Jan. 4, 1938. F. SCHULTE 2,104,497

AUTOMATIC VENDING MACHINE

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Fig. 1.

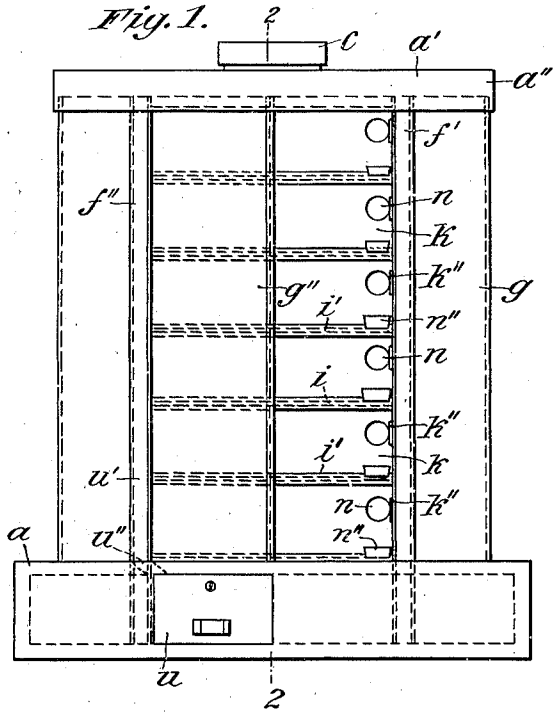



Fig. 4.

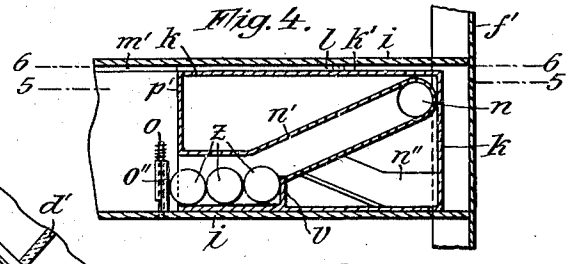



Fig. 5.

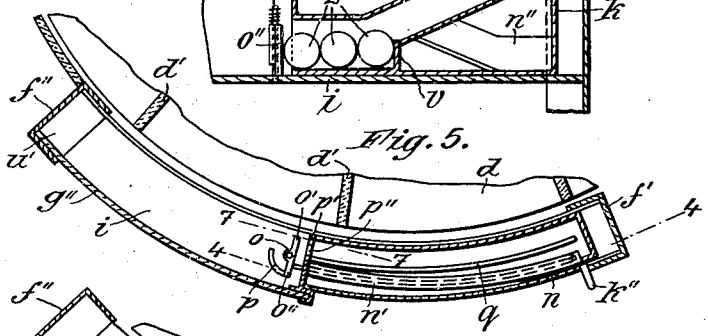
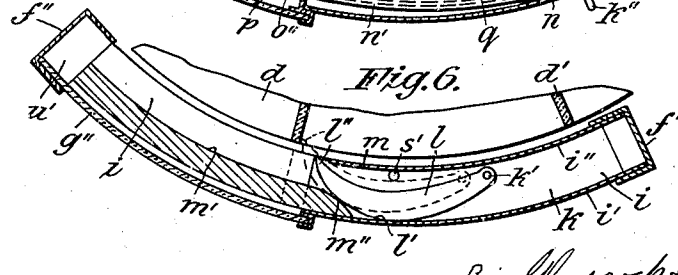



Fig. 6.




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AUTOMATIC VENDING MACHINE

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Fig. 2.

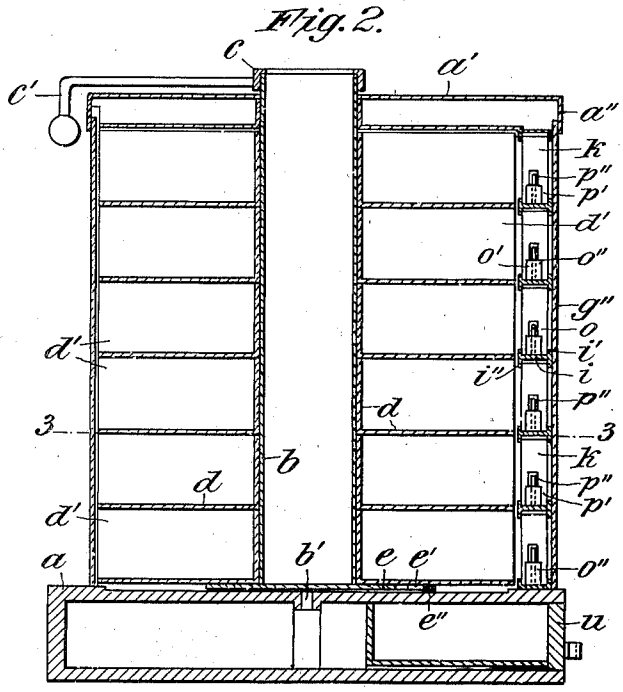



Fig. 3.

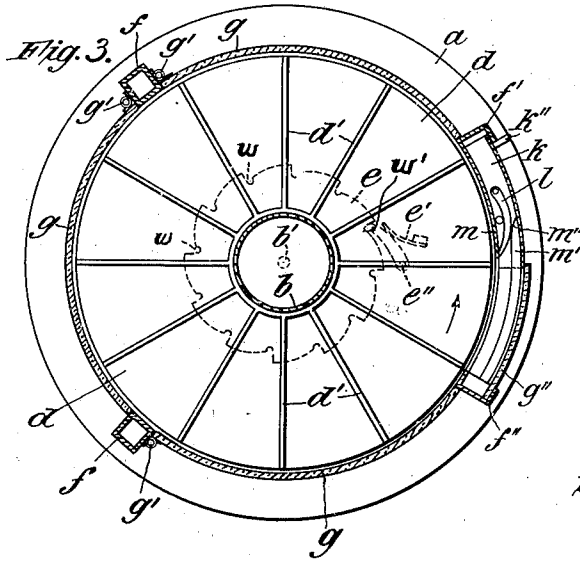



Fig. 7.

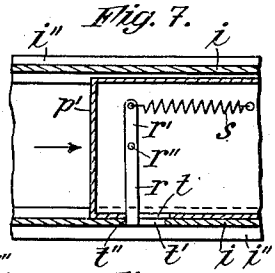
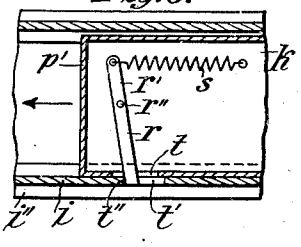



Fig. 8.




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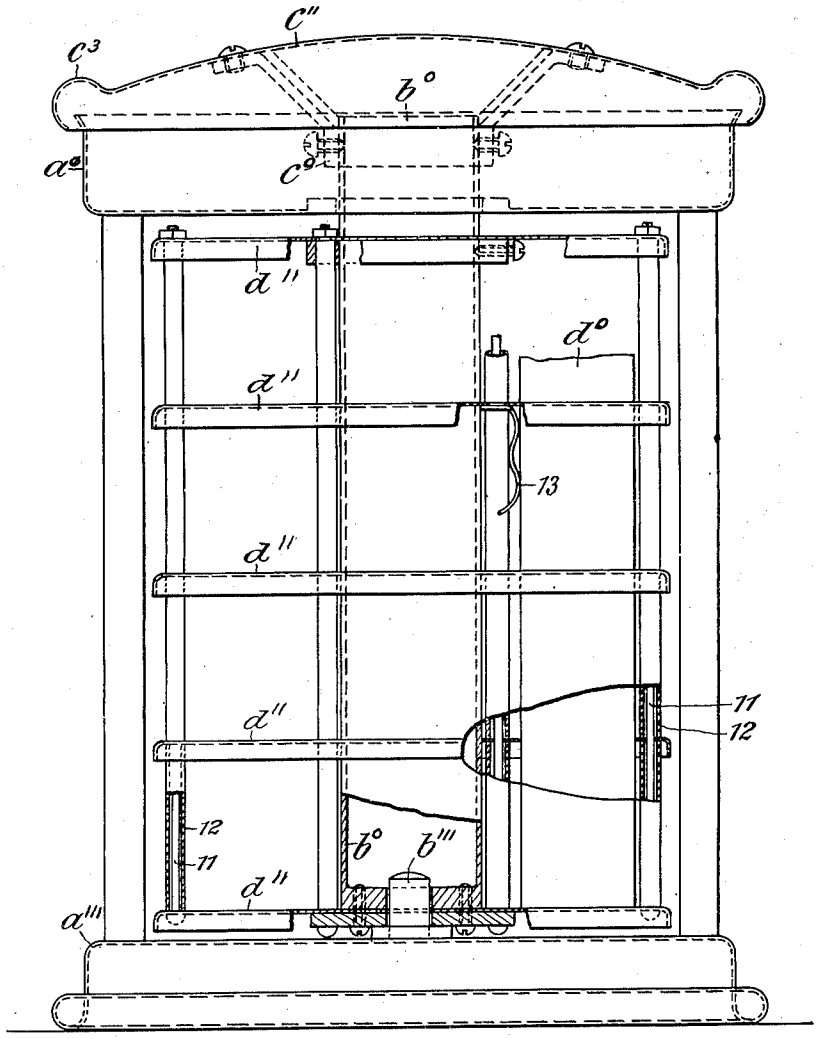
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*Fig. 9.*




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Patented Jan. 4, 1938 2,104,497

# UNITED STATES PATENT OFFICE

2,104,497

## AUTOMATIC VENDING MACHINE

Fritz Schulte, Berlin-Halensee, Germany

Application January 18, 1936, Serial No. 59,763
In Germany January 19, 1935

2 Claims. (Cl. 312—97.1)

Those automatic vending machines which are accessible on all sides and which more particularly are to be placed on a table form a special class. In the case of such machines both as regards the construction or form of the housing and the accessibility, special requirements have to be imposed upon the shaping or fashioning since the goods contained in the automatic machine have to be satisfactorily visible from all sides. On the other hand, access to a particular article can as a rule be arranged only at a definite point in such a way that a selected article container and the opening thereto can be brought into coincidence at will, so that after a piece of money has been inserted any desired article becomes accessible. The arrangement of a plurality of points of access makes the automatic vending machine uneconomical in form. Such automatic vending machines mostly make use of the arrangement of containers for the goods in the form of a rotary plate or tray, which, according to its diameter, may accommodate only a very limited number of such containers or sectors (fan-shaped containers), usually eight to ten. As a rule this number is far too small for practical requirements and furthermore is inconvenient since the containers have to be filled much too frequently and above all because only goods of one price level can be sold and particularly there is no provision for the withdrawal of goods according to choice. It is also no solution of the difficulty if, for example, six automatic vending machines each with twelve fan-shaped compartments are placed side by side, since these six machines obviously take up a much larger space. Such automatic machines therefore cannot provide any relief in inns such as would be very desirable and advantageous in extremely busy times.

The object of this invention is to provide an automatic vending machine which enables a very large number of different goods of various price levels to be arranged, for example about seventy-two articles, which can be withdrawn in any desired sequence, which machine nevertheless can be placed on a table and consequently is capable of automatically serving guests, particularly when business is very brisk, and as a result of affording relief to the staff.

The invention likewise makes use of sector-like arranged containers for the goods which can be brought into coincidence with a common access opening, and the invention consists more particularly in this that the containers for the goods are arranged immediately above one another in several levels or storeys.

The individual storeys of containers for the goods may with advantage have a common intermediate bottom. Above all this enables the containers for the goods to be made of transparent material, such as glass for example, so that all the goods are quite visible and at the same time can be clearly seen. The containers for the goods may be fashioned in the form of rotary plates or trays. For each rotary tray a separate door is fitted having its own opening for the insertion of the money: the door is capable of being positively coupled with the containers for the goods in such a way that on the one hand in the case of a container and the door opening not coinciding the door guides the former into this coinciding position, and on the contrary is brought into the closed position again by the forwardly moving containers. It is not necessary therefore to close again by hand a door which has once been opened. The particular method of construction of the automatic vending machine also provides the possibility of inserting an ice container for goods which require to be cooled. The machine also can be illuminated from the interior.

The accompanying drawings show by way of example one constructional form of the automatic vending machine provided by this invention. In these drawings:—

Figure 1 shows a front view of an automatic vending machine:

Figure 2 shows a vertical section along the line 2—2 of Figure 1:

Figure 3 shows a horizontal section along the line 3—3 of Figure 2:

Figure 4 is a part section along the line 4—4 of Figure 5:

Figure 5 shows a horizontal part section along the line 5—5 of Figure 4:

Figure 6 shows a horizontal part section along the line 6—6 of Figure 4:

Figures 7 and 8 show a vertical part section along the line 7—7 of Figure 5 with two different positions of the latch or pawl mechanism:

Figure 9 shows in elevation, with vertical part section, a somewhat modified construction of the automatic vending machine.

The hollow column *b* is rotatably mounted by means of the pin *b'* in a pedestal or base member *a*, which otherwise may be hollow and may accommodate, for example, the cash drawer *u*. The said hollow column *b* carries a disc *e* shaped

like a ratchet-wheel for supporting any desired number of containers *d* for the goods, e. g. in the form of rotary plates or trays, which are divided by means of radial walls *d'* into a number of sectors, e. g. twelve. The plates *d* rest directly on one another so that between them there is no driving mechanism or other devices for serving the automatic vending machine. As a result the employment of separate covers or lids for the individual containers for the goods is superfluous. The said containers on the contrary may have common intermediate horizontal walls *d* and may with advantage be made of transparent material, such as for example glass, artificial resin or the like. The number of teeth on the ratchet wheel *e* is the same as the number of sectors, for example twelve. The pawl *e'* mounted on the pedestal at *e''* and under the action of a spring permits the containers for the goods to be rotated only in one direction by means of column *b*, this direction in the example shown in the drawings being counter-clockwise. In order that the positions of coincidence of the openings of the containers with the door opening may also be perceptible, a suitable resting place may be provided, for example by giving the teeth of the ratchet-wheel *e* a recess *w* at definite places into which the pawl *e'* with its rounded point *w'* particularly falls so that on moving the containers for the goods round, a resistance is felt which is indeed small but nevertheless perceptible. By means of these resting places the containers for the goods are also held with their openings in the proper position of coincidence with the door opening.

In the pedestal *a* four columns *f* or *f'* and *f''* are arranged. The two columns *f* may have the same cross section; the two columns *f'* and *f''* are preferably shaped like U-rails disposed with their open sides towards one another. Plates *g*, for example of glass, are hinged to the columns, e. g. at *g'*, the said plates being held in their closed position by means of the cover *a'* which serves as an upper guide for the column *b* and engages over the plates *g* by means of a collar *a''*. On the free end of the column *b* a nut *c* is screwed having a handle *c'* by means of which the whole stack of individual containers can be rotated in the particular direction permitted by the ratchet-wheel *e*. If the nut *c*, which can be secured in a suitable manner is loosened, then the cover *a'* can be raised or removed and the plates *g* can be swung aside for cleaning the machine, as well as for access to the individual containers for the goods.

The doors *k* for the access to the containers are arranged between the columns *f'* and *f''*. Each storey of containers has its own door *k*. For guiding purposes the horizontal ledges or brackets *i* arranged on the rails *f* and *f'* are used having a front guide *i'* as well as a rear guide *i''* for the arcuate path of the likewise arcuately shaped door *k*. The half width of the distance between the two columns *f'* and *f''*, the left half in the example shown, is covered by means of a plate *g''* of glass for example, which can be secured in the same way as the plates *g* by means of the collar *a''*.

Each door *k* has a handle *k''* and also contains an opening *n* for the insertion of the money as well as a coin chute *n'*, together with a rejection chute *n''* for bad money, and also the usual coin tester, which may be of any desired kind and is not shown. The coins *z* slide in the chute *n'* up to the end wall *p'* of the door *k*. According to the number of coins to which the automatic vending machine is to respond so also is the rear abutment piece *v* of the coin track *n'* mounted. Abutment pieces can be installed in the coin track when the automatic machine is to respond to for example only two or even one coin.

The coins *z* are so guided that the foremost coin projects somewhat through the end wall *p'* of the door *k* and abuts on a double-armed lever *o'*, *o''*, which lever is mounted at *o* in the path of the door on the lower guiding ledge *i*. The range of motion of this double-armed lever is limited for example by means of a circular track *p* in which it engages by means of a pin, so that it can execute rotations through about one right angle. If no coins are inserted the door *k* can be opened only a very little way, e. g. a few millimetres, since its end wall *p'* comes up against the double-armed lever *o'*, *o''*, and abuts on it so that it cannot rotate and acts as a transverse bolt member. If the requisite number of coins *z* are inserted, then the door as a result of its opening motion presses against the outer arm *o''* of the double-armed lever *o'*, *o''* by means of the front coin *z*, and the said lever is swung out of the transverse position into the tangential position. The arm *o'* of the lever then swings through a slot *p''* in the end wall *p'* of the door *k* and travels in the bottom of the door *k* along the groove *q* arranged in the door *k* and following the periphery thereof. The door can then be pushed open and access given to the wares situated behind the same.

If this opening does not coincide with the door opening then the door *k* brings about the correct adjustment of the container, as a result of its opening motion, by means of a positively controlled pawl or latch *l*. This pawl is mounted for example on the door at *k'* and its inward motion is limited by means of a stop *s'*. On the front guide *i'* or under each intermediate ledge *i* a curved path *m'* is arranged with a shoulder or run-on portion *m''* against which the outer edge *l'* of the pawl *l* hits. The pawl or latch itself possesses a tooth *l''* at the free end and moves with its inner edge moreover on a track *m* arranged on the inner guide *i''* of the intermediate ledge *i*, which track terminates just short of the tooth *l''* of the pawl *l*. Figure 6 shows the drawn-in position of the pawl *l* with the door closed. If as a result of the insertion of a coin the door is opened, then the curved track *m'* forces the pawl *l* inwardly into the region of the sector wall *d'*, and the door takes the containers by means of its pawl *l* when the latter abuts against the next sector wall *d'*, and in fact takes this wall along so far until the door opening and the opening of a container coincide. Conversely when forwarding the container the door *k* is positively led into the closed position again through its latch *l*. The guiding ledge *m* in the final position of the door presses the latch *l* back out of the range of the sector walls *d'* again.

Since the door *k* must in the absence of inserted coins have a small opening play up to the point of abutment on the double-armed lever *o'*, *o''* and therefore would be freely movable for this distance, then in order to prevent this a special arrangement is provided by means of which the door is always forced into its closed position. In this way the coin meeting the double-armed lever *o'*, *o''* in its obstructing position, in which the coin could not rotate the said lever into the open position, is avoided. For this purpose a lever

$r$ with a counter-arm $r'$ is mounted on the door at $r''$. The spring $s$ pulls on the counter-arm $r'$. The lever $r$ engages through a slot $t$ in the bottom of the door $k$, and through a slot $t'$ situated underneath the same, into the, with respect to the door, lower intermediate ledge $i$. In the completely closed position the door assumes the position shown in Figure 7. If attempts are made to open it without inserting money, so that it lies with its front wall $p'$ against the double-armed lever $o'$, $o''$, then the lever $r$ abuts against the front edge $t''$ of the slot $t'$. As soon as the door is unhandled by the person trying to open it the lever $r$ under the action of the spring $s$ presses against the edge $t''$ of the ledge $i$, and thereby forces the door $k$ back into the completely closed position again.

The hollow column $b$ may have a comparatively large diameter so that it can be utilized as an ice container for effecting cooling of the goods contained in the automatic machine. On the other hand the column $b$ could also be pierced in a suitable manner in order that the automatic vending appliance can be illuminated from the interior.

Instead of rotating the containers for the goods by means of a handle $c'$ as shown in Figure 2, a covering plate $c''$ could be fastened to the ring $c^0$ attached to the column $b^0$ as shown in Figure 9, the edge of the said covering plate being rolled over to form an annular bulge $c^3$, so that the containers for the goods can be rotated from the same place. The annular bulge $c^3$ projects over the upper closing rim $a^{0''}$, which is connected with the columns $f$.

The intermediate bottom members $d''$ of the containers for the goods are preferably connected with one another by means of rods 11 on which sleeves 12 are slipped which serve as distance members between the bottoms $d''$, as is seen particularly from Figure 9. The vertical intermediate walls $d^0$ are preferably held in their position by means of leaf springs 13 which are slipped on to the rods 11 by means of an eye and thereby are tensioned with the sleeves 12 as well, so that clinking of the intermediate walls $d^0$, consisting usually of glass, is avoided. In Fig. 9, the container for the goods turns around a pin $b'''$ on the base $a'''$ of the vending machine.

What I claim is:—

1. In an automatic vending machine, in combination, a transparent casing, a drum rotatable in said casing and comprising a plurality of immediately superposed goods supporting members having intermediate walls arranged to form a plurality of superposed rows of sector-shaped compartments for the goods connected together so as to be rotatable in unison, an external manual control member for turning the drum, said casing having a withdrawal opening for each superposed row of compartments for permitting access to the compartments, a door for each of said openings, a driving member on each of said doors movable into and out of the path of said intermediate walls, actuating means for said driving member on the casing arranged to protrude the driving member into the path of the intermediate walls on the door being opened, so as to engage one of said walls and move the drum into a position in which one of said sector-shaped compartments coincides with the respective opening and enable the drum to move any open door into the closed position on the drum being turned in the direction to close the door and means operatively connected to the drum to limit rotation thereof in the opposite direction.

2. In an automatic vending machine, in combination, a transparent casing, a drum rotatable in said casing and comprising a plurality of immediately superposed goods supporting members having intermediate walls arranged to form a plurality of superposed rows of sector-shaped compartments for the goods connected together so as to be rotatable in unison, an external manual control member for turning the drum, said casing having a withdrawal opening for each superposed row of compartments for permitting access to the compartments, a door for each of said openings having guiding means therefor for enabling it to be slid from a position covering the opening to a position uncovering the opening, a driving member pivoted on each of said doors and a ramp on the casing arranged on the casing so as to move the driving member into and out of the path of said intermediate walls on the door being moved into the position to uncover the opening, so as to engage one of said walls and move the drum into a position in which one of said sector-shaped compartments coincides with the respective opening and enable the drum to move any open door into the closed position on the drum being turned in the direction to close the door and means operatively connected to the drum to limit rotation thereof in the opposite direction.

FRITZ SCHULTE.