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T. STOCKER.

VENDING APPARATUS.

APPLICATION FILED DEC. 16, 1911.

1,044,591.

Patented Nov. 19, 1912.

2 SHEETS—SHEET 1.

Fig. 1

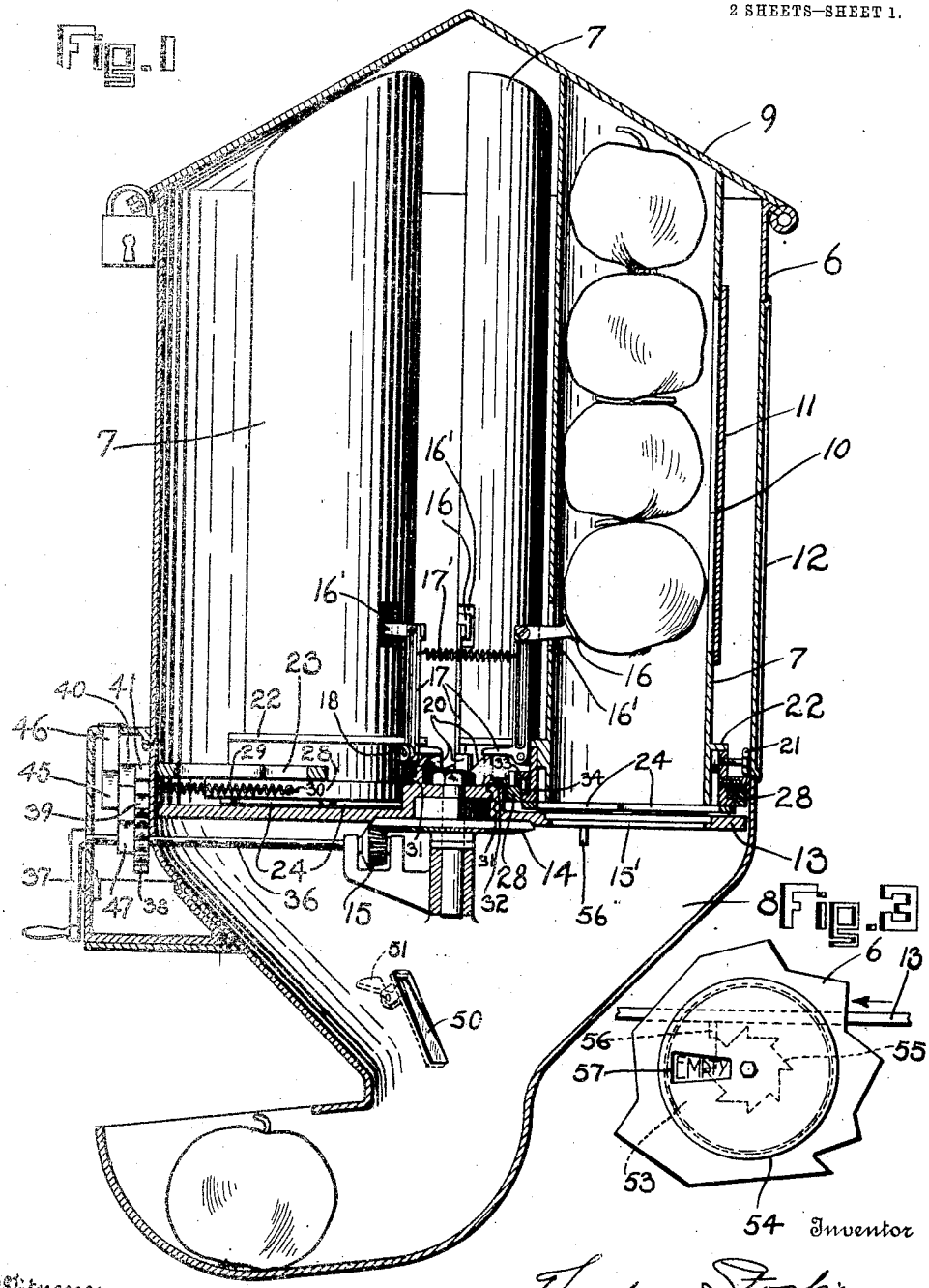

Fig. 3

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2 SHEETS—SHEET 2.

FIG. 2

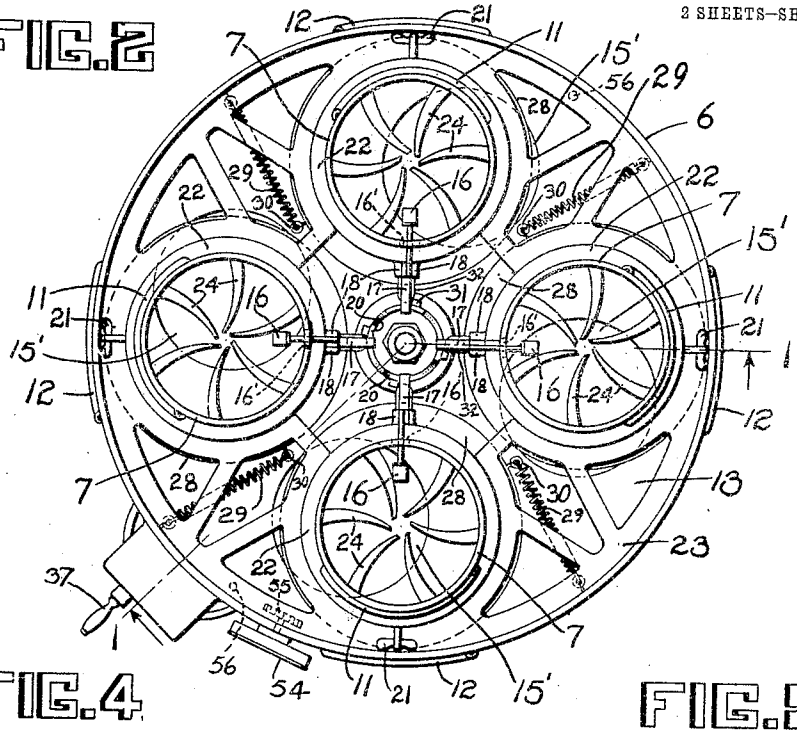


FIG. 4

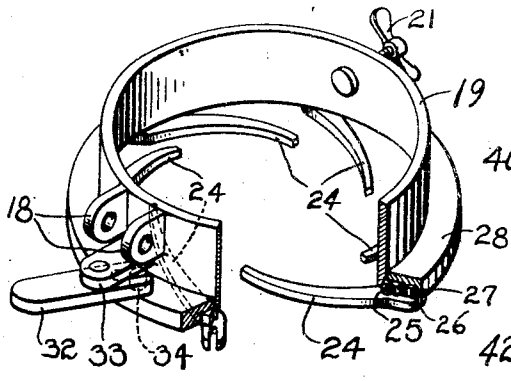
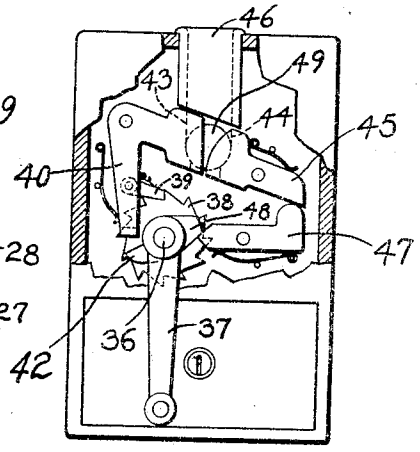


FIG. 5



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VENDING APPARATUS.

1,044,591. Specification of Letters Patent. Patented Nov. 19, 1912.

Application filed December 16, 1911. Serial No. 666,182.

To all whom it may concern:

Be it known that I, THEODORE STOCKER, a citizen of the United States of America, and resident of Covington, county of Kenton, and State of Kentucky, have invented certain new and useful Improvements in Vending Apparatus, of which the following is a specification.

This invention is an improvement in vending apparatus and the coin-control mechanism for actuating such apparatus.

An object of this invention is to produce an improved vending apparatus which is capable of delivering one or more articles each time it is actuated and which may be readily altered so that the number of articles delivered may be varied.

A further object is to produce a new and improved coin-controlled apparatus which is simpler in construction and more effective in operation than apparatus now in use or known to me.

These and other objects I attain in an apparatus embodying the features herein described, and illustrated in the drawings accompanying and forming a part of this application.

In the drawings Figure 1 is a vertical sectional view along the line 1—1 of Fig. 2. Fig. 2 is a plan view of a vending apparatus, embodying my invention, and shown with the top cover removed. Fig. 3 is a fragmental side elevation of the apparatus shown in Figs. 1 and 2 and illustrates means employed for indicating whether the machine contains articles for sale or is empty. Fig. 4 is a perspective view of a ring and instrumentalities secured thereto which form details of my invention: a portion of the ring is shown cut away for convenience of illustration. Fig. 5 is a partial front and sectional elevation of the casing of the coin controlled actuating mechanism, forming a detail of my invention, a portion of the casing is shown broken away for the convenience of illustration.

Referring to the drawings: The apparatus illustrated as an embodiment of my invention includes an exterior cylindrical casing 6, which incloses one or more magazines or containers 7 and is provided with a delivery passage 8 communicating with all of the containers 7 and having an open end located on the front side of the machine. The casing is provided with a top cover 9 which may be hinged thereto and which closes the tops of the magazines 7.

Any number of magazines may be included in apparatus embodying my invention but in the apparatus illustrated I have shown four, which are located at approximately 90 degrees apart within the casing 6. Any kind of merchandise, adapted to be sold in separate pieces or packages, such as candy, cigars or chewing-gum, may be located in the magazines but the machine illustrated is particularly adapted as a fruit vending machine and consequently the containers are arranged to receive fruit such as apples or pears. Each magazine is cylindrical and is provided with a longitudinally extending opening 10, through which fruit may be introduced, and a suitable cover 11 for the opening. The casing 6 is also provided with doors or slides 12 in its cylindrical wall through which access may be had to the openings 10 in the magazines.

The lower end of each magazine is open and the delivery of fruit from the open end is controlled by means of a movable member, such for example as a rotatable circular disk 13, which is supported on a centrally located bearing and is adapted to be rotated by means of an intermeshing gear 14 and pinion 15, as will hereinafter be described. The disk 13, as illustrated, is located immediately below the magazines and is of such diameter that it closes their lower ends. Apertures 15′ are, however, provided in the disk 13 and are so located that each is adapted to register with one or another of the containers 7 when the disk is turned to certain positions. There are preferably as many apertures 15′ in the disk as there are magazines included in the apparatus and the disk actuating apparatus is preferably so arranged that each aperture will be moved from the position below one magazine into register with the lower edge of the next adjacent magazine, when the vending apparatus is operated. I also provide cover plates, for the apertures 15′ which, when they are in place on the disk 13 close the lower ends of the magazines. By employing these cover plates I am able to vary the number of articles delivered by the apparatus when it is operated. By closing all but one of the apertures 15′ the apparatus is caused to deliver but one article each time it is operated and the number of articles de-

livered may be easily increased by removing the desired number of cover plates.

The merchandise in each magazine is so arranged that the articles are located one above the other and are supported one by the other. With such an arrangement it is necessary to provide means for preventing all of the articles contained in each magazine from being discharged when the bottoms of the magazines are opened. The means I employ for accomplishing this consists of an abutment 16, located in each magazine 7, and so arranged that it moves into the line of travel of the articles through the magazine and thereby prevents the passage of articles therethrough, when the lower end of the magazine is opened. Each abutment 16 projects through a slot 15′ provided in the side of the magazine 7 with which the abutment coöperates and each abutment is mounted on an upright arm of a bell crank 17 which is pivotally mounted on lugs 18 formed integrally with a ring 19, which supports the lower end of the magazine and is illustrated in Fig. 4, it being understood that each magazine is provided with a supporting ring 19 and that each abutment 16 is provided with a separate supporting bell-crank 17.

The bell-cranks 17 are actuated by means of cams or projections 20, located on, or formed integrally with, the disk 13 and adapted to engage the horizontally projecting arm of the bell-crank and to thereby move the abutments 16 to the forward position, in which they prevent the passage of articles through the magazine. Any suitable means, such as springs 17′, may be employed for holding the abutments 16 in the withdrawn position, that is, out of the line of travel of the articles through the magazines. Each abutment is preferably so located that it engages the next lowest article in its magazine and thereby segregates the bottom article from the rest of the articles and allows it to be delivered when the bottom of the magazine is opened. The cams or projections 20 are so located on the disk 13, that they move the abutments 16, to the forward positions immediately prior to the opening of the lower ends of the magazines by the apertures 15′. The cams are also so arranged that they permit the abutments 16 to move back to the withdrawn position as soon as the lower ends of the magazines are closed so that the articles contained therein may readjust themselves for the purpose of subsequently delivering the bottom article. If each magazine is to deliver an article each time the apparatus is operated the disk 13 must be provided with an operating projection 20 for each bell-crank. If, however, it is desired to deliver but one article at a time from the machine then it is necessary to provide but one projection 20 which is to be located adjacent to the open aperture 15′ in the disk and will successively engage the bell-cranks of the abutments located in the adjacent magazine as the bottoms of the magazines are successively opened by the open aperture. If it is desired to deliver more than one article each time the apparatus is operated it will be necessary to provide a bell-crank operating projection 20 for each open aperture 15′.

In the drawings each abutment is shown adjustably mounted on its supporting bell-crank for the purpose of varying its position to accommodate fruit of varying sizes. This is accomplished by providing a longitudinal slot in the upright arm of each bell-crank and by securing the abutments in place on the bell-cranks by means of bolts which project through and engage the edges of the slots. I have also provided means for mounting magazines of different sizes on the rings 19 for the purpose of accommodating articles of different sizes. Each ring 19 is provided with one or more set screws 21 for engaging the lower edges of the magazines, which are preferably provided with shoulders 22 for engaging the upper edges of the rings. With this arrangement the magazines may be made interchangeable and the apparatus can be easily and quickly varied to accommodate fruit of different sizes or even to accommodate articles of different shapes.

The rings 19 as illustrated are formed integrally with a frame 23 which is located immediately above the disk 13, and is secured in any suitable manner to the walls of the casing.

In the apparatus illustrated I have provided each ring with means which supplement the disk 13 in supporting the articles in the magazine. The means illustrated consists of fingers 24 adapted to occupy substantially radial positions, relatively to their rings 19, while in the supporting position, and which are adapted to be automatically moved to substantially peripheral positions, relatively to the rings for the purpose of discharging articles from the magazine. Each finger 24 is pivotally mounted on a pin 25 carried by the lower edge of one of the rings 19, and is provided at its outer end with a slot 26, which is adapted to engage a pin 27 carried by a ring 28. Each ring 28 is concentric with one of the rings 19 and is slidably mounted thereon. The rings 28 are held in predetermined positions, relatively to their supporting rings 19, by means of springs 29, one end of each of which is secured to an eyelet 30, carried by the ring, and the other end is secured to a similar eyelet, mounted on the frame 23.

The springs are preferably so arranged

that they hold the fingers 24 in the radial or supporting positions and the fingers are withdrawn from the radial position by means of cams 31, carried by the disk 13, and adapted to engage ring actuating levers 32, which are fulcrumed on brackets 33 formed integrally with the rings 19. The inner end of each lever 32 is provided with an open ended slot which engages a pin 34, carried on the coöperating ring 28 for the purpose of operatively connecting the lever to the ring. The levers are so arranged that they turn the rings in opposition to the tension of the springs 29 and withdraw the fingers 24 to the peripheral positions upon being engaged by the cams 31. The cams are so arranged that they engage the levers 32 and operate the different sets of fingers 24, when the disk is in such positions that the apertures 15' register with the lower ends of the magazine 7, and they release the levers 32 and permit the fingers to move to the radial positions, in response to the pull of the springs 29, when the motion of the disk moves the apertures out of register with the bottoms of the magazines.

The cams 31 are so located with reference to the positions of the cams 20 that the fingers are moved to the peripheral position immediately after the abutments 16 have been moved to the forward or obstructing position, and the fingers are returned to the radial or closed position immediately prior to the withdrawal of the abutments 16.

The number of articles delivered by the vending apparatus may be varied by varying the number of cams 31 employed on the disk 13. For example, if it is desired to deliver but one article at a time from the vending apparatus the disk 13 will be provided with but one cam 31 which will successively engage the levers 32 and successively actuate the different sets of fingers so that only one magazine will deliver an article each time the disk 13 is moved from one operating position to the next. For this reason it is desirable to so form the cams or projections 31 that they may be removably mounted on the disk 13, and so that their number may be varied when it is desired to vary the number of articles delivered by the apparatus.

It will be understood that the fingers 24 are not absolutely essential in the apparatus, but that they improve its operation. If the fingers 24 were not employed, the lowest article in each magazine would slide along the surface of the disk 13 as the disk turned and while such an arrangement would not be objectionable with some articles of merchandise it would be apt to scar or mar fruit.

The coin-controlled mechanism illustrated consists of an actuating shaft 36 which projects through the casing 6 of the apparatus and is provided with an operating crank 37—the pinion 15, mounted on the shaft—the intermeshing gear 14, mounted on the disk 13, and meshing with the pinion—and a locking device for preventing the shaft from being turned except upon the introduction of a coin into the machine.

The locking mechanism consists of a rachet wheel 38 and a coöperating pawl 39, which prevent motion of the shaft 36 in one direction, and an arm 40, which prevents motion of the shaft in the opposite direction. The rachet 38 is mounted on the shaft 36 and its engaging pawl is pivotally mounted on a convenient portion of the stationary casing 6 and is continually held in engagement with the wheel by a suitable spring. The arm 40 is pivotally mounted on an extension 41 formed on the casing 6 and its lower end is normally adapted to project into the path of travel of a stop 42, carried by the shaft 36, and to thereby prevent forward motion of the shaft 36. The other end of the arm 40 is provided with a groove 43 which coöperates with a similar groove 44, formed in the adjacent end of a pivotally mounted tipper-bar 45, in receiving a coin from a slot or chute 46 which terminates outside of the casing.

The tipper-bar 45, together with a tipper-lever 47 and a lug 48, mounted on the shaft 36, forms means for moving the lower end of the arm 40 out of the path of the stop 42 and thereby unlocking the shaft 36. The apparatus is, however, so arranged that this cannot be accomplished unless a coin is held in the position indicated at 49, by means of the coöperating grooves 43 and 44.

The ratchet wheel 38 is provided with relatively long ratchets and the stop 42 is so located on the shaft relatively to the position of the ratchets that the shaft may be turned through a limited angle while it remains locked against motion which would be sufficient to operate the vending apparatus. The lug 48 is so located on the shaft that it will engage and depress the tipper-bar 47 while the shaft is turned through this limited angle and will thereby actuate the tipper-bar 45. The end of the tipper-bar 45 is so constructed that it will swing free of the adjacent end of the arm 40 and will therefore be incapable of actuating the arm, unless a coin is located in the coöperating grooves 43 and 44. When a coin is in place in the grooves as is illustrated in Fig. 5 the tipper-bar 45 is capable of shifting the position of the arm 40 through the agency of the coin and of thereby moving its lower end out of the path of travel of the stop 42. This is accomplished as follows: The first motion of the shaft 36 causes the lug 48 to actuate the tipper lever 47 which in turn tilts the bar 45. The tilting motion of the bar is imparted to the arm

40 through the agency of the coin and the arm is swung about its pivot so that its lower end moves outwardly relatively to the shaft 36. The lug 48 is so proportioned that the stop 42 will clear the end of the arm 40 as the shaft 36 is turned in the direction of the arrow Fig. 5, and will thereby permit the shaft to be turned through an entire revolution. The coöperation between the tipper-lever and the lug 43 is such that the tipper-bar 45 is moved by the lever to such a position, that the coin is dropped from between the tipper-bar and the arm 40 and the arm is thereby freed so that it returns to its normal position, with its lower end in the path of travel of the stop 42 and prevents the shaft from being turned more than one revolution with the introduction of another coin.

The arm 40, the tipper-bar and the tipper-lever 47 may be held in the normal position illustrated in Fig. 5 by means of springs such as those illustrated. The chute 46 may be, and preferably is made circuitous so that the locking mechanism can not be tampered with. The grooves 43 and 44 are also formed so that while they will receive and hold a coin of one kind, such as a nickel, they will not hold a smaller coin but will permit it to drop directly between the arm and the bar into the cash drawer. This is accomplished by so forming the grooves 43 and 44 that they extend clear across the ends of the members in which they are formed and by providing a coin supporting shoulder or off-set in each groove.

In the apparatus illustrated the pinion 15 and gear 14 are so proportioned that the disk 13 will be turned through one-fourth of a revolution while the shaft 36 is turned through an entire revolution. The relative diameters of the pinions and gear may be varied as desired so as to vary the length of travel of the disk to accommodate the number of magazines 7 included in the vending apparatus.

In the drawings I have illustrated means for preventing the delivery passage from being obstructed by the interference of the articles dropped from the magazines. It will be apparent that if all the magazines simultaneously drop apples there will be a tendency for the apples to become jammed in the delivery passage. If this takes place the apples can be released by means of a trigger actuated jumper-bar 50 which is located in a recess formed in the wall of the passage 8 and is provided with a trigger 51 which projects through, and is accessible on the outside of the casing. The bar 50 is located at the point where the apples are most likely to become jammed, and it is held in the normal or inoperative position by any suitable means, such for example as a spring. The interior of the passage 8 may be padded to prevent bruising of the fruit, and the fingers 26 may also be padded if desired.

I have also provided a device for indicating whether or not the apparatus contains articles for sale. The device illustrated consists of a dial 53 which is inclosed within the casing 54 and is provided with an actuating gear or ratchet 55 located within the casing and adapted to be engaged by pins 56, carried by the disk 13. The pins 56 are preferably removably mounted on the disk so that the device may be easily adjusted to operate in conjunction with vending apparatus when all the magazines are delivering fruit and when one or only a few of the magazines are delivering fruit. A portion of the dial is so exposed through an opening 57 provided in the casing and the dial is so arranged that it will expose the word "Empty" or a similar term when the machine has delivered all its fruit. The intermediate portions of the dial may indicate the number of articles delivered at each operation of the apparatus, or the price of the article for sale.

It will be understood that various modifications and substitutions may be made without departing from the spirit and scope of the invention.

I claim—

1. A vending machine comprising a container for small articles, open at its lower end, a movable disk located below the container, movable fingers controlled by the disk for closing the end of the container, and means located above the fingers and actuated by the disk on obstructing the passage through the container while the fingers are moved to the open position.

2. A vending machine comprising a plurality of containers open at their lower ends, movable fingers for closing the lower ends of said containers, a movable means for successively actuating the fingers of the separate containers, and means located above the fingers and controlled by the first-mentioned means for obstructing the passage through each container when the fingers are moved to the open position.

3. A vending machine comprising, a series of containers, a rotatably mounted disk located below the containers and having an aperture adapted to successively register with the open ends of the containers, movable fingers for controlling the delivery of articles from the containers through the aperture in the disk, and means mounted on the disk for controlling the operation of the fingers.

4. A vending machine comprising a plurality of containers, a rotatably mounted disk below the containers for controlling the delivery of articles therefrom, movable means for projecting into each container

and for retaining the remaining articles in the container during the operation of discharging one article therefrom, and means mounted on the disk for actuating said first-mentioned means.

5. A vending machine comprising, a magazine for separate articles, a disk mounted below the magazine for controlling the delivery of articles therefrom, a finger for segregating the article to be delivered and for supporting the remaining articles during the delivering operation, means for adjusting the length of the finger, and means mounted on the disk for controlling the operation of the finger.

6. A vending machine comprising, an open ended container for vendable articles, a movable disk located below the open end of the container, movable means controlled by the disk for closing the end of the container and controlling the delivery of articles therethrough and means located above said first mentioned means and actuated by the disk for segregating the article to be delivered and for supporting the remaining articles during the delivering operation.

7. A vending machine comprising, a series of open ended magazines, a movable disk located below the magazines and having an aperture through which articles delivered from the magazines pass, separate means actuated by the disk for closing the lower end of each magazine, and separate means for each magazine for segregating the article to be delivered and for supporting the remaining articles during the delivering operation.

8. A vending machine comprising, an open-ended magazine for articles to be sold, means for controlling the delivery of articles from the magazine, an arm controlled by said means and a finger adjustably mounted on the arm for segregating the articles to be delivered and for supporting the remaining articles during the delivering operation.

9. In a vending machine comprising an open-ended magazine for articles to be sold, means for controlling the delivery of the articles from the magazine, a finger controlled by said means and adjustable longitudinally along the magazine for segregating the article to be delivered and for supporting the remaining articles during the delivering operation.

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