J. W. HUGHES.

AUTOMATIC VENDING MACHINE.

APPLICATION FILED MAR. 2, 1915.

1,173,720.

Patented Feb. 29, 1916.

3 SHEETS—SHEET 1.

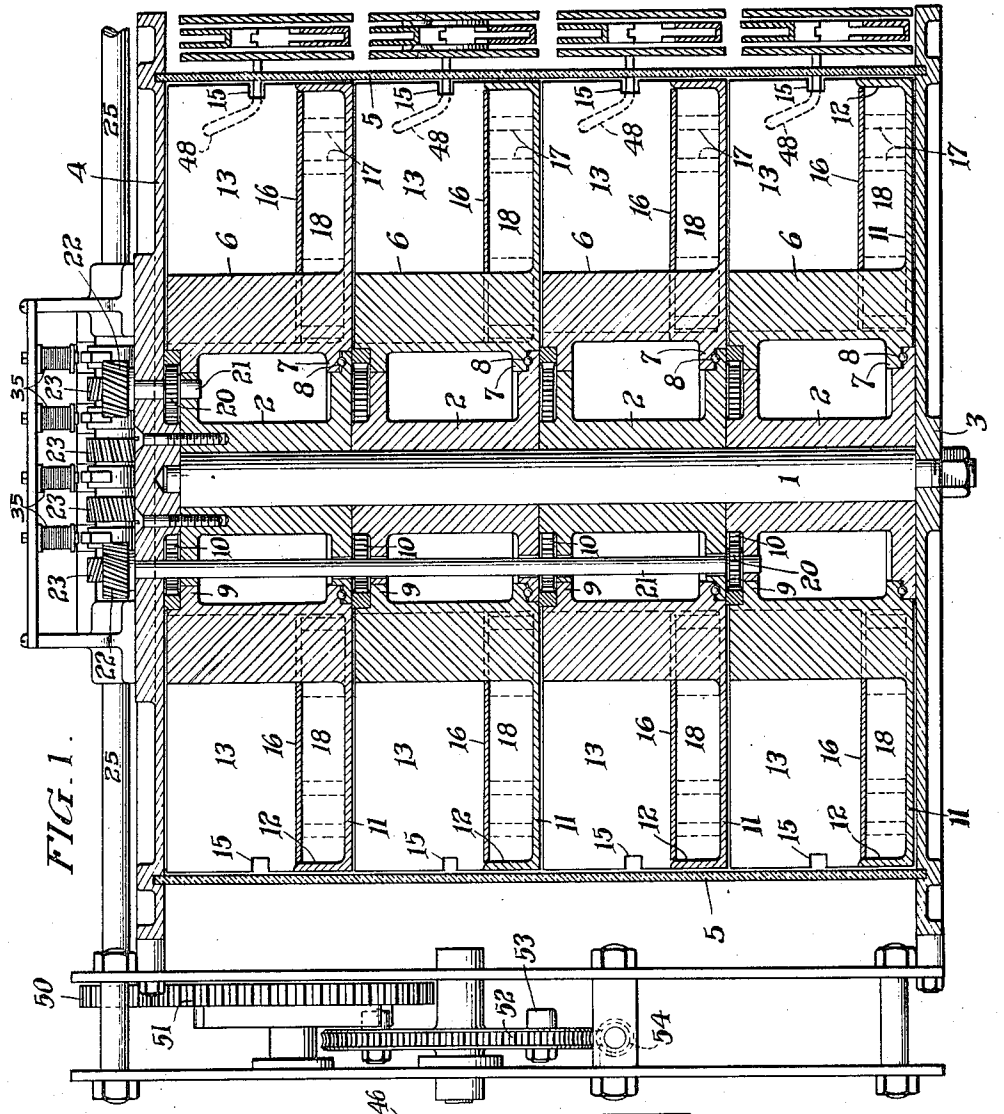


FIG. 1.

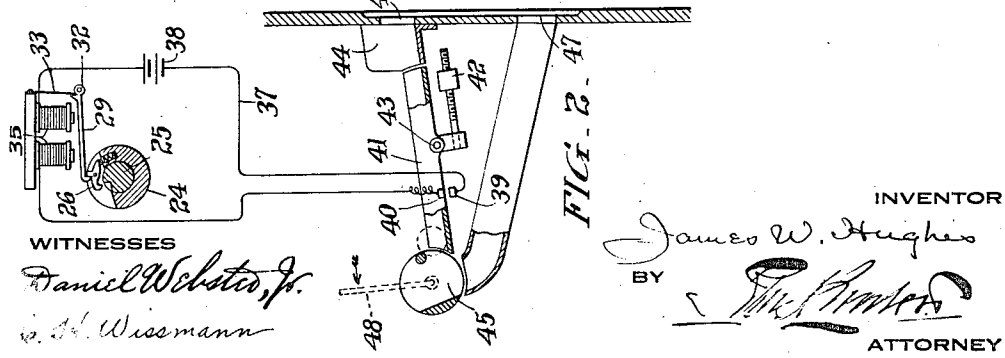


FIG. 2.

WITNESSES

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3 SHEETS—SHEET 2.

FIG. 3.

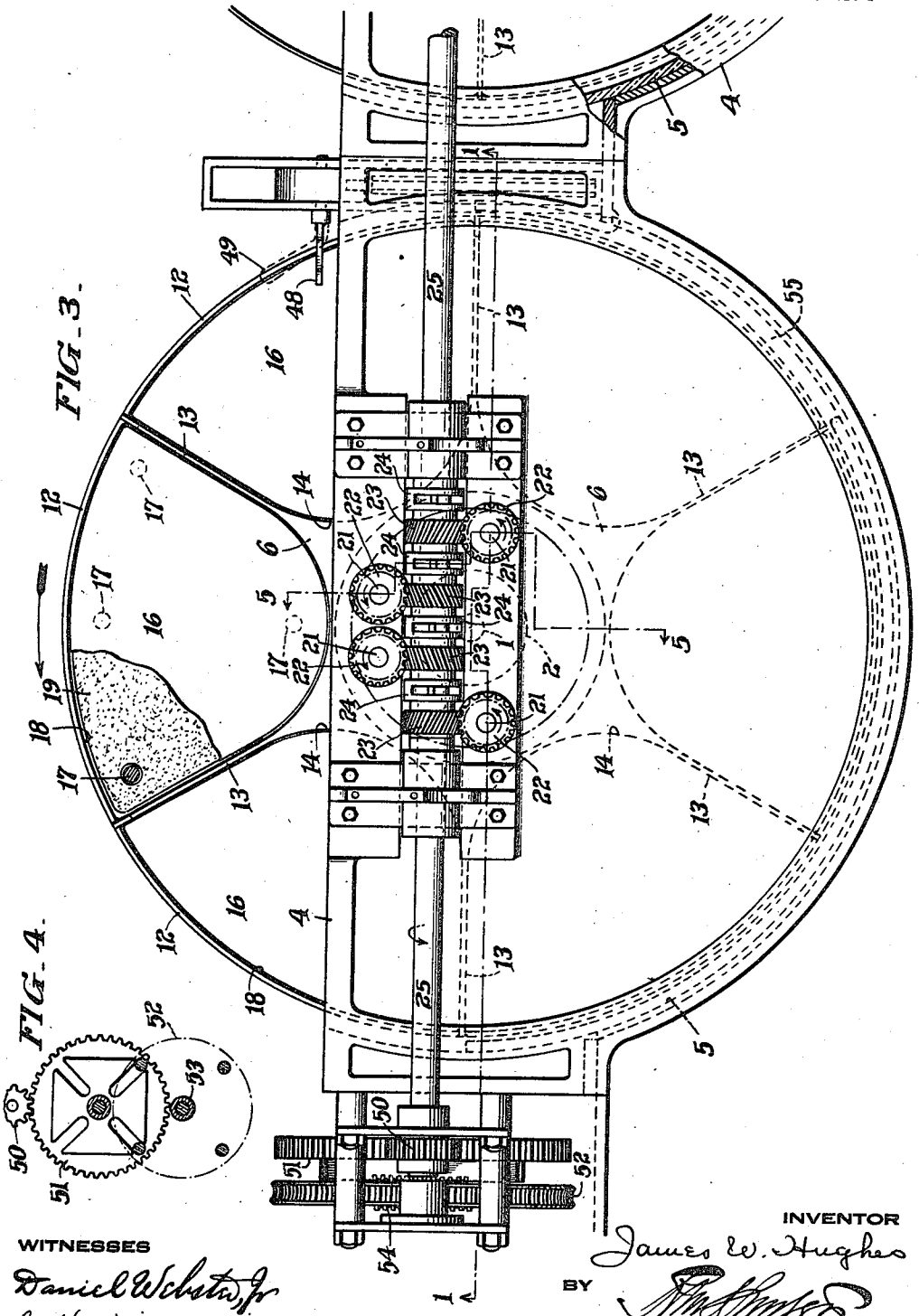


FIG. 4.

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3 SHEETS—SHEET 3.

FIG. 6.

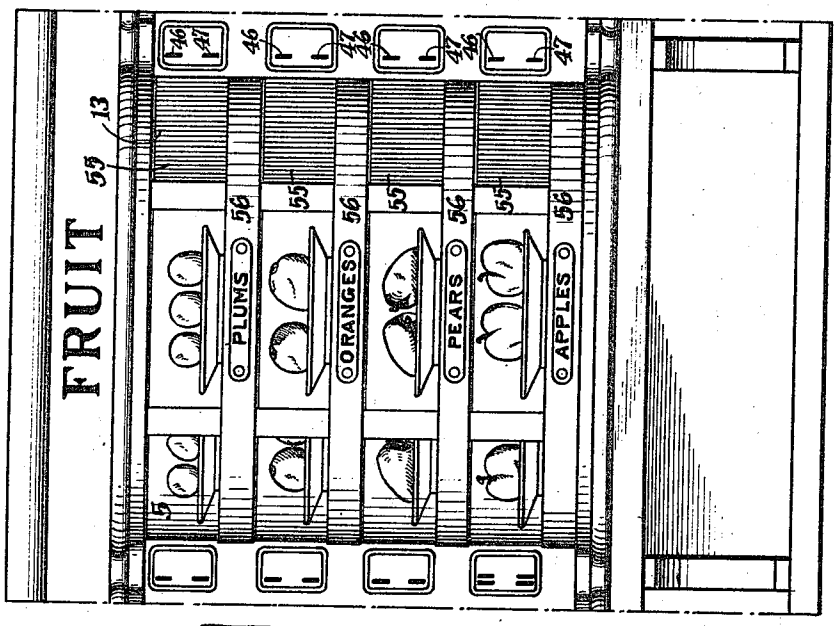
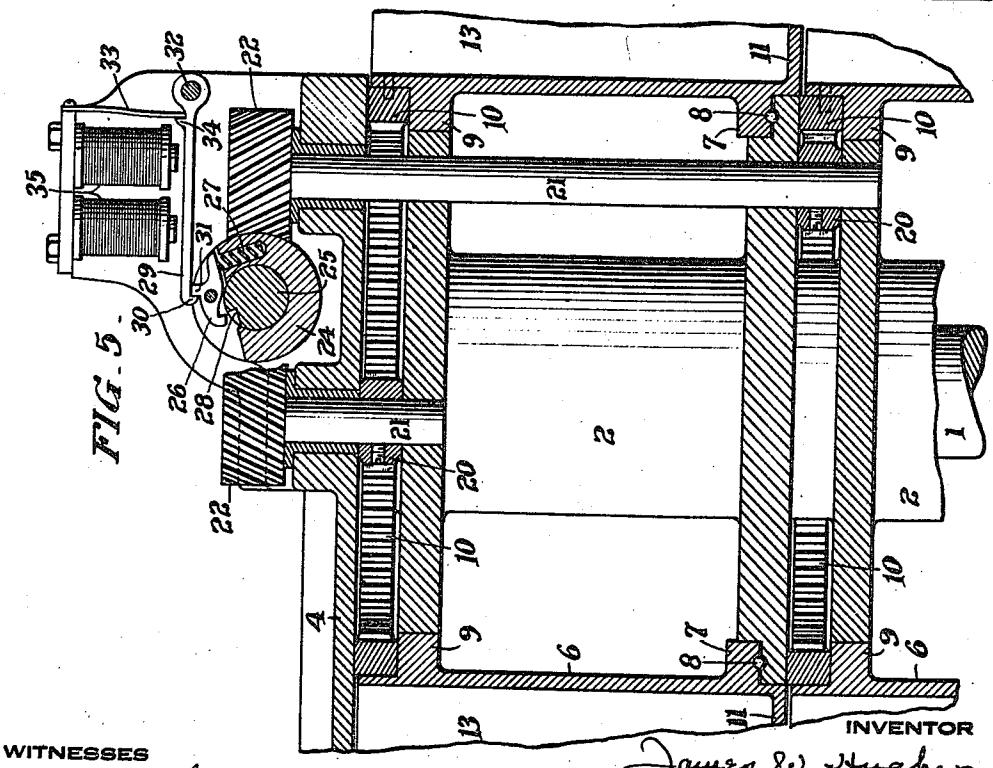


FIG. 5.



WITNESSES

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AUTOMATIC VENDING-MACHINE.

1,173,720. Specification of Letters Patent. Patented Feb. 29, 1916.

Application filed March 2, 1915. Serial No. 11,465.

To all whom it may concern:

Be it known that I, JAMES W. HUGHES, a citizen of the United States, and resident of Haddon Heights, county of Camden, and State of New Jersey, have invented an Improvement in Automatic Vending-Machines, of which the following is a specification.

This invention relates to an automatic vending machine and consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings which form a part thereof.

The object of the invention is to provide a mechanism for automatically dispensing goods of the same or various characters, wherein the mechanism is adapted to selectively operate to dispense a predetermined article or articles contained therein.

The invention has as a further object to provide a mechanism for automatically actuating a predetermined part of the machine in such a manner that the goods to be delivered by that part are brought from an inaccessible position to an accessible one, in which latter position the machine automatically comes to rest.

The invention has as a further object to provide a plurality of containers for articles to be dispensed, each of which is provided with a separate and independent control and regulating mechanism and also provided with means for normally locking such control mechanism until a predetermined governing device has been employed to release the locking mechanism for the selected container.

The invention has for a further object to provide a common actuating means for a plurality of separate or independent containers, which means is normally disconnected from the control mechanism for the respective containers, but so arranged that said common means is adapted to actuate any one, all, or any number of the containers independently or simultaneously according to requirements.

With the above and other objects in view, the nature of which will be more fully understood from the description hereinafter, the invention consists in the novel construction of automatic vending machine as hereinafter more fully described and defined in the claims.

Referring to the drawings: Figure 1 represents a sectional elevation of an automatic vending mechanism embodying my invention, the section being taken on line 1—1 of Fig. 3; Fig. 2 represents a section of the coin actuated mechanism and a diagrammatic view of the electrical circuit control; Fig. 3 represents a plan of the machine, certain portions being broken away for clearness of illustration; Fig. 4 represents a detail of the intermittent driving gear; Fig. 5 represents a section on line 5—5 of Fig. 3; Fig. 6 represents an elevation of the machine.

1 designates a rod or column of suitable dimensions for supporting a plurality of hub sections 2 held in fixed relation between the heads 3 and 4. The heads 3 and 4 are suitably rabbeted adjacent their peripheries to receive a casing 5, preferably of glass or like transparent material formed in sections and substantially cylindrical in assembled form so that the general appearance or configuration of the heads and casing is that of a drum having a sectional hub. The sectional construction of the hub provides a means for enlarging or decreasing the length of the drum and it may therefore be of any desired size in order to form a plurality of transversely arranged compartments. In view of the fact that the mechanism forming the compartments is of similar construction in each case the description will be limited to the details of one of the devices, and the same numerals of reference will be applied to all.

6 designates an annular hub adapted to fit over the hub section 2 and provided with annular flanges 7 which have ball bearing or like engagement, as shown at 8, with flanges upon the hub member 2, thereby providing a means for rotating the movable hub member about the inner or fixed hub member. In the construction here illustrated the flange 7 is adjacent the bottom of the hub member 6, while adjacent the upper portion of the said hub there is a somewhat similar flange 9 removed from the upper surface of the hub 6 a sufficient distance to receive an internal rack gear 10 which is fixed to the hub 6 and serves to transmit motion thereto as will be later explained.

11 designates a laterally disposed shelf or flange preferably formed integral with the hub 6 and extending laterally from said hub in a substantially horizontal circumferen-

tial plane and terminating in the present instance in a vertically disposed circumferential wall 12 which is in close proximity to the casing wall 5, though of course providing a sufficient clearance to permit free relative movement between the parts. The hub 6 with the shelf 11 and the adjuncts movable therewith I have preferred to designate generally as a turret since this entire structure is adapted to rotate about the hub part 2.

13 designates a plurality of radially arranged vertical wings or partitions formed, in the present instance, as an integral part of the hub 6 and extending transversely and radially of the shelf portion 11 and serving to divide the shelf portion into a plurality of separate and distinct compartments. In connection with these wings 13 it will be noted that the hub portion 6 between adjacent wings is of curved contour as shown at 14, whereby each compartment is of maximum size and particularly adapted to accommodate the usual round plates or dishes. Each of the wings 13 is preferably provided with a notch or recess 15 in its outer edge, or edge opposed to the casing 5, for the purpose of permitting the said wing or partition to pass free of certain adjuncts of the control mechanism which will be later explained.

While I have explained the turret structure as provided with a circumferential wall 12, it will be understood that I do not desire to be limited to this exact construction, as obviously the turret structure may be varied in many particulars to produce the desired result, though I have preferred, in the present instance, to utilize this wall as a means for coöperating with a closure or supporting surface 16 which consists of a shelf having depending legs 17 for holding it in proper position and substantially at the same height as the top edge of the wall 12 so that articles thereon may be readily removed. The structure just described therefore forms a receptacle 18 at the bottom of each of the turret compartments, and which may serve as a container for a cooling medium, such as ice or the like, or to contain a heating medium such as the stone 19 shown in Fig. 3, or like heat retaining means.

The turret is adapted to be rotated by a pinion 20 meshing with the gear 10 thereon, said pinion keyed to a shaft 21 which projects through one of the heads of the casing. The upper end of the shaft 21 is provided with a suitable gear 22 normally in mesh with a similar gear 23 fixed to and carried by a sleeve section 24. These gears are shown as spiral gears as I prefer such gears because they are noiseless, but any other form of gears may be employed. It will be understood that there are as many sleeve sections as there are turrets and all are loosely mounted upon the main driving shaft 25 and normally disconnected therefrom. The sleeve section 24 carries a pivoted pawl 26 normally acted upon by a spring 27 which tends to throw the pawl, when released, into engagement with the shaft 25. This shaft 25 is suitably notched as shown at 28 to receive the end of the pawl and cause the latter with its sleeve to rotate with the said shaft at such time as the pawl is released and free to move under the action of the spring 27. The pawl is normally held out of engagement with the shaft by means of the armature lever 29 which has a hook end 30 adapted to engage a lug 31 upon the said pawl, as clearly shown in Fig. 5. The armature lever 29 is pivoted at 32 to a suitable fixed part of the machine frame, and is normally held in engagement with the pawl by means of a flat spring 33 acting against a suitable lug 34 upon the said armature. 35 designates a pair of magnets suitably mounted adjacent the armature 29 and so arranged that when energized the said armature 29 is within the magnetic field created, and consequently is drawn toward the magnet to release the pawl 26.

The energizing of the magnets 35 is accomplished by a circuit 37 having a battery 38 therein and having the respective branches of the circuit terminating in a fixed contact 39 and a movable contact 40, both as will be understood being in close proximity to each other and so arranged that a minimum movement of the contact 40 will bring the two contacts together and close the circuit to energize the magnets 35 in the required manner. In the present instance the contact 40 is secured in a suitable position upon a pivoted coin runway 41 which is normally maintained in position to break the contact by means of the adjustable counterweight 42 at one side of the fulcrum 43. This runway 41 forms a bridge or connection between the coin receiving chute 44 and the coin ejecting mechanism 45. It will be noted that the runway 41 is preferably so delicately balanced that a coin of the proper denomination and weight to operate the machine will cause the said runway to tilt and thus close the circuit, and thereby operate the particular turret desired, while a bogus coin of less weight will not operate the parts.

I make no claim to the specific form of the circuit controlling means here shown in this application: and I do not restrict myself to the particular construction illustrated by which the electromagnet controls the clutch mechanism which puts the turrets in operation, as any mechanism for controlling the clutches or pawls 26 may be employed so long as it is capable of being selectively put into operation under the control of the person.

Referring to Fig. 6 it will be seen that each of the horizontally arranged turrets

has associated with it a coin receiving aperture 46 so that selection may be made as to which turret is to be operated to dispense its contents. The coin slot 47 forms a means for discharging a coin in case a coin should inadvertently be inserted to operate an empty turret or in case a bogus coin is inserted. While the coin ejecting mechanism forms no part of the present application, I have shown for convenience of illustration an arm 48 attached to the coin discharge device in such a manner as to oscillate the latter, the said arm extending through a suitable slot 49 of the main casing and into the path of the partition wings 13 so that as the latter are swung from one position to another the said arm is engaged and moved outwardly to properly trip or operate the coin discharging device.

The main driving shaft 25 is preferably operated in an intermittent manner by means of a pinion 50 meshing with an intermittent gear 51 of the star-wheel type, this latter being driven in the customary manner by the continuously rotating worm wheel 52 which carries the laterally projecting pin 53 for engaging the star wheel gear, the relation being such that the shaft 25 receives one revolution at each intermittent operation of the gear 51. The worm wheel 52 is driven from the worm shaft 54 which receives its power from any suitable source. This form of driving gearing imparts a sinusoidal movement, which is especially desirable as it starts and stops the main shaft 25 with a relatively slow motion and hence is quiet in action and has ample power to overcome the inertia of the static machinery without necessity for an abnormal source of power.

Referring to Figs. 3 and 6 of the drawing, it will be noted that one portion of the casing corresponding in length to the circumferential arc subtended by the wings 13 is cut away as shown at 55 to form an opening for access to the respective turrets, so that the contents of the compartment positioned in alined relation with the opening may be removed. 56 designates suitable bands, preferably of a decorative nature, secured to the casing and extending circumferentially thereof across the front to cover respectively the opposed edges of adjacent turrets so that the mechanism is substantially concealed and only the contents of the respective compartments of the several turrets are visible through the glass casing 5.

In describing the operation of the machine it will be assumed that the driving gear mechanism is in operation and the main driving shaft 25 is being intermittently rotated with regularity and that the other parts controlling the operation of the turrets are in normal inoperative condition, so that while all of the turrets and their operating adjuncts are disconnected from the driving shaft and are in stationary condition, the driving shaft is in normal operation. With reference to the ratio of movement between the turret structure and the driving shaft 25, it will be noted that this is so designed as to transmit an annular velocity to the turret which, in the present instance, is substantially one-sixth that of the driving shaft 25. In other words, one rotation of the driving shaft 25 will cause the turret or turrets in operation to move a distance corresponding in length to the arc between adjacent division wings 13, hence a turret when brought into operation will move its emptied compartment to the rear of the machine where it may be refilled and simultaneously move its next (filled) compartment into position adjacent the opening 55, so that its contents in turn may be removed. Should a user of the machine desire to secure a portion of apples, for example, a coin is inserted in the slot 46 (Fig. 1) provided adjacent the turret, indicating the apple contents, with the result that this coin traverses the runway 41 and overbalances it so that the circuit controlling the magnets 35 for the proper turret (the lowermost one in this instance), whereupon the armature 29 is shifted to release the pawl 26. The shaft 25 therefore engages the pawl as soon as the slot 28 comes into position and consequently the sleeve 24 for one revolution becomes a part of the shaft 25. The rotation of the sleeve transmits movement through the gears 22 and 23 to the shaft 21 and thence through the gear to the internal rack gear 10, which of course operates the turret parts. The result is to swing the turret containing the apples to a position where one of the filled compartments comes into alined relation with the opening 55, and the contents may thereupon be removed.

During the shifting of the turret one of the compartment wings 13 engages the trip arm 48 in order to eject the coin so that by the time the shaft 25 has completed its revolution the contact of the electrical circuit has been broken again and the armature again returns to a position where it locks the pawl out of engagement with the shaft notch. It will be apparent, from Fig. 5, that when the armature 29 is released by the deënergizing of the magnets, its hook portion 30 will drop into the path of movement of the lug 31 and consequently withdraw the pawl automatically from engagement with the shaft 25 and retain it until the magnets are energized again. While I have in the present embodiment of the invention shown four superposed turrets it will be understood that I am not to be limited to this specific number, nor do I wish to be limited to the operation of one set of turrets by the shaft 25 since obviously the

same shaft may control a number of machines placed adjacent each other as indicated in Fig. 6. Thus, for example, a row of machines may all be operated by the same driving shaft, each machine of course being provided with control mechanism for selectively operating any turret or combination of turrets in the same machine.

While I have shown my improvements in that type of apparatus generally known as an "automat" lunch restaurant, my invention is not so restricted, as it may be employed in stores and other places for vending articles, to relieve the necessity of a large number of salesmen in cases where the articles to be vended are regular commodities such as sugar, cereals, etc.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated as desirable, and while I have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that I do not restrict myself to the details, as the same are susceptible of modification in various particulars without departing from the spirit or scope of the invention.

Having now described my invention, what I claim as new and desire to protect by Letters Patent is:—

1. In a device of the character stated, a casing provided with a transparent portion having an opening therein, a plurality of turrets mounted within said casing and independently rotated, each of said turrets being subdivided into compartments adapted to be brought respectively into juxtaposed relation with said casing opening, a main driving shaft, means to rotate said shaft, independent actuating mechanism for each turret, and means normally inoperative for connecting at will any of said actuating means to said driving shaft whereby a desired turret or turrets may be brought into operation and moved a predetermined distance.

2. In a device of the character stated, a plurality of casings arranged adjacent each other and each having a transparent portion provided with an opening, a plurality of turrets rotatably mounted in each casing, the respective turrets being each subdivided into a plurality of compartments adapted to be brought respectively into juxtaposed relation with said casing opening, a main driving shaft common to all of said casings, means to operate said shaft, independent actuating mechanism for each turret, and means normally inoperative for connecting any of said actuating means to said driving shaft whereby a desired turret or turrets may be brought into operation and moved a predetermined distance at will.

3. In a device of the character stated, a casing provided with a transparent portion having an opening therein, a plurality of turrets mounted within said casing and independently rotatable, each of said turrets being subdivided into compartments adapted to be brought respectively into juxtaposed relation with said casing opening, a main driving shaft, means to intermittently operate said shaft, independent actuating mechanism for each turret, separate means for connecting each actuating mechanism to said driving shaft, means for normally maintaining said connecting means in disconnected position, and a control device for releasing the respective maintaining means whereby any actuating means receives motion from said driving shaft to move its turret.

4. In a device of the character stated, a casing provided with a transparent portion having an opening therein, a plurality of turrets mounted within said casing and independently rotatable, each of said turrets being subdivided into compartments adapted to be brought respectively into juxtaposed relation with said casing opening, a main driving shaft, means to intermittently operate said shaft to make one revolution, independent actuating mechanism for each turret, and a control mechanism operable at will for forming a connection between said driving shaft and any actuating mechanism whereby a desired turret is moved an angular distance substantially corresponding to the width of said opening in the casing.

5. In a device of the character stated, a casing provided with a transparent portion having an opening therein, a plurality of turrets mounted within said casing and independently rotatable, each of said turrets being subdivided into compartments adapted to be brought respectively into juxtaposed relation with said casing opening, a main driving shaft, means to intermittently operate said shaft to make one revolution, independent actuating mechanism for each turret, a control mechanism operable at will for forming a connection between said driving shaft and any actuating mechanism whereby a desired turret is moved an angular distance substantially corresponding to the width of said opening in the casing, and means to automatically return said control mechanism to normal inoperative position.

6. In a device of the character stated, a plurality of casings arranged adjacent each other and each having a transparent portion provided with an opening, a plurality of turrets rotatably mounted in each casing, each turret being subdivided into a plurality of compartments adapted to be brought respectively into juxtaposed relation with

the opening in the corresponding casing, a main driving shaft common to all of said casings, means to intermittently operate said shaft to make one revolution, independent actuating mechanism for each turret, a control mechanism operable at will for forming a connection between said driving shaft and any actuating mechanism whereby a desired turret is moved an angular distance substantially corresponding to the width of said opening.

7. In a device of the character stated, a plurality of casings arranged adjacent each other and each having a transpartent portion provided with an opening, a plurality of turrets rotatably mounted in each casing, each turret being subdivided into a plurality of compartments adapted to be brought respectively into juxtaposed relation with the opening in the corresponding casing, a main driving shaft common to all of said casings, means to intermittently operate said shaft to make one revolution, independent actuating mechanism for each turret, a control mechanism operable at will for forming a connection between said driving shaft and any or all of said actuating mechanisms whereby the desired turret or turrets may be brought into operation and moved an angular distance substantially corresponding to the width of said opening.

8. In a device of the character stated, a casing having openings in the front wall thereof, a plurality of turrets mounted within said casing and independently rotatable. each of said turrets being subdivided into compartments adapted to be brought respectively into juxtaposed relation with said casing openings, a supporting shelf for each compartment spaced from the bottom of said compartment to form a receptacle, a heating element located in certain of said receptacles, a man driving shaft, means to rotate said shaft, independent actuating mechanism for each turret, and a control mechanism for connecting any of said actuating means to said driving shaft at will whereby a predetermined turret may be moved to bring a compartment into operative relation with respect to said opening.

9. In a device of the character stated, a casing having an opening in the front wall thereof, a central circular frame having an annular bearing provided with a flange, a turret arranged within the casing and journaled upon the central frame and having an inwardly directed flange supported upon the annular flange of the said central frame, said turret being subdivided into compartments adapted to be brought successively into juxtaposed relation with the said casing opening, a gear rigid with the turret and surrounding the axis of the central frame, a vertical shaft journaled in the central frame and having a pinion engaging the turret gear whereby the turret may be revolved, means to intermittently operate said shaft whereby the turret may be moved angular distances each substantially corresponding to the width of said opening in the casing, and a control mechanism operable at will for putting said shaft into and out of operation.

10. In a device of the character stated, a plurality of casings each formed with a substantially semi-circular glazed front portion and radially extending side portions having flat front parts, said side portions of adjacent casings being abutted in alinement, whereby the front of the casing is composed of a plurality of said curved or semi-circular glazed portions separated by vertical flat portions, and said curved or semi-circular portions of the casing each having an opening therein, combined with rotatable turrets arranged within the respective casings back of the curved or semi-circular glazed portions, and each turret divided into compartments adapted to be successively brought in alinement with the respective openings, and means for intermittently operating said turrets.

11. In a device of the character stated, a plurality of casings each formed with a substantially semi-circular glazed front portion and radially extending side portions having flat front parts, said side portions of adjacent casings being abutted in alinement, whereby the front of the casing is composed of a plurality of said curved or semi-circular glazed portions separated by vertical flat portions, and said curved or semi-circular portions of the casing each having an opening therein, combined with a plurality of rotatable turrets arranged one above the other within the respective casings back of the curved or semi-circular glazed portions, and each turret divided into compartments adapted to be successively brought in alinement with the respective openings, means for intermittently operating said turrets from a common source of power, means for each plurality of turrets of the respective casings for putting any turret into intermittent rotation, and selective means under manual control to determine which of the turrets shall be operated, said means extending to the front flat portions of the respective casings.

12. In a device of the character stated, a plurality of casings each formed with a substantially semi-circular glazed front portion and radially extending side portions having flat front parts, said side portions of adjacent casings being abutted in alinement, whereby the front of the casing is composed of a plurality of said curved or semi-circular glazed portions separated by vertical flat portions, and said curved or semi-circu-

lar portions of the casing each having an opening therein, combined with rotatable turrets arranged within the respective casings back of the curved or semi-circular glazed portions, and each turret divided into compartments adapted to be successively brought in alinement with the respective openings, means for intermittently operating said turrets from a common source of power, and means controllable at will of the person desiring the contents of a compartment of the turret for controlling the time of operation of any turret.

In testimony of which invention, I hereunto set my hand.

JAMES W. HUGHES.

Witnesses:
C. H. WISSMANN,
FLORENCE DEACON.