

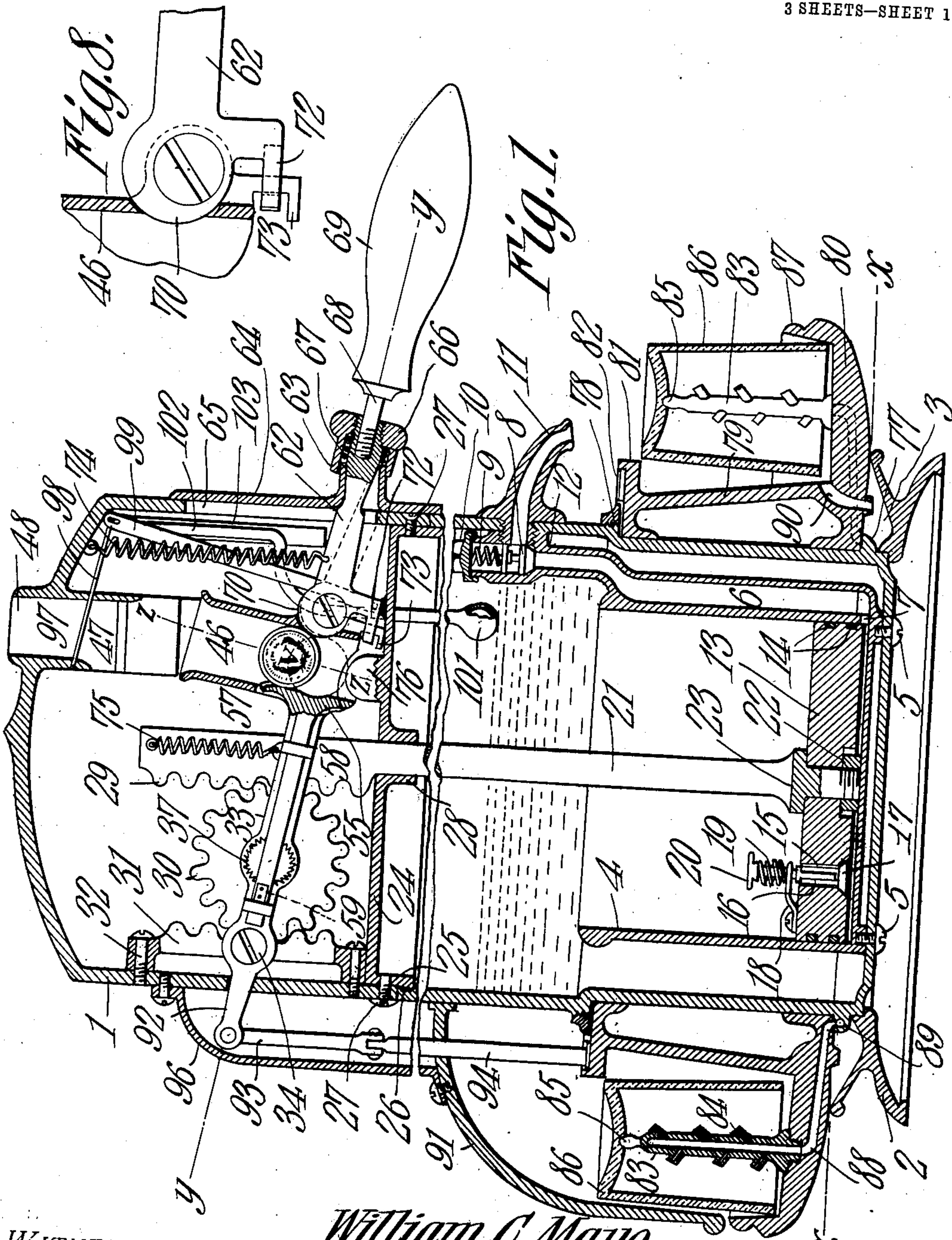
No. 896,737.

PATENTED AUG. 25, 1908.

W. C. MAYO & J. HOULEHAN.
LIQUID DISPENSING APPARATUS.

APPLICATION FILED JUNE 26, 1907.

3 SHEETS—SHEET 1.



WITNESSES:

E. J. Stewart
G. J. Chapman

William C. Mayo
John Houlehan

INVENTORS

By

C. A. Snow & Co.

ATTORNEYS

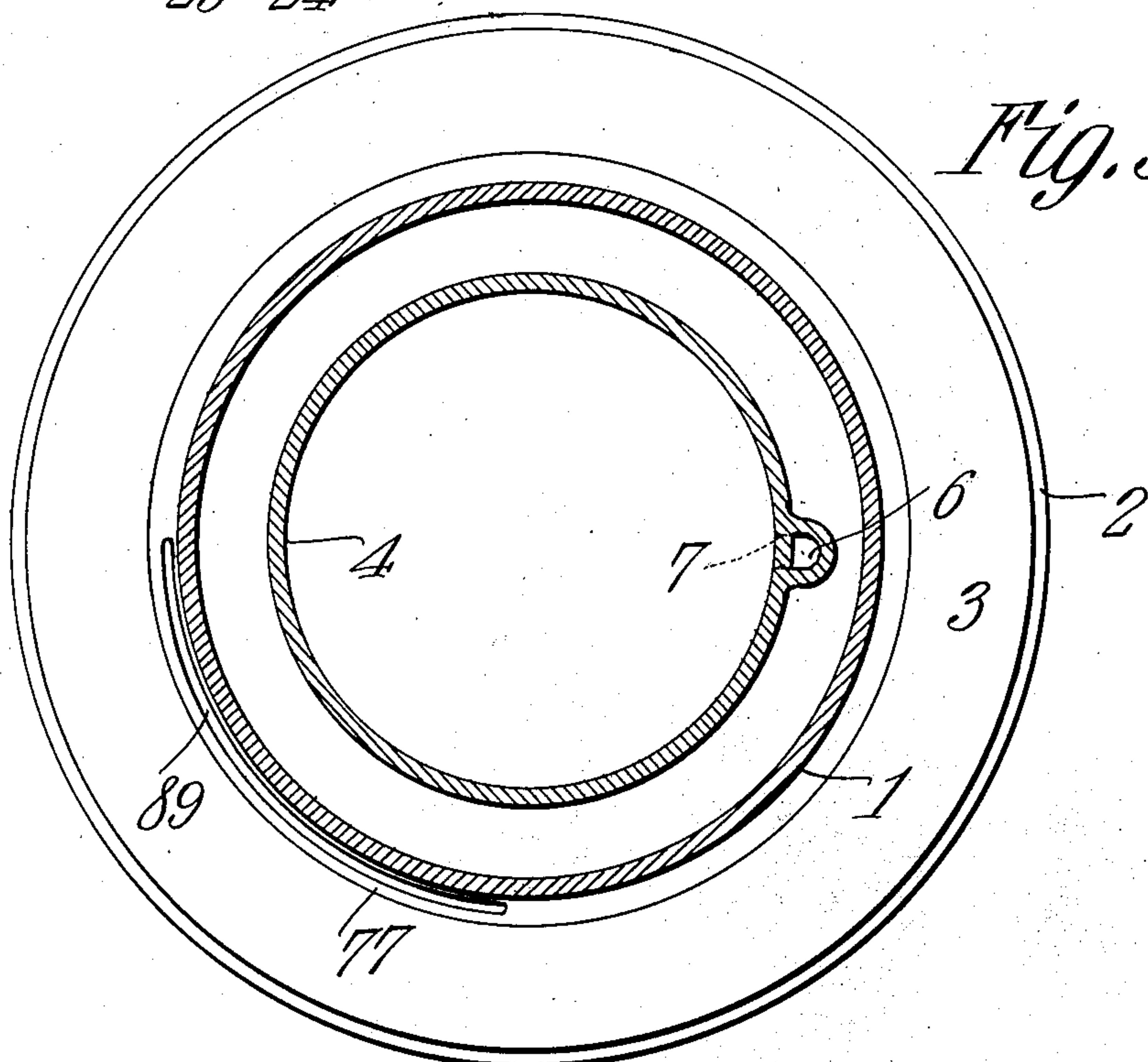
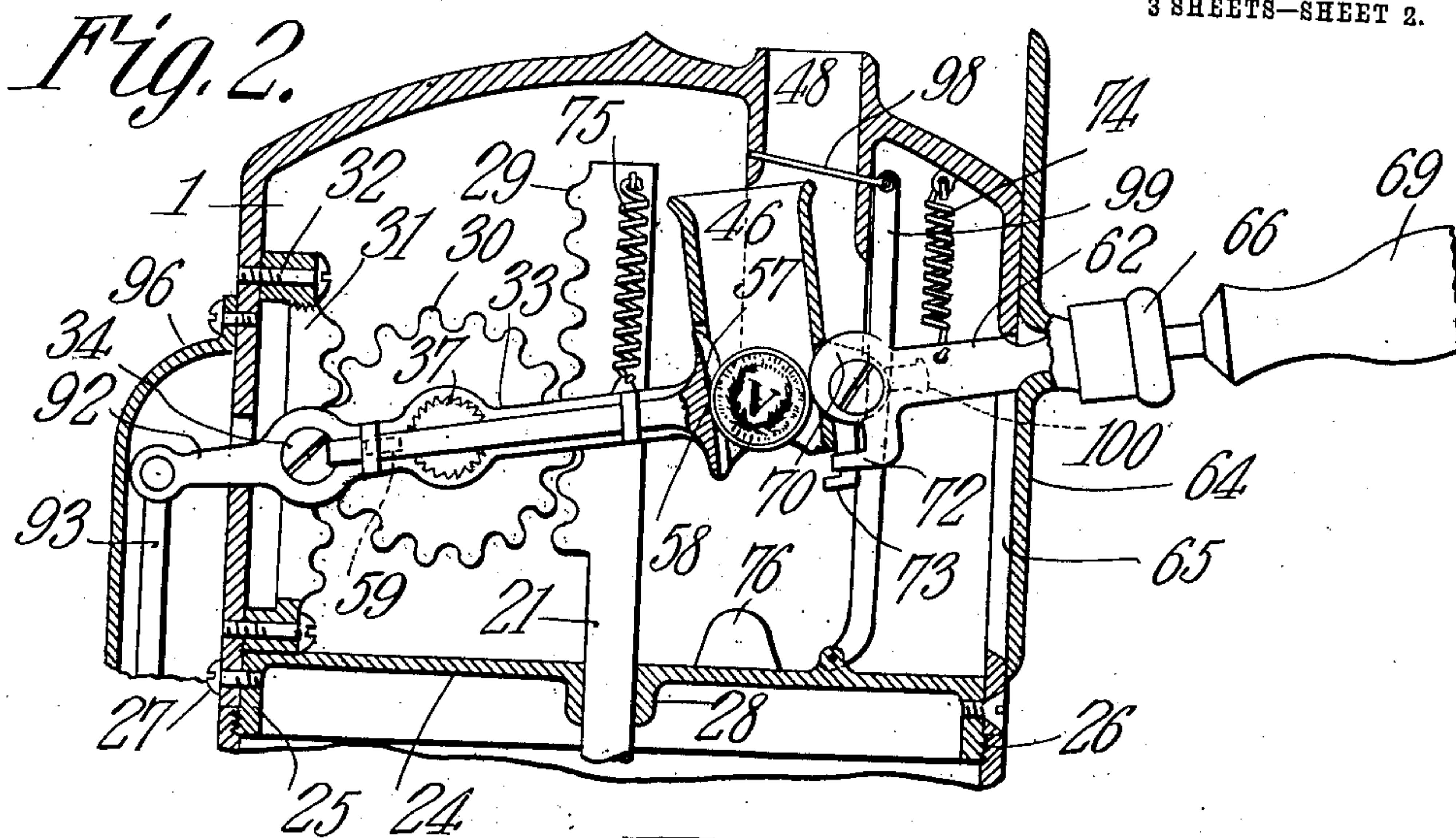
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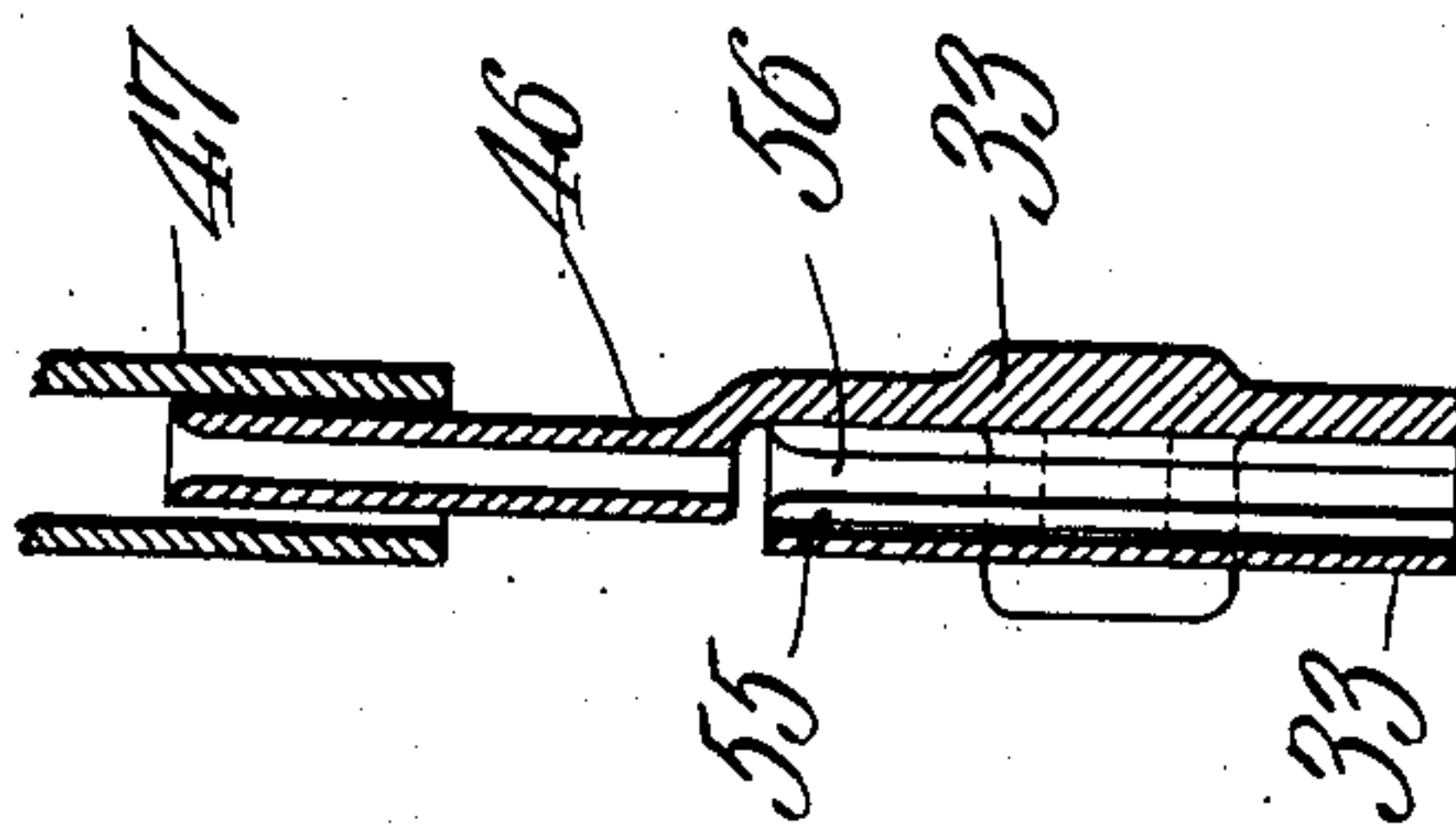
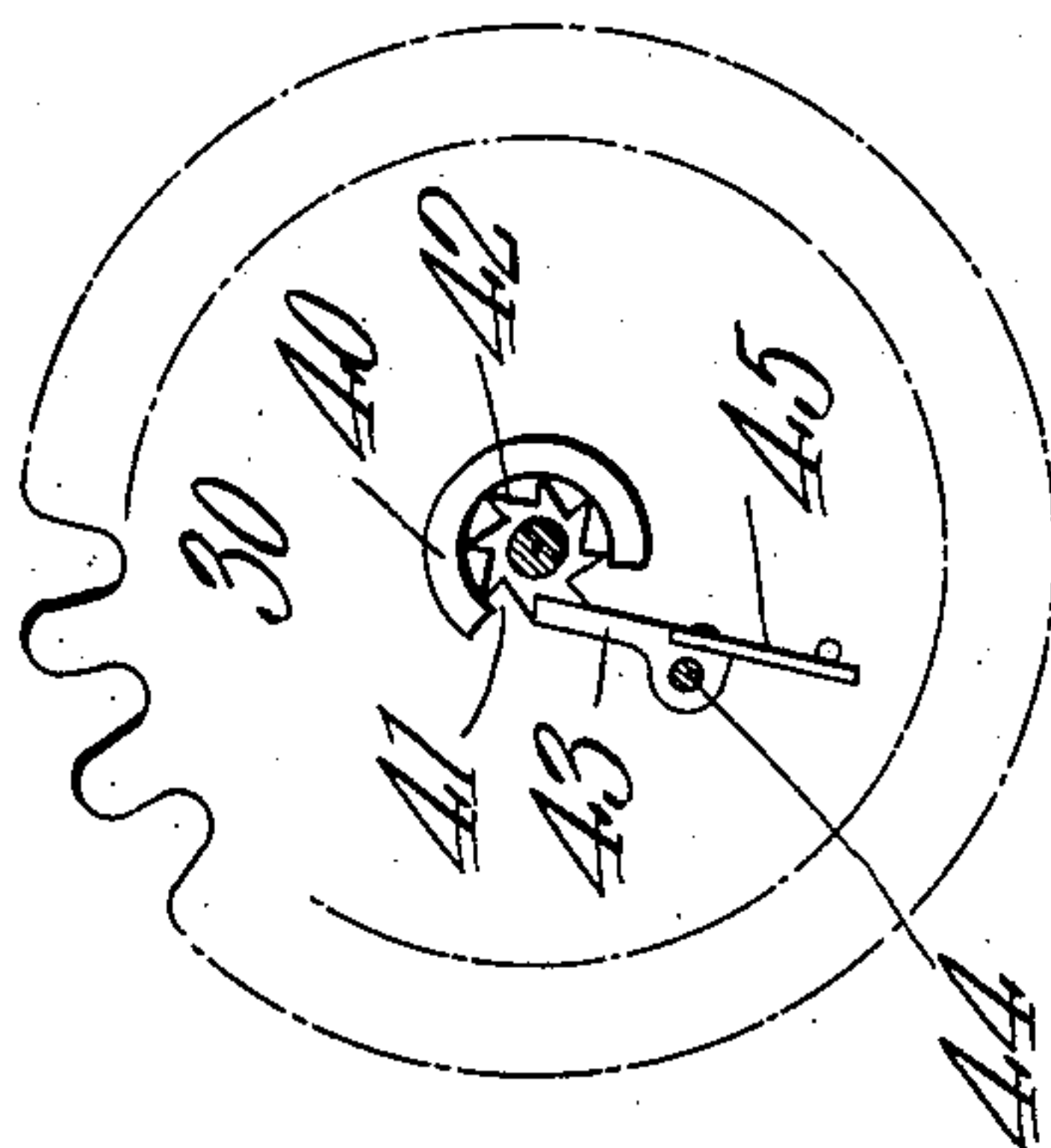
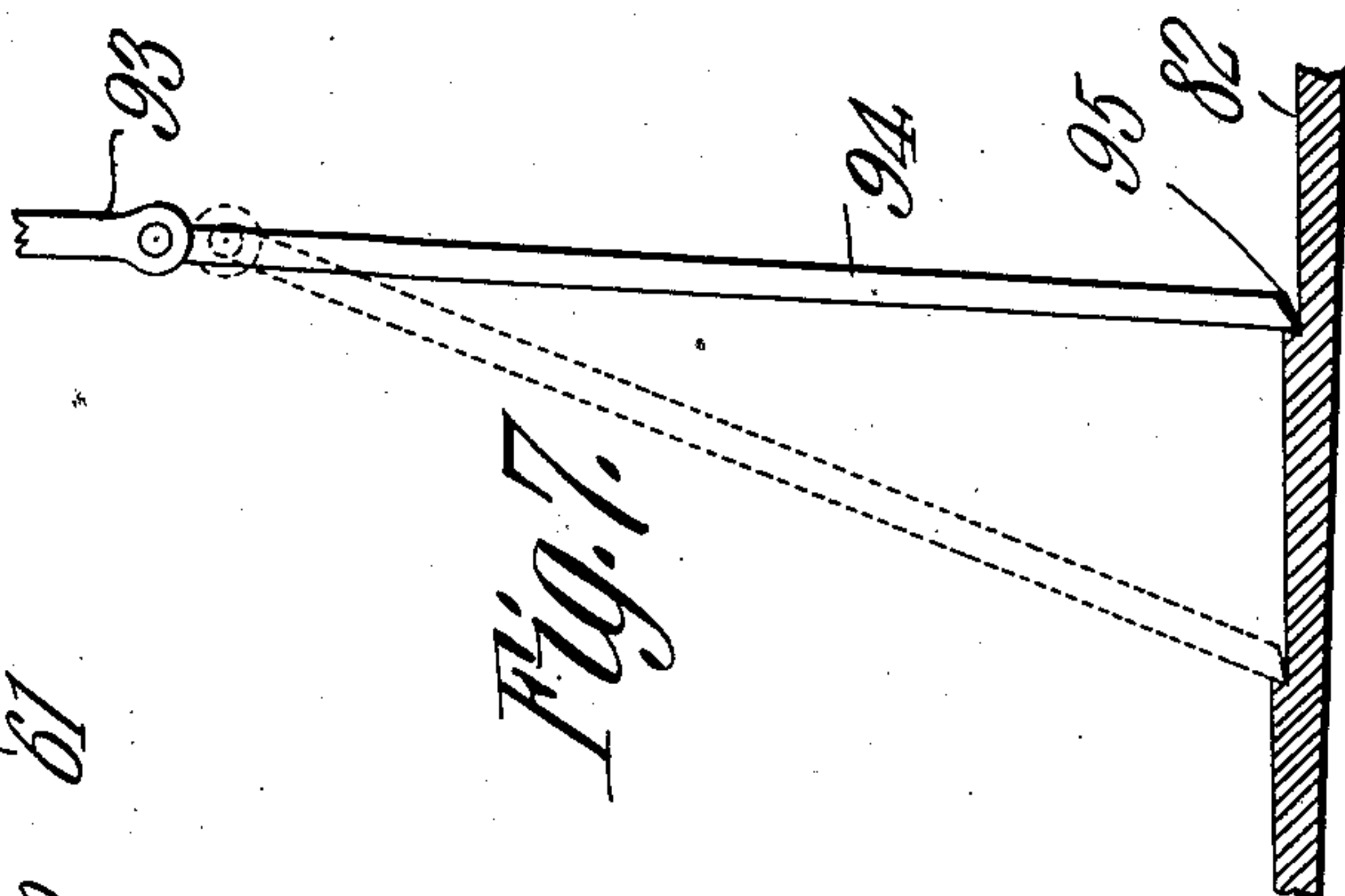
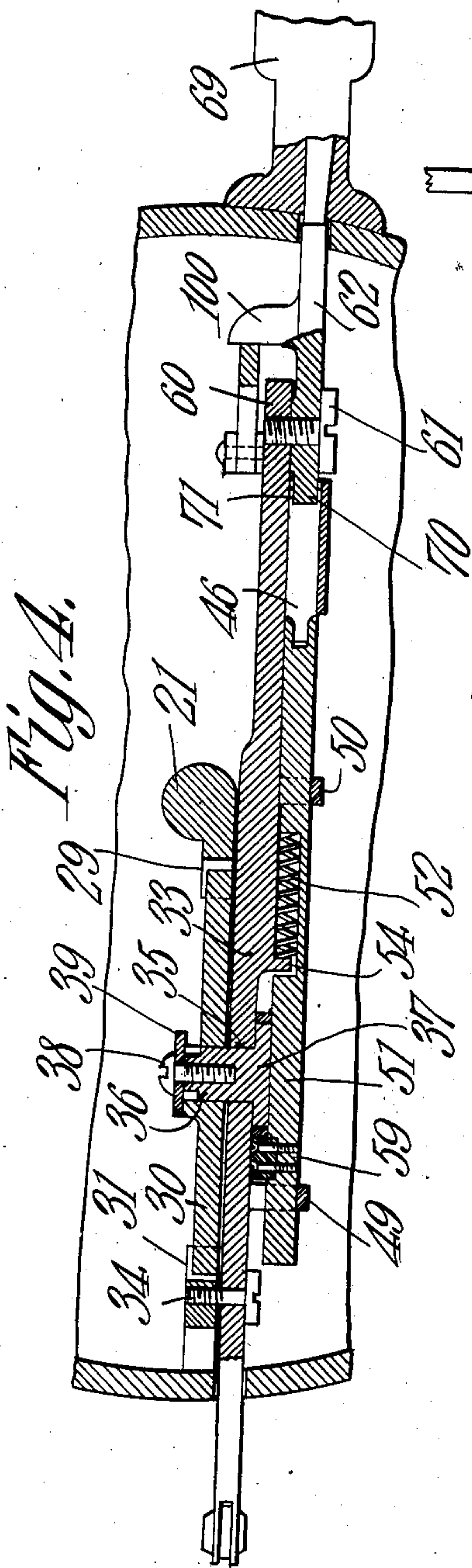
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WILLIAM C. MAYO AND JOHN HOULEHAN, OF EL PASO, TEXAS, ASSIGNORS OF ONE-THIRD
TO GEORGE E. BRIGGS, OF BARSTOW, TEXAS.

LIQUID-DISPENSING APPARATUS.

No. 896,737.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Original application filed February 2, 1907, Serial No. 355,457. Divided and this application filed June 26, 1907.
Serial No. 380,984.

To all whom it may concern:

Be it known that we, WILLIAM C. MAYO and JOHN HOULEHAN, citizens of the United States, residing at El Paso, in the county of El Paso, State of Texas, have invented a new and useful Liquid-Dispensing Apparatus, of which the following is a specification.

This invention has reference to improvements in liquid dispensing apparatus, and its object is to provide a means whereby beverages or other liquids may be obtained from the apparatus by a customer on the deposition in the apparatus of a coin of proper value.

The present invention has more particular reference to the means whereby the liquid may be dispensed after having been released from a normally locked or inoperative condition by the introduction into the apparatus of a coin of proper value.

The mechanism whereby the introduced coin operates to release or unlock the apparatus to operation forms the subject-matter of our application No. 355,457, filed February 2, 1907, for liquid dispensing apparatus, of which the present case is a division.

The present invention comprises means whereby, after the apparatus has been unlocked by the introduced coin, liquid may be ejected from a suitable container in predetermined quantities on the manipulation of the apparatus through external means under the control of a customer.

Since one of the purposes of the invention is the dispensing of beverages, the invention further comprises means for providing a customer with a clean glass or other liquid receptacle, and it also comprises means whereby glasses that have been used by previous customers may be automatically cleansed and ultimately presented to the customers, all by the operation of the machine in the act of ejecting the liquid to a customer.

The invention will be fully understood from the following detailed description, taken in connection with the accompanying drawings forming part of this specification, in which,—

Figure 1 is a central vertical section of the improved liquid dispensing machine, with some parts shown in elevation, and with the parts in position to illustrate one phase of the operation; Fig. 2 is a similar view of the portion of the machine containing the coin-oper-

ated mechanism, and showing another phase of the operation of the machine; Fig. 3 is a cross section on the line $x-x$ of Fig. 1; Fig. 4 is a cross section on the line $y-y$ of Fig. 1; Fig. 5 is a section of the coin conduit on the line $z-z$ of Fig. 1; Fig. 6 is a detail view of the operating pinion; Fig. 7 is a detail view, partly in section, showing a portion of the operating mechanism for propelling the turntable carrying the liquid-receiving receptacles; and Fig. 8 is a detail view of the coin engaging end of the operating lever handle section.

Referring to the drawings, there is shown a main casing 1 of cylindrical shape, the bottom of which is supported upon an annular foot 2 having formed thereon so as to surround the base an annular trough 3 designed to receive waste liquid which will be permitted to escape through a suitable orifice, not shown. In the bottom of the casing 1 and concentric therewith is a pump cylinder 4 secured to the casing by screws 5, or otherwise, and this pump cylinder has formed in one side a conduit 6 which communicates with the interior of the pump cylinder through an opening 7 at the lower end thereof. This conduit 6 is continued up above the pump cylinder and there carries a valve 8 controlled by a spring 9, and the top of the conduit is closed by a screw-cap 10 which also serves to confine the valve and spring in the conduit. Above the valve-seat the conduit 6 communicates with a spout 11 screwed through the side of the casing into a boss 12 formed on the side of the conduit 6. Within the pump cylinder 4 there is a piston 13 provided with suitable packing rings 14, and through this piston is a passage 15 in which is located a valve 16 provided with a valve head 17 seated in a suitable valve-seat formed at the lower end of the passage 15. The stem of the valve 16 is guided by a bracket 18, and a head 20 formed on the valve stem serves to maintain the valve head 17 normally against its seat. The piston is carried on the lower end of a piston-rod 21 which extends through the piston and is there threaded to receive a nut 22 which serves to clamp the piston firmly to a flange 23 formed on the piston-rod 21 near its lower end.

The casing 1 is designed to form a receptacle for the liquid to be dispensed and also

for the coin-controlled operating mechanism for the machine. To separate the casing into a lower compartment for the liquid and an upper compartment for the coin-controlled mechanism, the casing is divided into two parts, the upper part having its lower end closed by a diaphragm 24 provided with an annular flange 25 extending below said upper part of the casing and there threaded so as to engage threads on the upper inner edge of the lower or liquid-receiving portion of the casing. This threaded connection is indicated at 26. In order that the mechanism in the upper compartment of the casing may be readily accessible, the diaphragm 24 is held removably therein by screws 27, or otherwise.

At the center the diaphragm 24 is formed with a boss 28 through which extends the piston-rod 21, and above this boss the piston-rod projects upwardly into the upper chamber of the casing and is there provided with rack teeth 29 for a purpose which will hereinafter appear. It will now be seen that if the piston be raised from the lowermost position indicated in Fig. 1, liquid contained in the lower compartment of the casing and at such a level as to fill the pump cylinder 4, will flow through the opening 15 and by the valve head 17 into the space below the piston, and when the piston is again depressed the valve head 17 will close this opening and the liquid will be forced up the conduit 6, opening the valve 8 and escaping through the spout 11, the pump being of the ordinary force-pump type. Coming, now, to the mechanism shown in the upper compartment of the casing, it will be seen that the rack teeth 29 on the upper end of the pump piston engage a pinion 30 which, in turn, meshes with another rack 31 fast to the inside of the casing by means of screws 32 and facing the rack 29 on the upper end of the piston-rod. This structure is such that any force applied to the axis of the pinion 30 to move the same in a vertical plane will, through the coaction of the two racks 29 and 31 and the pinion 30, cause the rack 29 to travel through twice the distance traveled by the axis of the pinion 30. Thus the pump may be operated through the desired range of movement by a movement of the pinion axis through a path of only half the extent of movement of the pump piston.

For the purpose of moving the pinion 30 through the desired range of travel, there is provided a lever 33 pivoted coincident with the rack bar 31 by a pivot screw 34 entering a nut formed in said rack bar. This lever 33 is perforated coincident with the axis of the pinion 30, as shown at 35, Fig. 4, and through this perforation extends the hub 36 of a toothed wheel 37, which hub 36 constitutes the journal bearing of the pinion 30 and to which the latter is held by a screw 38 and in-

terposed washer 39, the screw being threaded into said hub 36 and confining the washer against the latter and against an annular boss 40 formed on the corresponding face of the pinion 30. This boss 40, however, is cut away, as shown at 41, to expose ratchet teeth 42 formed on said hub 36 at the end projecting through the pinion 30. In the path of the ratchet teeth 42 is a ratchet pawl 43 pivoted at 44 upon said pinion 30 and under the stress of a spring 45, as indicated in Fig. 6. The end of the lever 33 remote from its pivot point carries a section 46 of the coin conduit, which section 46 is, in one phase of the operation of the mechanism, coincident with and projecting into another section 47 of the coin conduit formed as a part, and, if desired, an integral part, of the walls of the upper compartment of the casing 1, and this section 47 terminates at the upper end in a coin-receiving opening 48 exterior to the machine.

Carried by the lever 33 and confined thereto by guide brackets 49—50 is a slide bar 51 constrained by a compression spring 52 to normally tend in a direction away from the pivot point of the lever 33. The spring 52 is confined in a recess 53 formed in the inner face of the slide bar 51 and abuts at one end against one wall of this recess and at the other end against a lug 54 formed on the lever 33 and projecting into the recess 53. This slide bar extends to the section 46 of the coin conduit carried by the lever 33 and is there formed into a head 55 having therein a vertical groove 56 coincident with the coin channel formed in the coin conduit section 46. This head 55 is, however, formed with a cam face 57 in the path of the coin, and a recessed portion 58 below the same constitutes a pocket for the coin, as will hereinafter appear. The slide bar 51 also carries a block 59 in position to engage the teeth of the toothed wheel 37 when this lever has been moved by the spring 52 away from the pivot point of the lever 33, the said toothed block also acting as a stop for limiting the movement of the slide bar under the action of the spring 52.

The lever 33 has an extension 60 beyond the coin conduit section 46 and there has pivotally secured to it by means of a screw 61 an arm 62 extending to the exterior of the machine. This arm 62 passes through a boss 63 formed on a sliding cover plate 64 closing a vertical slot 65 formed in the wall of the casing 1 and constituting a guideway for the movement of the arm 62, whereby the latter may have an extended vertical movement but is prevented from lateral movement and, in turn, serves at this point to guide the lever 33 of which it constitutes an extension or elongation. The arm 62 is threaded at its outer end to receive a cap 66 between which and the outer end of the boss 63 there is confined a spring 67. The arm 62 also receives

in a nut formed in its outer end the shank 68 of a manipulating handle 69 located exterior to the machine in convenient position for manipulation by a customer.

5 The inner end of the arm 62 is formed into a cam head 70 eccentric to the pivot screw 61, and this cam head enters the coin conduit section 46 through a slot 71 formed therein opposite the head 55 formed on the slide bar 10 51. The arm 62 has a limited movement around the pivot screw 61 determined by a slotted or hooked finger 72 formed on said arm and engaging a lug 73 formed on said coin conduit section 46 in the path of said finger 72. Connected to the arm 62 within the 15 casing there is a spring 74, the other end of which is fast to the top of the casing. There is also another spring 75 connected at one end to the lever 33 and at the other end to 20 the upper end of the piston-rod 21.

The normal position of the parts is shown in Fig. 1. That is, the pump piston is at the 25 lowermost point of its travel and the lever 33 has moved downward until stopped by the engagement of the lug 73 with the diaphragm 24, while the spring 74, acting on the arm 62, maintains it in a slightly elevated position a little above the lower edge of the slot 65, 30 with the cam head 70 projecting into the coin conduit section 46 opposite the head 55 on the slide bar 51, the two parts 55 and 70 coacting to restrict the width of the coin conduit at this point. Now, if a coin be dropped 35 through the opening 48, it will gravitate to this restricted portion of the coin conduit, but if the handle 69 be depressed against the action of the spring 74 the arm 62 will be 40 turned on its pivot 61, carrying the cam head 70 out of the conduit, so that the coin may now drop until arrested by a stop 76 formed on the diaphragm 24, and when the parts are in the position shown in Fig. 1 this stop 76 enters the lower end of the section 46 of the coin conduit sufficiently to hold the coin in 45 line with the recess 58 in the head formed on the end of the slide bar 51. Now, if the handle 69 be moved upward by the action of the spring 74 and by the hand of a customer, the cam head 70 will again enter the coin conduit 50 section 46 and engage the coin, forcing it against its seat on the head 55 and ultimately causing the bar 51 to be moved longitudinally to a sufficient extent to carry the toothed lug 59 out of engagement with the 55 toothed wheel 37. The pinion 30 is now unlocked and the handle 69 may be raised to the full extent of its travel and thus, through the action of the fixed rack 31 and the pinion 30, raise the piston-rod 21 and the piston 13 60 to the upward limit of their movement, as shown in Fig. 2, this upward limit of travel being determined by the position of the upper edge of the slot 65 which is then engaged by the arm 62. The customer now presses 65 down upon the handle 69 and because of the

resistance of the liquid, which has in the meantime flowed through the valve in the piston to the under side of the latter, the first downward movement of the handle will 10 cause the arm 62 to turn on its pivot and carry the cam head 70 away from the coin, thus permitting the coin to fall from out the movable section of the coin conduit. The slide bar 51 now returns to the first position 15 under the action of the spring 52 and the toothed block 59 engages and locks the toothed wheel 37. But the pinion 30 is still free to move upon its axis since the pawl 43, which holds the pinion against movement on 20 the hub 36, is inactive to the movement of the pinion in a direction to lower the piston. However, as soon as the handle 69 has again been lowered to the position shown in Fig. 1, 25 the pawl 43 and ratchet teeth 42 coact with the toothed wheel 37 and toothed block 59 to effectually lock this pinion against return movement and so lock the entire structure 30 against further manipulation until another coin of the proper denomination has been inserted.

90 In the operation thus far described it has been assumed that the user is supplied with a suitable receptacle for the liquid ejected through the spout 11. But the invention 95 contemplates means whereby clean glasses, or other suitable receptacles, may be carried by the machine for the convenience of the user. For this purpose there is formed on 100 or secured to the lower portion of the casing 1 an annular flange 77 between which and a shoulder 78 higher up on the casing is mounted an annular casting 79 made hollow, 105 as shown, for lightness, and this casting is formed at its lower end with an annular, horizontally-projecting glass-carrier 80. Upon the upper edge of the casting 79 there is 110 formed an annular ledge 81 carrying an annular series of ratchet teeth 82, the purpose of which latter will be hereinafter described. The flange 77 carries a number of 115 equi-distantly spaced hollow uprights 83, each having a number of upwardly-projecting nozzles 84, and the top of each upright terminates in a pin 85 upon which is hung 120 a glass tumbler 86 bottom upward, the lower edge of the glass hanging close to the upper face of the glass-carrier 80 within an up- 125 turned rim 87 formed on the edge of the glass-carrier. The interior of each of the hollow uprights 83 communicates with a duct 88 extending through the base of the glass-carrier to a point above the flange 77, and in 130 this flange 77 there is formed a passageway 89, open on its upper edge so as to be in communication with the inner ends of the ducts 125 88. The passageway 89 extends through but a portion of the circumference of the flange 77, say to the extent of about ninety degrees. The ducts 88 will therefore be 130 in communication with this passageway

through but one-quarter of the revolution of the glass-carrier, which latter, in the practical operation of the machine, is made to travel entirely around its seat on the flange 77.

5 Water is conveyed to the passageway 89 from a source of supply, not shown, and when one or more of the ducts 88 is in communication with said passageway 89 the water is conveyed through the hollow uprights 83 and
10 forced through the nozzles 84 against the sides of the glass tumblers. These nozzles 84 are given a slight twist, so that the water jets will strike the inner walls of the tumblers more or less tangentially and produce a swirl
15 of the water which is very efficient in cleansing the inside of the glasses. The water used for washing the glasses falls on to the bottom of the glass-conveyer, which is purposely made slightly inclined toward the axis of the
20 conveyer, and a number of passages 90 are provided to convey the waste water into the trough 3 from which it may be conveyed away in any suitable manner, as by means of a waste pipe, which, however, is not shown.
25 The glass-carrier is covered by a hood 91, fast in any suitable manner to the casing, and which extends around the said glass carrier except adjacent to the spout 11, so that the glasses are hidden from view while being
30 cleansed and only the one about to be used is within the reach of the customer.

The passageway 89 is made to extend through only about a quadrant so that the glasses will have time to drain and dry before they are brought into reach of the customer. In order to prevent the escape of
35 water between the passageway 89 and the edges of the glass-carrier, the meeting edges of the glass-carrier and the flange 77 may be ground to produce a watertight joint.

In order to provide for the rotation of the glass-carrier, the lever 33 is formed with a short arm 92 to which is secured a link 93 carrying a pendent pawl 94, the lower end of
45 which is formed with a tooth 95 engaging the rack teeth 82 on the ledge 81 before referred to. The pawl 94 passes through and is guided in the upper wall of the hood 91, and this portion of the structure is protected by a
50 casing 96 fast to the casing 1 and the hood 91, as indicated in Fig. 1. Now, when the lever 33 is moved to raise the piston 13 the outer end of the arm 92 is depressed and through the link 93 depresses the pawl 94, which, in
55 its normal position, rests behind a tooth 82 at a slight angle to the vertical, so that as a result of the downward movement of the arm 92 and link 93 the lower end 95 of the pawl 94 will be forced in a direction to rotate the
60 glass-carrier upon a vertical axis, and the parts are so proportioned that this rotation will be sufficient to move the glass-carrier a distance equal to the distance between two glasses carried thereby.

It is possible that an unscrupulous customer may endeavor to insert a coin to which a string or wire has been attached for the purpose of operating the machine and then withdrawing the coin. To prevent this, the upper section 47 of the coin conduit is provided with a cross slot 97 in which moves a
70 knife blade 98 fast to one end of a rock-arm 99 pivoted at the other end to the diaphragm 24 and in the path of a lug 100 on the arm 62 of the manipulating lever, so that as this
75 lever is moved the knife will be forced across the conduit and thereby sever any cord or wire which may have been attached to the coin, before the lever can be manipulated to cause the machine to expel the liquid. 80

For the purpose of notifying an observer of the amount of liquid contained in the lower compartment or liquid reservoir, a float 101 is provided therein having attached thereto an indicator arm 102 arranged opposite a window 103, whereby the level of the liquid in the reservoir may be at once ascertained and the intended purchaser may thereby know whether or not the reservoir contains sufficient liquid to supply the normal operation of the machine. 85 90

We claim:—

1. In a liquid dispensing apparatus, a liquid reservoir, a pump connected therewith, means for operating said pump, a rotatable glass-carrier mounted on said liquid dispensing apparatus, and connections between the operating device of the liquid dispenser and the glass-carrier for rotating the latter step-by-step by the operation of the liquid dispenser. 95 100

2. A liquid dispensing apparatus comprising a reservoir, a pump, means for operating said pump, a glass-carrier on said reservoir, connections between the pump-operating mechanism and said glass-carrier for rotating the latter, a conduit for cleansing water, water conveyers on the glass-carrier, and connections between the conduit and said water conveyers. 105 110

3. A liquid dispensing apparatus comprising a liquid reservoir, a pump for forcing liquid to the exterior of the reservoir, means for operating the pump, a rotatable glass carrier mounted on said reservoir, connections between the pump-operating mechanism and said glass-carrier for operating the latter, glass-supports on said carrier, water-conveying passages leading to said supports, and a water conduit extending partially around said reservoir in the path of the water passages in the glass-carrier. 115 120

4. In a liquid dispensing apparatus, a liquid reservoir, a force pump connected therewith for forcing liquid to the exterior of the apparatus, a lever operating said pump, a rotatable glass-carrier mounted on said reservoir, and pawl-and-ratchet connections be- 125

tween the pump-operating lever and the glass-carrier for rotating the latter step-by-step by the reciprocation of said lever.

5. In a dispensing apparatus, a pivoted lever for operating the delivery mechanism, a slot in the casing for the passage of the lever to the exterior thereof, a slidable cover over the slot, and elastic connections between the lever and pivoted cover whereby the latter is held in engagement with the casing to cover the slot.

6. A liquid dispensing apparatus comprising a liquid reservoir, a force pump connected therewith, a conduit from said pump to the exterior of the apparatus, a lever for operating the pump, a rotatable glass-carrier mounted on said reservoir, means for cleansing the glasses coacting with said glass-carrier, a shield adapted to said reservoir and covering the glasses being cleansed, and connections between the lever and glass-carrier for operating the latter step-by-step by the operation of the lever.

7. In a liquid dispensing apparatus, a movable glass-carrier, means for cleansing the glasses coacting with said glass-carrier, means for moving the glass-carrier step-by-step, and a shield for covering the glasses during the travel of the latter through the cleansing zone.

8. In a liquid dispensing apparatus, a rotatable glass-carrier, means for cleansing the glasses coöperating with said glass-carrier to act on the glasses through a portion only of the rotative travel of the carrier, a shield of less extent than the length of travel of the carrier and covering the glasses being cleansed, and means for causing the rotation of the glass-carrier.

9. In a liquid dispensing apparatus, a rotatable glass carrier, nozzled supports for the glasses mounted on said glass-carrier, passages leading to said supports, a conduit communicating with said passages through a part only of the path traversed by said passages, and propelling means for said glass-carrier.

10. In a liquid dispensing apparatus, a rotatable glass-carrier, nozzled supports for the glasses mounted on said glass-carrier, passages leading to said supports, a conduit communicating with said passages through a part only of the path traversed by said pas-

sages, propelling means for said glass-carrier, and a shield for covering the glasses and having its continuity broken to expose the glasses to view during a portion of the rotative travel of the carrier.

11. In a liquid dispensing apparatus, a liquid reservoir, a reciprocating-piston pump communicating therewith, a rack carried by the piston-rod of the pump, another fixed rack, a pinion connecting the two racks, and a lever carrying the pinion and movable to cause the pinion to transmit motion to the rack on the pump piston.

12. In a liquid dispensing apparatus, a liquid reservoir, a force pump communicating with said reservoir for forcing liquid to the exterior of the apparatus, means for operating the pump, a rotatable glass carrier mounted upon said reservoir, and connections between the pump operating means and the glass carrier for moving the latter rotatively step by step with each operation of the pump operating means.

13. A liquid dispensing apparatus comprising a liquid reservoir, a force pump contained therein, a conduit from said pump to the exterior of the machine, a rack bar carried by the pump piston, a pinion, a fixed rack bar with which as well as the rack on the pump piston the pinion coöperates, a lever carried by said pinion, a rotatable glass carrier mounted on said reservoir, and connections between the lever and glass carrier for operating the latter step by step by the operation of the lever.

14. A liquid dispensing apparatus comprising a reservoir, a pump contained therein, a conduit from the pump to the exterior of the machine, a rack on the pump piston, a fixed rack, a pinion engaging both racks, a lever carrying the pinion, a rotatable glass carrier mounted on the reservoir, and propelling connections for the glass carrier carried and operated by the manipulating lever for the pump.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

WILLIAM C. MAYO.
JOHN HOULEHAN.

Witnesses:

MABEL O. FAHNESTOCK,
WILLIAM H. GENN.