

PATENTED JAN. 24, 1905.

2 SHEETS—SHEET 1.

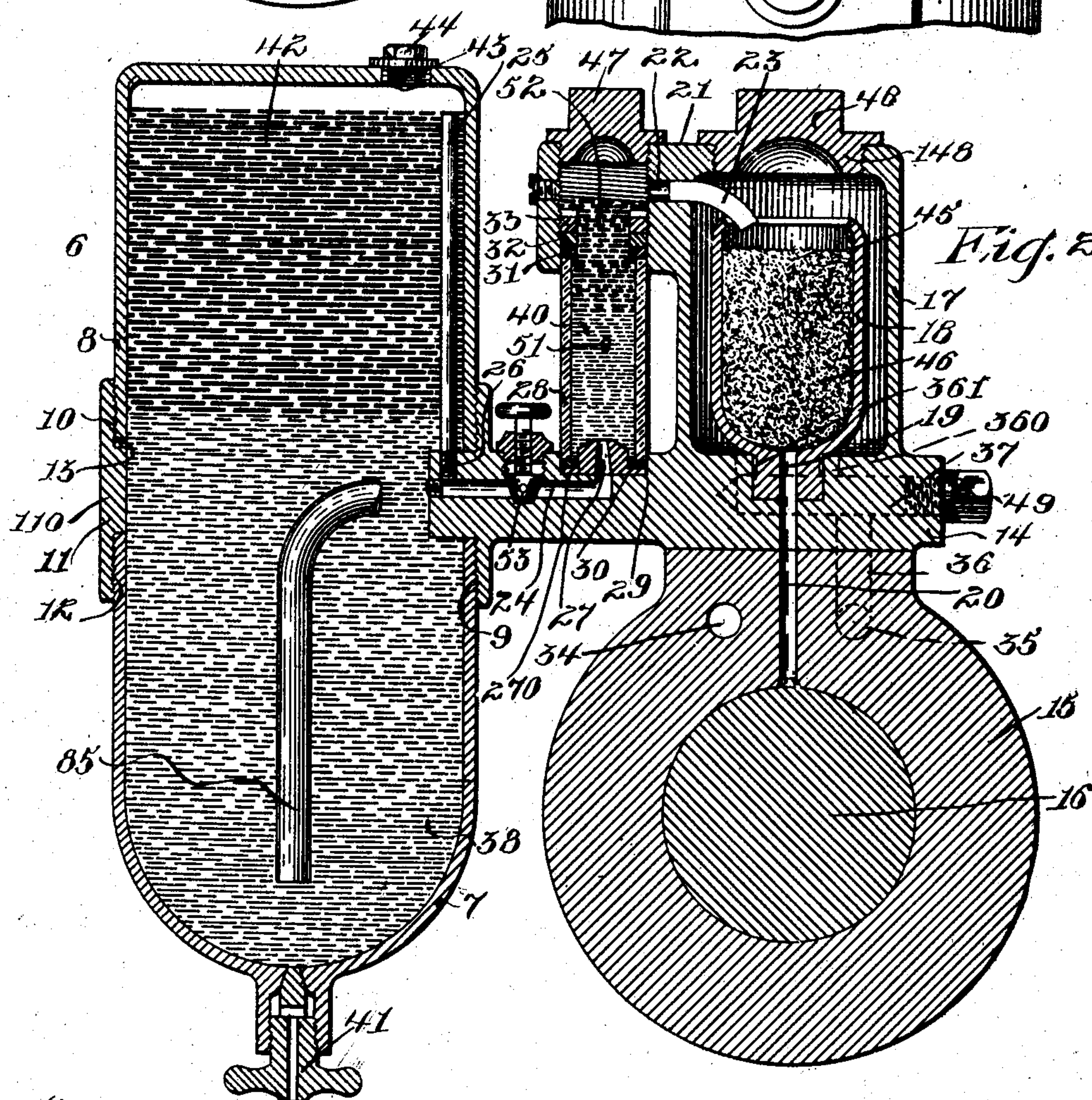
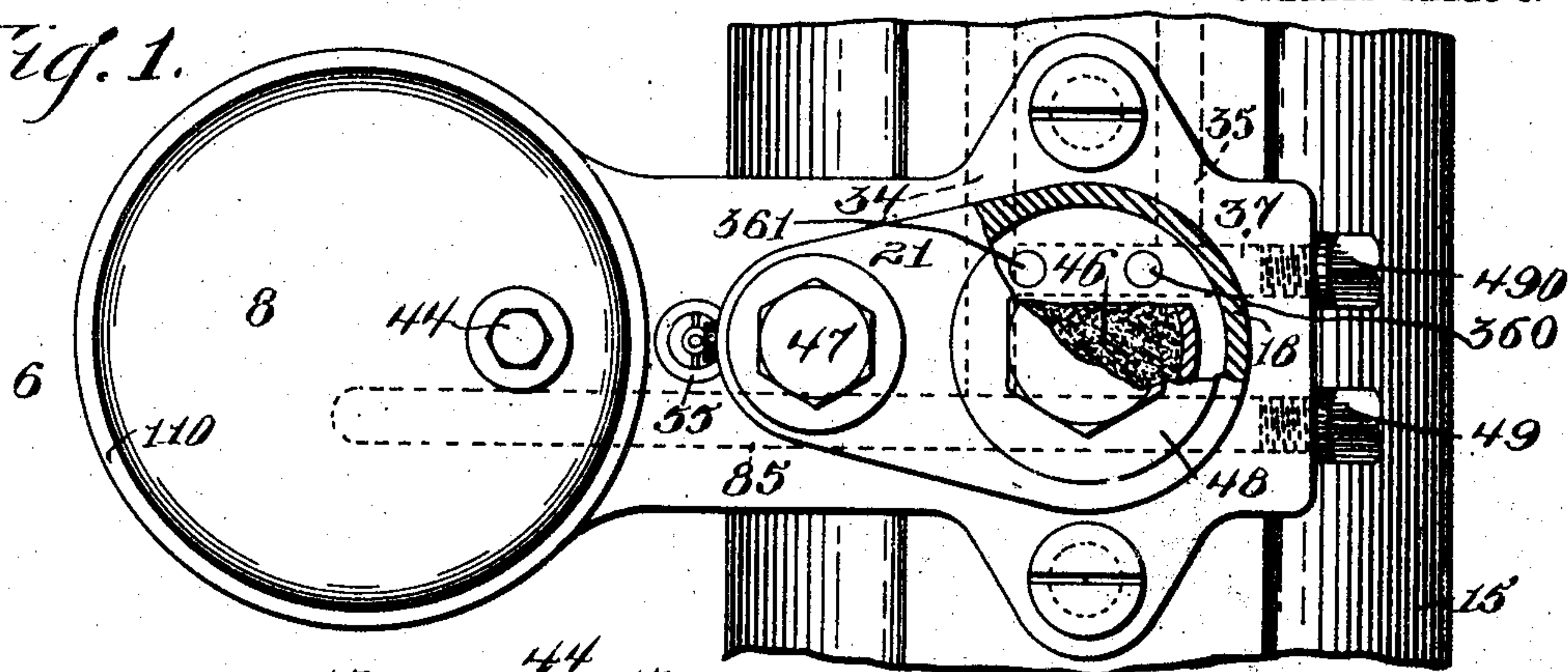


Fig. 2.

Inventor:

Chester Comstock;

By his attorney,

J. A. Richards

No. 780,779.

PATENTED JAN. 24, 1905.

C. COMSTOCK.
PROCESS OF LUBRICATION.
APPLICATION FILED SEPT. 20, 1904.

2 SHEETS—SHEET 2.

Fig. 3.

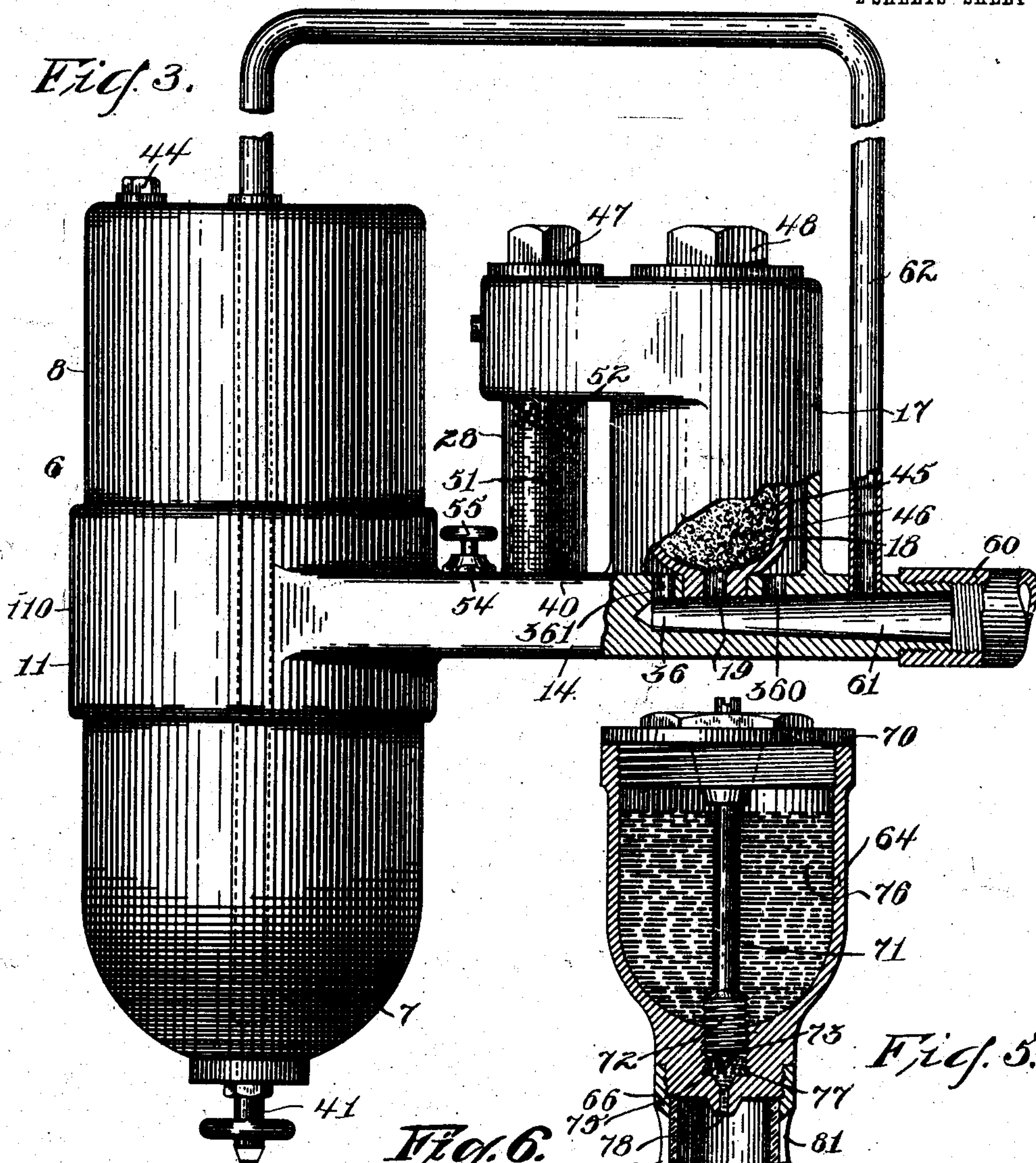


Fig. 4.

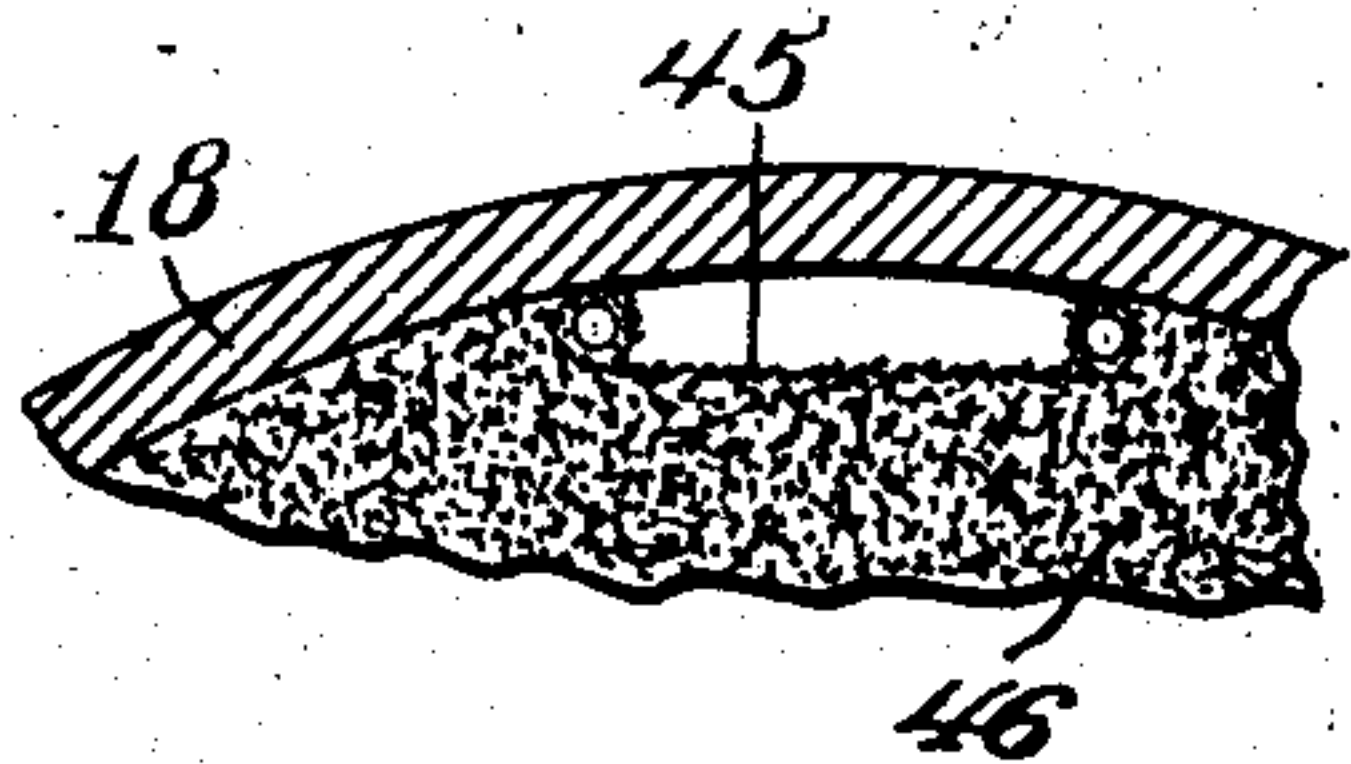


Fig. 6.

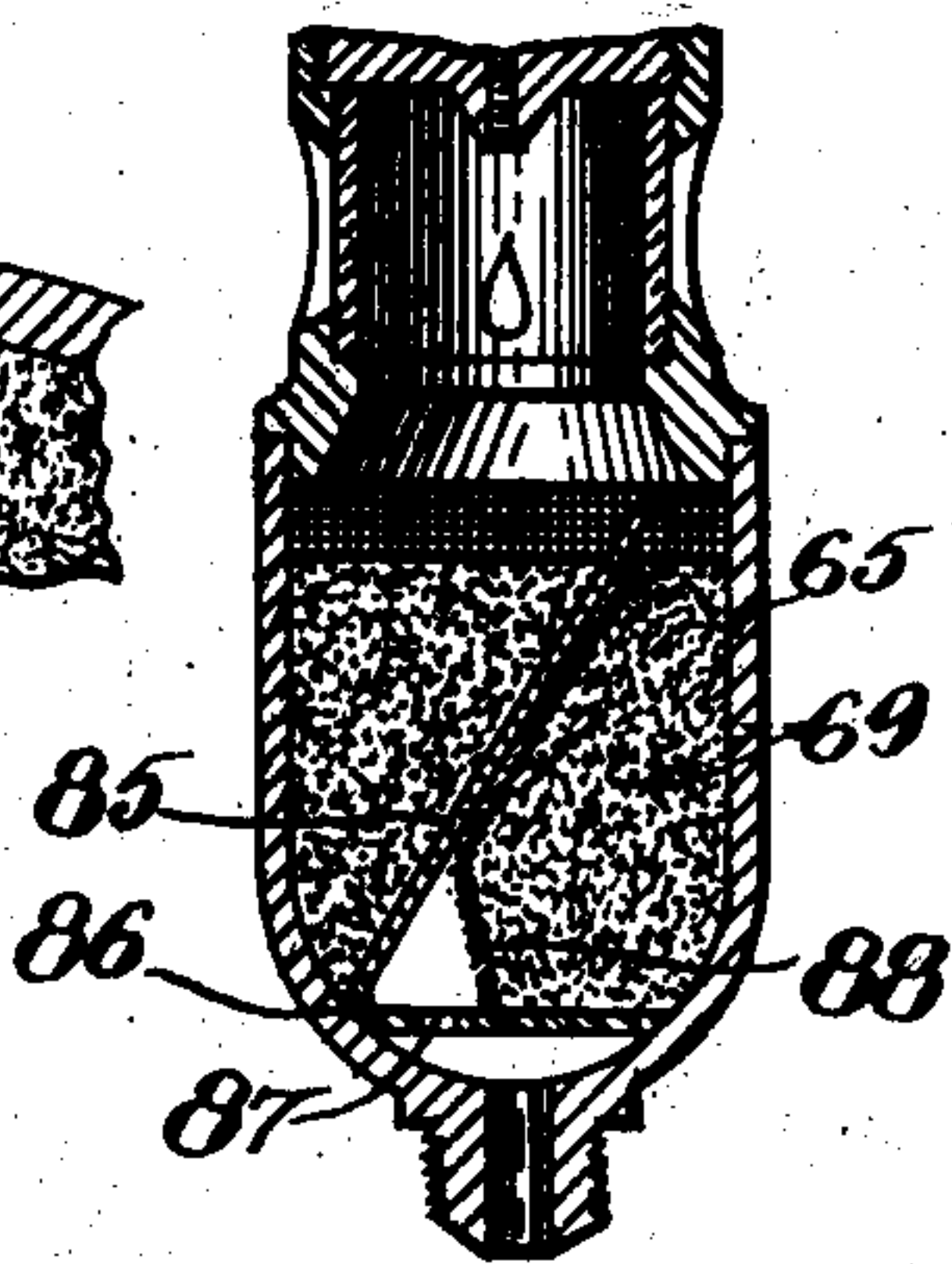
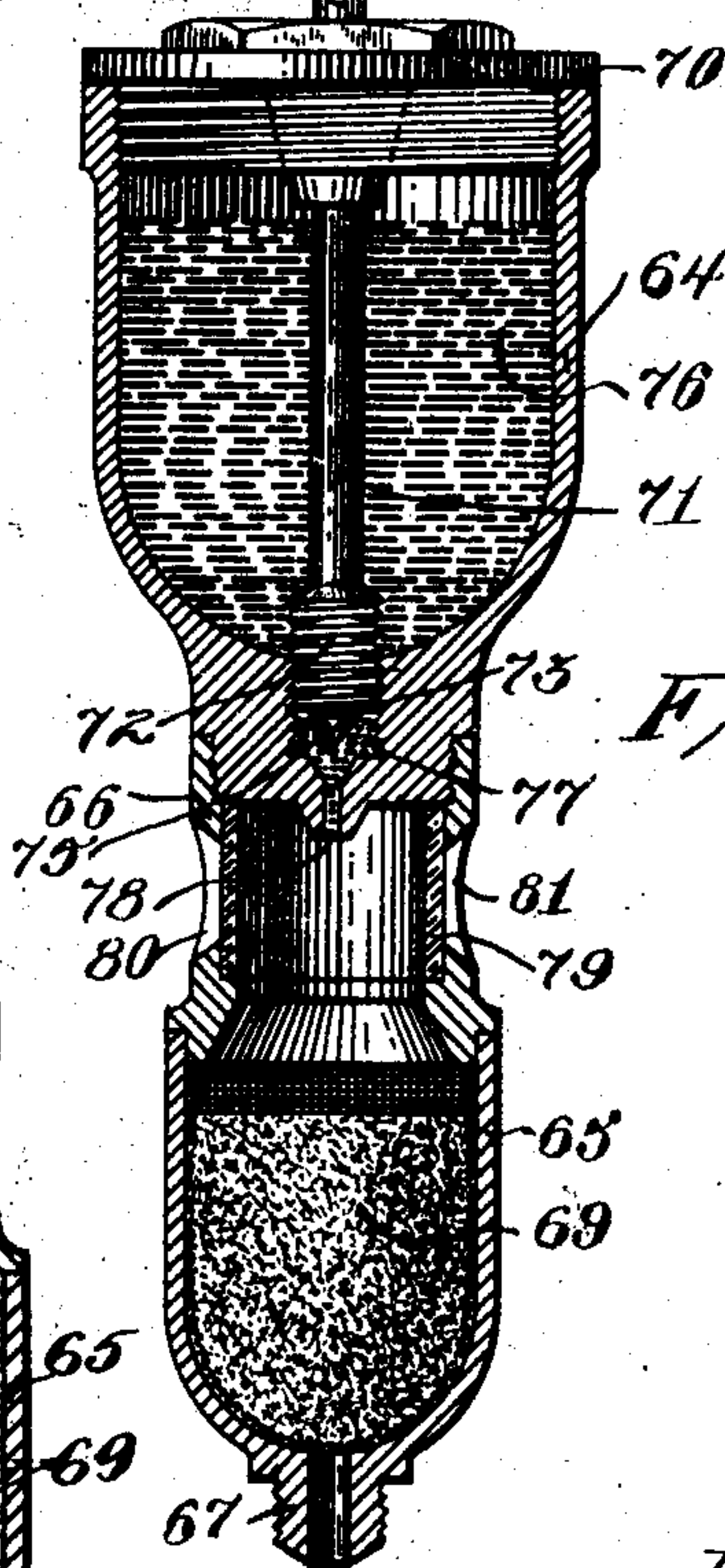


Fig. 5.



Witnesses:
G. G. Fuss,
Robert A. A.

Inventor
Chester Comstock;
By his Attorney,

J. W. Richards

UNITED STATES PATENT OFFICE.

CHESTER COMSTOCK, OF BROOKLYN, NEW YORK.

PROCESS OF LUBRICATION.

SPECIFICATION forming part of Letters Patent No. 780,779, dated January 24, 1905.

Application filed September 20, 1904. Serial No. 225,167.

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 Processes of Lubrication, of which the following is a specification.

This invention relates to a process for lubricating, and comprehends the admixture of one material with another, whereby both may be discharged to the parts to be lubricated in a compound form.

The invention further comprehends the construction of such devices or apparatus, as will automatically accomplish such process.

It is comprehended that the results to be obtained may be effected through the instrumentality of various constructions, which may be suitably adapted for the purpose specified, and it will therefore be understood that the constructions illustrated on the accompanying sheets of drawings, together with the detailed description thereto appertaining, shall not be considered as confining my invention to the particular form of mechanism or apparatus herein illustrated and described.

It is an object, among others, of the invention to gradually convey one lubricant to a surface of another lubricating substance, whereby both of said lubricants may combine and be finally discharged in an admixed form.

The drawings accompanying this specification illustrate an embodiment of an apparatus whereby the process may be carried forth, and whereon—

Figure 1 is a plan view of an improved lubricating apparatus, portions of which are broken away so as to disclose its construction and the apparatus being shown as applied to a journal-bearing. Fig. 2 is a sectional view in elevation of the same. Fig. 3 is an elevational view of such lubricating apparatus, the same being similar to that shown in Fig. 2, with the exception of that portion partially broken away, which is slightly changed for adaptation to a valve-chest of a cylinder. (Not shown.) Fig. 4 is a plan sectional view showing the wire-cloth lining disposed upon a frame, which is inserted into the apparatus. Fig. 5 illustrates a modified form of a lubri-

cating device, and Fig. 6 illustrates another form of lubricating device.

Throughout the various figures similar characters of reference apply to similar parts.

I have, for example, illustrated a device applied to a journal-bearing, for instance, as shown in Fig. 2, and to an exhaust-pipe of a cylinder in another instance, as shown in Fig. 3, and in the third instance I have shown a device capable of being applied to various elements of machinery, &c., where the other illustrated devices may not be so well adapted for application. In either case it will be observed that the invention primarily comprehends the provision of a reservoir adapted to contain a lubricant, a receptacle for containing another lubricant, means for introducing one lubricant into the other, and a "sight" whereby may be determined the amount of lubricant used.

Referring now to the construction shown in Figs. 1 and 2, 6 indicates in a general way a reservoir, which may be made in any suitable manner and which in the present instance may comprise upper and lower cylindrical sections 7 and 8, respectively, each of which may be screw-threaded exteriorly, as at 9 and 10, so that they may be fitted into a frame or bracket 11, internally screw-threaded at 12 and 13 to receive the screw-threaded portions 9 and 10 of said sections, said bracket in the present instance being provided with an internally-projecting shoulder 110, by which the inner wall of the reservoir 6 may be continued, as seen in Fig. 2. This frame 11 may be carried by an arm or extension 14, which in the present instance may be suitably supported upon a bearing 15, in which may rotate a journal 16. Suitably mounted, preferably upon this extension 14, and which, if desired, may be integral therewith, is a steam-chest 17, which is provided with a removable plug 48, preferably screw-threaded into the mouth of said chest, as at 148, and whereby said chest may be tightly closed when the device is in operation. Within this chest 17 and preferably stepped into the wall of the extension 14 is a receptacle 18, provided at its bottom with an opening 19, adapted to register with a conduit 20, which passes through

the extension 14 and the bearing 15 and communicates with the opening in which the journal rotates. The chest 17 in the present instance may be cast integral with the extension, it being understood that the frame 11, extension 14, chest 17, and extension 21, if desired, may be cast in one piece for cheapness of manufacture. Said extension 21 is provided with a bore which is internally screw-threaded, and passing from said bore to the interior of the chest 17, through the wall of the extension 21, is a port 22, to which, in the present instance, is attached a nozzle 23, directed into the mouth of the receptacle 18, located in said chest 17. The extension 14 in the present instance may be provided with a conduit 24, extending longitudinally and inwardly through said extension, and to which is connected at 26 an elongated perpendicularly-disposed pipe 25, which extends upwardly in the reservoir 6, preferably to a point very near the top of said reservoir. The extremity of the conduit 24 communicates with a nozzle 27, which, in the present instance, is stepped into a seat 270 in the extension 14, and this nozzle extends upwardly into a glass tube or sight 28, which is mounted on a packing-ring 29, located around said nozzle 27, and which glass tube extends upwardly and communicates with the bore of the extension 21, whereupon the same may be secured in place by metallic gaskets 32 and 33, a packing 31 being interposed between one of said gaskets and the top of said tube for the purpose of preventing leakage. A plug 47 is screw-threaded into the bore of the extension 21, and thus, as is obvious, a complete air-tight communication is obtained between the reservoir 6 and the journal 16 through the pipe 25, the conduit 24, the tube 28, the nozzle 23, and the conduit 20. The interior of the receptacle 18 is lined, preferably, with gauze, wire-cloth, or other open-mesh lining 45 and is filled in the present instance with some suitable lubricating compound 46—such, for instance, as graphite—which lies in said receptacle in a non-liquid mass, as seen in Fig. 5, upon which may be discharged a lubricant from the nozzle 23; as will be more fully explained hereinafter. From a suitable source of supply and coming through the conduit 34 is steam which passes through a transversely-disposed conduit 85, which extends through the wall of the reservoir 6 and conducts the water of condensation down into and near the bottom thereof, it being understood that for convenience and economy such steam may be obtained from any suitable source. For the purpose of causing the pressure in the reservoir 6 and the chest 17 to be equal I provide a second conduit 35, which communicates with a conduit 36, entering into a conduit 37, and which communicates with openings 360 and 361, which enter through the bottom of the chest 17, causing such chest to be filled with steam, where-

by pressure will be so directed onto the graphite as to prevent it from being lifted out of the receptacle by under pressure through the port 19. The steam directed through the conduits 34 and 35 will be condensed into water 38 in the reservoir 6, and such condensation will have a tendency to fill said reservoir. Through the opening 43 in the top of the reservoir, which is provided with a closing-plug 44, I pour oil 42, which rests upon the water resulting from condensation. The glass tube 28 may also be provided with a suitable amount of water 40 for purposes shortly to be explained. As the process of condensation takes place and the drip passes through the pipe 85, the water resulting therefrom will cause the oil which is borne on its surface to rise, and when the oil reaches the mouth of the pipe 25 it will course down into the conduit 24, which will gradually fill as the condensation continues until it reaches the mouth of the nozzle 27, when the drops of oil will be expelled from said nozzle upward through the water 40 until it reaches the surface thereof, when a second mass of oil accumulates on the top of the water in the tube 28 until it reaches the mouth or level of the port 22, when it will commence to run through said port into the nozzle 23 and drip onto the mass of graphite contained in the vessel 18. The oil runs in upon the graphite and spreads over the latter, and when it reaches the wire-cloth 46 it will trickle down said cloth to the opening 19, where it will drip off drop by drop through the conduit 20 onto the journal 16, it being understood that as the oil spreads over the graphite each drop of said oil will carry with it a portion or deposit of the graphite, whereby that lubricant which passes through the conduit 20 will be a composition of oil and graphite or their equivalents. As has been remarked, the oil leaves the nozzle 27 in drops 51, which drops pass through the water 40 contained in the glass tube 28. In this way the speed with which the final discharge of the lubricant takes place can be ascertained by the rapidity with which these drops are being expelled from said nozzle through the water. For the purpose of preventing too great a discharge of the lubricant I situate in the conduit 24 a valve 53, suitably held in place by a collar 54, and which is provided with a handle 55, and by this means the quantity of lubricant to be discharged may be arranged for. For cleansing the chest as well as the bore of the tube I may provide plugs 47 and 48, respectively, which may be suitably screw-threaded one into said chest and the other into said bore in a manner, for instance, as shown, and for cleansing the conduits 37 and 85 I may provide plugs 49 and 490, suitably screw-threaded into said conduits, as shown.

The same structure as heretofore described and which embodies the reservoir 6, the glass

tube 28, the extension 21, the chest 17, and the receptacle 18 is shown in Fig. 3, and it may embody all of the details of construction heretofore pointed out with reference to Figs. 1 and 2. Instead, however, of being applied to a journal, as shown, for instance, in Fig. 2, the same is applied to a steam-pipe 60, connected with a valve-chest, (not shown,) and a lubricant-conduit 61, instead of being directed downwardly through the extension 14, is preferably directed along the longitudinal axis of said extension into the mouth of the pipe 60. Communicating with such conduit 61 is a pipe 62, which is directed into the reservoir 6 in a manner similar to that heretofore explained, whereby steam may pass therethrough and be held in a condensed condition within the reservoir in the manner heretofore described. The two structures are practically similar, with the exception that the method of the application of the parts to be lubricated is somewhat different.

In Fig. 5 I illustrate another construction which may be used in connection with various parts, such as small journals, &c., and this construction discloses a reservoir 64, a receptacle 65, an intermediate connection 66, and a nozzle 67 for attaching the combined structure in place. Within the receptacle 65 may be provided means suitably located, as shown, and which may constitute an open-mesh member which comes into contact with graphite or other suitable material 69, and through the instrumentality of such means the oil which has been conveyed upon the graphite will be conducted to the parts to be lubricated, such oil in the meantime having become ladened with a portion of the graphite. The interior of the receptacle 65 may be provided with a wire-cloth lining or other open-mesh lining and also be filled with graphite or other suitable material 69. The reservoir may be provided with a screw-threaded plug 70, through which may be passed a stem 71, having a screw-threaded head 72 fitted into the screw-threaded opening 73 in the base of said reservoir 64, and which head in the present instance may be provided with an oblique conduit 75, through which the oil 76 in the reservoir 64 may drip into a chamber 77 and through a conduit 78 into the graphite 69, the extent to which said oil may drop being determined by the adjustment of the rod 71 preferably, and for observing the extent to which the oil is dropping on the graphite I provide a glass tube 79, carried by a connection 66, and which connection is provided with sights 80 and 81, respectively.

In Fig. 6 there is shown as suitably located within the receptacle 65 a member 85, which in the present instance is preferably located in a plane oblique to the vertical axis of such receptacle, and at or near the bottom of which member is a diaphragm 86, having an open-

ing 87, through which the lubricant may be discharged. Located on the under side of such obliquely-disposed member is an open-mesh member 88, which is carried by the member 85 and which at a certain point proceeds from the plane of said oblique member into a plane parallel with the vertical axis of said receptacle. By means of such a construction the precipitating oil may ultimately find its way to said member 85, spreading thereupon and around until it reaches the network, whereupon it will trickle down and along the perpendicular portion 88, when it is finally discharged over the diaphragm 86 and through the opening 87.

It will be observed that the pressure within the reservoir 6 is equalized by the steam-pressure which may be directed into the chest 17 through the conduits 36 and 37, connected to the conduit 35, and in this way the oil cannot run too fast into the graphite, and where by pressure will be directed onto the graphite, so as to prevent it from being lifted out of the receptacle by underpressure through the port 19.

It will now be observed that I have a process for discharging a lubricant and combining it with another lubricant by an intermittent process and whereby the two lubricants are directed to the place to be lubricated in a compound or mixed condition.

It will be noted that the introduction of oil into the graphite is not essential, it being understood that the graphite alone being a lubricant may be carried to the parts to be lubricated by such other suitable medium as may be selected.

Having thus described my invention, I claim—

1. That art of lubricating which consists in conveying onto a surface of a mass of non-liquid lubricant a flow of liquid lubricant, then continuing the flow of said liquid lubricant and drawing off a portion by said flow from said non-liquid lubricant.

2. That art of lubricating which consists in directing onto a surface of a mass of non-liquid lubricant a flow of liquid lubricant, continuing said flow around the surface of said mass, removing a portion of said mass by said flow and discharging said flow and said portion simultaneously.

3. That art of lubricating which consists in directing onto a surface of a mass of non-liquid lubricant a flow of liquid lubricant, continuing said flow around the surface of said mass, removing a portion of said mass by said flow and discharging said flow and said portion in a compound form.

4. That art of lubricating which consists in conveying onto a surface of a mass of graphite a flow of oil, then continuing the flow of said oil and drawing off a portion by said flow from said graphite.

5. That art of lubricating which consists in directing onto a surface of a mass of graphite a flow of oil, continuing said flow around the surface of said mass, removing a portion of
5 said mass by said flow and discharging said flow and said portion simultaneously.

6. That art of lubricating which consists in directing onto a surface of a mass of graphite a flow of oil, continuing said flow around the
10 surface of said mass, removing a portion of

said mass by said flow and discharging said flow and said portion in a compound form.

Signed at Nos. 9 to 15 Murray street, New York city, New York, this 16th day of September, 1904.

CHESTER COMSTOCK.

Witnesses:

FRED W. BARNACLO,
JOHN O. SEIFERT.