

No. 653,420.

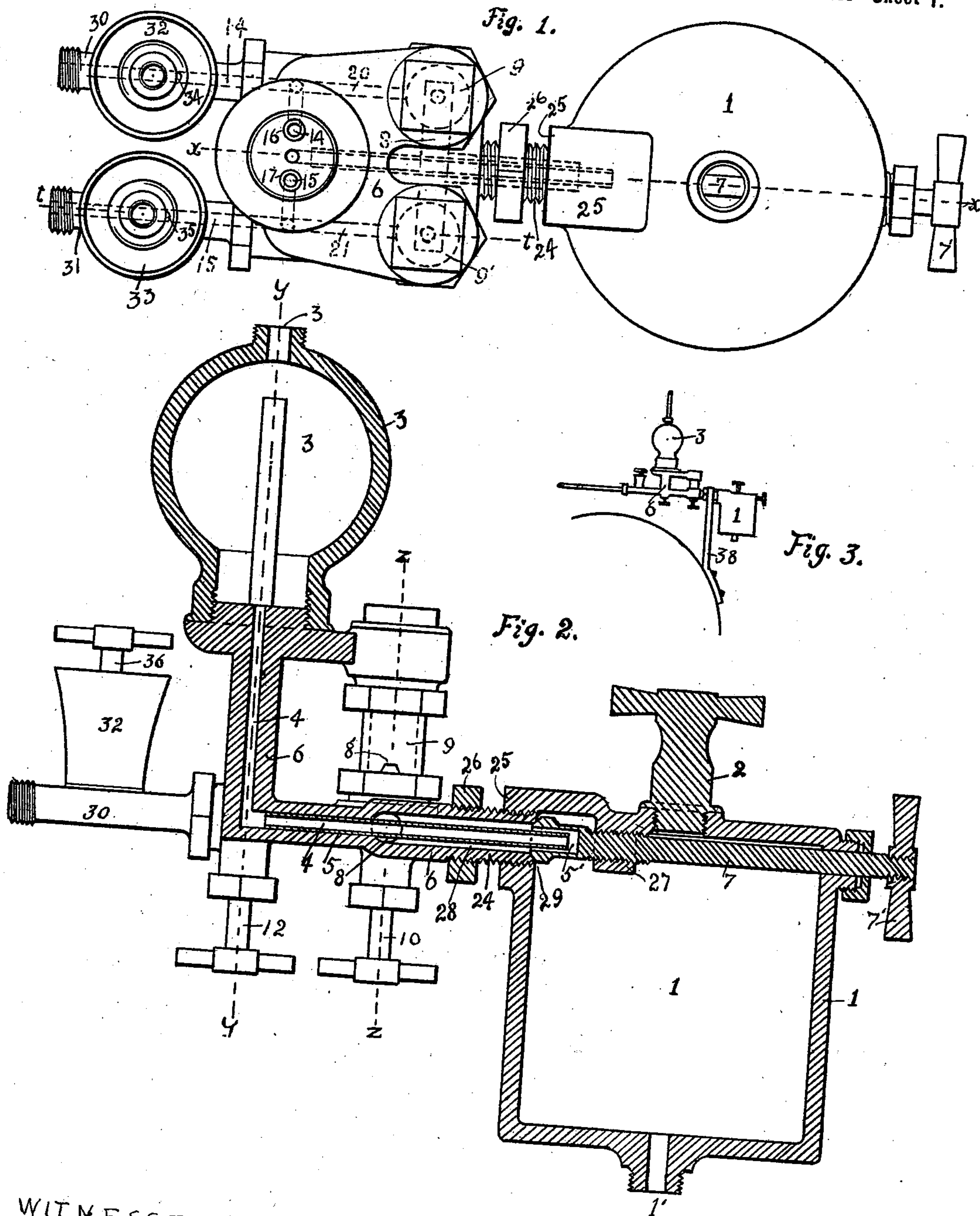
J. F. LEWIS.  
LUBRICATOR.

Patented July 10, 1900.

(No Model.)

(Application filed Sept. 15, 1898. Renewed Feb. 17, 1900.)

2 Sheets—Sheet 1.



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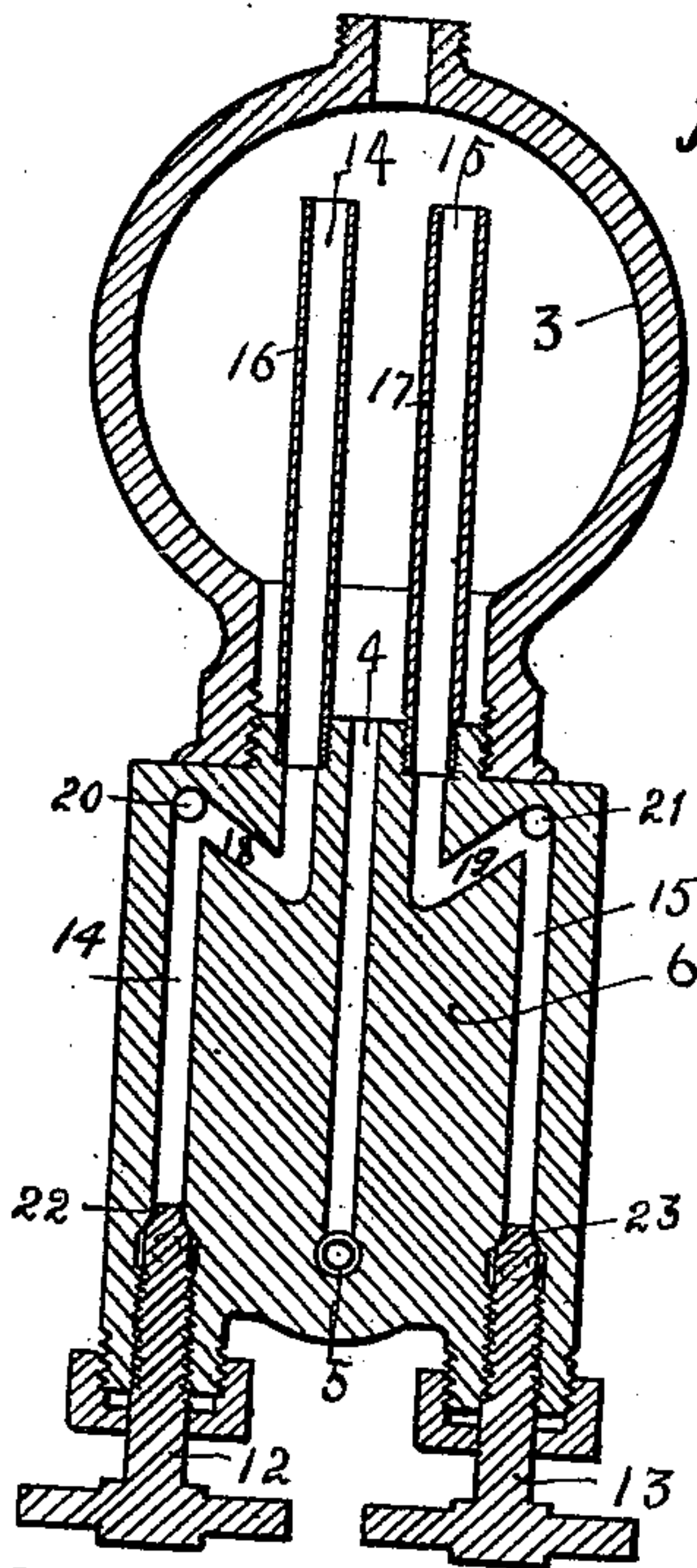


Fig. 4.

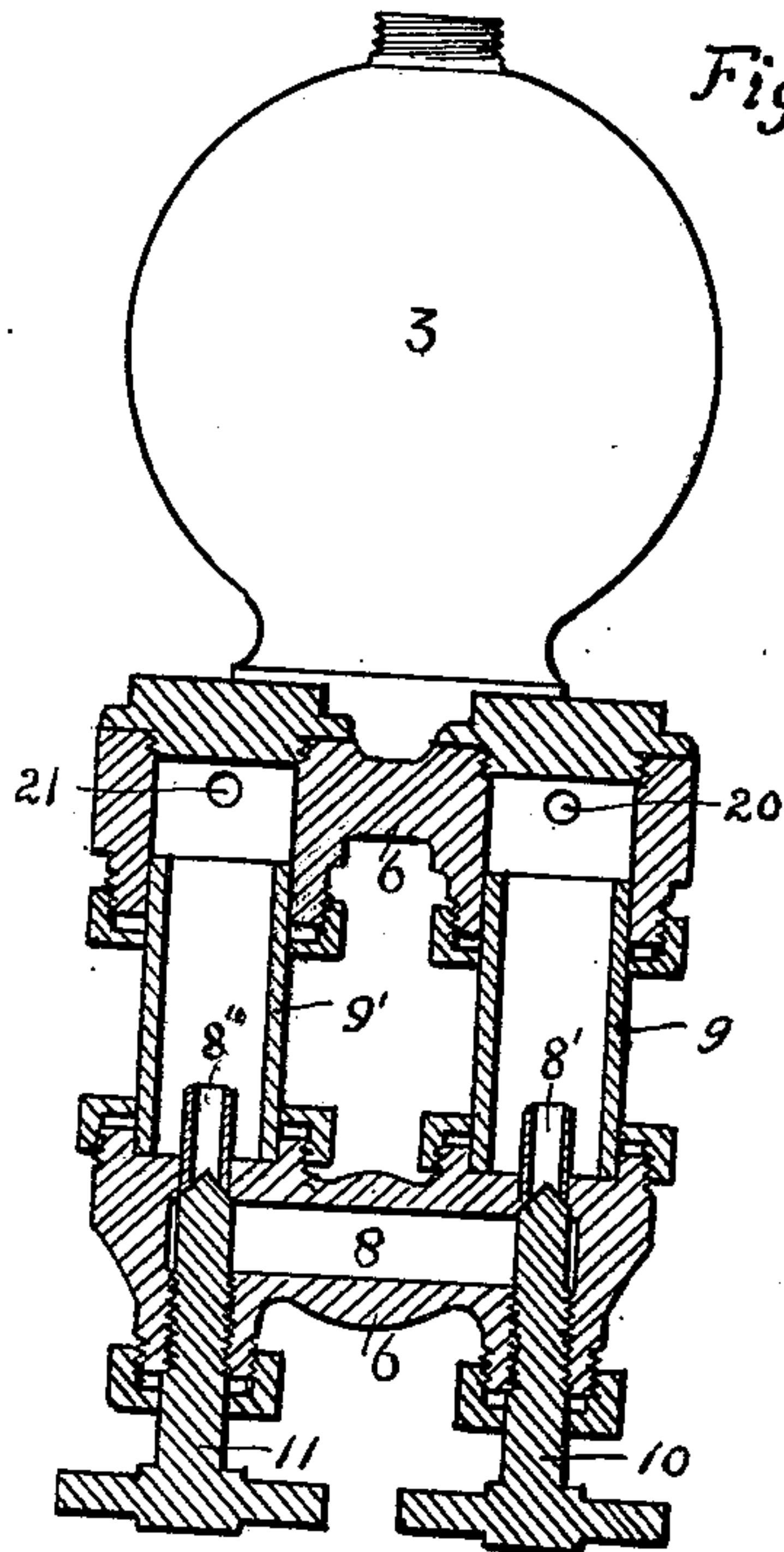


Fig. 5.

Fig. 7.

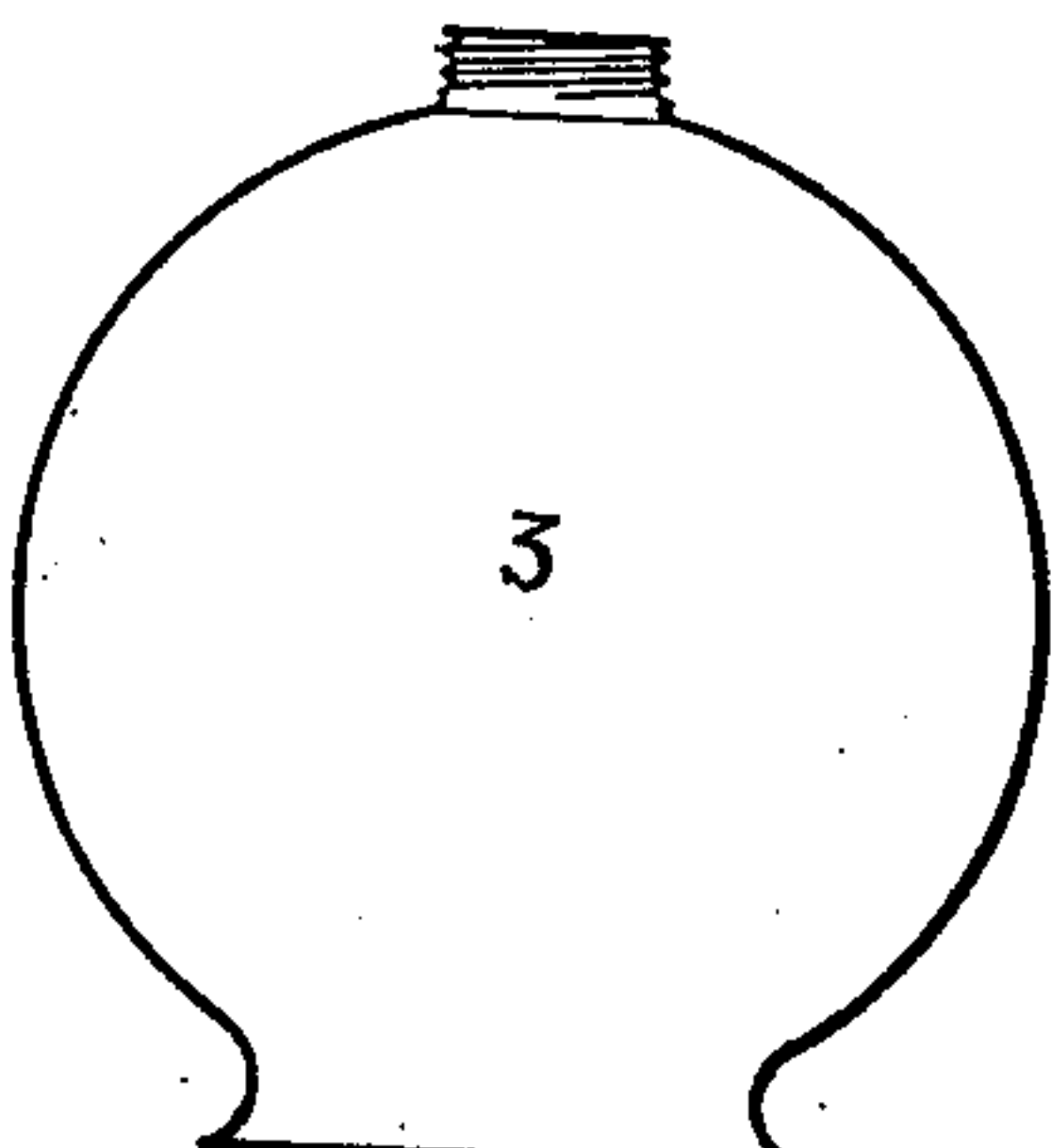
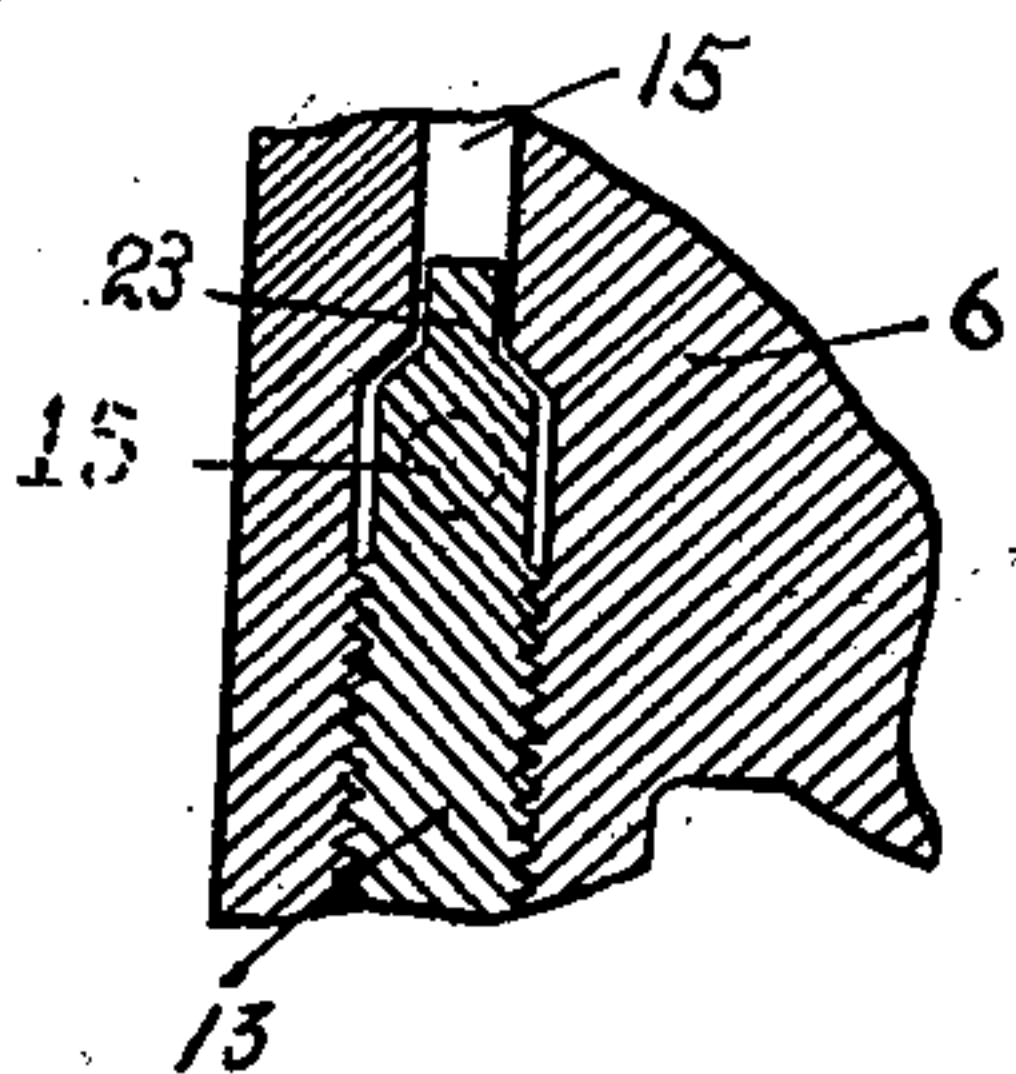
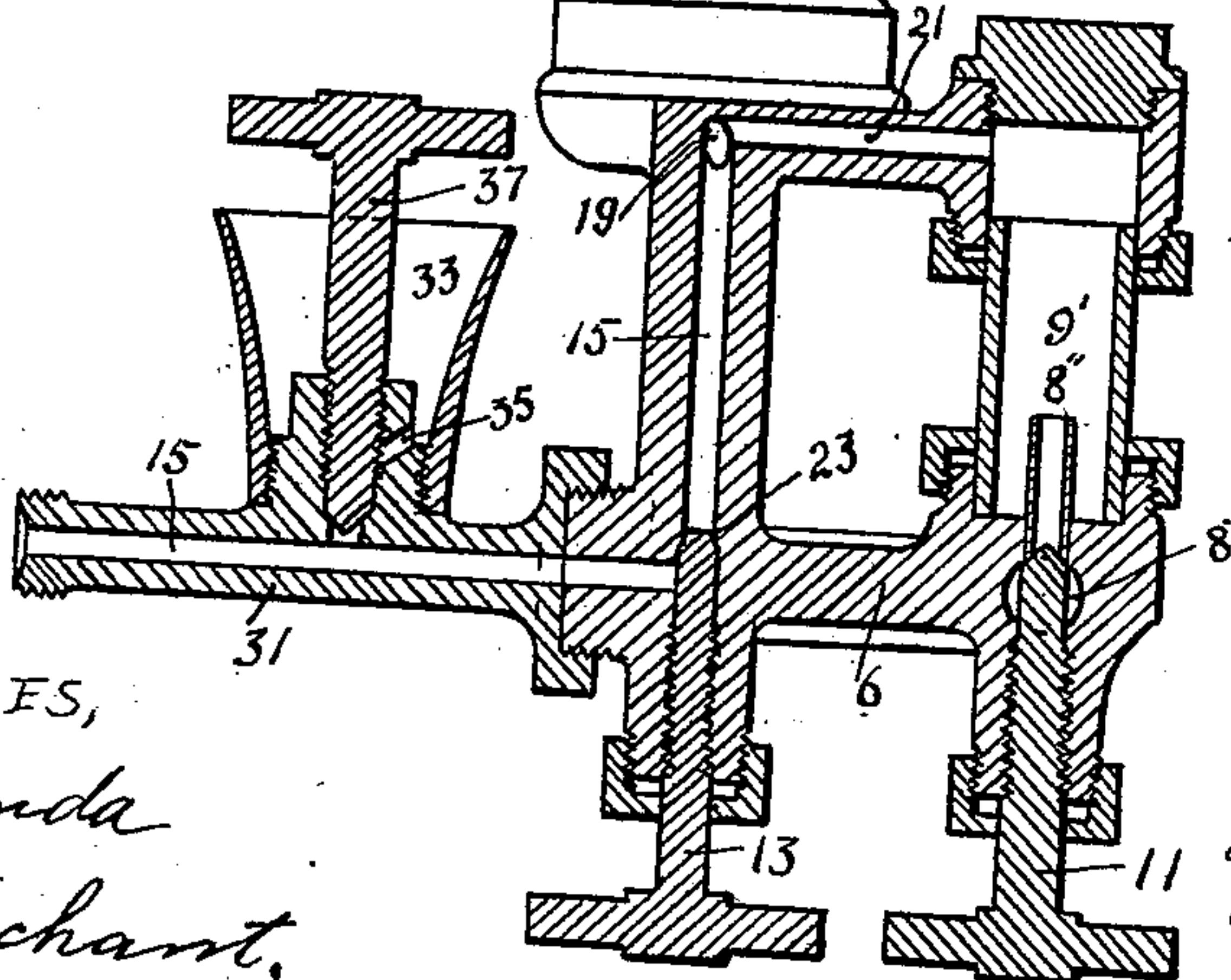


Fig. 6.



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# UNITED STATES PATENT OFFICE.

JOHN F. LEWIS, OF SCRANTON, PENNSYLVANIA.

## LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 653,420, dated July 10, 1900.

Application filed September 15, 1898. Renewed February 17, 1900. Serial No. 5,649. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. LEWIS, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Lubricators; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of lubricators which are used to convey lubricant to the inside of the steam chests and cylinders of locomotive and other engines, and has for its objects to produce a multiple form of such lubricators to carry the lubricant to a plurality of points to be lubricated, greater efficiency and certainty of action than in those heretofore in use, and other objects as set forth in this specification and embodied in the claims.

To these ends the invention consists of the novel construction, arrangement, and combination of parts herein specified, and illustrated in the accompanying drawings.

Referring to the drawings, Figure 1 is a top view of a lubricator embodying my invention having certain parts removed. Fig. 2 is a cross-section taken on the line *xx* of Fig. 1 with the parts replaced. Fig. 3 is a minified general view of the device, showing a mode of attachment to the curved surface of a boiler. Fig. 4 is a view taken in cross-section on the line *yy* of Fig. 2 looking toward the oil-reservoir. Fig. 5 is a view taken in cross-section on the line *zz* of Fig. 2. Fig. 6 is a view taken in cross-section on the line *tt* of Fig. 1. Fig. 7 is an enlarged detail view of the special valve used in the device.

Similar figures of reference refer to similar parts throughout the several views.

The device is composed principally of the three members 1, 3, and 6. 1 is the oil-reservoir, which may be filled by removing the plug 2 and pouring in the lubricant. 3 is a condensing-chamber into which live steam is admitted at 3' and has a passage extending from it through the tube 5 to the reservoir 1. The tube 5 is governed by a valve 7, having

a bore 5' longitudinally bored into the end thereof to accommodate the end of the tube 5, which extends partially into the chamber 1, and the chamber 1 is enlarged at 25 to accommodate the end of the said valve. A passage 28 also extends from the chamber 1 and surrounds the tube 5, connecting with the passage or chamber 8, from which any number of subpassages or conduits might extend. In the illustration shown there are two ducts leading from the said chamber 8 through the sight-feed devices 8' and 8'', which are designed to feed lubricant to the two separate steam-chests of a two-cylinder locomotive-engine, for which the device illustrated is particularly adapted. Fitted into the bracket or member 6 and inclosing the up-drop nozzles 8' and 8'' are glass sight-tubes 9 and 9', from which lead the ducts or passages 20 and 21, emptying, respectively, into the passages or ducts 14 and 15, which lead from the tops of the tubes 16 and 17 in the condenser 3. They lead from 6 through the connections or nozzles 30 and 31, respectively, which are adapted to have coupled to them smaller pipes leading, respectively, to the right and left cylinders of the locomotive. The parts 30 and 31 have attached to them the old-fashioned grease-cups 32 and 33, adapted to be used in emergencies. They are adapted to be closed by the valves 36 and 37 and provide for the ordinary method of lubricating should the other parts of the device become broken or damaged. The passages 8' and 8'' are controlled, respectively, by the turn-valves 10 and 11, and the passages 14 and 15 are controlled after their junction with the passages 20 and 21, respectively, by the turn-valves 12 and 13, respectively. The valves 12 and 13 have cylindrical projections 22 and 23 fitting loosely into the round passages 14 and 15, so that when the valve is turned a round or two the contents of the passage may be forced through the small annular openings thus provided for it. The receiver 30 is adapted to be screwed onto a short threaded shank on the top of the member 6, and the valve 7 is screw-threaded into a lug 27, projecting downward on the inside of the reservoir 1. The stem of the valve 7 must be inserted therein before the handle 7' is fastened thereon. The member 6 is attached to the reservoir 1 by means of the



threaded shank 24, which is screwed into the threaded boss 25. The inner rim of the said shank 24 is also ground off to make a valve-seat 29. Shank 24 is also provided with a nut 26, adapted to secure the device to any suitable standard.

The operation of the device is as follows: The drain-passage 1' of the reservoir 1 is suitably closed and the reservoir filled with any suitable oil for lubricating purposes. A live-steam pipe connecting with the steam-boiler is attached at 3', and the lubricant-pipes, reaching to the steam-chests of the cylinders, are suitably attached to the members 30 and 31 of the device. The turn-valve 7 is now opened and all of the other valves except 36 and 37, which are never opened during the operation of the main part of the device. Condensation-water collecting in the chamber 3 is conducted downward through the passage 4, passing through the tube 5 into the recess 5' and passing through the open annular space between the inner walls of the tube 5, whereupon it drops downward and collects on the bottom of the reservoir 1, at the same time displacing and forcing the lubricant through the annular space 28 and into the chamber 8, where it spreads and passes upward through the nipples 8' and 8". The condensation-water from the tubes 16 and 17 will also gradually fill the sight-tubes 9 and 9', which are made of glass, with water, and the lubricant is floated thereby out through the passages 20 and 21, respectively, by means of which it is emptied into the out-leading passages 14 and 15, respectively. The crooks 18 and 19 in the passages 14 and 15 respectively serve as traps by collecting water in their lower angles, so as to prevent lubricant from passing upward through the passages 14 and 15 should they become filled with condensation-water. Since the oil in that case might pass upward through one of them, it being buoyed by the water, and then float on the level of the condensation-water, which in such case being as high as the upper ends of the tubes 16 and 17, the oil would be carried down the other tube, which being empty would convey it to one of the cylinders of the engine, so that the attendant would not be aware that both sides were not being lubricated. It is to prevent this occurrence for which these particular features of my invention are designed. The ends of the tubes 16 and 17 are intended to extend above the level of the condensation-water which may be contained in the chamber 3 and are each intended to conduct a jet of live steam out through the passages 14 and 15. The valves 22 and 23, respectively controlling passages 14 and 15, are not fully turned open during the operation of the device; but the cylindrical portions 22 and 23 form annular narrow passages through which the live steam forces the lubricant and sprays it. Of course the jet is allowed to be strong enough to continue to

drive the lubricant through the passages to the steam-chests of cylinders to be lubricated.

The parts 30 and 31, which are attached to threaded shanks on the member 6, so as to continue the passages 14 and 15, respectively, are adapted to be used by filling the cups 32 and 33 with lubricant, then unscrew the valves 36 and 37, when by closing the throttle of the engine while under headway the lubricant is drawn downward through the passages 34 and 35 by the partial vacuum formed in the cylinders. This is never done unless from some cause the regular mechanism is out of order.

An advantage in the construction of the valves 12 and 13 is that a partial turn or a number of turns of the said valves will not change the effect or the size of the opening through which the lubricant is sprayed, and therefore may be turned in the dark by the attendant to stop or start the lubricant, while the valves 10 and 11 are not interfered with except at such times when the drop or lubricant may be seen passing up through the respective tubes 9 and 9'. It is during the time that the valves 12 and 13, or one of them, may be turned off that the tubes 16 and 17 collect full of condensation-water, but with the traps 18 and 19, which I have arranged in the passages, the lubricant is prevented from passing up through said tubes, and when either of the valves are open in the usual way the pressure of the steam immediately drives the condensation-water collected therein out through the annular openings and then delivers lubricant as before. By the arrangement of closing the passages 4 and 28 by the one valve 7 and by the extending of the end of the tube 5 into the recess 5' of the said valve I prevent a difficulty common with lubricators—viz., a mixing or emulsifying of the oil and water as the hot condensation-water is entering into the reservoir 1. By my plan the water will drop down from the end of the tube 5, while the oil will pass outward through the passage 28 from the edge of the reservoir. An advantage is also gained by having but the one valve 7 to turn in closing off both these passages, and when the said valve is closed off the passage 1' may be opened and condensation-water drained off and the plug 2 removed for replenishment of the reservoir.

Having thus described my invention, what I claim is—

1. In a lubricator of the kind described, an oil-reservoir and a condenser, the said condenser situated at a higher level than said reservoir and having a passage for condensation-water leading thereto through a tube projecting into the upper part of said reservoir in substantially a horizontal position, the said horizontal tube leading through an annular passage-way provided for the exit of lubricant and adapted to contain a considerable portion thereof, in combination with a valve having a cup-shaped end adapted to cover the end of



the tube aforesaid projecting into the oil-reservoir, and to form with the said annular passage around it, a temporary substitute for the oil-reservoir during the process of refilling, substantially as specified.

2. In a lubricator of the kind described having an oil-reservoir and condenser adapted to drive oil thereout by condensation-water, the combination of an induction-tube leading from said condenser in a substantially-horizontal position and projecting inward of said reservoir and adapted to lead condensation-water therein, with an annular induction-passage for lubricant surrounding said induction-tube, and delivery-passages extending from said annular passage with a cup-shaped valve

adapted to cover the projecting end of the induction-tube aforesaid, and simultaneously to close the annular passage surrounding it, the said induction-tube adapted to communicate with the interior of the oil-reservoir through the annular space in the hood or cup of the valve covering it when the said valve is open, for the purpose described, substantially as specified.

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

JOHN F. LEWIS.

Witnesses:

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A. J. BRANDA.