

C. S. HARDY.
 VENDING MACHINE.
 APPLICATION FILED AUG. 12, 1909.

1,003,256.

Patented Sept. 12, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

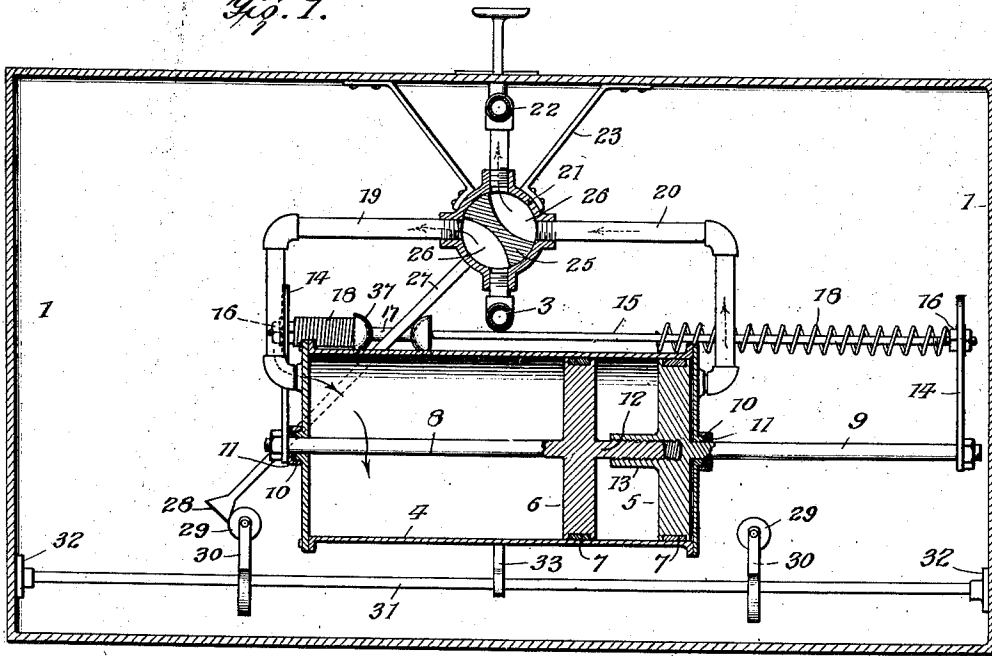
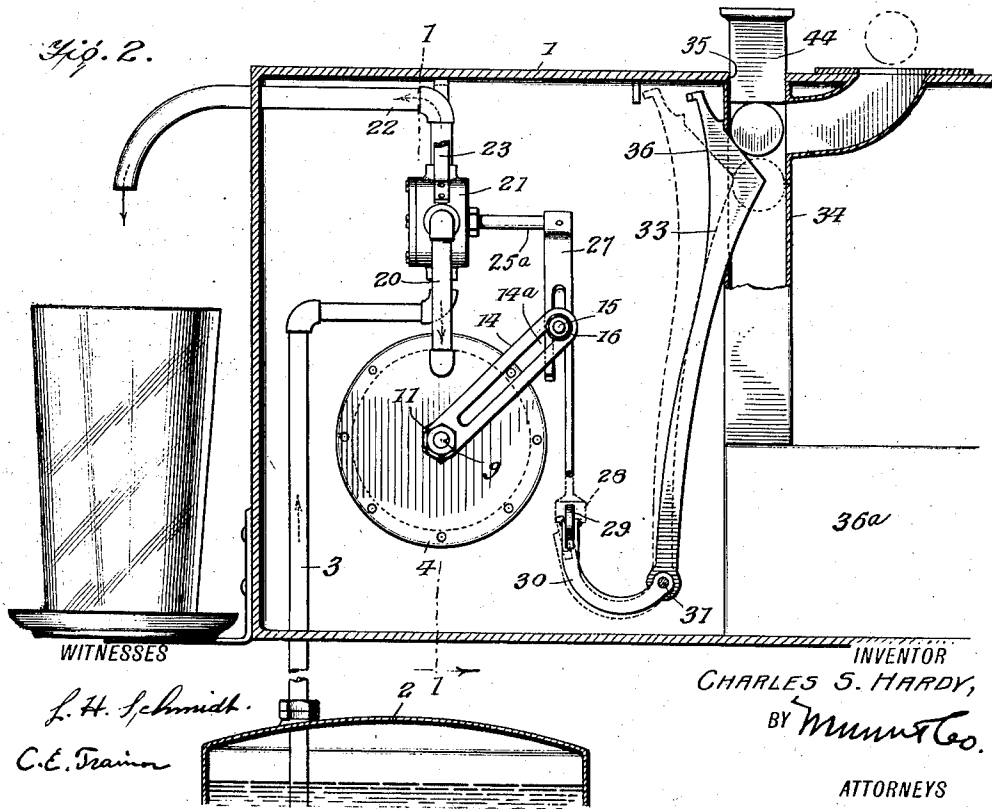


Fig. 2.



WITNESSES

L. H. Schmidt.
 C. E. Trainor

INVENTOR
 CHARLES S. HARDY,
 BY *Munn & Co.*
 ATTORNEYS

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2 SHEETS—SHEET 2.

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Fig. 4.

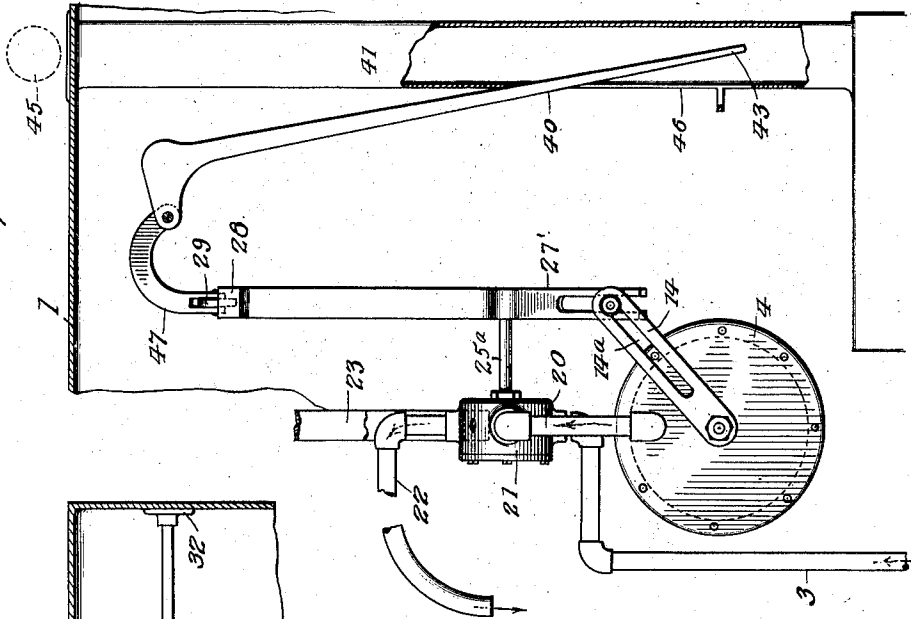
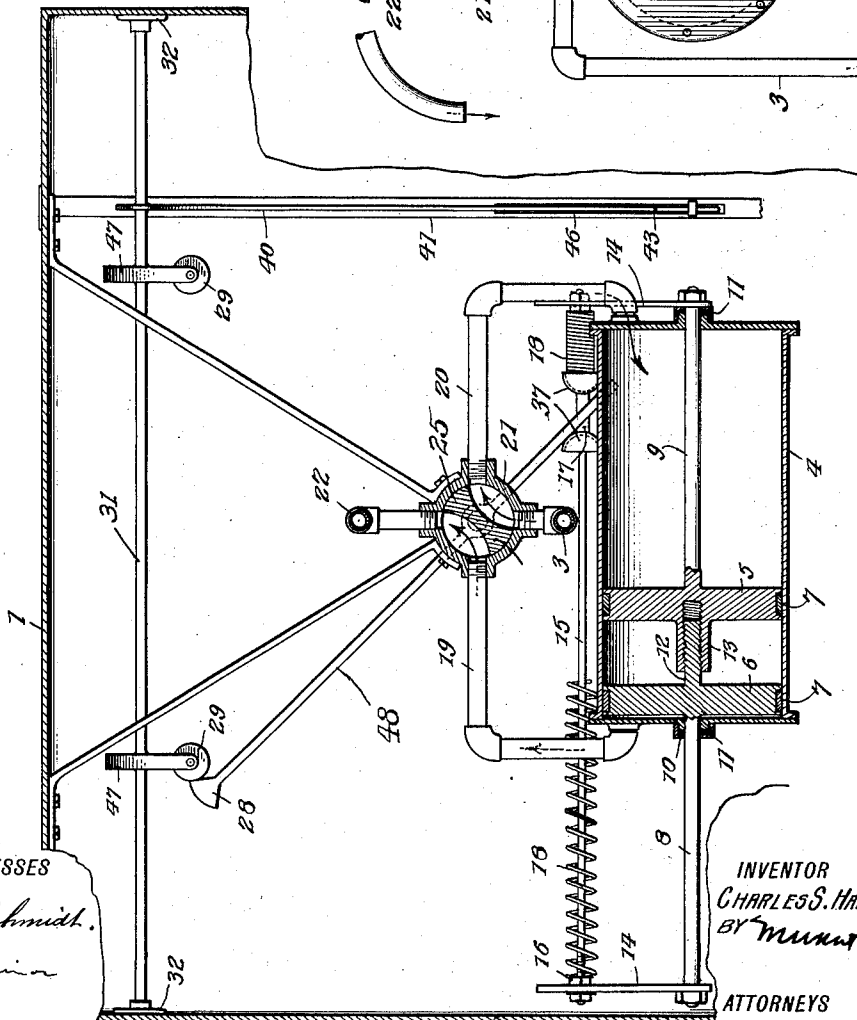


Fig. 3.



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C. E. Trainor

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BY *Munn & Co.*

ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES S. HARDY, OF SAN DIEGO, CALIFORNIA.

VENDING-MACHINE.

1,003,256.

Specification of Letters Patent.

Patented Sept. 12, 1911.

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To all whom it may concern:

Be it known that I, CHARLES S. HARDY, a citizen of the United States, and a resident of San Diego, in the county of San Diego and State of California, have invented a certain new and useful Improvement in Vending-Machines, of which the following is a specification.

My invention is an improvement in vending machines and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

The object of the invention is to provide a device of the character specified which will dispense accurately measured quantities of liquid, without the necessity of an attendant, and which will be operated by the liquid, under pressure.

A further object is to provide a device wherein the amount dispensed may be varied, by varying the capacity of the pump.

Referring to the drawings forming a part hereof: Figure 1 is a vertical transverse section on the line 1—1 of Fig. 2. Fig. 2 is a sectional view, the casing and a part of the coin chute being shown in section and some parts in elevation. Fig. 3 is a section similar to Fig. 1 showing a somewhat similar construction to that presented in Fig. 1. Fig. 4 is an end view partly in section of a portion of the construction shown in Fig. 3.

The embodiment of the invention shown in the drawings comprises a suitable casing 1, with which is connected one or more reservoirs or containers 2 for the liquid which is contained therein under pressure, and with each of the containers is associated a pump, to be described in detail, by means of a pipe 3.

Each of the pumps consists of a barrel 4, in which is slidable a plunger, consisting of spaced pistons 5 and 6, the pistons being each provided with a packing ring 7 on its periphery, and with a piston rod 8 and 9. The rods 8 and 9 extend in opposite directions through the heads of the barrel, and are encircled outside of the barrel by a packing 10, which is retained in position by a packing nut 11. One of the pistons 6 is provided on the face opposite its rod with a threaded lug 12, and the other piston 5 with a threaded socket 13, in which is received the lug so that by turning the pistons in opposite directions, they may be

moved toward or from each other, to vary the capacity of the barrel, and hence the quantity of liquid dispensed at each stroke of the plunger. An arm 14 is connected with the outer end of each rod, the arm having a bearing encircling the rod and secured thereto in any suitable manner, and a rod 15 has its ends passed through the upper ends of the arms which are slotted as at 14^a for the purpose and secured in place by lock nuts 16. The rod is supported by the arms 14, and a spiral spring 18 encircles the rod near each end, bearing at one end against one of the nuts, and at the other against a bearing to be presently described. When the pistons are being adjusted toward and from each other the lock nuts 16 are loosened, and after they are adjusted, the lock nuts are tightened to retain the said pistons in adjusted position.

From each end of the barrel extends a pipe 19 and 20, upwardly and inwardly to the opposite sides of a fourway valve casing 21, with whose other ports are connected the pipe 3 before mentioned, and a discharge pipe 22, which delivers the liquid at any desired point. The valve is supported from the under face of the top of the casing 1 by a bracket 23, and the pipes 19 and 20 support the barrel. The plug 25 of the fourway valve is oblong in form and is cut away at each side as at 26 to form passages for connecting the adjacent pipes with each other. As will be observed, by an inspection of Fig. 1 the pipe 3 may be connected with either end of the barrel while the opposite end is simultaneously connected with the discharge pipe 22, so that while the fluid under pressure is entering one end of the barrel and forcing the plunger toward the opposite end, the liquid therein is permitted to flow out at the discharge pipe.

The plug 25 is operated by means of a valve rod or handle 27 rigidly connected to the stem 25^a thereof, and extending radially therefrom, and the free end of the rod is provided with a head 28 which is normally engaged by a roller 29, journaled in a bracket 30 on a trip rod 31, which is journaled longitudinally of the barrel. The valve rod 27 is provided with a fork 27', which engages the spool 17. The said spool 17 slides on the rod 15 and its enlarged ends 37 alternately engage the inner ends of the springs 18. The trip rod 31 rotates

in bearings 32 in the casing, and intermediate its ends a tripping lever 33 is connected therewith, the free end 36 of the lever projecting into a coin chute 34, which extends
 5 between a slot 35 in the casing wall, and a receptacle 36^a in the casing.

In operation the parts being in the position shown in Fig. 1, and a coin being inserted in the slot, it is forced down the chute
 10 by the block 44, and the tripping lever is swung out of the chute. The movement of the lever oscillates the rod and moves the roller out of engagement with the head of the valve rod. The spring 18 at the end of
 15 the barrel opposite the plunger is at this point under compression, and as soon as the valve rod is released it is thrown to the right of Fig. 1, by the expansion of the spring, thus reversing the position of the
 20 plug and admitting the liquid to the end of the barrel adjacent to the plunger, while the opposite end is connected with the discharge pipe. The liquid being under pressure moves the piston and causes the delivery of the contents of the barrel 4. The
 25 barrel is always filled, and as the plunger moves to the left of Fig. 1, a charge is forced out of the barrel. As soon as the coin passes the lever, said lever swings back
 30 into the chute, and returns the trip rod to its original position, so that the roller at the other end of the rod 31 engages the head of the valve rod, to prevent a return-movement thereof, until it is again released by
 35 the insertion of another coin. The spring 18 does not begin to be compressed until the head is engaged with the roller, and is not closely compressed until the plunger has completed its movement, and the head is
 40 conical in shape, so that it will not easily become disengaged. When it is desired to vary the capacity of the barrel, the lock nuts 16 are released, and the pistons are turned in opposite directions, to move them toward
 45 or from each other. When adjusted the nuts are again locked. The slide rod 15 must be moved toward or from the stem 25^a so that the stroke of the valve stem will be the same, and the slotted arrangement of the
 50 radial arms 14 permits this movement.

It will be evident that the casing may be provided with any number of reservoirs and barrels, and that one barrel may be connected to more than one reservoir if so desired.
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In Figs. 3 and 4, a somewhat modified form is shown. In this embodiment the tripping lever 40 extends upwardly alongside the chute 41 and is provided with a
 60 cam portion 43, which extends through the slot 46 into the chute. In Figs. 3 and 4 the tripping rod 31 is supported at the top of the casing, and the valve rod 48 of the four way valve extends upwardly instead of
 65 downwardly. The remainder of the construction is however, the same, and the device operates in the same manner.

struction is however, the same, and the device operates in the same manner.

I claim:

1. A device of the character specified comprising a casing, a reservoir for liquid
 20 under pressure, a barrel, an adjustable plunger therein, rods connected with the plunger and extending through the ends of the barrel, a radial arm connected with each
 75 of the rods, a slide rod connecting the outer ends of the arms, a four way valve casing having a discharge port, and having ports communicating with the ends of the barrel and with the reservoir, a plug in the valve casing, a valve rod for controlling the plug,
 80 said valve rod having at its outer end a head, and engaging intermediate its ends with a spool through which extends the slide rod, a spring encircling the slide rod at each
 85 end thereof, said springs bearing at their outer ends against the adjacent arm, the inner end being adapted for engagement by the spool, a tripping rod rotatable in the casing, a roller at each end of the said rod for engaging the head to prevent movement
 90 of the valve rod, and a tripping lever secured to the tripping rod.

2. A device of the character specified comprising a casing, a reservoir for liquid
 95 under pressure, a barrel, a plunger therein, rods connected with the plunger and extending through the ends of the barrel, a radial arm connected with each of the rods, a slide rod connecting the outer ends of the arms, a four way valve casing having a discharge
 100 port, and having ports communicating with the ends of the barrel, and with the reservoir, a plug in the valve casing, a valve rod for controlling the plug, said valve rod having at its outer end a head, and engaging
 105 intermediate its ends with a spool through which extends the slide rod, a spring encircling the slide rod at each end thereof, said springs bearing at their outer ends against the adjacent arm, the inner ends
 110 being adapted for engagement by the spool, a tripping rod rotatable in the casing, a roller at each end of the tripping rod for engaging the head to prevent movement of the valve rod, and means for oscillating the
 115 tripping rod.

3. A device of the class described, comprising a reservoir for liquid under pressure, a barrel, a plunger therein, rods
 120 connected with the plunger and extending through the ends of the barrel, a slide rod parallel with the rods and rigidly connected thereto, a four way valve having a discharge port, and provided with means for simultaneously connecting one end of the
 125 barrel with the reservoir and the other with the discharge port in alternation, a rod controlling the valve, said rod engaged with a spool through which the slide rod passes, a spring at each end of said slide rod for en-
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gaging the spool to swing the valve rod, a trip for engaging the valve rod to prevent the swinging thereof, and means for releasing the trip.

- 5 4. A device of the class described, comprising a reservoir for liquid under pressure, a barrel, a valve for simultaneously connecting one end of the barrel with the reservoir and the other with the atmosphere
10 in alternation, a plunger in the barrel, rods connected therewith and extending through the ends of the barrel, a slide rod rigidly connected with the rods and in parallel relation thereto, a valve rod for controlling the
15 valve and engaging with a spool through which passes the slide rod, a spring at each end of the slide rod for swinging the valve rod, means for normally restraining the

swinging movement, and means for releasing said restraining means.

20 5. A device of the class described, comprising a reservoir for fluid under pressure, a fluid operated pump, said pump comprising a barrel and a plunger therein, a
25 valve for controlling the passage of the fluid to and from the pump, springs for moving the valve to admit the fluid to the opposite ends of the barrel in alternation, means for restraining the operation of the
30 springs, and means for releasing the restraining means.

CHARLES S. HARDY.

Witnesses:

EUGENE D. WILLIAMS,
CLEMENT H. WESCOTT.