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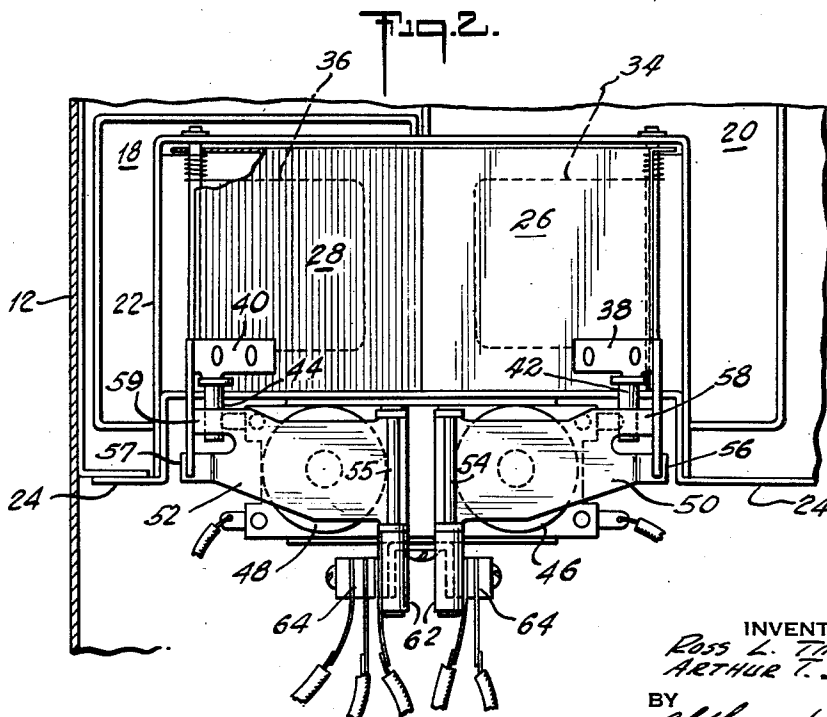
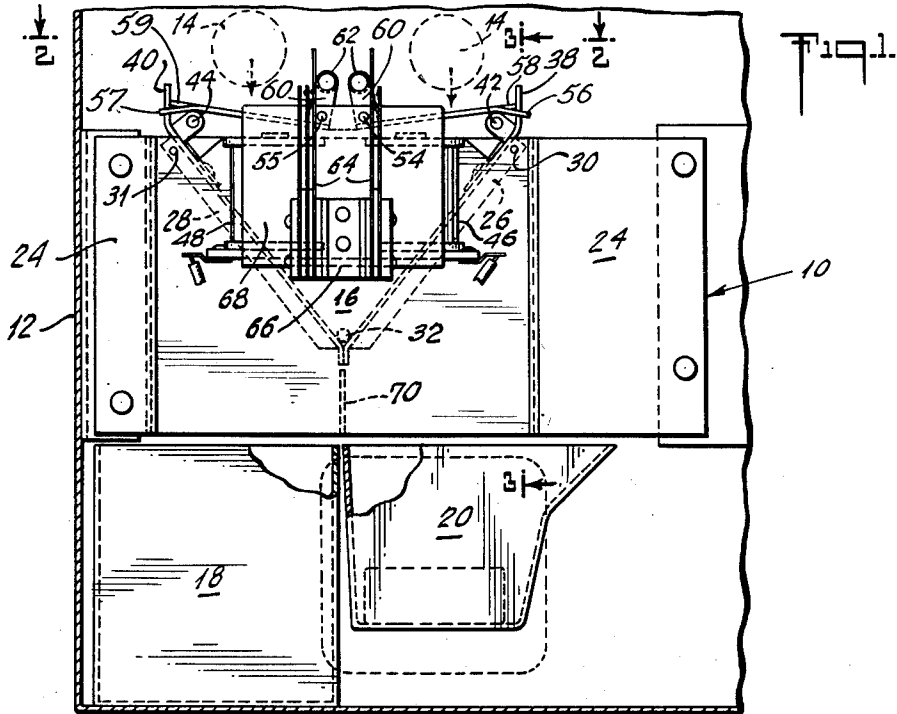
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COIN HOPPER FOR VENDING MACHINES AND THE LIKE

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2 Sheets-Sheet 1



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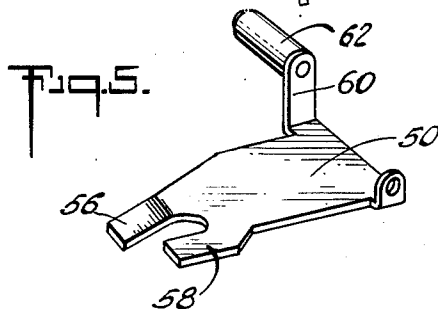
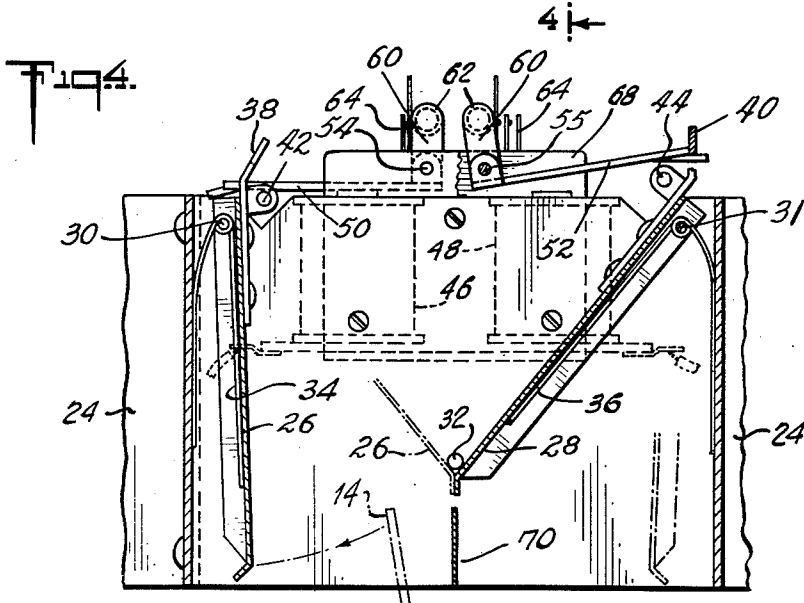
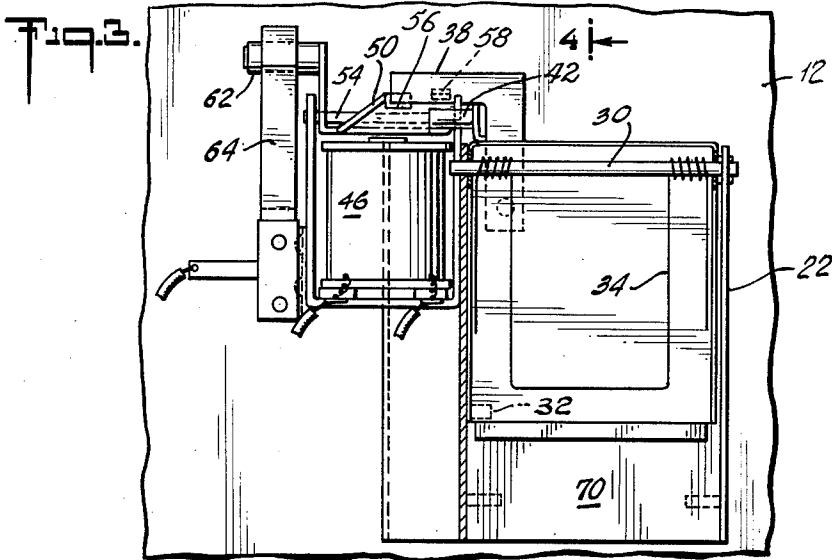
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COIN HOPPER FOR VENDING MACHINES AND THE LIKE

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4 Claims. (Cl. 232—57.5)

This invention relates to a coin receiving mechanism for holding a plurality of coins deposited therein, pending ultimate disposition thereof in one of several different ways. More particularly this invention may be said to relate to a coin hopper for receiving coins in a vending machine by a customer, and holding them pending a determination as to whether or not the coins are to be accepted and the goods delivered or the coins are to be returned to the customer.

It is an object of the present invention to provide a coin receiving mechanism of improved and simplified construction for holding coins deposited therein pending ultimate disposition into one or more of a series of coin receptacles. Another object of the present invention is that of providing a coin hopper that is easily and positively actuated. It is a further object of the present invention to provide a coin hopper that may not accidentally be actuated by the deposit of coins therein. These and other and further objects will be in part apparent and in part pointed out as the specification proceeds.

In the drawings:

Figure 1 is a side elevation of an apparatus embodying features of the present invention;

Figure 2 is an enlarged view part in plan and part in section, taken on line 2—2 of Fig. 1;

Figure 3 is an enlarged vertical section taken on line 3—3 of Fig. 1;

Figure 4 is a vertical section partially broken away taken on line 4—4 of Fig. 3; and

Figure 5 is an enlarged perspective view of one of the solenoid armatures of the apparatus.

In Figures 1—4, the coin hopper 10 is shown as being mounted in a lower corner of a vending machine 12 below a conventional slug rejector (not shown) adapted to identify the coins deposited therein and positioned so that all of the coins deposited therein regardless of denomination will drop into the receiving chamber 16. Beneath the coin hopper 10, a coin collecting box 18 and a coin return chute 20 are positioned side by side, adjoining approximately along the center line of the hopper.

The coin hopper 10 comprises a generally rectangular box frame portion 22 open at the top and bottom and having extending therefrom two mounting flanges 24 for securing the hopper in the vending machine 12. Pivotaly mounted within the frame 22 are two plates or partitions 26 and 28. These partitions are pivotally mounted on shafts 30 and 31 adjacent the upper edges of the opposite side walls of the frame 22, with their free ends urged against a centrally positioned stop pin 32 by springs 34 and 36 to form a V-bottomed coin receiving chamber. The partitions 26 and 28 are provided with actuating levers 38 and 40 mounted on the upper corners of the partition and having arm-like portions projecting laterally over one side of frame 22. Mounted on these levers are roller pins 42 and 44 which project laterally from the partitions 26 and 28 in a like manner.

Mounted on this side of the frame 22 in a bracket 68 is a pair of solenoids 46 and 48 adapted to actuate the partitions 26 and 28 respectively. These solenoids 46 and 48 include armatures 50 and 52 mounted upon shafts 54 and 55 which shafts are positioned at the edges of the solenoids 46 and 48.

Each of the solenoid armatures 50 and 52 has at its free end a split finger detent compressing a pair of fingers 56 and 58 or 57 and 59 (see especially Figure 5). The longer fingers 56 and 57 of the two armatures form stops

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which engage the lower edges of the levers 38 and 40 to limit the upward movement of the armatures 50 and 52. The ends of the shorter fingers 58 and 59, when the armatures 50 and 52 are in their upper or "de-energized" position as shown in Figure 1, engage the lever arms 38 and 40, to prevent movement of the partitions 26 and 28 from the position as shown in Figure 1.

To maintain the armatures 50 and 52 in the upper position there is provided at the pivoted ends of the armatures, as may be seen more clearly in Figure 5, upwardly extending arms 60 which have projecting laterally therefrom insulated pins 62. These insulated pins 62 are urged toward each other by the leaf springs of a pair of switches 64, which are positioned so as to engage the outer sides of the pins 62 and raise the armatures 50 and 52 upwardly against the lever arms 38 and 40, the various leaves of the spring pairs providing added restoring force as the armatures are drawn downwardly and indeed if they are not needed to perform electrical functions they may be formed so as to provide a continuous additional restoring force.

The lever arms 38 and 40 thus act both as stops to limit upward movement of the armatures 50 and 52 and as an interlock to prevent the actuation of the hopper by the depositing of coins within the chamber 16 or by any other means except the energization of the solenoids 46 and 48 and the resultant movement of the armatures 50 and 52.

The leaf spring switches 64 are mounted in a bracket 66 on the outside of the bracket 68 holding the solenoids 46 and 48. Illustratively, there are shown three leaf-spring fingers on the left hand side and two on the right hand side of Figure 1. These spring fingers are provided with switch contacts which may be utilized to close or open circuits as the case may be upon the actuation of one or the other of the solenoids 46 and 48, in addition to the spring functions described above.

In operation the coins are inserted into the usual vending machine coin slot which directs them into a conventional slug rejector. Those coins that are accepted pass out of the slug rejector, whether of one or several denominations, and drop into the V-bottomed chamber 16 formed by the partitions 26 and 28. As mentioned above, these partitions are maintained in the closed position about the pin 32 against the impact of the coins dropping therein, by the interlock fingers 58 and 59 on the armatures 50 and 52. Thus it is not possible for a coin to hit one of the partitions with sufficient force to open it even slightly and let a coin drop therethrough.

When it is desired to return the coins that have been collected in the chamber 16 the solenoid 46 is energized. As may be seen in Figure 4, this draws down the armature 50, moving interlock finger 58 below the lever 38 and allowing it, and thus the partition 26, to pivot about the shaft 30. This also causes the finger 58 to press down the roller pin 42 and cause the partition to pivot about the shaft 30 to the position shown in Figure 4. This permits the coins 14 to drop through the opening between the retracted partition 26 and the bottom of the partition 28 into the coin return chute 20 from which the customer may withdraw the coins in the usual manner.

If on the other hand it is desired to collect the coins deposited in the chamber 16, the solenoid 48 is energized which in a similar manner draws down the armature 52 clearing the interlocking finger 59 and pressing down roller pin 44 to cause the partition 28 to pivot about the shaft 31 to the open position partially shown in dotted lines in Figure 4. The deposited coins will then drop into the coin receiving box 18 within the vending machine from which they may be subsequently collected by a service man.

To guide the coins into the proper receptacle when one or the other of the partitions is withdrawn, an auxiliary partition 70 is provided below the point of contact between the two partitions 26 and 28.

As may be seen in Figure 4, when the solenoid 46 is energized it actuates the associated pair of leaf-spring contacts 64, which may be used to control other electrical circuits as desired. Correspondingly, energization of the solenoid 48 actuates the other leaf-spring contacts 64 which likewise may be appropriately utilized.

It is thus readily apparent that I have provided a coin hopper of an improved and simplified construction that is positive and fool-proof in operation, in accordance with the foregoing objects.

While there is given above a certain specific example of this invention and its application in practical use, it should be understood that this is not intended to be exhaustive or to be limiting of the invention. On the contrary, the illustration and the explanation herein are given in order to acquaint others skilled in the art with this invention and the principles thereof and a suitable manner of its application in practical use, so that others skilled in the art may be enabled to modify the invention and to adapt and apply it in numerous forms, each as may be best suited to the requirements of a particular use.

We claim:

1. A coin receiving mechanism for use in a vending machine wherein the coins deposited are received and held pending subsequent acceptance or return, comprising in combination a coin receiving chamber, a coin collecting box and a coin receiving chute disposed below said chamber, a pair of partitions pivotally mounted in said chamber to form a V-bottomed division thereof, an actuating solenoid for each of said partitions, a pivotally mounted corresponding pair of armatures, an actuating portion of each of said partitions being positioned in the path of movement of said armatures to pivot the corresponding partition from the V-bottomed position when the associated solenoid is energized, an interlock arm member on each of said partitions, stop portions on each of said armatures to engage each of said interlock arm members, and spring means for maintaining said stop portion in contact with said interlock arms except when drawn out of contact by the energization of said associated solenoid whereby said partitions cannot be moved by a coin falling thereon.

2. A device as described in claim 1 wherein said stop portions on each of said armatures comprise a pair of fingers extending from the ends of said armatures, one of said fingers being longer than the other and extending downwardly and underneath said interlock arm member whereby when said armature is in the de-energized position said longer finger contacts the bottom of said interlock arm member and positions said

shorter finger closely adjacent the side of said interlock arm member to prevent movement thereof.

3. For use in a machine for vending articles, services and the like, a coin hopper comprising a generally rectangular tube like frame portion, a pair of plates pivotally mounted within said frame to form a V-bottomed coin receiving chamber, a pair of springs urging said plates together, an actuating lever mounted on each of said plates, an actuating solenoid for each of said plates mounted on said frame, a pivotally mounted armature for each of said solenoids, said armatures having at the free ends thereof a split finger detent and at the pivoted end thereof a laterally projecting insulated pin, a multiple spring finger contact assembly positioned to engage said insulated pins to urge said armatures away from said solenoids and to move said split finger detents into locking relationship with said actuating levers whereby said plates can be pivoted from said V-bottomed arrangement only upon the energization of the appropriate solenoid.

4. For use in a machine for vending articles, services and the like, a coin hopper comprising an enclosing frame, a pair of plates pivotally mounted within said frame with their lower ends in approximate engagement to form a V-bottomed coin receiving chamber, spring means urging said plates together to close the bottom of said chamber, an actuating lever mounted on each of said plates, a solenoid for each of said plates, a movable armature for each of said solenoids including an electrically insulated portion and having at the free ends thereof detents adapted to engage said actuating levers, spring fingers engaging said insulated armature portions to urge said armatures away from said solenoids and to cause said detents to engage said actuating levers whereby said plates can be pivoted from said chamber closing position only upon the energization of the appropriate solenoid.

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