

H. PEIN.

VENDING DEVICE FOR LIQUIDS.

APPLICATION FILED DEC. 9, 1904.

Patented Dec. 15, 1908.

4 SHEETS—SHEET 1.

906,554.

Fig. 9

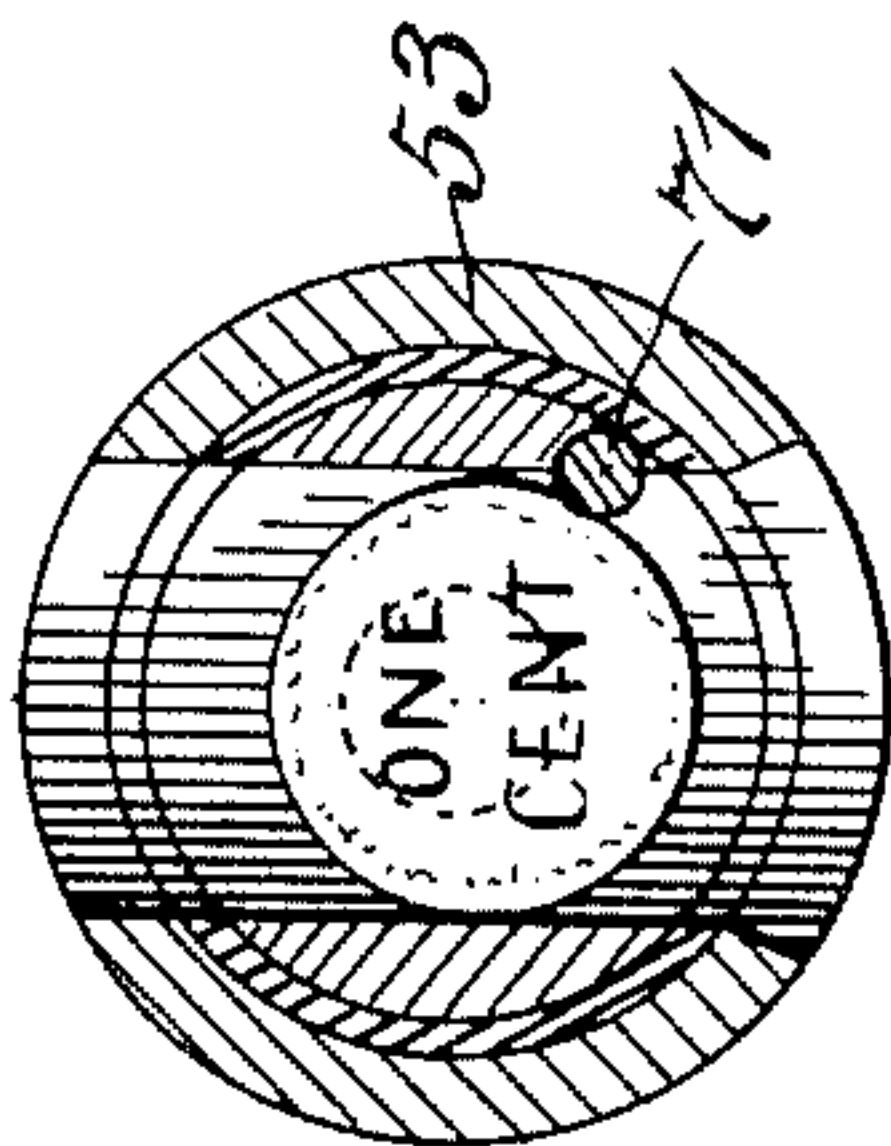


Fig. 10.

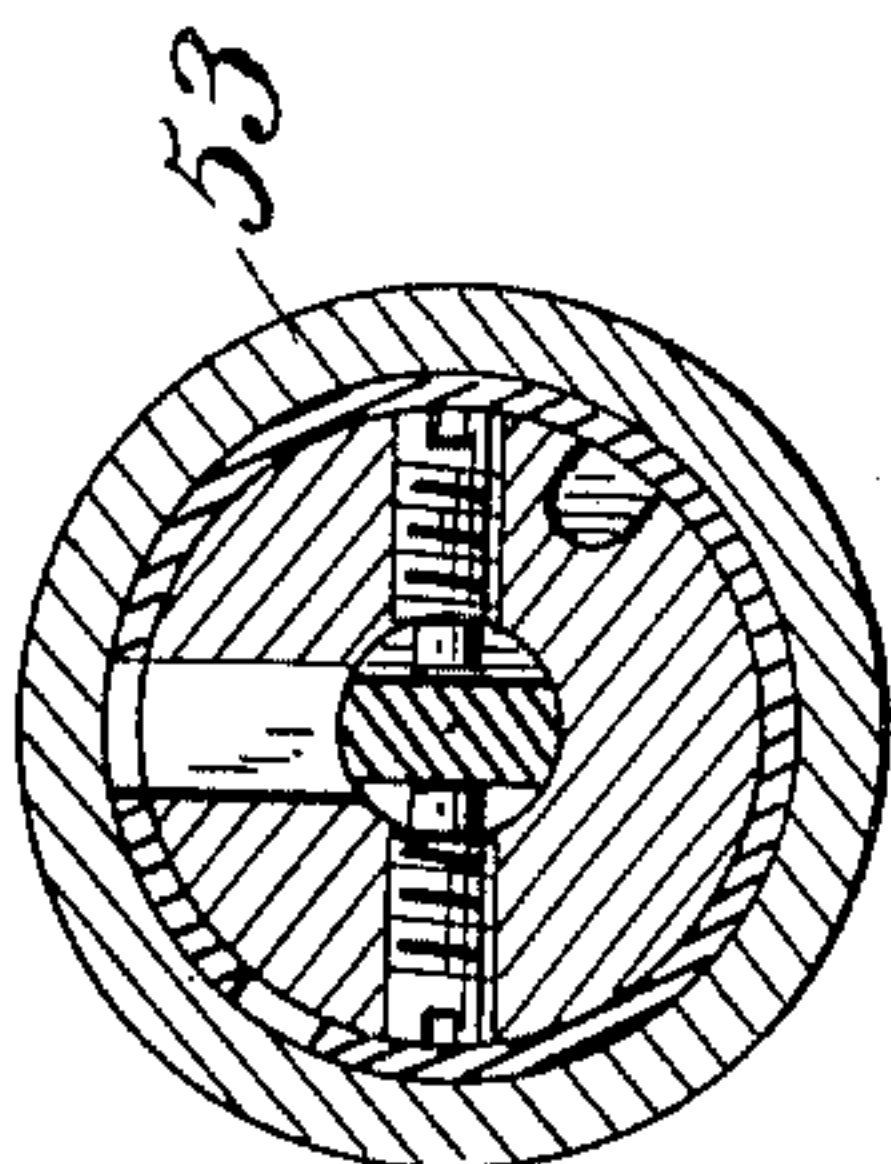


Fig. 11.

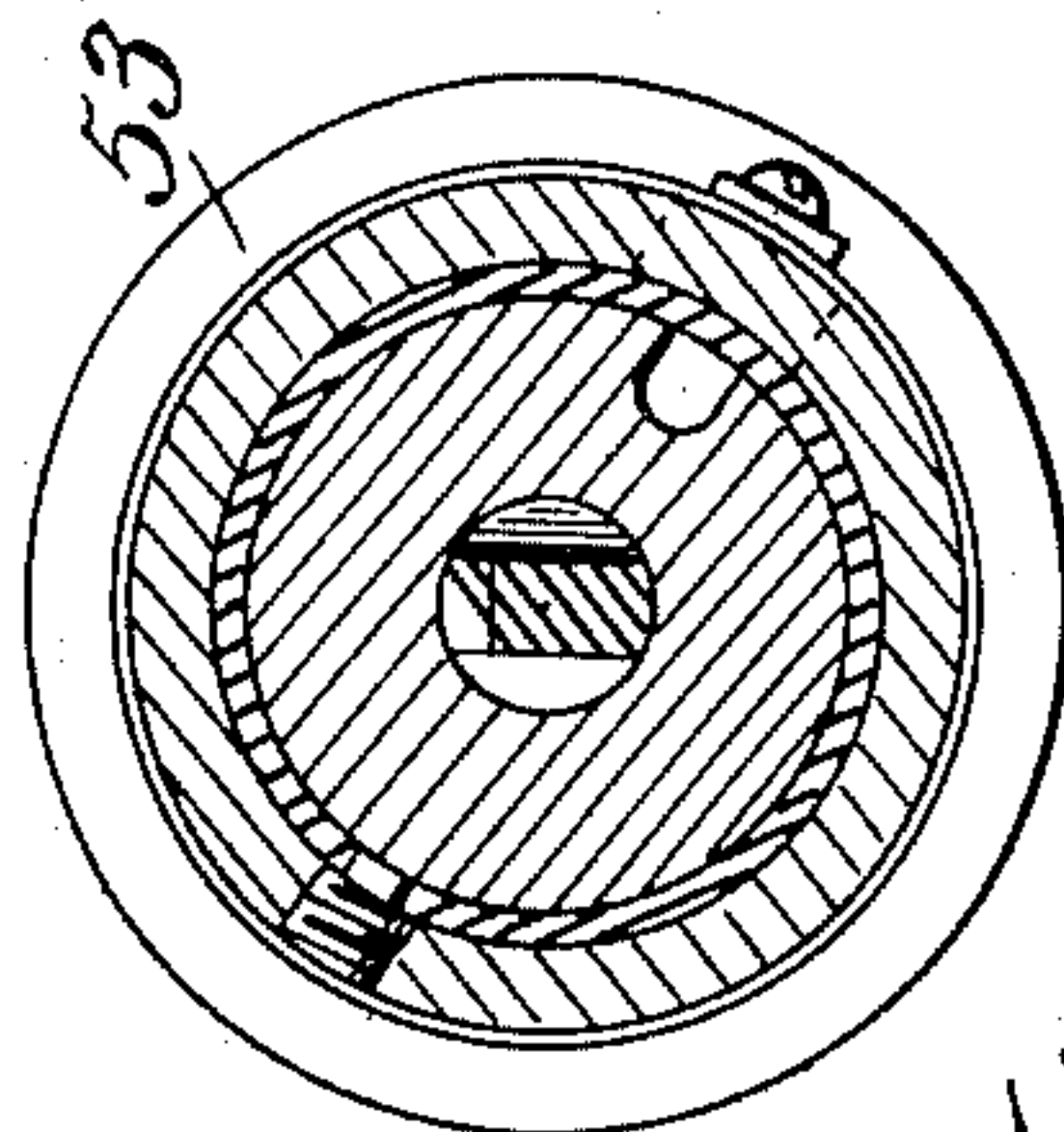


Fig. 12.

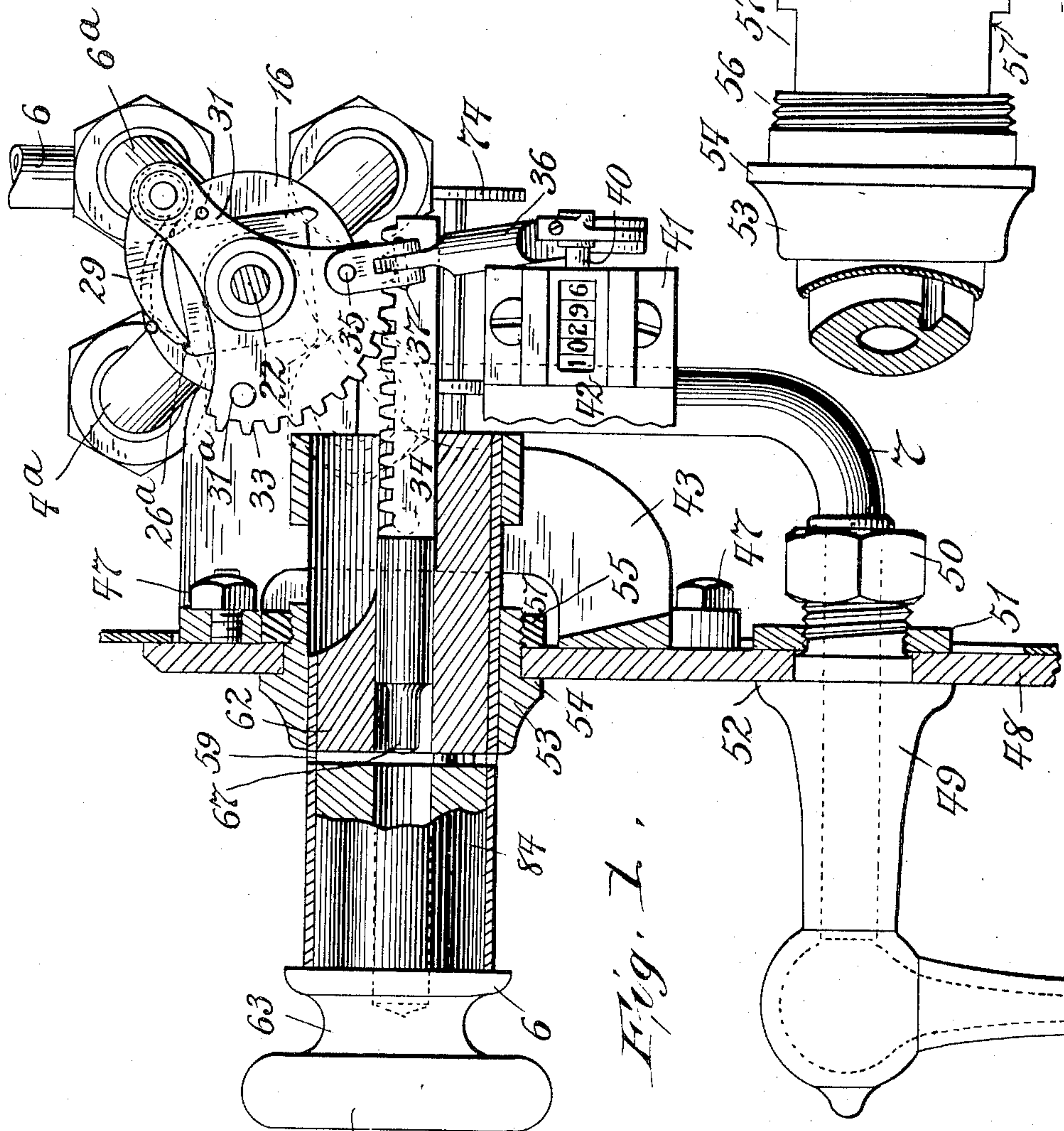
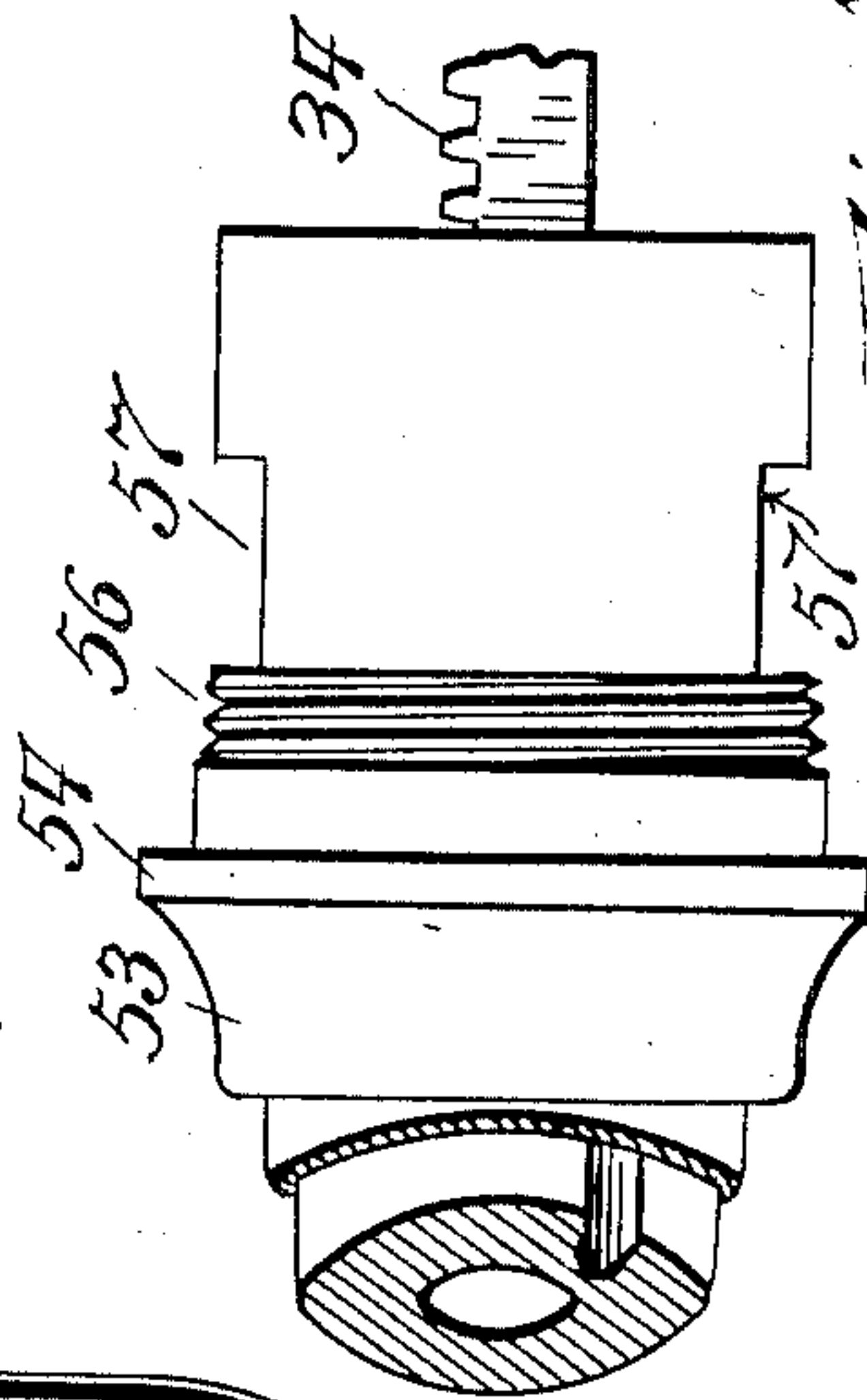


Fig. 1.

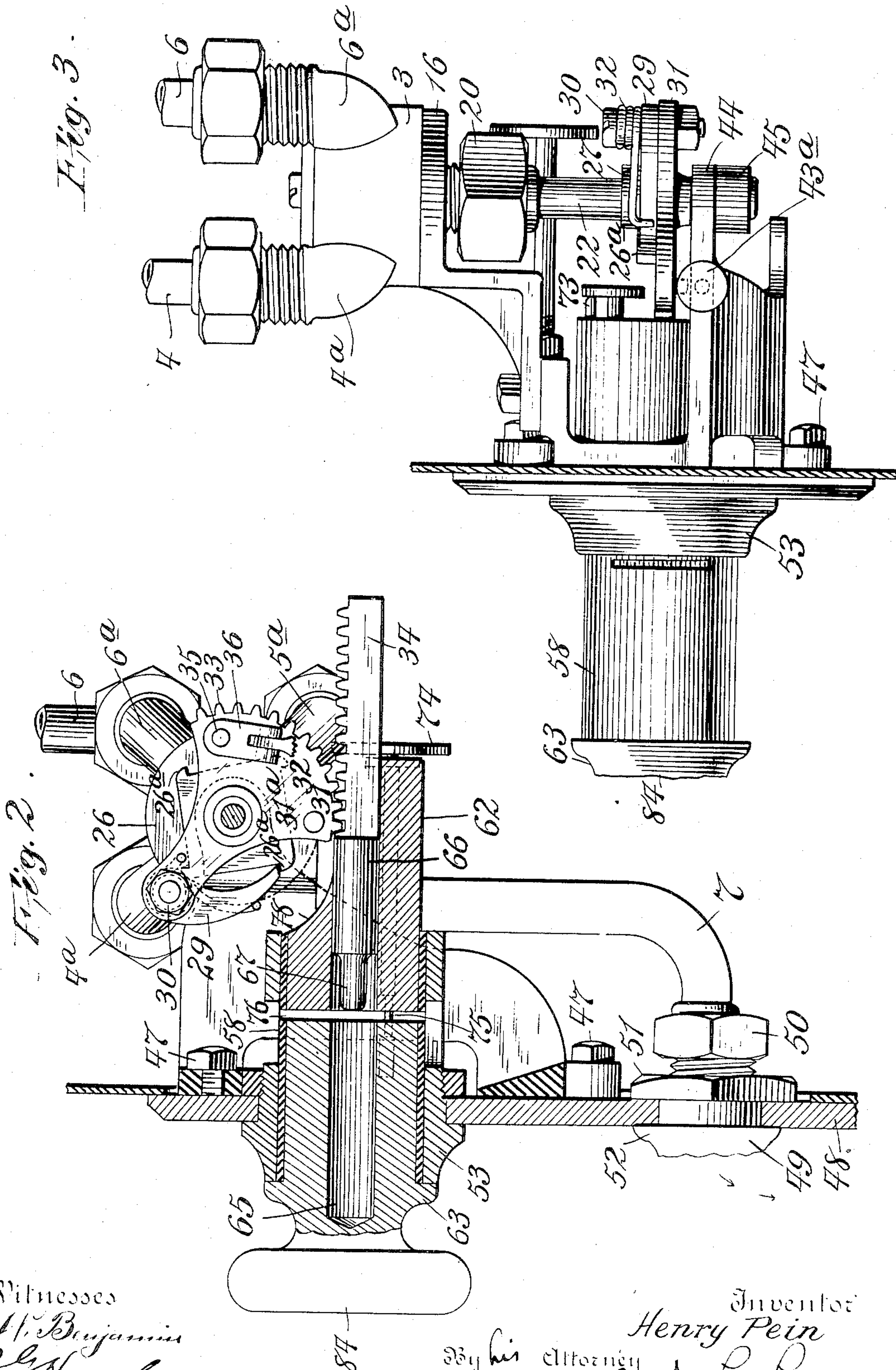
Witnesses  
C. W. Benjamin  
Phas. G. Mansley.

Inventor  
Henry Pein  
By his Attorney  
Joseph L. Levy

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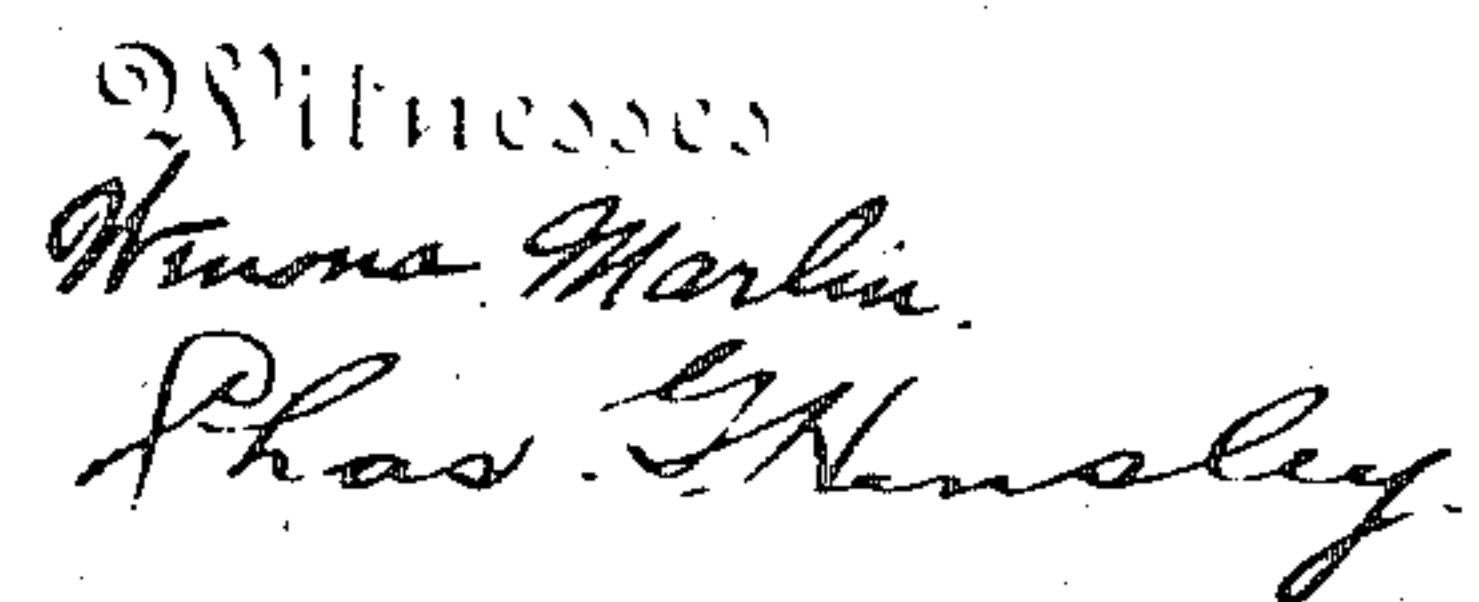
Witnesses  
C. H. Benjamin  
P. L. Hensley.

Inventor  
Henry Pein  
By his attorney  
Joseph L. Ruy



906,554.

4 SHEETS—SHEET 3.



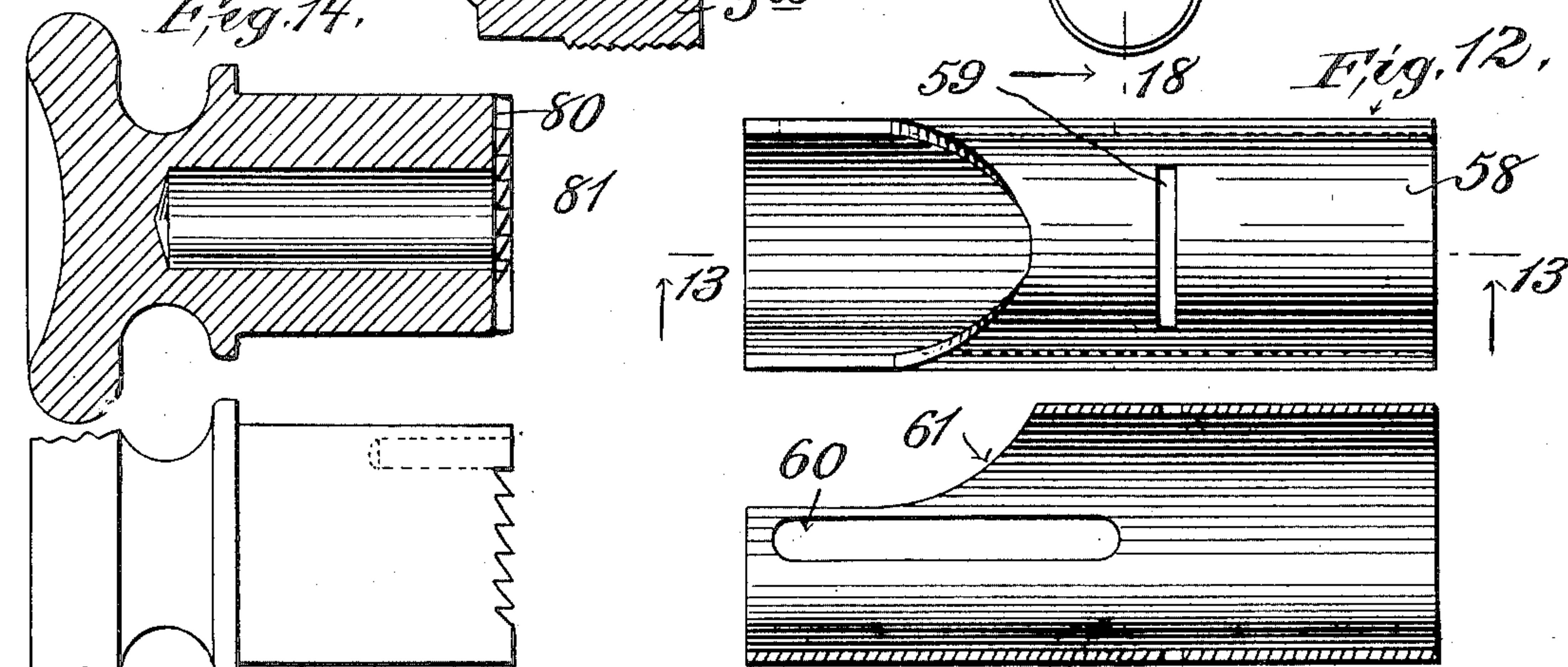
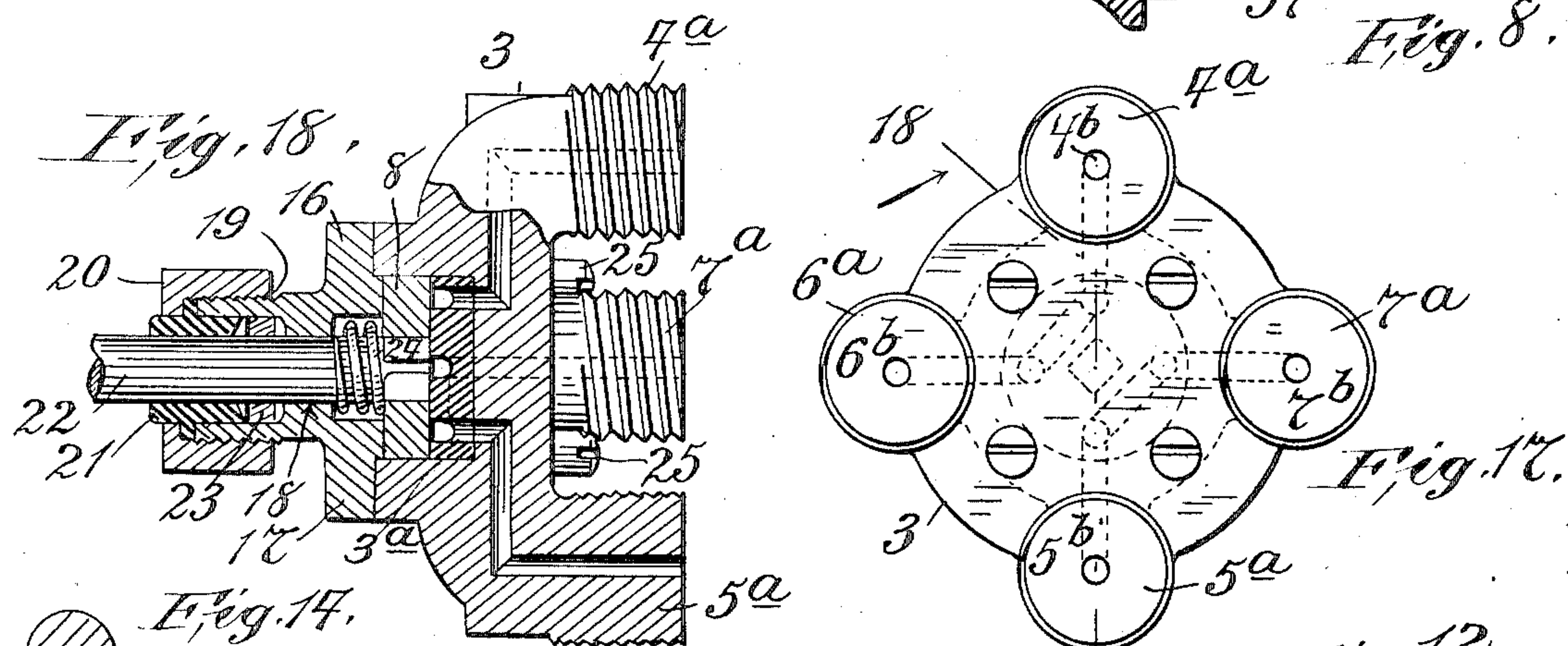
Inventor  
Henry Pein  
By his Attorney  
Joseph L. Levy



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Patented Dec. 15, 1908.

4 SHEETS—SHEET 4.



2 Witnesses *Fig. 15.*  
C/1 Benjamin  
Phas E. Hersley.

Fig. 13.  
Inventor  
Henry Pein  
By his Attorney Joseph R. Peay



# UNITED STATES PATENT OFFICE.

HENRY PEIN, OF JERSEY CITY, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO  
AERATING MACHINE MANUFACTURING COMPANY, A CORPORATION OF NEW YORK.

## VENDING DEVICE FOR LIQUIDS.

No. 906,554.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed December 9, 1904. Serial No. 236,190.

*To all whom it may concern:*

Be it known that I, HENRY PEIN, a citizen of the United States, and a resident of Jersey City, county of Hudson, State of New Jersey, have made a new and useful Improvement in Vending Devices for Liquids, of which the following is a specification.

The object of my invention is to provide means whereby a given quantity of liquid will be dispensed in exchange for a coin or equivalent token, and this I accomplish by means of my invention, one embodiment of which is hereinafter set forth.

For a more particular description of my invention, reference is to be had to the accompanying drawings, forming a part hereof, in which—

Figure 1 is an elevation partly in section, of my improved vending device. Fig. 2 is a similar sectional elevation showing the mechanism in a different position, certain parts being omitted. Fig. 3 is a plan view. Fig. 4 is an end elevation showing the interior of the apparatus. Figs. 5 and 6 are horizontal sections of the coin actuated mechanism shown in two different positions. Fig. 7 is a detailed view showing the plunger and casing of the coin actuated mechanism. Fig. 8 is a similar view partly in section, showing the casing only. Figs. 9, 10 and 11 are sectional views taken on the lines 9—9, 10—10, and 11—11 respectively, of Fig. 5. Figs. 12 and 13 show a plan and longitudinal section respectively of the bushing which incases the plunger. Figs. 14 and 15 respectively are a plan and longitudinal section of a portion of the plunger. Fig. 16 is a detailed view showing the casing for supporting the coin actuated mechanism. Fig. 17 is an end view of the valve casing. Fig. 18 is a sectional view taken on the line 18—18 of Fig. 17, looking in the direction of the arrows. Fig. 19 is a plan view of the rotating slide of the valve. Figs. 20 and 21 are sectional views taken on the lines 20—20 and 21—21 respectively, of Fig. 19, looking in the direction of the arrows.

Throughout the various views of the drawings, similar reference characters designate similar parts.

The reservoirs, 1 and 2, shown diagrammatically in Fig. 4 may be of any shape, size, and material, but are preferably made with only one opening, and of sufficient capacity to permit the amount of liquid which is ex-

changed for a coin to flow into and out of each of them. These reservoirs 1 and 2 are connected with the valve casing 3 by means of pipes 4 and 5 respectively, the pipe 4 being attached by a union to the nozzle 4<sup>a</sup>, and the pipe 5 being similarly attached to 5<sup>a</sup> of the casing 3. The casing 3 is also connected with a supply pipe 6 through the nozzle 6<sup>a</sup> and the discharge pipe 7 through the nozzle 7<sup>a</sup>. The supply pipe leads from any source of liquid which, in the present case, is preferably a cooler which may be of any suitable form, which, in turn, is connected with a carbonator, so that a carbonated beverage may flow through the valve casing 3. A suitable carbonator for this purpose is shown in my co-pending application filed of even date herewith, and serially numbered 236,191, and a suitable casing for containing this carbonator and vending device is shown and described in the co-pending application of Erwin Lavens, serially numbered 236,255, and also filed of even date herewith.

As shown in Fig. 17, the nozzles 4<sup>a</sup>, 6<sup>a</sup>, 5<sup>a</sup>, and 7<sup>a</sup> are each placed at the corner of a square and all have ducts of the same length. These ducts are designated 4<sup>b</sup>, 6<sup>b</sup>, 5<sup>b</sup>, and 7<sup>b</sup> respectively, and lead to points in the casing 3 which are symmetrically placed around the axis of the casing, as indicated in the dotted lines in Fig. 17. These ducts are given any suitable shape, size, and curvature to enable them to effect this result. The casing 3 is also provided with a cylindrical bore 3<sup>a</sup> concentric with its axis, in which is a disk 8 which just fits said bore. The disk 8 is shown in detail in Figs. 19, 20 and 21, and comprises two disks 8<sup>a</sup> and 8<sup>b</sup>. The disk 8<sup>b</sup> contains a centrally located square hole 9, which is adapted to receive a valve stem, as will appear below, and the disk 8<sup>a</sup> is provided with symmetrically located recesses 10, 11, 12 and 13, which are adapted to register with the ducts 4<sup>b</sup>, 6<sup>b</sup>, 5<sup>b</sup> and 7<sup>b</sup> respectively, when the disk 8 is in place. The recesses 10 and 13 are united by a slot 14 and the recesses 11 and 12 are similarly united by a slot 15.

Although I have shown and described the disk 8 as being formed of two disks 8<sup>a</sup> and 8<sup>b</sup> which are fixed together, it is obvious that if desired, the disk 8 may be formed by one integral piece. However, it is preferable to form it of two pieces, as shown, because then, as indicated in Fig. 20, the slots 14 and 15 may be concealed. The arrangements of



slots and recesses above described in the disk 8 enable the ducts 4<sup>b</sup> and 6<sup>b</sup> to be connected when the disk 8 is in one position, and the ducts 5<sup>b</sup> and 7<sup>b</sup> to be similarly connected at the same time, as indicated in Fig. 17. If the disk 8 is turned through an angle of 90 degrees, the duct 4<sup>b</sup> is connected with the duct 7<sup>b</sup> and similarly the duct 6<sup>b</sup> is connected with the duct 5<sup>b</sup>. By turning the disk through a second angle of 90 degrees, the ducts are connected as first above described, so that by rotating the disk 8 in the same direction to angles of 90 degrees, the supply pipe 6 is alternately connected with the reservoirs 1 and 2, and at the same time, the other reservoir not connected with the supply pipe 6, is connected to the drain pipe 7.

To the casing 3 is secured the flanged bracket or tube 16, whose end is reduced to fit in the bore 3<sup>a</sup>, and its shoulder 17 rests against and is flush with the end of the casing 3, as shown in Fig. 18. The tube 16 has an annular shoulder 18 projecting into its interior, and its outer end is slightly reduced and screw-threaded to receive a cap 20, which secures a bushing 21 around a shaft 22. A packing 23 rests against the shaft 22 between the bushing 21 and the shoulder 18, so as to form a tight joint. A coiled spring 24 encircles the shaft 22, and one end of it rests against the shoulder 18, and the other end rests on the disk 8 whereby the disk is held to its seat to form a tight joint. The bracket 16 is fixed to the casing 3 by means of screws 25, or it may be held in any suitable manner, and to the bracket 43 in a manner described below.

The free end of the shaft 22 is provided with a pawl and ratchet mechanism and a sector which will now be described. The ratchet 26 is fixed to the shaft 22 by means of a collar 27 and a set screw 28, or in any other suitable way. This ratchet 26 is provided with four equi-distant teeth 26<sup>a</sup> which are engaged by a pawl 29 pivoted to a bolt 30 fixed in the segment 31. A coiled spring 32 encircles the bolt 30, and has one end fixed to the sector 31, and the other end rests on the pawl 29, thereby forcing it into engagement with the teeth on the ratchet 26. The sector 31 is mounted on the shaft 22, so as to be free to oscillate thereon without loss of motion, and is provided with teeth 33 which engage a rack 34, as indicated in Figs. 1, 2 and 4. A pin 35 is secured in the sector 31 and is geared with the universal link 36 which is articulated at 37 and 38, and pivotally connected at its other end with an arm 39 which is fixed to the spindle 40 of an indicator 41. This indicator 41 indicates, as shown in Fig. 1, by numerals in the dial 42, the number of times the sector 31 is oscillated by the movement of the rack 34, as described below. From the foregoing, it is evident that when moved in one direction, the sector 31 through the

pawl 29 and ratchet 26 rotates the shaft 22 and when moved in the other direction, the shaft is not rotated and the pawl 29 slides free on the ratchet 26.

The casing 3 is supported by the bracket 43 through the bracket 16 which is bolted thereto and this bracket 43 is shown somewhat in detail in Fig. 16. This bracket 43 supports a bearing 44 in which the end of the shaft 22 is journaled and held in its correct position by means of a collar 45, which is fixed thereto. The indicator 41 is also mounted on this bracket 43, and held in position by screws 46, and the bracket 43 is, in turn, supported by bolts 47 on a plate 48, which also supports the entire vending mechanism. This bracket 43 on its upper edge is provided with a screw 43<sup>a</sup> with a large head which forms an adjustable stop that engages a pin 31<sup>a</sup> fixed in the sector 31 and limits its movement in one direction.

Near its lower end the plate 48 is provided with a suitable nozzle 49 which is connected by a union 50 with the discharge pipe 7 in the usual manner. The nozzle 49 is further reinforced by a large nut 51 which rests against the rear of the plate 48, thereby clamping it between this nut 51 and a shoulder 52 on the nozzle. In the plate 48 and above the nozzle 49 is a bushing 53 which is provided with a shoulder 54 which rests against the outside of the plate 48 and is provided with a reduced and screw-threaded inner end which engages a nut 55 which is screwed against the inner surface of the plate 48. As shown in Figs. 1 and 7, the bushing 53 is somewhat prolonged between the screw-threaded portion 56 and is recessed at 57 for purposes which will appear below.

As shown in Fig. 1, the bushing 53 does not extend far enough to interfere with the action of the sector 26. Slidably mounted in the bushing 53 and snugly fitting the same is a second bushing 58. The bushing 58 is slotted at 59 and 60, as shown in Figs. 12 and 13, and is recessed at 61 for purposes which will appear below. The bushing 58 is filled by two plugs 62 and 63 which are preferably provided with a registering and cylindrical bore 65. This bore 65 is so shaped as to slidably mount and support the cylindrical end 66 of the rack 34. The extreme end 67 of the rack 34 is considerably reduced in diameter for a reason which will appear below. The end 68 of the plug 63 is made into suitable form which may be easily and readily grasped by the hand of the operator and this handle is provided with stops 69 against which the bushing 58 abuts and which is also adapted to abut against the end of the bushing 53. Both the plug 63 and the plug 62 are provided with a bore 70 which is considerably smaller than the bore 65, and at one side thereof, and in which slides the cylindrical shaft 71 which is provided with an



enlarged head 72 which is adapted to impinge against a stop 73 when in the position shown in Fig. 5, and against a second stop 74 which is fixed to the bracket 43, when the mechanism is in the position shown in Fig. 6. The portion 75 of the cylindrical shaft 71 is considerably reduced, and is so placed as not to be opposite the coin receiving slot 76, when the mechanism is in the position shown in Fig. 5, and to be opposite this coin receiving slot when the mechanism is in the position shown in Fig. 2. The plug 62 is provided with set screws 77, access to which is had through slots 60 and this plug is cut away so as to be flush with the curved portion of the bushing 58, as indicated at 78 in Fig. 2. The outer end of the plug 62 is corrugated at 79 on its coin receiving surface, as is the inner end 80 of the plug 63, and the plug 63 is provided with projections 81 which abut against the plug 62, whereby a coin receiving slot 82 is formed, which is flush with the slot 59 in the bushing 58, and forms therewith the coin receiving slot 76.

If desired, the corrugations 79 and 80 may be omitted, and the device will operate, but not as well as with the corrugations, for the reason that if a moist coin is dropped into a slot without corrugations, it is very apt to become stuck and lodged. Where the corrugations are present, there is no surface to which the coin may become attached. The end 67 of the rack 34 is reduced so that if a washer is inserted in lieu of a coin, the reduced end 67 will protrude through the hole in the washer and not operate the mechanism, thereby preventing a fraudulent use of the device.

From the foregoing, the operation of my improved mechanism will be readily understood. Assuming the parts to be in the position indicated in Fig. 1, a coin is inserted through the slot 59 in the bushing 58, and falls between the plugs 62 and 63; the plunger 84 being composed of the bushing 58 and plugs 62 and 63 and their component parts. The plunger 84 is then shoved inwardly by means of the handle 68 and the end 67 of the rack 34 rests against the coin, as indicated in Fig. 6. The plunger 84 then forces the rack inwardly to the position shown in Figs. 2 and 6 and the coin in its initial position is shown in Fig. 9, and is prevented from slipping through the plunger 84 by the cylindrical bar 71. When the plug reaches the inner limit of its movement which terminates when the shoulder 69 rests against the bushing 53, the head 72 impinges against the stop 74, thereby forcing the reduced portion 75 opposite the coin receiving slot. Meanwhile the rack 34 oscillates the sector 31 through the inter-meshing teeth 33 thereby rotating the ratchet 26 and shaft 22 through the pawl 29. At the same time, through the crank pin 35 and universal link 36, the arm

39 is drawn upwards and the indicator 42 caused to register one number higher. The movement of the plunger 84 and rack 34 is so determined that the sector 31 and shaft 22 are shifted through an angle of 90 degrees, whereby one reservoir is connected with the supply pipe 6, and the other is drained by the pipe 7, and the contents are caught in a glass and placed below the nozzle 49. As the reservoir holds only a limited amount of liquid, the flow is terminated when the reservoir is emptied, so that only a definite and pre-determined amount of liquid can flow through the apparatus after one movement of the plunger. When the plunger is drawn outwardly, the screws 77 permit a slight movement of the plunger before the rack 34 is moved, whereby the coin is released and falls through the slot 57 into a coin receptacle which is not shown, and then the screws 77 engage the enlarged part 66 of the rack 34, and cause the rack to be drawn outwardly with the plunger, whereby the sector 31 is turned in the opposite direction through an angle of 90 degrees, but this time it does not rotate the shaft 22, because the pawl 29 simply slides over the ratchet 26. The outward movement of the plug 84 is terminated by the pin 31<sup>a</sup> which impinges against a projection 43<sup>a</sup> on the support 43, and an enlarged portion of the shaft 71 is brought opposite the coin receiving slot 58 in the plunger 84 by the projection 73 from the bushing 53 which projections engage against the enlarged head 72 on the shaft 71. The apparatus is then in the position indicated in Fig. 1, and ready to receive another coin, after which the same cycle of operations may be repeated.

From the foregoing, it is apparent that a very simple and automatic vending device has been disclosed. As this device may be modified in many ways without departing from the spirit of my invention or sacrificing any of its advantages, I do not regard it as limited to the structure herein set forth, but regard it as broad enough to cover all structures which come within the scope of the annexed claims.

Having thus described my invention, what I claim is:—

1. In a liquid dispensing apparatus, a hollow piston and a rack sliding in said hollow piston and guided thereby, a coin receiving means with walls, and corrugations in the walls of said means which prevent the coin from sticking thereto.

2. In a liquid dispensing apparatus, a hollow piston, a rack sliding therein, means with walls in said hollow piston adapted to receive the coin, a reciprocating rod passing through the edges of the walls of said means, and means for causing said rod to reciprocate so that a coin is released by the reciprocation of said rod.



3. In a coin control liquid dispensing device, a piston comprising a bushing, two hollow plugs in said bushing, and a rack bar sliding in said hollow plugs.
- 5 4. In a coin-control liquid dispensing device, a hollow piston comprising a bushing, two hollow and separated plugs mounted in said bushing, and a rack bar sliding in said plugs.
- 10 5. In a coin-control liquid dispensing apparatus, a hollow piston comprising a bush-

ing, hollow and separated plugs mounted in said bushing, a rack bar slidably mounted in said plugs, and a small piston sliding parallel to said rack bar and adapted to release a coin 15 from the space between the plugs.

Signed this 5th day of November, 1904.

HENRY PEIN.

Witnesses:

AM. STOSS,

CHAS. G. HENSLEY.