Feb. 3, 1959 L. M. MILTON 2,872,010

COIN-FREED VENDING APPARATUS

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Fig. 1.

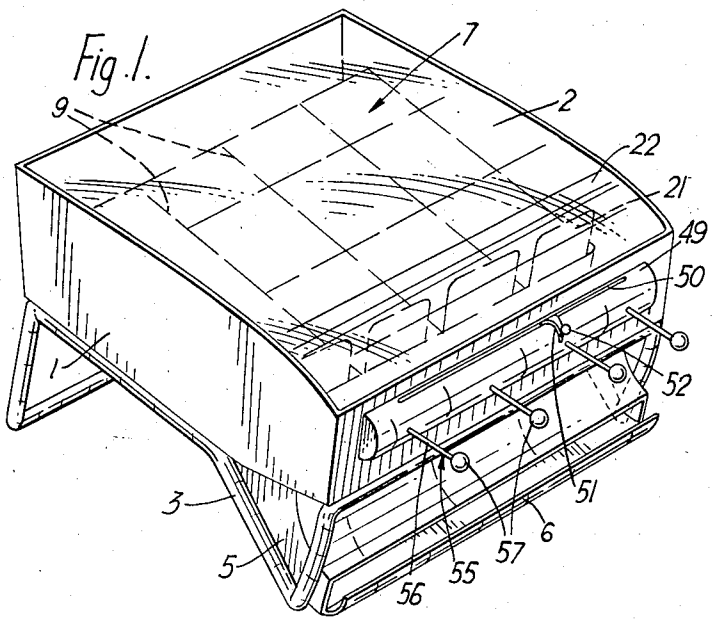

Fig. 2.

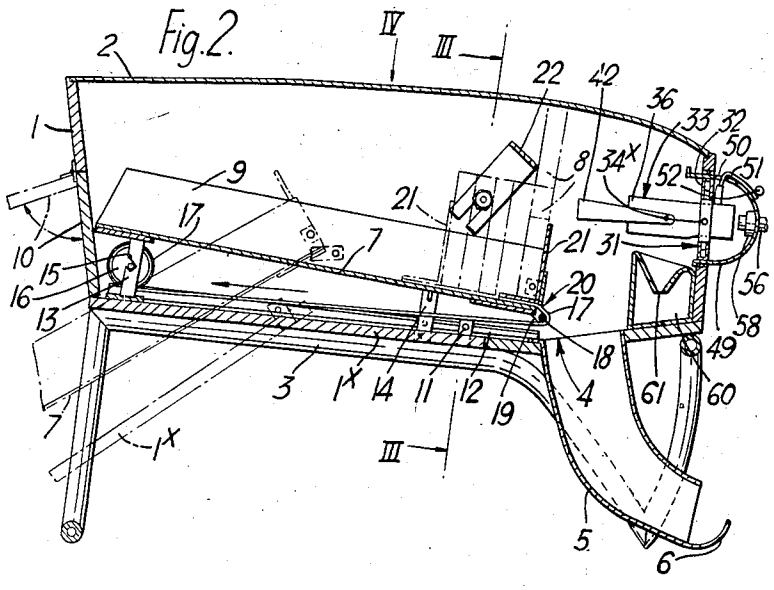

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Fig. 3.

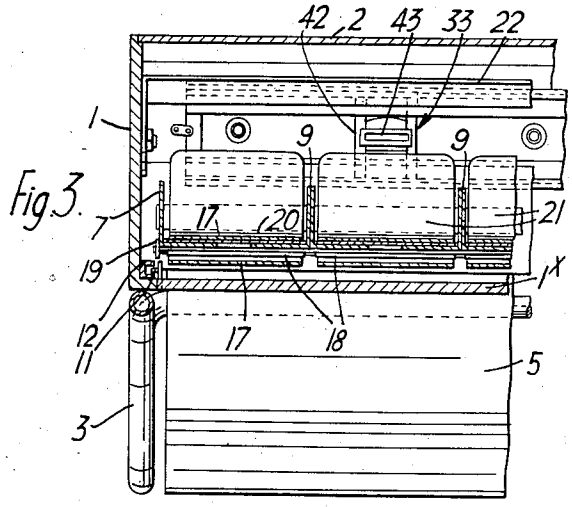

Fig. 4.

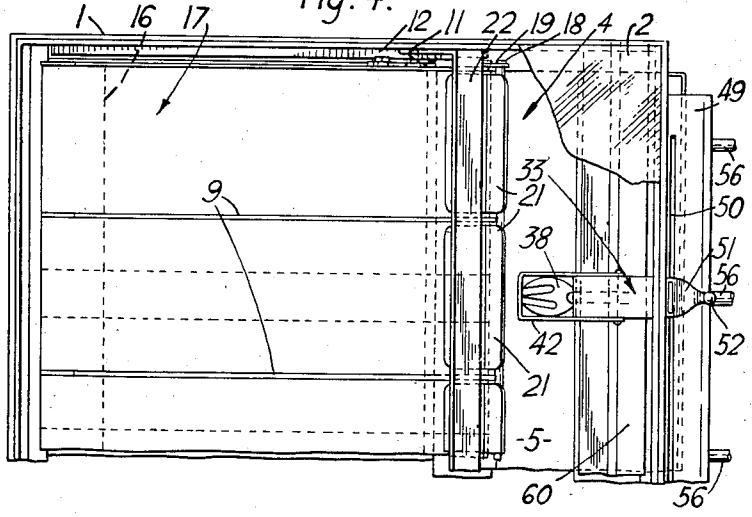

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Fig. 5.

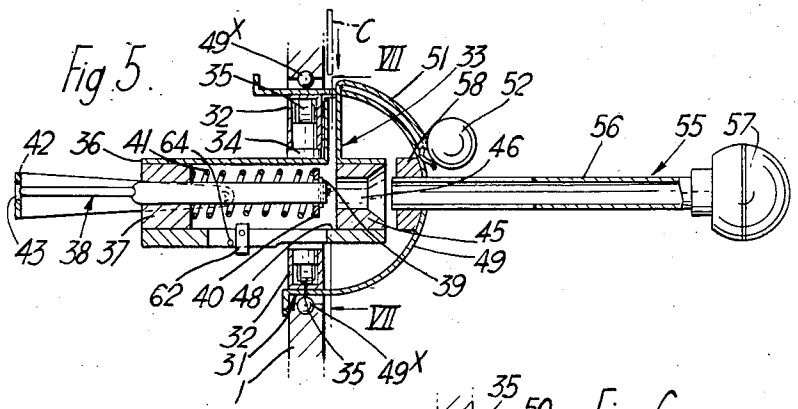


Fig. 6.

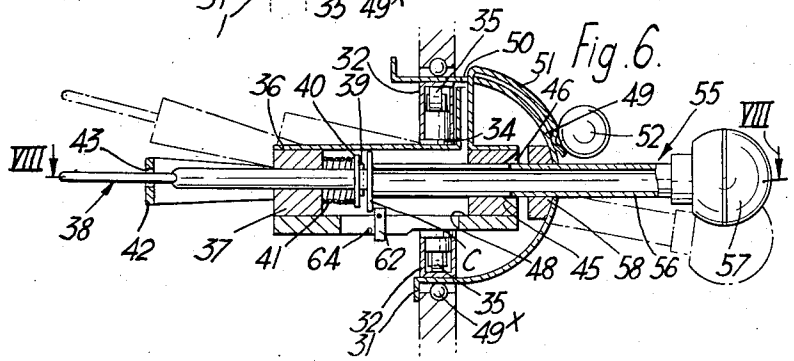


Fig. 7.

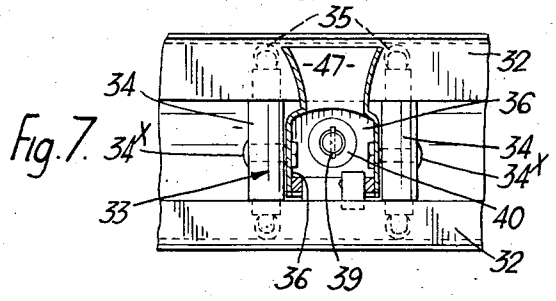
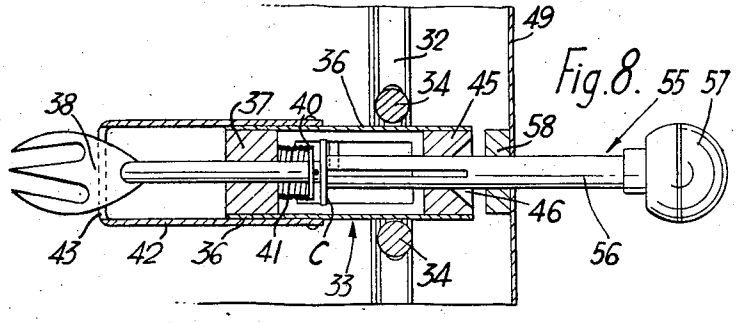


Fig. 8.



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COIN-FREED VENDING APPARATUS

Leslie M. Milton, London, England

Application October 1, 1957, Serial No. 687,590

Claims priority, application Great Britain March 25, 1957

5 Claims. (Cl. 194—79)

This invention relates to coin-freed vending apparatus and has for its object to provide a new or improved apparatus intended primarily for the sale of various kinds of perishable foodstuffs such as, for example, sandwiches, cakes and the like and to this end according to this invention there is provided a coin-freed vending apparatus comprising a casing having a tray or the like for supporting a plurality of articles of the kind referred to, a delivery chute through which the articles may be delivered to the exterior of the casing, and means for removing said articles one at a time from said tray and passing them to the chute, said means comprising an element inaccessible from the exterior of the casing for engaging one of the articles, and a member for operating said element from outside the casing, said element and member being adapted to be operatively connected by a coin inserted into the apparatus.

In the accompanying drawings:

Figure 1 is a general perspective view of a coin-freed vending apparatus in accordance with this invention,

Figure 2 is a vertical section, taken from front-to-back, through the apparatus shown in Figure 1, being drawn on an enlarged scale,

Figure 3 is a section on the line III—III of Figure 2,

Figure 4 is a plan view taken in the direction of the arrow IV in Figure 2,

Figure 5 is an enlarged sectional view through the article extractor mechanism of the apparatus shown in Figures 1 to 4, prior to the operation thereof,

Figure 6 is a view similar to Figure 5, but during the operation of the mechanism,

Figure 7 is a section on the line VII—VII of Figure 5, and

Figure 8 is a section on the line VIII—VIII of Figure 6.

The apparatus shown in the accompanying drawing is intended primarily for selling wrapped sandwiches, and for convenient reference is made in the following description to sandwiches only, but it is to be understood that the apparatus could readily be adapted for the sale of other foodstuff articles such as, for example, sliced slab cake, doughnuts, bread, rolls, and the like.

With reference to Figures 1 to 4, the apparatus comprises a flat generally rectangular casing 1 furnished with a transparent cover 2 of glass, synthetic plastic material or the like, and a supporting tubular frame 3, the latter being formed so that the casing is inclined slightly forwardly and downwardly. A wide transverse slot 4 is provided in the bottom of the casing 1 near and parallel to the front thereof, and into this slot is fitted the upper end of a downwardly and forwardly curved delivery chute 5 which terminates at its lower end in an upturned lip 6.

The major part 1× of the bottom of the casing 1, that is the part behind the slot 4, carries a tray 7 for containing sandwiches 8 to be sold (see Figure 2), the tray being divided by equally spaced parallel partitions 9, extending from the front to the rear of the tray, into a plurality of compartments, each for containing sandwiches with a particular filling. The part 1× of the bottom of the casing together with the tray 7 is removable from the casing, a flap 10 being provided in the back wall of the casing to facilitate removal thereof, the flap and the part 1× having interengaging means (not shown) whereby they may be locked together. In practice, when it is desired to load the tray with sandwiches, it is removed from the casing. At its opposite side edges the part 1× carries projecting pins 11 which are adapted to slide into guide slots 12 on the insides of the side walls of the casing (see Figure 3).

The tray is supported on and connected to the part 1× of the bottom of the casing by front and rear legs 13 and 14, the rear legs being slotted at 15 to form supports for the bearing rods of spring rollers 16 which are disposed beneath the tray along the rear edge thereof, one roller being provided for each compartment of the tray. On each roller 16 is wound the end of a belt 17 which passes forwardly to the front of the tray, up over a bar 18 supported between forwardly projecting brackets 19 at the opposite sides of the front edge of the tray, through a slot 20 in the front wall of the tray, and finally to a pusher member 21 to which it is attached. The roller spring always tends to wind the belt 17 around the roller 16 and thus always draws the pusher member 21 forwardly in its compartment in the tray. In use sandwiches are inserted in the compartment between the pusher member 21 and the front wall of the tray so that as each sandwich is removed the remainder are pushed forward. This will be more fully explained hereinafter.

The means for extracting sandwiches from the tray 7 will now be described in detail, but in general it comprises a fork on which the foremost sandwich 8 in a compartment can be impaled, lifted clear over the front wall of the tray and dropped into the chute 5. So that only one sandwich can be extracted at a time an adjustably inclined bar 22 is secured inside the casing between the side walls thereof near the front of the tray, the arrangement being such that this bar will prevent the second sandwich in a compartment being lifted with the first clear over the front wall of the tray. Should the second sandwich be lifted at all it will strike the bar 22 which will knock it back into the tray.

In the front wall of the casing 1 there is formed an elongated horizontal slot 31 having mounted therein opposed channel shaped members 32 which form runners for a fork supporting carriage, indicated generally by the reference numeral 33. The channel shaped members 32 are carried by a semi-cylindrical shield 49 near the ends thereof, and between the latter and the top and bottom of the slot 31 there are disposed roller or ball bearing units 49×, the arrangement being such that the shield 49, with the fork supporting carriage 33, is rockable about the longitudinal centre line of the slot 31. Stops on the ends of the shield 49 limit the rocking movement thereof. The carriage 33 comprises two spaced pillars 34 provided at their upper and lower ends with wheels 35 which engage and run in the channel members 32. Pivotally mounted on and between the two pillars 34 by means of pivot pins 34× (see Figure 7), is the actual fork carrier 36. This carrier is hollow, being closed at its inner end by a block 37 in which is slidably mounted a fork 38, the fork rod having on the end thereof an annular shoulder 39 which forms an abutment or stop, for a washer 40 which is slidable on the rod. Between the washer 40 and the block 37 there is disposed, around said rod, a compression spring 41. This spring serves in the inoperative position of the extractor means to draw the fork rod into the carrier 36 until the prongs of the fork engage the block 37, the prongs being contained in this position within a U-shaped guard 42 which extends rearwardly from and is secured

to the opposite sides of the carrier **36**. The inner end of this guard has an elongated aperture **43** through which the fork can be projected as is explained hereinafter.

The outer end of the fork carrier **36** is also closed by a block **45** which has, however, a central bore **46** which at its outer end is of outwardly tapering conical shape. When the fork is in its inoperative position the shoulder **39** on the end of the rod thereof is spaced from the inner end of the block **45** sufficiently to allow a coin C to fall between them, the carrier **36** having thereon an upwardly extending coin chute **47** immediately beneath which there is provided a narrow ledge **48** on to which a coin dropped into the chute will fall and thereby be supported on its edge.

In the upper end of the shield **49**, closely adjacent the front wall of the casing there is formed an elongated slot **50** (see Figure 1) and through this extends an arm **51** which is secured to the fork carrier **36** at its inner end and is bent forwardly and downwardly over the top half of the shield **49**. At its extreme end the arm **51** has secured thereto a finger plate **52**. By means of this finger plate the whole fork supporting carriage **33** can be caused to move transversely across the front of the casing.

In the shield **49** opposite each compartment of the tray **7** there is mounted an operating member **55**, this member having a hollow shaft **56** with an operating knob **57** on the outer end thereof. The shaft **56** passes through an aperture in the shield **49** and through a bearing block **58** inside the shield, the inner end of the shaft being formed so that it cannot be withdrawn wholly through said block. The internal diameter of the shaft **56** is greater than the external diameter of the rod of the fork **38**.

The operation of the apparatus, as described so far, is as follows. Let it be assumed that all the compartments have been loaded with sandwiches, one variety of filling in each compartment. Suitable indicator means (not shown) would be provided to indicate such fillings. A person wishing to purchase a sandwich moves the fork supporting carriage **33** by means of the finger plate **52** until it is in line with and between the compartment containing the required sandwich and the corresponding operating member. He then drops a coin C of a given value into the coin chute **47**. This falls into the fork carrier and it will be seen that it takes up a position between the outer end of the fork rod and the inner end of the operating member shaft **56**. The operating member **55** is now pushed in. It slides into and through the bore **46**, the conical taper of which prevents jamming due to the fork supporting carriage not having been quite perfectly positioned, and then pushes the coin C against the end of the fork rod. On continuing to push the operating member the fork prongs are projected from the guard **42** and into the foremost sandwich. The operating member is then depressed to rock the shield **49** and the fork carriage **33**, the fork prongs being as a result raised thus lifting the sandwich clear over the front wall of the tray **7**. On releasing pressure on the operating member **55** the spring **41** which has been compressed during the inward movement of the fork re-asserts itself and draws the fork prongs back into the guard **42**, the latter serving to dislodge the sandwich which drops down into the chute **5** ready to be removed, being arrested by the lip **6**. The operating member **55** will also be pushed back to its initial position. An additional light spring may be provided to ensure that it is pushed fully back. The shield **49** and fork supporting carriage **33** will rock back to their initial position due to the weight of the latter.

Extending along the interior of the front wall of the casing **1** below the level of the slot **31** and the inner end of the fork carrier **36** is an elongated coin receiving box **60** with a tapering inlet **61** (see Figure 2). The bottom of the fork carrier is open and on one side of this opening there is pivotally suspended a catch element **62**, this element being so arranged that it is in the path of the coin trapped between the ends of shaft **56** and the fork rod. On the inward movement of the coin it strikes the upper end of the catch element **62** which is free to pivot inwardly. The coin thus moves easily past the catch element. As the coin returns, it again strikes the catch element but this time the latter is prevented from pivoting outwardly by a stop **64** on the fork carrier **36** below the pivot of the catch element. The coin is therefore tilted and due to the pressure of the spring **41** is caused to be forceably ejected downwardly into the coin receiving box **60**.

Operation of the apparatus without first inserting a coin is impossible because the dimensions of the fork rod and shaft **56** are, as explained above, such that these two merely telescope one within the other without any movement of the fork taking place.

In a modification individual forks may be provided for each of the compartments of the tray **7**, in which case the carriers therefor would not, of course, need to be movable across the front of the casing. In another modification a single fork and operating member may be provided in conjunction with a rotatable compartmented tray, the latter being, in operation, rotated to bring a selected compartment opposite the fork.

In a still further modification the coin chute or chutes as described above are omitted and a single coin selector mechanism, which per se is of known construction, is provided on the casing, this mechanism being adapted to operate electromagnetic slides or the like elements which move into the position taken up by the coin, as in the particular embodiment described above.

I claim:

1. A coin-freed vending apparatus comprising a casing, a tray in said casing for supporting a plurality of articles of the kind referred to, partition means for dividing the tray into a plurality of compartments each for containing articles of one particular character and for locating them ready for removal in a given order, a delivery chute through which the articles may be delivered to the exterior of the casing, and means for removing said articles one at a time from said tray and passing them to the chute; said means comprising an element inaccessible from the exterior of the casing for engaging one of said articles, which element is selectively movable into operative position in relation to any one of said compartments ready for the removal of the leading article therein, and a plurality of members for operating said element from outside the casing, one operating member being provided for each of said compartments and being adapted to be operatively connected by means of a coin with said element after the latter has been moved into its correct operative position in relation to the respective compartment.

2. A coin-freed vending apparatus comprising a casing, a tray in said casing for supporting a plurality of articles of the kind referred to, partition means for dividing the tray into a plurality of compartments each for containing articles of one particular character and for locating them ready for removal in a given order, a delivery chute through which the articles may be delivered to the exterior of the casing, and means for removing said articles one at a time from said tray and passing them to the chute; said means comprising an element inaccessible from the exterior of the casing and on which the leading article in any one of said compartments may be impaled and thereby lifted away from the other articles in such compartment and dropped into the delivery chute, said element being selectively movable into operative position in relation to any one of said compartments, and a plurality of members for operating said element from outside the casing, one operator member being provided for each of said compartments and being adapted to be operatively connected by means of a coin with said element after the

latter has been moved into its correct operative position in relation to the respective compartment.

3. A coin-freed vending apparatus comprising a casing, a tray in said casing for supporting a plurality of articles of the kind referred to, partition means for dividing the tray into a plurality of compartments each for containing articles of a particular character and for locating them ready for removal in a given order, means for urging the articles in each compartment towards the point of removal thereof, a delivery chute through which the articles may be delivered to the exterior of the casing, and means for removing said articles one at a time from said tray and passing them to the chute; said article removing means comprising an element inaccessible from the exterior of the casing and on which the leading article in any one of said compartments may be impaled and thereby lifted away from the other articles in such compartment and dropped into the delivery chute, said element being selectively movable into operative position in relation to any one of said compartments, and a plurality of members for operating said element from outside the casing, one operating member being provided for each of said compartments and being adapted to be operatively connected by means of a coin with said element after the latter has been moved into its correct operative position in relation to the respective compartment.

4. A coin-freed vending apparatus comprising a casing, a tray in said casing for supporting a plurality of articles of the kind referred to, partition means for dividing the tray into a plurality of compartments each for containing articles of a particular character and for locating them ready for removal in a given order, means for urging the articles in each compartment towards the point of removal thereof, a delivery chute through which the articles may be delivered to the exterior of the casing, means for removing said articles one at a time from said tray and passing them to the chute; said article removing means comprising an element inaccessible from the exterior of the casing and on which the leading article at the point of removal in any one of said compartments may be impaled and thereby lifted away from the other articles in such compartment and dropped into the delivery chute, said element being selectively movable into operative position in relation to any one of said compartments, and a plurality of members for operating said element from outside the casing, one operating member being provided for each of said compartments and being adapted to be operatively connected by means of a coin with said element after the latter has been moved into its correct operative position in relation to the respective compartment; and means for limiting the movement of all but the leading article in a compartment during the removal thereof so that only the leading article can be removed and passed to the delivery chute.

5. A coin-freed vending apparatus comprising a casing, a tray in said casing for supporting a plurality of articles of the kind referred to, partition means for dividing the tray into a plurality of compartments each for containing articles of one particular character and for locating them ready for removal in a given order, a transparent member through which the entire contents of the tray are visible, means for urging the articles in each compartment towards the point of removal thereof, a delivery chute through which the articles may be delivered to the exterior of the casing, means for removing said articles one at a time from said tray and passing them to the chute; said article removing means comprising an element inaccessible from the exterior of the casing and on which the leading article at the point of removal in any one of said compartments may be impaled and thereby lifted away from the other articles in such compartment and dropped into the delivery chute, said element being selectively movable into operative position in relation to any one of said compartments, and a plurality of members for operating said element from outside the casing, one operating member being provided for each of said compartments and being adapted to be operatively connected by means of a coin with said element after the latter has been moved into its correct operative position in relation to the respective compartment; and means for limiting the movement of all but the leading article in a compartment during the removal thereof so that only the leading article can be removed and passed to the delivery chute.

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