Oct. 25, 1932. H. B. WOODS 1,884,478

VENDING MACHINE

Filed Jan. 11, 1928 2 Sheets-Sheet 1

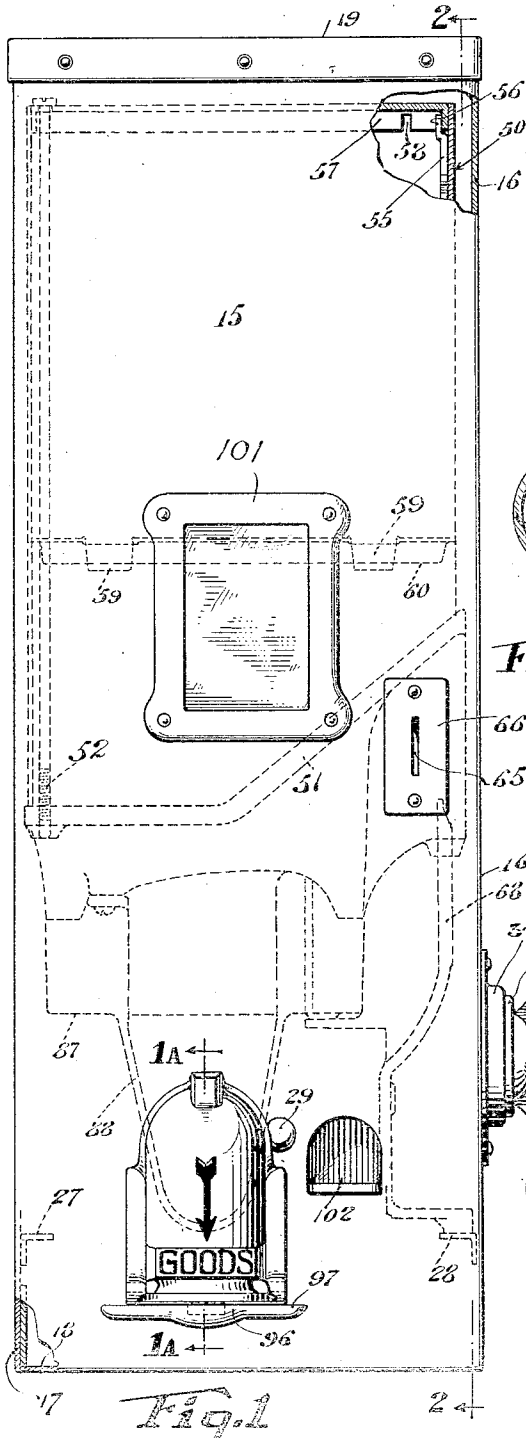


Fig. 1

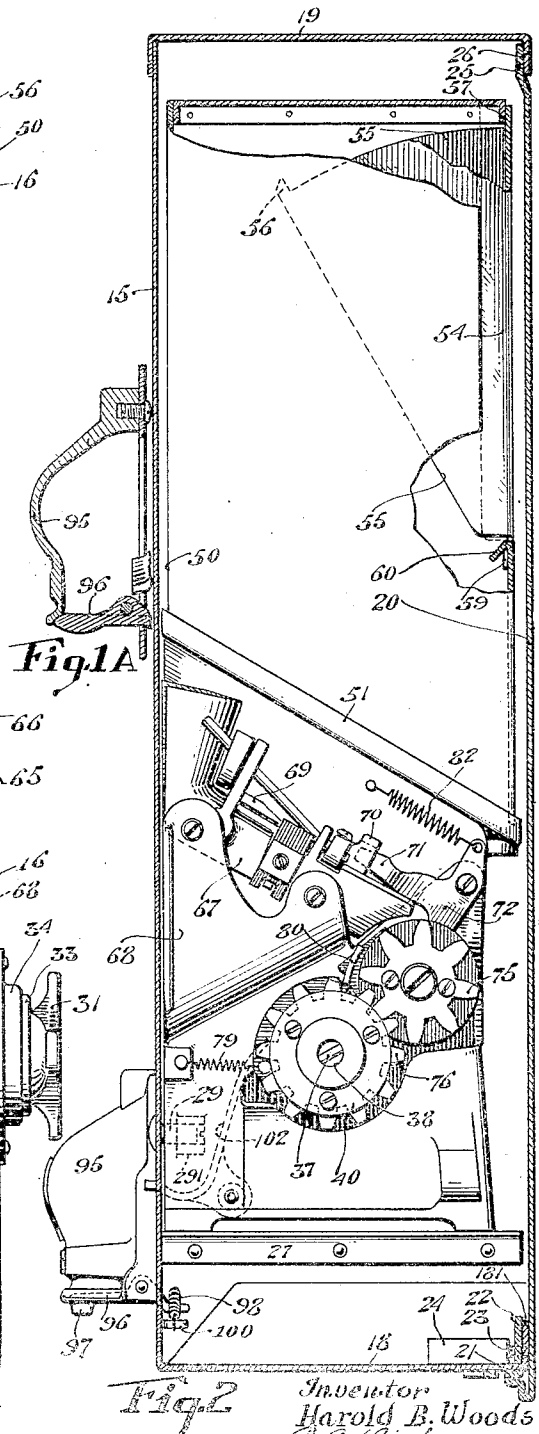


Fig. 1A

Fig. 2

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Oct. 25, 1932. H. B. WOODS 1,884,478

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Filed Jan. 11, 1928 2 Sheets-Sheet 2

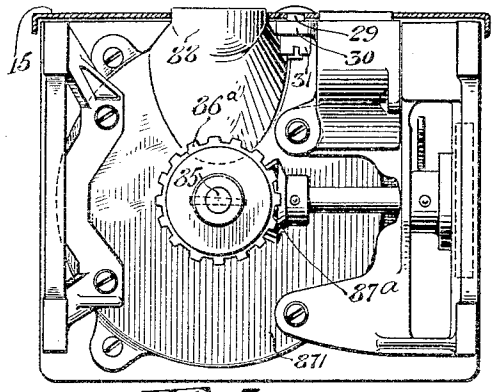


Fig. 3

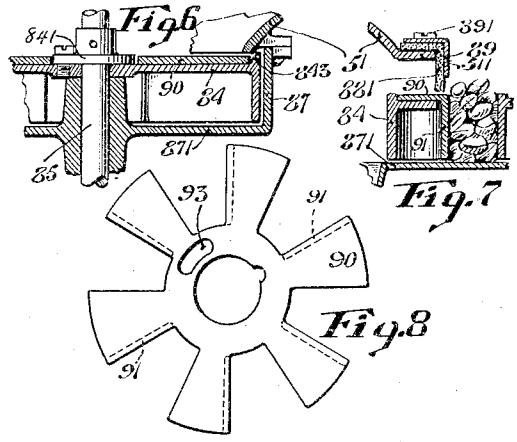


Fig. 6

Fig. 8

Fig. 7

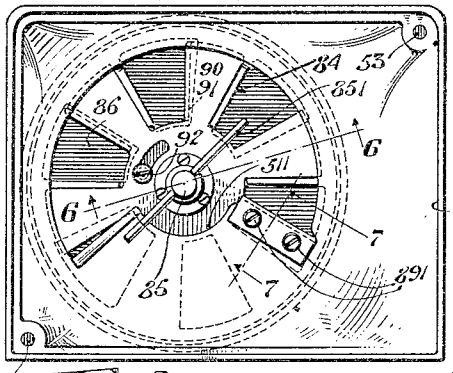


Fig. 4

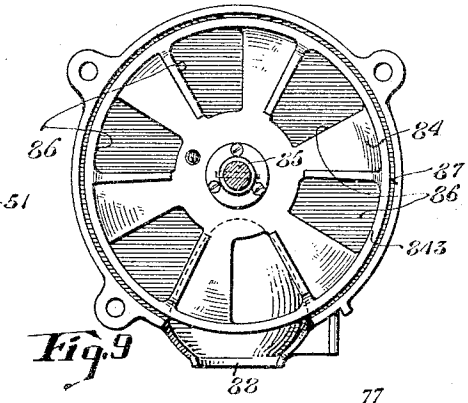


Fig. 9

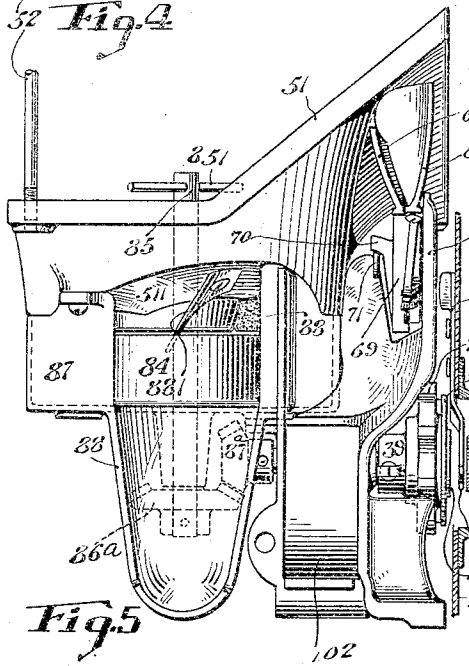


Fig. 5

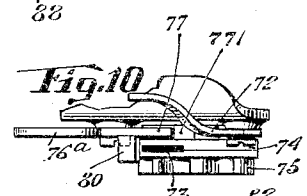


Fig. 10

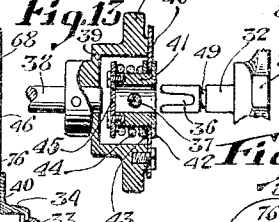


Fig. 13

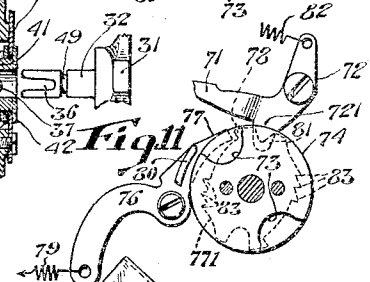


Fig. 11

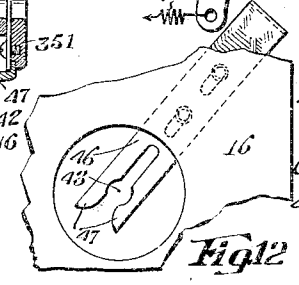


Fig. 12

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UNITED STATES PATENT OFFICE

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VENDING MACHINE

Application filed January 11, 1928. Serial No. 245,952.

This invention relates to vending machines and, generally stated, contemplates an improved and efficient machine for vending bulk products in measured quantity, the delivery apparatus being controlled by the insertion of a proper coin.

One object of the invention is to improve the commodity measuring and delivering mechanism by providing a construction which prevents particles of foreign matter from escaping from the commodity receptacle to the moving parts of the delivery mechanism.

A further improvement in the delivery mechanism contemplates a device for separating the measured quantity of a commodity to be delivered from that remaining in the receptacle in such a way as to prevent mutilating of the article or commodity delivered.

A further improvement in the delivery mechanism comprises the provision of means for facilitating and insuring the movement of the measured quantity of the commodity from the measuring chambers to the delivery spout.

A further improvement comprises the provision of means for varying the quantity of the commodity delivered at each operation of the machine.

The invention likewise contemplates certain improvements and refinements in the coin control mechanism.

The invention further contemplates an improved connection between the delivery mechanism and the operating fingerpiece, such connection being arranged to prevent injury to the mechanism by excessive pressure on the fingerpiece when the machine is locked.

With these and other objects which will more fully appear, the invention consists in certain novel constructions, combinations and arrangements of parts, a representative embodiment of which has been illustrated in the drawings and will be hereinafter described.

Referring to the drawings: Fig. 1 is a front view of the machine cabinet, parts of the interior construction being indicated in dotted lines.

Fig. 2 is a section substantially on the line 2—2 of Fig. 1.

Fig. 1—A is a section substantially on the line 1A—1A of Fig. 1.

Fig. 3 is an inverted plan view of the machine the case being removed.

Fig. 4 is a plan view of the delivery mechanism the case being removed.

Fig. 5 is a front elevation of the coin control and delivery mechanism.

Fig. 6 is a vertical section substantially on the line 6—6 of Fig. 4.

Fig. 7 is a vertical section substantially on the line 7—7 of Fig. 4.

Fig. 8 is a plan view of a device for varying the quantity of goods delivered.

Fig. 9 is a plan view of the delivery plate.

Fig. 10 is a detail in plan of the coin control device.

Fig. 11 is an elevation of the mechanism shown in Fig. 10.

Fig. 12 is an elevation of the operating handle retaining device.

Fig. 13 is an assembly view of the clutch mechanism and operating handle.

The machine is housed within a casing comprising front plate 15, side plates 16 and 17, bottom 18 and top 19. The mechanism is supported from the walls of this casing, which is closed by a back plate 20 to which the casing is secured by means which may be constructed as follows: Near the lower end of the back plate is a ledge 21 which may be integral with the back plate itself (Fig. 2). Extending upward from the ledge 21 and preferably integral therewith and spaced from the back are tongues 22 one of which is slotted to receive the bolt 23 of a lock 24 secured to the bottom plate 18. The tongues 22 are received in apertures in the bottom, and pass in front of the flange 181 which extends upward from the rearward edge of the bottom. At its upper end the back plate is offset forwardly at 25, and a down turned edge 26 of top 19 passes behind the offset 25. Thus the casing is supported at the top by the offset 25 and at the bottom by the ledge 21 and when the lock bolt 23 is retracted the casing, with the mechanism which is supported therein, may be moved upwardly to disengage the offset 25 and the casing removed.

The article containing and delivering device, coin testing device and coin actuated release mechanism are all secured together as a unit and are supported in the casing on ledges 27 and 28 secured to the side walls 17 and 16 respectively. For the purpose of retaining the mechanism within the case a threaded stud 29 adapted to receive the slotted nut 291 projects inwardly from the front of the case and is received in an aperture in a lug 30 on a casting which comprises a part of a coin return chute.

The mechanism is actuated by a handle 31 projecting from one side of the case and having connected therewith the slotted stem 32 which passes through a face plate 33 held in a flange ring 34 by means of the disk 35 which is secured to the face plate 33 by suitable means, such as screws 351, and engages the inner surface of the flange of ring 34 as clearly shown in Fig. 5. The inner edge of face plate 33 is rabbeted to receive the margin of ring 34.

The stem 32 terminates in a slot 36 adapted to receive a pin 37 which extends transversely of a recess in a friction clutch mechanism which is constructed as follows: The main operating shaft 38 has secured thereto a hollow head 39 which is closed by the apertured plate 40. The aperture in plate 40 receives a hollow cylindrical member 41 having fixed thereto a flange 42 which engages the outer face of plate 40. A washer 43 encircling cylinder 41 is pressed into frictional engagement with the plate 40 which in turn frictionally engages the flange 42 by a stiff spring 44 compressed between the washer 43 and a plate 45 which is secured to the end of the cylinder 41. Thus in the normal operation of the machine motion is transmitted from the operating handle or finger piece 31 through the shaft 32, pin 37, clutch member 41, plate 40 and part 39 to the operating shaft 38. If, however, the resistance to the motion of the shaft 38 is sufficient to overcome the friction between flange 42 and the plate 40, the plate will remain stationary, the flange 42 sliding thereon. Breakage of any part of the mechanism by excessive pressure on the operating finger piece when the machine is locked or the mechanism clogged in any way is thus avoided.

The finger piece and the clutch are held in operative relation by a plate 46 which is slidably mounted on studs projecting from the inside of the casing wall 16. The end of plate 46 is slotted to form spring fingers 47, which are received in a peripheral groove 49 in the shaft 32. An enlargement 48 of the slot between the fingers 47 locates the plate 46 in effective position, as shown in Fig. 12. Upon retracting the plate from this position the fingers are freed from the groove 49 and the operating finger piece may be withdrawn, leaving the mechanism free of the side walls. If then the slotted nut 291 is removed the mechanism may be withdrawn from the casing.

The machine is adapted to contain and dispense articles in bulk, such as peanuts, gum, small candy, etc. An article containing hopper, indicated generally by numeral 50, is secured to a cast base 51, which forms a frusto-conical bottom for the hopper, by bolts 52 and 53. The hopper is closed at the top and has in the back a door 54 provided with side flanges 55 lying adjacent to the side walls of the hopper for the purpose of retaining the commodity with which the hopper is filled while the door is open. Ears 56 project upwardly from the inside corners of the side flanges 55 and by engagement with a rim 57 on the hopper top limit the opening movement of the door. The rim 57 is provided with a pair of notches 58 removed a short distance from the side walls so that by pressing the flanges inwardly until the projections 56 register with the notches 58 the hopper door may be removed. The door hinge comprises two downwardly extending lugs 59 adapted to be received in slots in an inturned lip 60 on the back of the hopper wall and at the bottom of the door aperture.

Coins are inserted through a slot 65 in escutcheon plate 66 on the face of the machine. The coins passing through the slot are received in a coin testing device comprising a fixed side wall 67 secured to a bracket 68 and a side wall 69 which is hinged to the fixed wall 67. A lug 70 extends laterally from the hinged side 69 and over-lies the horizontally extending arm 71 of a control lever 72. The coin testing device will not be described in detail since it forms no part of the present invention.

The accepted coin, passing through the testing device, is received in one of two coin pockets 73 in a disk 74. Secured to the disk 74 is a pinion 75 which meshes with a gear 76 secured to the drive shaft 38. Secured to, or integral with, the disk 74 is a cam and locking plate 771 which is provided with duplicate sets of control devices, this plate and associated parts turning one-half revolution on each operation of the machine. Pivoted on the machine base is a lock lever 76a controlled by a spring 79 and having a nose 77 which normally stands in the path of, but removed a short distance from, a shoulder 78 on the lock disk 771. Adjacent to the coin receiving slot 73 a lifting flange 80 projects laterally from the lock lever 76. If a coin is in the slot, on the initial movement of the mechanism the edge of the coin engages the lifting flange 80 and lifts the nose 77 out of the path of locking shoulder 78, the gap between the locking shoulder 78 and the nose 77 permitting the movement of the disk and the control plate necessary for such unlocking. This initial movement also serves to actuate

the lever 72 and lift the hinged side of the coin chute to release any coins or other devices which may be lodged therein, such coins thereupon falling into the open receptacle for rejected coins. The movement of the lever 72 is effected by the engagement of the tail 721 of this lever by a cam shoulder 81 on the control plate 771, said cam shoulder forming one side of a recess occupied by the tail of lever 72 when the coin mechanism is at rest. Lever 72, which is controlled by a spring 82, likewise serves to locate the coin mechanism in normal position and to return it to normal position after the initial displacement just described, if there is no coin in the pocket 73. The tail 721 also acts as a full stroke pawl, engaging with teeth 83 on control plate 771 to prevent retrograde movement of the parts during the delivery operation.

The casting 51 which supports the rectangular hopper 50 has inwardly sloping sides forming a frusto-conical base for the hopper and directing the commodity in the hopper to the delivery mechanism, which may be constructed as follows: A disk or drum 84 is secured to a vertical spindle 85 carrying a bevel gear 86[a] which meshes with a bevel pinion 87[a] on the drive shaft 38. An agitator comprising a transversely projecting rod 851 is secured to the upwardly projecting end of shaft 85. The drum comprises a plurality of sector shaped recesses or pockets 86, in the present instance six, and the gear ratios are such that the drum is moved through an arc corresponding to the spacing of the pockets at each operation of the machine. The recesses are open at both top and bottom.

The drum is contained in a cylindrical housing 87 having the flat bottom 871 upon which the commodity contained in recesses 86 is supported. At one side the bottom 871 is depressed to form the delivery spout 88. A sector shaped plate 511, preferably integral with the hopper base 51, extends over the delivery drum 84, closing the top of the pocket which is in alignment with the delivery spout. As the drum rotates the pockets are filled with the commodity in the hopper and each pocket in turn passes under the plate 511 and into alignment with the delivery spout.

The machine being adapted to vend articles such as peanuts and small pieces of candy, the articles near the top may project slightly above the rim of the recessed wall. Articles so positioned are liable to mutilation as they pass under the edge of cut off plate 511, and to avoid such mutilation a yielding wiper is provided, which may be constructed as follows: Plate 511 is spaced a short distance above the top of the drum 84. Secured to the edge of this plate which is approached by the filled recesses and projecting downwardly therefrom to the top of the drum is a yielding wiper piece or finger 881, which may be of leather, rubber, fabric, fabric reinforced rubber or other desired material. This wiper piece is held in place as well as reinforced by the angle plate which is secured to plate 511 by suitable means, such as screws 891, passing thru the wiper and into the plate. An effective measuring cut off which does not mutilate the articles at the top is thus insured. Referring particularly to Fig. 6, it will be seen that the lower end of the hopper bottom 51 projects down well within an upstanding peripheral flange 843 on the drum 84. This construction is very beneficial. Not only are the articles in the hopper accurately directed into the measuring pockets, but the passage of small particles or granular material such as salt over the edge of the delivery drum, and into the space between the drum and the housing cylinder 87 is prevented.

Means are provided for varying the capacity of the measuring recesses 86, to adapt them to commodities of different value, or to provide against loss by fluctuations in the price of one commodity. For this purpose a movable spider 90 (Fig. 8) is placed upon the drum 84. The radial arms of the spider overlie the upper surfaces between recesses 86, and each arm is provided with a depending vertical plate 91 which extends into and forms one side of one of the recesses. The spider encircles the hub 841 which secures drum 84 to shaft 85, and is adjustably held in place by suitable means, such as a set screw 92 passing thru slot 93 and threaded into drum 84. By loosening the set screw and shifting the spider the capacity of the recesses is varied. Movement of the goods being delivered out of the recesses 86 and into the delivery spout 88 is facilitated by the spring finger 881, which is secured beneath plate 511 and adapted to project into the recesses. Spout 88 communicates with a receptacle 95 on the outside of the front wall of the casing, from which the commodity delivered can be removed. This receptacle comprises the hinged bottom 96 having the projecting ends 97 to facilitate manipulation. The bottom is normally held shut by a spring 98, tensioned between an arm projecting rearwardly from the bottom, and a stud 100 on the front wall of the casing. Suitable decorative devices such as mirror 101 may be applied to the outside of the case.

The operation of the device may be summarized as follows:

A quantity of the commodity which it is desired to sell through the machine is placed in the bin or hopper 50, the machine being removed from the back 20 for this purpose. The hopper being thus charged, the door 54 is closed and the machine is secured to the supporting back plate 20 by inserting the downwardly extending flange 26 on the top of the casing behind offset 25 at the top of the back. The weight of the machine then

rests upon ledge 21. The machine is then secured in place by manipulating lock 24 to thrust the bolt 23 thereof into the aperture in the tongue 22.

If an attempt is made to operate the machine by manipulating the fingerpiece 31 without first inserting an acceptable coin, the gear 76 and meshing pinion 75 will rotate until the locking shoulder 78 engages with the end 77 of the locking lever. Further movement of any part of the mechanism being thus blocked, continued pressure on the fingerpiece 31 results in slipping of the flange 42 over the plate 40, no excessive strain being placed on any part of the mechanism. The initial movement however rocks lever 72 to open the coin tester.

Inserted coins must first be accepted by the coin testing device. Coins which are not accepted drop into the open receptacle 102 from which they may be recovered. The accepted coin passing thru the coin testing device comes to rest in the pocket 73 of the coin mechanism. With the coin so positioned, if the fingerpiece 31 is operated, gear 75 and with it a coin disk 74 are rotated as before, but the edge of the coin in pocket 73 engages the ledge 80 on the lock lever 76 and lifts the nose 77 of this lever out of the path of movement of shoulder 78.

In the further movement of the coin disk the tail 721 of lever 72 engages the teeth 83 and prevents such retrograde movement of the delivery mechanism as would permit repeated deliveries without the insertion of a separate coin for each delivery. The coin disk 74 rotates a half revolution upon each operation, the tail 721 at the end of the operation engaging the opposite notch between shoulders 78 and 81 and locating the disk in proper position to receive a coin for a subsequent operation.

The rotation of the shaft 38 permitted when the mechanism is released by proper coin as just described, through the beveled gears 87^a and 86^a rotates shaft 85 with the agitator 851 and turns the delivery drum 84 through an arc equal to the spacing between the adjacent delivery pockets 86. In this operation one of the delivery pockets passes under the wiper 881 which brushes off any articles projecting from the top of the pocket without injury thereto. Another of the delivery pockets which has previously passed the wiper comes into alignment with the delivery spout 88, the articles contained therein are displaced into the delivery spout by the pressure of the wiper or finger 881, and pass through the delivery spout into the receptacle 95 from which they may be removed by opening the cover plate 96 against the tension of its spring 98.

The invention is not to be considered as limited to the specific embodiment which has been illustrated and described, but is to be understood as extending to all equivalent devices falling within the broad interpretation of the appended claims.

What is claimed is:

1. In a vending machine for a bulk commodity, a commodity receptacle, a measuring device adapted to communicate with said receptacle and to withdraw a unit quantity of the commodity therefrom, means positively separating the measuring device from the receptacle, and means for separating the content of the measuring device from the contents of the receptacle comprising a flexible wiper adapted to traverse the surface of the content of the measuring device during the separating operation, the contact edge of said wiper being at all times free from contact with moving parts of the mechanism.

2. In a machine for vending unit quantities of a bulk commodity a receptacle for the commodity to be vended comprising an open bottom, a delivery device below said receptacle comprising a measuring pocket adapted to receive a unit quantity of the commodity in the receptacle, means for moving said pocket out of communication with said receptacle, and means for leveling off the content of the receptacle comprising a flexible wiper which is passed by the pocket, as the pocket passes out of communication with the receptacle, the contact edge of said wiper being at all times free from contact with moving parts of the mechanism.

3. In a machine for vending a bulk commodity, a commodity receptacle comprising a hopper bottom, a delivery drum closing said bottom and comprising a plurality of measuring pockets, a shield plate projecting inwardly from a part of the hopper bottom adapted to close the pockets in certain positions from the receptacle, a delivery spout communicating with a pocket beneath said shield plate, means for rotating the delivery drum to bring each pocket in turn beneath said shield plate and over said delivery spout, and means for leveling the commodity in each pocket as it approaches the delivery spout comprising a flexible wiper associated with the shield plate and passed by the pockets, the contact edge of said wiper being at all times free from contact with moving parts of the mechanism.

4. In a machine for vending a bulk commodity, a unit measuring device comprising a rotating member provided with sector shaped pockets, means for varying the capacity of said pockets comprising a plate provided with sector shaped apertures corresponding to said pockets, and depending radially extending flanges adjacent said apertures adapted to enter said pockets, and means for varying the position of said plate and said flanges with respect to said pockets.

5. A vending machine for bulk commodities comprising a commodity receptacle having a hopper bottom, a movable delivery device below and communicating with said hopper bot-

tom, an upstanding flange on said delivery device adapted to embrace a part of said hopper bottom, whereby foreign matter is excluded from the mechanism.

6. In a dispensing device a rotatable member having a plurality of sector shaped measuring pockets with radial and arcuate walls, and means for adjusting the capacity of said plurality of pockets simultaneously by changing the arcuate dimensions while maintaining the radial dimensions at their original full value.

7. In a dispensing mechanism a rotatable device provided with a plurality of measuring pockets of equal capacity, said device comprising a unitary member all of whose parts have a constant relationship, said member being settable for simultaneously changing the capacity of each of the pockets with a single adjustment while maintaining such constant relationship of its parts.

8. In a dispensing mechanism the combination of a rotatable device comprising two relatively adjustable members providing sector shaped measuring pockets having radial and arcuate walls, and means for securing said members together in a plurality of varying positions, the inter-relationship of the parts constituting each member being unvarying for all of said positions.

9. In a dispensing device, a rotatable member having a plurality of pockets disposed circumferentially about the axis of rotation, a second member rotatable with said first-named member and about the same axis and also adjustable angularly about said axis with respect to said first-named member, and a plurality of elements associated with said second-named member extending into the pockets of said first-named member whereby the angular adjustment of said second-named member simultaneously changes the capacity of all of said pockets, said plurality of elements having unvarying relationship.

10. In a dispensing device for a bulk commodity comprising frangible units, a commodity receptacle having a hopper bottom, a delivery drum closing said bottom and having a measuring pocket therein, a shield plate projecting inwardly from a part of the hopper bottom adapted to close the pocket in certain positions from the receptacle, said shield plate being positioned above the drum sufficiently to provide a clearance between said plate and said drum to prevent shearing of the frangible units in passing under said plate, a delivery spout communicating with the pocket when positioned under said shield plate, means for rotating the delivery drum to bring the pocket beneath said shield plate and over said delivery spout, and means for levelling the commodity in each pocket as it approaches the delivery spout comprising a flexible wiper associated with the shield plate and passed by the pocket, the contact edge of said wiper being at all times free from contact with moving parts of the mechanism.

11. A dispensing device comprising a commodity receptacle having a hopper bottom of substantially circular cross section, a substantially circular movable delivery device positioned below said hopper bottom and providing a closure therefor, and an upstanding flange on said delivery device adapted to embrace a part of said hopper bottom whereby foreign material is excluded from the mechanism.

12. In a dispensing device for a bulk commodity comprising frangible units, a commodity receptacle having a hopper bottom of substantially circular cross section, a substantially circular movable delivery device positioned below said hopper bottom and providing a closure therefor, said delivery device having a measuring pocket therein, a shield plate projecting inwardly from a part of the hopper bottom adapted to close the pocket in certain positions from the receptacle, said shield plate being positioned above the drum sufficiently to provide a clearance between said plate and said drum to prevent shearing of the frangible units in passing under said plate, and an upstanding flange on said delivery device surrounding the end of said hopper whereby foreign material is excluded from the mechanism.

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