Aug. 17, 1937. V. H. KELLEY 2,090,368

VENDING MACHINE

Filed May 6, 1936 3 Sheets-Sheet 1

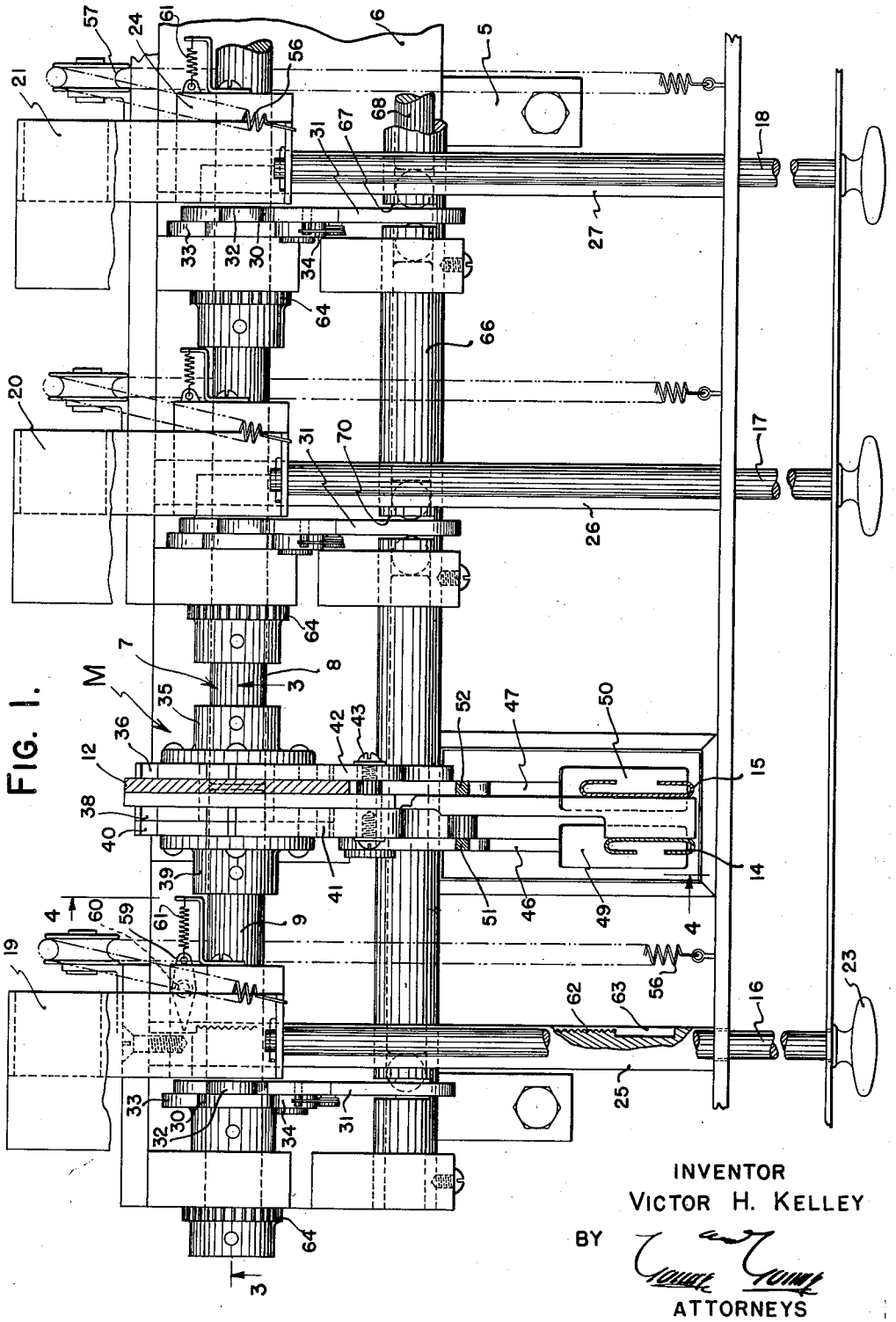


FIG. 1.

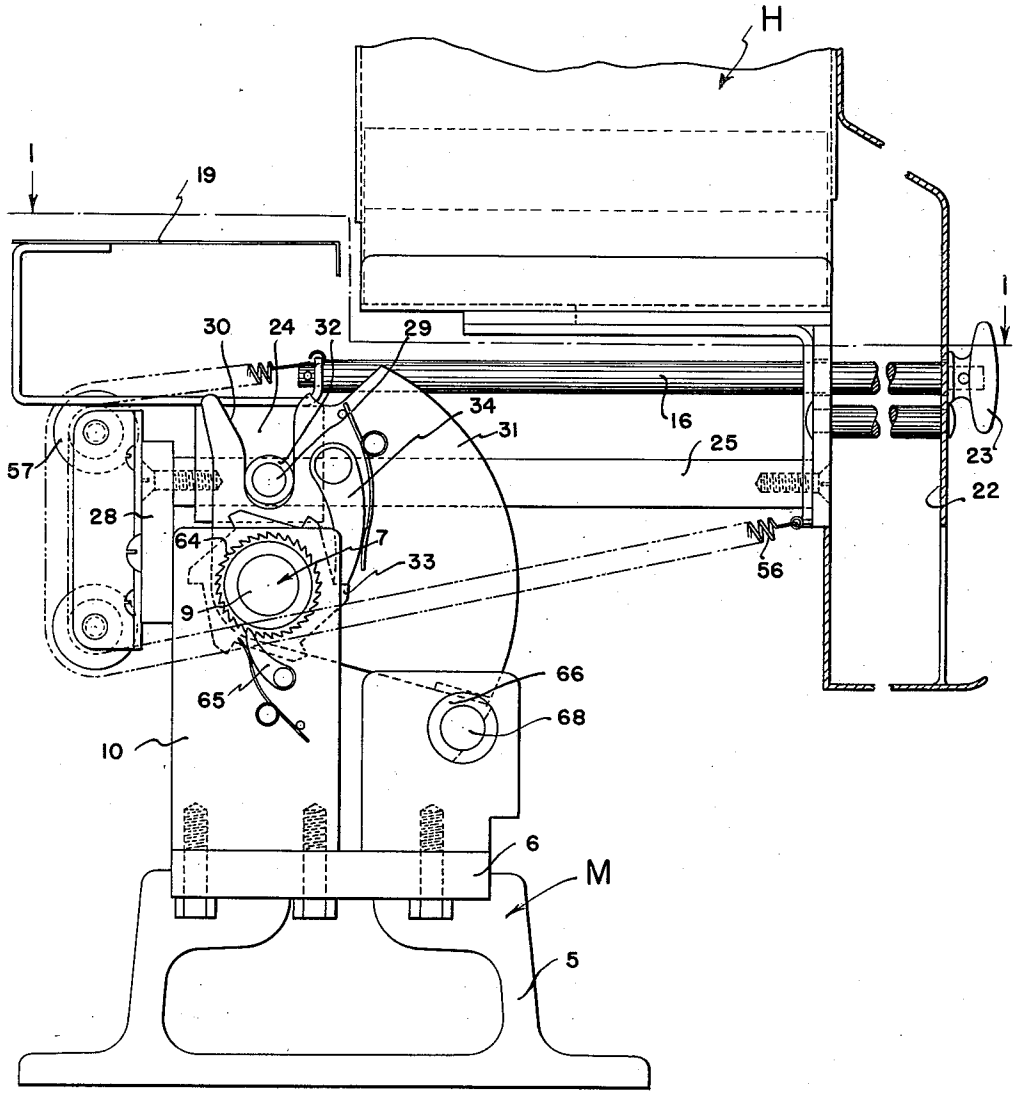
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VENDING MACHINE

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FIG. 2.



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FIG. 3.

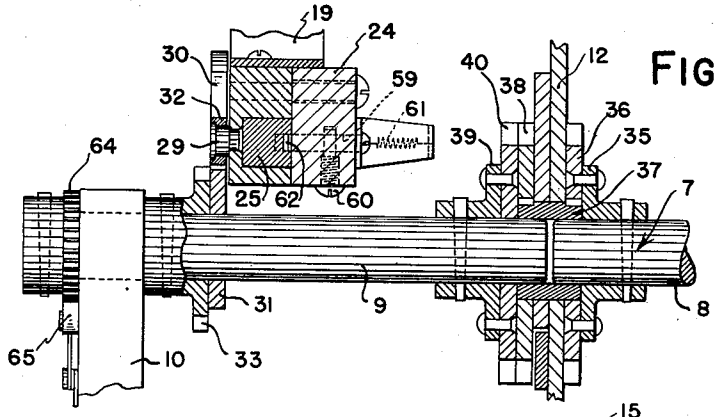
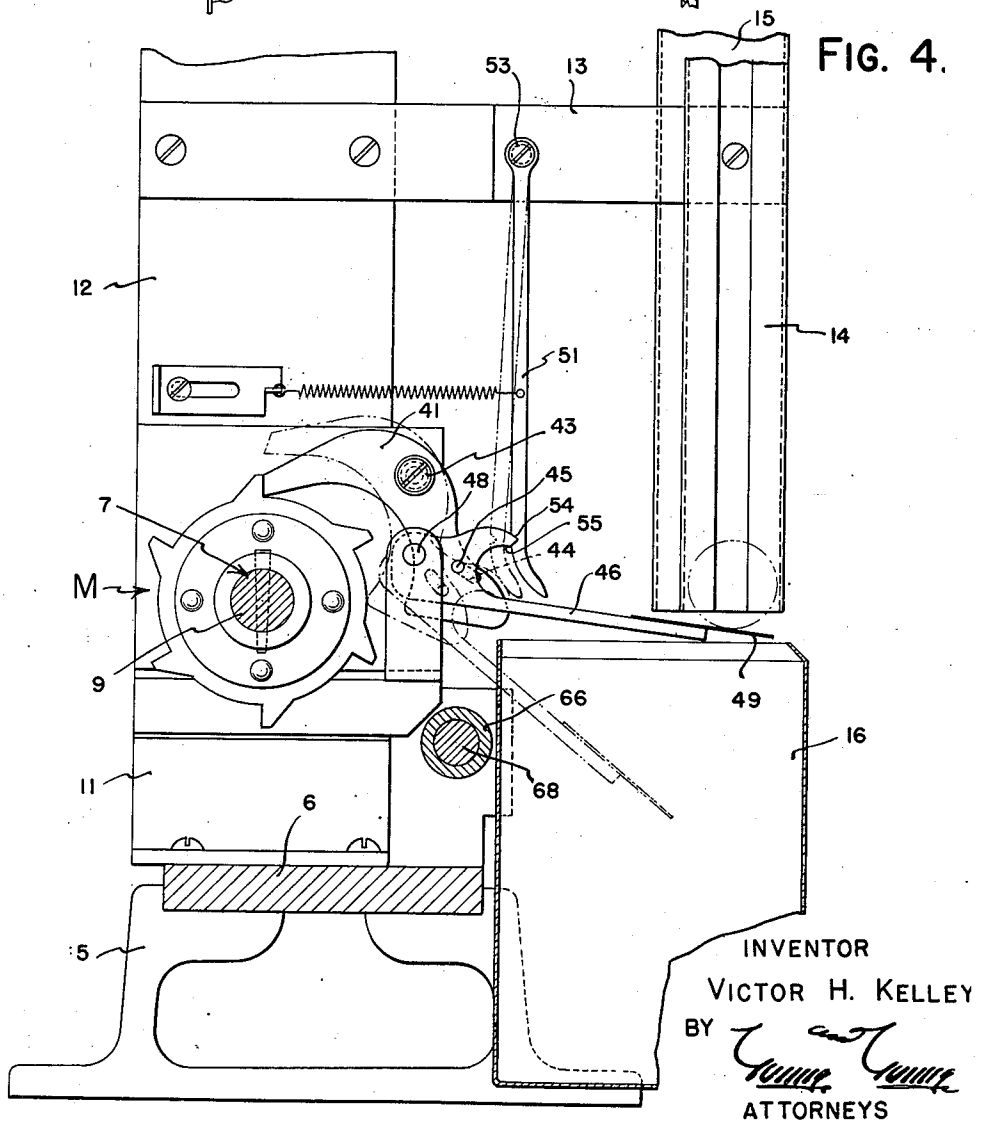


FIG. 4.



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2,090,368

UNITED STATES PATENT OFFICE

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VENDING MACHINE

Victor H. Kelley, Madison, Wis.

Application May 6, 1936, Serial No. 78,206

8 Claims. (Cl. 194—27)

This invention appertains to devices for dispensing merchandise, and more particularly to a coin-controlled vending machine.

One of the primary objects of my invention is to provide a vending machine in which articles of different prices can be dispensed upon the depositing of coins of the necessary value.

Another object of my invention is the provision of a vending machine which will dispense one article upon the deposit of a required coin, and another priced article upon the depositing of two coins totaling the price of the second article.

Another salient object of my invention is to provide a coin-controlled vending machine which is adapted to dispense any type of packaged goods, such as cigarettes, candy, etc., but which is particularly adapted for dispensing decks of playing cards of different prices, the machine being also capable of dispensing score pads from one chute upon the depositing of a coin (say, a dime) and a deck of cards from another chute upon the depositing of two coins (say, a dime and a quarter).

A further object of my invention is to provide novel means for releasing operating plungers for manual actuation upon the depositing of the required coins and for re-setting the coin-actuated mechanism upon the return of the plungers to their normal positions after the delivery of an article.

A further important object of my invention is to provide novel means for preventing the operation of two or more plungers at a time and for locking the other plungers against movement upon the operation of one plunger alone.

A still further object of my invention is to provide an improved coin-controlled vending machine of the above character, which will be durable and efficient in use, one that will be simple and easy to manufacture, and one which can be placed upon the market at a reasonable cost.

With these and other objects in view, the invention consists in the novel construction, arrangement, and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawings, in which drawings:

Figure 1 is a fragmentary longitudinal section through the improved machine, taken substantially on the line 1—1 of Figure 2, the brackets for the article chutes or hoppers being shown removed.

Figure 2 is a fragmentary end elevation of the improved machine, the casing for the machine being shown removed.

Figure 3 is an enlarged, detail horizontal section taken substantially on the line 3—3 of Figure 1, looking in the direction of the arrows, illustrating the construction of the operating shaft.

Figure 4 is an enlarged, fragmentary vertical section through the improved machine, taken on the line 4—4 of Figure 1, looking in the direction of the arrows.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter M generally indicates my improved coin-controlled vending machine, and the same embodies longitudinally alined base brackets 5, which can be firmly united to a longitudinally extending base plate 6, on which the various parts of the operating mechanism can be disposed. The base and the operating parts of the mechanism can all be housed within a suitable casing or housing (not shown), which can be of any desired or preferred ornamental character.

Disposed above the base plate 6 is the operating shaft 7, which includes a pair of longitudinally alined independent sections 8 and 9. These shaft sections 8 and 9 are supported for free rotation in suitable bearing blocks 10 rigidly connected to the base plate 6.

Rigidly joined to an angle bracket 11 carried by the base plate is an upstanding supporting plate 12 through which the shaft 7 extends. This plate 12 supports, by means of brace plates 13, chutes 14 and 15 for the coins, as will be described later. It is to be noted that the coin chutes 14 and 15 terminate above a coin box 16, and thus the coins are adapted to drop from their chutes into the box, where the same can be removed at the convenience of the owner of the machine. The upper terminals of the coin chutes can be formed in any preferred manner to facilitate the insertion of coins therein.

On one side of the plate 12 are arranged vertical hoppers or chutes for receiving articles of one price, and on the other side of the plate are arranged hoppers for receiving articles of another price. There may be as many of the chutes in the machine as desired, and in the present instance, I have shown mechanism on one side of the plate 12 for dispensing only one article of one price, and on the other side of the plate, mechanisms for dispensing two different articles of another price. Hence, I have provided and shown three different operating plungers 16, 17, and 18. These plungers have rigidly secured to their rear ends, follower plates 19, 20, and 21 respectively, which are adapted to

move through openings in the bottom of the article-receiving hoppers for forcing one of the articles from a hopper into a delivery pocket 22, where the same can be conveniently reached by the operator of the machine.

Obviously, the plungers 16, 17, and 18 extend through the front wall of the casing of the machine and are provided with hand grips 23. The followers 19, 20, and 21 are of a shape best suited for the dispensing of the particular articles being vended, and hence the exact form thereof can be changed to agree with the form of the article and the construction of the article-receiving hopper.

As brought out in the objects of the specification, it is one of the salient features of the invention to provide means for dispensing one article upon the depositing of one coin (say, a dime) and for dispensing another article upon the depositing of two coins (say, a dime and a quarter). Thus, the plunger 16 in the present instance is utilized for dispensing articles valued at a dime, while the plungers 17 and 18 are utilized for dispensing articles having a value of thirty-five cents.

The chute 14 constitutes means for receiving a ten cent piece, while the chute 15 constitutes means for receiving a twenty-five cent piece.

The plungers 16, 17, and 18 and the followers 19, 20, and 21 have rigidly connected thereto slide blocks 24, and these blocks are mounted for free movement on supporting bars or tracks 25, 26, and 27. These tracks or bars are mounted directly below their plungers 16, 17, and 18, and are securely bolted to rigid plates 28 carried by the bearing blocks 10, which form a part of the supporting frame.

All of the slide blocks 24 carry laterally extending pins 29, which are normally received within guide slots 30 formed in sector-shaped lock plates 31, which are mounted on the shaft sections 8 and 9 for free rotation. If preferred, the laterally extending pins 29 can be provided with anti-friction rollers 32 for facilitating movement of the pins in the slots.

Adjacent to each of the sector-shaped lock plates 31 is a ratchet wheel 33, which is keyed or otherwise rigidly secured to its shaft section 8 or 9, as the case may be, and each lock plate carries a spring-pressed dog 34 for engaging its ratchet wheel.

From the construction so far, it can be seen that when a plunger is pulled forwardly, its slide block 24 will travel on its guide bar 25, 26, or 27, carrying its pin 29 therewith. Movement of the pin will rotate a lock plate 31 on the shaft. As the lock plate swings downwardly, the dog 34 engaging the ratchet wheel 33 will turn the shaft section 8 or 9.

Novel mechanism is provided for preventing the rotation of the shaft sections 8 and 9 until the required coin or coins are deposited.

Particular attention is now invited to Figure 3 of the drawings, and it is to be noted that the shaft section 8 has rigidly keyed or otherwise secured thereto a collar 35 carrying a ratchet wheel 36, the teeth of which are equidistantly spaced. The shaft section 8 also has rigidly coupled thereto a sleeve 37, which extends through the upright plate 12, and this sleeve receives the inner end of the shaft section 9, and has formed thereon or rigidly secured thereto a ratchet wheel 38, which is of the same character as the ratchet wheel 36.

Thus, the shaft section 8 has mounted for movement therewith like ratchet wheels 36 and 38. The shaft section 9 has rigidly secured thereto a collar 39 on which is formed or rigidly secured thereto a ratchet wheel 40. This ratchet wheel 40 is of the same type as the ratchet wheels 36 and 38, and the teeth of all of the ratchet wheels are in longitudinal alinement.

Rockably mounted on opposite sides of the upright plate 12 are ratchet dogs 41 and 42. These ratchet dogs are rockably mounted intermediate their ends on a common pivot pin 43. The upper terminal of the dog 42 is adapted to engage the teeth of the ratchet wheel 36. The upper end of the dog 41 is formed relatively wide and is adapted to engage the teeth of both the ratchet wheels 38 and 40. The ratchet dogs 41 and 42 are of substantially a crescent shape and are so formed that when the upper ends thereof are in the path of the teeth of the ratchet wheels 36, 38, and 40, their lower ends are out of the path of said teeth.

When the dogs are moved, by means which will be hereinafter described, to position their upper ends out of the path of the ratchet wheels 36, 38, and 40 to permit rotation of the shaft sections 8 and 9, the lower ends of the dogs are in the path of the ratchet teeth to permit the ratchet teeth to move the dogs back to their normal positions, with their upper ends in the path of the teeth of said ratchet wheels.

Both of the ratchet dogs have their lower ends provided with slots 44 below their pivots, which receive operating pins 45 carried by coin trip levers 46 and 47. These trip levers 46 and 47 are rockably mounted at their rear ends above the pins 45 upon pivot pins 48. Consequently, upon downward movement of the coin trip levers, the ratchet dogs will be swung on their pivots 43, so as to move the upper ends thereof away from the ratchet wheels, and their rear ends in engagement with the ratchet wheels.

The forward terminals of the coin trip levers 46 and 47 carry trip plates 49 and 50, which are disposed respectively below the coin chutes 14 and 15. Hence, upon the depositing of a coin of the required value in the coin chute 14, the trip lever 46 will be operated, and upon the depositing of a coin in the chute 15, the trip lever 47 will be actuated.

These trip levers are normally held in a raised position by means of spring-pressed holding dogs 51 and 52. These dogs are rockably mounted on a pivot pin 53 carried by the frame plate 13, and the inner faces of these holding dogs have formed therein, adjacent to their lower ends, notches 54, which are adapted to receive teeth 55 formed on the coin trip levers 46 and 47 forwardly of their pivots 48.

Consequently, when the teeth 55 of the trip levers 46 and 47 ride into the grooves 54 of the holding dogs, the said levers will be held against accidental movement. When the ratchet dogs 41 and 42 are in engagement with the ratchet wheels, rotation of the shaft sections 8 and 9 is prevented in one direction, and consequently none of the plungers with its follower plate can be actuated, due to the fact that the lock plates 31 are held against movement by the said shaft sections.

Upon the deposit of a coin (say, a dime), the trip lever 46 will be actuated and released from its holding dog 51, and the ratchet dog 41 will be moved away from the teeth of the ratchet wheels 38 and 40. Consequently, the shaft sec-

tion 9 can be turned, but the shaft section 8 will be held against movement by the engagement of the ratchet dog 42 with the ratchet wheel 36.

When the operator pulls upon the plunger 16, the plunger will be moved forwardly with its follower, and consequently an article will be dispensed from the article hopper, and as the ratchet wheel 40 rotates, the teeth engaging the lower end of the dog 41 will move the dog back to its normal position to hold the shaft against further rotation. Consequently, upon the return of the plunger to its normal position, the same is again ready for operation upon the depositing of another ten cent piece.

When it is desired to obtain an article valued at, say, thirty-five cents, a dime is deposited in the chute 14 and a quarter is deposited in the chute 15, and consequently both of the trip levers 46 and 47 are actuated, moving the upper ends of the dogs 41 and 42 away from all of the ratchet wheels 36, 38, and 40. Consequently, either one of the plungers 17 or 18 can be operated to dispense the article selected, and upon return of the actuated plunger, the dogs will again be returned to their normal operative position.

When a dime and a quarter have been deposited in the machine, the plunger 16 for the dime article can be operated, and consequently the article valued at a dime will be delivered, but the plungers 17 and 18 will then be held against movement by the ratchet dog 41, and consequently to obtain an article valued at thirty-five cents, it will be necessary to again deposit a dime in the chute 14.

All of the plungers are automatically returned to their normal positions as soon as an article has been delivered, and when the operator releases the plunger. Thus, the rear end of each plunger has connected thereto a contractile coil spring 53. The forward terminals of the coil springs 56 are brought toward the front of the machine and are firmly anchored to a rigid plate of the machine frame. The intermediate portions of the coil springs 56 can be brought over anti-friction rollers 57 carried by the frame of the machine.

To prevent the return of a plunger to its normal position before the plunger has been given its full stroke by an operator to deliver an article, each plunger slide block 24 carries a double-acting pawl 59. This double-acting pawl 59 is rockably mounted intermediate its ends on a pivot pin 60 carried by its slide block, and the pawl is normally centered on the pivot pin by means of a spring 61. The supporting bars 25, 26, and 27 for the slide blocks have formed on their side faces rack bars 62, and the supporting bars at the ends of the rack bars are recessed, as at 63. The double-acting pawl is normally disposed in one recess 63 or the other, and consequently, when a plunger is operated, the double-acting pawl will ride out of its recess, say, the rear recess, and will strike the teeth of the rack 62, and the pawl will be swung on its pivot. Consequently, rearward movement of the slide block will be prevented.

As the slide block moves forwardly and the pawl rides into the front recess 63, the same will be again centered by the spring, and as the slide block moves rearwardly, the pawl will be swung in the opposite direction to permit rearward movement of the slide block and to prevent forward movement of the slide block.

Means is provided independent of the mechanism previously described for at all times holding the shaft sections 8 and 9 against rotation in one direction, and thus each shaft section can carry ratchet wheels 64, which are adapted to be engaged by spring-pressed dogs 65 carried by the bearing blocks 10.

It is highly essential to provide means for preventing the simultaneous operation of two or more plungers upon the depositing of the required coins in the coin chutes, and I have provided mechanism for preventing an unscrupulous operator from doing this. The rock plates 31 previously described form a part of this mechanism, as will be seen as the description proceeds.

Rigidly secured to the frame of the machine in front of the bearing blocks 10 is a hollow shaft or tube 66. This hollow shaft 66 is disposed directly in the path of the lock plates 31, but the same is slotted at spaced points, as at 67, to permit the passage of the lock plates therethrough.

Slidably mounted within the hollow shaft or tube 66 are cylindrical push bars 68, the terminals of which engage lock balls 70, which are disposed on opposite sides of the slots 67. The lock balls 70 are so spaced that when an operator endeavors to actuate two or more of the plungers simultaneously, the passage of the lock plates past the balls will be prevented, and consequently the lock plates cannot turn.

When one plunger is operated, the lock plate will move between the balls 70 and impart lateral movement to the balls and to the push rod 68, moving the other balls into the other slots and in the path of the other lock plates 31. Consequently, only the lock plate moved by the operated plunger will have passage between the balls.

While my improved machine can be utilized for dispensing any desired type of goods, the same has been particularly designed for dispensing score pads and decks of cards. Thus, the chute holding articles to be dispensed by the plunger 16 can receive score pads, and the hoppers receiving articles controlled by the plungers 17 and 18 can receive decks of cards, which can be of different designs to suit the choice of the operator.

From the foregoing description, it can be seen that I have provided an exceptionally simple and durable machine which will permit the vending of articles of different prices.

Changes in details may be made without departing from the spirit or the scope of my invention, but what I claim as new is:

1. In a vending machine, independent manually operated members for dispensing articles from magazines, one of said members being provided for dispensing articles of a lesser value than the other members, a two-part shaft having each part independently rotatable, means operatively connecting said one member to one shaft part, means operatively connecting the other of said members to the other shaft part, releasable means normally holding one shaft part against rotation, and releasable means normally holding both of said shaft parts against rotation.

2. In a vending machine for dispensing articles of different values, a magazine for receiving articles having one value and a magazine for receiving articles having another and higher value, independent manually actuated means for dispensing articles from the magazines, independent means normally holding said dispensing means against movement, check-controlled means for releasing one of said holding means, and check-controlled means operating in conjunction with the first check-controlled means for releasing the other of said holding means.

3. In a vending machine for dispensing articles of different values, a magazine for receiving articles of one value, a magazine for receiving articles having a higher value, independent manually actuated means for dispensing articles from the magazine, a rotatable shaft operatively connected to one of said manually actuated means, a second shaft operatively connected to the other of said manually actuated means, a trip lever normally holding the last mentioned shaft against rotation, a second trip lever normally holding both of said shafts against rotation, and coin-operated means for operating said trip levers.

4. In a vending machine for dispensing articles of different values, a magazine for receiving articles of one value, a second magazine for receiving articles of a higher value, manually actuated dispensing plungers for the magazines, a rotatable shaft for one plunger, a rotatable shaft for the other plunger, a pawl and ratchet mechanism between the plungers and their shafts, a holding ratchet wheel for one shaft, a pair of holding ratchet wheels for the other shaft, a holding pawl engaging one of the pair of holding ratchet wheels, a second holding pawl engaging the other ratchet wheel of the pair of ratchet wheels and the first mentioned ratchet wheel, and means for independently releasing said pawls.

5. In a vending machine for dispensing articles of different values, a magazine for receiving articles of one value, a magazine for receiving articles of a higher value, manually actuated means for dispensing articles from the magazines, a pair of independently rotatable shaft sections, means operatively connecting the manually actuated means with the shaft sections, whereby upon movement of one manually actuated means one shaft will be rotated and upon actuation of the other manually actuated means the other shaft section will be rotated, a holding ratchet wheel on one shaft section, a pair of holding ratchet wheels on the other shaft section, a pawl normally engaging one of the pair of holding ratchet wheels, a second holding pawl normally engaging the other of the pair of holding ratchet wheels and the first mentioned holding ratchet wheel, independent trip levers for actuating said holding pawls, and means normally holding the trip levers against movement.

6. In a vending machine for dispensing articles of different values, a magazine for receiving articles of one value, a magazine for receiving articles of another value, a reciprocating plunger for dispensing articles from one magazine, a second reciprocating plunger for dispensing articles from the second magazine, a pair of independently rotatable shaft sections, means operatively connecting the first plunger to one shaft section, and means operatively connecting the second plunger to the other shaft section, a holding ratchet wheel rigidly secured to the first shaft section, a pair of holding ratchet wheels secured to the second mentioned shaft section, a double-ended holding pawl rockably mounted intermediate its ends normally engaging one holding ratchet wheel of the pair of ratchet wheels for holding the second shaft against movement in one direction, another double-ended holding pawl rockably mounted intermediate its ends for engaging the other holding ratchet wheel of the pair of ratchet wheels and the holding ratchet wheel carried by the first shaft section, independent means for releasing the holding pawls from the ratchet wheels for permitting operation of the plungers, means for returning the holding pawls to their normal positions upon operation of the plungers.

7. In a vending machine for dispensing articles of different values, a magazine for receiving articles of one value, a magazine for receiving articles of another value, a reciprocating plunger for dispensing articles from one magazine, a second reciprocating plunger for dispensing articles from the second magazine, a pair of independently rotatable shaft sections, means operatively connecting the first plunger to one shaft section, and means operatively connecting the second plunger to the other shaft section, a holding ratchet wheel rigidly secured to the first shaft section, a pair of holding ratchet wheels secured to the second mentioned shaft section, a double-ended holding pawl rockably mounted intermediate its ends normally engaging one holding ratchet wheel of the pair of ratchet wheels for holding the second shaft against movement in one direction, another double-ended holding pawl rockably mounted intermediate its ends for engaging the other holding ratchet wheel of the pair of ratchet wheels and the holding ratchet wheel carried by the first shaft section, independent means for releasing the holding pawls from the ratchet wheels for permitting operation of the plungers, means for returning the holding pawls to their normal positions upon operation of the plungers, and means for preventing operation of one of the plungers upon actuation of the other of said plungers.

8. In a vending machine, a magazine for dispensing articles of merchandise, a manually operable plunger having a follower movable through the magazine for vending articles therefrom, a rotatable shaft, a sector-shaped disc rotatably mounted on the shaft, a ratchet wheel on said shaft, a spring-pressed pawl carried by the sector-shaped disc engaging said ratchet wheel, a pin-and-slot connection between the plunger and disc, means normally holding the shaft against rotation, and check-controlled means for actuating said last mentioned means.

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