

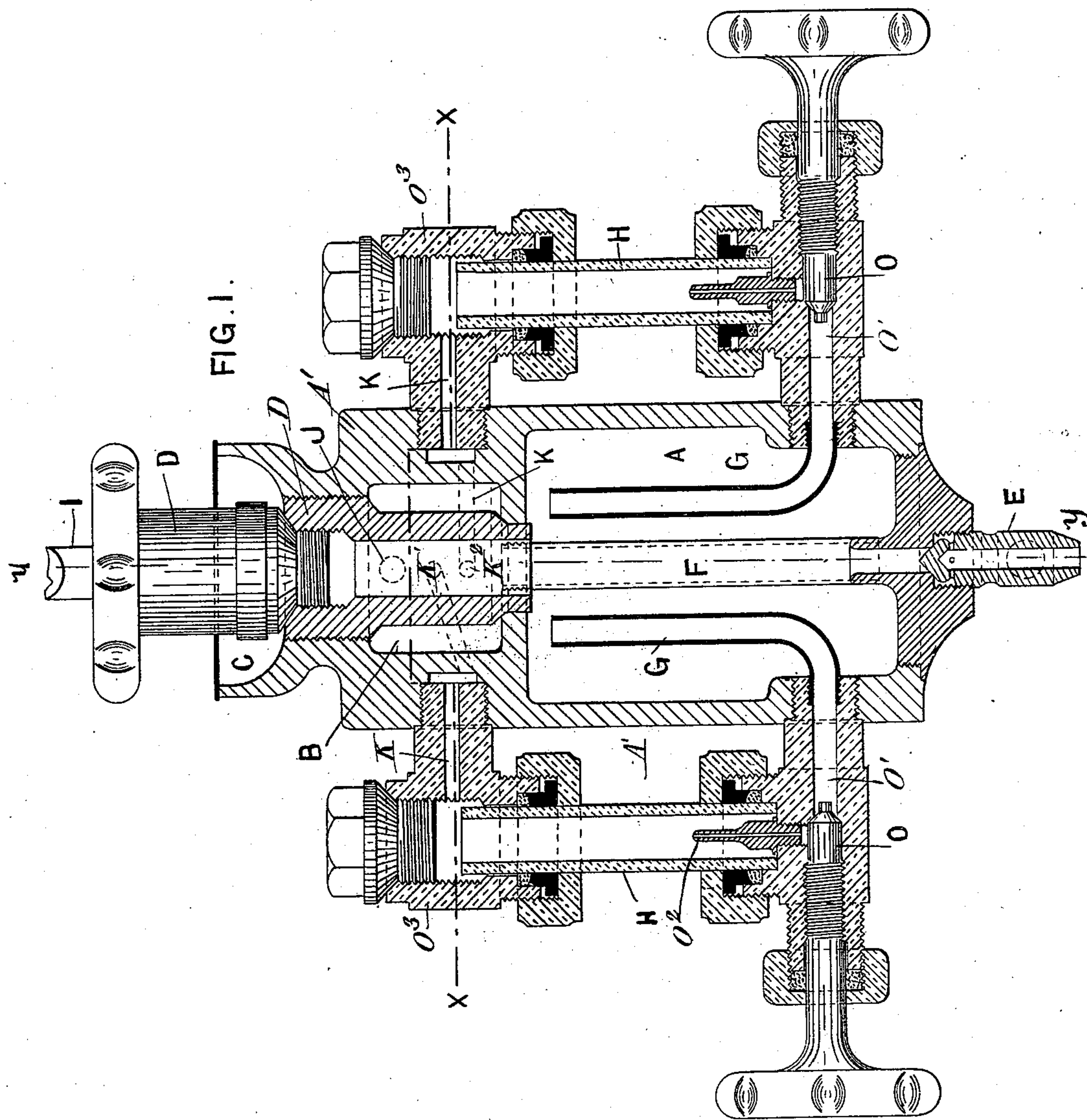
(No Model.)

5 Sheets—Sheet 1.

W. GRIMES & C. C. WAKEFIELD.  
LUBRICATOR.

No. 558,488.

Patented Apr. 21, 1896.



Witnesses.

C. Prior.  
L. Woolsey.

Inventors.

Walter Grimes  
Charles C. Wakefield  
By *Knights Bros*  
Attorneys

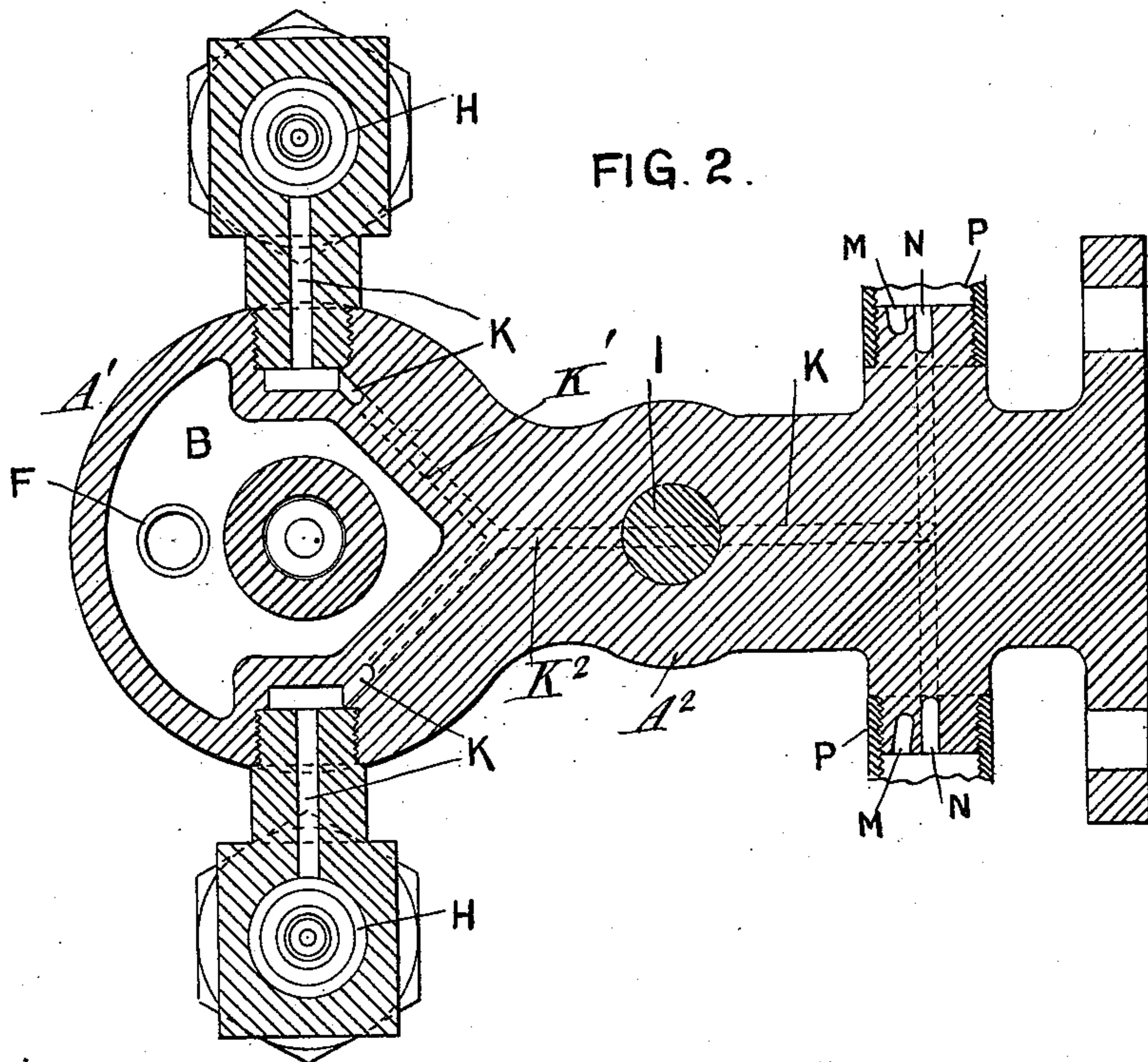
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Witnesses.

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(No Model.)

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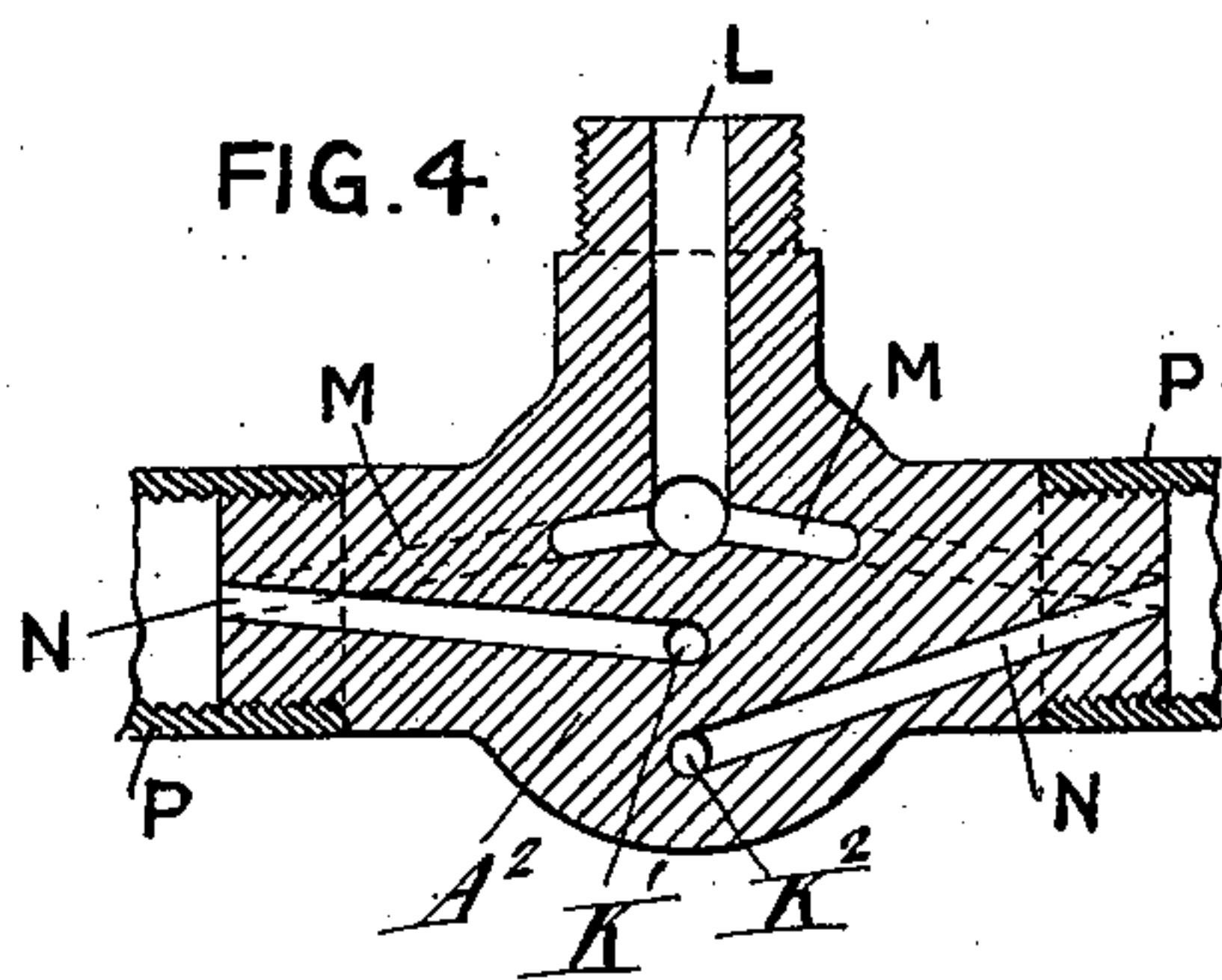
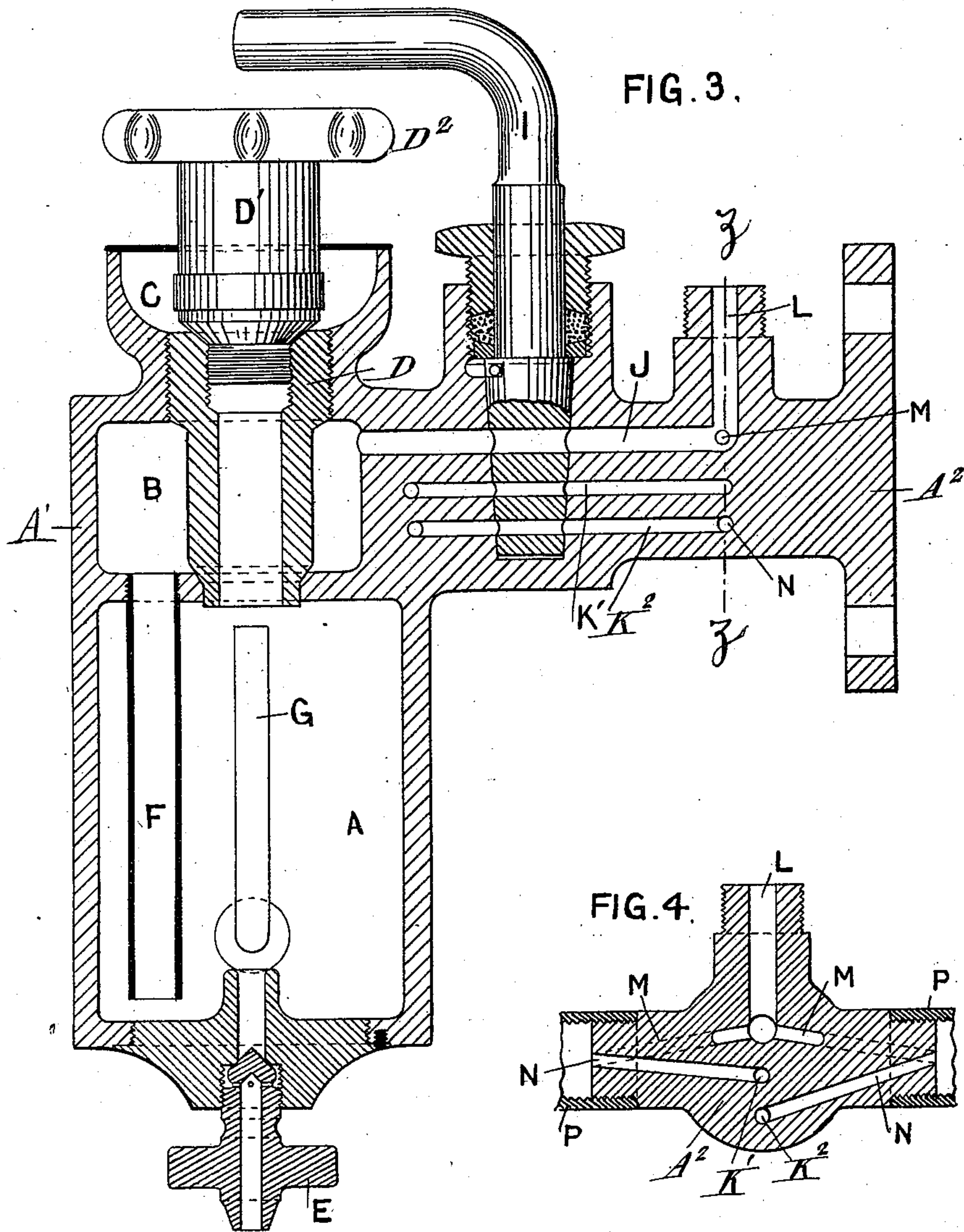
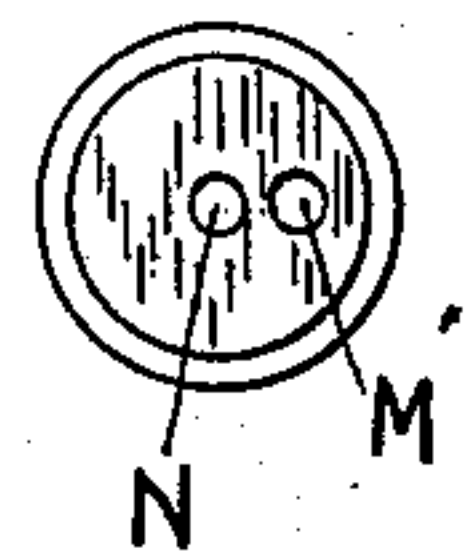


FIG. 5.



Witnesses.

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Inventors.

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By *Tringht*  
Atty.

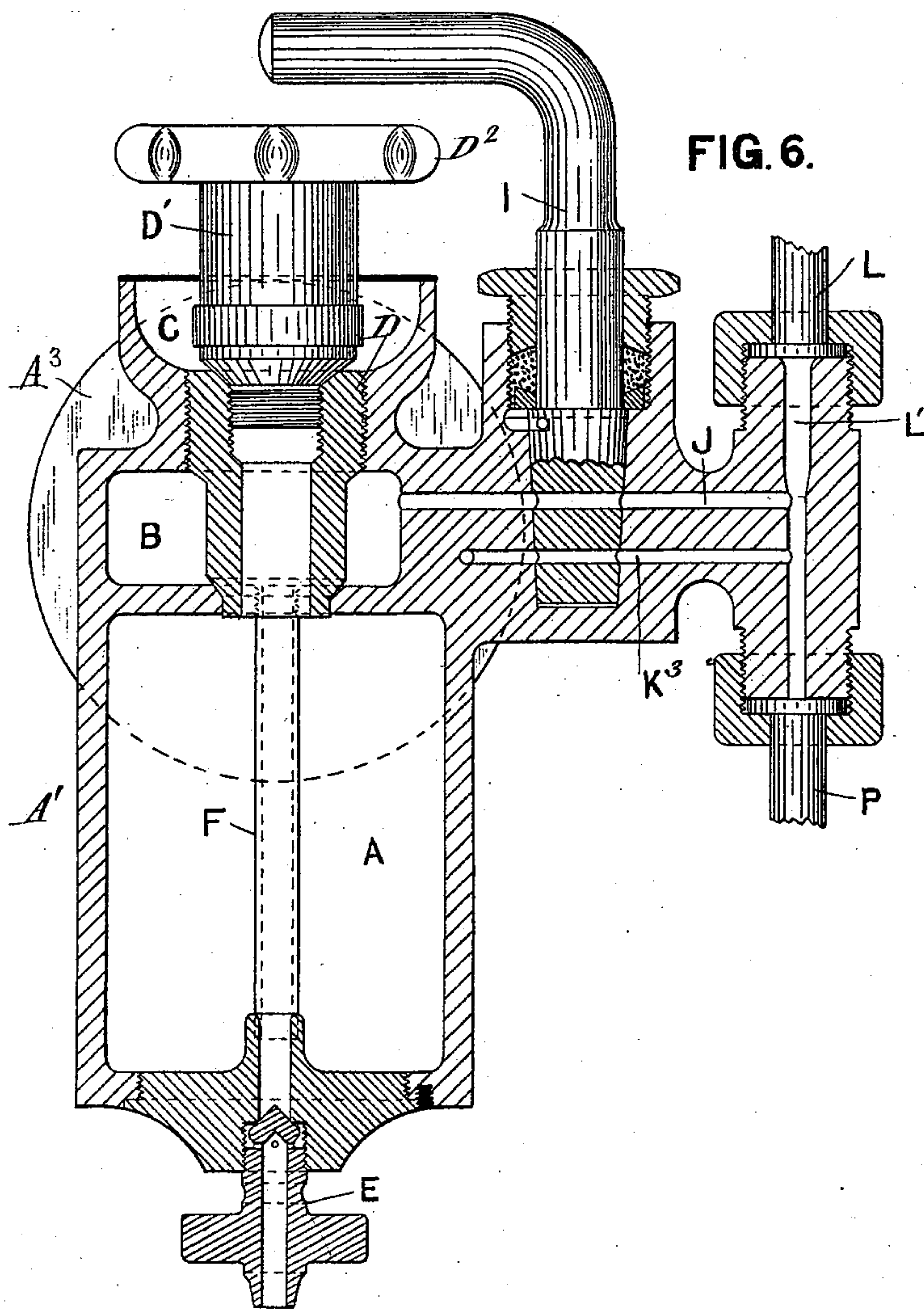
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Patented Apr. 21, 1896.



Witnesses.

C. Prior  
L. Woolsey

Inventors.

Walter Grimes  
Chas. C. Wakefield  
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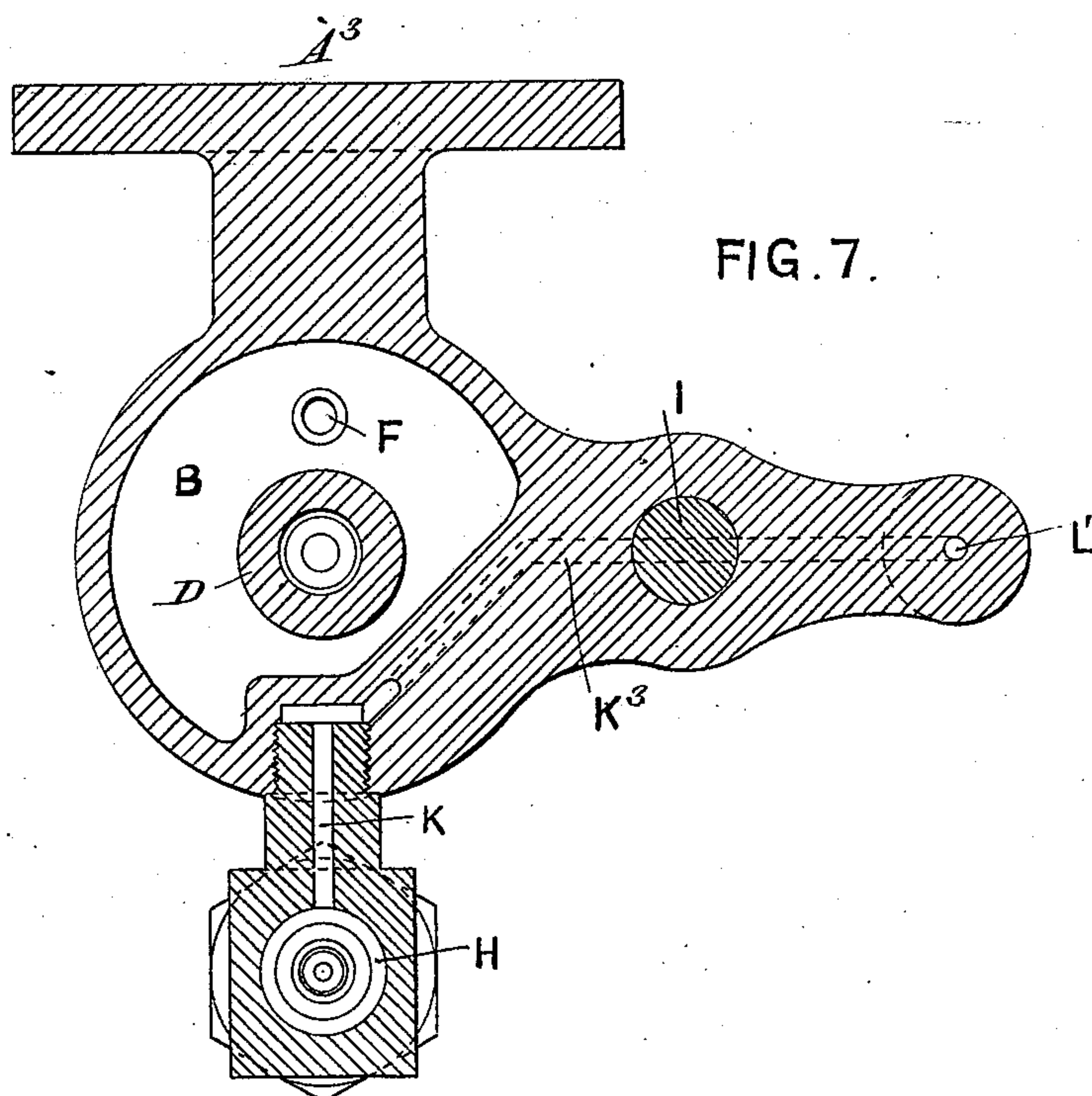
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Witnesses.

*C. Prior,*  
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Inventors.

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*By [Signature] Attys.*



# UNITED STATES PATENT OFFICE.

WALTER GRIMES, OF LONDON, AND CHARLES C. WAKEFIELD, OF LIVERPOOL, ENGLAND, ASSIGNORS TO THE VACUUM OIL COMPANY, OF ROCHESTER, NEW YORK.

## LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 558,488, dated April 21, 1896.

Application filed December 28, 1892. Serial No. 456,594. (No model.) Patented in England May 5, 1892, No. 8,518.

*To all whom it may concern:*

Be it known that we, WALTER GRIMES, a resident of London, in the county of Middlesex, and CHARLES CHEERS WAKEFIELD, a resident of Liverpool, in the county of Lancaster, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in Lubricators, (for which we have obtained British Letters Patent No. 8,518, dated May 5, 1892,) of which the following is a specification.

This invention has for its object certain improvements in that class of lubricators into which steam is admitted, a part of which is condensed and passing down to the bottom of the oil-reservoir displaces the oil contained therein, causing it to pass through a sight-feed glass and along passages to a chamber where it meets a jet of steam and is carried along by the latter to the steam-chest or other parts requiring lubrication.

The improvements have for their objects simplicity of construction and consequent fewness of parts, certainty of action, and durability. The manner in which they are carried out will be understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of a double lubricator constructed according to our invention; Fig. 2, a sectional plan of the same through  $xx$ ; Fig. 3, a vertical section through  $yy$  at right angles to Fig. 1; Fig. 4, a vertical section through  $zz$ , Fig. 3; Fig. 5, an end view of the same, showing the steam and oil outlets; Fig. 6, a vertical section of a single lubricator, and Fig. 7 a sectional plan of the same.

Referring to Figs. 1 to 5, inclusive, A is the oil-reservoir, above which and preferably in the same casting is formed the condensation-chamber B, above which and upon the top of the same casting is the oil-cup C. Through the axis of the casting is screwed the plug D, which closes the aperture between the oil-cup C and the top of the condensation-chamber B, and also extends downward, closing the axial aperture from the condensation-chamber B to the oil-reservoir A. This plug is of such diameter as to leave an annular passage around it to form the condensation-chamber

B. This plug is perforated through its axis and is closed at the upper end by the plug D', which is provided with a suitable handle D<sup>2</sup>. In the bottom of the oil-reservoir A is a suitable drip-cock E, by which the well may be drained when desired. From the bottom of the annular condensation-chamber B a tube F extends downward in the oil-reservoir A, and nearly to the bottom thereof, for conducting the water of condensation from the chamber to the bottom of the oil-reservoir, and also to form a steam-trap when the lower end of the tube F is closed by the water. Extending outward from near the bottom of the oil-reservoir A we provide one or more oil-conduits, which are at the same time the bottom supports for the sight-feed glasses H.

Within the oil-reservoir A a pipe G extends from each oil-conduit upward to near the top of the reservoir, so that the oil lying upon the top of the water in the reservoir will flow over into the pipe G and thence downward into the conduit O'. A cock or valve O is placed in each oil-conduit for the purpose of closing the supply of oil to the sight-feed glass or of adjusting such supply. The usual nipple O<sup>2</sup> is placed at the connection between the oil-conduit and the sight-feed glass, in order to form the oil into drops or globules as it passes through the water in the glass. Extending laterally from the upper part of the main casting of the lubricator and above the oil-conduits O' are the upper supports O<sup>3</sup> for the sight-feed glasses, which are perforated with the oil-conduits K. Fixed to the casting or body of the lubricator A' is the boss A<sup>2</sup>, in which are formed the steam and oil inlet and outlet ducts. From each oil-conduit K there extends a separate oil-conduit K' K<sup>2</sup>, through the bracket A, to an outlet N, emptying into a feeder-pipe P, leading to the cylinder that is to be lubricated. Through the bracket A<sup>2</sup> extends the steam-inlet L and steam-duct J, leading therefrom to the condensation-chamber B, and from the steam-duct J extend laterally other branch steam-ducts M, one of which empties into each feeder-pipe P, close beside the oil-outlet N, and at acute angles therewith. (See Fig. 4.) Besides the operation of the ducts in producing a blast for breaking the oil into globules as



it enters the feeder-pipes P they operate to equalize the pressure throughout the lubricator from the steam-inlet to the oil-outlet to relieve excessive steam-pressure at the inlet, and, in case of stoppage of a tube or duct in the lubricator, to obviate breakage. The steam-inlet duct J and the oil-outlet ducts K<sup>1</sup> K<sup>2</sup> are set in a single plane, which is vertical in the forms of lubricator shown in the drawings, and through these three passages there extends a cock I, having passages there-through registering with the said three passages, so that by turning the cock I the passages are closed or opened at the same time.

Figs. 6 and 7 represent a single lubricator—that is, a lubricator having only one inlet for steam, one outlet for oil, and consequently only one sight-feed glass. The features of this lubricator, are the same as those of the multiple lubricator, the construction only being slightly modified. It is obvious that one of our lubricators may be constructed with any number of feeding-pipes P which may be convenient, each such pipe being connected with a separate oil-outlet and sight-feed glass. The number of such feeding-outlets is limited only by the size of the lubricator. In case of a number of feeding-outlets being used the cock I has a corresponding number of perforations therethrough to open or close such outlets. Suitable stuffing-boxes are provided by which to hold the sight-feed glasses H in position and such other devices in connection therewith as are usual.

The operation of the device is as follows: The lubricator having been fixed in a suitable position by means of the boss A<sup>2</sup> or A<sup>3</sup>, and the steam-inlet L having been connected with the supply-pipe from the boiler, and the feeding pipe or pipes P having been connected with the parts to be lubricated, the device is ready to be filled. The cock I is closed, the plug D' is removed, and the oil-reservoir A is filled with oil through the perforation in the plug D, and the plug D' is replaced and screwed tight. The cock I is now opened, and steam enters through the steam-passage J into the condensation-chamber B. Condensation of the steam takes place in the chamber, and the water passes down the pipe F to the bottom of the oil-reservoir A, and by reason of its greater specific gravity displaces a proportionate bulk of the oil, causing the equivalent quantity of oil to flow over into the pipes G. Through the pipes G the oil passes downward into the oil-conduits O', and thence, regulated in quantity by the cock O, passes into the nipple O<sup>2</sup>, and from the nipple rises drop by drop through the body of water standing in the sight-feed glass. From the top of the water in the glass the oil flows out through the passages K and K' or K<sup>2</sup> to the feeder-pipes P. A portion of the steam from the inlet L passes through the passages M, the ends of which are in close proximity to the oil-orifices N, and thereby a kind of

blast or atomizing of the oil supply is effected. The supply of steam into the lubricator and the supply of oil from the lubricator are controlled by the cock I, but a more delicate adjustment and regulation of the oil supply is also provided for by the cocks O.

When the water of condensation collects to such an extent in the oil-reservoir A that the oil supply through the pipes G is stopped, the reservoir may be drained by the drain-cock E.

In the form of device shown in Figs. 6 and 7 the oil-inlet L is devoid of the branch steam-ducts M shown in Figs. 1 to 5, and the oil-exit K<sup>3</sup> empties directly into the steam-passage L', which is a continuous passage connecting as well with the steam-inlet J. The equalizing effect is produced in this form of our device by the connecting-passage L'.

It must be understood that we do not confine ourselves to the exact arrangement herein described, as, for example, the steam-inlet and the oil and steam-passages or ducts can be differently arranged without departing from the principle of our invention.

What we claim is—

1. In a lubricator, a steam-inlet, one or more oil-outlets, a lubricant-reservoir and a connected condenser, a duct connecting said steam-inlet with said condenser, a duct connecting said steam-inlet with each oil-outlet, a duct connecting the lubricant-reservoir with each oil-outlet, and a multiple-passage cock controlling the ducts connecting the steam-inlet with the condenser and connecting the lubricant-reservoir with the oil-outlet, substantially as described.

2. In a lubricator, a lubricant-reservoir and a connected condenser, a steam-inlet, one or more oil-outlets, a duct connecting said steam-inlet with said condenser, a duct connecting said steam-inlet with each oil-outlet for atomizing the oil into said oil-outlet and for equalizing the pressure throughout the lubricator, a duct connecting the lubricant-reservoir with each oil-outlet and passing through a suitable sight-feed device, a regulating-valve for each of the last-mentioned ducts, and a multiple-passage cock controlling the ducts connecting the steam-inlet with the condenser and connecting the lubricant-reservoir with the oil-outlet, whereby the inlet and outlet ducts are simultaneously regulated, opened and closed without requiring readjustment of the oil-valves and without disturbing the equalized pressure in the lubricator, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WALTER GRIMES.  
C. C. WAKEFIELD.

Witnesses:

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L. C. JOHNSON.