

1,026,927.

A. RYDQUIST.
VENDING MACHINE.
APPLICATION FILED FEB. 16, 1910.

Patented May 21, 1912.

4 SHEETS—SHEET 1.

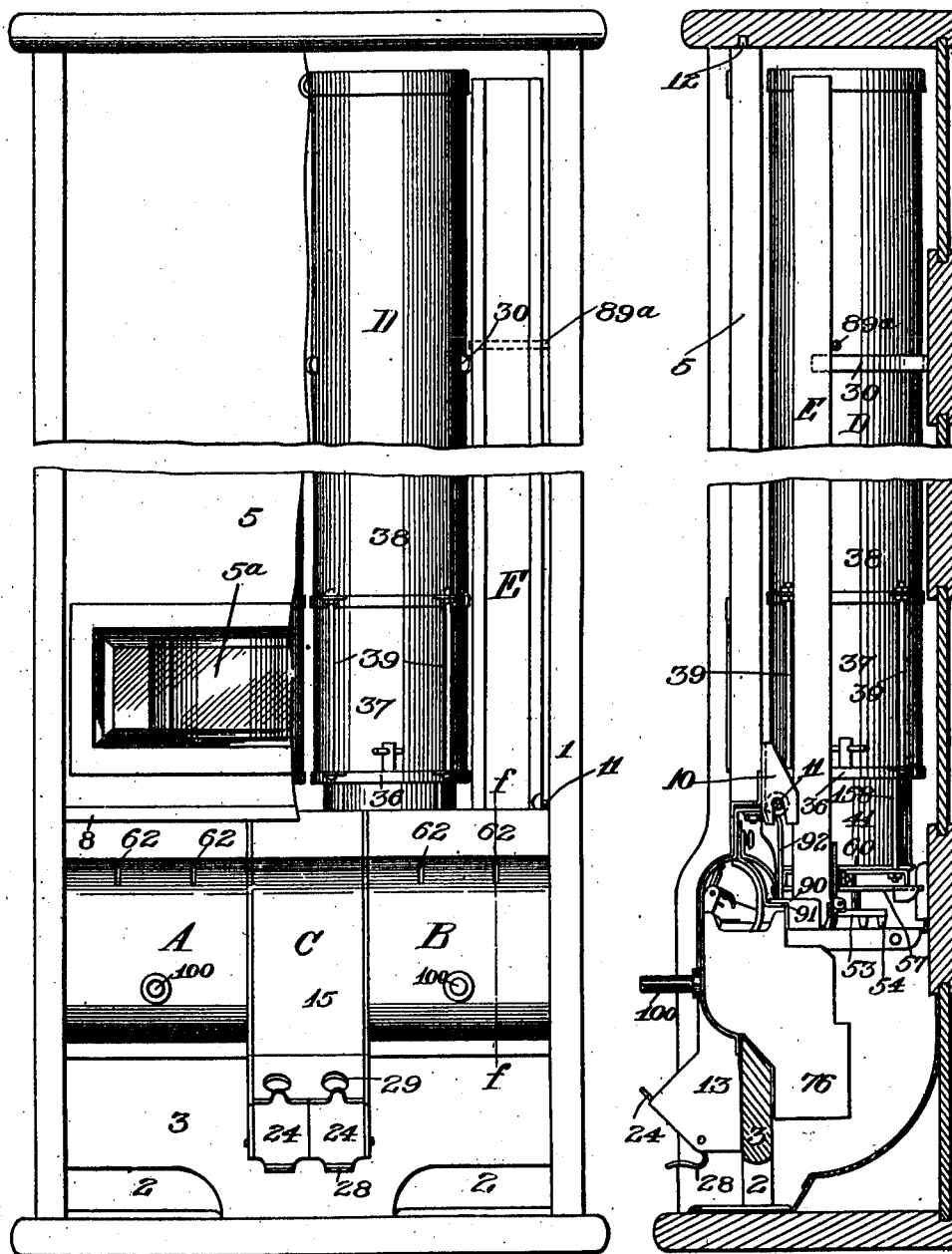


Fig. 1.

Fig. 2. Inventor.

Witnesses

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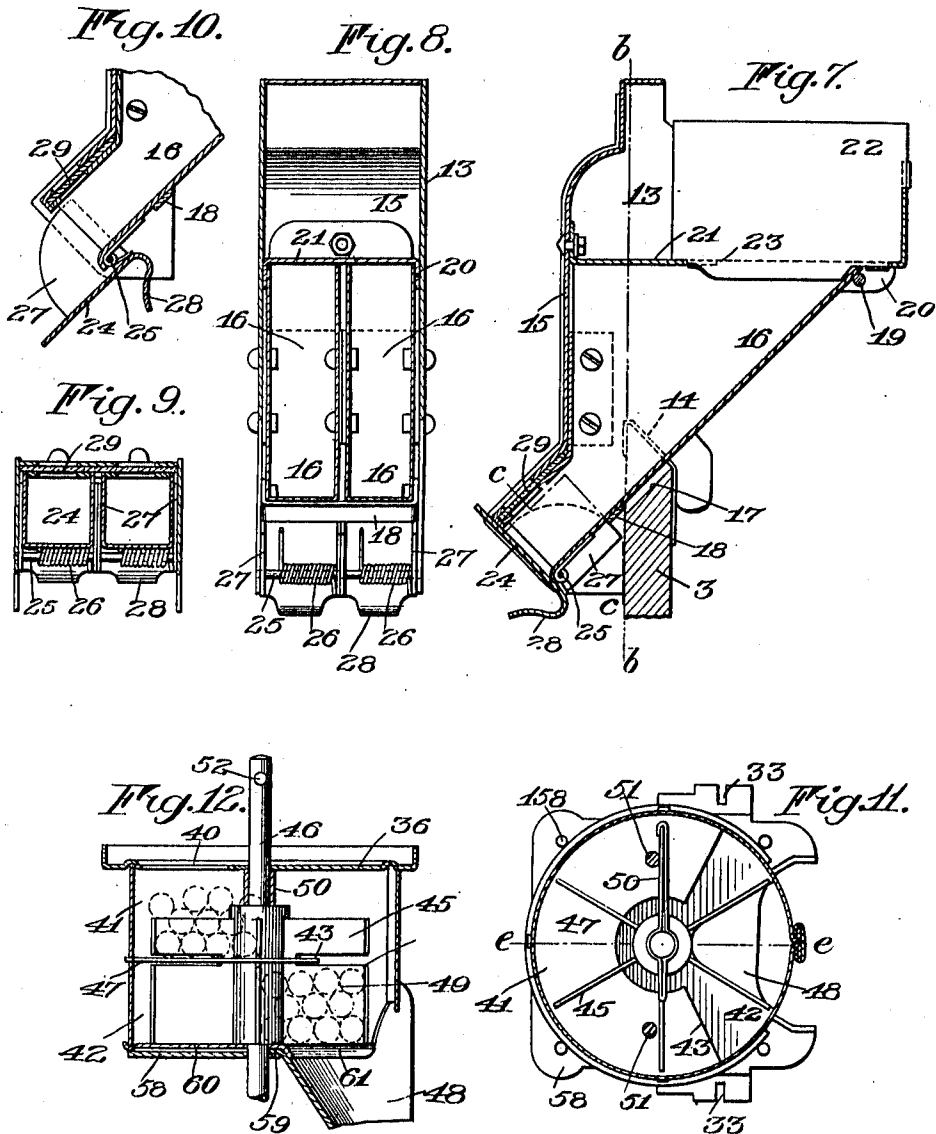
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UNITED STATES PATENT OFFICE.

ADOLPH RYDQUIST, OF ROCHESTER, NEW YORK.

VENDING-MACHINE.

1,026,927.

Specification of Letters Patent.

Patented May 21, 1912.

Original application filed April 26, 1909, Serial No. 492,130. Divided and this application filed February 16, 1910. Serial No. 544,273.

To all whom it may concern:

Be it known that I, ADOLPH RYDQUIST, of Rochester, in the county of Monroe, State of New York, have invented certain new and useful Improvements in Vending-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

The present invention relates to vending machines and this application contains subject matter which has been divided from an application filed by me on April 26, 1909 for improvements in coin controlled machines, Serial No. 492,130.

The invention has for an object to provide a construction in which the several parts or mechanisms are constructed and arranged so that they may be readily removed from or fitted to the vending casing so that the machine may have its parts replaced at a moments notice by one entirely unfamiliar with its operations.

Another object of the invention is to provide a construction which cannot be successfully operated without the use of a coin.

Still another object is to provide for feeding measured amounts of material from a receptacle without breaking or crushing the material while still maintaining the device against discharge due to the shaking of the machine.

A still further object is to collect the coin in such a manner that the party filling of the machine shall not have access to the contents of the coin receptacle.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a front view of the vending machine constructed in accordance with the present improvements, a part of the closure for the front wall being broken away; Fig. 2 shows the interior parts in side elevation, one of the side walls of the casing being removed; Fig. 3 is an enlarged detail view of interior parts showing the manner of feeding material from some of the vending receptacles to the exterior of

the machine, parts being illustrated in section; Fig. 4 is a detail transverse sectional view through the lower portion of the casing to further illustrate the feeding mechanism shown in Fig. 3; Fig. 5 is a bottom view of one of the vending receptacles; Fig. 6 shows in plan the chute which delivers to the exterior of the machine, and in section, one of the vending receptacles arranged in coöperative relation therewith; Fig. 7 is a section on the line *a-a* of Fig. 6; Fig. 8 is a section on the line *b-b* of Fig. 7; Fig. 9 is a section on the line *c-c* of Fig. 7; Fig. 10 is a sectional view showing in open position a valve or gate for the chute; Fig. 11 is a section on the line *d-d* of Fig. 3 through one of the feeding mechanisms; Fig. 12 is a section on the line *e-e* of Fig. 11; Fig. 13 is a section on the line *f-f* of Fig. 1, through the coin controlled mechanism and adjacent parts, showing said mechanism in condition to receive a coin; Fig. 14 is a like section showing the coin controlled mechanism at the time of its movement to deliver material from the vending receptacle, and Fig. 15 is a section on the line *g-g* of Fig. 13 showing the coin controlled mechanism moving to discharge a coin.

In the embodiment of the invention herein illustrated there is employed a casing 1 preferably having its front wall open and all of its other walls closed. Connecting the side walls near their front edges and lower ends is a cross piece 3, while opening beneath opposite ends of this cross piece are chutes 2 which deliver articles to the exterior of the machine from vending receptacles E arranged within the casing and to be hereinafter more particularly described. The cross piece 3 serves in this instance as a support for two casings A and B containing coin controlled mechanisms and for a chute C, the chute being arranged between the two casings and all of said parts being held in interlocking engagement with the cross piece by a removable casing closure 5 which, for this purpose, coöperates with the upper edges of said members A, B and C.

In the present instance the interlocking connection between the closure and the chute and between the closure and the casings A and B is effected by a strip 6 secured to the bottom of the closure 5 by screws 7 and having along its front edge a flange 8 which co-

operates with the front faces of the parts A, B and C and prevents the entrance of rain or dust between the closure and said parts. A plate 9 may be secured to the rear face of the closure and depend therefrom in rear of said parts A, B and C to prevent the inward movement of the latter. This plate may have at its opposite ends laterally and rearwardly extending hooks 10 to cooperate with studs 11 projecting on the inner side of the side walls of the casing, these lugs holding the lower end of the closure against outward movement and through the flanges 8 and 9 retaining the parts A, B and C against removal. A locking device 12 at the upper end of the closure serves for retaining within the casing the closure, the casings A and B of the coin controlled mechanisms and the chute C; and transparent portions 5^a on the closure, permit portions of the interior of the casing to be viewed.

The chute C preferably embodies two side pieces 13 notched at their lower ends, as at 14, to straddle the cross piece 3 and connected by a front wall 15 which is provided with a discharge opening at its lower end. Supported between the side pieces are preferably two troughs 16 each formed from a single piece of sheet material and extending in an inclined direction and discharging through the opening in the front wall 15, the cross piece 3 being cut away or notched at 17 to receive the troughs and thus define the position of the chute. The troughs are preferably supported between the side pieces on the cross bar 18 near their lower ends and by a tie rod 19 near their upper ends, said tie rod connecting depending flanges 20 on the top piece 21. These flanges also serve to prevent the spreading of the side walls of the troughs. The top piece is also provided with openings 23 through which material is received by the troughs, the openings being located on opposite sides of a vertical partition 22 which extends upwardly above the top piece to prevent material for one trough being discharged into the other.

At the lower end of each trough may be provided a gate or valve 24 hinged at 25 to swing upwardly to close its trough, a spring 26 acting thereon to hold it in a closed position. Each of these valves has on opposite sides, fenders or side pieces 27 so that when the valve is thrown downwardly to the position shown in Fig. 10 the side pieces will confine articles and direct them into the hands of the purchaser. Preferably each valve has near its swinging axis an operating portion or laterally extending arm 28 which is so located that it may be engaged by the tips of the fingers of the purchasers in placing their hands in the position to receive material from the chute. The front wall 15 of the chute may be provided

in proximity to the lower end of each trough with transparent portions 29 serving to notify a purchaser of the point of delivery of the purchase.

The articles to be vended through the chute are preferably contained in bulk within separate receptacles D arranged within the casing of the vending machine. Each receptacle preferably is formed by a bottom section 36 against which abuts a transparent section 37 which in turn supports an upper tubular metal section 38, the latter being connected with the bottom section by tie rods 39 and a discharge 40 being provided in the bottom section. The transparent section lies in the horizontal plane of the window 5^a on the closure 5 so that the contents of the receptacle are visible. By making one section of each receptacle transparent, less cost in manufacturing is involved and the parts are less liable to breakage. These receptacles may contain candy beans, peanuts or other similarly formed material. In this instance the receptacles are loosely supported within the casing so that they may be removed therefrom for the purpose of repair or for the substitution of other types of receptacles. Preferably each casing is guided and held near its upper end between a pair of spring arms 30, while its lower end is loosely supported upon one side of the chute, the latter for this purpose being provided with two vertical guides 31 and 32, one arranged in rear of the other to cooperate with guides 33 on opposite sides of the receptacle D at the bottom thereof, thus permitting the chute to be removed from and placed within the casing by a tilting movement. In order that the rearmost guide 33 will cooperate with the guide 32 when the receptacle is being introduced within the casing, a guide projection 34 is provided on the chute in proximity to the guide 31 to enter a guiding recess 35 on the receptacle. The guides 33 and the openings 35 are so arranged that they may cooperate with the guides 31 and 32 and projections 34 on either side of the chute.

To the end that the material will be fed in measured amounts and without injury thereto, such as the crushing thereof, there is preferably employed below and beneath the bottom section of each receptacle D a chamber 41 into which material is discharged through the opening 40, while below the chamber 41 is provided a chamber 42 communicating with the chamber 41 by an opening 43 arranged out of vertical alinement with the opening 40 so that material cannot pass directly from the opening 40 to the chamber 42. The chamber 42 in turn has its bottom wall 60 provided with a discharge 44 vertically alined with the opening 43 but having a smaller area than the latter. The opening 44 discharges

into chute 48 which in turn discharges into one of the troughs 17 through opening 23. The chute preferably abuts a flange 61 turned downwardly from the bottom 60 about opening 44, and has outwardly turned flanges 59 abutting the bottom 60 and held thereagainst by a plate 58 connected by tie rods 158 to the bottom section 37 of the receptacle.

- 10 Arranged to operate within the chamber 42 is a feeding device which carries the material in measured amounts to the opening 43. This device is preferably in the form of a feed wheel having blades 45 extended radially from a shaft 46, the blades operating in proximity to the wall 47 separating the chambers 41 and 42, but being spaced from the bottom 36 of the receptacle.

- Owing to the spaced relation between the edges of the blades 45 and the bottom 36 of the receptacle it is impossible for the blades to shear or crush the material to be vended. As, however, the spaces between the blades and the bottom 36 provides a passageway for the material, it is possible, provided there were no means to prevent it, to cause the material to be discharged merely by shaking the machine and it is with the object of preventing this that the second chamber 42 is provided to receive the material prior to its discharge through the open discharge 44 into the chute 48. The chamber 42 also has a feeding device arranged therein to confine the material within the chamber after it has passed from the chamber 41 and is about to be fed through the discharge 44. This feeding device also embodies a rotary feed wheel having blades 49 extended radially from the shaft 46 in vertical alignment with the blades 45. These blades preferably are substantially coextensive in height with the height of the chamber 42 so that the material cannot pass over or under the blades. The distance between any two blades of the wheel in the lower chamber is equal to the distance between the walls of the opening 44 so that the material between the blades is immediately discharged through the opening 44 whenever the latter is reached, while the distance between the walls of the opening 43 is greater than the distance between any two blades so that after any two blades vertically aline with the walls of the opening 44, material may be received by the chamber 42 from the chamber 41 without discharging through the opening 44. There may also be arranged within the chamber 41 of each receptacle D, above the blades 45, a fender 50 which extends radially from one side of the shaft 46 preventing the discharge of the material above the feed wheel on one side of the opening 41 while permitting material above the wheel to move with the latter from the other side of the opening. As each vending

receptacle D may be attached on either side of the chute C this fender should also be reversible and to this end it frictionally engages the shaft 46, being made from a strip of sheet metal bent upon itself on opposite sides of the shaft and secured together at its ends. In order to hold the fender in operative position on either side of the opening 40, stops 51 depend from the bottom 36 of the receptacle and engage the fender.

The shaft 46 is extended upwardly into the receptacle D and is provided with a cross piece 52 at its upper end to act as an agitator of the material within the receptacle, while the lower end of the shaft is extended below plates 58 and carries a wheel 53 having depending teeth 54 and adapted to be held against accidental movement by any suitable means as a spring pressed plunger 55 carried by the wheel and adapted to enter in one of the series of openings 56 in the plate 57, which also carries the guides 33 and openings 35 and is held in spaced relation to the plate 58. The wheel 53 is preferably actuated by an ejector 67 whose position is controlled in any suitable manner by a coin or other check. Also arranged within the casing of the vending machines are vending receptacles E adapted to contain cakes of chewing gum or chocolate, each of these chutes preferably having its front wall open throughout its height and a delivery opening 83 in the lower portion of its rear walls normally closed by a spring pressed gate 84 hinged at 85 to a plate 86 which is secured by bolts 87 to the vending receptacle above the delivery opening. Also secured by said bolts 87 is a plate 88 provided with vertical slots 89 which permit said plate to be adjusted to control the size of the delivery opening so that the vending receptacle may be adapted to packages of different thicknesses. The receptacles E preferably rest at their upper ends against arms 89^a extended from the side walls of the casing, while the lower ends of the receptacles carry forwardly extending portions 90 resting on the shoulder 91 on one of the casings A, B. This forwardly extending portion 90 interlocks with the vertical guide 92 on the casing of the coin controlled mechanism and retains the lower end of the vending receptacle E in cooperative relation with an ejector 67 of a coin controlled mechanism.

The coin controlled mechanism is not claimed in detail in this case as it forms the subject matter of my application filed on April 26, 1909, Serial No. 492,130, in which, as before stated, I have also illustrated, but not claimed, some of the features which are made the subject matter of the present application. Generally stated, each casing A and B contains a pair of coin controlled mechanisms operated by a single plunger

100 having a slight movement on a carriage provided with two coin seats 65. Each casing has two coin slots 62 from each of which leads coin guides 63 and 64 directing a coin to one of the coin seats 65 on the carriage 66. The carriage 66 has two ejectors 67 thereon, the position of each of which is determined by a coin on a seat 65 through the medium of the pivoted member 68, one end of which coöperates with the depending arm 69 on the ejector, while the other arm coöperates with the coin on the seat 65, the coin being removed from the seat and deposited in receptacle 72 when the carriage reaches the end of its inward movement, the pivoted stop member 70 being then free to swing, thus permitting the pressure on the plunger 100 to be transmitted to the pivoted member 68 by means of pinion 101.

Any paper, or improper coins or checks which do not pass to the seat 65 will collect upon the top of the carriage 66, and when the latter is moved forward, will be stripped therefrom and discharged into the chute 71.

A follower 93, operating in a vending receptacle E, has a projection 94 operating through the open front wall to coöperate when its lower position is reached with the rear face of a movable spring pressed member 95 which carries a switch 96 into the path of a coin passing on the coin guides 64, deflecting said coin from the guide onto the carriage 66, so that whenever a vending receptacle E is empty and the carriage is moved to the rear after depositing the coin the latter will drop into the chute 71 and be delivered through the opening 2.

Each coin receptacle 72 is preferably removable from the machine and has in this instance two slots 73 therein through which coins are delivered thereto from a pair of coin controlled mechanisms. These slots are substantially the length of the diameter of the coin so that once a coin has passed through a slot into the coin receptacle it cannot easily be removed through the slot, the receptacle preferably having a key controlled lock 74 controlling the closure 75 which permits the coins to be removed from the receptacle. This is an important feature of this invention. Owners of vending machines have heretofore experienced a great deal of loss owing to the fact that their employees, whose duty it is to fill the machines and collect the coins, have in many instances appropriated to their own use parts of the moneys in the machines. With this invention an employee, after filling the vending receptacles, entirely removes the coin receptacle placing an empty one in its place, the one containing the coins being carried to the headquarters where its contents are removed by one in authority.

As a means for holding a coin receptacle in proper position with relation to one of

the casings A, B, the side pieces 76 of the latter are extended downwardly below the cross piece 3 to coöperate with the rear face of the latter at their forward edges and are connected by a rear wall 77 against which the receptacle 72 is held by a front wall 78, preferably pivoted at its upper end at 79 and having a rearwardly extending flange 80 at its lower end to coöperate with the bottom wall of the coin receptacle and hold the latter against the rear wall 77 between the side walls 76. To the end of preventing accidental movement of this swinging member 78, the latter is provided with forwardly extending flanges 81 at its opposite ends to coöperate with the rear faces of the cross piece 3 and at the same time to provide a chute between the cross piece and the coin controlled mechanism casing. The upper edge of the cross piece is declined or beveled rearwardly so that the coins will not come to rest on the upper edge. Coins are delivered from each coin controlled mechanism into a chute 82 which preferably is carried by the rear wall 77 of the casing of a pair of coin controlled mechanisms.

It will be apparent that because the vending receptacles D are supported on the chute C, the receptacle may be removed independently of the casings A, B, and the latter may be removed independently of the receptacles, thus permitting the repair of either, the removal of the coins from the coin controlled mechanism or the refilling of the vending receptacles without interfering with the other parts. In addition to this, the vending receptacles D are supported by the casings A and B of the coin controlled mechanisms. This is important, for it has been found that when they have been separately supported changes of temperature will affect the relative positions between them and make it possible for the ejector of the coin controlled mechanism to actuate the feeding mechanism of the vending receptacle without the use of a coin. Further, when the coin controlled mechanism is carried by a casing independently of the vending machine casing, boys or others maliciously inclined will lift up on the coin controlled mechanism causing the ejector of the latter to be moved in proximity to the feeding mechanism of the vending receptacles so that the latter may be actuated. Both of these objections are overcome in this invention for the reason that the vending receptacles D are supported directly on the casings of the coin controlled mechanisms, the shoulder 91 of the casings A, B engaging beveled shoulders 97 on the vending receptacles. With this arrangement the expansion and contraction of the two parts are equal and if the coin controlled mechanism is raised, then the vending receptacle will be moved upwardly therewith, while either

the coin controlled mechanism or the vending receptacle may be removed independently of the other.

Assume that it is desired to obtain material from receptacles D. Coins are deposited in either coin slot 62 in proximity to the chute C. The coin, if it be of proper denomination, passes to the seat 65 and holds the ejector 67, operated by said coin, in an elevated position so that when the carriage 66 is moved to the rear the ejector will engage one of the teeth 54 on the wheel 53, thus rotating both feed wheels in the feeding mechanism. This action causes the contents of the chamber 42 to be discharged into the chute 48 and another charge to be fed by the feed wheel in chamber 41 to the chamber 42. From the chute 48 material passes into one of the troughs 16 and is held therein until the gate 24 is opened. The latter, when swung downwardly forms a continuation of the trough and discharges the material into the hand of the purchaser. If, however, the coins are deposited in either of the other slots 62, the ejector 67, in proximity to the receptacle E, will be actuated to force the lower package in the receptacle through the rear wall of the latter and out through the chute 2.

From the foregoing it will be seen that there has been provided a vending machine which is incapable of being operated except upon the introduction of a properly sized coin. A feeding mechanism is employed which deals out measured amounts of material from a vending receptacle without injury to the material. The receptacles are quickly and easily filled and the coin mechanism and delivery chute may be quickly replaced by others whenever they get out of order. The parts, however, cannot be removed except upon the opening of the casing, the key of which permits access to all parts to be quickly obtained.

I claim as my invention:

1. In a vending machine, the combination with a casing, of a casing carrying a controlling mechanism and interlocking with the casing, a closure for the front wall of the casing supported at its lower end on the casing of controlling mechanism, having a device cooperating with the front wall of the last mentioned casing, a plate secured to the rear face of the closure to depend below the latter and cooperate with a rear face of the casing of the controlling mechanism, rearwardly extending hooks formed at opposite ends of the plate, projections on the side walls of the cabinet casing engaged by the hooks, and a locking device for the closure.

2. In a vending machine, the combination with a casing having an open front and a cross piece near its lower end, of a chute movably interlocking with the cross piece at

its lower end, a controlling mechanism also removably interlocking with the cross piece at its lower end and arranged to one side of the chute, a vending receptacle within the casing discharging through the chute, and a closure cooperating with the upper ends of the chute and the controlling mechanism to retain said parts within the casing.

3. A chute for vending machines comprising a pair of side pieces each provided with a hook at its lower end, a front wall having an opening at its lower end, an inclined trough arranged between the said side pieces and discharging through the opening in the front wall, and a cross piece connecting the side pieces below the trough.

4. A receptacle for vending machines comprising a cylindrical bottom section having a discharge, a cylindrical transparent section abutting and surrounding the upper edge of the bottom section, a section above the transparent section abutting the latter, and tie rods connecting the upper cylindrical section with the bottom section.

5. The combination with a receptacle having a discharge, of a chamber receiving material from said discharge, a second chamber having communication with the first named chamber and having a discharge, a measuring feed device operating in the first named chamber to carry the material to the second named chamber, and a feed device operating in the second named chamber to carry the material to the discharge of the latter and having connection with the first named feed device to move therewith.

6. The combination with a receptacle having a discharge in its bottom, of a chamber arranged below and receiving material from said receptacle, a second chamber arranged below and communicating with the first named chamber, a measuring feed device operating in the first named chamber to carry measured amounts of material to the second named chamber, and means for feeding the measured amounts from the second named chamber through the discharge of the latter, connected with the first named feed device to move therewith.

7. The combination with a receptacle having a discharge in its bottom, of a chamber below said receptacle receiving material therefrom, a second chamber below the first named chamber, communicating with the latter at a point out of vertical alinement with the discharge of the receptacle and having also a discharge, a rotary feed wheel in the first named chamber to carry the material to the second chamber, and a rotary feed wheel in the second named chamber for discharging the latter connected to the first named wheel so that both move together.

8. The combination with a receptacle having a discharge in its bottom, of a chamber below said receptacle receiving material

therefrom, a second chamber below the first named chamber communicating with the latter at a point out of vertical alinement with the receptacle discharge and having a discharge in vertical alinement with the communication between the two chambers, a bladed wheel rotatable in the first named chamber in spaced relation to the bottom wall of the receptacle, and a bladed wheel having its blades alined with the blades of the first named wheel and operating in the second named chamber.

9. The combination with a receptacle having a discharge in its bottom, of a chamber below said receptacle receiving material therefrom, a second chamber below the first named chamber having communication with the latter at a point out of vertical alinement with the receptacle discharge and also having a discharge smaller than the chamber communicating opening, a bladed feed wheel rotatable in either direction within the first named chamber to carry material to the second named chamber, and a blade feed wheel in the second named chamber arranged to displace the material through the discharge of the latter.

10. The combination with a receptacle having a bottom provided with a discharge, of a chamber beneath the receptacle receiving material from the discharge, a shaft extending through said chamber, a set of radially arranged blades arranged on the shaft and operating in said chamber, a fender frictionally engaging the shaft between the blades and the bottom of the receptacle, and stops on opposite sides of the discharge to limit the movement of the fender with the feed wheel.

11. The combination with a receptacle having a bottom provided with a discharge, of a chamber beneath the receptacle receiving material from the discharge, a second chamber arranged beneath the first named chamber communicating with the latter and having a discharge, a shaft extending through both chambers, and two sets of blades arranged on the shaft and each set operating in one of the chambers.

12. In a vending machine, the combination with a casing, of a vending receptacle, devices for loosely supporting the receptacle within the casing, and a removable controlling mechanism provided with a shoulder to engage and support the receptacle while the latter is held by the supporting devices, said mechanism having a bar movable in two planes.

13. In a vending machine, the combination with a casing, of a chute removably arranged therein, a vending receptacle guided

vertically by the chute and having a feeding mechanism, and a removable controlling mechanism controlling the feeding mechanism and having a shoulder to engage and support the vending receptacle while the latter is on the guide of the chute.

14. In a vending machine, the combination with a casing having a pair of guides therein, one in rear of the other, of a vending receptacle carrying guiding portions for cooperating with the guides on the casing, one of said elements being provided in proximity to the forward guide with a projection and the other being provided with an opening to receive said projection and cause the guiding portion on the receptacle to engage the guide in the casing.

15. In a vending machine, the combination with a casing having an open front with a cross piece at its lower end, of a chute supported on the cross piece, controlling mechanisms supported on the cross pieces on opposite sides of the chute, two receptacles supported in the casing to discharge in the chute and removable independently of the latter and the controlling mechanisms, and a closure interlocking with the casing, the controlling mechanisms and the chute to retain said parts in the casing.

16. In a vending machine, the combination with a casing having an open front wall with a cross piece near its lower end and a pair of chutes discharging beneath opposite ends of the cross piece, of a chute removably supported on the cross piece, a pair of vending receptacles removably supported within the casing, discharging into the last mentioned chute and each having a feeding mechanism, a second pair of vending receptacles arranged to discharge in the first mentioned chutes, and two casings each carrying a pair of controlling mechanisms and removably arranged on the cross pieces on opposite sides of the second mentioned chutes, each pair of mechanisms being adapted to control a vending receptacle of each pair.

17. In a vending machine, the combination with a casing, of a chute therein, having two troughs and a vertical partition extending upwardly between the troughs, and a pair of vending receptacles separate from the chute and each having a depending chute discharging into the troughs on opposite sides of the vertical partition so that the latter prevents material from one receptacle passing into the trough of the other.

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