May 29, 1928.

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1,671,663

LIQUID PUMP

Filed April 15, 1926

Fig. 1.

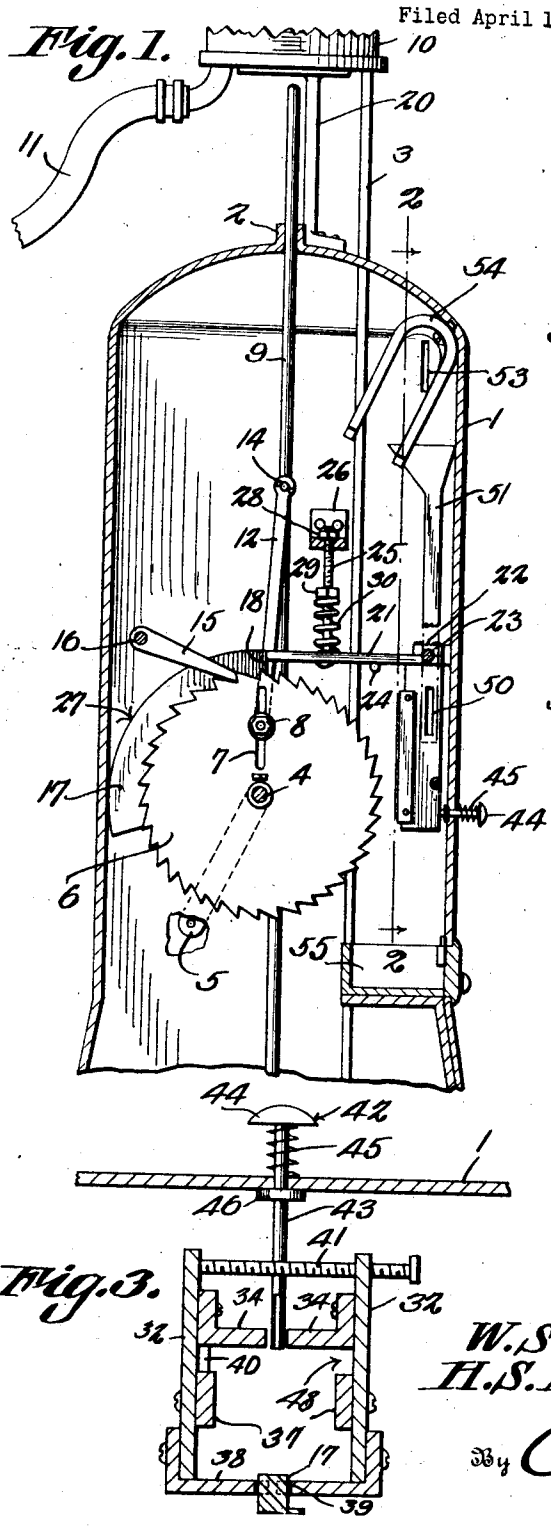

Fig. 2.

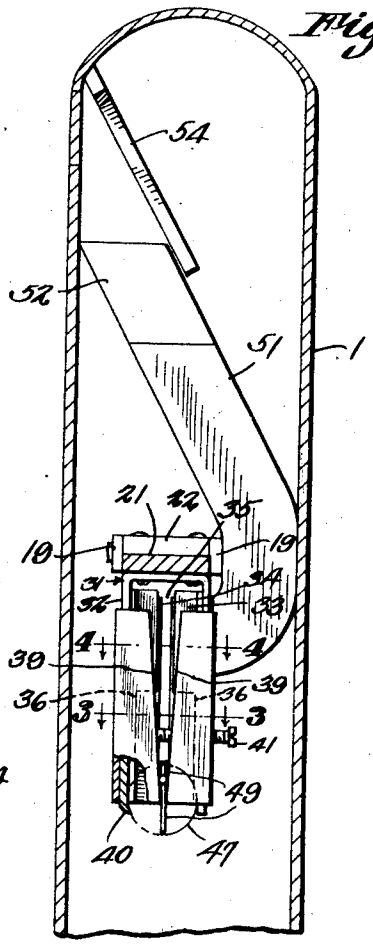

Fig. 3.

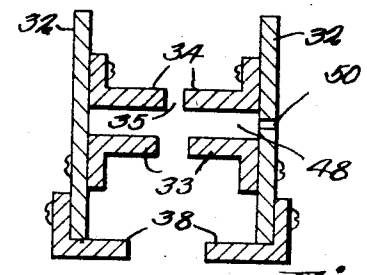

Fig. 4.

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Patented May 29, 1928. 1,671,663

UNITED STATES PATENT OFFICE.

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LIQUID PUMP.

Application filed April 15, 1926. Serial No. 102,232.

The device forming the subject matter of this application is a coin control for a vending machine, and the invention aims to provide novel means whereby the coin is permitted to drop out of the coin receptacle regardless of the pressure exerted on the thrust member which operates the machine through the instrumentality of the coin.

Another object of the invention is to provide novel means whereby a lead slug or other article having a transverse bending strength which is less than that of a coin of standard mintage, cannot be used to operate the device.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings:—

Figure 1 shows in vertical longitudinal section, a device constructed in accordance with the invention, parts being in elevation;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a section on the line 4—4 of Figure 2.

In carrying out the invention, there is provided a support or casing 1, equipped at its top with a guide 2. Above the support 1 is located a tank 10, which may be mounted on a bracket 20, carried by the support 1. Liquid is supplied to the tank 10 through a pipe 3, leading upwardly through the support 1, and from the tank 10, liquid is carried to the point of use or delivery through a hose 11. The liquid which the tank 10 receives, is forced through the pipe 3 by a pumping mechanism which includes a plunger 9, mounted to reciprocate in the guide 2. The pumping mechanism is not shown in great detail, because this invention relates to a coin-control: and it is known that a coin-controlled mechanism cannot be characterized patentably by pump details. Let it suffice, then, to state that the pumping mechanism embodies the plunger 9, whereunto a pitman 12 is pivoted at 14, the lower end of the pitman being pivoted to a wrist pin 8, adjustable (to vary the throw of the pump plunger 9) in a radial slot 7 formed in a rotary member 6 carried by a shaft 4, journaled in the support 1, and operated by a crank 5, or otherwise. The rotary member 6 may be a ratchet wheel, engaged by a back stop pawl 15 that is pivotally mounted at 16 on the support 1. The rotary member 6 carries an opener or spreader for the coin receptacle (hereinafter described) and the opener or spreader, marked by the numeral 17, has a circumferential cam edge 27 which is disposed eccentrically with respect to the shaft 4. One end of the member 17, marked by the numeral 18, forms a shoulder which is engaged with a detent, next to be described.

The support 1 is provided with spaced bearings 19 whereon is fulcrumed a detent, in the form of a bell crank. The bell crank or detent embodies an arm 21 held by a cap piece 22 to swing on a shaft 23 mounted in the bearings 19. One end of the arm 21 of the bell crank detent lies normally in the path of the opener or spreader 17, and engages with the shoulder 18. Downward swinging movement of the arm 21 is limited by a stop 24, such as a pin or the like, mounted on the support 1. A spring means is provided for holding down the arm 21 on the stop 24, the said means including a depending finger 25 on which the arm 21 swings, the finger 25 being mounted at its upper end in a bracket 26 on the support 1. The finger 25 is threaded for adjustment into the bracket 26 and is held in place by a lock nut 28 on the finger and engaging the bracket. There is an adjusting nut or abutment 29 on the finger 25, above the arm 21. A compression spring 30 surrounds a portion of the finger 25, one end of the spring engaging the adjusting nut 29, and the other end of the spring bearing on the arm 21 of the detent.

The detent or bell crank lever includes a U-shaped spring 31, the crown of which is

secured to the arm 21 at a point adjacent to the shaft 23, so that the spring 31, and parts carried thereby, form the other arm of the bell crank lever or detent. The spring 31 embodies two depending side portions 32 which constitute part of the coin receptacle. The coin receptacle is completed by oppositely disposed angle members 34—34 and 33—33, which are secured to the side portions 32 of the spring 31 that forms one arm of the bell crank detent. The members 34 are spaced at their inner edges, to form a slot 35. The lower parts of the inwardly projecting flanges of the angle members 33 are cut away, as at 36, leaving only those parts 37 of the angle members 33 which bear against the side portions 32 of a spring 31 directly, as shown in Figure 3. Wing plates 38 are secured to the side portions 32 of the spring 31, and the inner longitudinal edges of the wing plates 38 converge, as shown best at 39 in Figure 2. One of the side portions 32 of the spring 31 is turned inwardly at its lower end, to fashion a coin retaining toe 40, best shown in Figure 2. An adjusting device, such as a screw 41, connects the side portions 32 of the spring 31, so as to vary the distance between the parts 32, to enable the machine to be altered for coins of different diameters, and still have the coin held by the toe 40. The adjusting device 41 "connects" the parts 32, in that it is threaded into one of them, and bears upon the other, the said members 32 tending to spring inwardly toward each other.

The machine embodies a thrust member which is marked generally by the numeral 42 in Figure 3, the thrust member being in the form of a push pin 43 having a head 44, a compression spring 45 being interposed between the head 44 and a part of the support 1, the push pin 43 being slidable in the support, and outward movement of the push pin, responsive to the spring 45, being limited by a shoulder 46 on the push pin, which engages the support or casing 1. The push pin 43 is adapted to be advanced with respect to the opening 35 that exists between the parts 34 of the coin receptacle, so that the inner end of the push pin may engage with a coin 47 held by the toe 40 in the passage 48 that exists between the parts 34 and 33 of the coin receptacle. The push pin 44 is supplied at its inner end with oppositely projecting fins 49. There is a slot 50 in one of the side portions 32 of the spring 31, and this slot lets the coin into the passage 48, the coin being adapted to traverse a chute 51, carried by the support 1 and having a hopper 52 at its upper end, into which the coin finds its way through a slot 53 in the support or casing 1, a magnet 54 being disposed adjacent to the hopper or intake end 52 of the chute 51, to segregate slugs of magnetic metal, before they have a chance to get down into the machine and facilitate the unlawful working of it.

The ordinary operation of the machine is as follows:—

The operator puts a coin in the slot 53, and the coin traverses the chute 51 and passes through the slot 50, into the passage 48, where the coin is held, by the toe 40, in the path of the push pin 43. The push pin 43 is thrust inwardly, engaging the coin, and tilting the bell crank lever or detent on its fulcrum 23 until the inner end of the arm 21 is out of the path of the shoulder 18 on the rotary member 6. The rotary member 6 then can be turned, by means of the crank 5 or its equivalent, to operate the plunger 9 and force a measured quantity of liquid up into the tank 10 through the pipe 3. When the rotary member 6 is turned, the opener or spreader 17 on the rotary member 6 passes between the inclined edges 39 of the coin receptacle, and opens it, the parts 32 of the spring 31 yielding for this purpose. When the coin receptacle thus is opened, the coin 47 is permitted to drop into a drawer 55 or other receptacle in the support 1, and when the coin drops out of the coin receptacle, the coin receptacle no longer is under the control of the push pin 43, but goes back, under the impulse of the spring 30, into the position of Figure 1, so that the inner end of the arm 21 is in the path of the shoulder 18, thereby preventing the operator from turning the shaft 4 and pumping liquid indefinitely.

So far as the description of the operation above set forth is concerned, it would be possible for the operator to push in the pin 43, keep a steady pressure on the coin 47, hold the coin in place notwithstanding the fact that the coin receptacle had been spread apart laterally by the action of the member 17, and obtain as much liquid as he wished, by depositing a single coin. Observe, however, that this cannot take place, because the eccentric edge 27 of the member 17 cooperates with the undersurface of the arm 21, as the part 6 is rotated, thereby to tilt the belt crank gradually into such a position that the coin 47, in the position shown in Figure 2, is spaced from the inner end of the push pin 43, and, therefore, cannot be held in place by the push pin, for the unlawful and improper purpose of obtaining more liquid than is paid for by the deposit of a single coin.

The spring 30 exerts a strong pressure on the arm 21 of the bell crank detent, and this pressure may be adjusted by means of the nut 29. The pressure exerted by the spring 30 is strong enough so that, in order to overcome it, a coin of standard mintage must be interposed between the inner end of the

push pin 43 and the parts 37. If a weak article occupies the place of the coin 47 in Figure 2, for instance, a lead slug, the slug will not be strong enough to stand the pressure from the push pin 43 that is necessary to overcome the action of the spring 30, and the result is that the slug bends under the action of the push pin and slips off the parts 37 without causing the bell crank detent to be operated and the arm 21 thereof lifted out of the path of the shoulder 18. The reason for cutting away the lower portions of the inwardly extended flanges of the members 33, is to leave a wide space between the parts 37, as shown in Figure 3, it being unnecessary, therefore, to bend a lead slug much, by the action of the push pin 43, before the slug slips off the parts 37, it being obvious that if the slug had to be pushed through the narrow slot that exists between the parts 33 in Figure 4, it would be necessary to double the slug until it was almost flattened together. A little bending of the slug, however, will permit it to slip off the narrow parts 37, under the action of the push pin 43.

It may happen that a person will drop a ring-shaped washer into the machine. Then, the push pin 43 will saw back and forth through the hole in the washer, without operating the machine, but the washer will hang in place, in the position shown by the coin 47 in Figure 2, and if a legitimate purchaser deposits a coin, the coin will come to rest on top of the washer, the pin will continue to work back and forth through the washer, and the person who has deposited the coin will get nothing in return for it. The foregoing operation presupposes that the pin 43 is devoid of the fins 49, but because the fins 49 are supplied, they will engage a washer, when the push pin 43 is thrust inwardly, and pass on the washer, through the machine, thereby preventing the washer from hanging in the position shown at 47 in Figure 2, and holding up the further operation of the device.

What is claimed is:—

1. In a device of the class described, a rotary member, an opener on the rotary member and including a cam, a movable detent engaging the opener to hold the rotary member against rotation, a coin receptacle carried by the detent and comprising separable parts, means for discharging a coin between said parts of the receptacle, mechanism under the control of an operator for engaging a coin in the receptacle, thereby to move the detent out of holding engagement with the opener, and means for rotating the rotatable member to cause the cam to move the detent and the receptacle far enough so that said mechanism will no longer cooperate with a coin in the receptacle, the opener coacting with the separable parts of the receptacle, when the rotary member is rotated, to open the receptacle and release the coin.

2. In a device of the class described, a rotary member, an opener on the rotary member and including a cam, a detent lever fulcrumed for swinging movement, one end of the lever engaging the opener to hold the rotary member against rotation, a coin receptacle forming the other end of the lever and comprising separable parts, means for discharging a coin between said parts of the receptacle, a push pin mounted for siding movement and under the control of an operator to engage a coin in the receptacle, thereby to move the first-specified end of the lever out of holding engagement with the opener, and means for rotating the rotatable member to cause the cam to move the lever far enough so that the push pin will no longer cooperate with a coin in the receptacle, the opener cooperating with the separable parts of the receptacle, when the rotary member is rotated, thereby to open the receptacle and release the coin.

3. In a device of the class described, a bell crank detent and a fulcrum therefor, a rotary member having a shoulder, a fixed stop, spring means for holding one arm of the bell crank detent on the stop and in the path of the shoulder on the rotary member, the other arm of the detent being in the form of a coin receptacle, means for conducting a coin into the coin receptacle, a plunger, and means for so mounting the plunger that it will engage a coin in the receptacle, tilt the detent against the action of the spring means, and move the first-specified arm of the detent out of the path of the shoulder; and mechanism for adjusting the aforesaid spring means to enable it to hold the detent against swinging movement responsive to the thrust of the plunger, when the coin in the receptacle has a bending strength that is less than the bending strength of a coin of standard mintage.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures.

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HARRY S. AUSHERMAN.