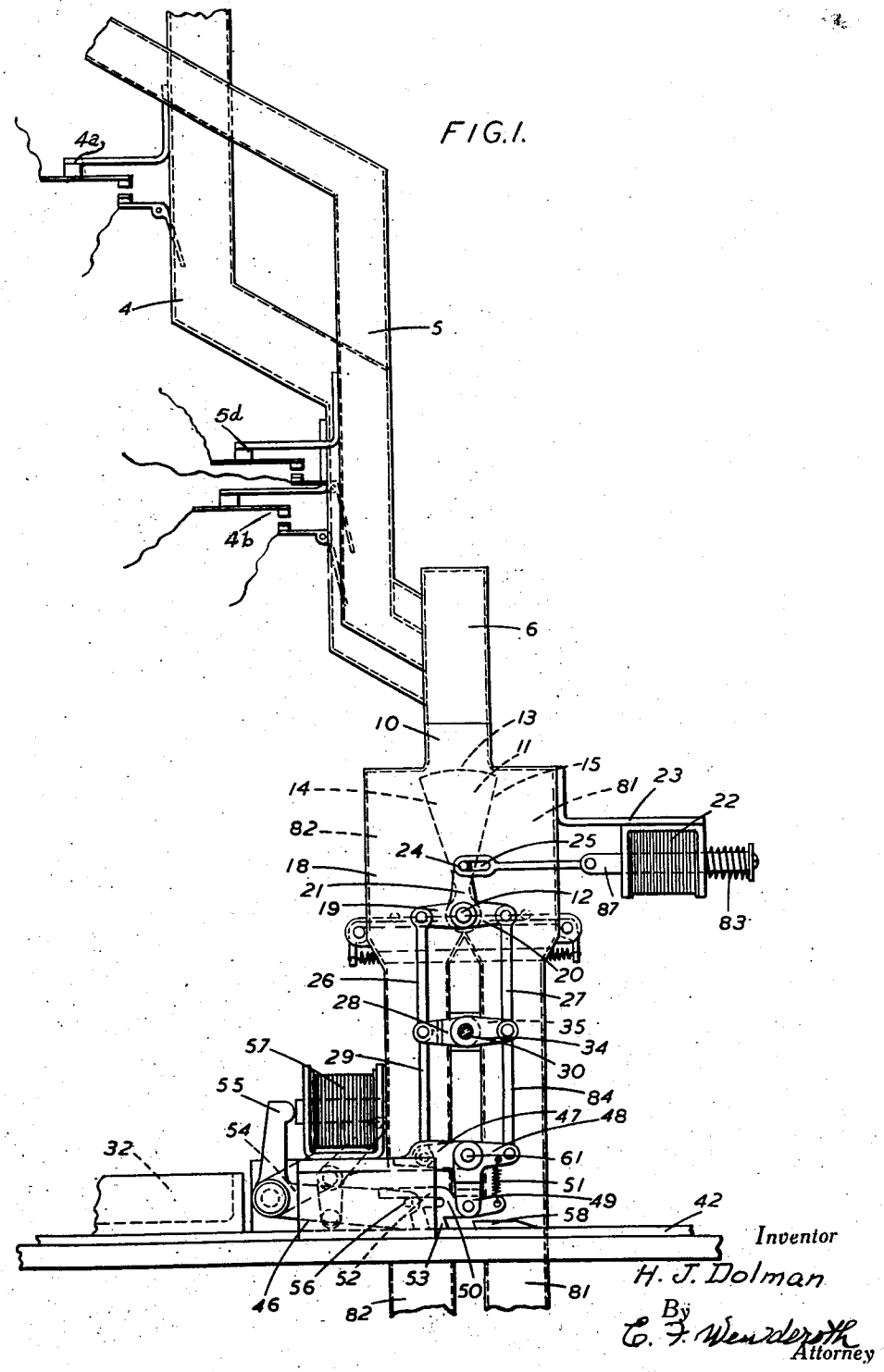
April 21, 1953 H. J. DOLMAN 2,635,731

COIN CONTROLLED APPARATUS

Filed April 12, 1945 3 Sheets-Sheet 1

FIG. 1.



Inventor
H. J. Dolman
By
C. F. Wenderoth
Attorney

April 21, 1953 H. J. DOLMAN 2,635,731

COIN CONTROLLED APPARATUS

Filed April 12, 1945 3 Sheets-Sheet 2

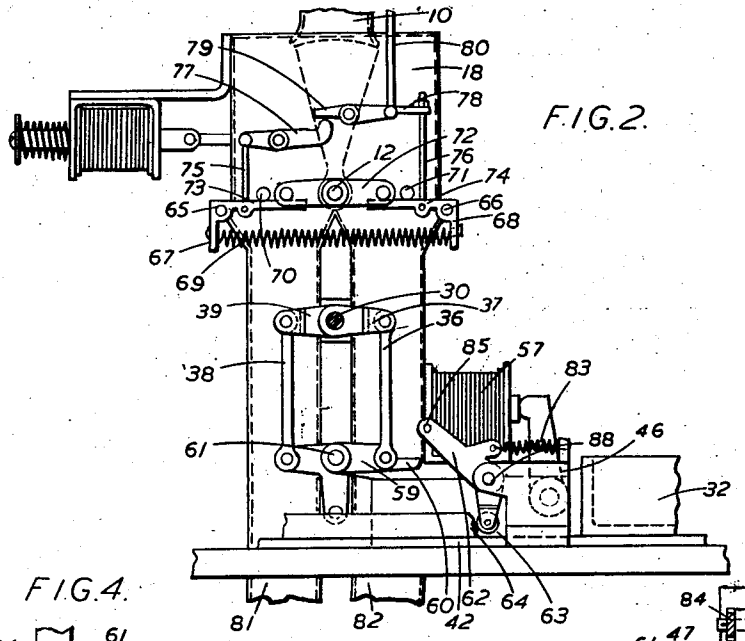
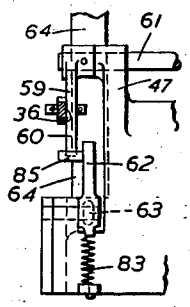


FIG. 2.

FIG. 4.



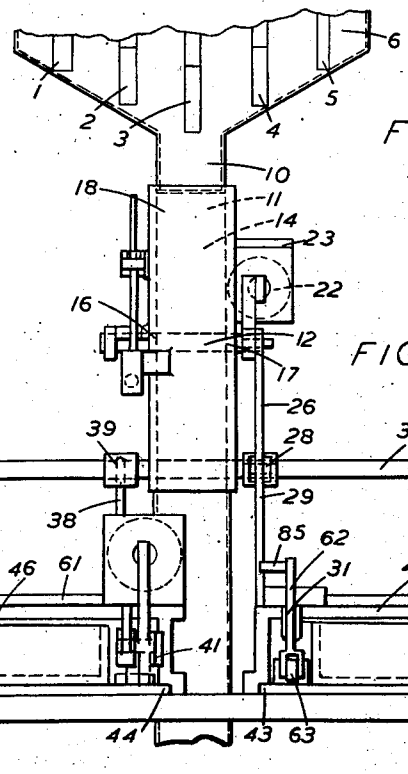


FIG. 3.

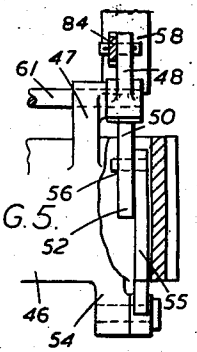


FIG. 5.

Inventor

H. J. Dolman

By

E. F. Wenderoth

Attorney

April 21, 1953 H. J. DOLMAN 2,635,731

COIN CONTROLLED APPARATUS

Filed April 12, 1945 3 Sheets-Sheet 3

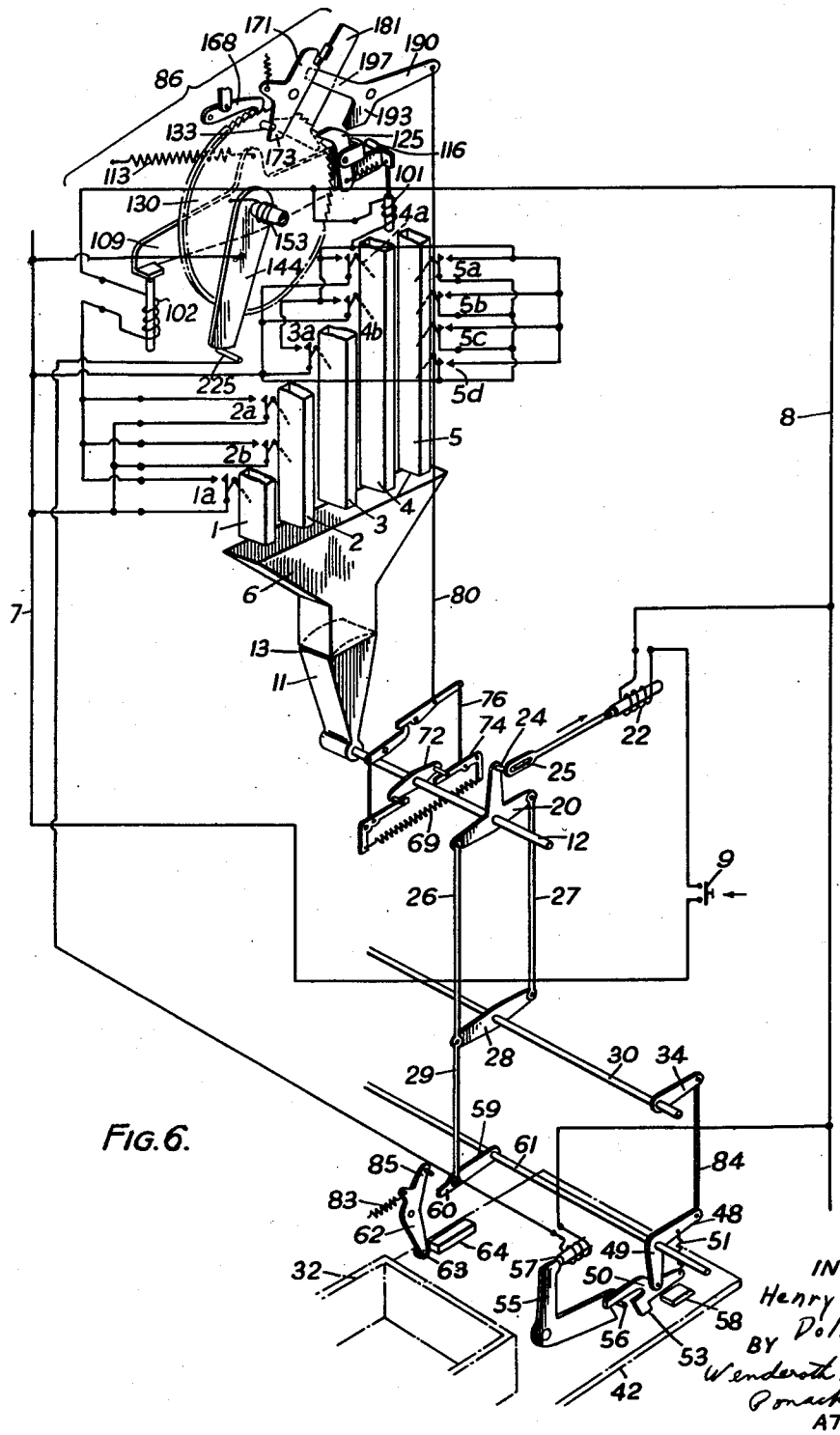


FIG. 6.

INVENTOR
Henry James Dolman
BY Wenderoth, Lind & Ponack
ATTORNEYS

Patented Apr. 21, 1953 2,635,731

UNITED STATES PATENT OFFICE

2,635,731

COIN CONTROLLED APPARATUS

Henry James Dolman, Staple Hill, Bristol, England, assignor to Brecknell, Munro & Rogers Limited, Bristol, England, a British company

Application April 12, 1945, Serial No. 587,847
In Great Britain April 19, 1944

3 Claims. (Cl. 194—10)

1

This invention relates to coin controlled apparatus of the type comprising a totaliser that is displaced from its initial position to an extent dependent on the value of an inserted coin or coins, said displacement acting to unlock a manually operable article delivery mechanism, when the proper money has been inserted.

In such a device it sometimes happens that the intended transaction cannot be completed, and it is the object of the present invention to provide, in such case, for the recovery of the inserted coins on the normal manipulation of the apparatus by the purchaser.

One form of coin controlled apparatus in accordance with the present invention is diagrammatically indicated in the accompanying drawings in which:

Fig. 1 is a side view of the apparatus.

Fig. 2 is a view of the apparatus taken from the opposite side to that shown in Fig. 1, but with certain parts omitted for clearness.

Fig. 3 is a front view of the apparatus (looking from the right of Fig. 2) with certain parts omitted including the upper portion of the coin hopper, and coin chutes and associated parts.

Fig. 4 is a plan on the line 4—4 of Fig. 3.

Fig. 5 is a plan on the line 5—5 of Fig. 3, partly broken away, and with the solenoid 57 omitted.

Fig. 6 is a pictorial diagrammatic view showing the apparatus and its electric circuits.

The apparatus shown is part of a coin controlled vending machine of the type that includes a totaliser controlling the availability of manually operable drawers 32 for the delivery of the articles for sale. It comprises coin chutes 1, 2, 3, 4, 5 wherein the inserted coins are caused to actuate the totaliser. These coin chutes lead from the front casing of the machine to a coin hopper 6. In the drawings the drawers are shown in their fully retracted positions.

Referring particularly to Fig. 6, the chute 1 includes a switch 1*a*, chute 2 includes switches 2*a* and 2*b*, chute 3 includes a switch 3*a*, chute 4 includes switches 4*a* and 4*b*, and chute 5 includes switches 5*a*, 5*b*, 5*c* and 5*d*. Where more than one switch is included in a chute the two or more switches are connected in parallel. The switches are adapted to be closed by the passage of a coin or coins through the chute or chutes concerned, and the electric circuits thereby closed act to energize electric solenoids which in turn act to displace the totaliser, diagrammatically indicated by 86. In the arrangement illustrated parallel-connected switches 1*a*, 2*a* and 2*b* are connected to a supply main 7 and are also in

2

series with solenoid 102 of totaliser 86 (see Fig. 6), said solenoid 102 being also connected to supply main 8. Similarly switches 3*a*, 4*a*, 4*b*, 5*a*, 5*b*, 5*c* and 5*d* are in parallel connection, are connected to supply main 7 and also in series with solenoid 101 of totaliser 86, said solenoid 101 being also connected to supply main 8. The totaliser 86 is fully described in the specification of my co-pending United States application Serial No. 585,623, filed March 30, 1945, now Patent No. 2,615,545, and in the specification of British Patent No. 578,158, filed March 29, 1944. In Fig. 6 of the accompanying drawings only the essential parts of the totaliser 86 are shown, the parts numbered 101, 102, 109, 113, 116, 125, 130, 133, 144, 153, 168, 171, 173, 181, 190, 193, 197, 225, and 80 corresponding to the parts numbered 1, 2, 9, 13, 16, 25, 30, 33, 44, 53, 68, 71, 73, 81, 90, 93, 97, 125 and 116 respectively in the drawings of the two specifications referred to.

The hopper 6 is sloped (see Fig. 3) to direct coins towards a central tube portion 10, constituting a coin receptacle, which is open at the bottom. A sector shaped element 11 (see Fig. 1) is secured to an axle 12, said axle being free to pivot in bearings 16, 17 provided in a casing 18. The element 11 lies below the coin receptacle 10 and is located so that its upper arcuate surface 13 provides a bottom or base for the said coin receptacle 10, while its slant surfaces 14, 15 provide deflecting elements as will be hereinafter described.

Externally of the casing 18 and in front thereof as seen in Fig. 1, the axle 12 carries a pair of horizontally disposed arms 19, 20 and a vertical arm 21, and it will be seen that any downward movement imparted to either arm 19 or 20, will act to move the base 13 to the left or right respectively, as seen in Fig. 1, and this acts, as will be hereinafter described, to release any coins in the receptacle 10 to the accept or reject passageway 81, 82 respectively.

A solenoid 22 is secured to a bracket 23 fixed to the outside of the casing 18 and the armature 87 of said solenoid is linked to the arm 21 through a pin and slot connection 24, 25 so that energization of the solenoid acts to turn the base 13 to the reject position.

The arms 19, 20 are coupled through links 26, 27 to levers 28, 35 secured to a shaft 30 that extends throughout the width of the apparatus as viewed in Fig. 3. The link 26 is continued at 29 downwards to mechanism generally designated by 31 located at the left hand side (as seen in Fig. 3) of the right hand drawer 32. Further,

mechanism 33 at the right hand side of this right hand drawer 32 is similarly connected to the shaft 30 by a link 84 and lever 34. It will thus be seen that each time the link 29 or 84 is moved downwardly it will tend to rotate the shaft 30 in a counter-clockwise or clockwise direction respectively, as viewed in Fig. 1.

As best indicated in Figs. 2 and 3, links 36, 38 (corresponding to 29, 84) and levers 37, 39 (corresponding to 28, 34) are provided at the left and right hand sides of the left hand drawer 32 in the apparatus (as viewed in Fig. 3) said links and levers connecting the shaft 30 with mechanisms 40, 41 (corresponding to 31, 33) relating to such drawer.

Each drawer 32 includes a tail portion 42 (see Figs. 1 and 2) said tail being adapted to slide within guides 43, 44 provided by a bridge piece 46 secured to a fixed part of the machine. Each bridge piece provides a housing for the mechanisms 31, 33 (or 40, 41) above referred to. The mechanism 33 (which is the same as 41) will now be described.

Referring particularly to Figs. 1, 3 and 5, extensions 47 of each bridge 46 provide bearings for an axle 61 to which is pivotally secured a bell crank lever, one of whose arms 48 is pivotally secured to the link 84 (or 38 in the case of the mechanisms above designated by 41), and whose other arm 49 has pivoted to its lower end a lever 50, said lever 50 being biassed by a spring 51 in a counterclockwise direction so that its left hand side (see Fig. 1) normally presses down against the upper horizontal surface of the tail 42. The lever 50 includes a horizontally extending tongue 52 and a downwardly extending locking claw 53. Each bridge 46 also includes an extension 44 (see Figs. 1 and 5) that provides a pivotal connection for a second bell crank lever 55, whose horizontal arm includes a pin 56 adapted to engage under the tongue 52 and whose vertical arm normally presses lightly against the armature of a solenoid 57, due to the weight of its horizontal arm. The solenoid 57 is adapted when energized through the totaliser 86 to turn the lever 55 in a counterclockwise direction as viewed in Fig. 1. A raised lug 58 is fixed to the tail 42 a short distance to the right of the claw 53, as seen in Fig. 1.

The mechanism 40 (to which 31 is similar) comprises the following (see particularly Figs. 2, 3 and 4).

The link 36 above referred to is pivotally connected to a lever 59 on the said axle 61. This lever 59 includes an extension 69 that lies in the path of a pin 85 provided on a bell crank lever 62. The bell crank lever 62 is pivotally secured at 88 to an extension on the bridge 46 and its second arm extends downwardly and carries a roller 63 which is adapted to co-operate with a raised portion 64 on the tail 42 due to the biassing action of a spring 83.

Referring particularly to Fig. 2, pivotally secured to the casing 18 at 65, 66 are two centering bell crank levers whose downwardly extending arms 67, 68 are connected by a spring 69 so that said levers normally assume the position indicated in Fig. 2 with their horizontal arms 73, 74 bearing against studs 70, 71 fixed to the casing. A cross lever 72 is secured to the axle 12 and this also carries studs that bear against the said horizontal arms 73, 74. This arrangement constitutes a self centering device that acts to hold the sector shaped element 11 in the position indicated in the drawings. The arms 73, 74 carry links 75, 76 adapted when said arms 73, 74 are depressed by the element 11 to rock levers 77, 78 in a counter-clockwise and clockwise direction respectively as seen in Fig. 2. The lever 78 includes an overlapping tail 79 adapted to provide a drive from the lever 77 to the lever 78 when the former is rocked in a counter-clockwise direction.

80 represents linkage which is connected to the totaliser 86 as diagrammatically indicated in Fig. 6, and when said linkage is moved downwards, it acts to permit the return of the totaliser to its initial position as described in the specification above referred to. The moving of the linkage 80 may also be arranged to close the coin slots in the casing of the apparatus. A wander plug 225 (Fig. 6) is connected to solenoid 57 and thence to supply main 8 and solenoid 22 is connected between supply mains 7 and 8. A push button 9 carried by the casing of the apparatus and accessible to the operator is connected in series with solenoid 22.

The apparatus works as follows:

The parts are normally in the positions indicated in the drawings.

If now there is inserted into the apparatus the amount of money requisite to unlock a drawer the following action takes place:

Assuming that coins have been inserted in chutes 4 and/or 5, then the totaliser solenoid 101 is energised and this effects partial rotation of disc 130. In consequence the solenoid 57 concerned is energized due to the appropriate displacement of the totaliser, and this acts to turn the lever 55 in a counter-clockwise direction (Fig. 1). The pin 56 thus lifts the lever 50 and raises its claw 53 clear of the lug 58. Meanwhile the inserted coinage falls from the chutes 1, 2, 3, 4, 5 into the receptacle 10 where it is detained by the surface 13 of the sector 11.

When the purchaser pulls the drawer 32 concerned to obtain the article the raised portion 64 (Fig. 2) strikes the roller 63 and thus the lever 62 is turned in a counter-clockwise direction. The pin 85 then strikes against the extension 60 and depresses the lever 59 which in turn through the linkage 36 and lever 37 (or linkage 29 and lever 28 as the case may be) rocks the shaft 30 in a clockwise direction as viewed in Fig. 2.

Referring to Fig. 1 (with reference to which the shaft 30 is rocked in a counter-clockwise direction), due to the rocking of the shaft 30 the link 27 is raised which acts through the arm 20 to rock the sector 11 so that its upper surface 13 moves to the left, and thus the coins within the receptacle 10 are deflected by the face 15 to the right into the accept passageway 81, whence they pass to the till. Referring to Fig. 2, the rocking of the sector 11 (clockwise in that figure) also acts to depress the bell crank lever arm 74, and this through the link 76 moves the link 80 downwards thereby returning the totaliser 86 to its initial position.

The return of the drawer permits the parts to return to their original positions ready for the next actuation.

If an attempt is made to open a drawer when the totaliser 86 has not acted to unlock same i. e., when a transaction cannot be effected the following action takes place.

Referring to Fig. 1, a small movement imparted to the drawer 32 brings the lug 58 into contact with the claw 53 and continued motion of the drawer acts to move the lever 50 horizontally and so turn the arm 48 in a clockwise direction. This

through the link 84 and lever 34 rocks the shaft 30 clockwise, as viewed in Fig. 1.

The claw 53 can only move horizontally until the right hand end of the slot formed by the tongue 52 reaches the pin 56 whereupon the claw 53 acts to lock the drawer 32 concerned against further opening movement. It will be seen that the claw 53 constitutes a locking element adapted to be rendered inoperative by the appropriate displacement of the totaliser.

The shaft 30 in turn through the lever 35 and link 27 ultimately rocks the sector 11 in a clockwise direction and so releases the coinage from the receptacle 10, and it is deflected by the side 14 into the reject passageway 82 whence it passes to a delivery orifice (not shown) on the outside of the apparatus where it may be removed by the purchaser.

Referring to Fig. 2, movement of the sector 11 also acts in a similar way to that already described, by way of the link 75 and lever 77 to pull downwards the link 80, to return the totaliser 86 to its initial position.

In addition to providing for the return of the coinage when the small movement is imparted to the drawer as above described, a push button 9 provided on the outside of the machine is adapted when operated by the purchaser to close the circuit that includes the solenoid 22. It will be seen from Fig. 1 that if said solenoid is energized to pull the armature to the right as seen in that figure, it will act in a similar way to return the coin to the purchaser. It is necessary in that case that the first movement of opening the drawer will act to break the circuit to the solenoid 22 to prevent fraudulent manipulation.

The spring 83 acts to return the solenoid 22 to the position shown in Fig. 1 when said solenoid is moved due to the mechanical operation of the sector by the drawer mechanism.

The top 13 of the sector (see Fig. 1) is preferably of arcuate shape so that it may fit closely against the lower end of the receptacle 10 and said receptacle may be flared towards the bottom as indicated in Fig. 2. This arrangement prevents jamming of the coins within the hopper.

What I claim is:

1. A coin controlled apparatus comprising manually operable article delivery mechanism, a locking member normally intercepting said article delivery mechanism and mounted to permit limited movement thereof by the delivery mechanism to lock same after slight movement of said delivery mechanism from its initial position, a coin chute structure for receiving inserted coins, a totaliser, means within the coin chute structure which are actuated by the passage of the inserted coinage through the said coin chute structure and which displace the totaliser from its initial position according to the total value of the coinage inserted, means controlled by the displacement of the totaliser corresponding to a predetermined total value of inserted coinage to move said locking member clear of the article delivery mechanism to permit of its full operation manually, coinage control means for the inserted coinage, resetting means for returning said totaliser to initial position, connecting means actuatable by said article delivery mechanism connected to said coinage control means and to said resetting means operable upon full manual operation of said article delivery mechanism to release said inserted coinage to a till and said totaliser is returned to initial position, and means connecting said locking member to said coinage control means and to said resetting means to cause the slight movement of the locking member before locking occurs to operate said coinage control means to divert the inserted coinage to outside the apparatus for return to the purchaser, and operate the resetting means to return the totaliser to initial position.

2. A coin controlled apparatus as claimed in claim 1, in which the manually operable article delivery mechanism, comprises a reciprocable drawer.

3. A coin controlled apparatus as claimed in claim 1, and including a pivoted first lever linked both to the coinage control and to the resetting means, a second lever pivoted to said first lever and constituting said locking member, a pivoted third lever controlled from the totaliser and engaging said second lever when the third lever is in its normal position to constitute an abutment to lock the second lever and thereby the first lever also after slight movement thereof, the third lever when displaced turning the second lever to bring it clear of the manually operable article delivery mechanism, the first lever remaining undisturbed, displacement of the totaliser corresponding to a predetermined total value of inserted coinage moving the third lever from its normal position, and thereby moving the second lever clear of the article delivery mechanism to permit of full manual operation of the latter, while if the said predetermined total value of coinage has not been inserted, the third lever will be in its normal position, where it will constitute an abutment to lock the article delivery mechanism after a slight movement thereof, and such slight movement of the article delivery mechanism, if it takes place, will be transmitted to the second lever and thence to the first lever also, and will thereby be transmitted to the coinage control and resetting means to divert the inserted coinage to outside the apparatus for return to the purchaser, and also to return the totaliser to its initial position.

HENRY JAMES DOLMAN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,174,754	Mioton	Mar. 7, 1916
1,635,451	Zsoldos	July 12, 1927
1,800,546	Larsen et al.	Apr. 14, 1931
1,998,602	Anderson	Apr. 23, 1935
2,323,981	Du Grenier et al.	July 13, 1943
2,330,186	Jetseck et al.	Sept. 21, 1943
2,333,176	Hoban	Nov. 2, 1943
2,354,896	Weiler	Aug. 1, 1944

FOREIGN PATENTS

Number	Country	Date
676,140	Germany	May 26, 1939