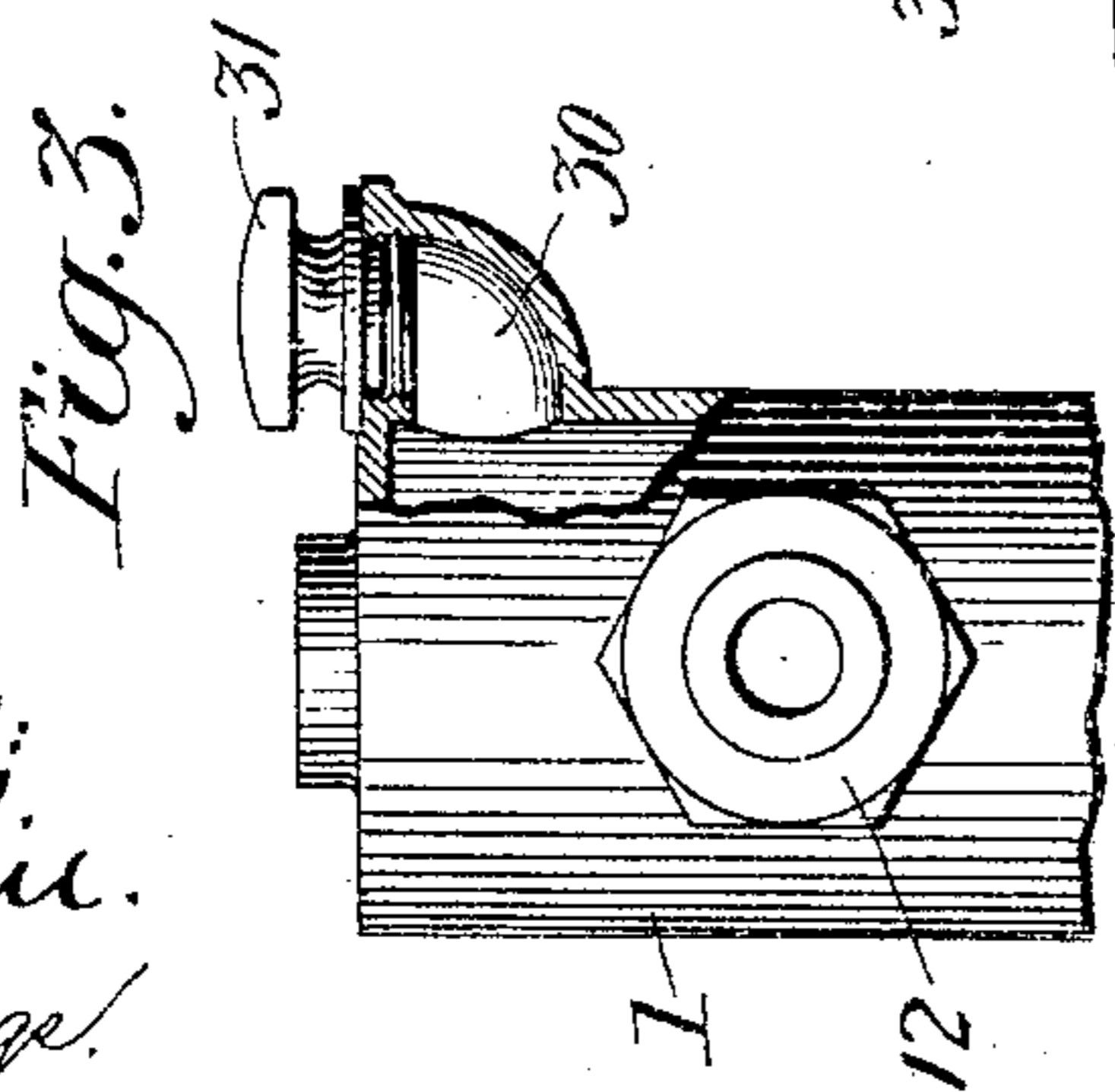
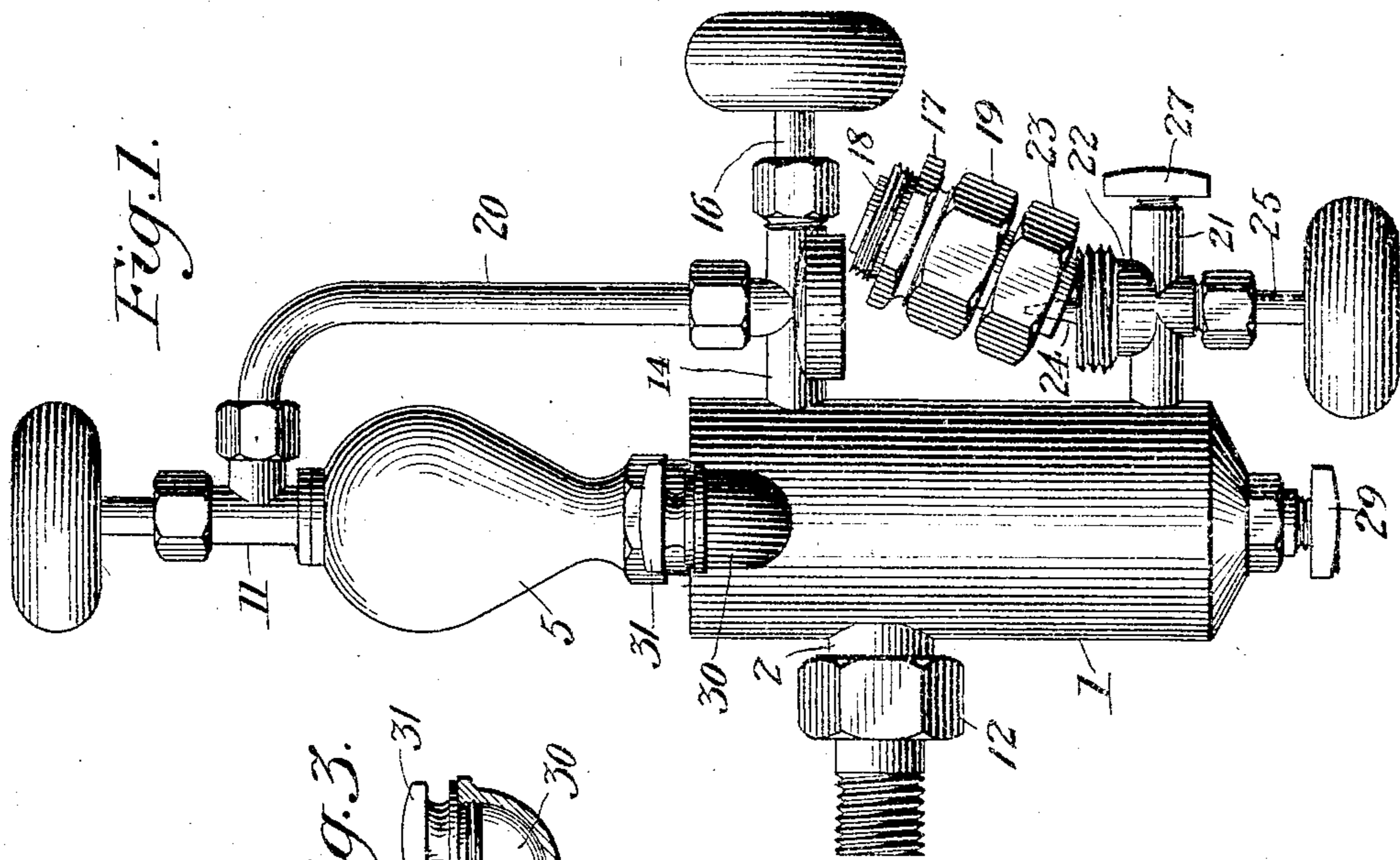
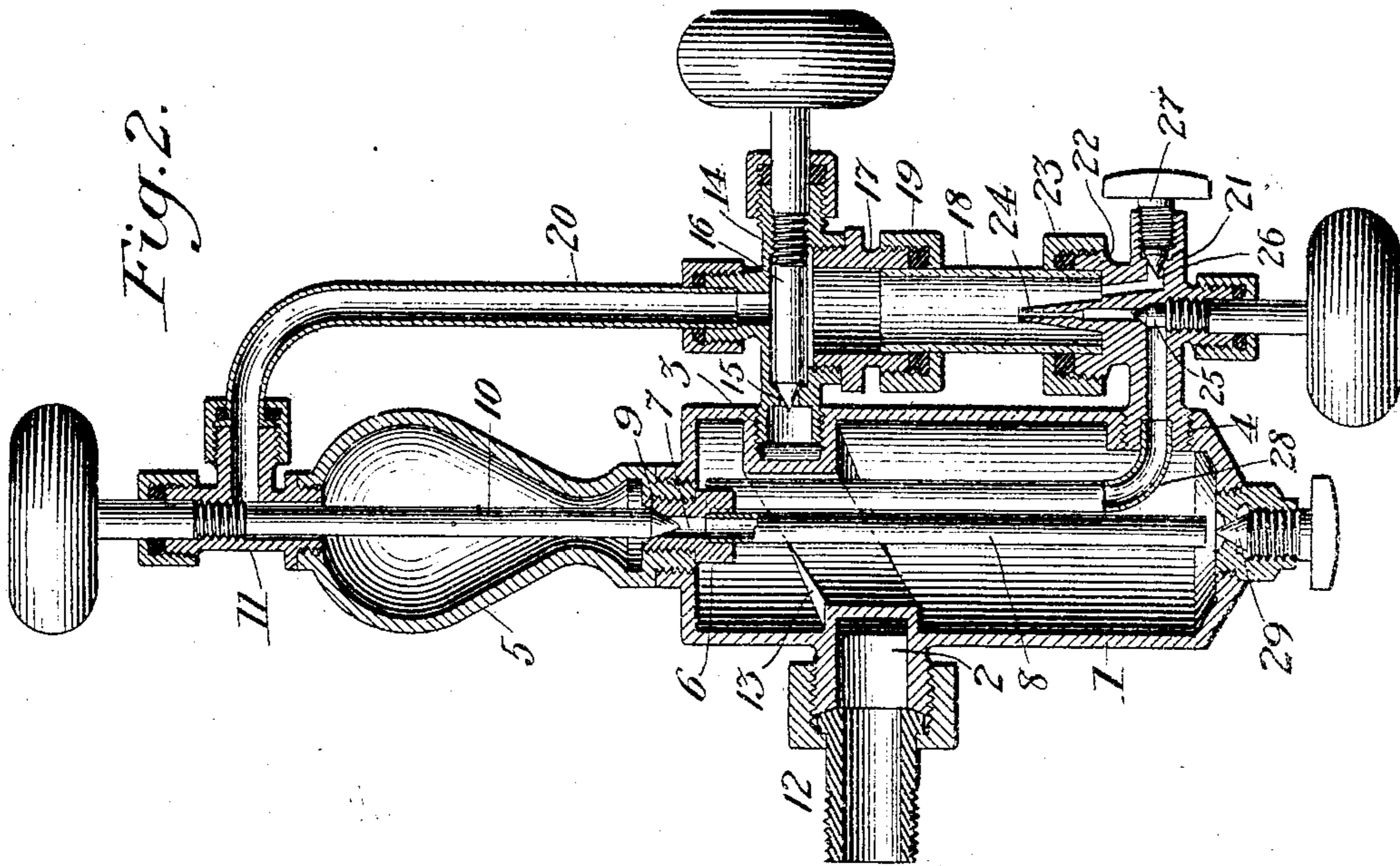


No. 777,765.

PATENTED DEC. 20, 1904.

C. B. ALLEN.  
CYLINDER LUBRICATOR.  
APPLICATION FILED APR. 8, 1904.

NO MODEL.



Witnesses:  
D. W. Edelin.  
Ada C. Briggs.

Inventor:  
Charles B. Allen  
by W. H. Finckel Atty.

# UNITED STATES PATENT OFFICE.

CHARLES B. ALLEN, OF WADSWORTH, OHIO.

## CYLINDER-LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 777,765, dated December 20, 1904.

Application filed April 8, 1904. Serial No. 202,242.

*To all whom it may concern:*

Be it known that I, CHARLES B. ALLEN, a citizen of the United States, residing at Wadsworth, in the county of Medina and State of Ohio, have invented a certain new and useful Improvement in Cylinder-Lubricators, of which the following is a full, clear, and exact description.

This invention relates to a sight-feed condensation-displacement lubricator for use upon the cylinders of steam-engines and for other purposes. In some lubricators of this class two connections with the steam-supply pipe are required, while in others only a single connection is necessary.

The invention consists of a single steam-connection sight-feed condensation-displacement lubricator having a novel water-valve controlling communication between the condenser and the oil-bowl; a steam-passage within the oil-bowl half-way round from the steam-inlet to the upper feed-arm, thus exposing the oil constantly to heat, and arranged at an incline extending downwardly from the feed-arm to the steam-inlet, so as to cause the oil to discharge into the steam-pipe by gravity; a novel arrangement of pressure-equalizing pipe interposed externally between the condenser and the upper feed-arm and in line with the feed-tip and serving to slightly reduce the downwardly-acting pressure, and thereby cause a positive oil-feed, and a sight-tube connection easily disconnected for removing and replacing the said tube, all as I will proceed now more particularly to set forth and finally claim.

In the accompanying drawings, illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a side elevation with the sight-tube couplings displaced to show the removability of the said tube. Fig. 2 is a longitudinal section with some parts in elevation. Fig. 3 is an elevation of part of the oil-bowl, showing the oil-supply tube in section.

1 is the oil-bowl, herein shown cylindrical, but which may be of any approved shape, and having a steam-connection nipple 2, an upper

feed-arm socket 3, and a lower feed-arm socket 4. The condenser 5 is tapped in the top of the oil-bowl, and its lower end is supplied with a screw-plug 6, having a longitudinal bore 7, from the lower end of which depends the tube 8, which extends nearly to the bottom of the bowl. In the upper end of the plug is a valve-seat 9, which receives the valve 10, shown as a needle-valve, tapped in a T-fitting 11, which is tapped in the top of the condenser. The plug 6, needle-valve 10, and the fitting 11 constitute the water-valve, which controls communication between the condenser and oil-bowl and opens into the lower portion of the bowl, so as to admit water in the first instance below the oil, and all these parts are in a straight line. Ordinarily the water-valve is a common globe or similar valve placed between the condenser and oil-bowl, or else it is formed as a part of the oil-bowl by intricate coring or drilled passages, involving difficulties in cleaning and repairing and expensive to replace. By my construction this valve is greatly simplified, easily cleaned by passing a wire directly through in a straight line, and should the valve-seat be worn it may be readily and inexpensively replaced.

The steam-connection nipple is adapted to be connected with the steam-pipe—for example, the engine-cylinder steam-pipe—by a suitable coupling 12. This nipple is arranged at a lower point on the oil-bowl than the upper feed-arm, and the two are connected by a duct 13, cast with the oil-bowl and extending half-way round the same at an incline. This duct extends thus within the oil-level of the bowl and imparts the heat of the steam to the oil, and so insures its fluidity at all times of use, and not only so, but being inclined downwardly from the upper feed-arm to the steam-pipe, whence the oil flows to the part to be lubricated, gravity is availed of for insuring the flow of the oil.

The upper feed-arm 14 is cruciform, is tapped in the socket 3, has a valve-seat 15 opening into the duct 3 and a needle-valve 16 engaging said seat for controlling communication between the feed-arm and the said duct,

and has a coupling-nipple 17 tapped in it to receive the upper end of the sight-tube 18, which is secured thereto in a fluid-tight manner by a packed nut 19. The upper feed-arm 5 also has an outside upright pipe 20, connecting it with the condenser-fitting 11, and this pipe is arranged centrally or in line with the sight-tube 18. The lower feed-arm 21 has a nipple 22, in which the lower end of the sight-tube 10 is seated and to which it is secured in a fluid-tight manner by a packed nut 23. From the nipple 22 rises the oil tip or nozzle 24 in line with the pipe 20. This oil-nozzle is provided with a needle-valve 25, tapped into the 15 lower feed-arm from below. A draining-duct 26 is also supplied in the lower feed-arm and is controlled by a needle-valve 27, so as to open communication between the sight-tube and the external atmosphere for cleaning out the 20 tube. The lower feed-arm opens into a vertically-arranged oil-feed pipe 28 within and extending nearly to the top of the oil-bowl, so as to be capable of feeding off practically all of the oil. The bottom of the oil-bowl is 25 supplied with a plug-valve 29 for draining and cleaning purposes. As indicated in Fig. 1, by unscrewing the nuts 19 and 23 and the nipple 17 the glass sight-tube may be readily got at for renewal and other purposes. The 30 oil-bowl is filled through a laterally-arranged filling-tube 30, having a screw-cap 31.

While needle-valves are herein shown and preferred, I do not wish to be understood as limiting the invention to their use, and, further, the several valves are herein shown as 35 provided with suitable handles or hand-wheels for operating them; but obviously any suitable operating means may be used.

The operation is as follows: Suppose the 40 steam-nipple 2 to be connected to steam-pipe leading to a cylinder to be lubricated and all of the valves closed. Then oil is introduced into the oil-bowl through filling-tube 30, which is afterward closed. The valve 16 is then 45 opened and steam admitted through duct 13 into the upper feed-arm, whence part of it condenses in and fills the glass sight-tube 18 and part flows through pipe 20 into the condenser and therein condenses. Valve 10 is 50 then opened, and the water of condensation flows through pipe 8 beneath and raises the oil, which overflows into pipe 28 and thence into the lower feed-arm. Valve 25 having been opened, the oil escapes in drops through 55 the nozzle 24 into the sight-tube and floats up into the upper feed-arm through the valve-seat 15 and into the duct, down which its passage is aided by gravity into the steam-pipe, and thence to the cylinder to be lubricated. The quantity of oil fed is controlled 60 by the valve 25. Since the steam-pressure is equal throughout, it follows that the oil is fed by the added pressure of the head of wa-

ter in the condenser. In other single-connection lubricators the steam-pipe connecting 65 the steam-supply and the condenser has been necessarily connected to the steam-supply at some point other than in line with the feed tip or nozzle; but by my construction of the straight-line connection there results a slight 70 reduction of the downwardly-acting pressure, probably by reason of the greater volume of upward flow of steam, and hence the oil-feed is much more positive and regular.

While I have entitled my invention herein a 75 "cylinder-lubricator" and have so referred to it in the claims, I wish to be understood as not limiting the invention to its application to "steam-engine cylinders," technically so known, inasmuch as I am aware that the in- 80 vention is applicable for the lubrication of other mechanism.

What I claim is—

1. In a lubricator, the combination of an oil-bowl, a condenser mounted thereon, a plug 85 interposed between the oil-bowl and the condenser at the point of union of the two and having a valve-seat at its upper end, a fitting at the top of the condenser, a needle-valve mounted in said fitting and cooperating with 90 the said valve-seat in the plug, and a tube extending from the bottom of the plug to near the bottom of the oil-bowl.

2. In a lubricator, an oil-bowl, a steam connection thereon, an upper feed-arm located 95 above the steam connection, and a duct formed on the wall of the oil-bowl and within said oil-bowl and connecting the steam connection and the upper feed-arm at an incline.

3. In a lubricator, an oil-bowl, a steam con- 100 nection and an upper feed-arm located oppositely on said oil-bowl and at different altitudes, and a duct formed on the inner wall of the oil-bowl and connecting the steam connection and upper feed-arm, and serving also in 105 use as a heater for the oil in the oil-bowl.

4. In a lubricator, an oil-bowl having an internal, downwardly-inclined steam and oil duct formed on the wall of the oil-bowl, a feed-arm socket at the upper end of said duct, 110 and a steam connection at the lower end of said duct.

5. In a lubricator, an oil-bowl, a lower feed-arm provided with an upwardly-projecting oil-nozzle, an upper feed-arm, a sight-tube 115 interposed between said feed-arms and surrounding the oil-nozzle, a condenser mounted upon the oil-bowl, and an equalizing-pipe arranged outside of the condenser and upper feed-arm and connecting the said condenser 120 and the upper feed-arm in line with the oil-nozzle.

6. In a lubricator, an oil-bowl, a lower feed-arm provided with an upwardly-projecting oil-nozzle, an upper feed-arm, a sight-tube 125 interposed between the said feed-arms and

surrounding the oil-nozzle, and means for readily disconnecting said sight-tube, a condenser mounted upon the oil-bowl, and an upright equalizing-pipe arranged outside of the  
5 condenser and upper feed-arm and connecting the said condenser and the upper feed-arm in line with the oil-nozzle.

In testimony whereof I have hereunto set my hand this 6th day of April, A. D. 1904.

CHAS. B. ALLEN.

Witnesses:

S. C. DURLING,  
J. H. DURLING.