

No. 640,576.

Patented Jan. 2, 1900.

E. H. LUNKEN.
LUBRICATOR.

(Application filed Dec. 17, 1897.)

(No Model.)

5 Sheets—Sheet 1.

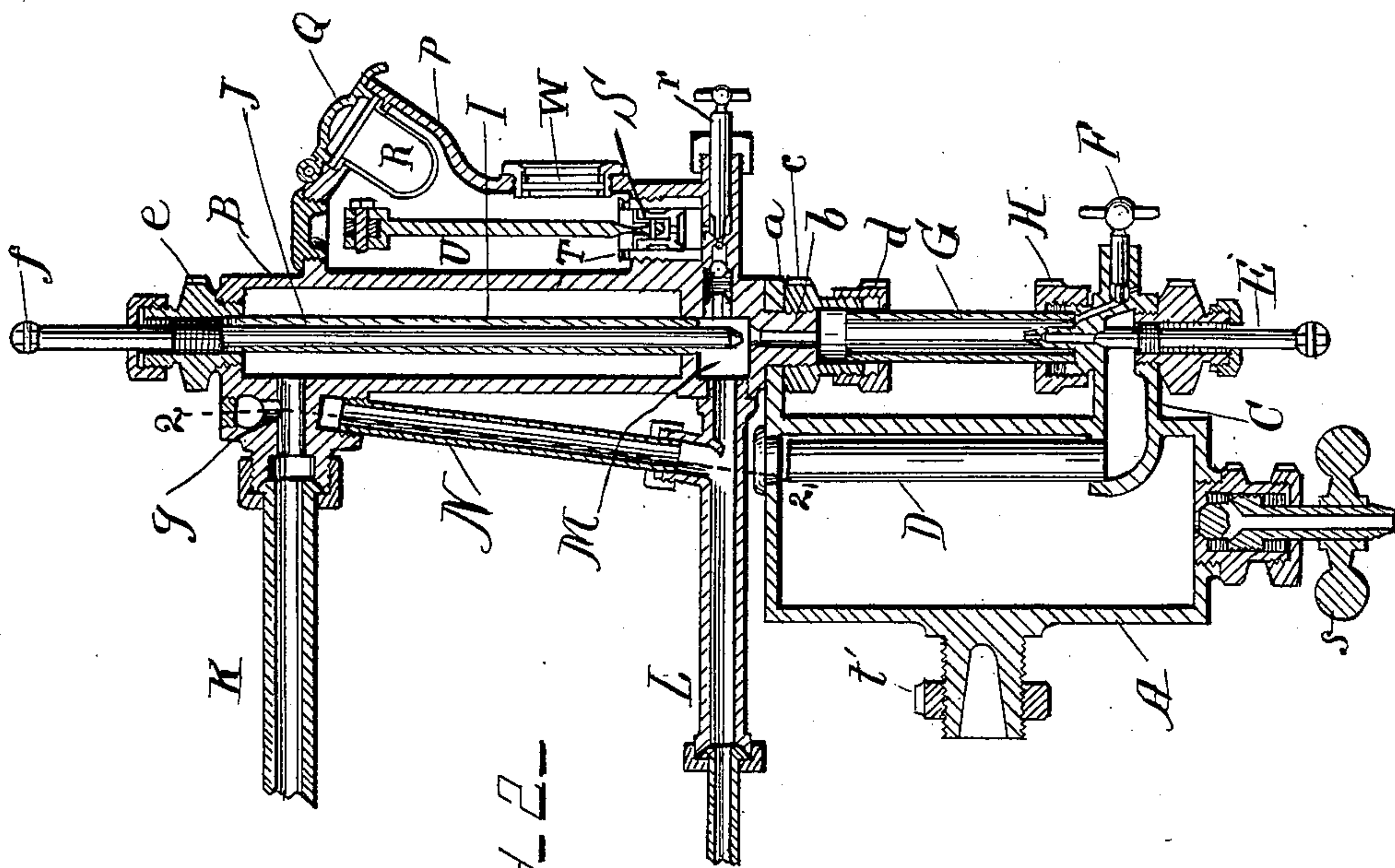


Fig. 2—

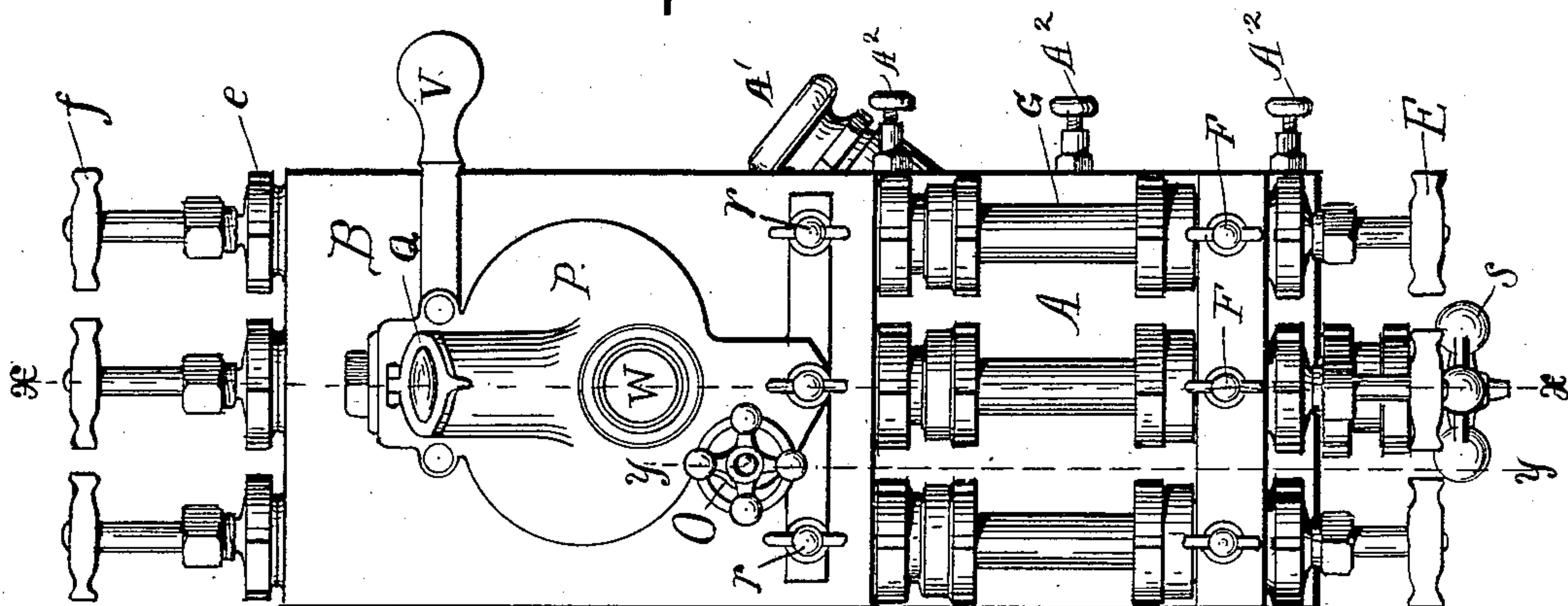


Fig. 1—

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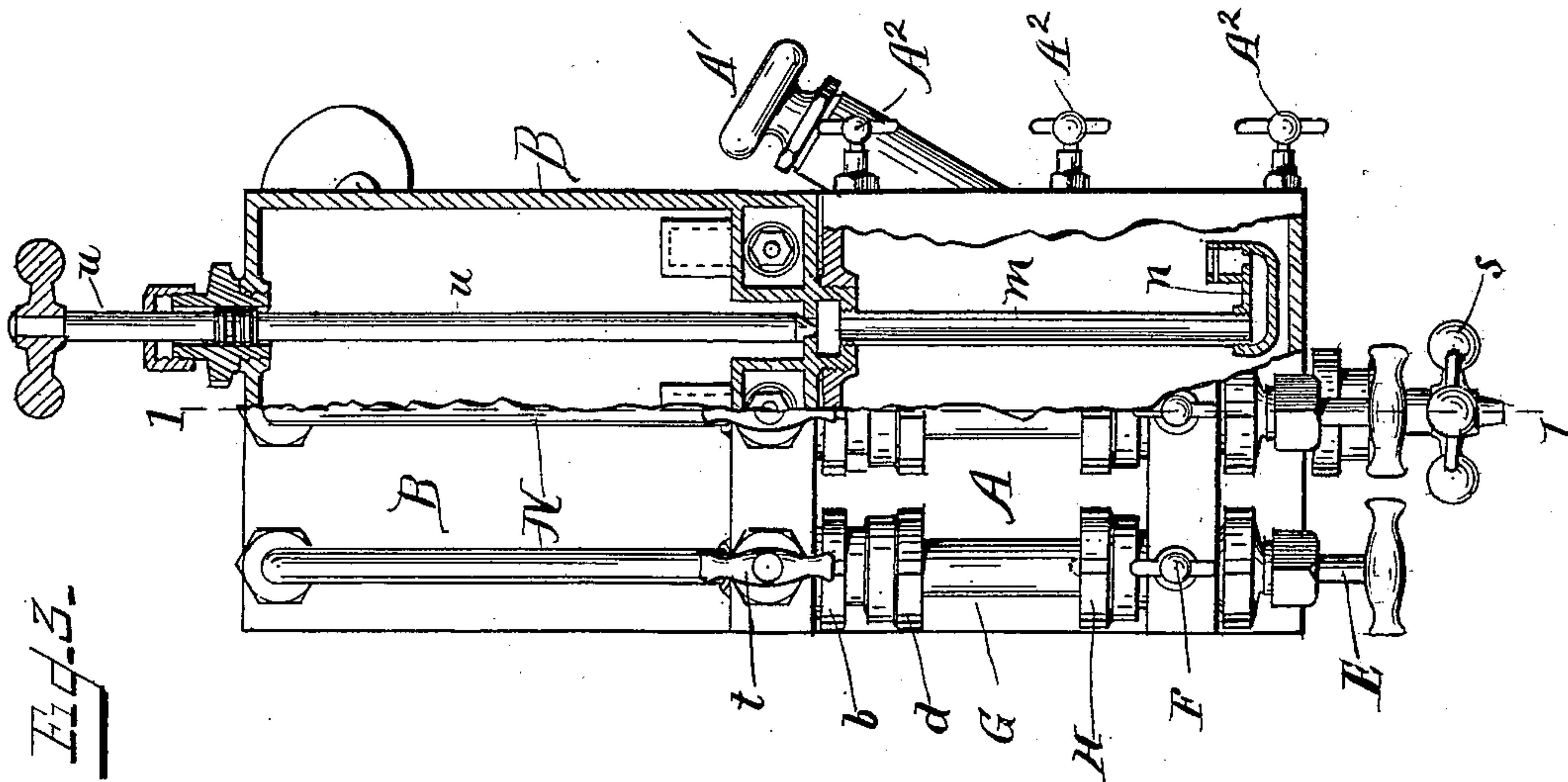
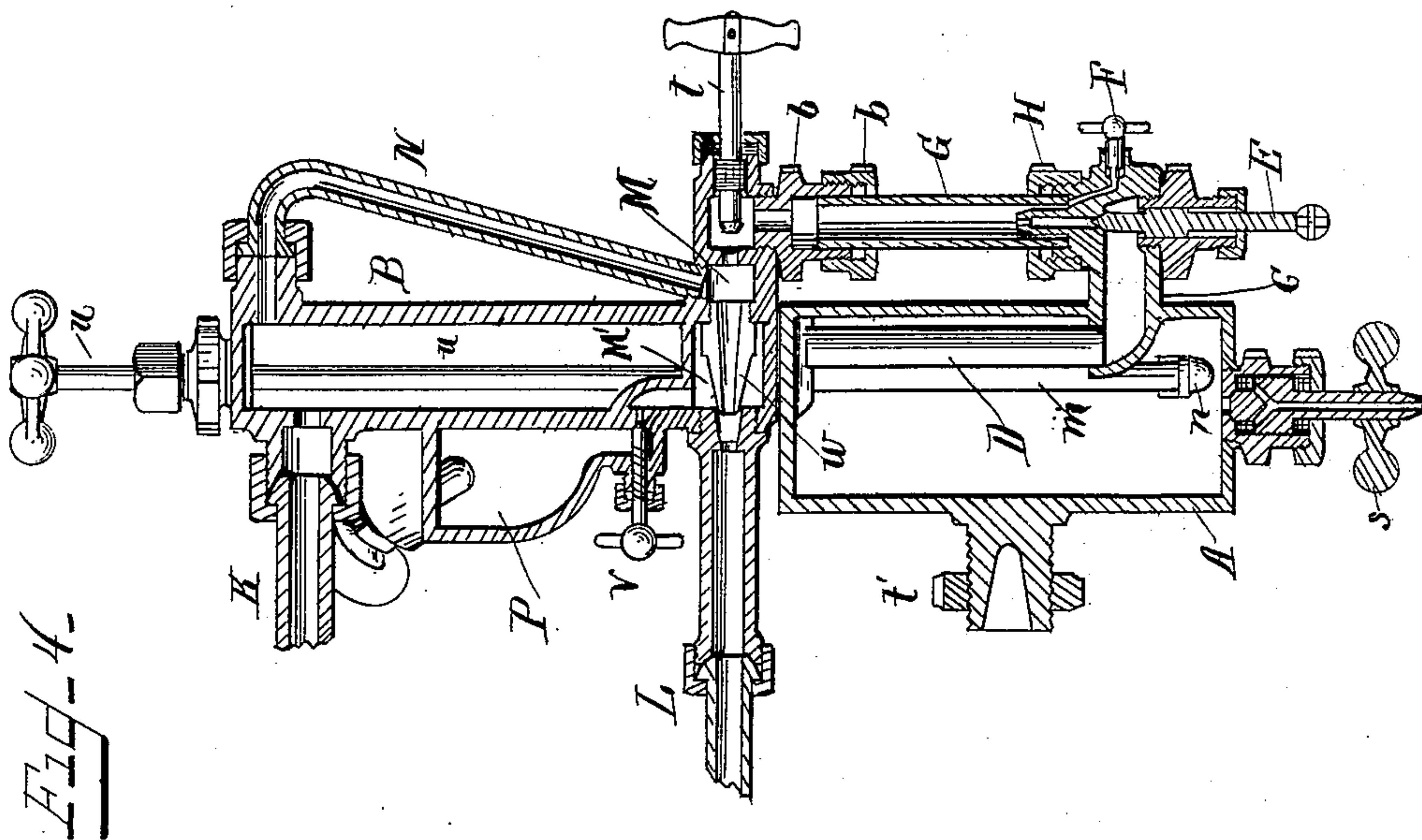
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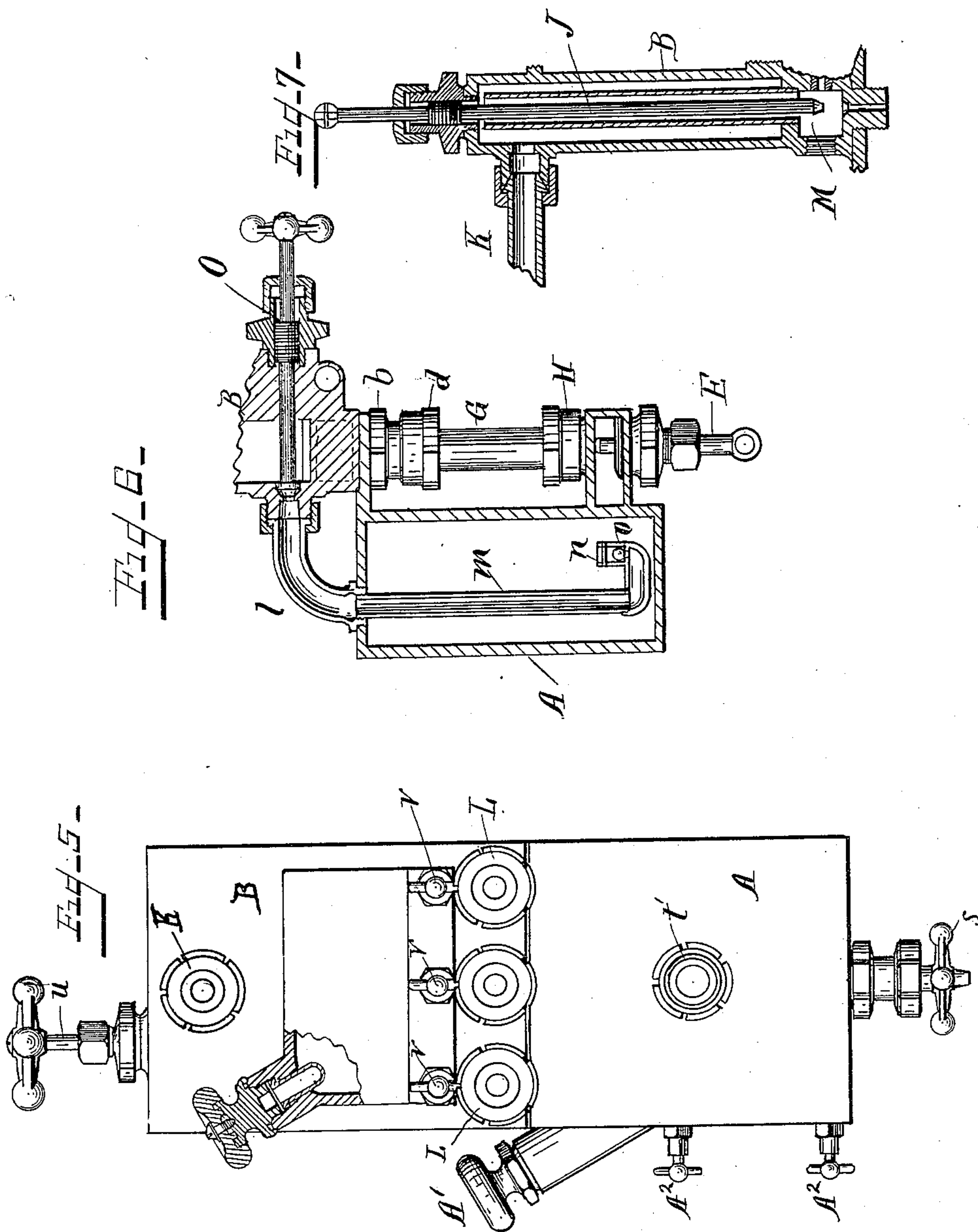
Patented Jan. 2, 1900.

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5 Sheets—Sheet 3.



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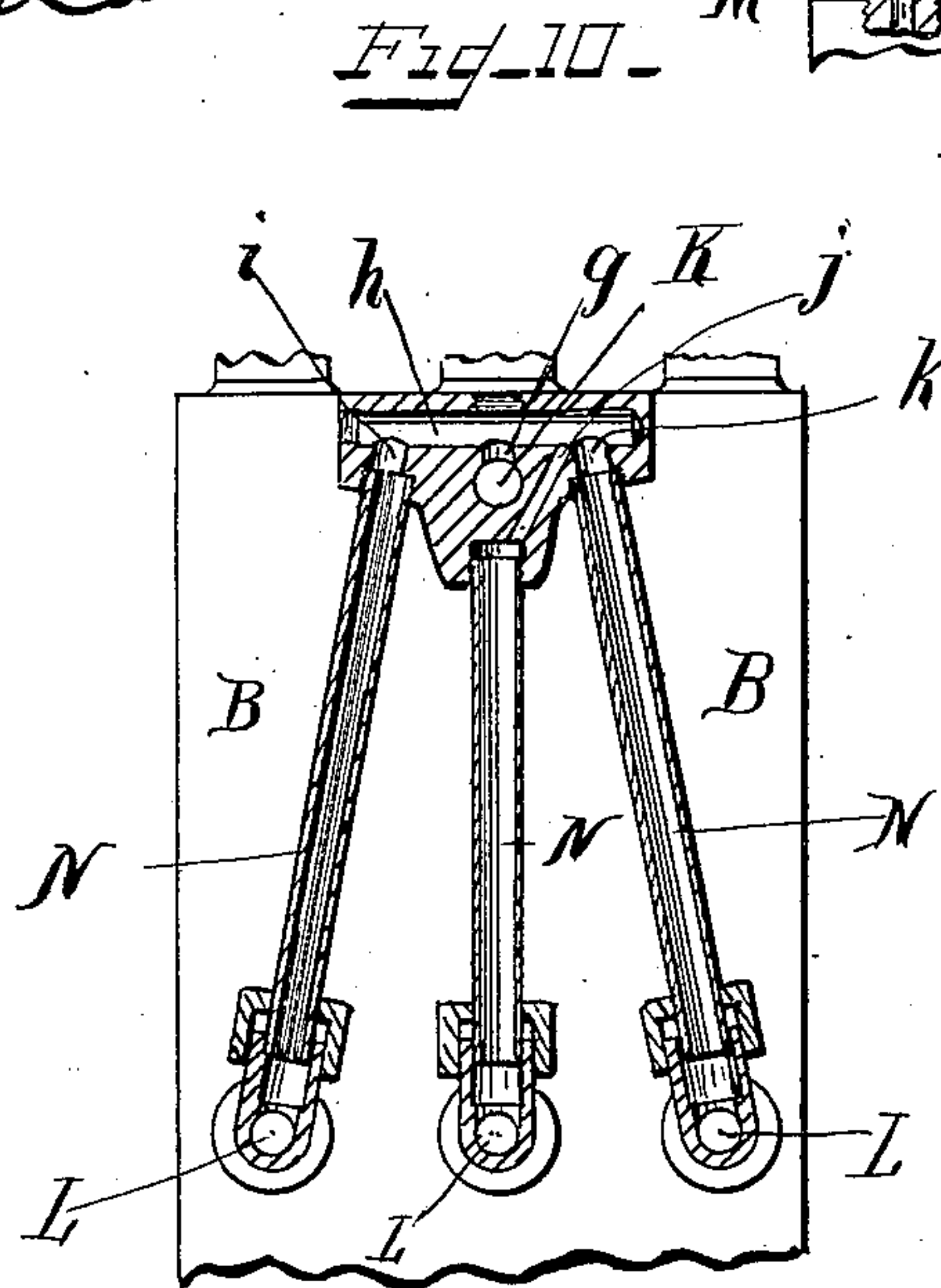
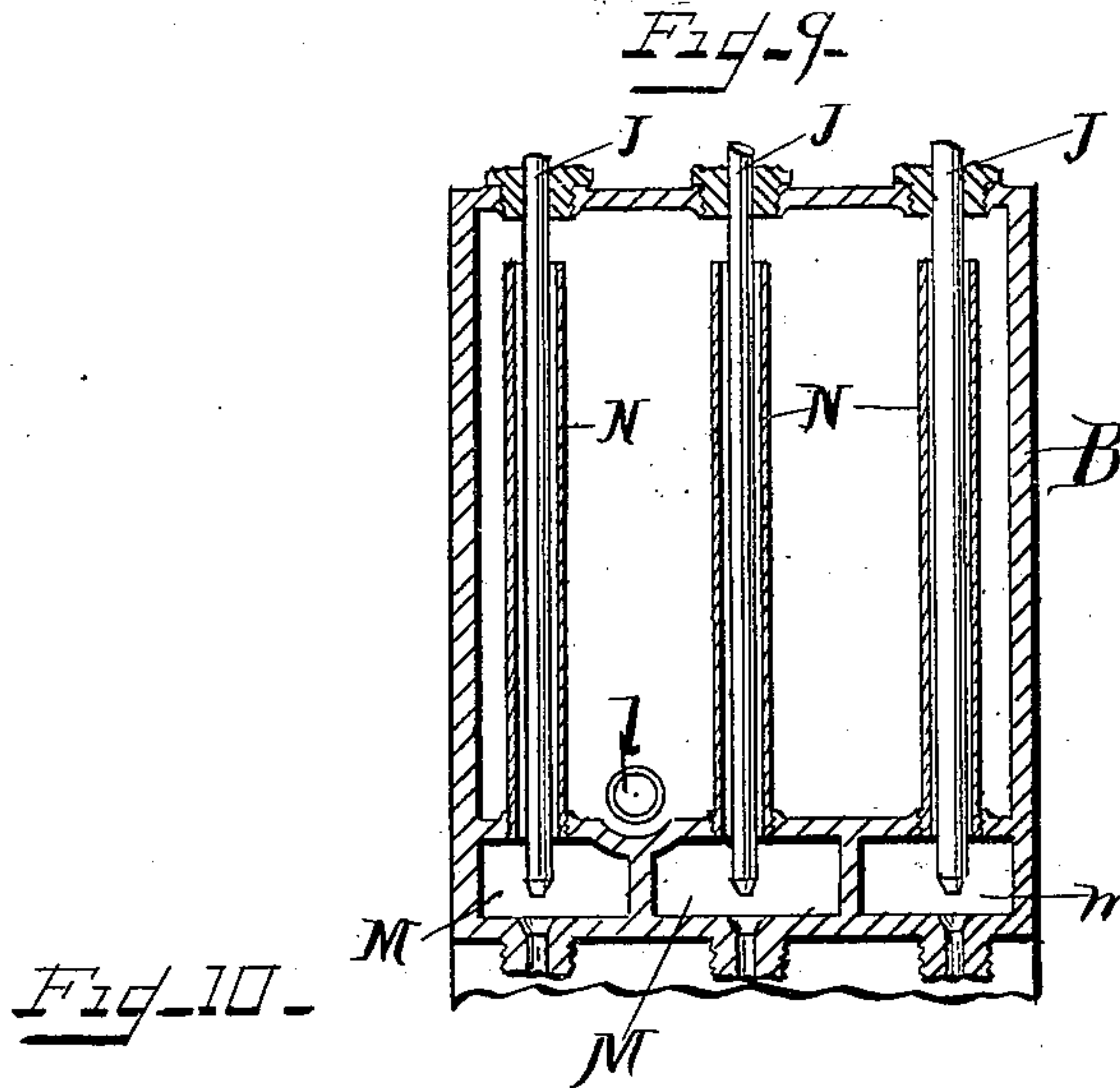
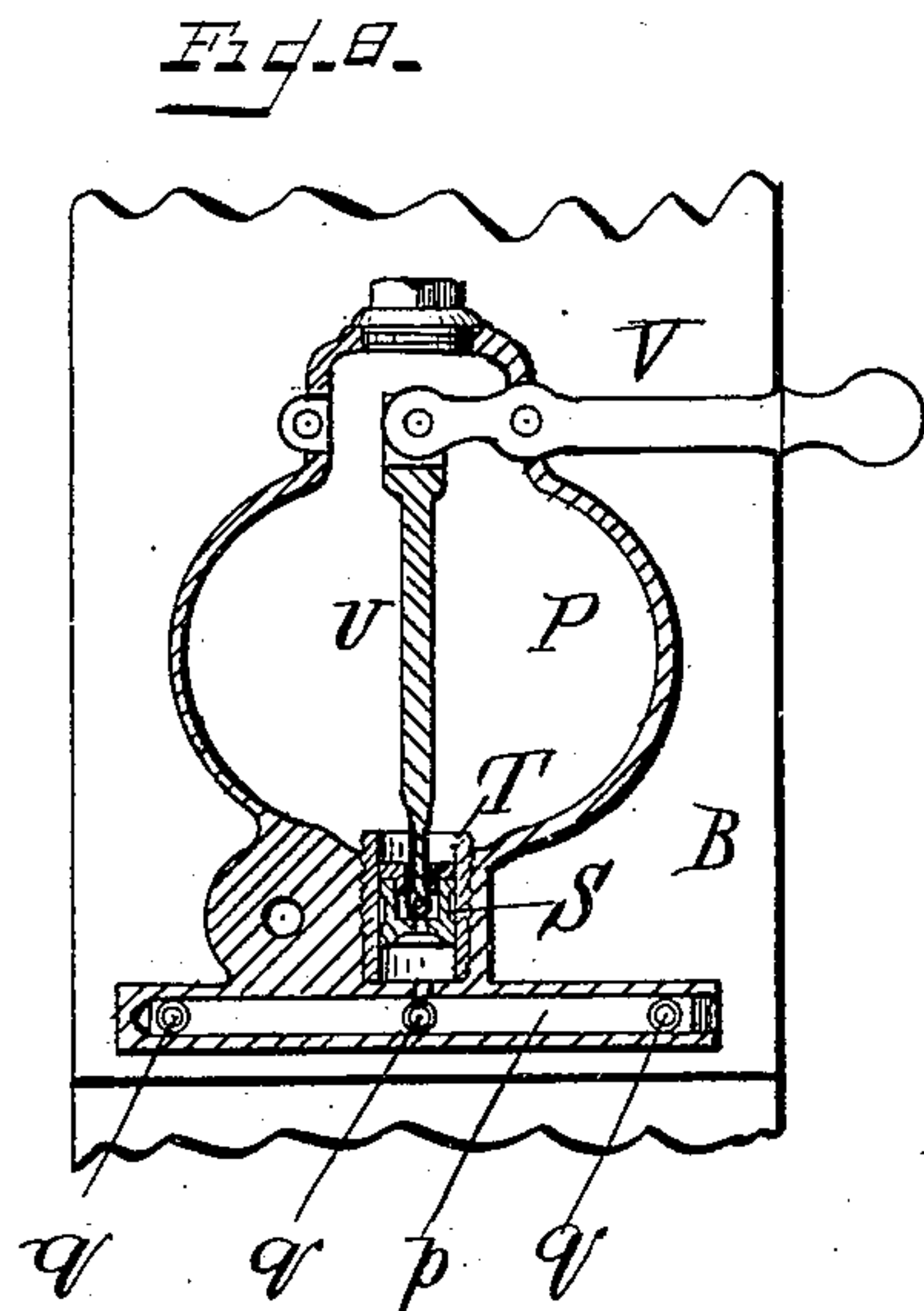
Patented Jan. 2, 1900.

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5 Sheets—Sheet 4.



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Patented Jan. 2, 1900.

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(No Model.)

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Fig. 12.

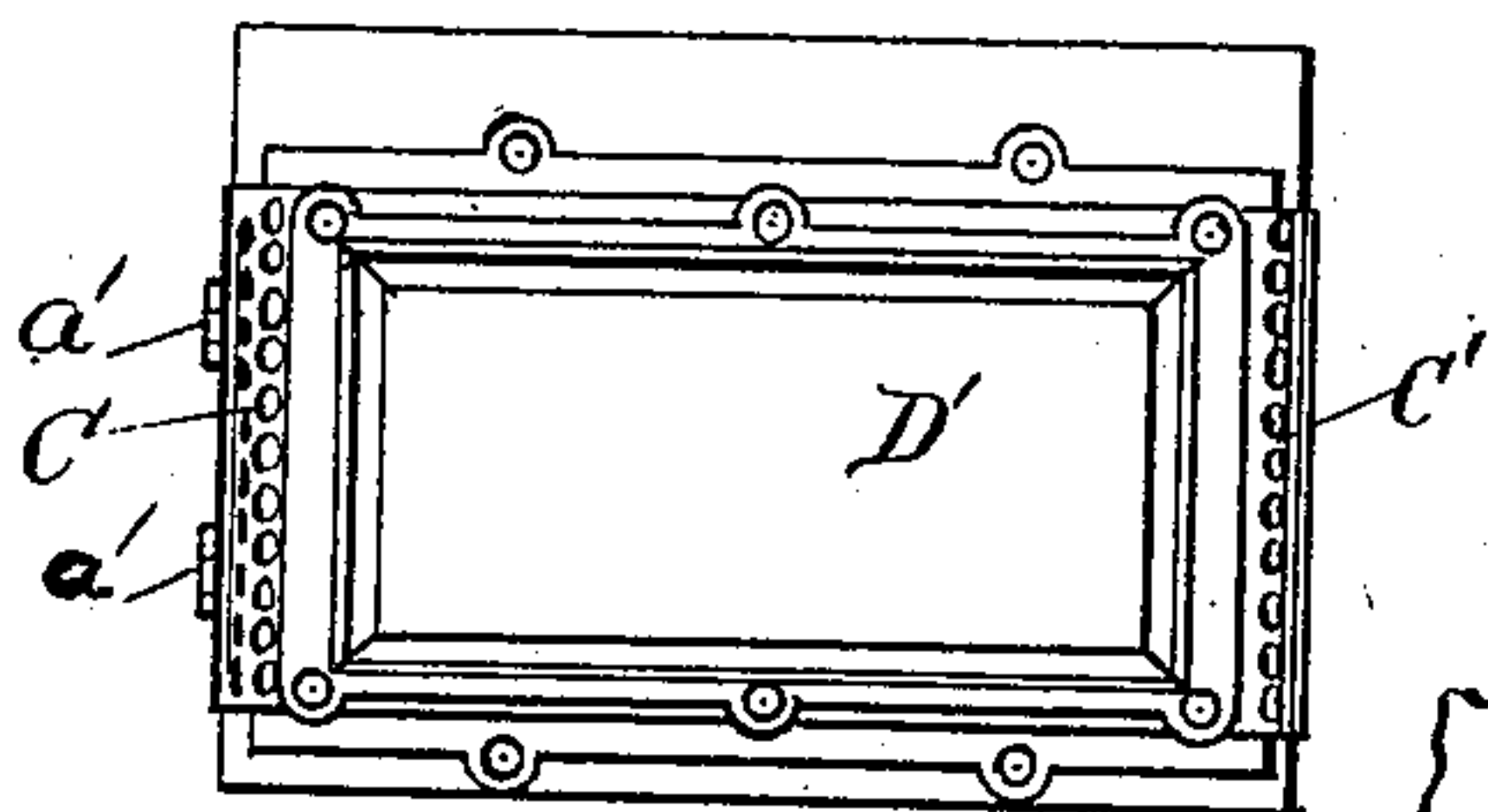


Fig. 13.

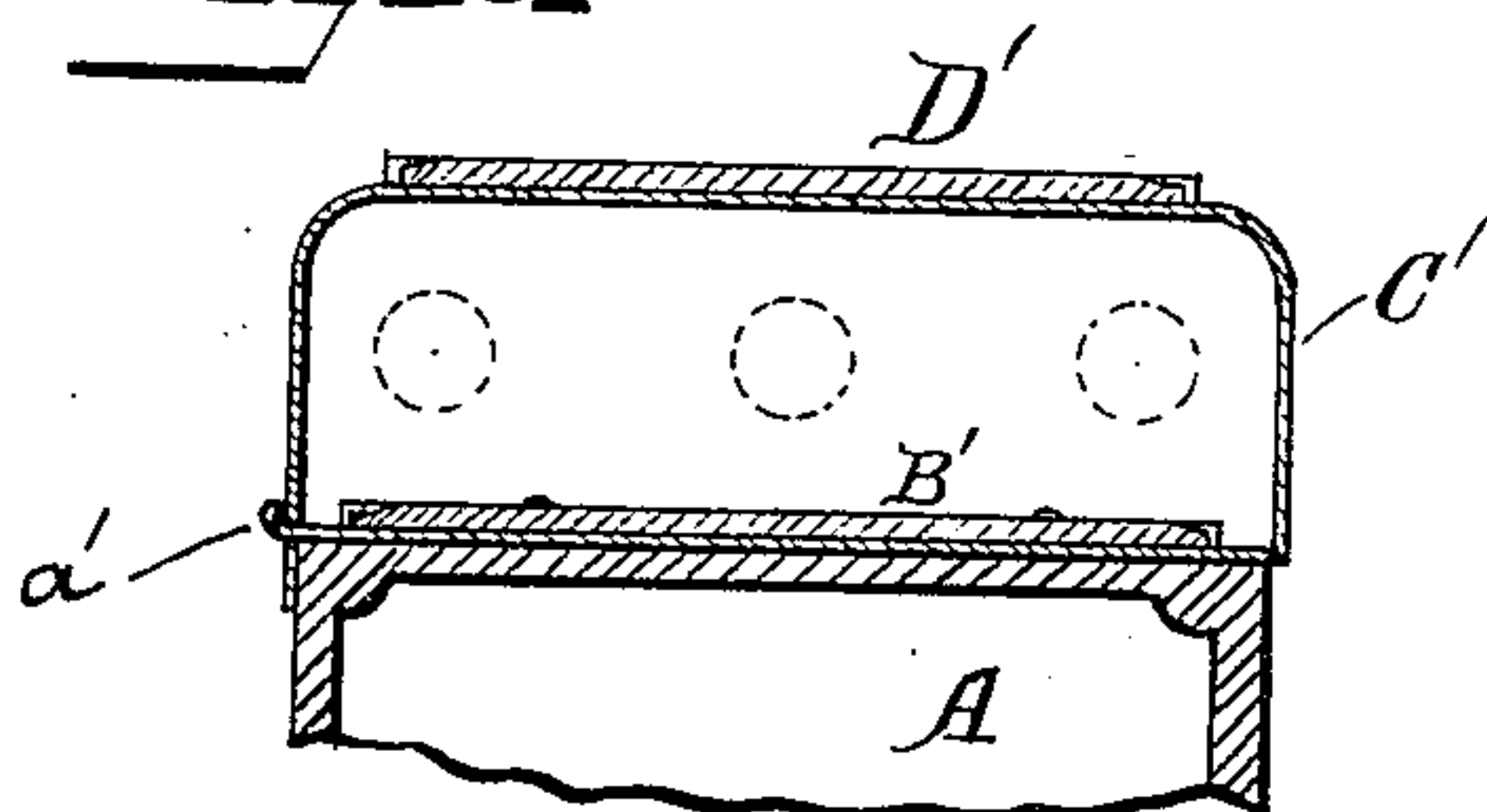


Fig. 14.

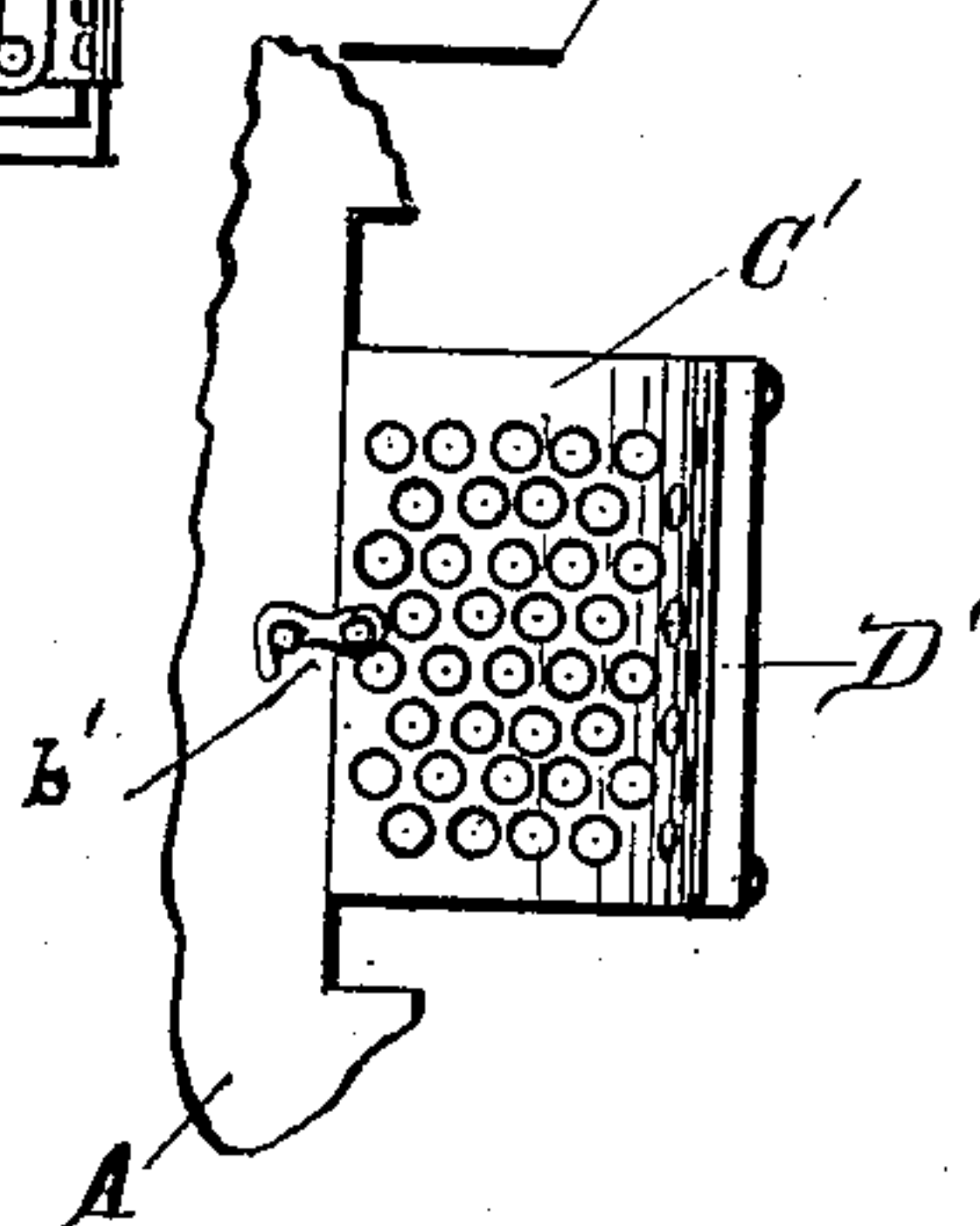
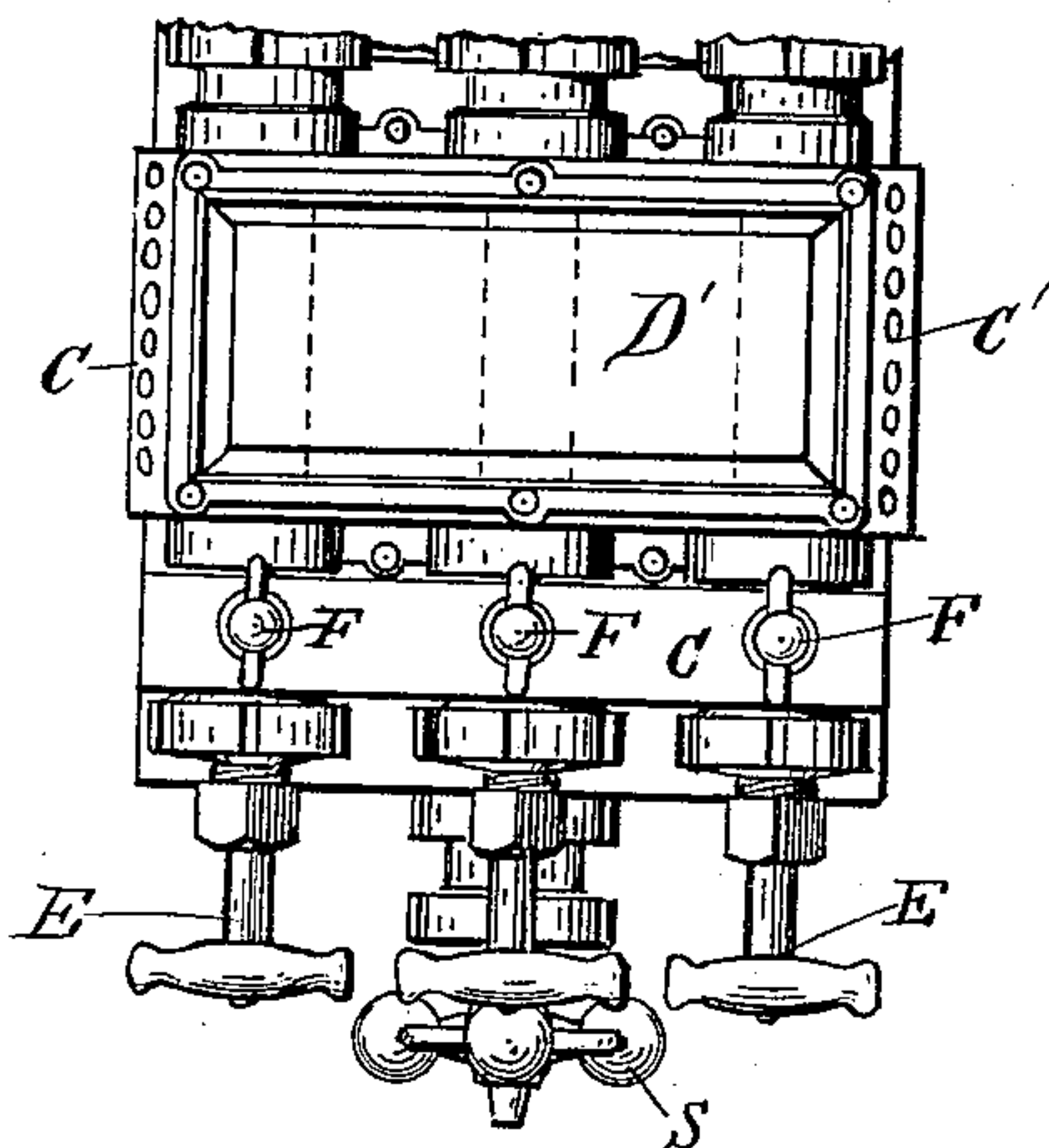


Fig. 11.



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LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 640,576, dated January 2, 1900.

Application filed December 17, 1897. Serial No. 662,344. (No model.)

To all whom it may concern:

Be it known that I, EDMUND H. LUNKEN, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Lubricators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to sight-feed lubricators, and more particularly to that class designed for use on locomotives; and it has for its object not only the simplified construction of the apparatus, but also its increased efficiency of action under all the conditions to which this class of lubricators is subjected.

The novelty of my invention will be hereinafter set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1, Sheet 1, is a front elevation of one form of a lubricator embodying my invention. Fig. 2, Sheet 1, is a sectional side elevation of Fig. 1 on the dotted line *xx* looking to the right. Fig. 3, Sheet 2, is a front elevation, partly broken and in section, of another form of lubricator embodying my invention. Fig. 4, Sheet 2, is a sectional side elevation of Fig. 3 on the dotted line *ll* looking to the right. Fig. 5, Sheet 3, is a rear elevation of Figs. 3 and 4. Fig. 6, Sheet 3, is a partial side elevation on the dotted line *yy* of Fig. 1 looking to the right. Fig. 7, Sheet 3, is a detail sectional side elevation of a modified form of condensing-chamber and equalizing-tube. Fig. 8, Sheet 4, is a sectional front elevation of the auxiliary oiling-chamber and pump mechanism connected therewith. Fig. 9, Sheet 4, is a front sectional elevation of the mechanism of Fig. 7. Fig. 10, Sheet 4, is a detail section on the dotted line *22* of Fig. 2 looking to the right. Fig. 11, Sheet 5, is a front elevation of the sight-feed part of the lubricator, showing my improved guard and indicator. Fig. 12, Sheet 5, is a corresponding view of the guard and indicator removed. Fig. 13, Sheet 5, is a sectional plan view of the guard and indicator applied to the lubricator, the sight-feed glasses being shown in

dotted lines. Fig. 14, Sheet 5, is a side elevation of the guard and indicator as applied to the lubricator.

The same letters of reference are used to indicate identical parts in all the figures.

In the lubricator shown in Figs. 1 and 2 and in the details thereof shown in Figs. 6, 8, and 10, A is the oil-reservoir, preferably flattened or elongated in transverse section, so as to accommodate at least two, and preferably three, sight-feed glasses just in front of its front face and directly under an overhanging condensing-chamber B, made part of or suitably secured to the reservoir.

As seen in Fig. 2, there is a front flange *a*, through perforations in which extend the pendent threaded nipples *b* of the condensing-chamber, and nuts *c*, screwed thereon and forming part of the upper sight-feed glass connections, serve to unite the reservoir A to the condensing-chamber. The lower sight-feed-glass connections are cast integral with the reservoir A in the form of a projecting box, constituting a multiple fitting, as seen at C, Fig. 2, and the channel connecting them is provided with an oil-delivery pipe D, extending nearly to the top of the reservoir A, and each sight-feed fitting is provided with a feed-regulating cock E and drain-cock F for the sight-feed glass G. This latter is seated upon the nipple of the lower connection C with a packing-nut H, and its upper end enters the perforation of the nut *b* and is packed by a nut *d*. In case of breakage of any of the sight-feed glasses it is only necessary to close the valve or cock E and valve F and remove the broken glass. Then by unscrewing the nut *c* from the nipple *b* and slipping it down, together with the nut *d*, upon a new sight-feed glass the latter may be inserted through the nut H and seated upon the nipple, and then the nuts *c d* may be slipped up and screwed into place to hold the new glass in its proper position, as will be readily understood, and this operation can be performed with very little trouble and with very little loss of time.

The purpose of placing the sight-feed glasses side by side on the front face of the oil-reservoir and with the condensing-chamber overhanging the same is to guard them

from accidental breakage and to place them in a position of the greatest security from accidents in handling tools of any character around the lubricator, and this arrangement of the sight-feed glasses, together with the relative arrangement of the oil-reservoir and condensing-chambers, constitutes one of the chief features of my invention.

Extending through the entire depth of the condensing-chamber B are tubular sleeves I, through which pass valve-stems J, one for each perforation in the nipples *b*, with which they engage to regulate the outflow of the oil from the sight-feed glasses or to cut it off altogether. The upper ends of these valve-stems are threaded and engage perforated nuts *e* in the top of the condensing-chamber, and they are provided with operating-handles *f*.

K is the pipe from the steam-space of the boiler, and L, Figs. 2 and 10, are the tallow or feed pipes—in this instance three in number—for conveying the oil from the sight-feed glasses, the two outer ones leading to the two cylinders of the locomotive and the middle one leading to the brake-pump cylinder. Each of the pipes L enters an independent chamber M, Fig. 2, into which chamber the oil from each of the sight-feed glasses passes and into each of which chambers the lower ends of the valve-stems I enter, as will be readily understood.

Steam enters through pipe K directly into the top of the condensing-chamber B and by means of a branch *g*, Figs. 2 and 10, into a transverse chamber *h*, having three ports *i j k*, communicating with the upper ends of three equalizing-pipes N, whose lower ends communicate with the tallow pipe L, respectively, at points beyond the chambers M, as seen more particularly in Fig. 2. As seen in Fig. 6, the water of condensation from the chamber B passes down through a pipe *l*, whose upper end is controlled by a valve O, Fig. 6, and into whose lower end is secured the upper end of the water-delivery pipe *m*, extending down to the bottom of the oil-reservoir and having an upturned end *n*, provided with any suitable check-valve *o* for delivering the water of condensation from the condensing-chamber B to the oil-reservoir, and thereby floating the oil and causing it to pass down the pipe D and up through the sight-feed glasses in the usual manner. The steam passing through the equalizing-pipes N affords sufficient water of condensation to fill the sight-feed glasses, as will be readily understood.

Upon the front side of the condensing-chamber B, and preferably cast integral therewith, is an auxiliary oil-chamber P, Figs. 1, 2, and 8. This chamber communicates at its lower end with a transverse chamber *p*, Fig. 8, with three ports *q*, controlled by valves *r*, and which ports enter the chambers M, respectively, so that in case of the breakage of any one of the sight-feed glasses its valves E and

f may be closed and the valve *r* in line with said glass opened to permit the flow of oil from the chamber P directly into its corresponding feed-pipe L, so that the work of lubrication will not be stopped during the time of replacing a new sight-feed glass, or if a new sight-feed glass is not at hand oil may continue to be discharged from the auxiliary chamber during the run of the locomotive or until such time as a new sight-feed glass may be procured during the trip.

Q is the filling-cover for the auxiliary oil-chamber, into the opening of which any suitable strainer R is placed to prevent foreign matters from passing with the oil into the chamber P when the latter is filled. While this auxiliary oiler might give entire satisfaction by the natural gravity of the oil and the suction of the pistons in the cylinders, yet I prefer to place therein positive pumping mechanism consisting of a pump-cylinder S, Figs. 2 and 8, in a barrel T at the lower end of the chamber P, which cylinder is connected by a pivoted pitman U with a pivoted pumping handle or lever V, entering the side of the chamber at its top in such manner that by working said handle the oil in the auxiliary chamber would be forced out therefrom and into the feed-pipe L, whose valve *r* was opened. This auxiliary oiler, with or without the pumping mechanism, also constitutes an essential part of my present invention, and to enable the attendant to see when the oil therein is exhausted I place a sight-feed glass or window W in the front thereof near its bottom.

In Fig. 2, *s* is the usual drain-cock of the oil-reservoir, and *t* a thimble or lug on the rear side of the oil-reservoir for attachment to the head of the boiler.

In Figs. 3 and 4 the steam-pipe K enters directly into the condensing-chamber B, and the equalizing-pipes N are arranged on the front side of the condensing-chamber with their upper ends opening into the top of the condensing-chamber above the water-line and with their lower ends opening into the chamber M. The valves *t* for admitting oil from the sight-feed glasses into the chambers M are upon the front side of the lubricator and do not pass down through the condensing-chamber, as in Fig. 2. A single valve *u*, however, is passed down through the condensing-chamber and seats in an aperture in the bottom thereof leading to the water-delivering pipe *m*, as seen in Fig. 3. The auxiliary oiler P is on the rear of the condensing-chamber and is controlled by valves *v*, whose ports, Figs. 4 and 5, open into chambers M', in line with the tallow-pipes L, and which chambers are provided with injector-shaped nipples *w*, opening from the chambers M into tapering openings in the ends of the tallow-pipes in such manner that when the valves *t* E of any sight-feed glass are closed and the corresponding valve *v* is opened the passage of steam through the corresponding equalizing-pipe N will draw out the oil from the chamber P and

force it around the nipple *w* into the corresponding tallow-pipe, after the manner of an injector.

In Figs. 1, 3, and 5, *A'* are the filling-plugs for the oil-reservoir, and *A²* are gage-cocks in the sides of the oil-reservoir to enable the attendant to know when the oil is exhausted therefrom, as will be readily understood.

The remaining feature of my lubricator (illustrated in Figs. 11 to 14, inclusive) consists in placing a mirror *B'* behind the sight-feed glasses to enable the attendant to more readily ascertain that the oil is feeding properly by the reflection thereof in said mirror. In addition, however, to this mirror, which I call an "indicator," I prefer to surround the sight-feed glasses with a perforated guard *C'*, of sheet metal or wire-gauze, in the front of which is secured a plate of glass *D'*, extending the full width and depth of the sight-feed glasses, as seen in Fig. 11. Where the guard is used, I secure the mirror to its rear side and hinge one of its edges, as seen at *a'*, Figs. 12 and 13, and secure its opposite rear edge by any suitable catch *b'* in such manner that in case of breakage of a sight-feed glass this catch may be released and the front of the guard thrown open on its hinges to give access to the sight-feed glasses, as will be readily understood.

Another modification in the construction of the lubricator (illustrated in Figs. 7 and 9) consists in placing the equalizing-tubes within the condensing-chamber with their lower ends communicating with the chambers *M* and with their upper open ends above the water-level in the condensing-chamber. Under this form of construction the valve-stems *J* pass down through the equalizing-tubes, but without contact therewith, as shown.

Having thus fully described my invention, I claim—

1. In a lubricator, the combination of the oil-reservoir having a projecting multiple fitting cast integral with it and communicating with the top of the reservoir, a plurality of sight-feed glasses arranged side by side and secured at their lower ends to said multiple fitting and at their upper ends to suitable connections leading to the oil-exits, and a condenser above and communicating with the reservoir, substantially as described.

2. In a lubricator, the combination of the oil-reservoir having a projecting multiple fitting cast integral with it at its lower end and communicating with the top of the reservoir, a plurality of sight-feed glasses arranged side by side and secured at their lower ends to said multiple fitting and at their upper ends to suitable connections leading to the oil-exits, and a condenser above and communicating with the reservoir, substantially as described.

3. In a lubricator, the combination of the superimposed condensing-chamber, the oil-reservoir beneath the same having a projecting multiple fitting cast integral with it at its

lower end, a plurality of sight-feed glasses arranged side by side on the front face of the oil-reservoir and connected at their lower ends with said multiple fitting and at their upper ends with exit-fittings, and suitable connections and valves for admitting steam to the condensing-chamber and discharging oil through the sight-feed glasses to the different parts to be lubricated, substantially as described.

4. In a lubricator, the combination of the oil-reservoir having a projecting multiple fitting cast integral with it, the condensing-chamber above and projecting forward of the reservoir, a plurality of sight-feed glasses arranged side by side on the front face of the reservoir between the projecting part of the condensing-chamber and the multiple fitting with which they are connected, and suitable connections and valves for admitting steam to the condensing-chamber and discharging oil through the sight-feed glasses to the different parts to be lubricated, substantially as described.

5. In a lubricator, the combination of the superimposed condensing-chamber, the oil-reservoir beneath the same having a projecting multiple fitting cast integral with it, a plurality of sight-feed glasses arranged side by side and secured at their lower ends to said multiple fitting and at their upper ends to suitable connections leading to the oil-exits, an equalizing-tube for each sight-feed glass opening from the top of the condensing-chamber and discharging into the oil-exit from each sight-feed glass at a point beyond the valve controlling the exit of oil from the sight-feed glass, and suitable connections and valves for admitting steam to the condensing-chamber and discharging oil through the sight-feed glasses to the different parts to be lubricated, substantially as described.

6. In a lubricator, the combination of the oil-reservoir, the condensing-chamber and the oil-exit pipes, the auxiliary oil-chamber with valve mechanism controlling the several oil-exit pipes, and means for drawing the oil from said auxiliary chamber and delivering it to any of said exit-pipes, substantially as described.

7. In a lubricator, the combination with the oil-reservoir, sight-feed glasses arranged side by side on the front face thereof, the condensing-chamber and oil-exit pipes, of an auxiliary oil-chamber with valve mechanism controlling the several oil-exit pipes, and means for drawing oil from said auxiliary chamber and delivering it to any part of said exit-pipes, substantially as described.

8. In a lubricator, the combination with the oil-reservoir and an exit-pipe therefor, of an auxiliary oil-chamber, and a pump for said auxiliary chamber for forcing the oil therefrom, substantially as described.

9. In a lubricator, the combination with the oil-reservoir, the condensing-chamber and the oil-exit pipes, of an auxiliary oil-chamber with

valve mechanism controlling the several exit-pipes and a pump for said auxiliary chamber for forcing the oil therefrom, substantially as described.

- 5 10. In a lubricator, the oil-chamber having at its lower end a projecting multiple fitting and at its upper end a projecting flange provided with one or more perforations combined with a condensing-chamber having at its
10 lower end one or more exteriorly-threaded nipples passed through the perforation or per-

forations in said flange, clamping-nuts for the lower end of said nipple or nipples, and sight-feed glasses arranged between the lower connections of the nipples, and the connections 15 at the bottom of the reservoir, substantially as described.

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