(No Model.)

2 Sheets—Sheet 1.

A. WERNER.

BOTTLING MACHINE.

No. 526,595. Patented Sept. 25, 1894.

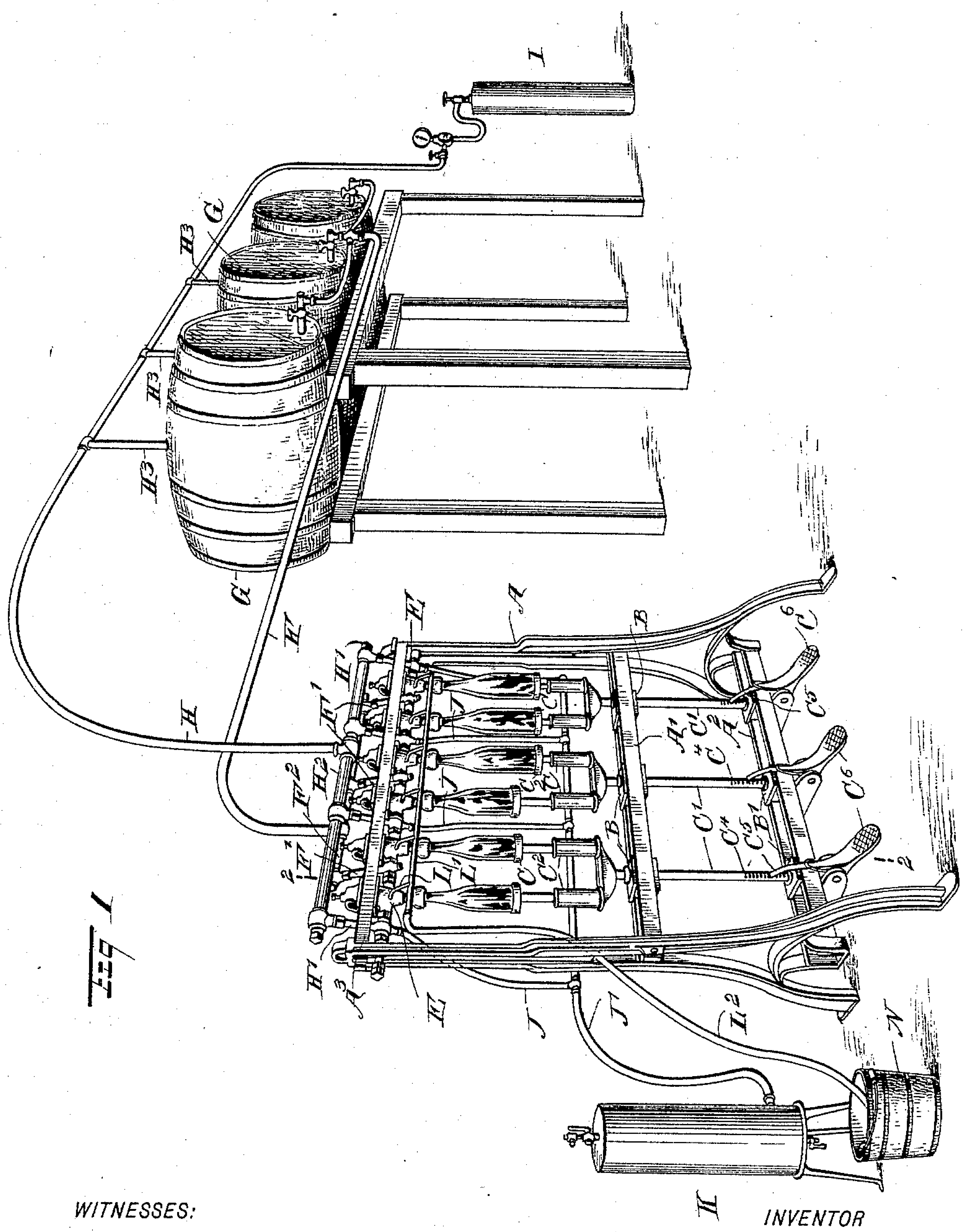

Fig. 1

WITNESSES:

H. Walker

Theo. G. Hoster

INVENTOR

August Werner.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

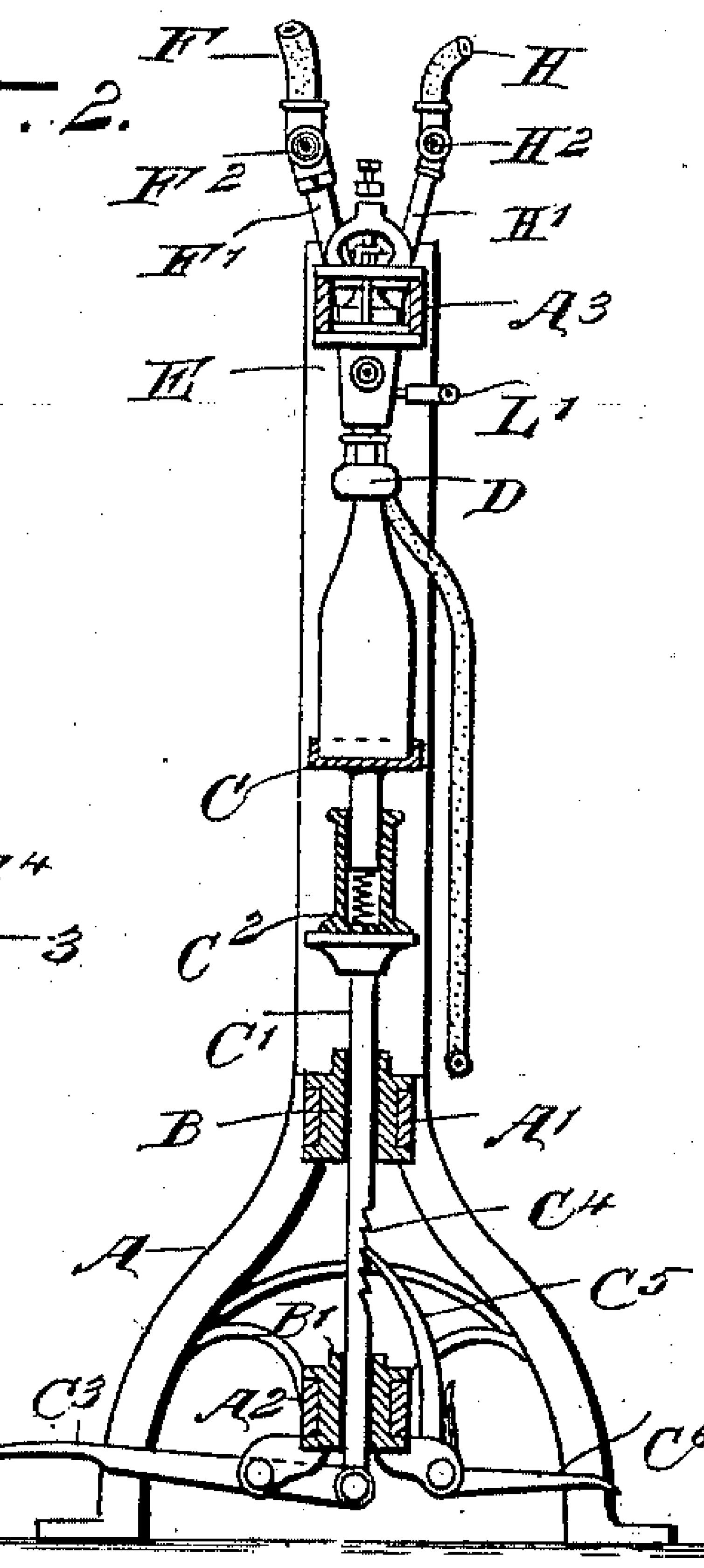


Fig. 8.

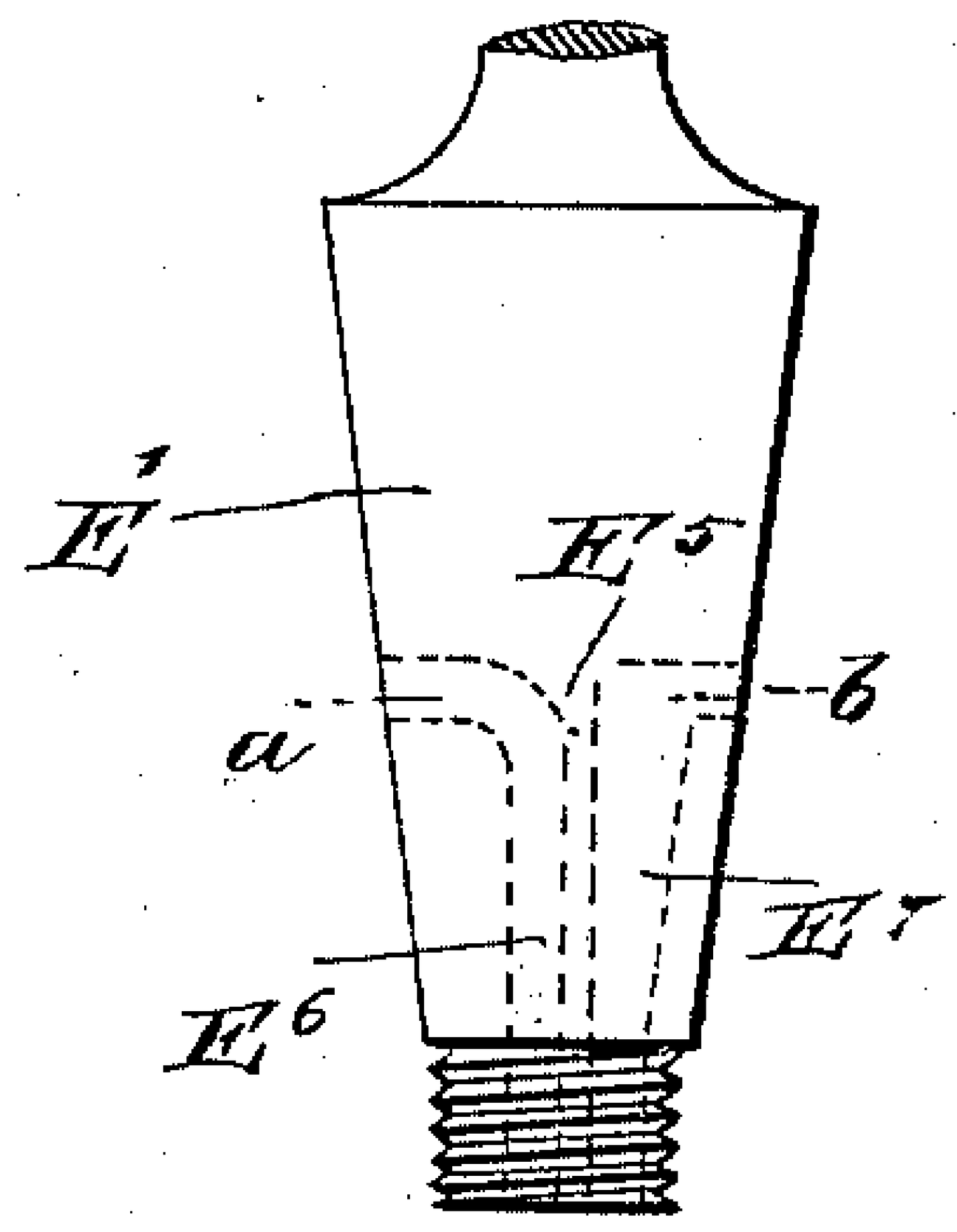


Fig. 4.

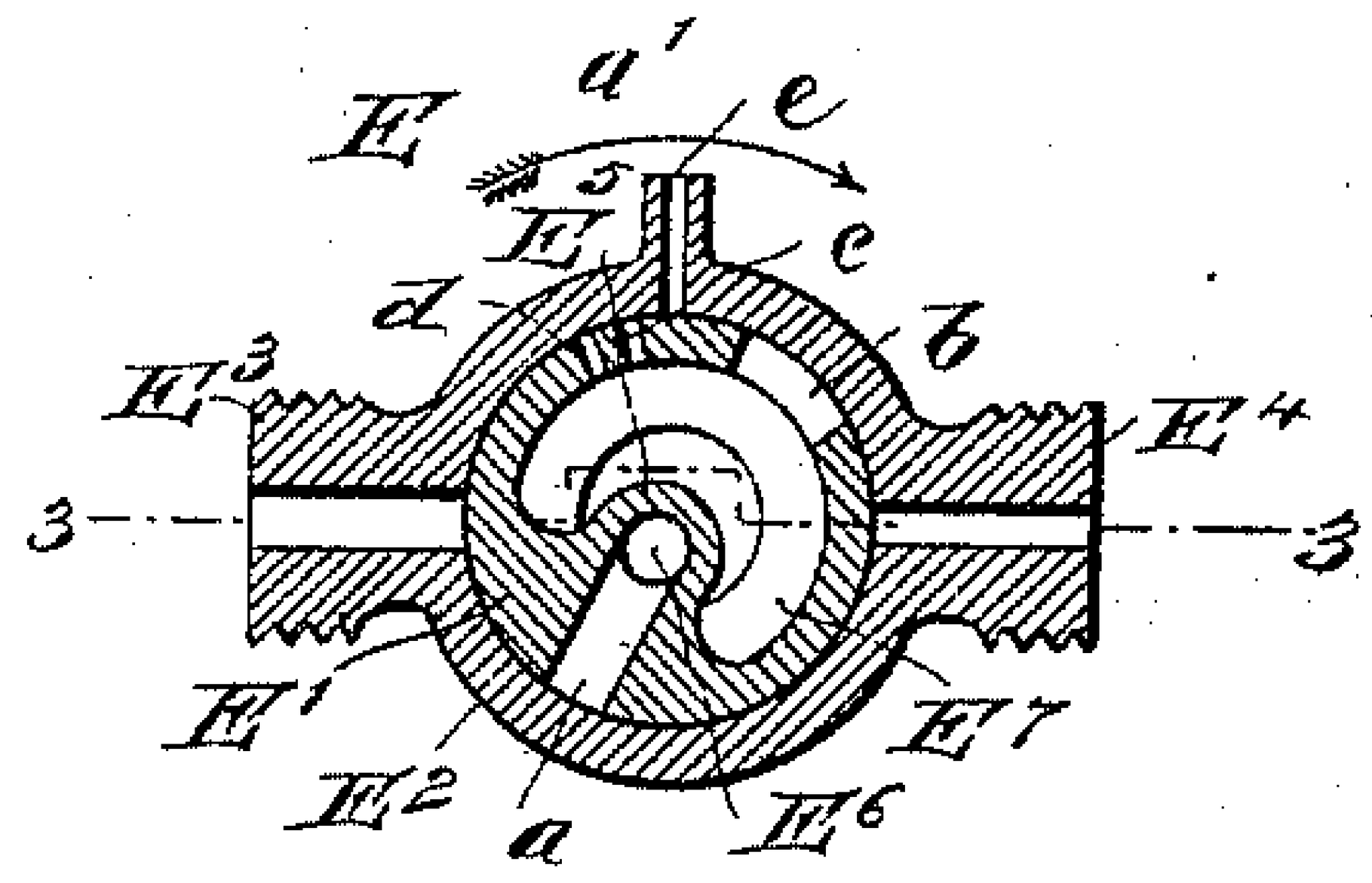


Fig. 7.

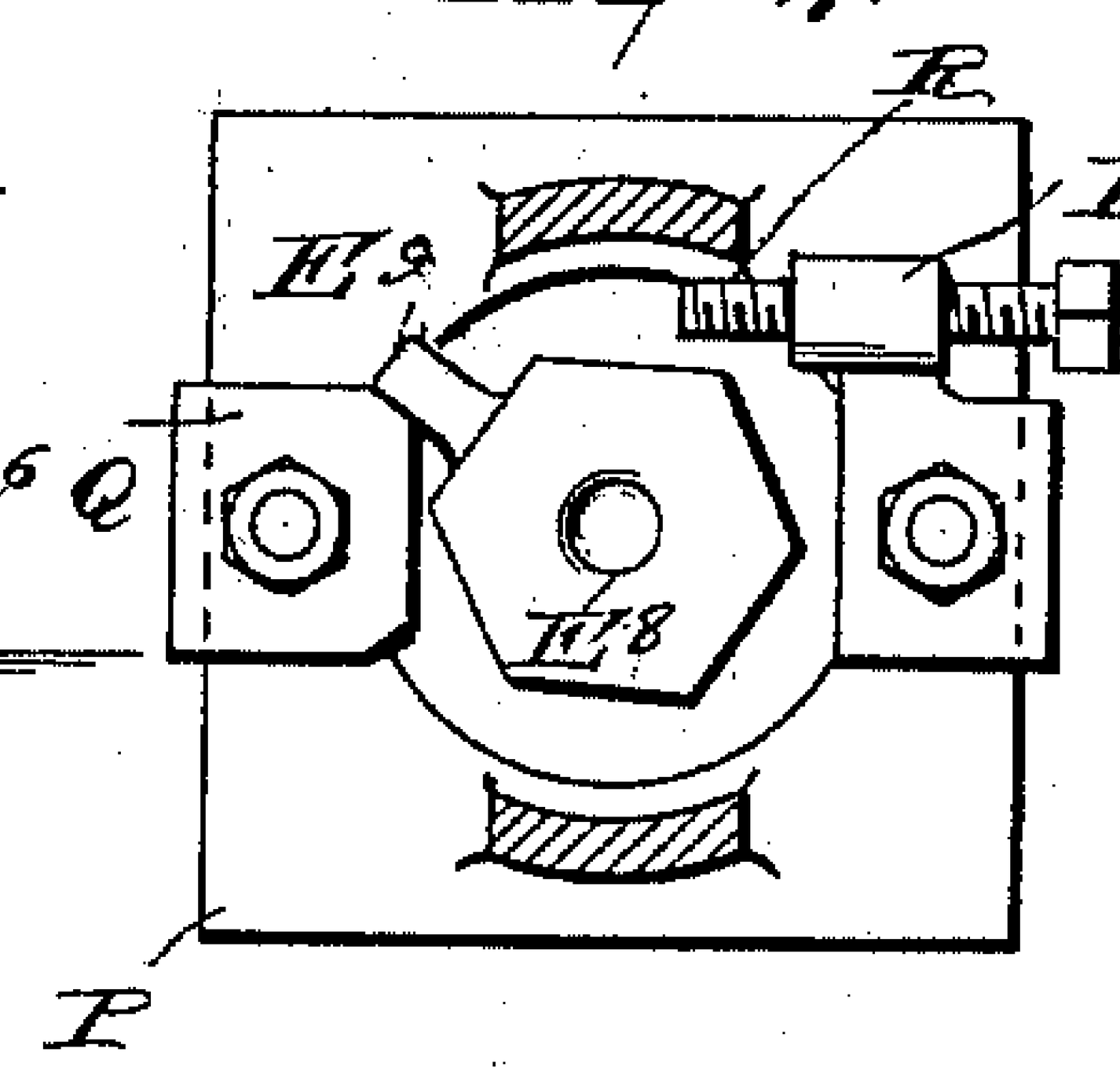


Fig. 5.

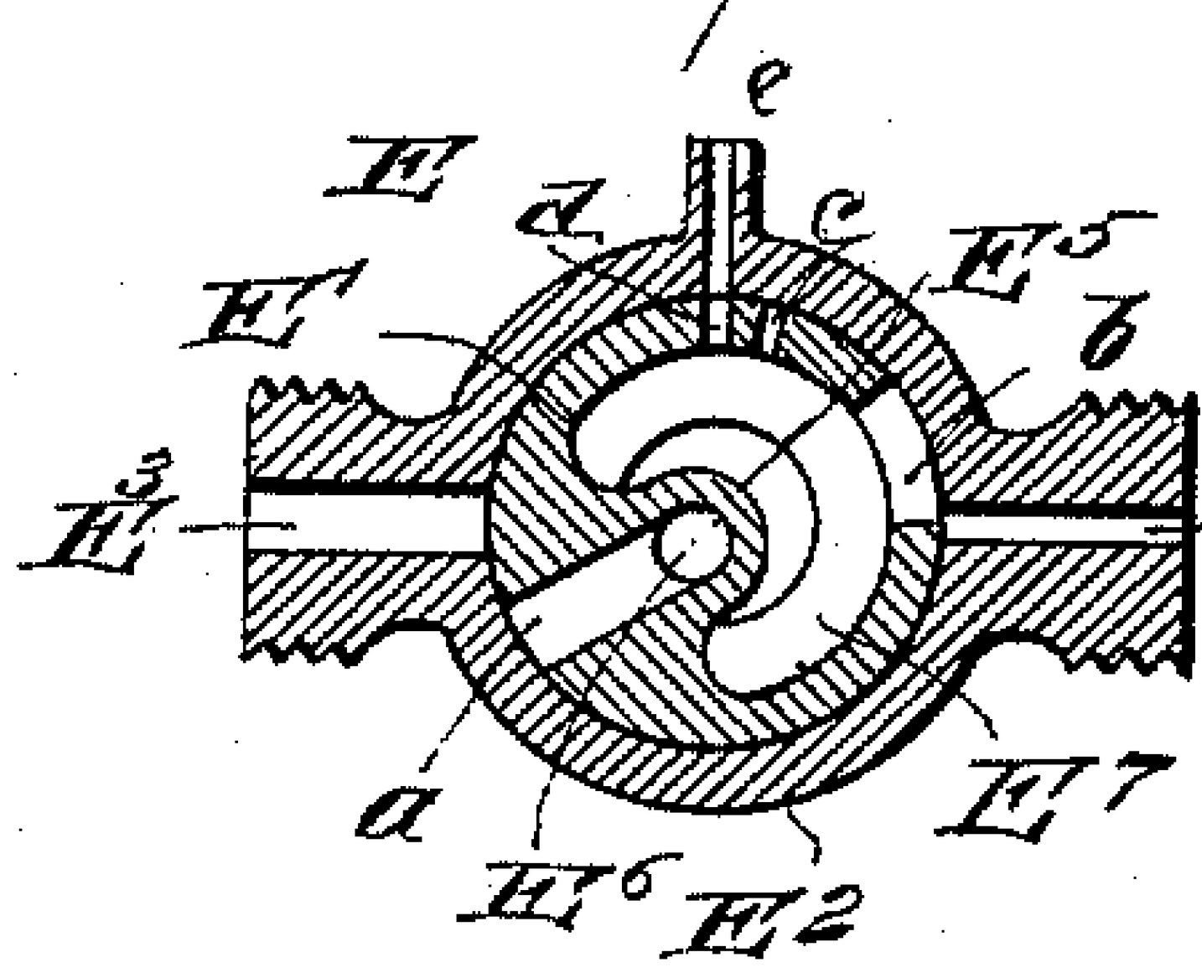


Fig. 6

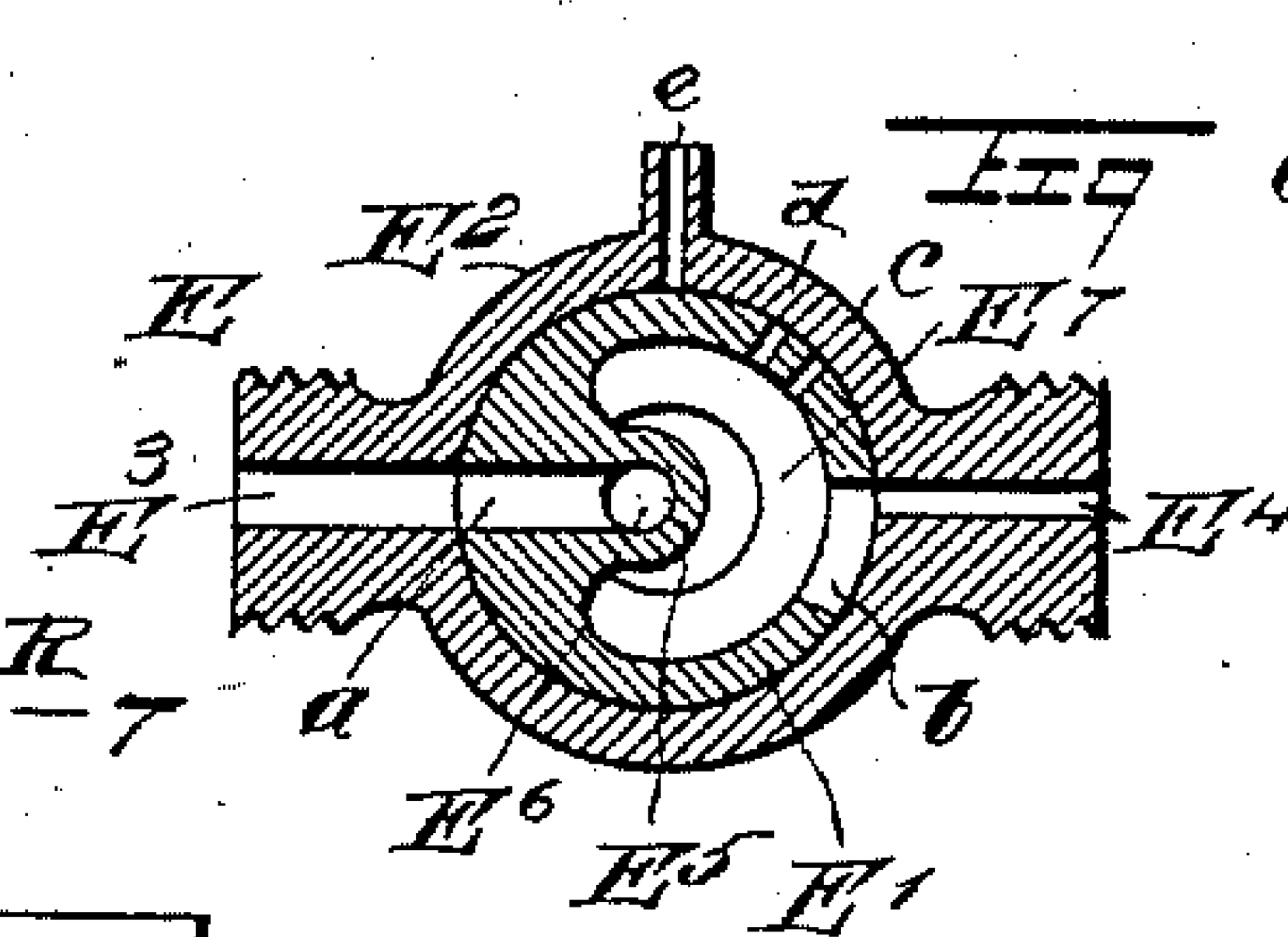
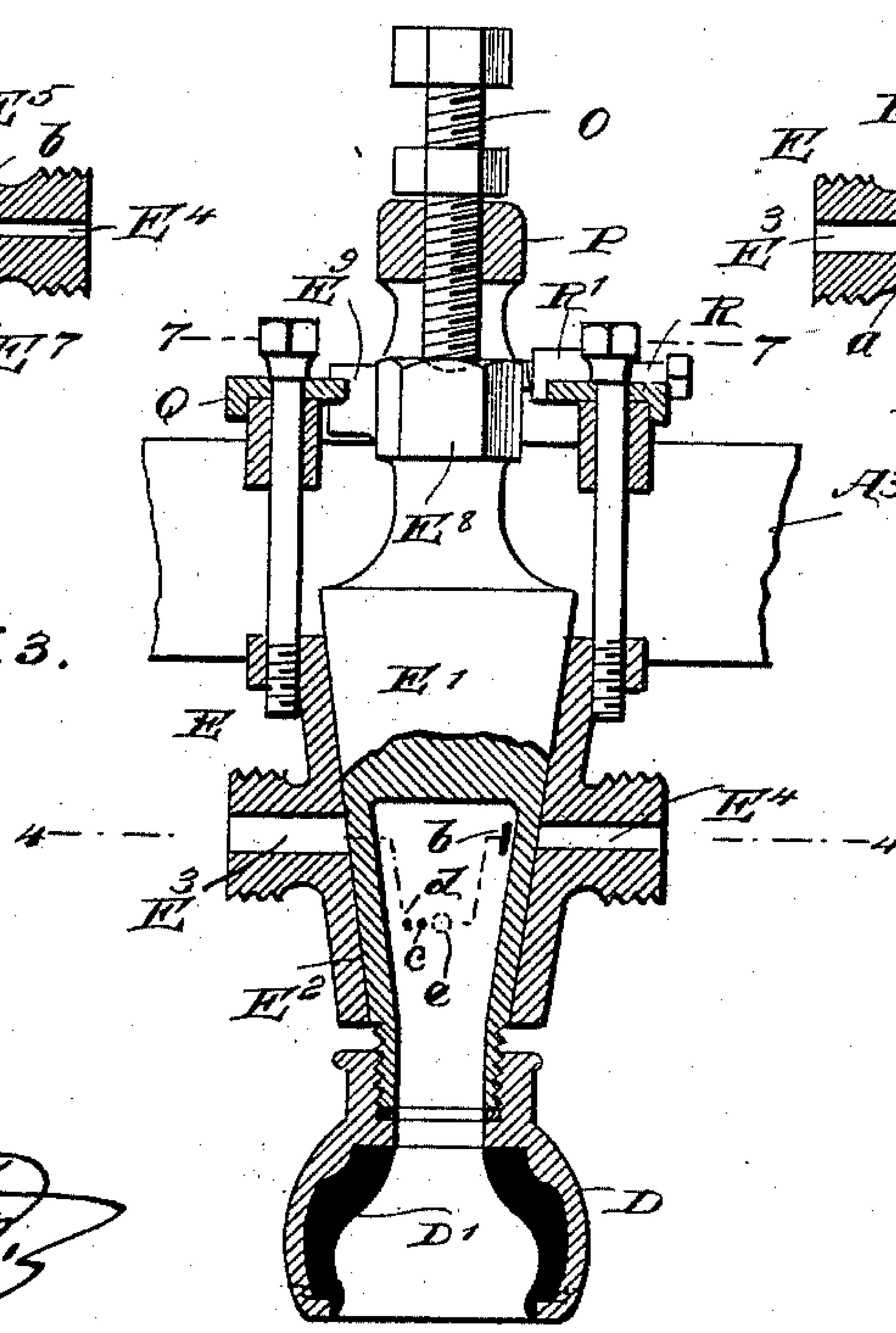


Fig. 3.



WITNESSES:

H. Walker

Theo. G. Hoster

INVENTOR

August Werner

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

AUGUST WERNER, OF BROOKLYN, NEW YORK.

BOTTLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 526,595, dated September 25, 1894.

Application filed May 31, 1894. Serial No. 513,050. (No model.)

To all whom it may concern:

Be it known that I, AUGUST WERNER, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Bottling-Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved bottling machine, which is comparatively simple and durable in construction and arranged to properly fill beer and other liquids into sterilized bottles, without waste and in such a manner that the beer retains its valuable properties and is not liable to spoil even if stored for a long time.

The invention consists principally of a liquid supply pipe connected with a storage cask, from which the beer or other liquid is to be drawn, a gas supply pipe connected with a supply tank and with the cask, to produce a counter pressure thereon, and a bottle-filling valve of especial construction and connected with the bottle, the liquid supply pipe and the gas supply pipe, in such a manner that on first opening the valve plug the gas passes into the bottle to drive out the air, and then on further opening the valve, the air escape is cut off and the bottle is filled with the liquid, at the same time permitting the gas in the bottle to recede from the same to the storage cask.

The invention also consists of certain parts and details and combinations of the same, as will be described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the improvement. Fig. 2 is a transverse section of the same on the line 2—2 of Fig. 1. Fig. 3 is an enlarged sectional side elevation of the valve, on the line 3—3 of Fig. 4. Fig. 4 is a sectional plan view of the same, on the line 4—4 of Fig. 3. Figs. 5 and 6 are similar views of the same, with the plug in different positions. Fig. 7 is a sectional plan view of the valve, on the line 7—7 of Fig. 3; and Fig. 8 is a side elevation of the plug.

The improved bottling machine is provided with a suitably constructed frame A, supporting between its standards, horizontal guideways A', A^2 and A^3, of which the guideways A' and A^2 carry horizontally adjustable bearings B and B' respectively. Corresponding bearings B, B', are engaged by a vertically disposed rod C', adapted to slide vertically and supporting at its upper end a head C^2, carrying spring-pressed bottle supports C, adapted to carry the bottles to be filled. As shown in Fig. 1, each head C^2 carries two bottle supports C, but more such supports may be arranged on a single head if desired.

The lower end of each rod C' is pivotally connected with a treadle C^3, fulcrumed on the bottom guideway A^2, as is plainly shown in Fig. 2, the said treadle being under the control of the operator to raise the rod C' and the supports carried thereon, to move the upper end or neck of the bottle in contact with the lining D' of a mouth piece D screwed or otherwise secured on the lower end of a valve plug E', mounted to turn in the body E^2 of a valve E held adjustably on the uppermost guideway A^3.

In order to hold the bottle in contact with the mouth piece D during the filling operation, I provide the lower end of each rod C', with notches or teeth C^4 adapted to be engaged by a spring-pressed pawl C^5, held on a treadle C^6 likewise fulcrumed on the lower guideway A^2, but extending in an opposite direction to the corresponding treadle C^3. Now, when the bottles are filled and the operator desires to remove them, he presses on the treadle C^6, whereby the pawl C^5 is disengaged from the corresponding notch or tooth C^4, to permit the rod C' and the head C^2 with its support or supports C and filled bottles, to drop downward by their own weight, so as to disengage the neck of the bottle from the mouthpiece D, to permit the operator to remove the filled bottles and to place empty ones on the supports C. The operator in charge of the filling machine then presses the treadle C^3 to again lift the support, to move the empty bottles in contact with the lining D' of the mouthpiece D, at the same time automatically locking the rod C' in place by means of the pawl C^5 then engaging one of the notches C^4.

The body E^2 of each valve E is provided on opposite sides with the liquid inlet E^3 and the gas inlet E^4, of which the former is connected

by a branch pipe F′ with a horizontally extending pipe F^2, into which open all the branch pipes F′ of the bottling machine. As shown in Fig. 1, the bottling machine is arranged for filling six bottles at a time, and hence three branch pipes F′ are employed, each supplying two adjacent valves E with the necessary amount of liquid to be filled into the bottles. The pipe F^2 is connected with the supply pipe F, connected with the cask or casks G, containing the liquid to be filled into the bottles.

The gas inlet E^4 of two adjacent valves E is connected by a branch pipe H′ with a horizontally extending pipe H^2, from which leads the gas supply pipe H, connected with a gas supply tank I, containing carbonic acid gas under pressure, so as to furnish the necessary supply of gas to the bottles to drive out the air, as hereinafter more fully described. The gas supply pipe H is also provided with branch pipes H^3, discharging into the casks G, so as to produce a counter pressure on top of the liquid contained in the said casks, it being understood that the casks are located a suitable distance above the frame A, so that the liquid from the casks flows through the pipe F to the several valves and bottles under its own hydrostatic pressure.

Each branch pipe H′ is connected at its lower end by a tube J with a pipe J′ leading to a closed vessel K, so that any liquid that may pass into the gas outlet E^4 can be drawn off through the tube J and pipe J′ into the vessel K so as to keep the said branch pipe H′ clear for the passage of gas at all times.

The valve plug E′ previously mentioned is formed with a vertically disposed partition E^5 in its lower portion, so as to form a liquid inlet chamber E^6 and a gas inlet chamber E^7, both opening at their lower ends into the mouth piece D, so that the gas and liquid pass independently into the bottle to be filled. The upper end of the chamber E^6 is provided with a port *a*, adapted to register with the liquid inlet E^3, and a port *b* formed in the upper end of the chamber E^7 is adapted to register with the gas inlet E^4. Two small ports *c* and *d* are also formed in the wall of the chamber E^7 and are adapted to register with a port *e* arranged in the valve body E^2 and connected by a branch pipe L with a horizontally disposed pipe L′ connected by rubber tubing L^2 with a pail or other receptacle N, set on the floor near the frame A.

On the upper end of the plug E′ is formed a head E^8, pressed on by a screw O screwing in a cap P fastened by bolts to the valve body E^2 and forming part of the bearing for the valve to slide on the guideways A^3. By the said screw O the plug E′ is held in the proper position on its seat in the valve body E^2, as will be readily understood by reference to Fig. 3. On the head E^8 is arranged a lug or projection E^9 adapted to engage two limiting stops Q and R, of which the former is fastened by a set screw to the cap P, and the other stop R is made in the shape of a screw turning in a nut R′ secured to the said cap P, as is plainly shown in Fig. 7. Now, by the operator adjusting the screw R in the nut R′, more or less throw can be given to the plug E′ to regulate the amount of gas permitted to flow into the bottles to be filled, as hereinafter more fully described.

The operation is as follows: When the valve plug is in the position illustrated in Fig. 4, then the several ports *a*, *b*, *c*, *d*, are cut off from the inlets E^3, E^4 and the port *e*, and after the operator has now placed a bottle in position on the support C, so that the bottle engages with its neck the lining D′ of the mouth piece D, then the operator turns the latter so as to impart a turning motion to the valve plug E′ in the direction of the arrow *a′* shown in Fig. 4. In turning the plug E′ to the position shown in Fig. 5, the ports *c*, *d* come successively in register with the air escape port or vent *e*, and the port *b* opens into the gas supply E^4, so that gas can pass into the chamber E^7 and through the same into the bottle, to drive out the air, which passes through the registering ports *d* and *e* to the branch pipe L, pipe L′ and tubing L^2, to the receptacle N, or to the outer air. As the operator continues to turn the plug E′ in the indicated direction, the ports *d* and *e* are cut off at the time the air has all been discharged from the bottle, and at this time the port *a* commences to open into the liquid inlet E^3, so that liquid now flows into the chamber E^6, and from the latter into the bottle to gradually fill the same. As the other port *b* is still in register with the gas supply E^4, the gas contained in the bottle can recede into the chamber E^7 through the port *b*, gas supply supply pipe E^4, pipes H′, H^2 and H, and into the cask G, to permit of completely filling the bottle with the liquid, it being understood that as the gas pressure is the same as that in the cask G, the liquid will flow through the pipe F to the bottle under its own hydrostatic pressure. When the bottle is filled, the operator turns the mouth piece D in the opposite or inverse direction of the arrow *a′*, whereby the liquid is first cut off and then the gas, after which the ports *d*, *c* again register with the vent or port *e*, to permit the small amount of gas in the upper part of the bottle to escape, so as to permit the liquid still contained in the chamber E^6 to flow down into the bottle, to completely empty the plug E′ of liquid, and to prevent foaming of the liquid in the bottles after the latter is removed from the mouth piece D and its support C. The gas escaping through the port *e*, passes through the pipes, L, L′ and the tubing L^2 to the vessel N.

In operating a bottle filling machine arranged with three double heads for supporting six bottles, two attendants are necessary for working with great rapidity; one operator standing at one side of the frame to attend to the raising of the bottles, to bring their necks into engagement with the mouth piece D and

to manipulate the latter to properly work the valves E until the bottles are filled. The other operator on the opposite side of the machine attends to the treadles C^6, to release the filled bottles from contact with the mouth pieces D, as previously described, and then removes the filled bottles from the supports and places empty ones thereon.

By the drip arrangements shown, any liquid or foam that may pass up the gas chamber E^7 at any time, can readily pass by the pipes J and L to the closed vessels K and vessel N, to prevent not only waste of liquid, but also to keep the valves and connections free and clear for the proper entrance of the gas.

By making the bearings B B′ and the valves adjustable in the guideways of the frame, the bottle supports C and corresponding valves E can be conveniently brought in proper alignment to insure prompt working of the parts.

It is understood that the gas in passing into the chamber E^7 readily flows downward into the bottle at one side thereof to permit the displaced air to readily rise on the other side of the bottle and escape through part of the chamber E^7 and ports *c*, *d* and *e*, as above described.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A bottling machine, comprising a liquid supply pipe adapted for connection with the cask containing the liquid, a gas supply pipe adapted for connection with the cask and a gas supply, and a bottle filling valve having ports adapted for connection with the liquid supply pipe and the gas supply pipe respectively, and an additional port adapted for connection with the outer air to permit the air to escape from the bottle when gas is introduced into the latter, the ports being so arranged that when the liquid supply port is opened the air escape port is closed while the gas supply port remains open to permit the gas to recede from the bottle to the cask, substantially as described.

2. A bottling machine provided with a valve comprising a body having connections with a gas supply and a liquid supply, a valve plug mounted to turn in the valve body, and a mouth piece held on the discharge end of the said plug to turn therewith and under the control of the operator to turn the plug to open and close the same, substantially as shown and described.

3. A bottling machine provided with a filling valve having a rotatable plug, and a mouth-piece held on the said plug to turn therewith and adapted to engage the neck of the bottle, the said mouth-piece also forming a handle adapted to be taken hold of by the operator to manipulate the plug, substantially as shown and described.

4. A bottling machine provided with a valve comprising a valve body having connections with a gas supply and a liquid supply, a valve plug mounted to turn in the valve body, a mouth piece held on the discharge end of the said plug to turn therewith and under the control of the operator to turn the plug to open and close the same, and a fixed and an adjustable stop for limiting the turning motion of the plug, substantially as shown and described.

5. A bottling machine provided with a valve comprising a valve body having a liquid inlet, a gas inlet, and an air outlet and a plug mounted to turn in the said body and provided with a partition to form separate liquid and gas chambers, the gas inlet and the air outlet communicating with the same chamber substantially as shown and described.

6. A bottling machine provided with a valve comprising a valve body having a liquid inlet and a gas inlet, and a plug mounted to turn in the said body and provided with a partition to form separate liquid and gas chambers, the head of the said valve plug being provided with a projection, and stops adapted to be engaged by the said projection to limit the turning motion of the plug in either direction, substantially as shown and described.

7. A bottling machine provided with a valve comprising a valve body having a liquid inlet and a gas inlet, and a plug mounted to turn in the said body and provided with a partition to form separate liquid and gas chambers, the head of the said valve plug being provided with a projection, and stops adapted to be engaged by the said projection to limit the turning motion of the plug in either direction, one of the stops being adjustable to permit of turning the plug a longer or shorter distance to regulate the inflow of the gas into the gas chamber, substantially as shown and described.

8. A bottling machine comprising a filling valve connected with a liquid supply pipe and a gas supply pipe, and a branch pipe leading from the said gas supply pipe at or near the valve, to carry off any overcharge of liquid or foam, substantially as shown and described.

9. A bottling machine comprising a filling valve having a valve body, a plug formed with a liquid inlet chamber and a gas chamber, also forming an escape chamber for the air, the said gas chamber having an air outlet port adapted to register with a port in the valve body, and a drip pipe adapted to be connected with the air port or vent in the said valve body, substantially as shown and described.

AUGUST WERNER.

Witnesses:
O. J. WEEKS,
C. SEDGWICK.