May 4, 1926. 1,582,933

F. F. KING

COIN CONTROLLED MACHINE

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Fig. 1.

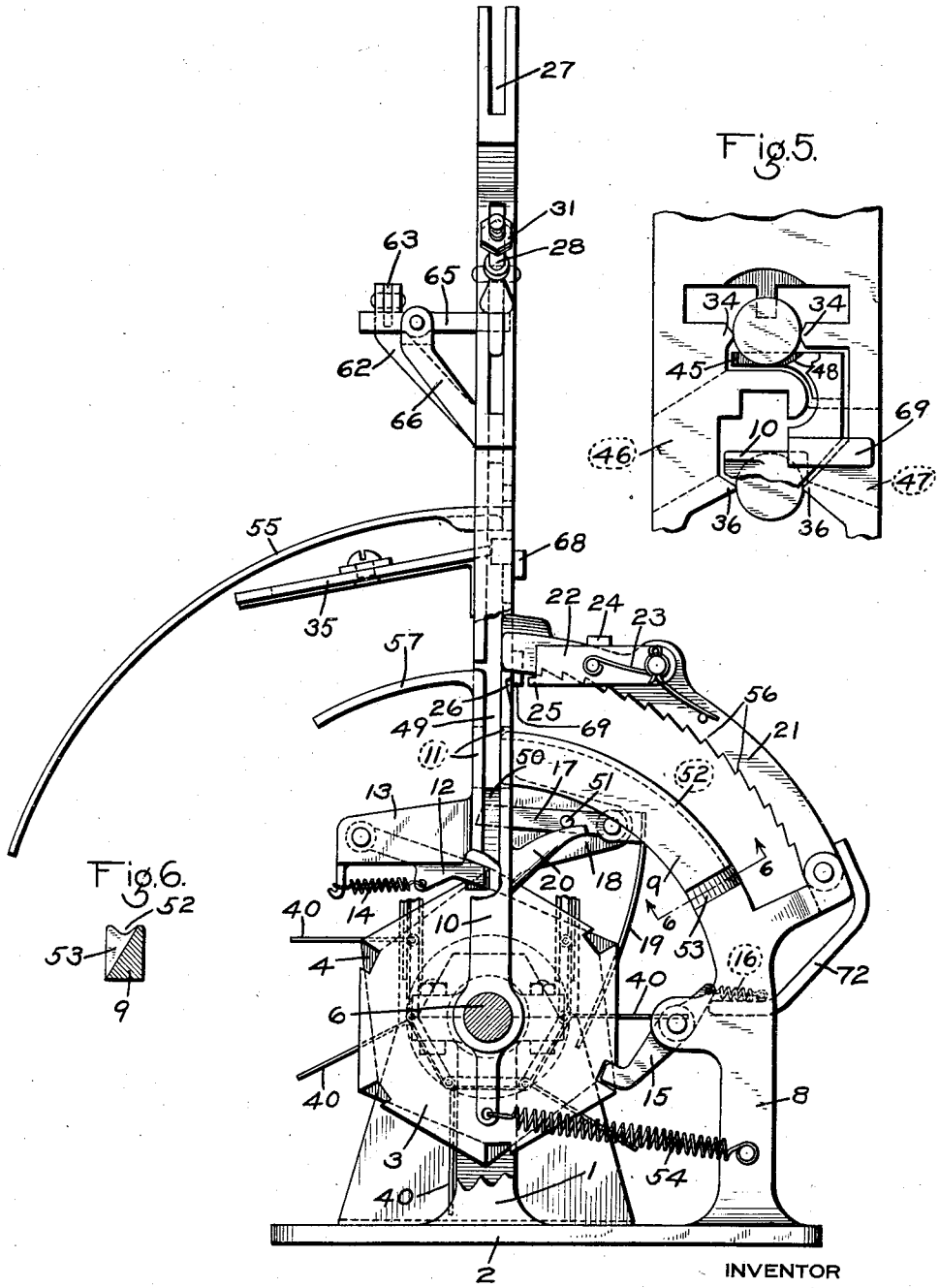


Fig. 5.

Fig. 6.

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Fig. 4

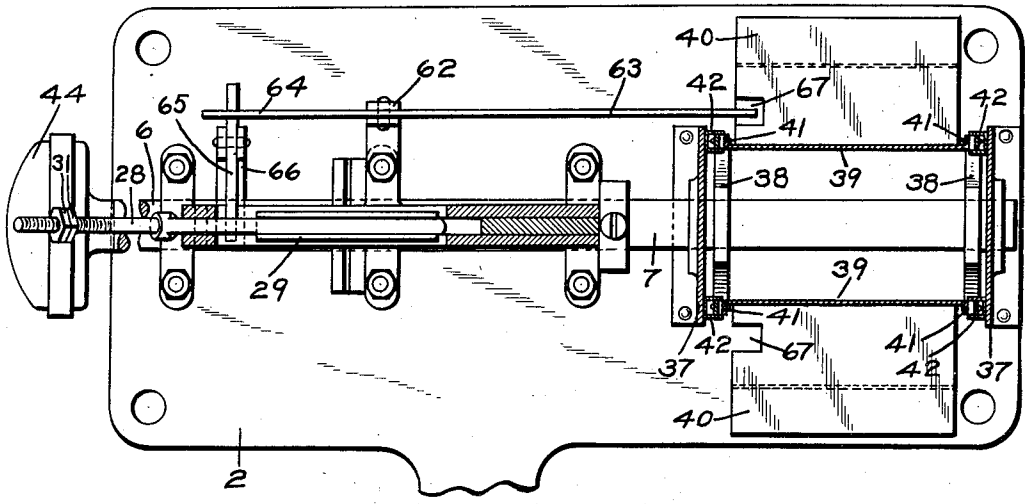
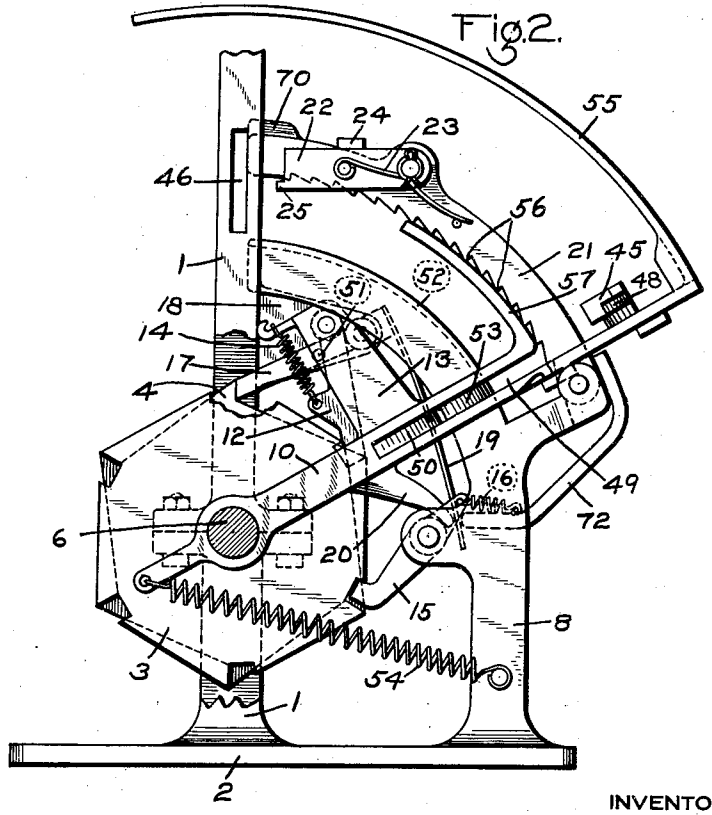


Fig. 2.



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Fig. 3.

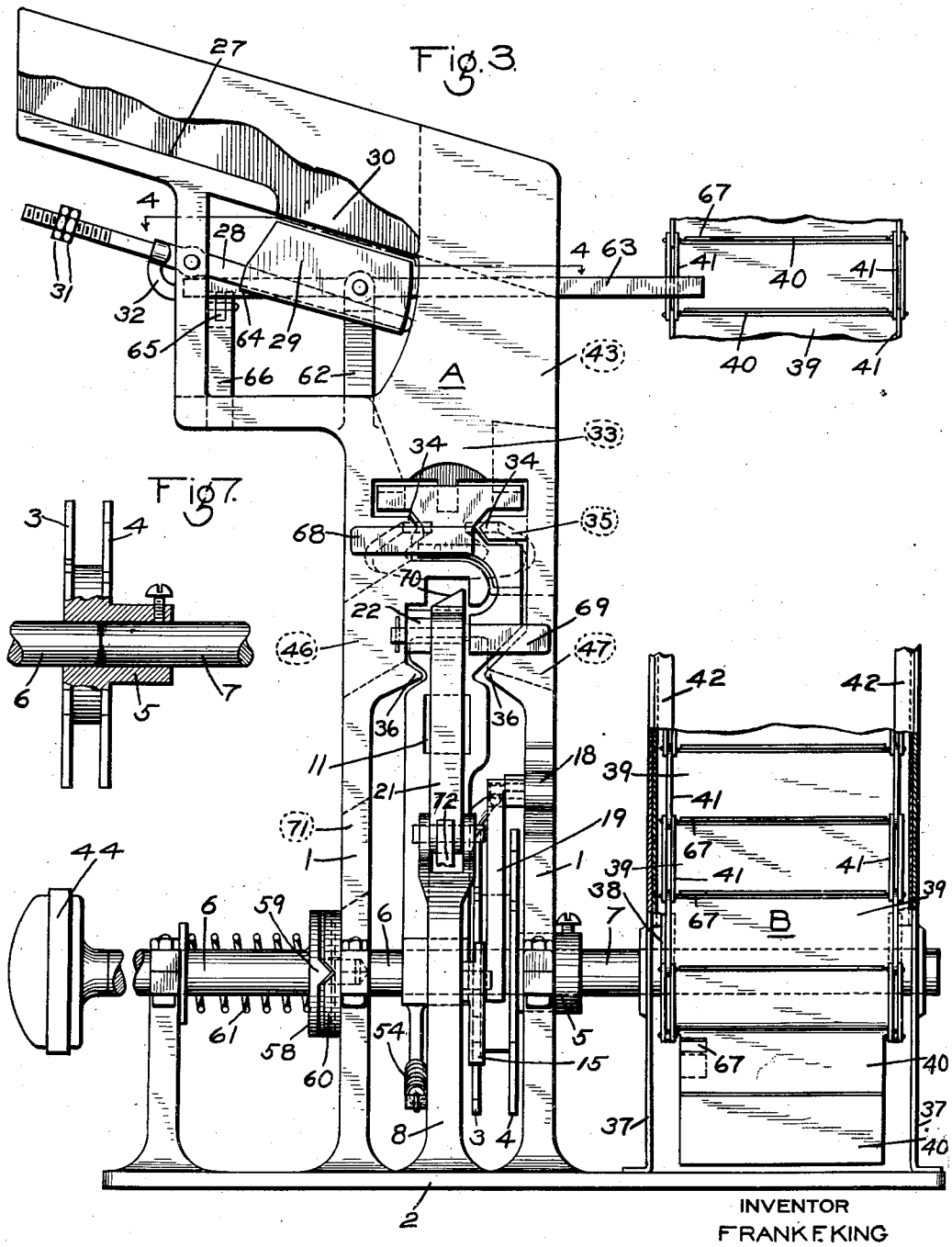


Fig. 7.

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UNITED STATES PATENT OFFICE.

FRANK F. KING, OF WILKINSBURG, PENNSYLVANIA.

COIN-CONTROLLED MACHINE.

Application filed May 17, 1924. Serial No. 713,974.

To all whom it may concern:

Be it known that I, FRANK F. KING, a citizen of the United States, residing at Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Coin-Controlled Machines, of which the following is a specification.

This invention relates to check controlled vending machines and has for one of its objects to provide improved means for preventing the operation of the machine by unauthorized checks and for returning such unauthorized checks to the person introducing the same.

Another object of the invention is to provide improved means for preventing the clogging of the machine with introduced checks which fail to operate the machine.

Another object of the invention is to provide means for returning an authorized or other check to the person introducing same, when the machine is emptied of articles to be vended and for locking the machine against further operation.

Another object of the invention is to provide means for preventing the application of excessive force through the manually operated element of the machine to the working parts of the machine.

Other objects and advantages will appear in the following more detailed description of the invention.

In the accompanying drawings; Fig. 1 is a front elevation of a check controlled vending machine embodying my improvements; Fig. 2 a view similar to Fig. 1, but showing the positions of the parts after the manually operable element has been rotated; Fig. 3 a side elevation of the machine shown in Fig. 1; Fig. 4 a section on the line 4—4 of Fig. 3; Fig. 5 a fragmentary view of the check diameter testing portion of the machine; Fig. 6 a section on the line 6—6 of Fig. 1; and Fig. 7 a detail view, partly in section, of the ratchet wheel member of the machine.

As shown in the drawings, the machine may comprise a check controlled mechanism indicated generally by the reference letter A and an article vending mechanism indicated by the reference letter B.

The check controlled mechanism A comprises a casing supported by standards 1 which are secured to a base plate 2. A ratchet wheel member is provided comprising ratchet wheels 3 and 4, with the ratchet teeth facing in opposite directions with respect to each other, and a hub 5 mounted in a bearing on one of the standards 1. In axial alinement with the ratchet member is a manually operable shaft 6, which is supported in a bearing on the other standard 1 and extends into a central bore of the ratchet member. Secured in the same central bore of the ratchet member is a shaft 7 for operating the article vending mechanism B.

Disposed midway between the standards 1 and carried by the base plate 2 is a guide member 8 having an arcuate guide portion 9, the arc of which is struck from the center of the shaft 6. An arm 10 is secured to the shaft 6 and is provided with an opening 11 for receiving the arcuate portion 9.

An operating pawl 12, adapted to engage the teeth of ratchet wheel 3 is pivotally mounted on a bracket 13, carried by the arm 10, and said pawl is held in yielding engagement with the ratchet wheel by a spring 14, so that rotation of the arm 10 operates the pawl 12 to rotate the ratchet wheel 3.

A pawl 15, pivotally mounted on the member 8, also engages the teeth of ratchet wheel 3 and serves to prevent reverse movement of the ratchet wheel. The pawl 15 is normally held in yielding engagement with the ratchet wheel by a spring 16.

A pawl 17, pivotally mounted on a bracket 18, carried by one of the standards 1, engages the teeth of ratchet wheel 4 and operates to limit the forward movement of the ratchet wheel member. A flat spring 19 carried by the pawl 17 is so disposed that it will engage a finger 20 carried by the arm 10, when the arm is rotated in its extreme forward position, so as to hold the pawl 17 in engagement with the ratchet wheel 4.

In the drawings, I have shown each of the ratchet wheels as provided with six teeth, but any other desired number of teeth may be employed. When provided with six teeth, the arm 10 is arranged to rotate through an arc of 60 degrees.

Pivotally connected to and spaced from the guide member 8 is an arcuate arm 21, which is concentric with the arcuate portion 9 and pivotally mounted on said arm is a

locking pawl 22 which is pressed downwardly by a spring 23 and having its downward movement limited by the engagement of an attached clip 24 with the arm 21. The pawl 22 is provided with a teat 25 which is adapted to engage a recess 26 in the arm 10, upon a slight forward rotative movement of the arm.

The upper portion of the casing supported by the standards 1 is provided with an inclined runway or chute 27 in which checks are deposited in order to operate the machine. Below the runway is provided a weight testing device, which may comprise a balance arm 28 pivoted in the casing and having at the inner end a check receptacle 29 in which fall checks from the runway 27 by way of opening 30. The outer end of the balance arm may be screw-threaded to receive nuts 31, so that by adjustment of the nuts, the desired balance may be provided in order to reject a check weighing less than an authorized check. A stop 32 may be provided on the arm 28 for limiting the upward movement of the inner end of the balance arm. It will be noted that the casing is cut away where the check receptacle 29 operates, so that dirt or foreign matter cannot collect between the receptacle and the walls of the casing and thus tend to clog up and prevent the free movement of the balance arm.

A check of the weight of an authorized check will deflect the balance arm 28 so that the check will fall into a chute 33. At the lower portion of the chute 33 there are provided gage points 34 which are spaced apart so as to permit the passage of a check of or less than the diameter of an authorized check, but which will hold a check of greater diameter.

Adjacent to the gage points 34 is mounted a permanent magnet 35 for holding checks made of magnetic material.

If a check passes the gage points 34, it is free to drop to another pair of gage points 36 which are spaced apart so as to just hold a check having the exact diameter of an authorized check.

The vending mechanism B may comprise standards 37 having bearings for the shaft 7 and mounted on said shaft are spaced sprocket wheels 38. The buckets for carrying the articles to be vended may be formed of sheet metal to provide a back 39, a shelf 40, and side links 41. The side links of a series of buckets are pivotally connected together to form endless sprocket chains at opposite sides of the buckets, which are adapted to engage the sprocket wheels 38 and similar sprocket wheels at the upper end of the vending mechanism.

The sprocket chain portions may be guided is runways 42, forming upward extensions of the standards 37, as shown in Fig. 4.

In operation, when a check is deposited, it will roll down the runway 27 and will drop through the opening 30, into the check receptacle 29 of the balance arm 28. If the check weighs less than an authorized check, it will not deflect the arm sufficiently to permit the check to drop into the chute 33 and consequently, the light weight check will be deflected through an opening 43 in the casing and will drop down to the base plate 2, so that the person depositing the check will receive the check back and will know that the check has failed to operate the machine.

A check of sufficient weight, equal to or exceeding the weight of an authorized check will deflect the balance arm 28, so that the check will fall through the runway 33. If the check so falling is of greater diameter than an authorized check, it will be caught and held by the gage points 34 or if the check is of magnetic material, it will be held by the magnet 35, whatever the diameter may be.

If the operator now tries to operate the machine by turning the knob 44, the shaft 6 can be slightly rotated with the arm 10 before the teat 25 engages the recess 26 in the arm and this movement is sufficient to cause a finger 45 carried by the arm 10 to engage the check and move same off the gage points 34. The check will then be moved clear of the casing and will drop down to the base plate 2, the movement being assisted by the engagement of the check with an inclined guide portion 48, as shown in Fig. 5. The engagement of the teat 25 of the locking pawl 22 in the recess 26, prevents the movement of the arm 10 to effect the operation of the machine, as will be evident.

If a check passes the magnet 35 and the gage points 34, it will drop vertically to the gage points 36 and if the check is of less diameter than an authorized check, it will pass the gage points 36 and will drop through a runway 49 provided in the arm 10 and out through an opening 71 in the standard 1 to the base plate 2, this movement being assisted by the engagement of the check with the inclined base 50 of the runway 49.

A check of the diameter of an authorized check will be caught and held by the gage points 36, as clearly shown in Fig. 5, and when the knob 44 is now turned toward the right, the check, which is now held in the runway 49 of the arm 10 will be carried forward by the arm so as to engage the end of the arcuate lever 21. Further movement of the arm 10 causes the check to lift the lever 21 sufficiently so that the pawl 22 will be lifted out of engagement with the arm 10, and consequently the arm 10 may be freely rotated toward the right.

In the normal position of the parts, the pawl 17 is held out of engagement with the

ratchet wheel 4 by the engagement of finger 20 with a pin 51 carried by the pawl 17, but as the arm 10 is rotated, the finger 20 moves away from pin 51 and permits the pawl 17 to drop down into engagement with the ratchet wheel 4. When the arm 21 is raised by the check carried by the arm 10, a finger 72 secured to arm 21 is moved so as to engage and trip the pawl 15 out of engagement with the ratchet wheel 3, so that said pawl will not prevent the movement of the ratchet wheel member.

When the arm 10 is rotated to the position shown in Fig. 2, the check carried by the arm 10 will register with the slot 53 in the guide member 9 and will then roll out, permitting the lever arm 21 to fall back to its normal position. This movement of the arm 21 causes the finger 72 to move away from the pawl 15, so that said pawl will drop into engagement with a tooth of the ratchet wheel 3.

As the arm 10 approaches the position shown in Fig. 2, the finger 20 will engage the flat spring 19 and will thus cause the pawl 17 to be shifted and held in yielding engagement with a tooth of the ratchet wheel 4.

The rotation of the ratchet wheels 3 and 4 is effected during this movement of the arm 10 by the engagement of the pawl 12 in a tooth of the ratchet wheel 3 and the rotation of the ratchet wheel member operates to rotate the shaft 7 of the vending machine mechanism, so that the endless chain of buckets is rotated the distance of one bucket and the article to be vended in one bucket is allowed to drop out so that the person operating the machine may secure the same.

When the parts are in the above described position, as shown in Fig. 2, the check, which was carried along by the arm 10 and which was guided by engagement in a V-shaped groove 52 in the guide portion 9, will register with an inclined slot 53 in the portion 9 as above stated, which will permit the check to fall into an authorized check receptacle.

It will be noted that both the pawls 17 and 15 are moved into locking engagement with the respective ratchet wheels 4 and 3 when the arm 10 has been moved to the position shown in Fig. 2, the pawl 17 serving to prevent any violent surging forward of the vending mechanism beyond the predetermined position, and the pawl 15 serving to hold the ratchet member against rotation in either direction when the arm 10 is returned to its normal position.

When the knob 44 is released, a spring 54, attached to the arm 10, will act to return the arm to its normal position. During the return movement of arm 10, the finger 20 will engage the pin 51 and will cause the pawl 17 to be lifted out of engagement with the ratchet wheel 4, as shown in Fig. 1, so that the machine may be again operated when an authorized check is deposited in the machine.

If, after a check has been deposited in the machine and has dropped down into engagement with the gage points 36, but before the knob 44 is turned, another check should be deposited, it will fall through the chute 33, provided it is of the authorized weight and diameter. Such check, however, will be thrown out and returned to the person depositing the same by way of either the chute 46 or 47, due to the fact that the second check will engage the first check which rests on the gage points 36 and will necessarily be deflected thereby so that it will roll out of the casing as indicated.

Checks will also be prevented from passing the gage points 34, after the arm 10 has been rotated toward the right by means of curved fingers 55, which are so disposed as to bar the path of a check in any position of the arm 10 except its normal position. When the arm 10 is returned to its normal position, any check which may have been held back by engagement with the fingers 55 will be operative, as intended, provided the check is an authorized check.

In order to prevent reverse movement of the arm 10 after it is once moved toward the right, the under face of the lever 21 may be provided with teeth 56 which are adapted to successively engage the check carried by the arm 10 so that the check itself acts as a pawl for preventing movement of the arm toward the left.

In order to facilitate the free return movement of the arm 10 and to prevent possible catching of the arm on the teeth 56, the arm 10 may be provided with a curved guide member 57 which is adapted to bear against the teeth 56, as the arm 10 is moved toward the left.

It is possible that attempts may be made to violently rotate the knob 44, and in order to prevent damage to the machine in such cases, a yielding connection may be interposed in the shaft 6 comprising a disk 58, secured to one section of the shaft and having one or more ridges 59 adapted to engage corresponding grooves in a disk 60 which is secured to the other section of the shaft 6. A spring 61 yieldingly presses the disk 58 into engagement with the disk 60, so that when turning the knob 44 as intended, the ridges 59 will engage in the recesses or grooves of the disk 60 and will operate to rotate the inner section of the shaft 6. If excessive force be applied to the knob 44, however, the ridges 59 will be thrown out, so that the knob 44 will turn without rotating the inner section of the shaft 6.

Another feature consists in providing means for preventing further operation of the machine after the vending mechanism

has been emptied of articles to be vended and for also, in such case, returning the check or coin to the person depositing same.

For this purpose, a lever mechanism is provided which is operative by the vending buckets, when the last article has been delivered, for holding the weight testing device against operation. Accordingly, a lever is pivotally mounted on a standard 62 carried by the casing of the machine and is so disposed that the arm 63 of the lever will engage a portion of the shelves 40 of the buckets. The other arm 64 of the lever engages over one end of a second lever 65, the other end of the lever extending beneath the balance arm 28, the lever 65 being pivotally carried by a bracket 66.

All of the shelves 40 of the buckets of the vending mechanism, except one, are provided with side openings 67, so positioned, that the end of the arm 63 is free from engagement with the shelf 40 as it is rotated past the arm. The one shelf 40 which is not provided with an opening 67 will then operate the lever 63, as this shelf comes to the proper position. In this position, the previous filling of the buckets is such that the last article will be vended as the shelf 40 engages the under side of the arm 63.

A further movement of this shelf will then lift the arm 63 and thus cause the downward movement of the outer end of the lever 65. The inner end of lever 65 then moves upwardly to engage the balance arm 28, so that said arm will not be depressed when a coin is deposited and such coin will be returned to the depositor by way of the chute 43. At the same time, the engagement of arm 63 with one of the shelves 40 prevents further movement of the bucket chain, as will be evident.

Laterally extending clips 68 and 69 may be attached to the arm 10 for limiting the movement of the arm toward the left beyond the normal position, as shown in Fig. 1.

The upper face of the extreme inner end of the lever 21 may be inclined, as shown at 70 to facilitate the ejection of checks which are thrown out by the movement of the arm 10, when the checks fail to pass the gage points 34 or the magnet 35.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a check controlled machine, the combination with a rotatable shaft for operating the machine, of a locking device for preventing rotation of said shaft, means controlled by a check for releasing said locking device, a manually rotatable shaft for operating the first shaft, an impositive driving connection between said shafts, and a spring for yieldingly holding said connection in driving position to thereby permit rotative movement of the manually operated shaft with the other shaft locked against movement.

2. In a check controlled machine, the combination with check controlled mechanism having a weight testing balance member operable by a check and an article vending mechanism comprising an endless chain of article carriers, of a lever mechanism and means associated with one of said article carriers for actuating said lever mechanism to lock said balance member against operation.

3. In a check controlled machine, a manually rotatable shaft, a member secured to said shaft and adapted to carry a check, locking means for said member adapted to be released by a check carried by said member upon movement of said member, and means engaged by said check in the movement of said member whereby said check acts as a pawl for preventing reverse movement of the member.

4. In a check controlled machine, a manually rotatable shaft, a member secured to said shaft and adapted to carry a check, locking means for said member adapted to be released by a check carried by said member upon movement of said member, and an arm carried by and extending rearwardly of said member for locking the path of another check upon rotative movement of said member.

5. In a check controlled machine, a rotatable member adapted to carry a check forwardly and broadside, a stationary element having a guide groove for supporting the check in its movement and provided with a notch through which the check is ejected upon a predetermined movement of said member.

6. In a check controlled machine, a rotatable arm for conveying a check with the plane of the check facing the direction of rotation, a stationary element below the check having a guide groove for supporting the check in its movement, and a member disposed above the check and having notches adapted to engage the check to prevent rotative movement of the check in one direction.

7. In a check controlled machine, a member having gage points for holding a check, an arcuate guide bar, and a rotatable arm for engaging a check held by said gage points and adapted upon rotation to move the check from the gage points to said guide bar.

In testimony whereof I have hereunto set my hand.

FRANK F. KING.