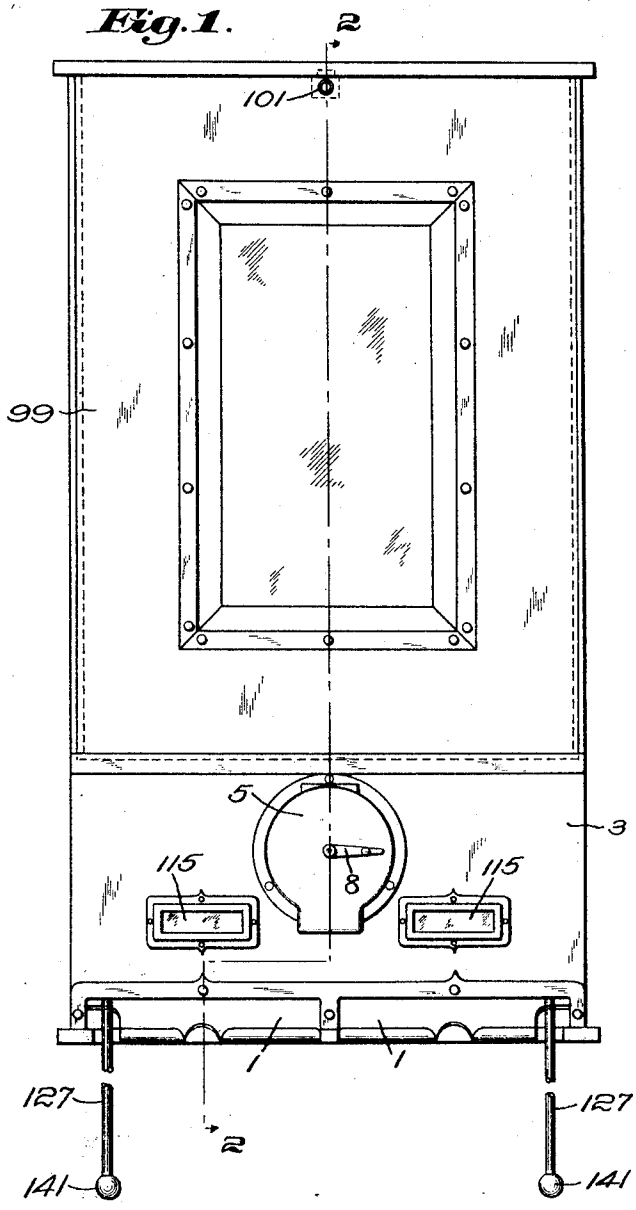
May 15, 1928. 1,669,717

C. LEA

VENDING MACHINE

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Fig. 1.



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VENDING MACHINE

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Fig. 2.

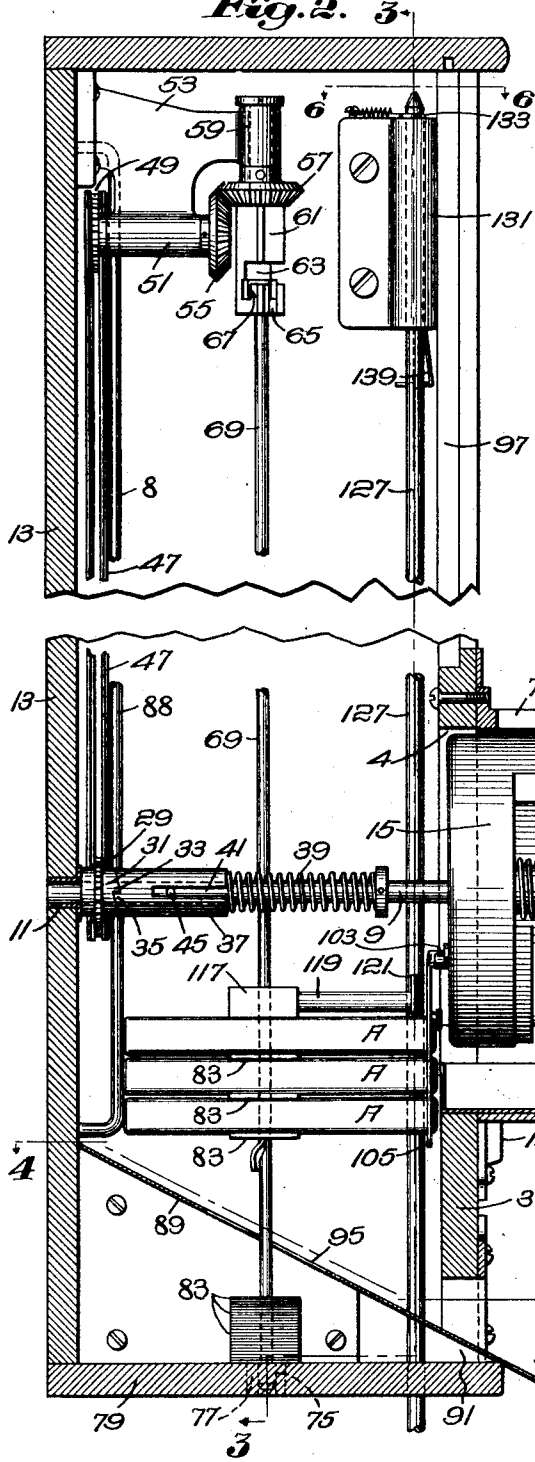


Fig. 7.

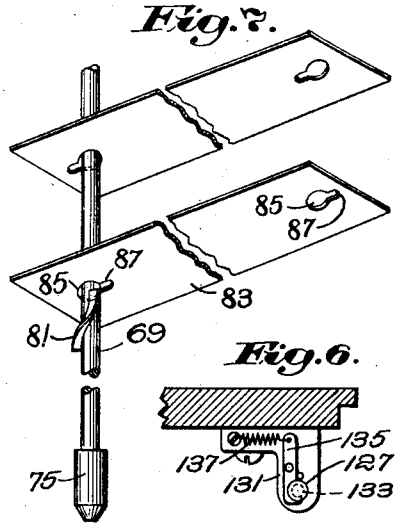


Fig. 6.

Fig. 8.

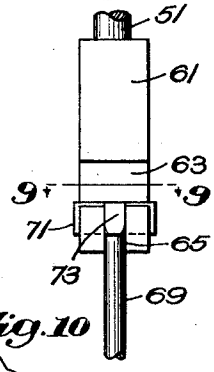


Fig. 10

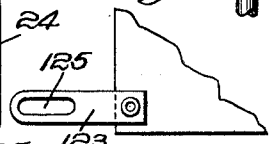
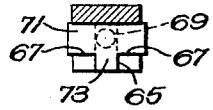


Fig. 9.



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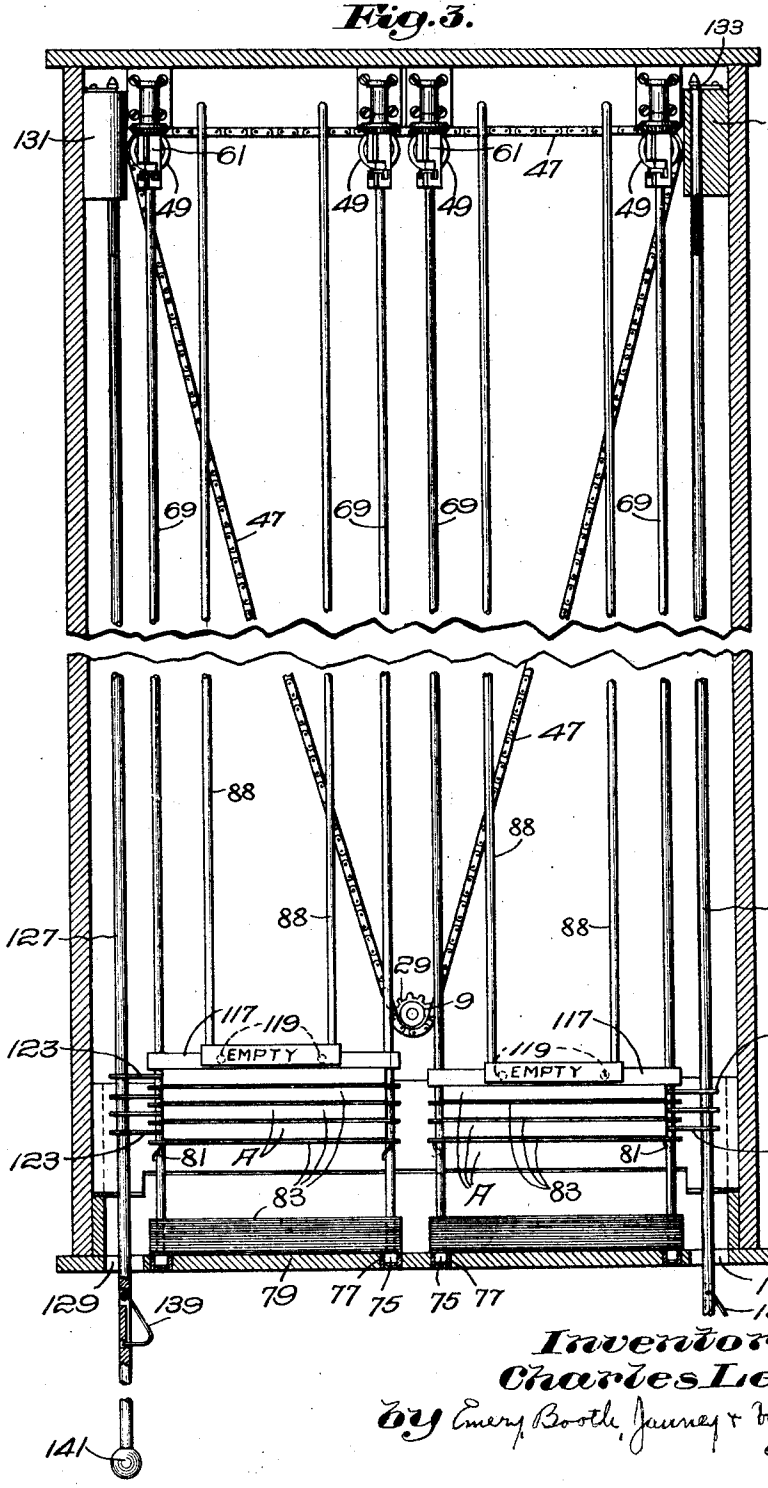
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Filed Sept. 9, 1921 4 Sheets-Sheet 3

Fig. 3.



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VENDING MACHINE

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Fig.4.

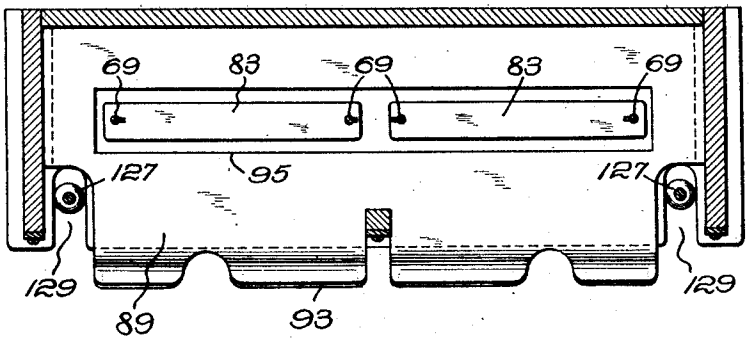
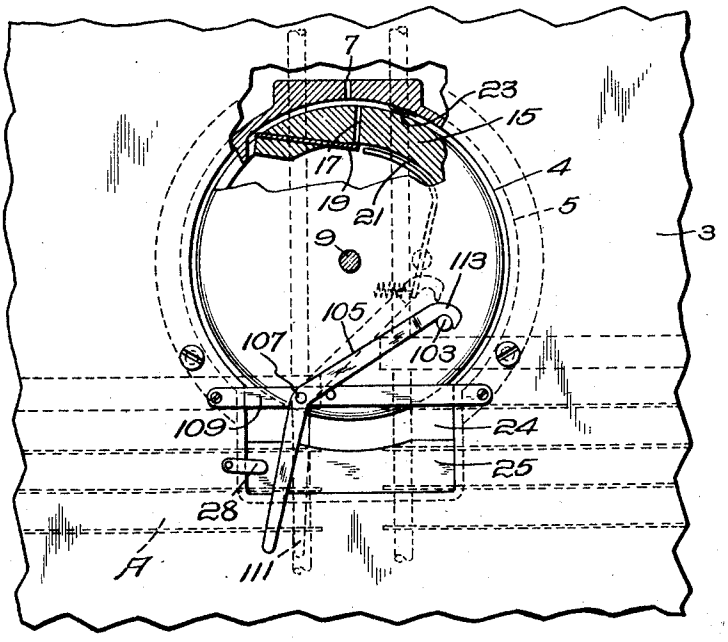


Fig.5.



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UNITED STATES PATENT OFFICE.

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VENDING MACHINE.

Application filed September 9, 1921. Serial No. 499,389.

My invention relates to vending machines. It will be best understood from the following description when read in the light of the accompanying drawings of a specific embodiment of my invention selected for illustrative purposes, while the scope of my invention will be more particularly pointed out in the appended claims.

In the drawings:—

Fig. 1 shows a front elevation of the above referred to embodiment of my invention;

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

Figs. 3 and 4 respectively are sections on the lines 3—3 and 4—4 of Fig. 2;

Fig. 5 is a fragmentary view looking at the back of the coin controlled mechanism from the interior of the cabinet as viewed in Fig. 2, with parts omitted and parts broken away;

Fig. 6 is a section on the line 6—6 of Fig. 2;

Fig. 7 is a perspective view showing a detail;

Fig. 8 shows the connection between one of the screw carrying rods and the member for rotating it;

Fig. 9 is a section on the line 9—9 of Fig. 8; and

Fig. 10 shows a fragment of a towel and an attached tag.

Referring to the drawings of the embodiment selected for illustrating my invention and particularly to Figs. 1 to 5 thereof, I have shown a cabinet for holding the articles to be vended, the latter being discharged from the cabinet through openings 1 formed through the lower portion of the front wall 3 of the cabinet. Above the openings I have provided an opening 4 which is closed by a casing 5 secured to the front wall of the cabinet and containing mechanism rendered operative by a coin when inserted through the slot 7 formed in the upper wall of said casing. After a coin is inserted turning of the handle 8 supported in front of the casing will act to discharge articles from the cabinet. The details of all the mechanism coacting with the coin do not form part of my present invention and therefore only so much of said mechanism will be described as is necessary to convey an understanding of how it is applied to my present invention.

Extending through the front of the casing 5 and supported thereby is a shaft 9, which exteriorly of the casing carries the handle 8 and at its opposite end is supported in the bushing 11 carried by the back wall 13 of the cabinet. Interiorly of the casing the shaft 9 has fixed thereto a member 15 which is provided with a slot 17 normally in alignment with the slot 7 of the casing. The member 15 carries a sliding bar 19, the end of which cooperates with the end of a pawl 21 pivoted to the casing. When a coin is inserted in the slot 17 and the handle 8 is turned to rotate the shaft and member 15 clockwise as viewed in Fig. 5, the coin is moved to rest on the upper surface of the pawl 21 while the opposite side of the edge of the coin cooperates with a cam member 23 to depress the pawl and cause the bar 19 to be disengaged and thereby enable the shaft to be further rotated. By means not necessary to describe the member 15 is permitted to move through a greater part of one revolution, after which further motion in this direction is prevented. On release of the handle 8 the shaft and member 15 are returned by means of the torsion spring 27 to the position in which the slots 7 and 17 are in alignment.

The lower portion of the casing 5 provides a compartment 24 in which is placed a tray 25 for receiving the coins after they fall from the slot 17. For holding the tray in position I provide a latch 28 pivoted to the cabinet. It will be noticed from this construction that coins can be removed only by way of the interior of the cabinet and as will hereinafter appear only after the articles to be vended are removed.

Adjacent the back wall 13 the shaft carries a chain sprocket wheel 29 which is freely rotatable on the shaft. The hub 31 of the wheel has formed on its inner annular end surface ratchet teeth 33 for cooperation with similar teeth 35 formed on the adjacent annular end of a sleeve 37, the sleeve being mounted on the shaft and pressed into engagement with the hub of the sprocket wheel by a compression spring 39 carried by the shaft. To cause the sleeve to rotate with the shaft, the former is provided with a longitudinally extending slot 41 which engages a radially extending pin 45 carried by the shaft, this construction allowing the sleeve to move longitudinally of the shaft.

The parts are so arranged that when the operator grasps the handle 8 and rotates the shaft, the clutch formed by the cooperating teeth of the sprocket wheel and sleeve will rotate the sprocket wheel and when the handle is released and the shaft is turned in the reverse direction by the spring 27 the teeth of the clutch will ride over each other without rotating the sprocket wheel. In other words, I have provided means for rotating the sprocket wheel step by step and always in the same direction.

The sprocket wheel 29 is in engagement with the endless chain 47 which passes over sprocket wheels 49 at the upper portion of the cabinet. Each sprocket wheel 49 is fixed to a shaft 51 carried by a bracket 53 secured to the cabinet. Fixed to the opposite end of the shaft 51 is a mitre gear 55 in mesh with a similar gear 57 fixed to the vertical shaft 59 rotatably mounted in said bracket. By this construction, it will be noted that movement of the chain will rotate the shaft 59.

Each shaft 59 has integrally formed therewith a downwardly projecting head 61 provided with a transverse slot 63 and an intersecting longitudinal slot 65, the head at the intersection of the slots being further recessed to provide a pair of slots 67 in communication with both the slot 63 and the slot 65. To each head is connected a rod 69, the latter being provided with a T-shaped head providing a portion 71 for reception in the slots 67 and the portion 73 for reception in the slot 65. The lower portion of each rod is provided with a head 75 received in a bearing 77 in the bottom wall 79 of the casing. It will be noticed particularly from Figs. 2, 8 and 9 that on lifting the rods the T-shaped heads may be removed through the slots 63 and the rods thereby detached from the heads 61.

Near its lower portion each rod 69 carries a cam in the form of a fin 81 shaped to provide a screw, which screw in the present embodiment of my invention makes slightly less than a quarter turn about the rod. These screws serve when rotated to release the articles to be vended and although I may otherwise provide I have shown members 83 for this purpose which are separate from the articles. These members are of size and shape to suit the articles and in the embodiment selected for illustrating my invention are in the form of thin flat plates interleaving the articles as indicated in the drawings at A. These plates are mounted on pairs of rods 69 and each is provided with a perforation having a cylindrical portion 85 for receiving the rod and a slot 87 for receiving the screw. As will be obvious, the rotation of a pair of rods 69 will cause the screw portions 81 thereof to enter the slots 87 and thereby release a plate which thereupon will drop toward the bottom of the casing followed by the article supported on the plate and the entire stack will move downwardly until the next plate rests on the shoulder afforded by the upper radial edge of the screw. I have shown adjacent plates with the slotted portions 87 extending in opposite directions and by so arranging the parts the plates when desired may be placed very close together to permit the vending of thin articles. This follows because with this construction I insure that the screw when in engagement with the slot 87 of a plate will not engage the slot of the adjacent plate before the first plate is moved off the screw. Preferably, but not necessarily, when practicable, the axial length of the screw will correspond substantially to the minimum thickness of the article to be vended or to be at least but slightly less than this thickness.

For guiding the articles and protecting the chain from interference therefrom I provide rods 88 carried by the back wall of the cabinet.

Below the stacks I place an inclined plate 89 which extends through an opening 91 formed in the front face of the cabinet and carries an upturned lip 93, the plate forming the lower faces of the openings 1. The plate is provided with openings 95 large enough to permit the plates to pass through them but small enough to prevent the articles to be vended from so passing. By this means when a plate 83 is released it is permitted to move past the plate 89, while the article to be vended is caught on the plate and slides through the opening 1.

The plates 83 after falling through the openings 95 may be removed together with the rods 29 by reason of the fact that the perforations 85 of the plates are of less diameter than that of the head 75 of the rods. For permitting removal of the rods and the plates after the last article has been discharged I provide the front wall of the cabinet with an opening 97 normally closed by a mirror and its frame 99 and held in position by means of a lock 101. After the last article of the stack is discharged a new stack already charged with articles may be readily inserted in the machine.

Preferably, but not necessarily, the mechanisms are so timed that but one article is discharged for each coin. It will be understood, however, that if desired the mechanism can be arranged to release more than one plate at a time or if desired more than one article may rest on a plate so as to discharge in either case a plurality of articles for one coin. Preferably, but not necessarily, the bottom members of the respective stacks are discharged alternately and although I have shown two stacks it will be understood that I may use but one or more than two and if desired so time the mech-

anism to discharge an article from more than one stack for the same coin.

For preventing the insertion of a coin after the articles are discharged I herein provide the back of the rotatable member 15 with a pin 103 projecting toward the interior of the cabinet and for cooperation therewith I provide a lever 105 pivoted at 107 to the bar 109 extending across the opening 4 in the front wall of the cabinet. As constructed the lower end 111 of the lever is adapted to rest against the edges of the articles or plates of one of the stacks, as is indicated in Fig. 5. When the last article is discharged, the lever tilts into its full line position, which causes the hooked end portion 113 of the lever to move into the path of the pin 103 which it catches on the return movement of the member 15 to hold the slot 17 thereof from moving into alignment with the slot 7 of the casing.

To indicate that the stack has been completely discharged I provide the front wall of the cabinet adjacent its lower portion with windows 115 while resting on the upper articles of the stack I provide a bar 117 having projecting pins 119 carrying a plate 121 which is suitably marked to indicate to the observer, when the plate moves in front of the window, that the machine is then empty. Preferably, not necessarily, the bar 117 is of substantial weight in order that it may exert a force tending to snugly pack the articles of the stack and force them towards the screws.

Although my machine is adapted to vend other articles I have shown it arranged for vending towels, each of which is folded and wrapped to form a package of shape indicated in the drawings. Each towel carries a projecting tag 123 having a perforation 125 while extending through the perforations of all the towels of the stack is a rod 127 which at its lower end extends through a slot 129 to the exterior of the machine. The slot is formed in the bottom wall of the cabinet and opens through the front thereof, while the plate 89 is cut away to conform to the slot. At its upper end the rod extends through the perforated bracket 131 and exteriorly thereof is provided with an annular groove 133 for receiving the notched end of the lever 135, this lever in an obvious manner being forced toward the position in which such end engages the groove 133 by means of a spring 137. At spaced points the rod 127 is provided with yieldable spring latches 139 for preventing except when desired relative sliding of the bar and towels and by means of which the towels may be stacked and the rods after insertion prevented from accidental removal during shipment of the stacks. When the towel is released it may be pulled out of the machine by the operator through the opening 1 and the tag through the slot 129 and while being used will be held on the upper portion of that part of the rod exterior to the cabinet by the lower spring latch 139. After using the towel the user may pull the towel downwardly over the latch 139 and permit the towel to fall to the bottom of the rod on which it will be retained by the ball 141 on the end of the rod.

Although I have described for purposes of illustration one specific embodiment of my invention it is to be understood that within the scope of my invention wide deviations may be made from said embodiment without departing from the spirit of my invention.

I claim—

1. In a vending machine, a pair of rods each carrying a screw and being mounted for rotation, a plurality of plates stacked on said rods and each having perforations for receiving said rods and screws, and the portion of said perforations receiving said screws on one of said plates being angularly disposed relatively to the corresponding portion of the perforations of the adjacent plate.

2. In a vending machine, a pair of rods each carrying a screw and being mounted for rotation, a plurality of plates stacked on said rods and each having perforations for receiving said rods and screws, and the portion of said perforations receiving said screws on one of said plates being angularly disposed relatively to corresponding portions of the perforations of other plates of said stack.

3. In a vending machine, a plurality of pairs of rods each slidably carrying a stack of plates, screws carried by said rods for releasing said plates, and means for rotating said rods for discharging plates from said stacks in alternation.

4. In a vending machine, a plurality of pairs of rods each carrying a stack of plates, screws carried by said rods for releasing said plates, and means for rotating all of said rods step by step, and said screws being so arranged relative to each other that a plate from one stack is discharged during one step without discharge from the other and vice-versa on the next step.

5. In a vending machine, the combination of article releasing means comprising a pair of rods, plates having spaced perforations, a screw carried by each rod for permitting movement of said plates from one portion of said rods to another, and means for retaining said plates on said rods after passing said screws.

6. In a vending machine, the combination of article releasing means comprising a plurality of pairs of spaced rods, screws carried by said rods, plates having perforations fitting said rods and screws, an endless chain for rotating said rods, a shaft having an

oscillatory motion, and a clutch cooperating with said shaft and chain for causing said chain to move step by step in only one direction.

7. A vending machine having, in combination, a plurality of plates for supporting articles, means for retaining said plates and articles in a stack comprising a rotatable screw the upper end of which engages the lowermost plate only of said stack, said plates having means cooperating with said screw for causing step by step rotation of said screw to release said plates one after the other from the bottom of said stack.

8. A vending machine having, in combination, a plurality of plates for supporting articles, means for retaining said plates and articles in a stack comprising a pair of spaced vertical screws the upper ends of which engage the lowermost plate only of said stack, said plates having means cooperating with said screws for causing step by step rotation of said screws to release said plates one after the other from the bottom of said stack.

9. A vending machine having, in combination, a plurality of plates for supporting articles, means for retaining said plates and articles in a stack comprising a pair of spaced vertical screws the upper ends of which engage the lowermost plate only of said stack, said plates having means cooperating with said screws for causing step by step rotation of said screws to release said plates one after the other from the bottom of said stack, and means for simultaneously rotating said screws step by step.

10. A vending machine having, in combination, a plurality of article supporting members, a pair of spaced vertical rods extending through perforations in said members, screws on said members for supporting the lowermost member, said perforations formed for releasing said members upon rotation of said screws, and means for rotating said screws.

11. A vending machine having, in combination, a plurality of article supporting members, a pair of spaced vertical rods extending through perforations in said members, screws fixedly carried on said members for supporting the lowermost member, said perforations formed for releasing said members upon rotation of said screws, and means for rotating said rods.

12. A vending machine having, in combination, a plurality of article supporting members arranged in a stack, a pair of spaced vertical rods extending through perforations in said members, stops on said rods engaging the lowermost member for supporting said stack, said perforations formed for releasing said members upon rotation of said stops, and means for rotating said stops.

13. A vending machine having, in combination, a plurality of article supporting members arranged in a stack, a pair of spaced vertical rods extending through perforations in said members, stops fixedly carried on said rods engaging the lowermost member for supporting said stack, said perforations formed for releasing said members upon rotation of said stops, and means for rotating said rods.

14. A vending machine having, in combination means for supporting a plurality of articles in a stack comprising a plurality of members adapted to be interleaved with said articles, means for releasing said members comprising a plurality of rotatable parts carrying stop devices cooperating with said members, the latter having perforations formed for receiving said parts and for cooperating with said stop devices to cause said members to be released successively upon rotation of said parts, and manually operable means for rotating said parts simultaneously.

15. A vending machine having, in combination, a pair of rotatable spaced vertical guide rods, a plurality of article supporting plates having perforations through which said rods extend, said rods having laterally extending substantially helical portions upon which the bottom plate of said plurality of plates is supported, said perforations of said plates having lateral enlargements adapted to permit said plates to pass by said laterally extending portions of said rods, and means for rotating said rods to cause said laterally extending portions of said rods to be moved into registry with said lateral enlargements of said perforations and said plates to be fed past said portions.

16. A vending machine having, in combination, a plurality of article supporting members, a casing for said members having guide means engaging said members for retaining them in stacked relation and permitting the stack of members to move downwardly toward the bottom of said casing, said casing having in a wall thereof an article discharge opening above the bottom of said casing, stop means for engaging the lowermost article supporting member of said stack for maintaining such member adjacent said opening, an operating handle, mechanism operatively connecting said handle with said stop means for causing motion of said handle to cause said lowermost article supporting member to be released and fall toward the bottom of said casing, and means for engaging the article supported by said lowermost member for passing the article through said opening when said lowermost member is released.

In testimony whereof, I have signed my name to this specification.

CHARLES LEA.