No. 788,095. PATENTED APR. 25, 1905.

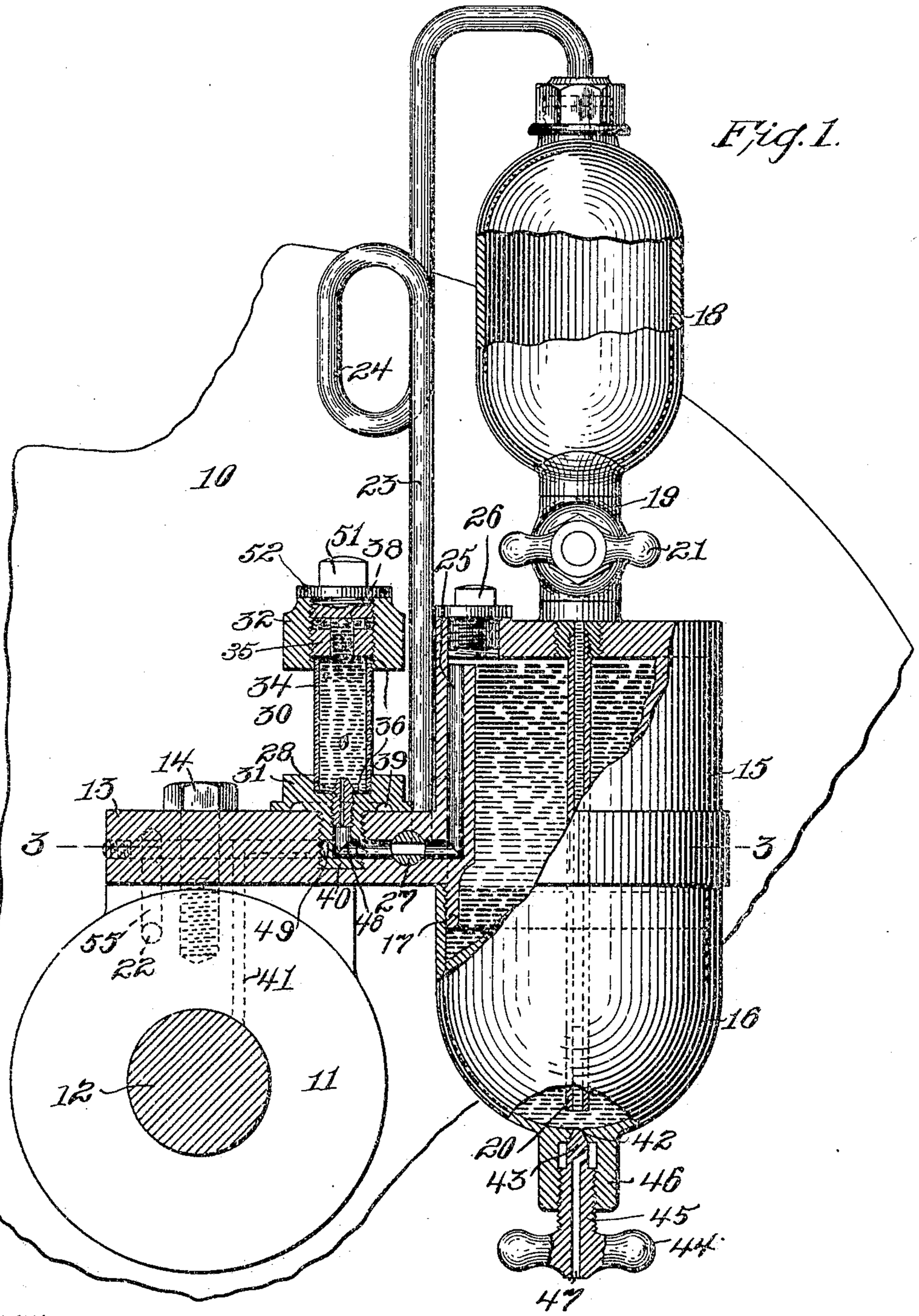
C. COMSTOCK.

LUBRICATOR.

APPLICATION FILED OCT. 26, 1903.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
C. F. Fuss.
Robert Adt.

Inventor:
Chester Comstock.
By his Attorney,
F. W. Richards.

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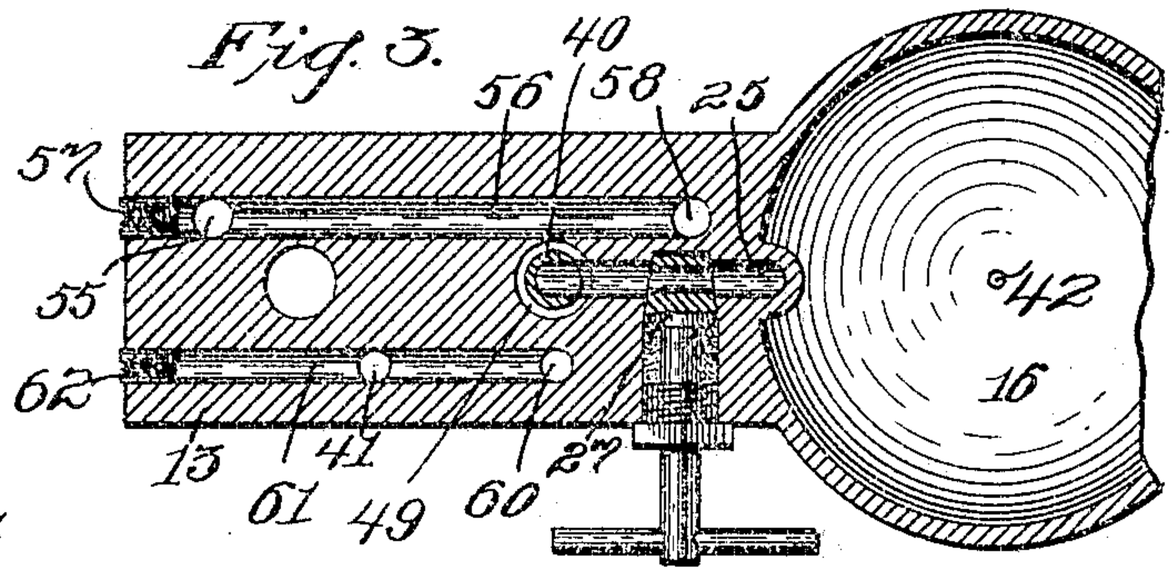
2 SHEETS—SHEET 2.

Fig. 3.



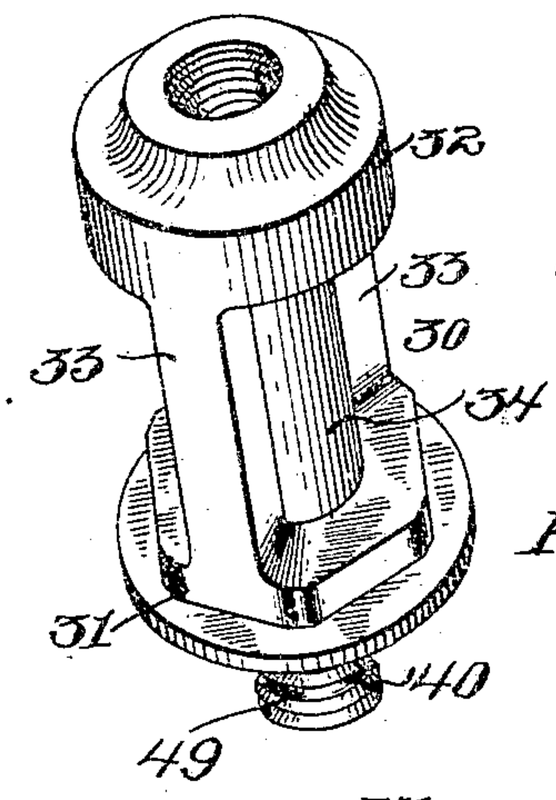


Fig. 4.

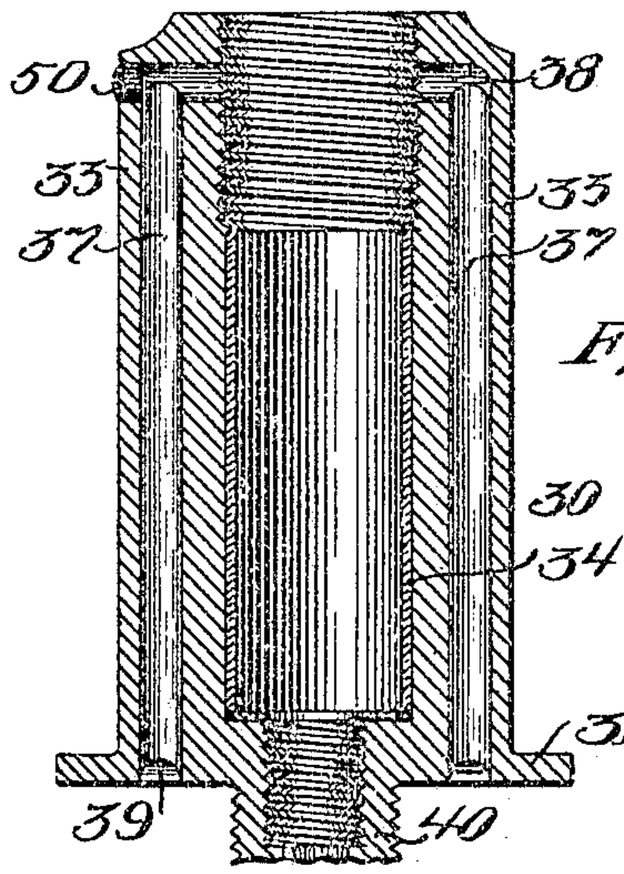


Fig. 6.

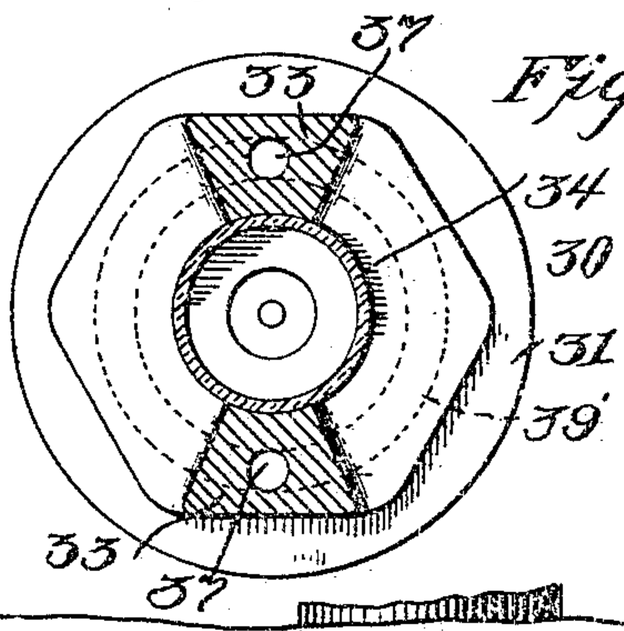


Fig. 5.

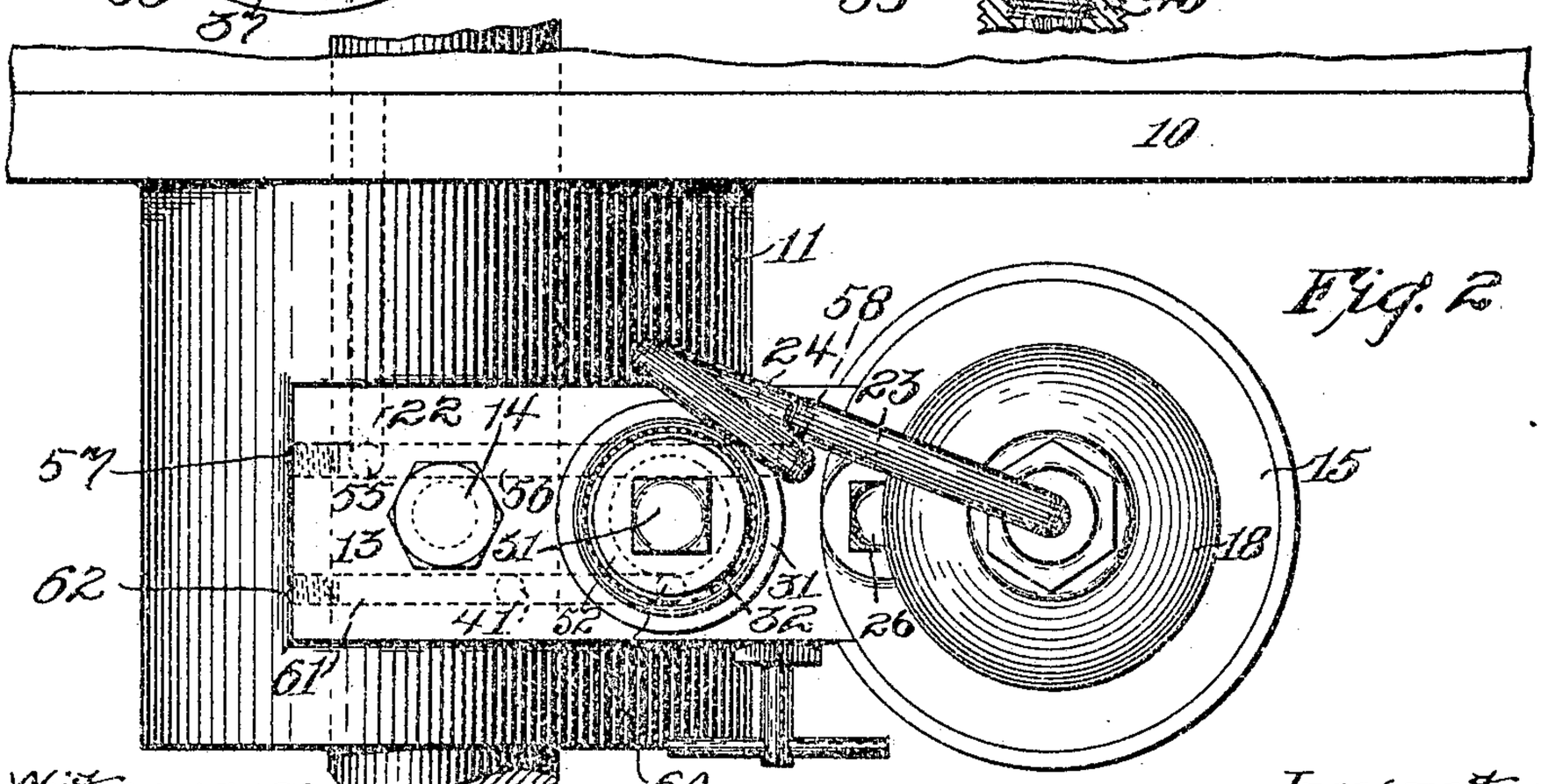


Fig. 2.

Witnesses:
E. G. Fuss
Robert Adt

Inventor:
Chester Comstock
By his Attorney
F. H. Richards.

No. 788,095. Patented April 25, 1905.

UNITED STATES PATENT OFFICE.

CHESTER COMSTOCK, OF BROOKLYN, NEW YORK.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 788,095, dated April 25, 1905.

Application filed October 26, 1903. Serial No. 178,469.

To all whom it may concern:

Be it known that I, CHESTER COMSTOCK, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Lubricators, of which the following is a specification.

This invention relates to and has for an object to provide a lubricator peculiarly adapted for lubricating journal-bearings under pressure.

In oiling the bearing of a shaft or rod projecting from a cylinder or from a rotary or turbine engine casing it is found difficult with ordianry feed-cups to supply the oil and prevent the same from being forced from the bearing by the steam within the cylinder or casing, to prevent which I have devised the present organization which will take steam, which may be exhaust-steam, from the cylinder or casing and by means thereof force the oil onto the bearing, so that it is supplied with lubricant by the same force or pressure which will work to eject the lubricant from such bearing. The oil may be contained within a tank having an outlet at a point near its top and be forced therefrom by means of the pressure of the exhaust-steam applied to water of condensation from such steam and the oil fed in some convenient manner to the bearing and may, if desired, be fed through an oil-cup which may be a sight-feed receiving oil at its bottom and delivering the same from its top, the oil passing through some dissimilar liquid, whereby its passage in drops may be noted to permit accurate regulation.

In the drawings accompanying and forming a part of this specification a form of my invention is illustrated, wherein—

Figure 1 shows a portion of a rotary-engine casing or a cylinder-head with a shaft in cross-section and my lubricating device applied thereto, partly shown in side view and partly in vertical section. Fig. 2 is a top view thereof. Fig. 3 is a plan view or section on the line 3 3 of Fig. 1. Fig. 4 is a perspective view of an oil-cup or sight-feed. Fig 5 is a horizontal section thereof through the sight-glass, and Fig. 6 is a vertical section thereof through the oil passage-ways.

The device is shown in connection with a head which may be a cylinder-head or the casing of a rotary or turbine engine and is designated in a general way by 10 and is shown as having a bearing-hub 11 for the shaft or rod 12. An arm or bracket 13 is shown as secured to the bearing by means of a tap-bolt 14 and carries at its end the upper portion 15 of an oil-tank, the lower portion 16 of which is screw-threaded and fits a flange 17 of such upper portion. A reservoir 18 is carried by a neck 19, through which is a conduit. The neck is shown screw-threaded into the head of the upper portion of the tank and communicates, by means of a tube 20, with the interior of the tank at a point near its bottom. The conduit in the neck 19 may be provided with a suitable valve 21 to control the passage of fluid from the reservoir into the tank.

A conduit in the present instance running through the bearing 11 communicates with the interior of the cylinder or casing and will supply the steam, which will pass through such conduit into the upper portion of the reservoir 18, such conduit in the present instance comprising a hole 22, drilled from the inside of the cylinder into the bearing-hub, a hole 55 in the hub and in the bracket 13, a hole 56 in the present construction drilled from the end of the bracket and closed at the point of the drill-entrance by a screw-plug 57. Such latter hole then leads to a hole 58, communicating with a tube 23, shown as having its end enter the bracket at the region of the hole 58. The tube 23 may, if desired, be provided with a trap or coil 24, whereby the steam will be controlled and given an opportunity to condense or partially condense in its trip to the reservoir, wherein further condensation will take place, and the water of condensation may then pass into the oil-tank by means of the tube 20 and raise the oil, which may flow therefrom through the conduit 25, which communicates with the interior of such oil-tank at a point near its top. A screw-plug 26 may be provided in the upper part of the oil-tank immediately above its outlet, whereby the device may be readily cleaned when desired. The conduit 25 is shown provided with a valve or cock 27 to

regulate the flow of oil, and such conduit is provided with a nozzle 28, which communicates with an oil-cup, in the present instance a sight-feed designated in a general way by 30 and which comprises a base portion 31 and top plate 32, in the present form of construction integral therewith by means of side members or standards 33. A sight-glass 34 is held between said top and bottom and is pressed in place by means of a screw-plug 35. Some suitable packing 36 will be placed at the ends of the sight-glass in the well-known manner to prevent its breaking and to produce a tight joint. Each of the side members 33 has a channel 37 running through it and communicating, by means of an opening or passage-way 38, with the upper part of the oil-cup and with an annular chamber 39 in the base portion 31. For ease of construction the passage-ways 38 may be produced by drilling from one side and tapping the point of entrance and closing the same with a screw-plug 50. The cup is provided at its bottom with a screw-threaded stem 40, to be received in the bracket 13, and when screwed in place the annular chamber 39 will register with a hole 60, leading by a hole 61 to a hole 41, making a conduit leading to the journal or bearing.

The conduit or hole 61 may be drilled from the end of the bracket and closed by a screw-plug 62. The top of the oil-cup is closed by a screw-plug 51. It will be seen by reference to Fig. 1 that the inner end of the plug comes short of the top of the plug 35, leaving a chamber therebetween communicating with the passage-ways 38. When the plug is screwed to proper position, the flange 52 will closely engage the top plate and present a tight joint. By this construction the glass may be clamped with just enough force to hold it irrespective of the amount of pressure applied upon the plug 51.

The lower part of the oil-tank is provided with a conical valve-seat 42, valved by means of a needle-valve 43, carried by a hand-wheel 44, having a screw-shank 45, screwing into a flange or hub 46 upon the bottom portion of the tank. The needle-valve 43 is shown as considerably smaller than the inner portion of such flange 46, whereby a chamber is left therebetween. An opening 47 is provided through the hand-wheel and its stem and runs out at the side of the stem carrying the needle-valve and is in communication with such chamber, whereby upon screwing down the valve sediment and water or other fluid in the tank may flow out through the opening 47 whenever it is desired to reduce the body of water, to permit the escape of sediment, or for any other purpose for which it may be desired to drain the tank or reduce the volume or pressure of its contents.

It will be seen that the exhaust-steam—or it may in some cases be live steam—which will find escape toward the head of the cylinder and will exert a pressure upon lubricating fluid at a bearing of a piston-rod or journal will be led through the conduit and given an opportunity to cool or partially condense at the coil or trap 24 and be passed on into the reservoir 18 and there permitted to further condense, and such condensed water while under pressure will pass down to a point near the bottom of the oil-tank and raise the oil, the water therein acting upon the lower portion of the oil and forcing it out of the exit at or near the top thereof, when it will enter the lower portion of the oil-cup, pass through the water which will be contained therein, and flow out of the upper part thereof, so that as each drop of oil enters the cup a corresponding amount of oil will pass out of the same through the exit and be fed on down through the channels and chambers and the conduit 41 to the journal, the pressure being utilized to feed the oil, which would come into antagonism thereto if the oil were fed in the ordinary manner, it being of course obvious that the pressure at the conduit 22 will be much greater than the presure surrounding the journal 12, so that the oil will be fed at pressure, but against the pressure which would otherwise have a tendency to eject the oil or lubricant from the bearing.

The stem of the oil-cup is shown as having a chamber 49 about its perimeter adapted to register with the passage 25 and which is in communication with a chamber 48 within such stem. The nozzle 28 is shown as screwed into such latter chamber.

In the construction illustrated the oiling apparatus is held to the engine by a single attaching-point—namely, the tap-bolt 14—and by its removal the oiling apparatus may readily be removed from the engine, and the oil and steam conduits 41 and 55, respectively, which are partly in the bracket 13 and partly in the bearing 11, may be separated without further uncoupling of parts. The juxtaposed faces of the bearing and the bracket form the joint or connection between portions of said conduits, and to produce tight joints such faces are made to correspond one with the other. It will be apparent that in this coupling are provided a plurality of conduits having connections registering on a plane or uniform surface, and in the present illustration such conduits have their juncture on registering plane surfaces. A fit can more easily be had on plane surfaces than on others.

Having thus described my invention, I claim—

1. A lubricating device for a bearing exposed to the pressure of steam within an inclosure, comprising the combination with a tank adapted to hold a liquid and having an outlet at a point near its top, of a reservoir communicating from its bottom to the bot-

tom of the tank; means adapted to conduct steam from said inclosure to said reservoir; a base-block having a socket in communication with the said tank; an oil-cup comprising a top member provided with a screw-threaded bore, a sight-glass, a screw-threaded plug for said bore traversed by an opening and bearing on the said glass, and a plug to close said bore and leaving a chamber between the plugs, and a bottom member connected to the top member by side members and having a screw-threaded stem to fit the socket in said base and having a chamber within it, the face of the bottom member having an annular chamber, and the said base-block having a conduit entering its face and leading to the bearing and registering with the said annular chamber, and said side members having conduits entering the annular chamber and the chamber between the plugs; and an inlet-nozzle to the cup carried by the bottom member, the chamber in the stem being in communication with said nozzle.

2. In a lubricating device the combination with a bracket to support the same and provided with plane faces upon two of its sides and a portion of an oil-conduit in such bracket opening at said plane faces, of an oil-cup having a plane face to rest upon one of said plane faces and chambered to receive the oil-discharge, and means of attachment comprising a single screw adapted to so hold the oil-cup upon the bracket; a journal-bearing having a plane face to receive the other of said plane faces of the bracket, and a portion of said oil-conduit in said bearing opening at such face and at the bearing-surface; and a bolt to unite the bracket and bearing and cause the portions of the said oil-conduit to register.

3. In a lubricating device the combination with a supporting-bracket provided with plane faces upon two of its sides and a portion of an oil-conduit and a portion of a steam-conduit in such bracket severally opening at both said plane faces; of an oil-cup having a plane face to register with one of said plane faces and chambered to receive the oil-discharge, and means of attachment comprising a single screw adapted to hold the oil-cup upon the bracket; a journal-bearing having a plane face and a portion of said oil-conduit and a portion of said steam-conduit in said bearing respectively opening at such plane face, the oil-conduit opening at the bearing-surface and the steam-conduit opening at a point adjacent thereto, the plane face of the bearing registering with the other of the said plane faces of the bracket; and a bolt to unite the bracket and bearing and cause the several portions of the said conduit to register.

4. In a lubricating device the combination with a supporting-bracket provided with plane faces upon two of its sides and a portion of an oil-discharge conduit and a portion of a steam-conduit in such bracket severally opening at both said plane faces, an oil-chamber in one of said faces and a supply-conduit leading thereto; of an oil-cup communicating with said plane face, a nozzle communicating with the chamber in the bracket, and means of attachment comprising a single screw adapted to hold the oil-cup upon said bracket; a journal-bearing communicating with the oil-discharge conduit and the steam-conduit; and a bolt to unite the bracket and bearing and cause the several portions of the said conduits to register.

Signed at Nos. 9 to 15 Murray street, New York, N. Y., this 23d day of October, 1903.

CHESTER COMSTOCK.

Witnesses:

FRED. W. BARNACLE,

JOHN O. SEIFERT.