Aug. 4, 1959 E. J. MAYHEW 2,897,939

VENDING MACHINE

Filed Jan. 23, 1956 2 Sheets-Sheet 1

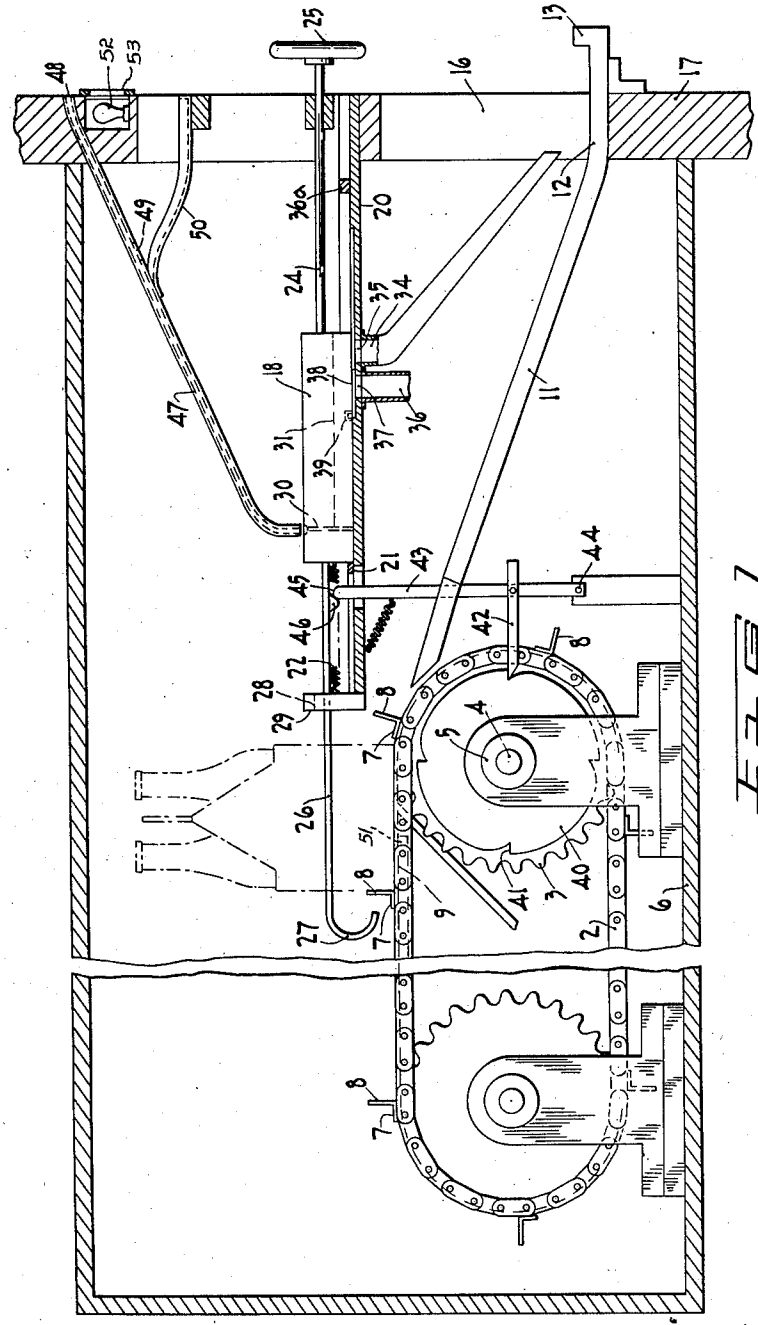


FIG. 1.

Inventor
Elston J. Mayhew
By Alex. E. MacRae
Attorney

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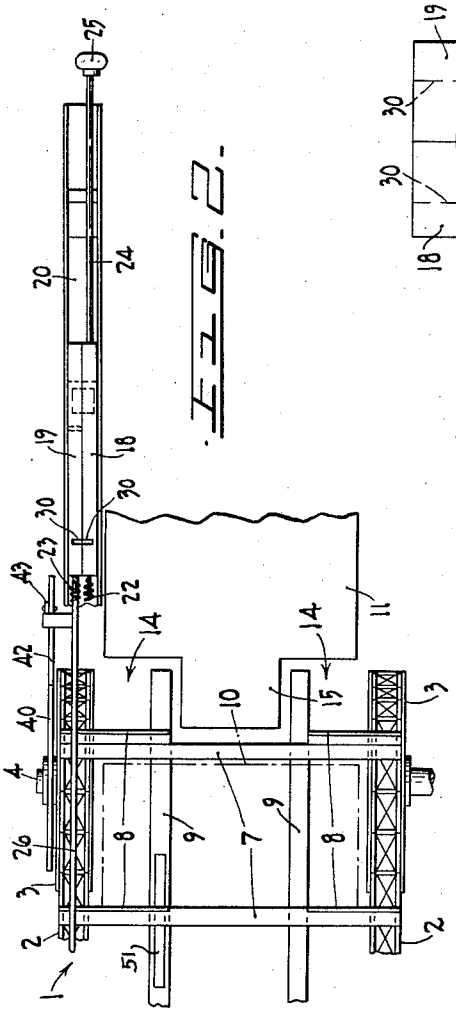


FIG. 2.

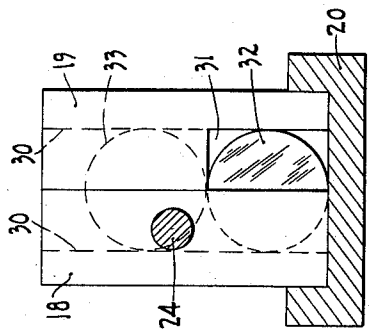


FIG. 3.

Inventor
Elston J. Mayhew
By Alex. E. MacRae
Attorney

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VENDING MACHINE

Elston J. Mayhew, North Augusta, Ontario, Canada

Application January 23, 1956, Serial No. 560,645

4 Claims. (Cl. 194—79)

This invention relates to vending machines having actuating mechanism of the coin controllable type.

An object of the invention is to provide a simple and inexpensive machine of the type mentioned, which is particularly adapted for the vending of articles such as cartons of beverages or the like.

The invention contemplates the provision of a vending machine having an endless conveyor belt, sprockets supporting the conveyor belt, a plurality of article engaging lugs fixed to the conveyor belt, a reciprocally mounted member, an arm carried by the member and reciprocal therewith, said arm having a hook engageable with one of the lugs to impart movement to the belt on reciprocation of the member and arm, a second reciprocally mounted member, and manually operable means for reciprocating said second member, said reciprocally mounted members having communicating coin receiving recesses and being arranged to be keyed together on reception of coins in said recesses.

The invention will be described with reference to the accompanying drawings, in which

Figure 1 is a sectional side elevation of a vending machine in accordance with the invention,

Figure 2 is a partial plan view of the machine, and

Figure 3 is an end view of the reciprocally mounted members.

Referring to the drawings, the conveyor 1 comprises a pair of laterally aligned endless chains 2 mounted upon two pairs of sprockets 3. Each pair of sprockets is mounted on a shaft 4 journalled in bearings 5 supported on a base 6. A plurality of transversely extending bars 7 are mounted on chains 2, the ends of each bar 7 being fixed to the pair of chains, as shown. Each bar 7 carries a pair of generally perpendicularly extending lugs 8, one adjacent each end of the bar. Located between the chains 2 and extending in the longitudinal direction thereof are one or more stationary supports 9, the upper surfaces of which constitute slides for the articles to be vended, such as cartons 10 of bottled beverages. Such surfaces are located in a plane generally coinciding with the upper plane of the chains 2. Each pair of lugs 8 is spaced from the adjacent pair of lugs a distance substantially equal to the width of the vendable article, such as a carton 10. Thus, a plurality of such cartons is adapted to be placed upon the supports 9, each between two pairs of adjacent lugs 8 whereby revolution of the chains will cause a pair of lugs to engage each carton and move it along the supports 9.

It will be apparent that revolution of the chains will cause the cartons 10 to be successively discharged over the end sprockets at one end of the conveyor. At such end of the conveyor, an inclined slide 11 is mounted to receive each discharged carton. It will be apparent that the carton will move down slide 11 by gravity and come to rest at the lower end thereof which may be provided

with a horizontal portion 12 and article retaining lip 13. As shown, the upper end of slide 11 is recessed at 14 on each side whereby the lugs 8 may pass on each side of the central tongue portion 15. The ends of supports 9 extend into the recesses 14 for ease of transfer of the cartons onto the slide.

The lower end of slide 11 is adapted to project through an opening 16 in a wall 17, which may be an exterior wall of a building in which the machine is mounted.

Coin controlled means for imparting movement to the conveyor to discharge a carton onto slide 11 and thus render it available to a purchaser through opening 16 comprises a pair of blocks or free sliding sections 18 and 19 reciprocally mounted in side to side relation on a guide 20. As shown, guide 20 is located adjacent one side of slide 11. Each block 18 and 19 is normally held in spring pressed engagement with a stop 21 by means of springs 22 and 23 fastened to the adjacent inner ends of the blocks. A rod or operating means 24 is connected to the outer end of block 18 and is provided with a handle 25 located adjacent to or externally of opening 16 for manual reciprocation of the block. A rod or advancing means 26 is pivotally connected to the inner end of block 19 and is provided with a hooked end 27 for engagement with the end portion of a lug 8. Rod 26 extends freely through an opening 28 in a supporting member 29. It will be apparent that inward reciprocation of block 19 and rod 26 will cause hook 27 to ride over the top of a lug 8 and to drop into a position for engagement with a side surface of the lug on outward reciprocation of block 19 and rod 26 thereby to impart travelling movement to the conveyor.

It is proposed to employ a plurality of coins as clutch means for connecting together blocks 18 and 19 for simultaneous reciprocating movement in an outward direction against the action of springs 22 and 23. To this end, the adjoining face of each block is provided with a transversely extending vertically disposed slot or groove 30. Slots 30 are in registry with each other in the stop-engaging position of the blocks to form in effect a single coin receiving slot the width of which is approximately equal to the diameter of a coin which it is proposed to employ. It will be apparent that slots 30 extend from top to bottom of the blocks, the upper end of the slots constituting the mouth thereof and the lower end being normally closed by the underlying surface of the guide 20. The adjoining surface of block 19 is also provided with a recess 31 which extends from slot 30 at one end to the outer end of the block. Recess 31 communicates, as shown, with the underlying surface of guide 20 and has a height approximately equal to the diameter of a coin which it is proposed to employ in connection with the machine.

In accordance with the invention, it is proposed to employ two coins of the same denomination (say, two twenty-five cent pieces) as the means for locking blocks 18 and 19 together. Referring to Figure 3, it will be apparent that if only one such coin is deposited in the slots 30 and the block 18 reciprocated outwardly, the single coin, as indicated at 32, will move through recess 31 without imparting movement to block 19. However, if a second coin, as indicated at 33, is deposited in the slots 30, before imparting reciprocation to block 18, it will rest upon the first coin in edge to edge relation and thus span the upper portion of slots 30. Blocks 18 and 19 are thereby locked together and reciprocation of block 18 will cause simultaneous reciprocation of block 19 and consequent movement of the conveyor.

In the case where inadvertently one coin only is deposited in slots 30 and block 18 reciprocated, means are provided for returning such coin to the customer and comprises a chute 34 communicating with an opening 35 in guide 20. It will be apparent that when block 18 has been moved a sufficient distance to place slots 30 in overlying relation to opening 35, the coin will drop into chute 34.

Guide 20 is also provided with a stop 36a for engagement with the outer ends of blocks 18 and 19 and defining the outer limit of the reciprocating or carton discharging stroke of the blocks.

Means for withdrawing and recovering the coins in slots 30 at the completion of the carton discharging stroke, comprises a chute 36 communicating with an opening 37 in guide 20 underlying slots 30. A slidable cover 38 normally closes opening 37 to permit return of a single coin through opening 35, as previously set forth. Cover 38 is keyed to block 19, as indicated at 39 whereby movement of block 19 will move cover 38 and uncover opening 37.

Means are associated with conveyor 1 to define the carton discharging movement thereof and prevent inadvertent movement thereof. Such means comprises a disc 40 fixed to shaft 4 and having a plurality of peripheral shoulders 41. A detent 42 is engageable with a shoulder 41 to prevent revolution of disc 40 and consequently conveyor 1. Detent 42 is carried by a spring-biased arm 43 one end of which is pivotally mounted at 44 on the base of the machine and the other end of which has a cam surface 45 engageable by a complementary cam member 46 on rod 26. It will be apparent that reciprocation of block 19 and rod 26 in an outward direction will cause cam member 46 to swing arm 43 and detent 42 out of engagement with a shoulder 41 to permit revolution of conveyor 1. As shown, hook 27 following its movement over a lug 8 is slightly spaced therefrom to provide sufficient lost motion during reciprocating movement of the hook to permit disengagement of detent 42 prior to engagement of the hook with the lug to cause revolution of the conveyor. It will be apparent that, during the subsequent revolution of the conveyor, detent 42 will ride upon the periphery of disc 40 until it engages a succeeding shoulder 41, which point coincides with the end of the carton discharging movement of the conveyor.

A coin chute 47 is preferably provided to assist in the deposition of coins in slots 30, such chute having an exposed mouth 48 disposed on the exterior surface of wall 17. The chute 47 is preferably provided with an opening 49 of smaller size than the diameter of coins acceptable for operation of the machine, whereby when such smaller coins are inadvertently employed, they will drop through opening 49 and be returned to the customer through a chute 50.

In operation, a plurality of articles to be vended such as cartons 10 are placed upon the upper travelling portion of conveyor 1, each carton being disposed between a pair of lugs 8.

Should it be desired to vend a plurality of various kinds of articles, such as bottled beverages, a battery of the vending machines described may be arranged in adjacent relation, at least one machine being provided for each kind of beverage.

Any suitable means may be provided to indicate when the machine is empty and thus inoperative. Such means may comprise a switch 51 mounted on support 9 and arranged to be held open by the last two adjacent cartons to be vended. When the last carton is vended, the switch closes a circuit (not shown) which includes a lamp 52 mounted in the wall 17 and arranged to illuminate an "empty" sign 53.

I claim:

1. In a plural-coin vending machine having a compartmented article-holding conveyor which is movable in increments to vend one article at each vending operation, lugs adjacent each compartment, a conveyor advancing means to engage the lugs, a manual operating means, and means for mechanically coupling the conveyor advancing means with the manual operating means with a coin to provide a vending operation the improvement, comprising, in combination, a longitudinally extending guide having inner and outer ends and mounted adjacent said conveyor, a pair of blocks, each block having inner and outer ends, confronting and outer sides and top and bottom surfaces, said pair of blocks being side by side and slidably mounted for reciprocating longitudinal movement in said guide, a stop in said guide adjacent its inner end, a coin receipt compartment communicating with said guide through an aperture spaced outward from said stop, means for biasing said blocks toward said stop, a handle attached to the first of said pair of blocks, an advancing element attached to the second of said pair of blocks, said blocks having registering slot portions which together provide a coin slot, said coin slot transversely extending across a portion of each of said blocks from their confronting sides, said coin slot being disposed in a vertical direction having a mouth at the top surfaces of said pair of blocks and being closed at the bottom by said guide, said slot having a depth to hold at least two coins in edge to edge relation, one coin being on top of the other, said second of said pair of blocks having a recess in its confronting face, said recess extending upwardly from said guide and terminating at that portion of said coin slot in which said top coin adjoins the next adjacent coin, said recess being transversely coextensive with said portion of said coin slot, and said recess extending longitudinally from said coin slot outwardly to said aperture, whereby said top coin keys said pair of blocks together upon movement of said blocks toward registry of said coin slot with said aperture of said coin receipt compartment.

2. In a plural-coin vending machine as claimed in claim 1, removable closure means for said aperture in said guide at said coin receipt compartment, said closure means being actuated by movement of said second block away from said stop.

3. In a plural-coin vending machine as claimed in claim 2, a coin return chute in communication with said guide and spaced outward from said aperture for said coin receipt compartment.

4. In a plural-coin vending machine having a compartmented article-holding conveyor which is movable in increments to vend one article at each vending operation, lugs adjacent each compartment, a conveyor advancing means to engage the lugs, a manual operating means, and means for mechanically coupling the conveyor advancing means with the manual operating means with a coin to provide a vending operation the improvement, comprising, in combination, a longitudinally extending guide means, a pair of free sliding sections, said free sliding sections having confronting surfaces, said pair of free sliding sections being slidably mounted for reciprocating longitudinal movement on said guide means, a handle attached to the first of said free sliding sections to move said section in a vending operational direction, an advancing element attached to the second of said pair of free sliding sections, said free sliding sections having registering slot portions which together provide a coin slot, said coin slot extending across a portion of each of said free sliding sections from their confronting surfaces, a coin stop adjacent one end of said coin slot, a coin receipt compartment, said coin stop having an aperture placing said coin stop in communication with said coin receipt compartment, said coin slot having a capacity to hold at least two coins of a sequence in edge-to-edge relation, one of said coins being the latest deposited coin of said sequence, said second of said pair of free sliding sections having a longitudinally extending recess in its confronting face, said recess extending from the end of said coin slot adjacent said coin stop into that portion of said coin

slot occupied by the latest deposited coin, said recess being transversely coextensive with said portion of said coin slot in said second free sliding section, and said recess extending longitudinally from said coin slot to said aperture in said coin stop for said coin receipt compartment whereby said latest deposited coin keys said pair of free sliding sections together upon movement of said free sliding sections toward registry of said coin slot with said aperture in said coin stop.

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