

No. 684,137.

Patented Oct. 8, 1901.

S. L. TROUPE.
BOTTLE FILLING MACHINE.

(Application filed Apr. 22, 1901.)

(No Model.)

2 Sheets—Sheet 1.

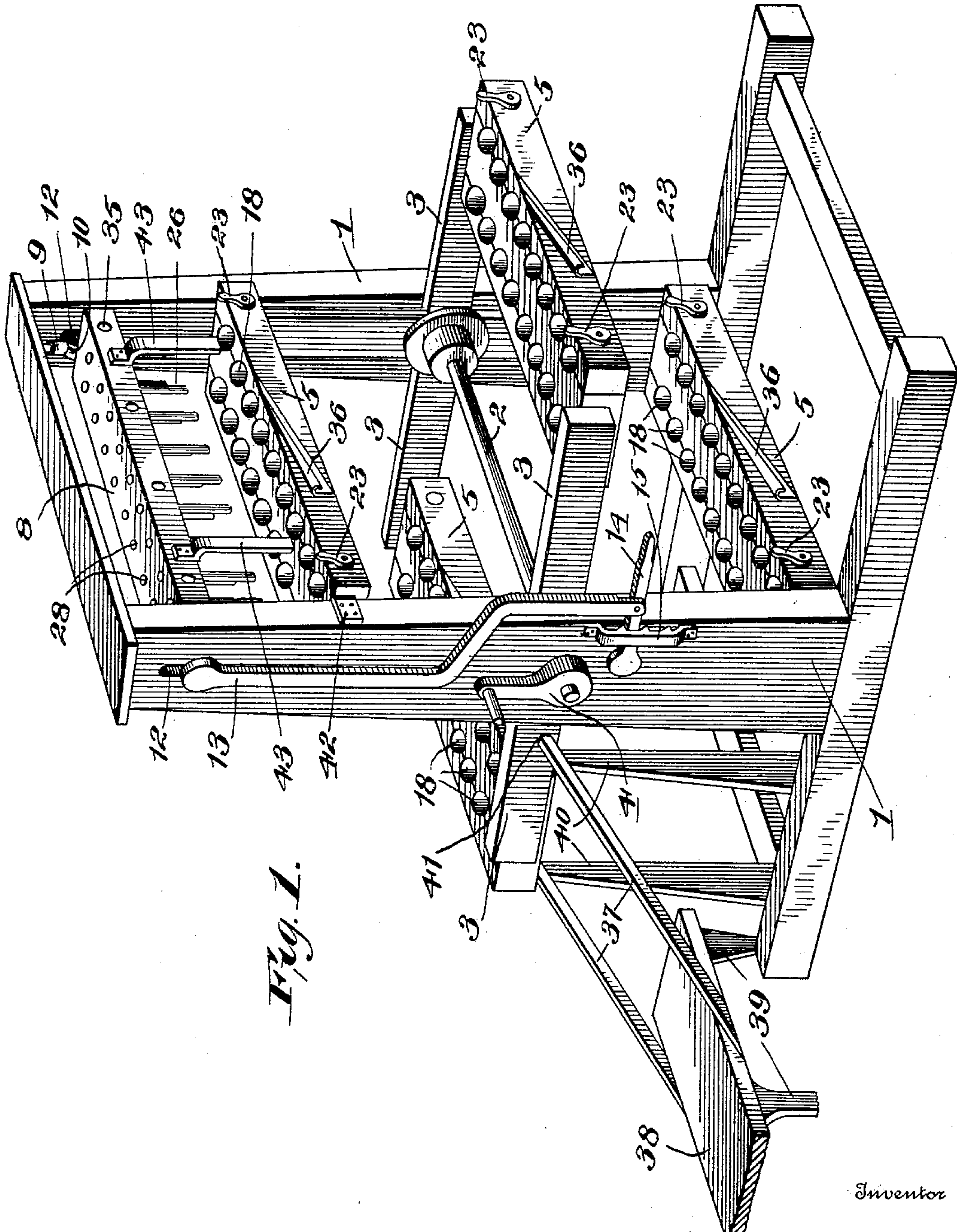


Fig. 1.

Witnesses
J. F. Pattison
E. M. Kitchen

Inventor
Samuel L. Troupe
By
Mason Peacock & Lawrence
Attorneys

No. 684,137.

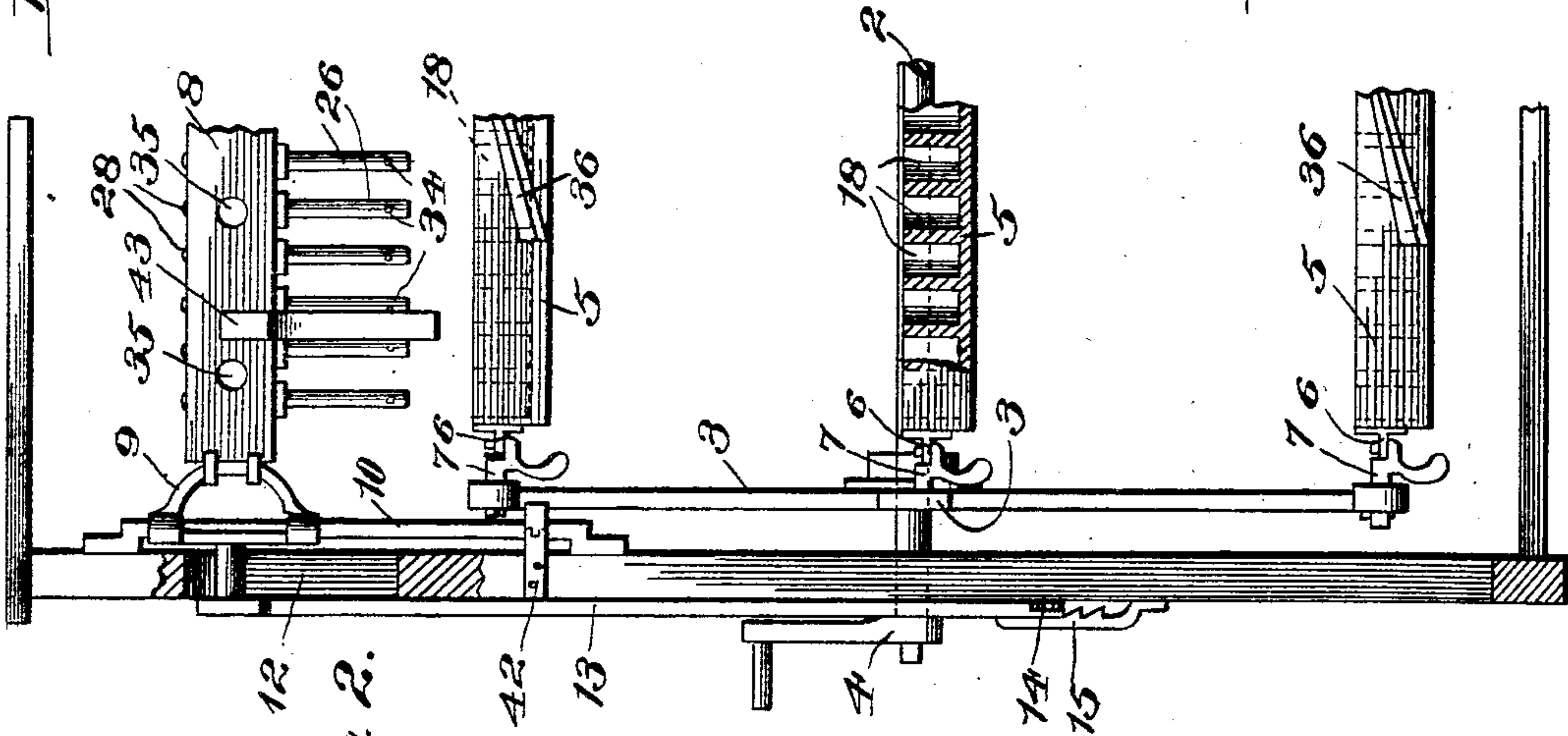
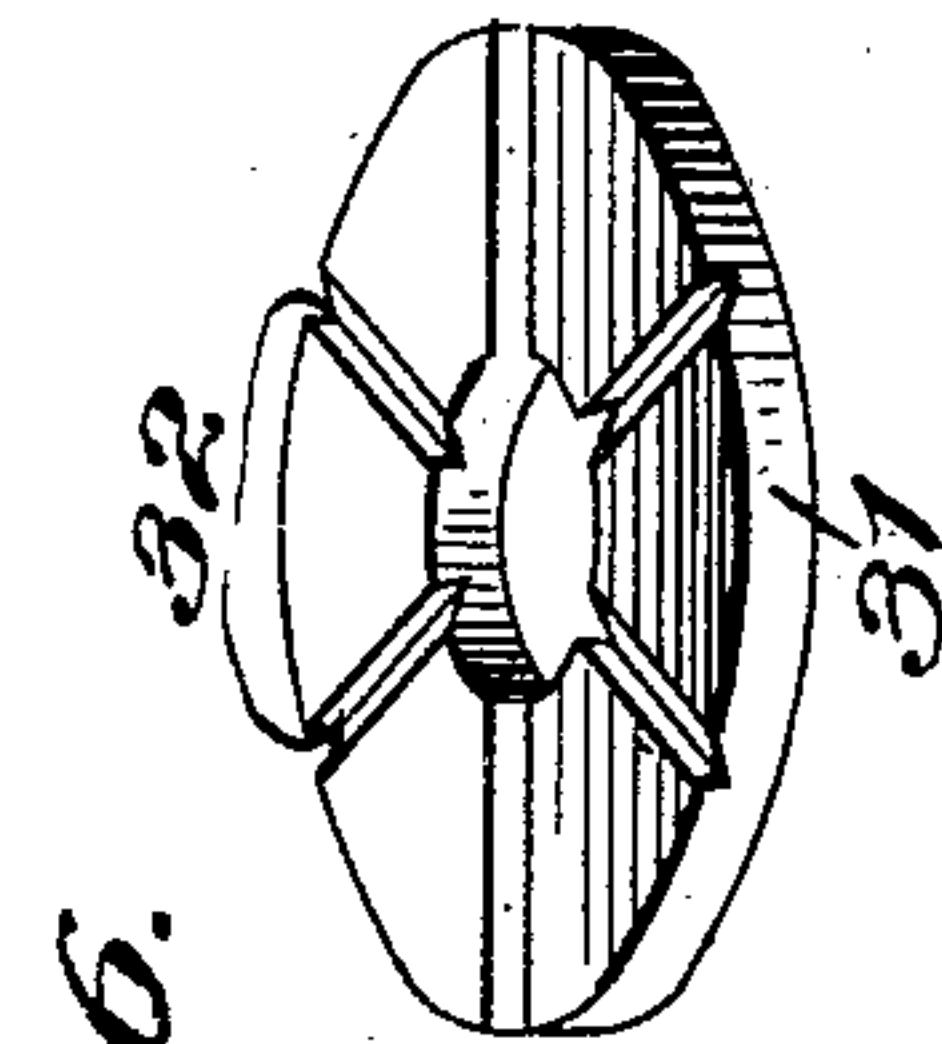
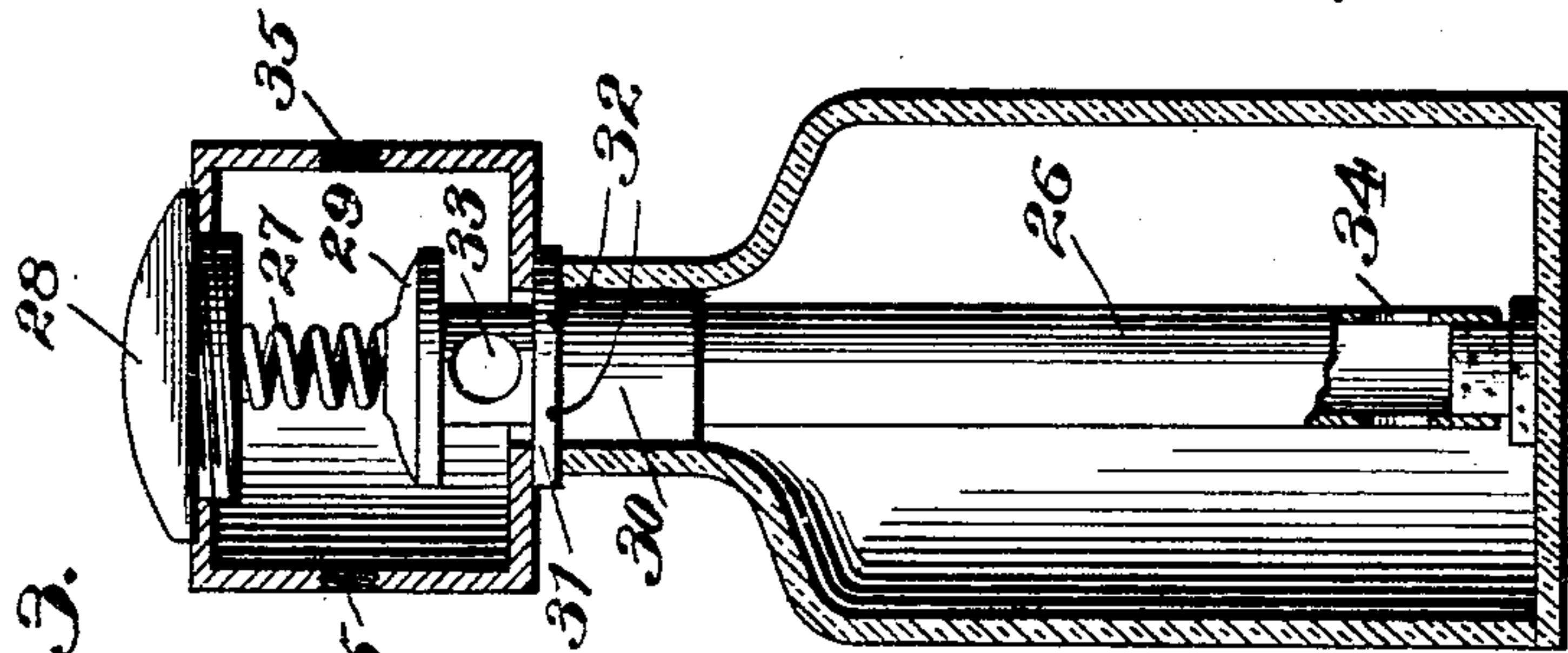
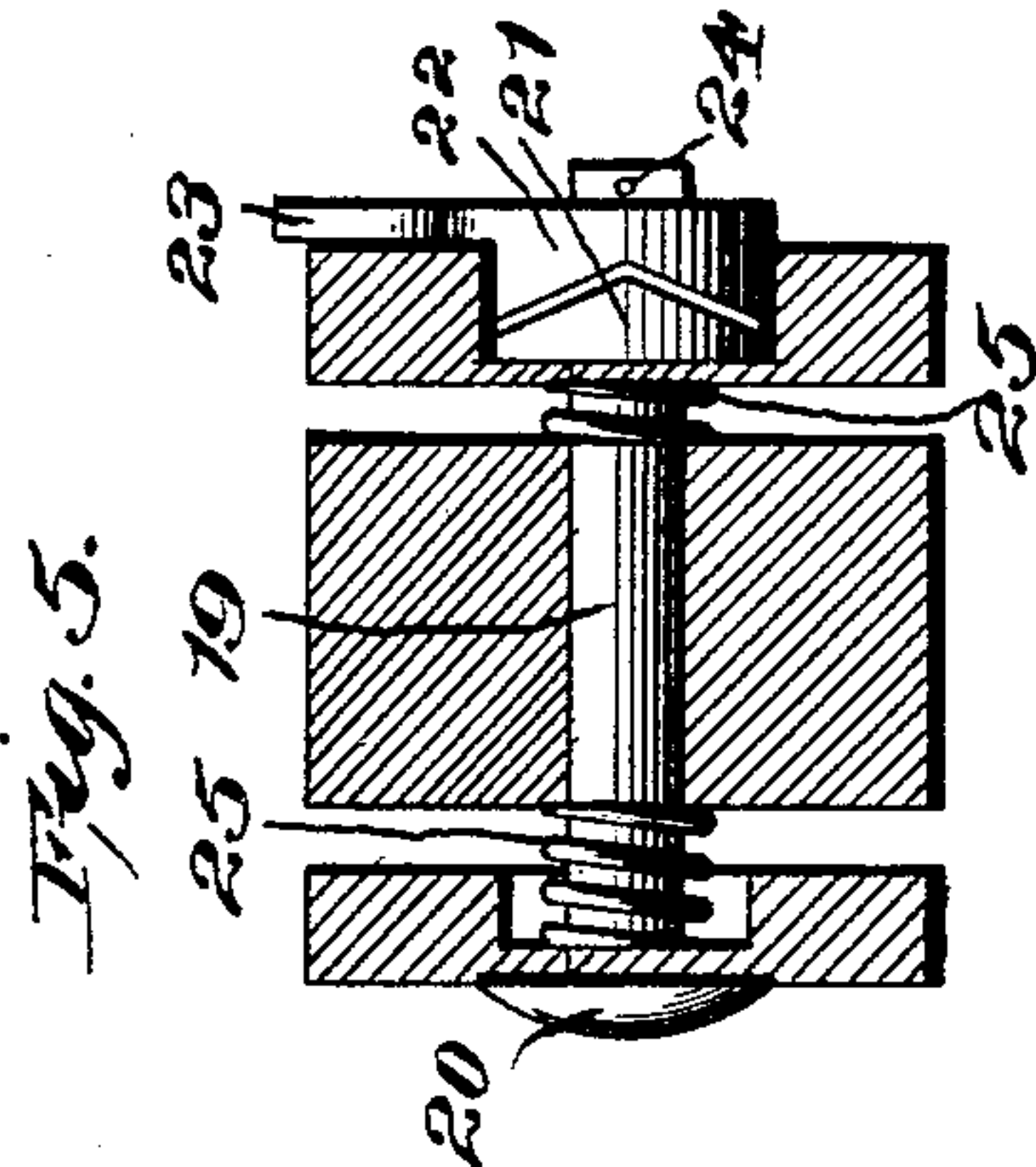
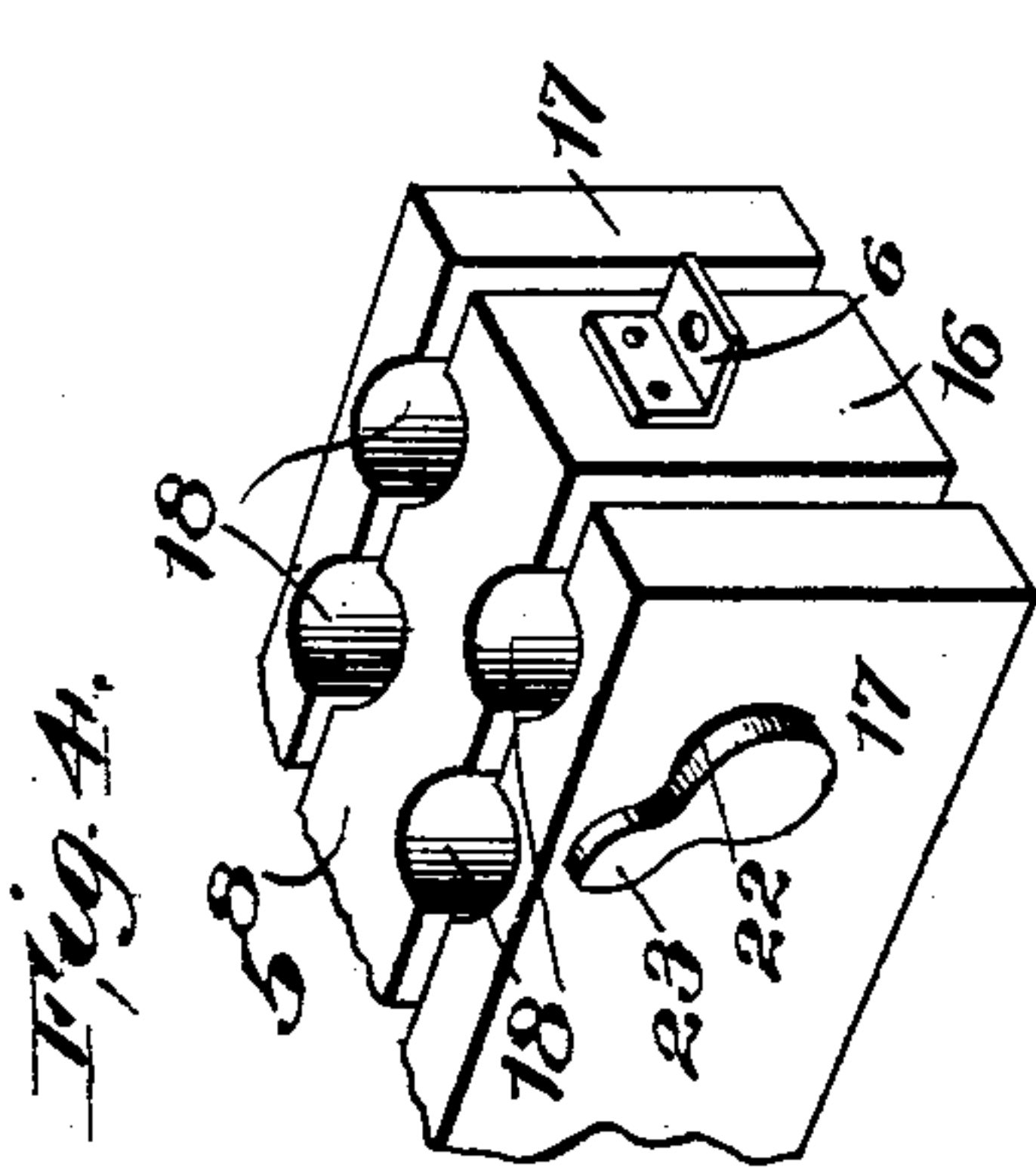
Patented Oct. 8, 1901.

S. L. TROUPE.
BOTTLE FILLING MACHINE.

(Application filed Apr. 22, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses
J. F. Pattison
E. M. Ritchie

Inventor
Samuel L. Troupe.

By
Mason Peunick & Lawrence
Attorneys

UNITED STATES PATENT OFFICE.

SAMUEL L. TROUPE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF
ONE-HALF TO HARRY HEWES, OF DARBY, PENNSYLVANIA.

BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 684,137, dated October 8, 1901.

Application filed April 22, 1901. Serial No. 56,980. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. TROUPE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Bottle-Filling Machines; and I do hereby 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.

This invention relates to improvements in bottle-filling machines, and more particularly to such a device provided with means for successively presenting a series of bottles to a corresponding number of filling-tubes and means for removing the bottles when filled.

It consists of a series of arms rotatably mounted upon a central axis and adapted to support a plurality of trays adapted to carry a number of bottles, which trays are adapted to be brought successively in alinement with bottle-filling means.

It also consists of a plurality of bottle-filling tubes leading from a supply-tank and adapted to enter bottles brought in alinement with said tubes and means for bringing a series of bottles in alinement with said tubes.

It further consists of certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 represents a perspective view of a bottle-filling machine embodying the features of the present invention. Fig. 2 represents a partial side elevation of the same, parts being broken away to better illustrate the features of the device. Fig. 3 represents a central vertical section through a bottle with the filling-tube applied, the supply-tank being shown in transverse section. Fig. 4 represents a perspective view of the end of a tray, illustrating the supporting-eye. Fig. 5 represents a transverse section through a tray, illustrating the clamping-bolt; and Fig. 6 is an inverted perspective view of a slotted bushing interposed between the bottle-neck and the supply-tank.

Referring to the drawings by numerals, 1 indicates any preferred form of frame or sup-

port, in the opposite uprights of which a shaft, as 2, finds bearings, and secured to this shaft as an axis are a series of radial arms, as 3 3, adapted to rotate with said shaft 2, the said shaft 2 being operated by any suitable means, as a crank 4. Swinging between and pivotally secured to the ends of each pair of the radial arms 3 is a suitable tray, as 5, adapted to support a plurality of bottles. Each of the trays 5 is provided at each end with an eye member, as 6, which is secured above the center of gravity of said tray and adapted to engage a hook or bracket, as 7, revolvably mounted in arm 3, whereby said tray is at all times maintained with its upper face in a horizontal plane. A supply-tank, as 8, is preferably secured between the uprights of frame 1 by means of arms 9 9, slidably engaging brackets 10, secured to said uprights, which arms 9 are united at the front and form a lug, as 11, adapted to project through a slot 12 in one of the said uprights. Secured to lug 11 on the outside of said upright is a downwardly-extending arm, as 13, provided with an operating-lever, as 14, adapted to engage any preferred securing means, as ratchet 15, whereby said tank 8 may be moved up and down and secured at any desired height.

Each of the trays 5 is preferably composed of a central longitudinal member 16 and two side pieces, as 17 17, which parts are formed with any preferred construction of bottle-retaining apertures, as 18 18, said apertures being formed, preferably, centrally of the dividing-line between member 16 and pieces 17, whereby a clamping pressure tending to draw pieces 17 17 near member 16 will have the effect of lessening the size of said apertures 18, and thereby firmly clamping the bottle therein contained. To accomplish this clamping effect, I provide a bolt, as 19, passing transversely through tray 5 and provided with a head 20 upon one side of said tray and a beveled nut, as 21, slidably mounted upon the other end. A correspondingly-shaped member is adapted to fit upon said beveled nut, as at 22, and provided with any suitable handle 23. A pin or other securing means, as 24, is passed through an aperture in the end of said bolt 19 for securing nut 21 and member 22 in place, whereby a partial

rotation of member 22 will produce a clamping effect upon the sides of tray 5. Suitable springs, as 25 25, may be interposed between member 16 and pieces 17 17, whereby when freed said springs will tend to separate said parts, thereby permitting the ready removal of the bottle carried by said tray.

The tank 8 is of any desired size and shape and preferably carries a plurality of filling-tubes, as 26 26, which preferably correspond in number to the number of bottles which one of trays 3 is capable of carrying. These tubes 26 are each preferably spring-pressed by means of spring 27, extending downwardly from screw-threaded cap 28, which cap is adapted to permit access to the interior of tank 8 when desired. The upper end of tube 26 is preferably provided with a cap or cover, as 29, provided with a flange larger than the aperture in the bottom of tank 8, through which said tube 26 passes. Cap 29 is adapted to remain at all times inside tank 8, and being pressed against the bottom of said tank 8 will tend to prevent the loss of the liquid contents of said tank. Beneath tank 8 and surrounding each of tubes 26 is provided a rubber sleeve, as 30, which is adapted in operation to fit within the neck of the bottle being filled and prevent the escape of liquid. Interposed between the upper edge of the bottle-neck and the bottom of tank 8 is provided a washer, as 31, of any suitable material, as rubber, and provided with one or more grooves, as 32, which in operation tend to permit the escape of air from the bottle. Each of the tubes 26 is provided with one or more apertures near the top and bottom thereof, as at 32 and 34, and provided with a cork, rubber, or other suitable stopper in its lower end for connecting with the bottom of a bottle, whereby the cap 29 may be raised from its seat and liquid may be permitted to flow into the tube from tank 8 and thence into the bottle. At any suitable points intermediate the length of tank 8 I preferably provide screw-threaded apertures, as 35, which are adapted to receive the couplings of any suitable supply-pipe leading from any suitable source of supply. The tank 8 may be divided by partitions into two or more chambers, each provided with one or more apertures 35, so that the apparatus may be used for simultaneously filling bottles with two or more different liquids. Upon each side of each of the trays 5 I preferably provide slanting track-engaging pieces 36, which are preferably hook-shaped in transverse section, so that when the tray is brought down over the tracks, as 37, the said pieces, being secured to the side of said tray at the same angle at which the said tracks 37 are arranged, will engage said tracks and permit the ready removal of said tray to a receiving-table, as 38, provided with any suitable support, as 39. The tracks 37 preferably extend at right angles to the arms 3 and are supported by suitable supports, as 40 40.

The inner track 37 is cut intermediate its length, as 41, for permitting the passage of arms 3 upon one side of the machine, the construction thereby being such that as one pair of arms 3 pass the horizontal plane of the top of said tracks 37 the said tracks will engage the pieces upon the edges of trays 5 and automatically lift the said tray from its engagement with the said arms as the said arms pass beneath the tracks, and thereby permit the tray to move downward along the tracks to table 38, whereby the bottles may be removed as desired.

I have found it necessary in operating my filling-machine to provide means for bringing each of the trays 5 into perfect vertical alinement with tank 8 and also means for retaining it in such position while said tank 8 is being moved downwardly to permit tubes 26 to enter the bottles carried by said tray, and to accomplish this I provide a hinge member, as 42, upon one of the uprights of the frame, or one of said hinges may be used upon each of the said uprights, the said hinge being provided with a pivoted portion, which is adapted to swing inwardly, but which cannot swing outward farther than in a direct line with the vertical plane of the edge of the said upright, whereby the tray 5 may readily pass the said hinge in one direction, but when attempted to pass in the other it will be stopped and held in vertical alinement with the tank 8. To assist in holding tray 5 in such alinement, I provide downwardly-extending arms, as 43 43, secured to the sides of the tank 8, which move downward with said tank and, fitting closely to the sides of said tray, prevent any movement of the same until the said tank has been raised.

In the operation of my improved bottle-filling machine I place a tray 5, laden with empty bottles, in pivotal engagement with a pair of arms 3, rotate the said arms until said tray is brought into vertical alinement with tank 8, and move tank 8 downward by means of lever 14 until each of tubes 26 has entered its respective bottle and the end thereof has struck the bottom of the bottle, and thereby raised the top end and permitted the liquid contents of the tank to fill the said bottle. The tray 5, with its filled bottles, will then be rotated farther until it is engaged by the tracks 37 and removed from engagement with said arms 3.

One of the great advantages of my improvement is the provision of means whereby different heights of bottle may be filled without danger of spilling any of the liquid, and this feature extends to various sizes and shapes of bottles, which may be filled with the same bottle-filling machine without altering the construction and arrangements of the parts in the least.

Although I have described in detail one specific embodiment of my invention, yet I do not wish to be understood as limiting myself to the exact form specified, but shall feel

at liberty to deviate from the size, shape, and minor details of the parts within the spirit and scope of my invention.

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

1. In a bottle-filling machine, the combination with a supporting-frame, a shaft rotatably mounted therein and a series of radial arms carried by said shaft, of means for supporting a plurality of bottles at the outer ends of said arms, means for filling the bottles carried by said arms, and means for automatically removing said bottle-carrying means from engagement with said arms, substantially as described.

2. In a bottle-filling machine, the combination with a supporting-frame, a shaft rotatable therein and pairs of radial arms carried by said shaft, of a support for a plurality of bottles between each of the several pairs of arms, filling devices carried by said frame for filling said bottles, means for bringing said bottle-supports into alinement with said filling devices, means for retaining said bottle-supports in such alinement, and means for removing said bottle-carrying means automatically from said arms, substantially as described.

3. In a bottle-filling machine, the combination with a suitable supporting-frame, of a rotatable shaft supported thereby, radial arms carried by said shaft, bottle-supporting trays supported between each two of said arms, means for supporting the upper face of each of said trays at all times in a horizontal plane, means for filling the bottles carried by said trays, and a track adapted to automatically remove said trays from the radial arms after the bottles have been filled, substantially as described.

4. Means for filling a bottle, comprising a supply-tank, a tube extending through one of the walls of the same of a length to reach the bottom of the bottle, a cap upon said tube adapted to close the aperture in said wall through which said tube passes, a spring for normally retaining said aperture closed, apertures being formed in said tube near either end thereof, whereby when a bottle-neck is brought into alinement with said tube and said tank is moved downwardly toward said bottle, the said tube will enter the bottle and contacting with the bottom thereof will be forced longitudinally into said tank, thereby permitting liquid to flow from said tank into said bottle, substantially as described.

5. In a bottle-filling machine, the combination with a suitable frame, and means for supporting a plurality of bottles beneath a supply-tank, of a supply-tank provided with means for filling said bottles, comprising each a tube passing through the bottom of said tank, a screw-cap in the wall of said tank for permitting access thereto, a cap closing the end of said tube and forming a closure for the aperture in the wall of said tank through

which said tube passes, a spring for holding said tube-cap upon its seat, a cushion-closure for the opposite end of said tube, a sleeve about said tube adapted to loosely fit the inside of the neck of a bottle, a washer about said tube above said sleeve, the said washer being provided with a groove from its inner to its outer periphery, and said tube being formed with apertures near its opposite ends, whereby when said tank is moved down upon said bottle the said tube will enter the said bottle and its cushioned lower end strike the bottom thereof, thereby raising the upper end thereof to the interior of the tank and permitting the flow of liquid from said tank to said bottle, the air within said bottle escaping through the groove in said washer, substantially as described.

6. A bottle-filling machine comprising in its construction a suitable frame, a rotatable shaft carried thereby, a plurality of pairs of radial arms carried thereby, a bottle-supporting tray adapted to be supported pivotally between each of said pairs of arms, means for filling said bottles, track-engaging strips secured to the sides of each of said trays, and a track extending at right angles to said arms and adapted to engage said strips as each pair of arms is moved past said tracks, whereby said trays may be automatically disengaged from said arms and removed from said frame, substantially as described.

7. In a bottle-filling machine, the combination with a frame, a rotatable shaft supported thereby, series of pairs of radial arms carried by said shaft and brackets carried in the ends of said arms and revoluble therein, of a tray adapted to be carried between each of said pairs of arms, an eye carried by each end of each of said trays adapted to engage said bracket and thereby maintain said tray in a horizontal plane, said trays being provided with bottle-carrying means, means carried by said frame for supporting said trays against movement when said bottles are being filled, means for filling said bottles, and means for removing said trays from said frame, comprising tracks extending at right angles to said arms, means carried by said trays adapted to engage said tracks, and a table at the outer end of the tracks for receiving said trays, whereby when said arms pass said tracks the trays will automatically engage the same and be lifted out of engagement with said arms as they pass beneath the tracks, thereby permitting each of the trays successively to be removed automatically from said frame, substantially as described.

8. In a bottle-filling machine, the combination with a frame, a rotatable shaft carried thereby and arms secured thereto and extending radially therefrom, of a bottle-supporting tray adapted to be secured between two of said arms in such manner as to maintain said tray at all times in a horizontal plane, means for filling the bottles carried by

said tray, tracks leading from said frame and adapted to automatically lift said trays from said arms, and slanting to a receiving means for said tray, and curved strips secured upon each side of said tray at a slant corresponding to the slant of said tracks, whereby when said strips engage said tracks the said tray will be automatically disengaged from said arms and permitted to move longitudinally of said tracks, the said tray being at all times in its traverse of said tracks in a horizontal plane, substantially as described.

9. In a bottle-filling machine, the combination with a frame, of rotatable arms carried thereby, bottle-filling means supported by said frame, and bottle-carrying means carried by said arms and adapted to be presented to said bottle-filling means, comprising a tray provided with series of apertures for receiving the said bottles, the said tray being divided longitudinally centrally of said apertures and means for forcing the parts of the tray together thereby firmly clamping each of said bottles, consisting of a bolt passed transversely through each end of said tray and provided with a head engaging one side of said tray and a loose beveled nut upon the other end engaging the other side of said tray, and means for pressing said nut longitudinally of said bolt, substantially as described.

10. A bottle-filling machine, comprising a frame, bottle-filling means supported thereby, and means for presenting bottles to said filling means, comprising a tray for carrying said bottles and means for supporting said tray, the said tray being composed of a central member and two side pieces, springs between said central member and said side pieces for spreading them apart and permitting of the ready removal of said bottles, and means for clamping said bottles, comprising apertures for retaining said bottles, a portion of each of the said apertures being formed in said central member and the other portion thereof being formed in one of the side pieces, and means for forcing the said side pieces to-

ward the central member consisting of a bolt passed transversely through the said tray near either end thereof, the said bolt being provided with a head at one end adapted to press against one of the side pieces, and a loose nut on the other end provided with a flat face adapted to press against the other side piece and a beveled face adapted to receive a correspondingly-beveled member, which member is adapted to surround said bolt near the end thereof and be retained thereon by a key passed through an aperture in the end of said bolt, and a handle upon said beveled member, whereby the same is adapted to be rotated for pressing said nut longitudinally of said bolt, and thereby forcing said side pieces nearer said central member and clamping the bottles carried by the said tray, substantially as described.

11. In a bottle-filling machine, the combination with a frame, a rotatable shaft carried thereby and pairs of radial arms carried thereby, of means supported by said arms for carrying a plurality of bottles, means for filling said bottles carried by said frame, means for bringing said bottle-carrying means in alinement with said filling means and means for retaining it in such position while the filling operation continues, comprising a hinge secured to one of the uprights of said frame and adapted to swing but one way, whereby, when the said bottle-carrying means has passed the said hinge in one direction and is returned thereto from the other it will be brought into alinement with said filling means, and arms carried by said filling means adapted to engage said bottle-carrying means and prevent any movement of the same during said filling operation, substantially as described.

In testimony whereof I have hereunto affixed my signature in presence of two witnesses.

SAMUEL L. TROUPE.

Witnesses:

WILLIAM S. ATCHISON,
ALBERT H. COGGINS.