Aug. 28, 1962 C. W. STANGE ET AL 3,051,286

COIN-CONTROLLED SHOPPING BAG DISPENSER

Filed Feb. 2, 1959 3 Sheets-Sheet 1

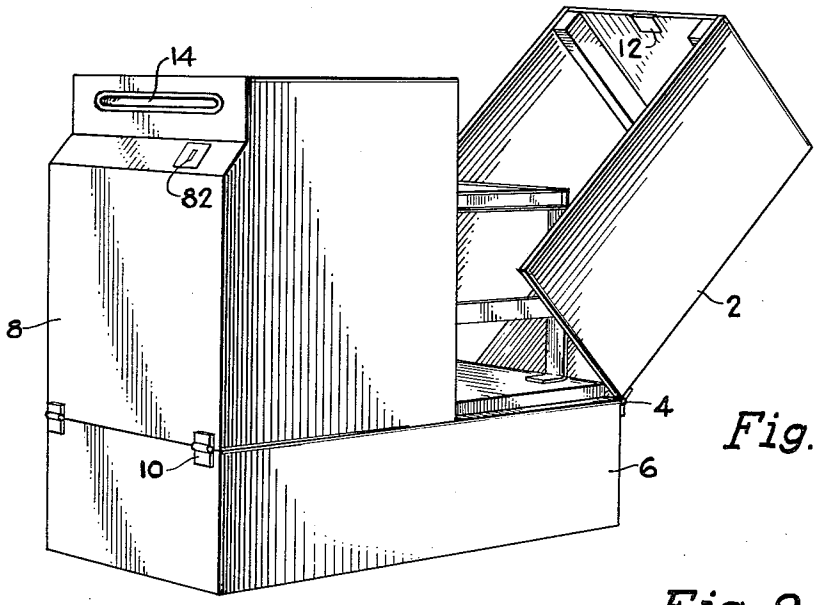
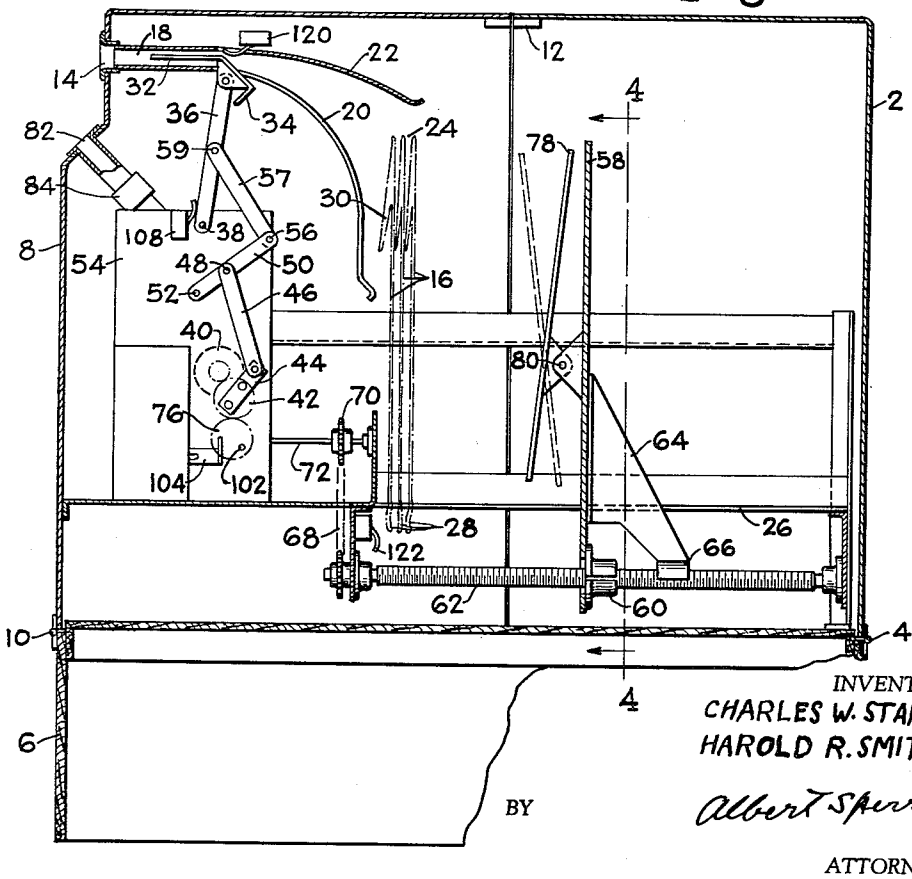


Fig. 1

Fig. 2



INVENTORS
CHARLES W. STANGE
HAROLD R. SMITH

BY Albert S. Perry.

ATTORNEY

Aug. 28, 1962 C. W. STANGE ET AL 3,051,286

COIN-CONTROLLED SHOPPING BAG DISPENSER

Filed Feb. 2, 1959 3 Sheets-Sheet 2

Fig. 3

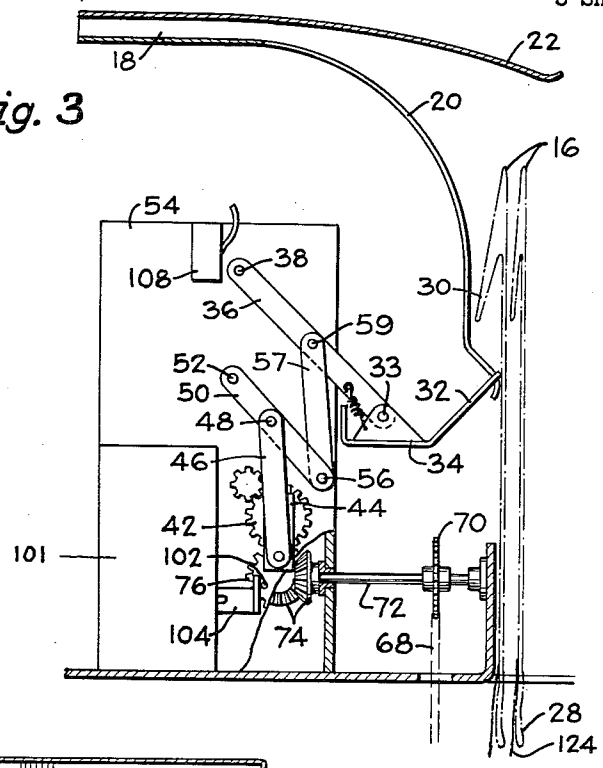
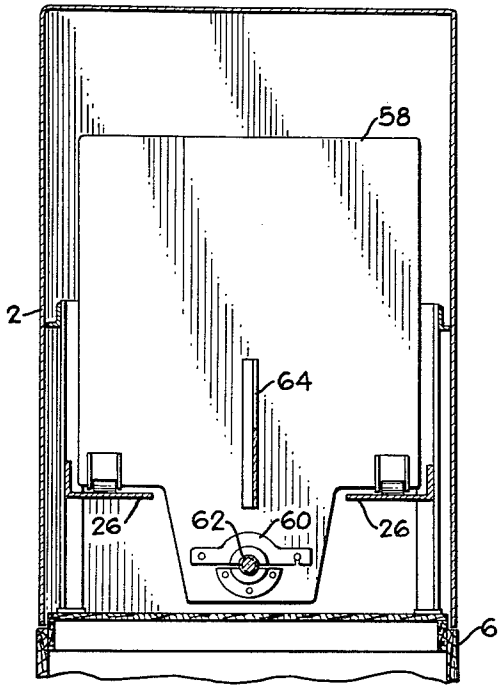


Fig. 4



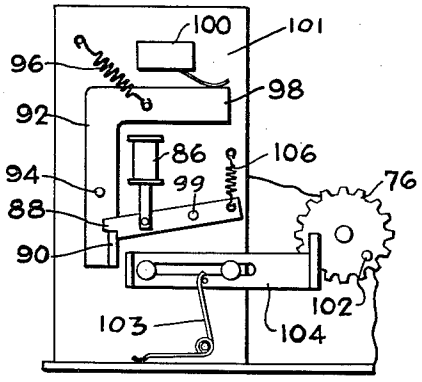


Fig. 5

INVENTORS
CHARLES W. STANGE
HAROLD R. SMITH

BY Albert Sperry.

ATTORNEY

Aug. 28, 1962 C. W. STANGE ET AL 3,051,286

COIN-CONTROLLED SHOPPING BAG DISPENSER

Filed Feb. 2, 1959 3 Sheets-Sheet 3

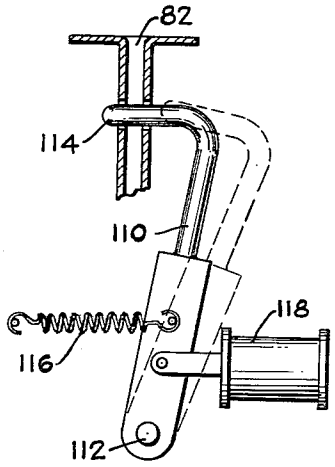


Fig. 7

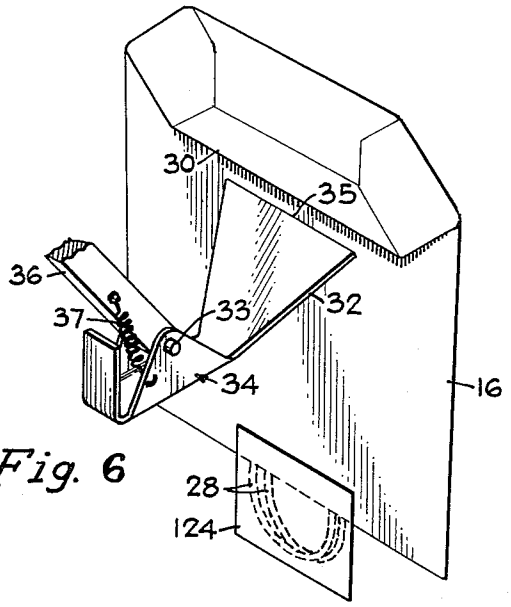
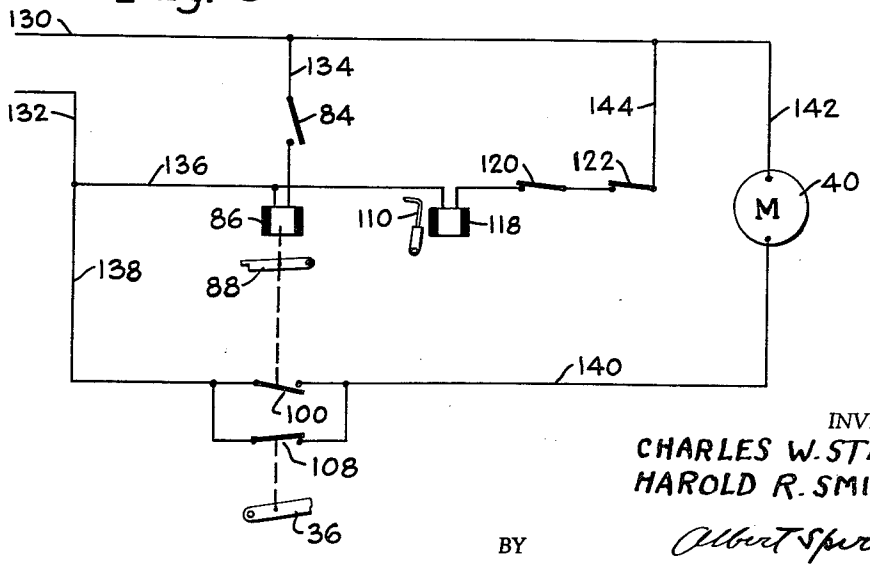


Fig. 6

Fig. 8



INVENTORS
CHARLES W. STANGE
HAROLD R. SMITH

BY Albert Sperry.

ATTORNEY

United States Patent Office

3,051,286

Patented Aug. 28, 1962

3,051,286

COIN-CONTROLLED SHOPPING BAG DISPENSER

Charles W. Stange, 125 Northfield Ave., West Orange, N.J., and Harold R. Smith, 15 Fairchild Place, Whippany, N.J.

Filed Feb. 2, 1959, Ser. No. 790,447
3 Claims. (Cl. 194—10)

This invention relates to coin controlled dispensing equipment and is directed particularly to constructions for use in vending shopping bags.

It is common practice for department stores and other establishments to provide shopping bags for the convenience of their customers. However, such bags are relatively expensive and little or no profit is derived from their sale, especially when the bags are displayed for purchase on the "honor system" with losses incident to the failure of customers to pay for the bags. Therefore, it is seldom economical to handle the bags as an ordinary item of merchandise. It is instead desirable to present them in an accessible manner for automatic dispensing to customers by means of a coin controlled dispensing device.

While it has been suggested heretofore that stationery, such as envelopes might be dispensed by coin controlled equipment, very different problems are encountered in the dispensing of large bags such as shopping bags and particularly bags having a handle formed of cord or the like. This is largely due to the fact that shopping bags are relatively large and heavy with the result that the friction encountered renders it practically impossible to withdraw a single bag from the bottom of a stack of bags. On the other hand, when the bags are placed on edge, they have a tendency to flex or bend in the middle or along one edge in such a way that the orderly removal of the foremost bag from a supply requires special means for supporting and engaging the bags to assure the dispensing of one bag at a time. Moreover, if the bags have the cord or rope handles so desirable in shopping bags, the handles tend to become entangled and cause two or three bags to be moved or dispensed at the same time with a resulting loss of bags and danger of jamming the equipment.

In accordance with the present invention, a simple type of coin controlled dispensing device is provided which is capable of receiving and holding a supply of shopping bags and is operable to remove and dispense one bag at a time from the supply upon each operation thereof.

It, therefore, is the principal object of the invention to provide improved coin controlled means for dispensing shopping bags.

Another object of the invention is to provide coin controlled means for removing and dispensing a single shopping bag from a supply of such bags contained in the equipment.

A further object of the invention resides in the provision of means for separating and protecting the handles of bags so as to prevent tangling of the handles.

These and other objects and features of the invention will appear from the following description thereof wherein reference is made to the figures of the accompanying drawings.

In the drawings:

FIG. 1 is a perspective illustrating a typical form of bag dispensing equipment embodying the present invention with the rear portion of the cabinet opened;

FIG. 2 is a longitudinal sectional view of the construction shown in FIG. 1 with the elements arranged in a raised bag discharging position to which they move at the conclusion of each cycle of operation;

FIG. 3 is a view showing a portion of the elements of FIG. 2 when in a lowered bag engaging position;

FIG. 4 is a transverse sectional view through the construction of FIG. 1 taken on the line 4—4 of FIG. 2;

FIG. 5 is a detailed view illustrating a portion of the elements embodied in the constructions of FIGS. 1 to 4;

FIGS. 6 and 7 illustrate further details of the constructions shown in FIGS. 1 to 4; and

FIG. 8 is a wiring diagram showing a typical electrical circuit which may be used in the present invention.

In that form of the invention chosen for purposes of illustration in the drawings, the equipment is enclosed within a cabinet having a rear portion **2** pivotally mounted at **4** on a base **6**. The front portion **8** of the cabinet is similarly hinged at **10** to the base **6** and the two portions of the cabinet are secured in closed position about the operating elements by means of a lock **12**.

The front portion **8** of the cabinet has an opening **14** therein through which the bags **16** being dispensed are passed through a bag guiding throat **18** formed by the spaced front members **20** and an upper guide member **22**. A supply of the bags **16** is indicated at **24** and is maintained in the lower rear portion of the cabinet where they are positioned with the open ends of the bags facing downward and resting upon the supporting plates **26**. The handles **28** of the bags extend downward between the supporting plates **26** as shown in FIGS. 2 and 3.

The bags **16** in supply **24** are folded flat and have a folded bottom portion **30** which faces forwardly and extends downwardly in the form of a flap positioned to receive the upwardly turned end **32** of a lifting member **34**. The lifting member is movable in an arcuate path between the spaced front members **20** of the bag guiding throat and is carried by an arm **36** pivotally mounted at **38**.

As shown in FIG. 6, the lifting member **34** is hingedly connected to the arm **36** at **33**, whereas it inclined outer edge **35** is urged outwardly by a spring **37** extending between the arm **36** and a portion of the member **34** located on the side of the pivot **33** opposite to the end **32**. With this construction, when the arm **36** and lifting member **34** are moved downward to their lowered bag engaging position as shown in FIG. 3, the edge **35** of the lifting member will sweep downward over the face of the foremost bag thereby serving to smooth out the bag and offset any tendency for the bag to bend or flex transversely and restore it in a vertical position. Subsequently, when the arm **36** and lifting member **34** are moved upward, the outwardly pressing edge **35** of the lifting member will engage the front surface of the foremost bag and enter behind the folded bottom portion **30** of the bag to lift the bag upward to dispense the bag through the opening **14** in the front of the cabinet. Even if the folded bottom **30** of the bag should be stuck down against the face of the bag, it is found in practice that the pressure of the edge **35** of the lifting member against the front face of the bag will serve to release the stuck edge of the bottom **30** or will remain in engagement with the stuck edge so as to lift the bag and project the end thereof through the opening **14** so that it can be withdrawn from the equipment under all conditions of operation.

The lifting member is positioned in the upper dispensing position of FIG. 2 at the start of each cycle of operation but moves downward to the lowered bag engaging position of FIG. 3 and back to its raised dispensing position each time equipment is operated.

The lifting member **34** may be actuated in any suitable way to dispense bags from the equipment, but as shown, is operated by an electric motor **40** which drives a pinion **42** having a crank **44** thereon. The crank **44** is connected

to the lower end of a link 46 which has its upper end connected at an intermediate point 48 on an arm 50. The arm 50 has one end pivotally connected at 52 to a central plate 54 and has its opposite end connected at 56 to link 57 which, in turn, is connected to an intermediate point 59 of arm 36. Therefore, each rotation of the crank 44 serves to move the arm 36 and lifting member 34 through a cycle from the upper bag dispensing position to the lower bag engaging position where it will engage the foremost bag in the supply 24 and back to the bag dispensing position.

The bags of the supply 24 are advanced into place with each cycle of operation and for this purpose, the equipment is provided with a pusher member 58 connected at its lower edge to a split collar 60 which has its upper portion threaded to engage a threaded shaft 62. A bracing member 64 is also carried by the pusher member and is formed with a shaft engaging member 66 which rests upon the shaft 62.

The shaft 62 is driven by the chain 68 from a sprocket 70 mounted on shaft 72. The latter shaft is driven by the bevel gears 74 from a pinion 76 which meshes with motor driven pinion 42. Accordingly, each operation of the equipment to dispense a bag serves to rotate the shaft 62 to advance the pusher member 58 a predetermined distance and thus move the foremost bag of supply 24 toward the spaced front members 20 of the bag guiding throat and into position to be engaged by the upturned end 32 of the lifting member 34.

The handle 28 of each bag is generally thicker than the body of the bag and, therefore, the pusher member 58 is preferably provided with a front plate 78 which is pivotally mounted at 80 on the pusher member to hold the bags in place and to equalize the pressure thereon as the pusher member is advanced by shaft 62. The pivot 80 is preferably positioned below the center of the plate 78 so that the upper edge of the plate will tend to tilt forward due to the greater thickness of the handles of the bags near the bottom of the plate 78. The bottoms of the bags are thus pressed forward into position to be engaged by the lifting member even though they may be thinner than the handles.

In order to actuate the equipment in response to the insertion of a coin, the front portion 8 of the cabinet is provided with a coin slot 82 which guides the coin inserted past a contact member 84 such as a micro-switch to a coin box (not shown). The contact member 84, when actuated, serves to close a circuit which energizes solenoid 86 to lift the latch member 88 which is pivotally mounted at 99 on a support 101 from the engaging end 90 of a bell crank lever 92. The bell crank is pivotally mounted at 94 and is urged in counter clockwise direction as seen in FIG. 5 by means of a spring 96 suitably connected to the bell crank lever 92 and to the support 101. Therefore, when the latch member 88 is lifted by the solenoid 86, the switch end 98 of the bell crank will engage and close the motor starting switch 100 to complete a circuit through the motor 40. In this way, the dispensing cycle is initiated and will continue as long as the motor is energized.

In order to return the latch 88 and the bell crank 92 to their starting positions as shown in FIG. 5, the pinion 76 is provided with a pin 102 which is engageable with a slide 104. The slide 104 is positioned to contact the engaging end 90 of the bell crank 92 as it is moved by the pin 102 against the action of biasing member 103. In this way the bell crank is rocked about its pivot against the action of spring 96 after which pin 102 will move on beyond the slide 104 as the pinion 76 continues to rotate. When bell crank 92 is rocked about its pivot by slide 104, the latch member 88 drops behind the engaging end 90 of the bell crank lever under the action of the spring 106 restoring and holding the elements in the starting position of FIG. 6.

When the bell crank 92 is returned to its starting position, the switch end 98 thereof disengages switch 100 and this switch is opened. However, the motor circuit is maintained by means of a holding switch 108 positioned to be engaged by the arm 36 of the bag lifting member. Therefore, the motor will continue to operate until the lifting arm 36 has returned to its upper dispensing position. Switch 108 will then be disengaged by arm 36 and the motor circuit will be broken when all the elements have been restored to their original positions ready for initiating a new cycle of operation.

In order to prevent improper operation of the equipment, blocking means are provided for the coin slot 82. Thus, as shown in FIG. 7, a rod 110 is pivotally mounted at 112 and has an end 114 positioned to extend across the coin slot. The end 114 is normally retracted from the coin slot by a relay 118 but is movable to a coin blocking position by spring 116 suitably connected to the rod 110 and to a stationary element such as the central plate 54. The relay 118 is normally energized to render the coin slot usable but is de-energized whenever the bag operated switch 120 on the upper guide member 22 of the bag guiding throat 18 is opened by a bag moving through the bag guiding throat of the equipment. Similarly, a bag supply switch 122 is connected to the relay 118 and is positioned to be opened by the pusher member 58 when the supply 24 of bags is exhausted. In these ways the customer is prevented from inserting a coin in the coin slot at all times before completion of a bag dispensing operation or when there are no bags in the machine.

In accordance with the present invention, the bags employed are preferably provided with handle protecting and shielding means as shown in FIG. 6. For this purpose, each bag is preferably provided with a piece of paper or the like 124 which is attached to the body of the bag 16 adjacent the handle 28 thereof. The protecting piece 124 is of larger area than the handle 28 and thus projects beyond the same so that when the bags are arranged in the supply 24 and as they are moved forward and lifted from the supply, each handle is separated from those of adjacent bags and prevented from tangling therewith. The bags are, therefore, individually removable from the supply in a smooth, orderly manner so as to be individually dispensed with each operation of the machine.

In operating the equipment described, an electrical circuit such as that shown in FIG. 8 may be used. For this purpose, current is supplied through the lines 130 and 132 from any suitable source. When a coin is inserted in the coin slot 82, it engages the contact member 84 to momentarily close a circuit from line 130 through line 134 to contact 84 and solenoid 86 and thence through line 136 back to the opposite side 132 of the current source. The solenoid 86, when energized, raises the latch member 88 whereupon the spring 96 raises the switch end 98 of bell crank 92 to close the motor starting switch 100. Current then flows from the side 132 of the power line through the line 138 to switch 100 and thence through line 140, motor 40 and line 142 back to the opposite side 130 of the power source.

As the motor 40 rotates, it drives gears 42 and 76 to actuate the bag lifting member and to move the pin 102 on gear 76 into engagement with the slide 104. The holding switch 108 is engaged by the arm 36 of the lifting member prior to the breaking of the motor energizing circuit by the opening of switch 100 as the bell crank is restored to the starting position of FIG. 5. Thus, when the holding switch is closed, current flows from the side 132 of the current source through line 138 to holding switch 108 and then flows through line 140 to the motor 40 and back to the line 130 through line 142. The opening of motor starting switch 100 can thus take place without de-energizing the motor 40. The motor instead will continue to operate until the holding switch 108 is opened by return of the bag lifting arm to its upper bag dispensing position. All of the elements will thus be returned to their initial or starting position at the conclusion of each cycle of operation.

The coin blocking means **110**, for preventing insertion of a coin into the slot **82** when there is a bag in the bag guiding throat or the supply of bags is exhausted, is actuated by the relay **118**. For this purpose, the bag actuated switch **120** and bag supply switch **122** can be connected in series with the relay **118** to receive current from line **136** and line **144**. Since the switches **120** and **122** are normally closed, the solenoid **118** will normally be energized unless there is a bag passing through the throat of the equipment or the bag supply is exhausted, or unless the current supply to the equipment is cut off for some reason.

While the circuit arrangement illustrated is preferred, it will, of course, be apparent that various other circuit arrangements may be employed. In a similar way, the linkage and other elements employed for actuating and controlling the operation of the bag lifting means may be constructed and arranged in various ways as desired for any particular installation. Moreover, the bags themselves may be positioned and moved as desired to deliver them sideways instead of upward from the bag supply if preferred.

These and other changes and modifications may be made in the form, construction and arrangement of the elements of the combination to adapt the invention for use with various types and sizes of bags and to simplify the construction and operation of the mechanism.

In view thereof it should be understood that the particular embodiment of the invention shown in the drawings and described above is intended to be illustrative only and is not intended to limit the scope of the invention.

We claim:

1. Equipment for dispensing one shopping bag at a time from a supply of such bags maintained in such equipment comprising means for supporting said supply of shopping bags in a flat folded arrangement and in a vertical position one behind another with the tops of the bags facing downward and the folded bottoms of the bags facing forwardly in the equipment, means for urging said bags forward in the equipment, a lifting member positioned in front of said supply of bags, said lifting member having one end thereof pivotally mounted on the equipment and provided at its opposite end with an upwardly turned edge movable in an arcuate path to project beneath the forwardly facing folded bottom of the foremost bag in said supply, means urging said edge of the lifting member into engagement with the foremost bag in said supply, a motor connected to said lifting member and operable to move the same through a cycle of operation from a raised bag dispensing position to a lowered position in which said edge of the lifting member projects beneath the downwardly facing folded bottom of the foremost bag of said supply and back to said raised bag dispensing position, a coin slot, a circuit for actuating said motor including a switch located adjacent said coin slot and operable upon insertion of a coin into said slot for initiating said cycle of operation, switch means operable upon conclusion of said cycle for de-energizing said motor, and means actuated by a bag being dispensed for obstructing said coin slot.

2. Equipment for dispensing shopping bags which when folded present a bottom portion that projects from an adjacent side of the bag near one end thereof, said equipment comprising a cabinet having a discharge opening through which a folded bag is movable, means in the cabinet for holding a supply of folded bags with the projecting bottom portions thereof facing in the same direction, a bag moving member located in the cabinet, means for moving said supply of bags toward said bag moving member, actuating means for moving said bag moving member through a cycle of operations, a bag engaging element connected to said bag moving member and movable thereby to pass beneath the projecting bottom portion of the foremost bag in said supply, said element and a bag engaged thereby being movable by said member to a discharge position wherein the end of the bag near said projecting bottom portion extends outward from said discharge opening, control means for said actuating means operable when said bag engaging element moves to said discharge position to interrupt the cycle of movement of said bag moving member so that said element will remain in said discharge position and hold the bag engaged thereby with the end of the bag extending outward from said discharge opening until said bag is removed, said actuating means including a motor, operating means movable to initiate the operation of said motor, and means engaged by a bag located in said discharge position for preventing renewed operation of said operating means until said bag is removed from said discharge opening.

3. In combination with a supply of folded shopping bags each of which bags has a bottom portion projecting from one end of the folded bag and positioned to overlie an adjacent side of the bag and has handles projecting from the opposite end of the bag with the handles of each bag in the supply separated from the handles of an adjacent bag in the supply to prevent entanglement of said handles with the handles of an adjacent bag in the supply and permit separation of one bag at a time from said supply, equipment for dispensing said shopping bags one at a time from said supply, said equipment comprising a cabinet in which said supply of bags is located, said cabinet having a discharge opening therein through which a folded shopping bag from said supply is movable, a bag moving member located in the cabinet, means for moving said supply of bags toward said bag moving member with the bottom portion of the foremost bag in the supply facing said bag moving member, a bag engaging element connected to said bag moving member and movable thereby through a cycle of operations to engage said bottom portion of the foremost bag in the supply to separate said foremost bag from the supply and move it to a discharge position wherein an end of the bag extends outward from said discharge opening in the cabinet, actuating means for said bag moving member including a motor, coin actuated control means operable to initiate operation of said motor and a cycle of operations of said bag engaging element, and means engaged by a bag in said discharge position for preventing renewed operation of said coin actuated control means until said bag is removed from said discharge opening.

References Cited in the file of this patent

UNITED STATES PATENTS

1,637,710	Rider	Aug. 3, 1927
1,657,364	Bartlett	Jan. 24, 1928
1,892,148	Hohl	Dec. 27, 1932
1,925,685	Antoine et al.	Sept. 5, 1933
1,926,232	Gilmore	Sept. 12, 1933
2,119,548	Laughery	June 7, 1938
2,522,033	Graham	Sept. 12, 1950
2,713,931	Russell	July 26, 1955
2,832,506	Hatcher	Apr. 29, 1958
2,876,884	Ray	Mar. 10, 1959