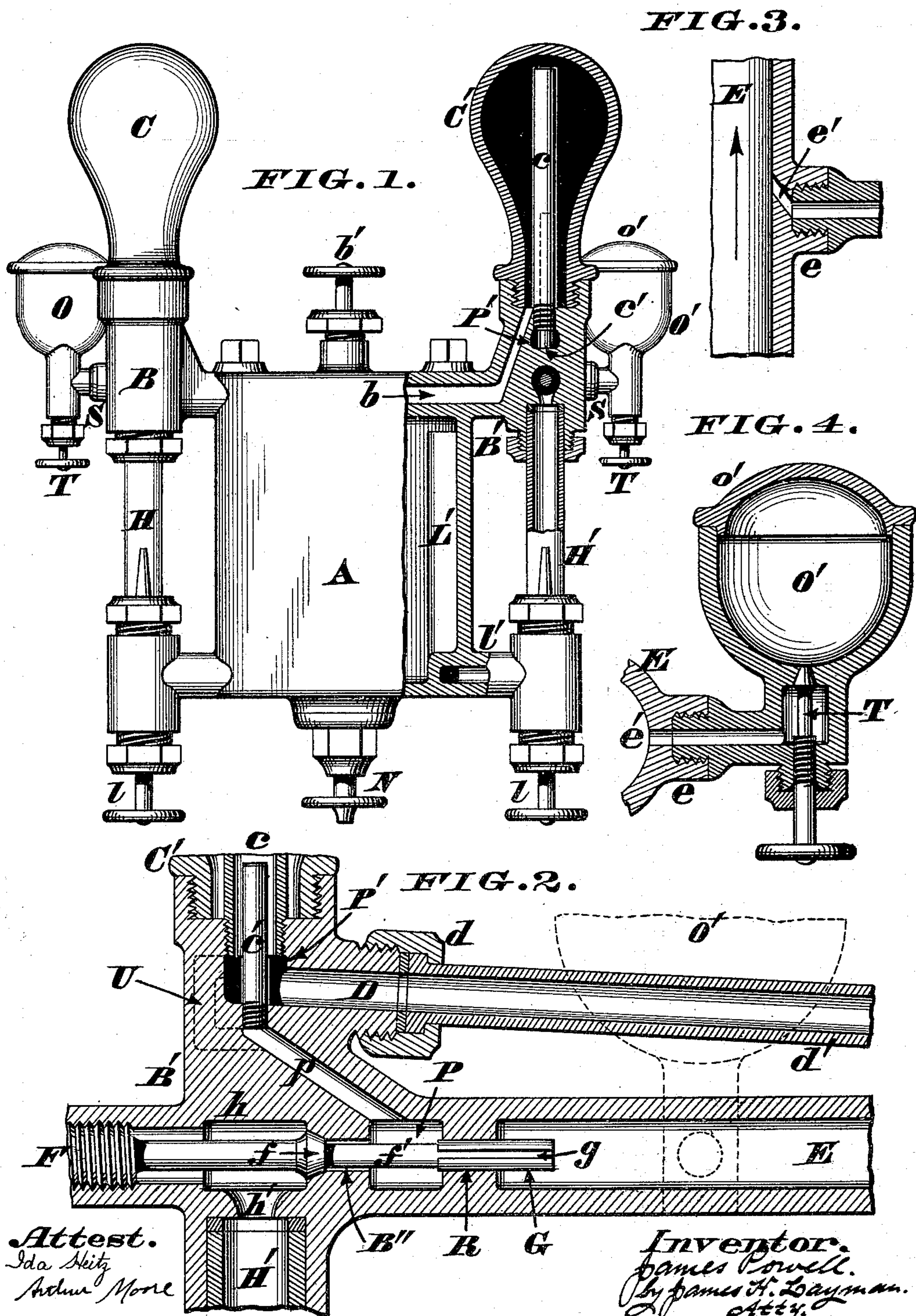


(No Model.)

J. POWELL.
LUBRICATOR.

No. 604,265.

Patented May 17, 1898.



UNITED STATES PATENT OFFICE.

JAMES POWELL, OF AVONDALE, OHIO, ASSIGNOR TO THE WILLIAM POWELL COMPANY, OF CINCINNATI, OHIO.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 604,265, dated May 17, 1898.

Application filed November 14, 1894. Serial No. 528,829. (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.

This invention relates to and is an improvement on the peculiar form of upfeed sight-lubricator seen in Letters Patent No. 462,320, granted to me November 17, 1891, and also represented in Letters Patent No. 534,006, issued to me February 12, 1895, and the first part of the present case includes a novel arrangement of pipes, channels, &c., which effectually insures a current of live steam in a downward direction to act as an equalizing-supply that drives the lubricant through the oil-discharge pipe to the cylinder or steam-chest or other part to be greased, while at the same time means are secured not only for supplying steam in an upward direction to the condenser for the purpose of condensation, but to prevent undue flooding of said oil-discharge pipe by an overflow of condense water within the live-steam pipe of said condenser.

It has been customary heretofore in lubricators of the class specified either to arrange the live-steam pipe so as to enter the top of the condenser to not only supply the proper amount of steam to said condenser for purposes of condensation, but also to supply a current of equalizing-steam down the central pipe within the condenser, and thence to the oil-discharge pipe, or to supply said steam for equalizing purposes by a pipe or pipes branching out from the main steam-pipe where it enters the top of the condenser and leading said equalizing-pipes wholly on the outside of the condenser to the oil-discharge referred to, in which case the central steam-pipe within the condenser is dispensed with.

In this my more recently-improved lubricator I cause the live-steam pipe to enter at or near the base of the condenser, thus insuring a current of steam within the condenser in opposite directions, one flowing downwardly from the point of entry as equal-

izing-steam into the oil-discharge passage, while at the same time another portion branches off and flows in the opposite direction and upwardly in the same pipe within the condenser to the top of the same to supply water of condensation to insure the proper displacement of oil from the oil-reservoir through the drop-nipple to the parts to be lubricated, as hereinafter more fully described.

Another feature of the present invention is a novel arrangement and construction of auxiliary oil-reservoir applied to the oil-discharge pipe of the lubricator, the details of this feature being hereinafter more fully described.

In the annexed drawings, Figure 1 is a sectionized front elevation of my improved lubricator. Fig. 2 is a greatly-enlarged vertical section of the oil-discharge pipe and its accessories, said section being taken in the plane of an injector-valve fitted within said pipe. Fig. 3 is a horizontal section through the side of said pipe to which the auxiliary oil-reservoir is coupled. Fig. 4 is a vertical section through said reservoir and a portion of the pipe.

The main reservoir or oil-fount A, heads B B', water-channel *b*, valve *b'*, condensers C C', steam-tube *c*, oil-discharge pipe E, valve appliances F *f'*, injector-nozzle G *g*, sight-chambers H H', vent-valve N, and auxiliary oil-cups O O' being substantially the same as those seen in my patent and pending application above referred to need no further description in this specification. The lower end of live-steam tube *c* communicates with a pocket P' within the head B', which head has a short lateral tubular neck D, to which is coupled at *d* the main or live steam pipe *d'*. This pipe may lead directly to the boiler, or the two heads B B' may be united together by a single pipe and the latter be connected to the boiler, as the arrangement of these devices is immaterial provided they admit live steam at the lower end of the condensers and not at their upper ends, as seen in the patents previously alluded to. Preferably the steam-pipe *d'* should slope downwardly from the lubricator-heads to the source of supply, so as to drain off any accumulation of water in said pipe and carry it back to the boiler.

Projecting vertically from the pocket P' and

extending up within the steam-tube *c* as far as may be necessary is a stand-pipe *c'*, whose lower end communicates with a passage *p*, that connects said upper pocket *P'* with a lower pocket *P*, within which latter the receiving end of the injector-nozzle *G* is always housed.

Nozzle *G* has a longitudinal groove *g*, that affords the only avenue of communication between the lower pocket *P* and the oil-discharge pipe *E*, the bore *R*, traversed by said nozzle, being practically both oil and water tight.

B'' is a channel connecting the pocket *P* with an enlarged chamber *h*, which chamber acts as a water and oil reservoir leading to and from the sight-glass *H'* by a short duct *h'*. Again, this channel *B''* is of somewhat greater diameter than the spindle portion *f'* of a screw-threaded stem *F*, the valve of which, *f*, closes against a seat at the rear end of chamber *h*.

Projecting laterally from the oil-discharge pipe *E* is a screw-threaded nipple *e*, having a channel *e'*, inclined in the direction of the steam-passage indicated by an arrow in Fig. 3, the thread of said nipple being engaged with a screw at one end of a branch *S*, that carries the auxiliary oil cup or reservoir *O'*. This cup has a cap *o'* and valve *T*, which valve controls the flow of oil in certain emergencies through the discharge-passage *s*, channel *e'*, and oil-discharge pipe *E*.

L' is a tube having at bottom a branch *l'*, which devices *L' l'* supply oil to the sight-glass *H'*, the flow through the nozzle of said glass being controlled by a valve *l* in the usual manner.

A filling-plug may be applied to the fount at any suitable place.

Instead of the stand-pipe *c'* a passage *U* (represented by dotted lines) may be used; but said passage must enter the pocket *P'* at a point above the drainage-level of the live-steam pipe *c*, although I prefer the pipe *c'*, because its receiving end may, if desired, be carried to a higher point above said drainage-level within the main steam-pipe *c*, where it enters the condenser *C*.

In my patents above referred to the main live-steam pipe communicates with the top of the condensers above the steam-pipe which supplies steam to the oil-discharge pipe. Said construction is objectionable in some cases, because surplus water is liable to accumulate within the condenser, then escape down the aforesaid steam-pipe and unduly flood the oil-discharge, thereby obstructing the flow of oil to the parts to be lubricated;

but by introducing steam at or near the bottom of the condenser and carrying the stand-pipe *c'* or its equivalent passage *U* up the required distance within the tube *c* such a sudden and direct flow of water is prevented, as it is obvious that all such accumulation will pass off down the steam-tube *c* to the main live-steam pipe and thence to the boiler, while at the same time an equalizing flow of live steam comparatively free from water passes unobstructedly through the receiving end of pipe *c'* or passage *U* to the pocket *P*, and thus drives the lubricant through the channel *g* of injector-nozzle *G* into the oil-discharge pipe and thence to the engine.

While I prefer using the stand-pipe *c* or passage *U*, yet, if desired, they may be dispensed with entirely and the pocket *P'* may open at the bottom directly into the passage *P*. The arrangement of nipple *e* and inclined passage *e'* is another valuable feature peculiar to my present form of lubricator, as said passage induces a flow of oil in the direction of the steam-delivery and without obstructing the oil-discharge pipe *e* with internal tubes or other leaders to guide the lubricant.

I claim as my invention—

1. The combination, in a sight-feed lubricator, of a reservoir; a condenser; a sight-feed chamber; an oil-discharge pipe communicating with said chamber; an external steam-pipe leading into the base of the condenser; a pipe within the latter, for conveying an upward current of steam; and, near the junction of said steam-pipe and condenser, a duct that conveys another current of steam down to said oil-discharge pipe, all as herein described, and for the purpose stated.

2. The combination, in a sight-feed lubricator, of a reservoir *A*; a condenser *C'*, a sight-chamber *H'*; an oil-discharge pipe *E*, communicating with said chamber; an external steam-pipe *d'* leading into the base of the condenser; a pipe *c* within the latter, for conveying an upward current of steam; a stand-pipe *c'*; and a duct *p* that connects said pipes *E* and *c'*, and conveys another current of steam downward, all as herein described, and for the purpose stated.

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

JAMES POWELL.

Witnesses:

JAMES H. LAYMAN,
JOHN W. KALBFUS.