

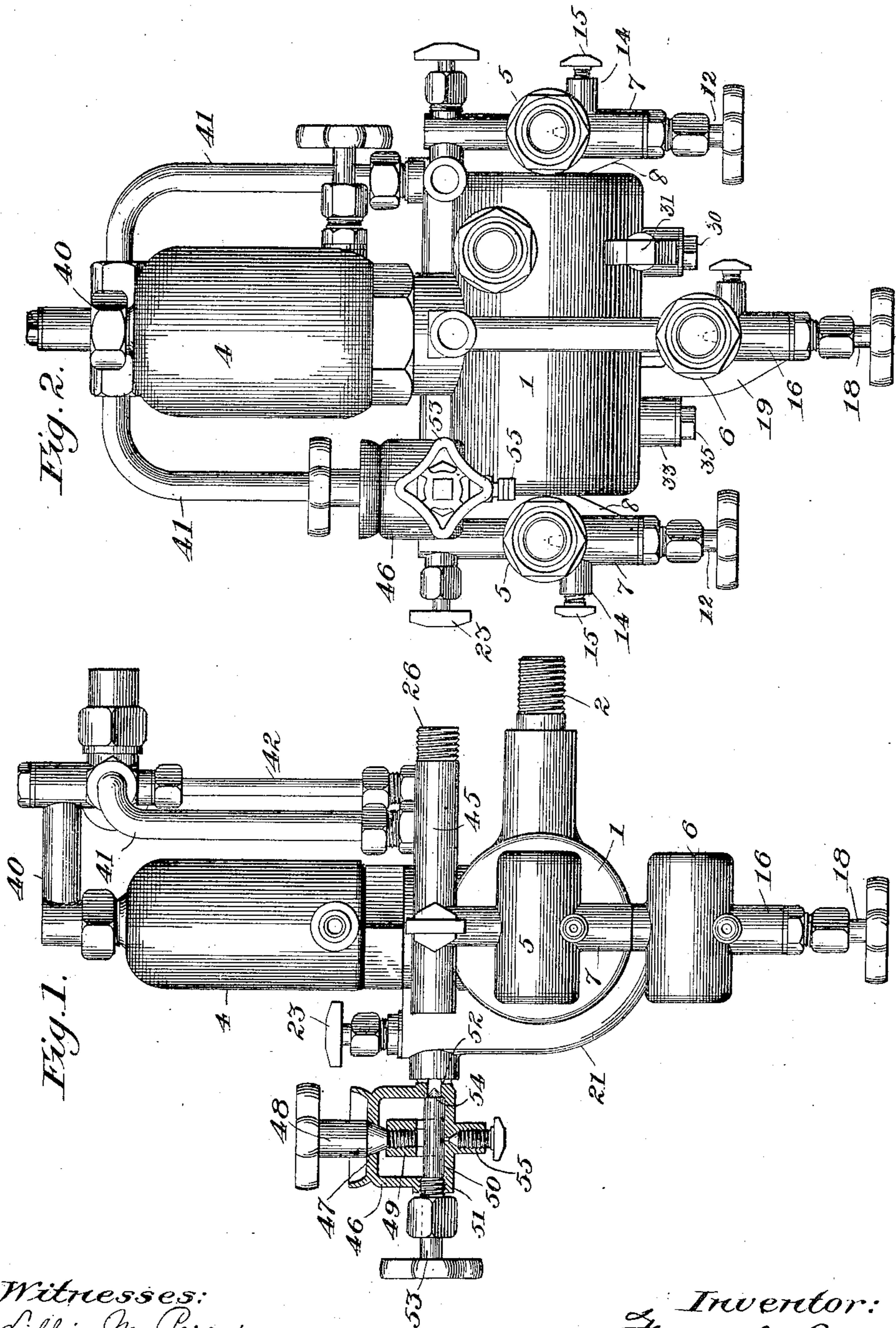
No. 887,036.

PATENTED MAY 5, 1908.

F. W. EDWARDS.
SIGHT FEED LUBRICATOR.

APPLICATION FILED FEB. 6, 1905.

3 SHEETS—SHEET 1.



Witnesses:
Lillie M. Perry.
Ada C. Briggs.

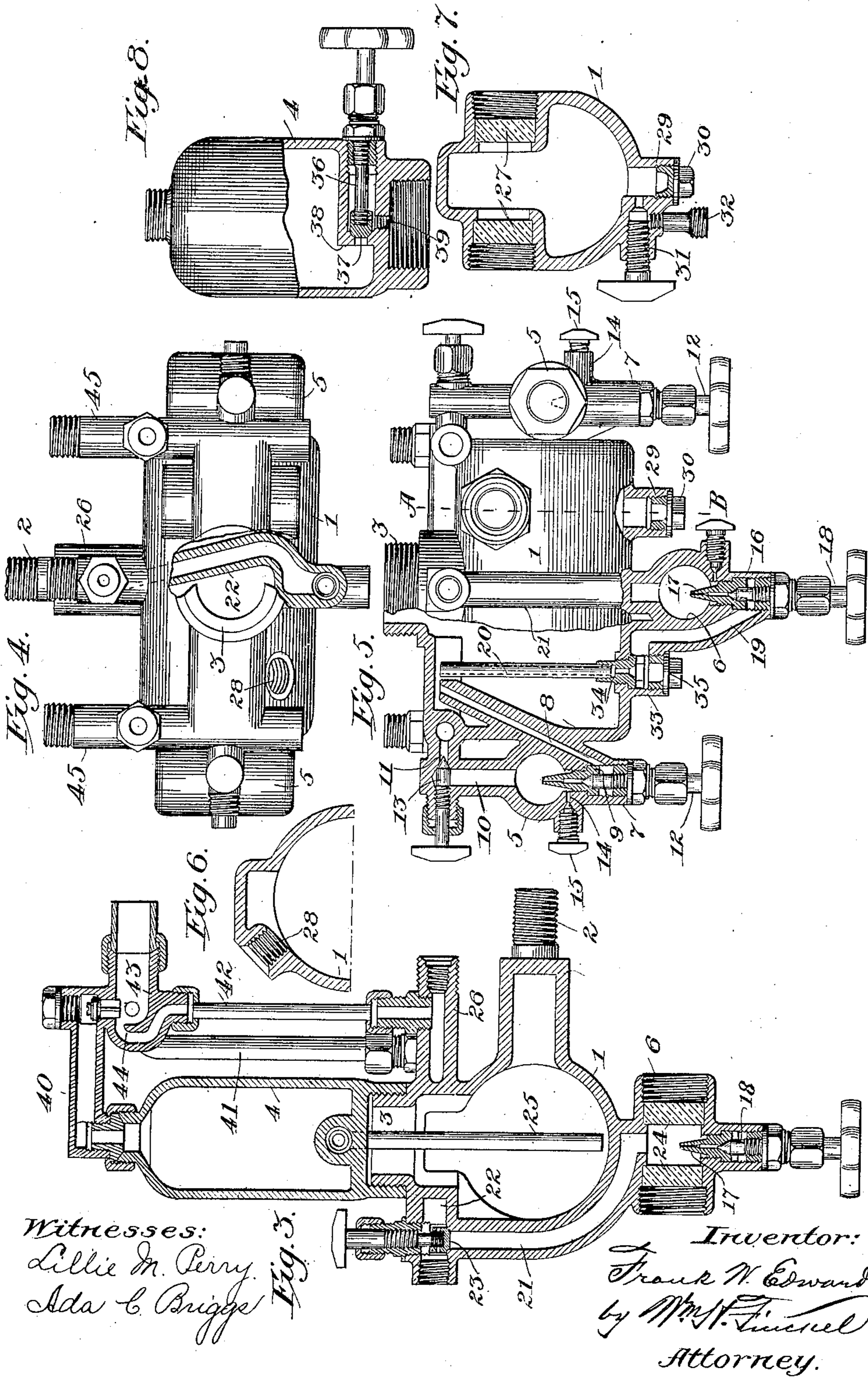
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 9.

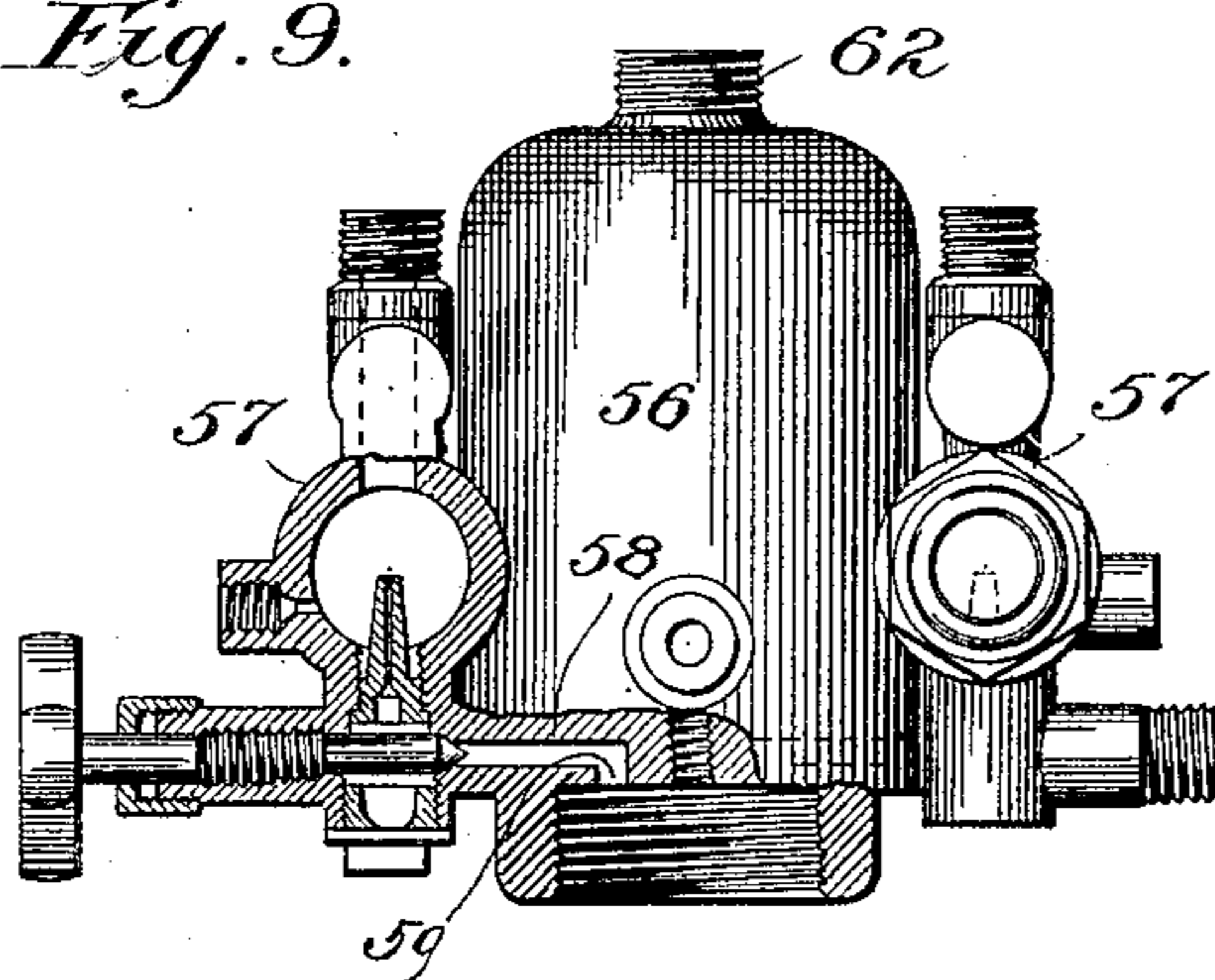


Fig. 10.

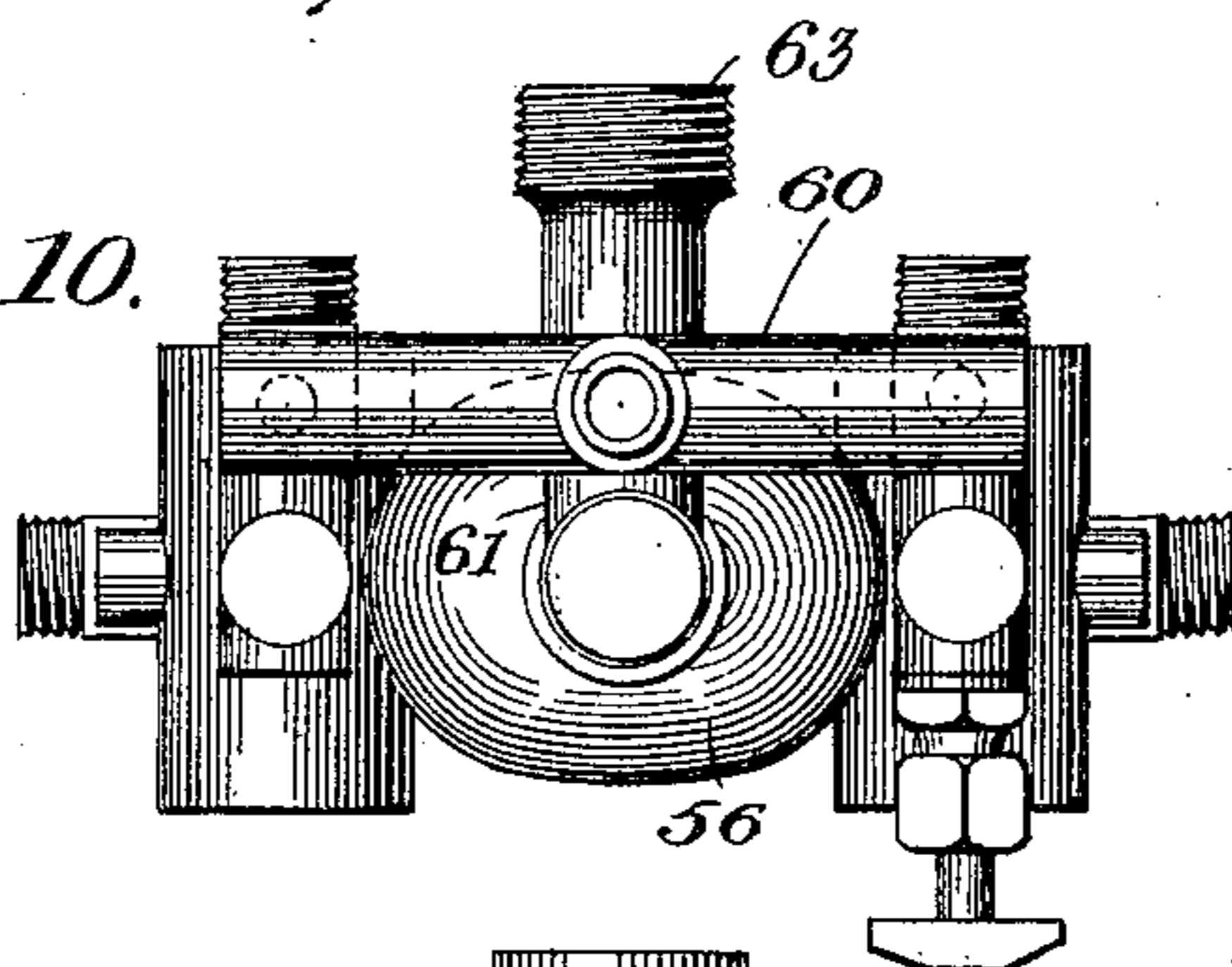


Fig. 11.

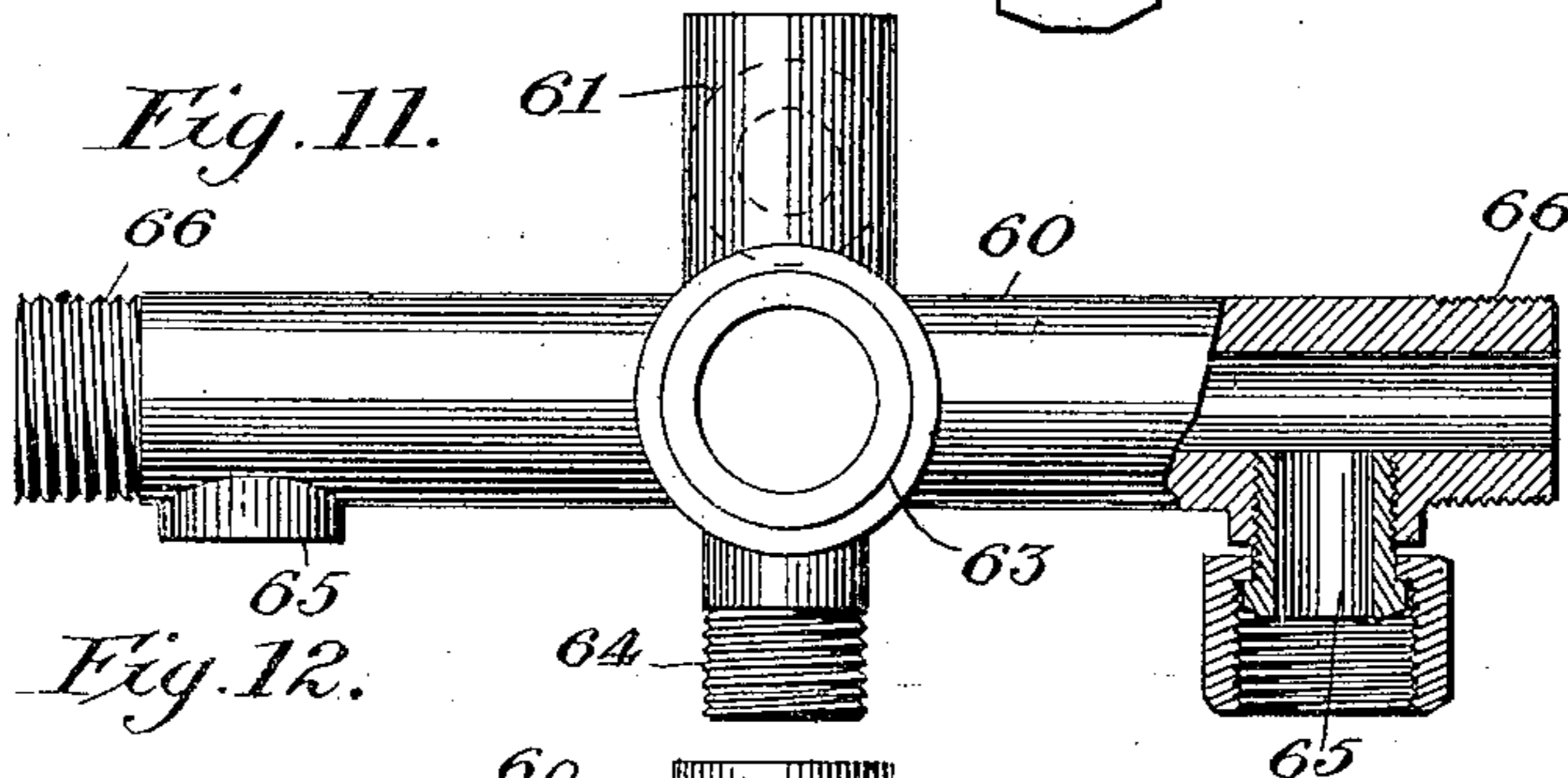
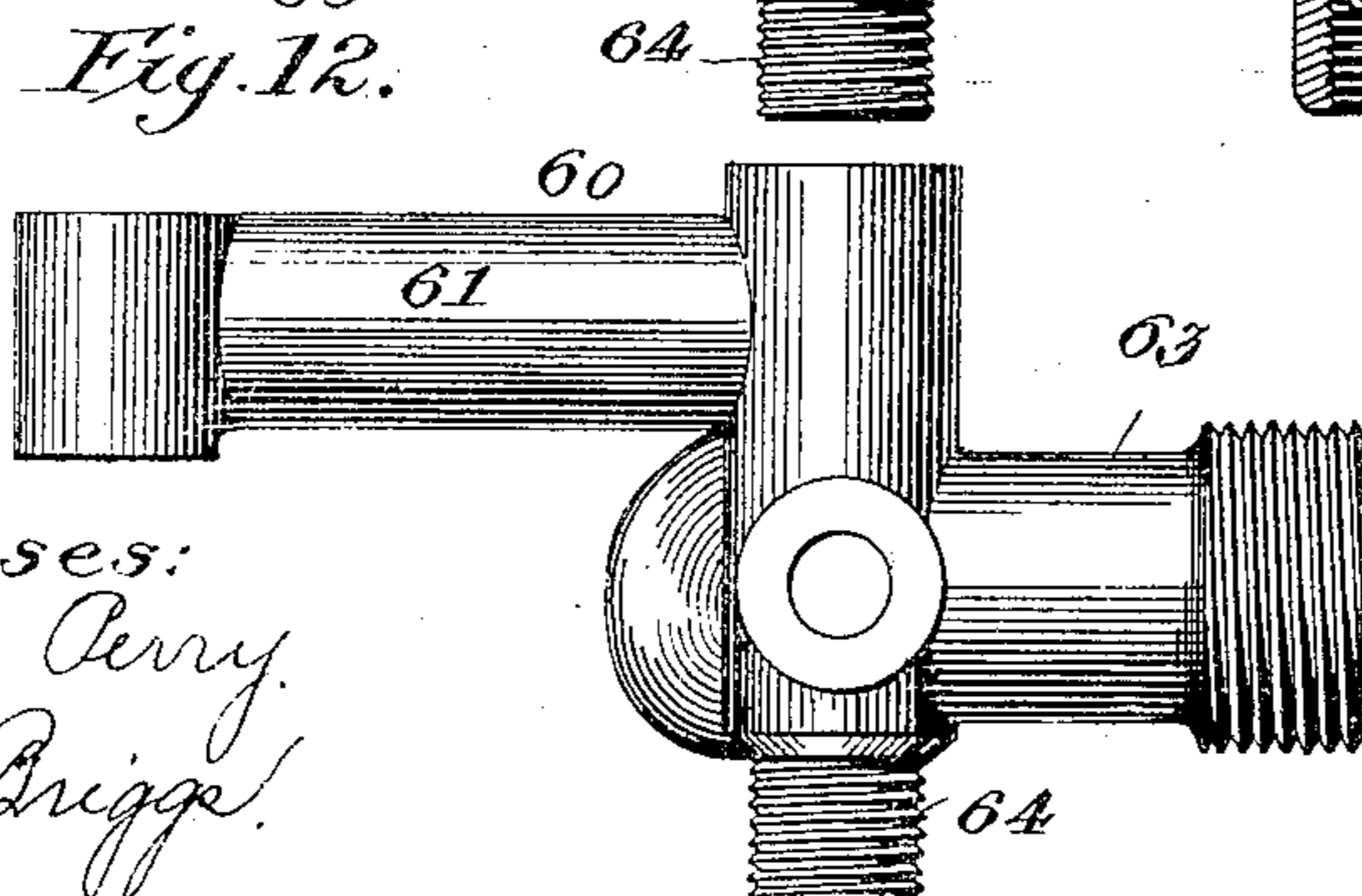


Fig. 12.



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UNITED STATES PATENT OFFICE.

FRANK W. EDWARDS, OF LOGANSFORT, INDIANA, ASSIGNOR TO THE CHICAGO LUBRICATOR COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SIGHT-FEED LUBRICATOR.

No. 887,036.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed February 6, 1905. Serial No. 244,459.

To all whom it may concern:

Be it known that I, FRANK W. EDWARDS, a citizen of the United States, residing at Logansport, in the county of Cass and State of Indiana, have invented a certain new and useful Improvement in Sight-Feed Lubricators, of which the following is a full, clear, and exact description.

This invention relates to the class of sight feed condensation displacement lubricators wherein, instead of tubular glasses and a vertical oil bowl, are used solid panes or pieces of glass and a horizontal oil bowl.

The object of the invention is to simplify the construction of parts so as to provide for the more perfect control of the fluids passing through the lubricator; to admit of the interchange of parts, and the ready application or combination of additional feed chambers.

In the accompanying drawings illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is an end elevation, with an auxiliary hand feed cup attached and shown in vertical section. Fig. 2 is a front elevation. Fig. 3 is a central vertical longitudinal section. Fig. 4 is a top plan view and partial section of the oil bowl. Fig. 5 is a front elevation and partial section of the oil bowl and its attached sight feeds. Fig. 6 is a vertical section of the top of the oil bowl through the filling-hole. Fig. 7 is a vertical section taken substantially in the plane of line A—B, Fig. 5. Fig. 8 is an elevation and partial longitudinal section of the condenser and water valve arrangement therein. Fig. 9 is a front elevation of the interchangeable condenser, showing the application of additional sight feeds to it, the left-hand sight-feed being shown in longitudinal section, the steam union being omitted. Fig. 10 is a top plan view of the arrangement shown in Fig. 9, with the union of Figs. 11 and 12 in place. Fig. 11 is a rear elevation and Fig. 12 is a side or end elevation of a union used in connection with the modification shown in Figs. 9 and 10.

The oil bowl 1, is, generally speaking, a cylinder arranged with its longitudinal axis horizontal. This cylinder is made with an attaching nipple 2 and a condenser receiving nipple 3 upon which last the condenser 4 is screwed. The oil bowl may be cast integral with the cylinders 5 at each end and a similar cylinder 6 at the bottom, and each of these

cylinders 5 and 6 constitutes, as will presently appear, a feed-chamber in the respective sight feeds. Each of the end cylinders 5 has a depending tube 7 with which communicates a duct 8 preferably made integral with the oil bowl, and opening in the upper end of this oil bowl so as to receive by displacement oil from the said bowl and conduct it down into the tube 7, whence it is displaced through any approved form of nipple or tip 9 into the feed-chamber of the cylinder 5 from which it rises through the tube 10 into the pipe 11, whence it is fed to the part to be lubricated. The nipple 9 is controlled by a hand-valve 12. At the intersection of the tube 10 and pipe 11 is arranged a valve 13 by which the pipe 11 may be closed and the feed-chamber and its appurtenances cut off from steam coming in through pipe 11, so that in case of breakage or damage to the sight feed including the feed-chamber, it may be cut off from the steam and repaired very readily. Each cylinder 5 is provided with a drainage passage 14 which is controlled by a valve 15.

The cylinder 6 has a depending tube 16 supplied with a nipple or tip 17 and a controlling valve 18, and the tube 16 is in communication with the oil bowl by means of a channel 19 and a tube 20 rising to near the top of the oil bowl to receive the displaced oil. The upper portion of the cylinder 6, as shown more particularly in Fig. 3, communicates with a channel 21 which opens into a distributing channel 22; and the intersection of channels 21 and 22 is supplied with a cut-off valve 23 by means of which the cylinder 6 may be deprived of steam in case of breakage of its glasses. The cylinder 6 is provided with a drainage valve similar to the drainage valves applied to the cylinders 5, and as shown in detail in Fig. 5. In each of these cylinders 5 and 6 are placed solid panes or disks or pieces of glass 24, suitably secured therein by any suitable screw-plugs, not shown, screwed into the ends of the cylinders.

The channel 22 crosses the top of the oil bowl, and as shown in Fig. 4, is deflected so as not to interfere with the water-pipe depending into the oil bowl from the condenser. This channel 22 communicates with the nipple 26 which is piped off to the object to be lubricated, in this instance, the air pump.

In order to inspect the contents of the oil

bowl readily, I put observation glasses 27 in opposite sides instead of ends thereof, and in order to get these observation glasses close together, recesses are made in the sides of the bowl, as shown in Fig. 7. The arrangement of the oil observation glasses in the upper part of the oil bowl on its shorter axis or transversely, instead of longitudinally, gives a direct reflection, and thus affords the operator a better and clearer view of the material in the bowl. The filling hole 28 likewise is arranged in the upper portion of the bowl.

As shown in Figs. 5 and 7, the bowl may be made with a bottom nipple 29, for purposes of cleaning, and this nipple has a screw-plug closure 30. At this point also the drainage valve 31 and drainage tube 32 may be located.

The nipple 29 is made symmetrical with the nipple 33 in which terminates the channel 19, and both nipples are plugged. These nipples afford cavities or core supports for casting the bowl. The oil-bowl has in its bottom a nipple 33, which projects a very short distance therefrom, and much less than the nipple 16. The nipple 33 has a tubular screw-plug 34 to receive the pipe 20; and it is closed by the solid plug 35. By removal of the plug 35 the nipple 33 is adapted to receive the valve 18, which in that case seats in the plug 34, and the plug 35 may replace the valve in the nipple 16. This interchangeability of parts is particularly valuable in placing the lubricator in a cramped space and where there would be no room for the extended stem of the valve 18.

As shown in Fig. 8, the water-valve comprises a stem 36 on which is mounted the valve proper 37 having a seat 38 in part communicating with the water-pipe-socket 39. This valve may be set at any angle desired. The condenser 4 is connected with the steam boiler by means of a union 40, and this union has any number of nipples corresponding with the number of objects to be lubricated and connected with them by suitable pipes, as 41, Figs. 1 and 2. It sometimes occurs that the water of condensation overflows from the union which connects the boiler, the condenser, and the feeds, in a pipe 42 leading to the air pump feed, and in order to overcome this, a pocket 43 is formed in the union, and a dam 44 thrown across the entrance to the said feed-pipe from said pocket, so as to exclude such condense water from the said feed-pipe. There are two pipes 41, one on each side of the pocket 43, and these pipes 41 lead to nipples 45 which are connected with the engine cylinders.

As shown in Fig. 1, the oil bowl is adapted to receive at any one of its sight feed nipples a hand-feed for use in case of necessity; and the hand-feed herein shown as applied to the lower feed comprises a cup 46 having an in-

let opening 47 covered by a hand-valve 48 screwing into a tube 49 which rises from the bottom of the cup and which is perforated transversely at 50. Opposite this perforation and in alinement therewith are nipples 51 and 52 which serve respectively to receive the screw-threaded portion of a valve-stem 53 and the point 54, so that the supply of oil to the part to which it is applied may be regulated by this hand-valve 53, 54. 55 is a drainage valve for the auxiliary hand-feed shown. The hand-feed or auxiliary oil-cup just above described and herein shown, forms the subject, among other things, of my Patent No. 839,373, granted December 25, 1906. The condenser 4 may have applied to it any number of sight-feed devices so that the apparatus may be used for lubricating more than three parts, as shown in Figs. 9, 10, 11 and 12, and when it is desired to equip a lubricator already in place with these facilities for lubricating additional parts, the condenser of Figs. 1, 2 and 3 may be removed and the condenser of Figs. 9 and 10 substituted for it. This condenser 56 differs in no essential particulars from the condenser 4, excepting in its being adapted to receive sight feed devices 57 at each side; and without further description it may be said that these sight feed devices are in all essential respects the same as those hereinbefore described. In order to receive them, the condenser is made with an oil supply tube 58 at each side communicating at 59 with the oil bowl. A special form of coupling 60 shown in detail in Figs. 10, 11 and 12 is employed, and this coupling comprises the portion 61 for union with the nipple 62 of the condenser; the nipple 63 for connection with the boiler; the nipple 64 for connection with the air pump nipple 26; the nipples 65 for connection with the sight feeds 57, and the nipples 66 for connection with the cylinder nipples 45.

It is to be observed that in each of the sight feeds is a valve by which the admission of steam to the feed chamber may be controlled, so that any one or more of these feeds may be cut out of service without in the least interfering with the work of the others. These valves also permit the operator to shut off steam from any feed when the glass therein is defective or breaks, without necessarily shutting off steam from the engine. These valves may be positive acting, as shown, or of some well known automatic construction.

As already indicated, the interchangeable condensers admit of the conversion of a three-feed lubricator into a five-feed lubricator, and, moreover, it is possible to connect up two or more feed-chambers with any one part to be lubricated.

The feed-valves are herein shown as arranged horizontally and at the side, but it is

within my invention to arrange them otherwise both in the feed-chamber parts and in the condenser; and so also the other pressure valves may be arranged otherwise than as shown so long as they perform the functions assigned to them.

What I claim is:—

1. A sight feed lubricator, having a horizontally arranged oil bowl provided with a feed-chamber at each of its ends, and a feed-chamber at its bottom, there being an independent oil-supply channel leading to each of said feed-chambers and made integral with the oil bowl, there being an independent steam-supply channel for each feed-chamber, and an independent steam-controlling valve for each steam-supply channel.

2. In a sight-feed lubricator, an oil-bowl having a bottom feed-chamber projecting downwardly therefrom, an adjacent nipple projecting a less distance from said bottom, there being an oil-duct leading from the oil-bowl through said nipple into said feed-chamber, a valve-seat-plug in said nipple, a closing plug for said nipple, and a valve for the feed chamber, said closing plug and valve being interchangeable.

3. In a sight feed lubricator, a horizontally arranged oil-bowl having a condenser-receiving nipple at its top substantially midway of its length, and three nipples at its bottom, one of which contains a feed chamber with which another of the nipples is connected so that the feed control may be interchangeably applied to either of these two nipples in accordance with the available space on the machine to which the lubricator is applied, the nipples at top and bottom being symmetrically arranged substantially as and for the purpose specified.

4. In a sight-feed lubricator, a horizontally arranged oil-bowl having the upper portion of its sides recessed at opposite points so as to bring said sides into relatively close parallel proximity, and observation glasses supported in said recesses opposite each other, and in the shorter or transverse axis of the bowl, so as to give a direct reflection and thereby afford the operator a good and clear view of the material in the bowl.

5. In a sight-feed lubricator, a horizontally arranged oil-bowl, an oil delivery connection near its top, a feed-chamber located at the bottom of the bowl, a delivery tube extending upwardly from said feed-chamber outside of said oil-bowl, a transversely arranged tube passing from said external tube crosswise of the oil-bowl and opening into said oil-delivery connection, an independent cut-off valve for controlling communication between the transversely arranged tube and the external

tube without taking off the steam from the lubricator, and an oil-supply duct connecting the bowl and feed-chamber.

6. In a sight-feed lubricator, an oil-bowl having a condenser-nipple at its top and a number of sight-feeds arranged about its body, combined with a condenser having feed-chambers arranged at its sides and integral therewith, and having integral oil-supply ducts communicating with the oil-bowl, and sight-feed appurtenances arranged on said feed-chambers, the said condenser being applicable to the condenser-nipple on the oil-bowl interchangeably with a condenser of another construction, to increase the number of sight-feeds as required and supply all from a single oil-bowl.

7. In a sight-feed lubricator, the combination of a condenser, an oil-bowl, an air-pump feed, and a boiler connection with the condenser, said boiler connection having an outlet leading to and connected with the air-pump feed pipe, and a pocket adjacent thereto provided with a dam extending across the pocket next to the opening into said air-pump feed pipe and above the center line of steam admission, to exclude condense water from the said feed pipe and admit steam to it.

8. A sight-feed lubricator comprising a horizontally arranged oil-bowl, three feed-chambers applied to said oil-bowl, respectively at its ends and its bottom, there being integral oil-ducts separately connecting each of said feed-chambers with the oil-bowl, and separate steam-supplying mediums, a condenser mounted upon said oil-bowl and having integral feed-chambers at its sides, each also fed independently from the oil-bowl, and a union applied to the condenser and having a steam connection for the boiler.

9. In a sight feed lubricator, the combination of a condenser, an oil-bowl, an air-pump feed, and a boiler connection with the condenser, said boiler connection having a pocket extending up into it above the center line of steam admission and an outlet at said point communicating with a passage leading down from and around the outside of the boiler connection, and a circulating pipe communicating with the bottom of said passage and the air pump feed pipe, whereby the water of condensation is excluded from and steam admitted to the circulating pipe.

In testimony whereof I have hereunto set my hand this third day of February, A. D. 1905.

FRANK W. EDWARDS.

Witnesses:

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JOSEPH G. LONG.