Nov. 26, 1929. W. T. MITCHELL 1,737,511

COIN CONTROL AND CHANGE MAKING DEVICE

Filed June 30, 1926 3 Sheets-Sheet 1

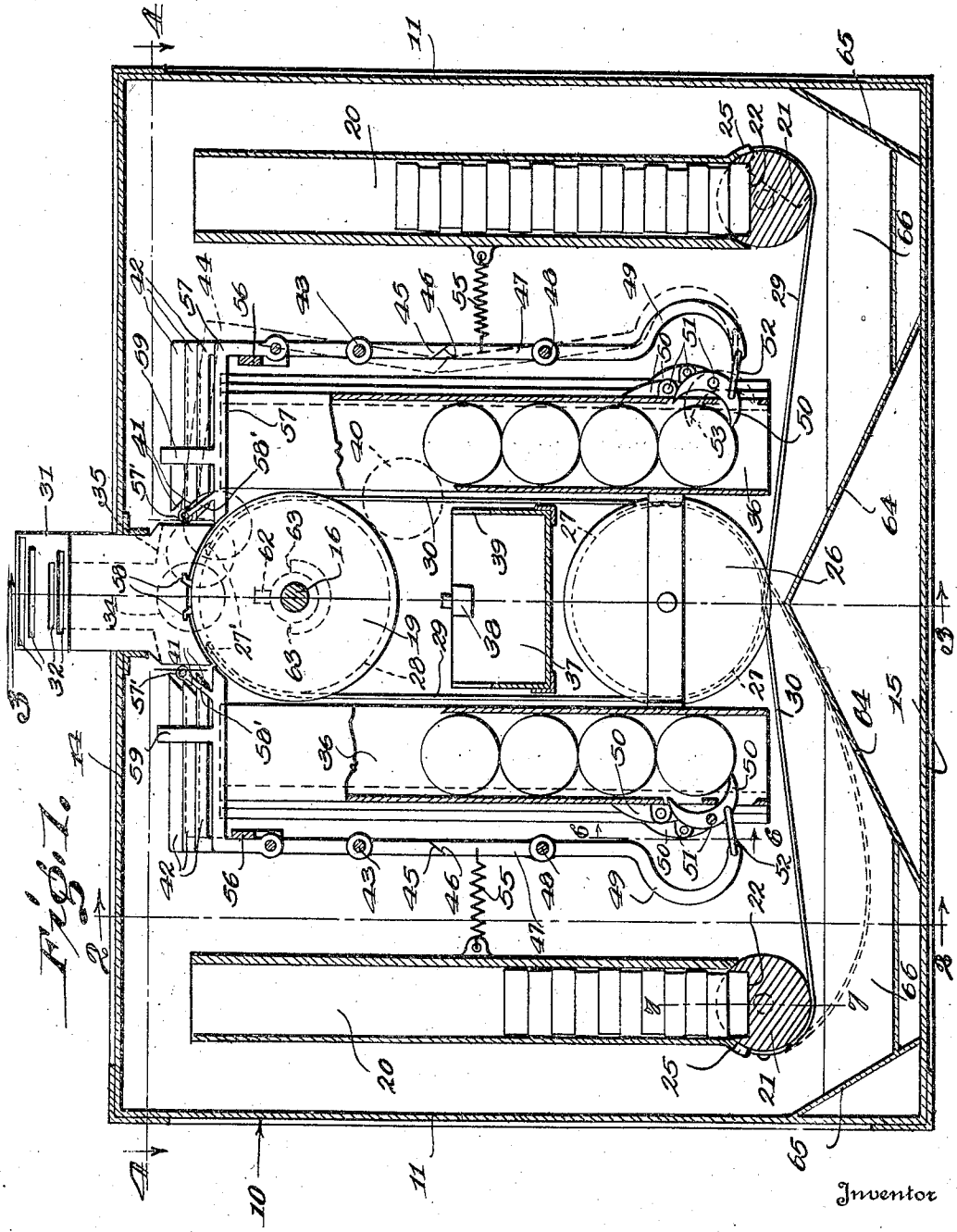


Fig. 1.

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COIN CONTROL AND CHANGE MAKING DEVICE

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Fig. 2.

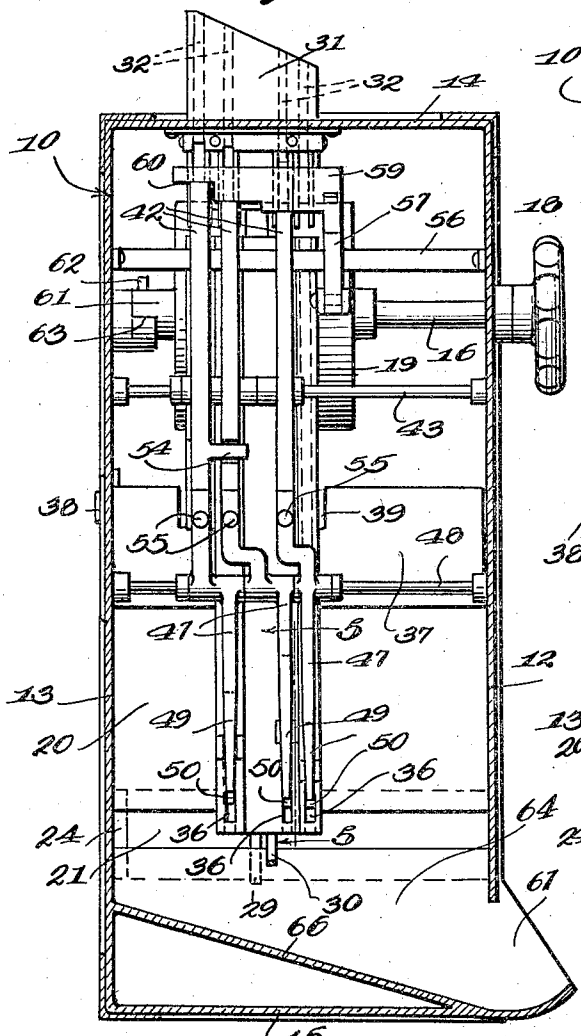
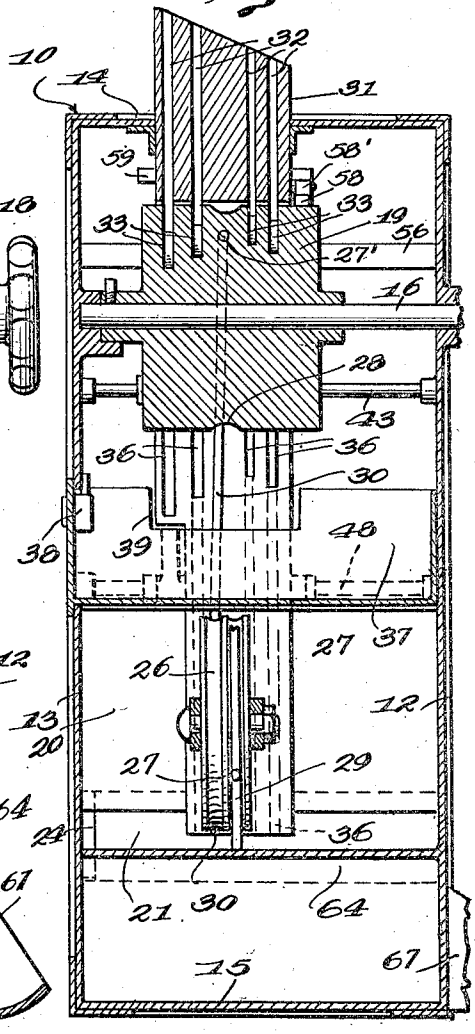


Fig. 3.



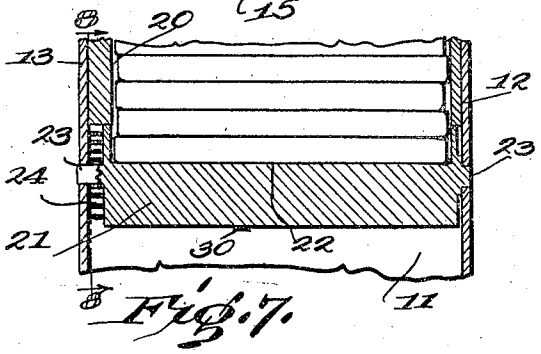


Fig. 7.

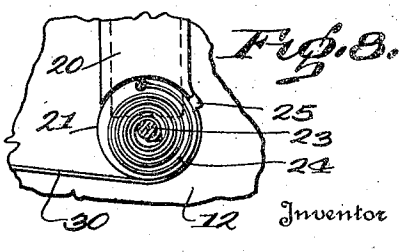


Fig. 8.

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COIN CONTROL AND CHANGE MAKING DEVICE

Filed June 30, 1926 3 Sheets-Sheet 3

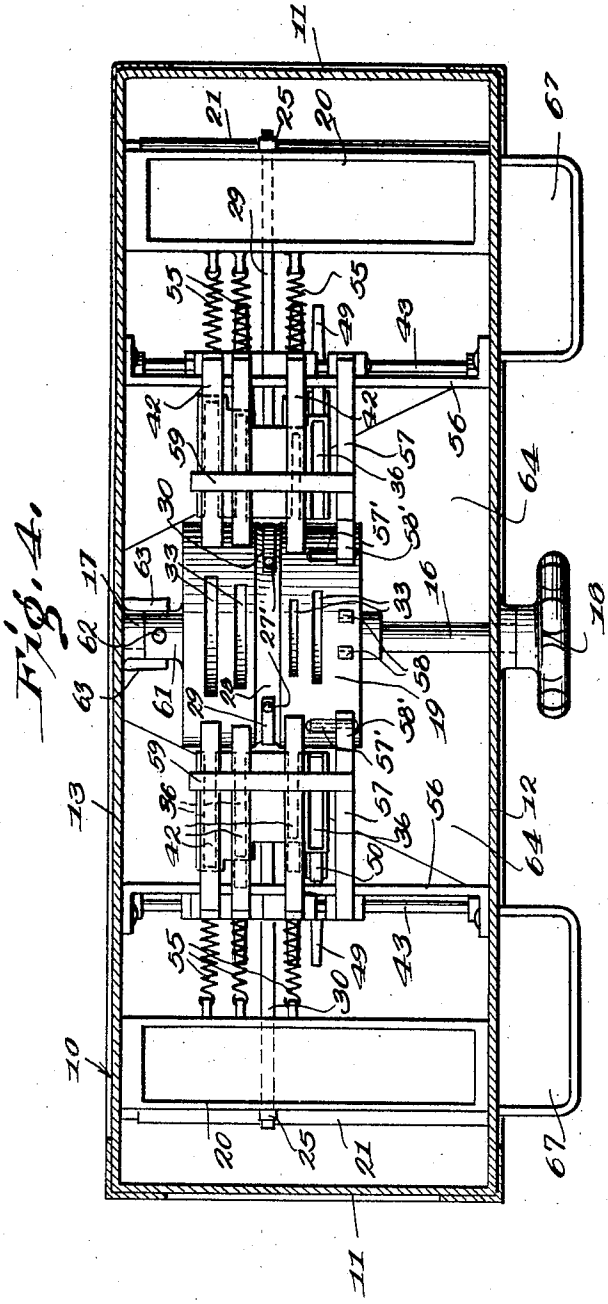


Fig. 4.

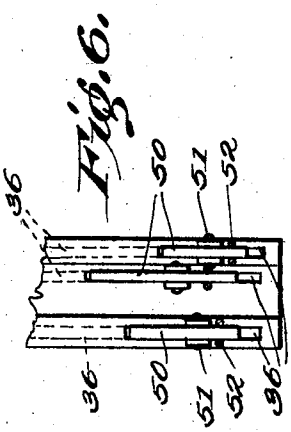


Fig. 6.

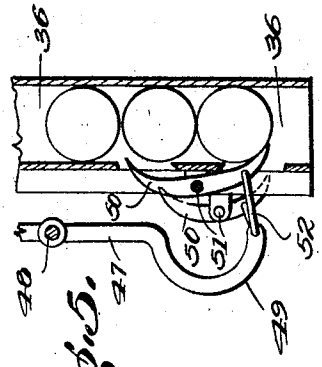


Fig. 5.

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Patented Nov. 26, 1929 1,737,511

UNITED STATES PATENT OFFICE

WALTER T MITCHELL, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-THIRD TO WALTER S. FORNAY, OF DETROIT, MICHIGAN

COIN-CONTROL AND CHANGE-MAKING DEVICE

Application filed June 30, 1926. Serial No. 119,667.

The present invention relates to a coin control and change making device, and aims to provide a novel and improved device of this character, which may be conveniently operated for efficiently controlling a vending structure and for giving the correct change when coins of larger denominations are deposited therein.

An object of the invention is to provided a coin controlled vending machine which will not only dispense various articles but will also deliver the correct change according to the denomination of the coin inserted into the machine.

A further object of the invention is the provision of a coin changing mechanism which may be conveniently and efficiently attached to different makes of non-change-making vending machines now on the market.

It is also an object of the invention to provide a device of the above indicated character, which is substantially simple in construction, durable, and efficient in use, and one which may be placed upon the market at a moderate price.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a vertical longitudinal section through my improved vending machine,

Figure 2 is a vertical cross section taken on line 2—2 of Figure 1,

Figure 3 is a similar section taken on line 3—3 of Figure 1,

Figure 4 is a horizontal section taken on line 4—4 of Figure 1,

Figure 5 is a fragmentary vertical section taken on line 5—5 of Figure 2,

Figure 6 is a similar section taken on line 6—6 of Figure 1,

Figure 7 is also a fragmentary vertical section taken on line 7—7 of Figure 1 and

Figure 8 is a section on line 8—8 of Figure 7.

In carrying out the invention, the numeral 10 designates a casing, having end walls 11, front wall 12, rear wall 13, and top and bottom walls 14 and 15 respectively. Extending through the front wall 12 is a rotatable shaft 16 which has its rear end received in a bearing 17 carried by the rear wall 13, while arranged on its forward end at the exterior of the casing is a manually operable knob 18 for turning the shaft 16. Fixed to the shaft 16 is a drum 19 which is adapted to be turned with the shaft 16.

At each side of the drum 19 is mounted an article receiving chamber 20, said chambers being of sufficient size so as to receive a series of articles to be dispensed. At the lower ends of the chambers 20 are rotatably mounted drum-shaped members 21 having elongated grooves or recesses 22 formed therein of sufficient size for receiving one of the articles in the chamber. The drums 21 have their opposite ends journaled in the front and rear walls of the casing as at 23. At one end of each of the drums 21 is a spiral spring 24 which has one end thereof attached to the drum while the opposite end thereof is secured to the casing for returning said drums to their initial positions after the same have been turned. In order that said drums may be limited against movement past their initial positions, lugs 25 are arranged upon said drums which are adapted to abut against the lower ends of the chambers so as to form stops.

Mounted beneath the drum 19 is a roller or pulley 26, having a pair of grooves 27 formed in the periphery thereof. Attached to the drum 19, as at 27', and received in a groove 28 formed centrally in the drum 19 are the ends of a pair of cables or tape members 29 and 30. The cables or tape members 29 and 30 extend downwardly and each is received in a groove 27 in the pulley or roller 26. The cables or tape-shaped members then extend past each other and each has its opposite end attached to a drum 21, as clearly illustrated in Figure 1 of the official drawings.

From the foregoing, it can be seen that when the drum 19 is turned in one direction that one of the cables 29 or 30 will be pulled upwardly, thus causing one of the drums 21 to be turned so that an article received in the recess 22 thereof will drop from said recess. It is to be noted that when a drum 21 is turned the periphery of said drum prevents more than one article being dispensed at a time, due to the fact that the recess is of a depth equal to the thickness of an article. When such operation takes place, the cable 29 or 30 not being pulled upwardly will thus be slackened, as shown in dotted lines in Figure 1, thus only one of the dispensing drums 21 will be operated, due to the fact that the spiral springs will hold the drum having the slack cable attached thereto against accidental movement.

In order to prevent the dispensing of articles without paying for same, a coin controlled mechanism is provided, said coin controlled mechanism not only permitting the dispensing of an article upon the insertion of a coin, but will deliver the correct change according to the denomination of a coin inserted in the machine. At the top of the casing and extending through the top wall 14 thereof is an extension 31 having a series of vertical slots 32 therein. The slots 32 are of sufficient size for receiving coins of five, ten, twenty-five, and fifty cent denominations. The slots for receiving the coins of the five and ten cent denominations are arranged and spaced in the forward portion of the extension 31 while the slots for receiving the coins of the twenty-five and fifty cent denominations are arranged in the rear of the extension 31. In the periphery of the drum 19 are arranged arcuate slots or grooves 33, which are adapted to align with the slots 32 so that a coin inserted in one of the slots 32 will drop due to gravity and have a portion thereof received in the groove below said slot. The grooves 33 are of various sizes according to the denomination of the coin the same is adapted to receive, so that each coin inserted in the machine will have approximately one-half thereof received in its respective groove, such as shown in dotted lines in Figure 1 and designated by the numeral 34. The slots 32 are enlarged at their lower portions, as shown by dotted lines in Figure 1 and designated by the numeral 35, so as to form guides for the coins when said coins have portions thereof received in the grooves in the drum and said drum is turned.

Arranged at the sides of the drum 19 and pulley 26 and inwardly of the dispensing chambers 20 are coin-slots 36, said slots being in alignment with the arcuate grooves 33 in the drum 19 so that when said drum 19 is turned in either direction a coin carried by said drum will be deposited into the proper slot towards which side the drum is turned. Thus it can be seen that when a coin is inserted in one of the slots 32 in the extension 31 that the same will drop due to gravity in the groove 33 arranged therebeneath in the drum 19, and when the drum is turned in either direction, the coin will be carried by the drum until said drum has turned a sufficient distance to permit the coin to roll from the groove the same is received in. Upon rolling from said groove, the coin will be deposited into its proper slot 36.

When the slots 36 are full, a coin deposited therein will be forced, due to the other coins in the slot, towards and into a coin box 37 slidably mounted in the casing. The coin box 37 has a lock 38 thereon so as to prevent unauthorized persons gaining access to said box. The sides of the coin box are cut away, as at 39, so as to permit the coins of large denominations being deposited therein. As shown in dotted lines and indicated by the numeral 40, a coin is shown as not being permitted to enter the coin slot and forced to enter the coin box.

When coins of larger denominations than the value of the article dispensed are inserted in the machine, it is necessary to deliver the correct change with the article. Thus when a coin of the ten, twenty-five, or fifty cent denominations is inserted into the machine, the same will engage the beveled end 41 of the bell crank lever 42 positioned at the side of the coin in the direction the coin is turned towards. There are provided six bell crank levers, one at each side of the ten, twenty-five, and fifty cent grooves 33 so that when the drum 19 is turned in either direction, a bell crank lever 42 will be engaged by said coin. The bell crank levers 42 at each side of the machine are pivoted upon shafts 43, said shafts being arranged substantially at the lower portions of the bell cranks so that when a coin engages the upper beveled face of a bell crank, said bell crank will have the upper portion thereof forced outwardly by said coin as indicated by dotted lines and designated by the numeral 44. The bell cranks 42 have their lower ends beveled, as at 45, and adapted to engage beveled faces 46 upon levers 47 pivoted upon shafts 48 below said bell cranks. The levers 47 have their lower portions constructed in arcuate shape formation, as at 49. The levers 47 operated by the insertion of coins in the ten, twenty-five and fifty cent denomination slots have their lower portions offset, as clearly shown in Figure 2 of the official drawings, so that the lower end of the lever operated by the insertion of a coin in the fifty cent slot will be in alignment with the lower portion of the twenty-five slot, while the lower end of the lever 47 operated by the insertion of a coin of the twenty-five cent denomination has its lower end in alignment with the slot for receiving ten cent denominations,

and while the lever 47 which is operated by the insertion of a ten cent piece has its lower end in alignment with the five cent slot.

Arranged at the lower portion of the five cent denomination slot are arcuate shaped members 50 which are pivoted, as at 51, intermediate their ends and have links 52 connecting the same with the lower ends 49 of the levers 47 operated by the insertion of a coin of the ten cent denomination. The arcuate members 50 are arranged so that when one end thereof is swung inwardly the opposite end thereof is moved outwardly. Thus but one coin is permitted to drop from the five cent slot. An arcuate member is shown in Figure 1 and designated by the numeral 53 in dotted lines as being moved to permit one coin to drop from a slot while the other coins in the slot are held therein by the upper end of the arcuate member. Similar arcuate members are arranged at the lower portions of the ten and twenty-five cent denomination slots and are operated in a like manner, with the exception that in the ten cent denomination slot the arcuate members are of much greater length so as to permit the dropping of two coins instead of one. This is necessary because when a coin of the twenty-five cent denomination is inserted in the machine, it is necessary to deliver two coins of the ten cent denomination in order to give the correct change. By referring to Figures 5 and 6 of the official drawings, it can be seen how the arcuate members 50 for the slots receiving coins of the ten cent denomination are constructed and operate.

Arranged upon the bell crank levers 42 operated by a coin of the fifty cent denomination are offset lugs 54 which are adapted to engage the bell crank operated by coins of the twenty-five cent denomination so as to cause said bell crank operated by coins of the twenty-five cent denomination to be operated therewith upon the insertion of a coin of the fifty cent denomination, so that a coin of the twenty-five cent denomination will be delivered together with two coins of the ten cent denomination in order to give the correct change when a coin of the fifty cent denomination is inserted in the machine. Attached to each of the levers 47 is one end of a coil spring 55, said coil springs having their opposite ends secured to the article chambers 20, so as to return said levers 47 to their initial positions after being operated. Due to the beveled engaging surfaces of the levers 47 with the bell crank levers 42, said bell crank levers will also be returned to their initial positions after being operated. Extending across the casing and attached to the front and rear walls thereof are bars 56 which are adapted to limit forward movement of the upper ends of the bell cranks 42 so that said bell cranks will be in proper position to be operated by coins inserted in the machine.

In order to prevent the dispensing of an article without the insertion of a coin into one of the coin slots, I have provided a locking device for preventing sufficient turning of the drum 19 to dispense an article. The locking mechanism consists of a pair of bell crank levers 57 pivoted to the bars 56 and being limited against inward movement by said bars 56. The bell crank levers 57 have their inner ends arranged to lie adjacent the periphery of the drum 19 so as to be engaged by lugs 58 arranged upon the periphery of the drum 19 should said drum be turned in either direction. Carried by each of the bell crank levers 57 and extending over the bell crank levers 42 which are adapted to be raised by being engaged by coins are portions 59 which will be engaged upon movement of one of said bell cranks 42 so as to raise the bell crank 57 arranged adjacent the bell crank 42 that is raised so that the end of the bell crank 57 will be moved out of the path of movement of the lugs 58 so as to permit the drum 19 to be swung a sufficient distance to dispense an article. The portions 59 have the lower surfaces thereof stepped upwardly, as at 60, so that each bell crank of each set 42 will raise the bell cranks 57 upon very slight movement. As the insertion of a coin of the five cent denomination does not effect the bell cranks 42 a roller 57′ supported by an arm 58′ is carried by each bell crank 57, said rollers being arranged in the paths of movement of the five cent coin so that upon turning movement of the drum 19 in either direction, a bell crank 57 will be raised by the coin, thus permitting the drum 19 to turn a sufficient distance to dispense an article.

On the hub 61 of the drum 19 is a pin 62 which is adapted to engage shoulders 63 arranged upon the bearings 17 so as to limit turning movement of the drum 19 in either direction. The pin 62 and shoulders are arranged so as to permit sufficient turning of the drum 19 in order that a coin will drop from an arcuate slot 33 in said drum into either its proper coin slot or the coin box.

Arranged upon the bottom wall 15 of the casing intermediate the ends thereof are plates 64 which have their inner or meeting ends thereof raised so as to direct coins towards either end of the casing, while at the extreme ends of the casing are angularly arranged plates 65 which cooperate with the plates 64 so as to provide a pair of chutes through which the article and change are dispensed. The lower surfaces of the chutes have arranged thereon angled plates 66 so as to direct the article and change towards the forward portion of the casing and into hoppers 67 arranged upon said forward wall 12.

In operation, when a coin of the five cent denomination is inserted in its proper slot

32 in the extension 31, the coin will necessarily drop into the arcuate groove 33 arranged in the drum 19 below the slot 32 in which the coin is deposited. The knob 18 is then turned towards the articles one of which is desired. Upon turning movement of the drum 19 the coin will be brought into engagement with one of the rollers 57' causing the bell crank carrying the roller to be raised out of the path of movement of the lugs 58 and upon continual movement of the drum the five cent coin will drop from the arcuate groove 33 and into the five cent coin slot the same is turned towards. Should this slot be filled with coins, the coin will be guided into the coin box as shown in dotted lines in Figure 1. Upon the turning of the drum 19 the cable 29 or 30 which is attached to the drum 21 beneath the articles the drum 19 is turned towards will be pulled upwardly, thus turning the drum 21 to a position so that the article received in the recess in said drum 21 will be dropped therefrom and guided into the hopper 67 adjacent thereto.

When a coin of the ten cent denomination is inserted in its proper slot 32 in the extension 31, the same drops into the arcuate groove arranged therebeneath in the drum 19 and when the drum 19 is turned, the coin is brought into engagement with one of the bell cranks 42 according to the direction the drum 19 is turned, thus raising the bell crank and swinging the lower end thereof inwardly so that the upper end of the lever 47 in engagement therewith will also be moved inwardly while the lower end of said lever is moved outwardly to operate the arcuate member 50 attached to the lower end of the lever 47 which will cause the dropping of one coin of the five cent denomination together with one of the articles, said article being dispensed in the same manner as explained when referring to the insertion of a coin of the five cent denomination.

When a coin of the twenty-five cent denomination is inserted in its proper slot, the same will drop into the groove 33 arranged beneath the slot the same is inserted and upon turning movement of the drum 19 in either direction, one of the levers 42 arranged in alignment with the slot for receiving the coin of the twenty-five denomination will be moved which will cause two coins of a ten cent denomination to be dispensed together with the article. When a coin of the fifty cent denomination is inserted, the same will move either one of the levers arranged in alignment therewith according to the direction the drum 19 is turned in, thus causing one coin of a twenty-five cent denomination to be released and two coins of a ten cent denomination to be released, due to the fact that the bell cranks operated by a fifty cent coin have lugs which cause the dispensing of ten cent coins together with a twenty-five coin. When a coin of the fifty cent denomination is inserted, the same does not go into a coin slot but passes directly into the coin box, as it is never necessary to dispense fifty cent coins.

After the machine has been operated and the knob 18 released, the spiral springs carried by the drums 21 will return the drum 19 to its initial position for receiving another coin, due to the fact that the cables or tapes 29 and 30 are connected to the drums 21 and to the drum 19.

Having thus described my invention, what I claim as new is:

1. A machine of the character described comprising a casing, a member mounted in said casing for rocking movement and having a plurality of coin receiving recesses therein, a shaft carrying said rocking member and having a pin projecting therefrom, a bearing for said shaft having stops engaged by the pin for limiting the movement of the shaft in both directions, a body or block arranged above said turnable member and having coin slots corresponding with the coin receiving recesses in said member, levers pivoted at opposite sides of the rocking member on a line with the coin receiving recesses therein, locking means on one of said levers to engage the rocking member and prevent movement thereof, and means carried by said lever adapted to be operated by the other levers to release the locking means.

2. A device of the character described comprising a casing, a member mounted in said casing for turning movement, an article dispensing structure arranged in said casing for dispensing an article upon turning movement of said member, said turnable member being adapted to receive and support coins of various denominations, separate coin chambers in said casing for receiving the respective coins from said turnable member, pivotally mounted pawls at the bottom of said coin receiving chambers for preventing coins dropping therethrough, and a series of levers pivotally mounted in said casing and adapted to be operated by coins carried by said turnable member to swing certain of said pawls on their pivots for releasing certain coins upon the insertion of other certain coins into the machine.

3. A device of the character described comprising a casing, a member mounted in said casing for turning movement, an article dispensing structure in said casing for dispensing an article upon turning movement of said member, said turnable member being adapted to receive and support coins of various denominations, separate coin chambers in said casing for receiving the respective coins from said turnable member, pivotally mounted pawls at the bottoms of said coin receiving chambers for preventing coins dropping therethrough, a series of levers

pivotally mounted in said casing and operated by coins upon turning movement of said turnable member to swing certain of said pawls on their pivots for releasing certain coins upon the insertion of other certain coins into the machine, and means in said casing for locking said turnable member against sufficient movement to dispense an article or change unless a coin is inserted into the machine.

4. A device of the character described comprising a casing, a member mounted in said casing for turning movement, an article dispensing structure in said casing for dispensing an article upon turning movement of said member, said turnable member being adapted to receive and support coins of various denominations, separate coin chambers in the casing for receiving the respective coins from said turnable member, pivotally mounted pawls at the bottoms of said coin receiving chambers for preventing coins dropping therethrough, a series of levers pivotally mounted in said casing and operated by coins upon turning movement of said turnable member to swing certain of said pawls on their pivots for releasing certain coins upon the insertion of other certain coins into the machine, and a coin box arranged in said casing for receiving coins when said coin receiving chambers are full.

5. A device of the character described comprising a casing, a member mounted in said casing for turning movement, an article dispensing structure arranged to dispense articles upon turning movement of said member, said turnable member having arcuate grooves formed in the periphery thereof for receiving the lower portions of coins of various denominations, separate coin receiving chambers for receiving coins of different denominations, a series of bell crank levers pivotally mounted in said casing and each having one end thereof, terminating adjacent said turnable member to be engaged by coins carried by said turnable member so as to swing said bell cranks on their pivots when engaged by said coins, a series of levers pivotally mounted below said bell cranks and each adapted to be operated when the bell crank thereabove is operated, pivoted pawls at the bottoms of said coin receiving chambers for releasing coins when said levers are operated, and spring means attached to the intermediate levers for returning said levers and bell cranks to their initial positions after being operated.

6. A device of the character described comprising a casing, a member mounted in said casing for turning movement, an article dispensing structure arranged to dispense articles upon turning movement of said member, said turnable member having arcuate grooves formed in the periphery thereof for receiving portions of coins of various denominations, coin receiving chambers each arranged for receiving coins of certain denominations, a series of bell crank levers pivotally mounted in said casing and each having one end thereof terminating adjacent said turnable member so as to be engaged by coins received in said arcuate slots in said turnable member so as to swing said bell cranks on their pivots when engaged by said coins, a series of levers pivotally mounted below said bell cranks and each adapted to be operated when the bell crank thereabove is operated, pivoted pawls arranged at the bottoms of said coin receiving chambers for releasing coins when said levers are operated, spring means attached to said levers for returning said levers and bell cranks to their initial positions after being operated, a locking lever pivotally mounted in said casing over said bell cranks so that said locking lever will be raised upon movement of any one of said bell crank levers, and lugs carried by said turnable member and adapted to engage said locking lever for preventing sufficient turning movement of said turnable member to dispense an article should a bell crank lever not be operated by a coin.

7. A device of the character described comprising a casing, a member mounted in said casing for turning movement, an article dispensing structure arranged in said casing for dispensing articles upon turning movement of said member, said turnable member having arcuate grooves formed in the periphery thereof of sufficient size for receiving coins of various denominations, coin receiving chambers arranged at both sides of said turnable member each for receiving coins of certain denominations according to the direction in which said member is turned, a series of bell crank levers arranged in said casing and pivotally mounted at each side of said turnable member each being arranged to be engaged by a coin of a certain denomination, other levers pivotally mounted in said casing and each being adapted to be operated by one of said bell crank levers, pawls arranged in the bottoms of said coin receiving chambers, means connecting each of said pawls to its companion lever so that certain coins will be released from said coin chambers according to the denomination of a coin received in said turnable member and brought into engagement with a bell crank, and spring means for returning said companion levers and bell crank levers to their initial positions after being operated.

8. A device of the character described comprising a casing, a member mounted in said casing for turning movement, an article dispensing structure arranged in said casing for dispensing articles upon turning movement of said member, said turnable member having arcuate grooves formed in the periph-

ery thereof of sufficient size for receiving coins of various denominations, coin receiving chambers arranged at both sides of said turnable member each for receiving coins of certain denominations according to the direction in which said member is turned, a series of bell crank levers arranged in said casing and pivotally mounted at each side of said turnable member each being arranged to be engaged by a coin of a certain denomination, other levers pivotally mounted in said casing and each adapted to be operated by one of said bell crank levers, pawls arranged in the bottoms of said coin receiving chambers, means connecting each of said pawls to its companion lever so that certain coins will be released from said coin chambers according to the denomination of a coin received in said turnable member and brought into engagement with a bell crank, spring means for returning said companion levers and bell crank levers to their initial positions after being operated, a pair of locking levers one being pivotally mounted to each side of said turnable member, extensions formed on said locking levers and adapted to extend above said bell crank levers so as to move said locking levers should a bell crank beneath said extensions be moved by a coin, and lugs carried by said turnable member for engaging a locking lever should said turnable member be turned in either direction without a bell crank lever being raised by a coin.

9. A device of the character described comprising a casing, a member mounted in said casing for turning movement, an article dispensing structure arranged in said casing for dispensing articles upon turning movement of said member, said turnable member having arcuate grooves formed in the periphery thereof of sufficient size for receiving coins of various denominations, separate coin receiving chambers arranged at both sides of said turnable member for receiving coins of certain denominations according to the direction in which said member is turned, a series of bell crank levers in said casing and at each side of said turnable member be engaged by coins of different denominations, respectively, other levers pivotally mounted in said casing and operated by said bell crank levers, pawls in the bottoms of said coin receiving chambers, means connecting each of said pawls to its companion lever so that certain coins will be released from said coin chambers according to the denomination of the coin received in said turnable member and brought into engagement with a bell crank, spring means for returning said companion lever and bell crank levers to their initial positions after being operated, a pair of locking levers one pivotally mounted at opposite sides of said turnable member, extensions formed on said locking levers and adapted to extend above said bell crank levers for movement of said locking levers should a bell crank beneath said extensions be moved by a coin, lugs carried by said turnable member for engaging a locking lever should said turnable member be turned in either direction without a bell crank lever being raised by a coin, and rollers carried by said locking levers adapted to be engaged by coins of a denomination corresponding to the value of an article being dispensed so as to release said locking levers when a coin of the proper denomination is inserted in the machine.

In testimony whereof, I have affixed my signature.

WALTER T. MITCHELL.