May 7, 1929. S. M. COFFMAN 1,711,773

VENDING MACHINE

Filed Nov. 19, 1926 4 Sheets-Sheet 1

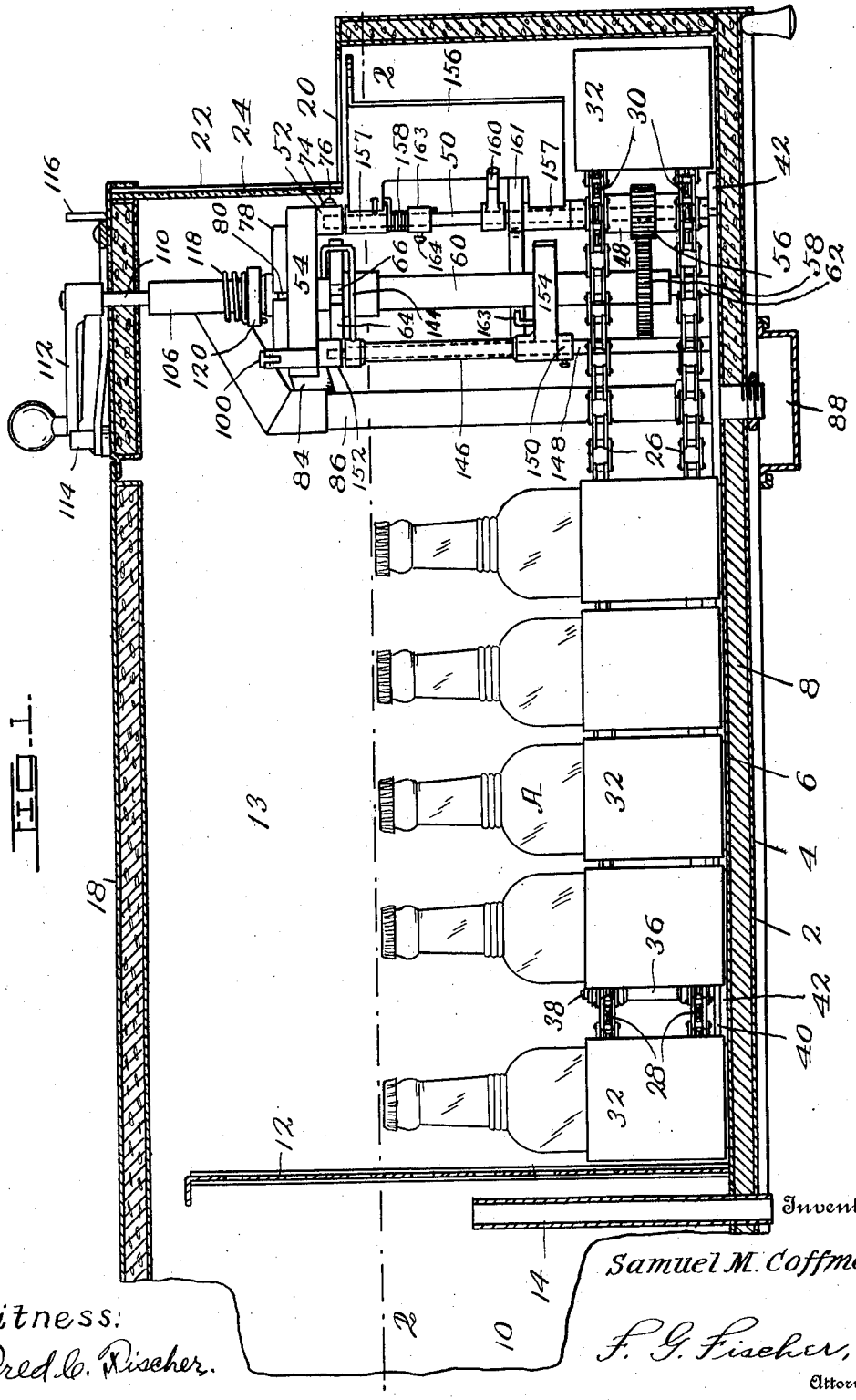


FIG. 1.

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VENDING MACHINE

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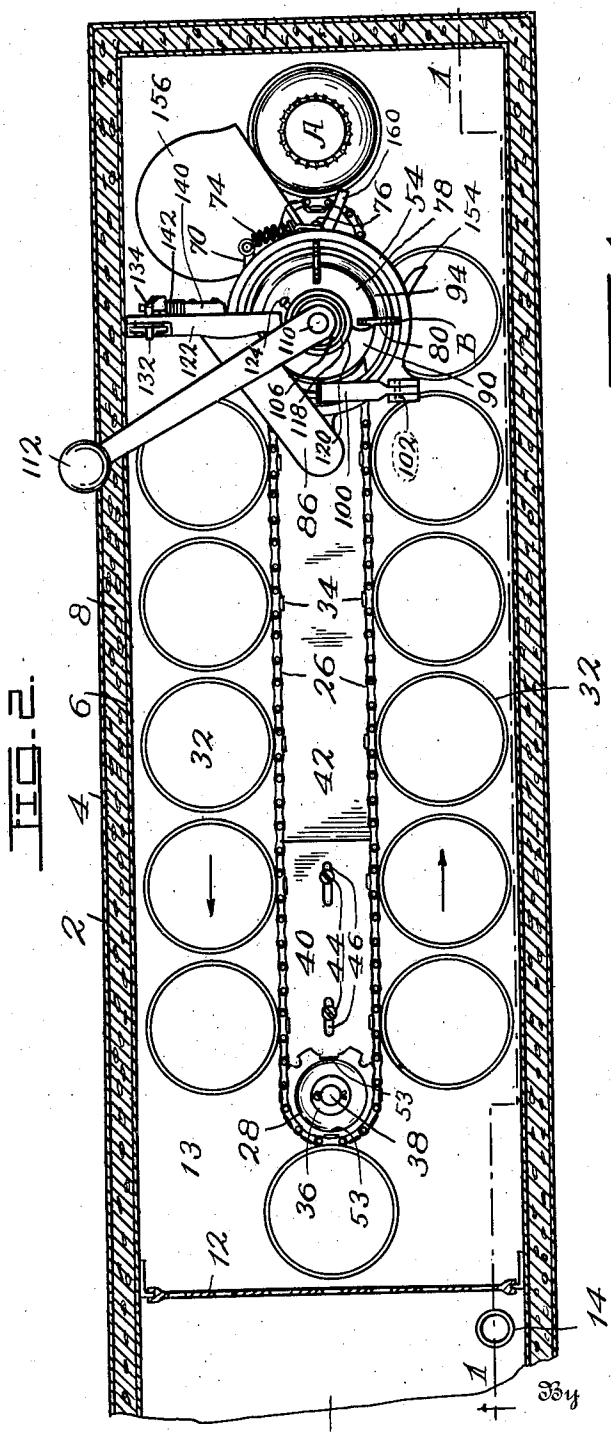


FIG. 2.

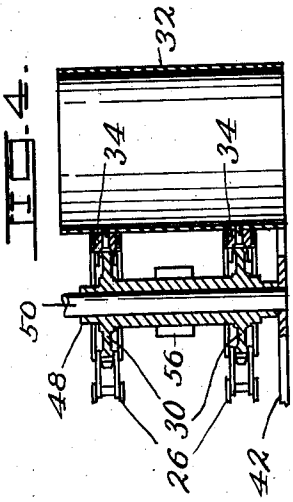


FIG. 4.

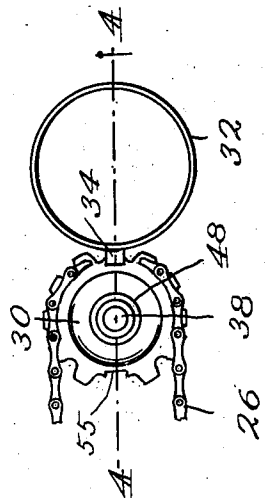


FIG. 3.

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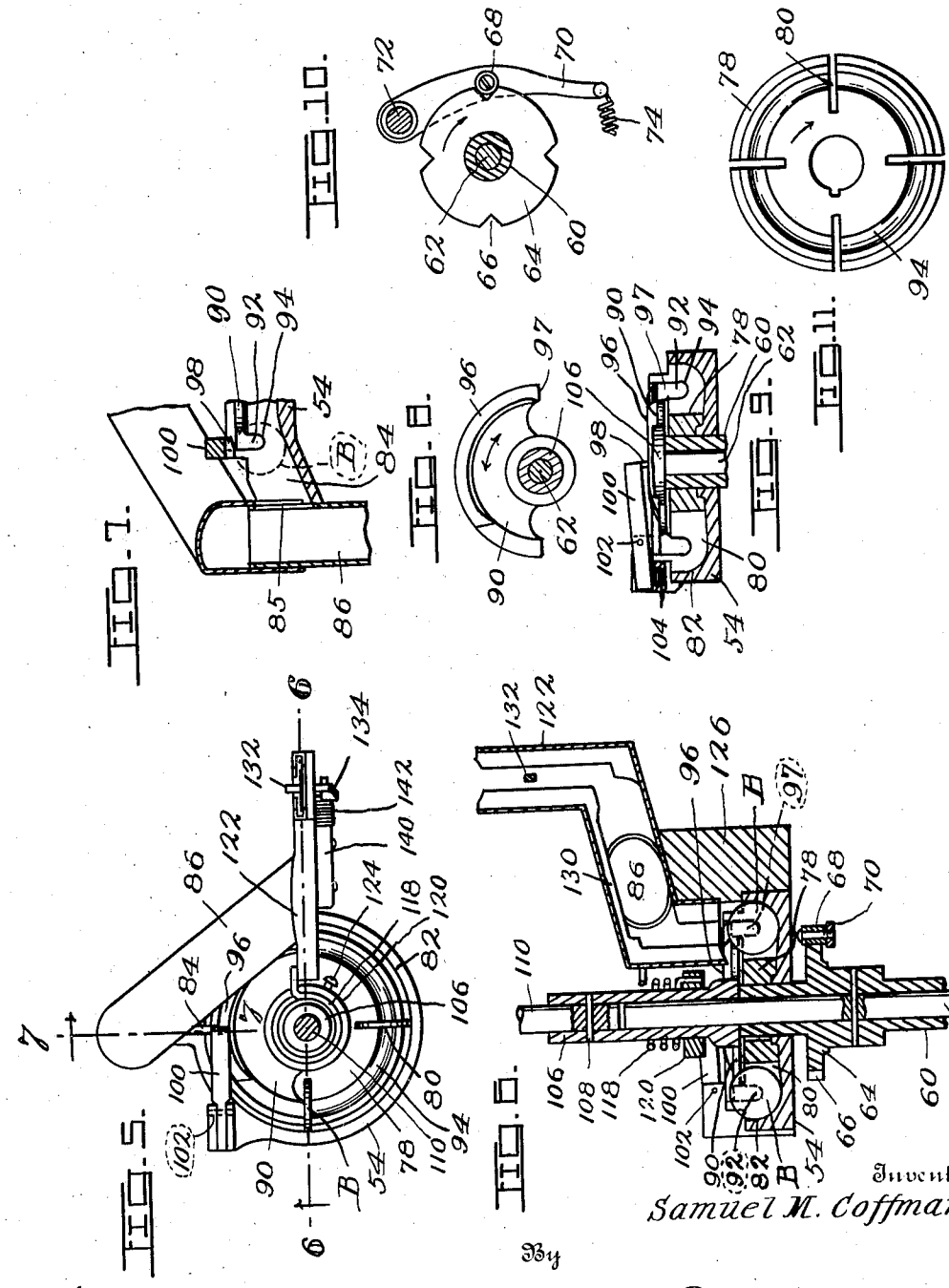
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May 7, 1929. S. M. COFFMAN 1,711,773

VENDING MACHINE

Filed Nov. 19, 1926 4 Sheets-Sheet 3



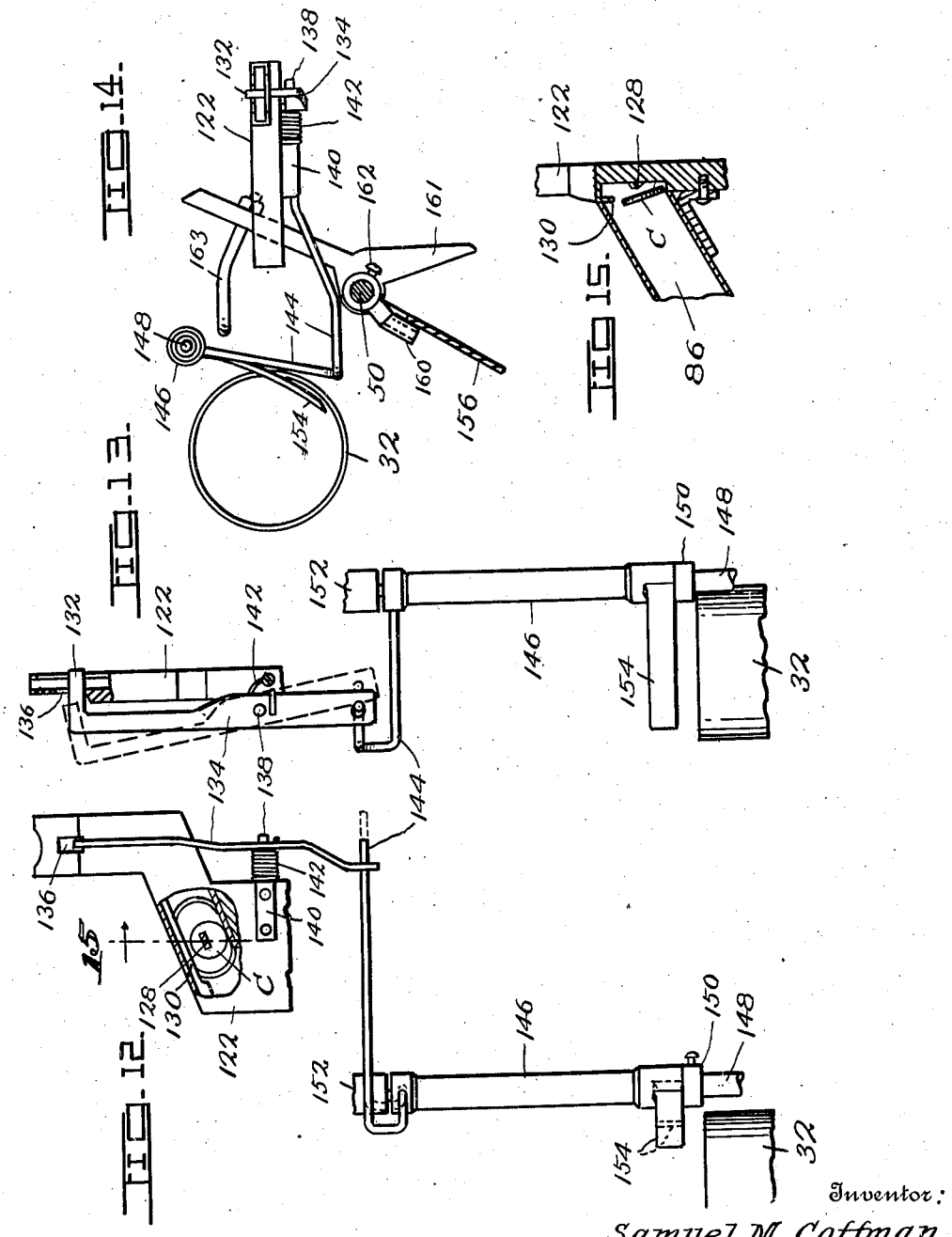
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May 7, 1929. S. M. COFFMAN 1,711,773

VENDING MACHINE

Filed Nov. 19, 1926 4 Sheets-Sheet 4



Patented May 7, 1929. 1,711,773

UNITED STATES PATENT OFFICE.

SAMUEL M. COFFMAN, OF KANSAS CITY, MISSOURI, ASSIGNOR TO RALPH H. OSBORNE AND CECIL W. SYDENSTRICKER, OF KANSAS CITY, MISSOURI.

VENDING MACHINE.

Application filed November 19, 1926. Serial No. 149,397.

My invention relates to coin controlled vending machines and the present invention pertains more particularly to a machine which may be used for vending articles such, for instance, as bottled goods.

The invention, generally stated, embodies a case in which an endless conveyer arranged to carry bottled goods is operably mounted for placing a bottle in position for delivery each time a proper coin is inserted in the coin controlled mechanism.

The case is preferably built like a refrigerator adapted to hold a cooling medium such as ice for chilling the bottled goods.

In order that the invention may be fully understood, reference will now be had to the accompanying drawings, in which:

Fig. 1 is a side elevation of the mechanism with several of the bottle holders removed, the case being partly broken away and in vertical longitudinal section on line 1—1 of Fig. 2.

Fig. 2 is a plan view of the mechanism with the case partly broken away and in horizontal section on line 2—2 of Fig. 1.

Fig. 3 is a broken plan view of a portion of the conveyer.

Fig. 4 is a vertical section on line 4—4 of Fig. 3.

Fig. 5 is a detail plan view of a portion of the coin controlled mechanism.

Fig. 6 is a section on line 6—6 of Fig. 5.

Fig. 7 is a fragmentary section on line 7—7 of Fig. 5.

Fig. 8 is a detailed plan view of a cam with its hub and the shaft upon which said hub is journaled, in cross section.

Fig. 9 is a section on the plane of line 6—6, Fig. 5, with a number of the parts removed.

Fig. 10 is a detail plan view of a notched wheel and a detent associated with said wheel, the shafts upon which said wheel and the detent are mounted being in cross section.

Fig. 11 is a detail plan view of a slotted wheel employed in carrying out the invention.

Fig. 12 is a broken side elevation of a portion of the coin controlled mechanism with means for automatically preventing the passage of a coin through the coin chute.

Fig. 13 is a view disposed at a right angle to Fig. 12.

Fig. 14 is a plan view of the parts disclosed by Figs. 12 and 13, with additional elements.

Fig. 15 is a fragmentary section on line 15 of Fig. 12.

In carrying out the invention, I employ a case 2 which is preferably provided with outer and inner walls 4 and 6, spaced apart for the admission of ground cork or other insulating material 8. The case 2 is divided into an ice chamber 10 and a main chamber 13 by a perforated partition wall 12 through which chilled water from the melting ice can flow around the bottled goods A in said chamber 13, the chilled water being retained at proper depth by means of an overflow pipe 14 leading outwardly through the bottom of the case, Fig. 1. Access is had to the interior of the case 2 for the placement of ice and bottled goods through a lid 18 and said case 2 is provided at its forward end with an offset provided at its upper portion with a delivery opening 20 and a sight-opening 22, which latter is covered with glass or other transparent material 24 through which the coins deposited in the coin controlled mechanism, hereinafter described, can be viewed for the purpose of determining whether or not they are legal and of the proper denomination.

Referring now more particularly to the conveyer, Figs. 1 to 4, inclusive, 26 designates a pair of endless sprocket chains arranged to travel around two pairs of sprocket wheels 28 and 30 and are provided at regular intervals with annular bottle holders 32 having lugs 34, which are firmly secured to certain links of the sprocket chains 26.

The sprocket wheels 28 are cast or otherwise formed integral with a hub 36 journaled upon a stationary vertical shaft 38 fixed at its lower end to the adjustable section 40 of a base plate 42, which is firmly secured to the bottom of the case 2. The section 40 is adjustable longitudinally for taking up slack in the sprocket chains 26 and is secured at any point of its adjustment by suitable means such as set screws 44 extending through slots 46 in said section 40 and threaded at their lower ends into the base plate 42.

The sprocket wheels 30, like the sprocket wheels 28, are cast or otherwise fixed to a

hub 48, which is journaled upon a stationary vertical shaft 50 fixed at its lower end in the base plate 42 and at its upper end in a boss 52 of a stationary member 54. The sprocket wheels 28 and 30 have diametrically opposed peripheral recesses 53 and 55, respectively, Figs. 2 and 3, for successively receiving the lugs 34 for the purpose of reliably holding each bottle holder 32 beneath the delivery opening 20.

The sprocket hub 48 is provided with a small integral cog wheel 56 which intermeshes with a larger cog wheel 58, Fig. 1, fixedly mounted upon a tubular shaft 60, journaled upon a stationary shaft 62 fixed at its lower end to the base plate 42. The tubular shaft 60 is provided at its upper portion with a wheel 64 having four equally spaced peripheral notches 66, Fig. 10, for successively receiving a detent 68 mounted upon a lever 70, which is rockably mounted upon a vertical shaft 72 fixed at its lower end to the base plate 42. The lever 70 is drawn towards the wheel 64 to yieldably hold the detent 68 in contact with said wheel by means of a coil spring 74 connected at one end to the free end of the lever 70 and at its opposite end to a screw 76 secured to the boss 52, Figs. 1 and 2.

The upper end of the shaft 60 extends freely through the center of the stationary member 54, Fig. 6, and is provided with a fixedly mounted wheel 78 having four equally spaced peripheral coin slots 80, as best shown by Fig. 11, for the reception of proper coins such as B. The slotted wheel 78 operates in a circular recess 82 in the member 54, Figs. 5, 6 and 9, the coins B being supported upon the bottom of the recessed portion as they are successively carried around to a delivery slot 84, Figs. 5 and 7, which leads from the member 54 to a slot 85 in a tube 86 fixed at its lower portion to the base plate 42 and the bottom of the case 2, and arranged to discharge into a cash drawer 88 slidably mounted beneath the bottom of the case 2, Fig. 1.

90 designates an oscillatory cam, Figs. 2, 5, 6, 8 and 9, having a depending segmental flange 92 which operates in a complementary recess 94 in the upper portion of the slotted wheel 78. The cam 90 has a raised upper surface 96 which slopes downwardly at its ends and is adapted to successively lift the toothed end 98 of a pawl 100 from the coin slots 80. The pawl 100 is mounted upon a pivot 102 carried by the stationary member 54, and the rear end of said pawl bears upon a coil spring 104, Fig. 9, carried in a recess in said member 54 and adapted to hold the tooth 98 of the pawl 100 yieldably in engagement with the upper surface of the wheel 78 and the upper surface of the raised surface 96 of the cam 90. The raised surface 96 is on a level with the upper surface of the slotted wheel 78 in order to successively lift the toothed end of the pawl 100 out of the coin slots 80, as will hereinafter appear.

The cam 90 has an upwardly projecting hub 106 which is journaled upon the upper end of the stationary shaft 62 and connected by suitable means such as a transverse pin 108, Fig. 6, to a shaft 110, extending through the top of the case 2 and provided with a fixedly mounted handle 112, which in the present instance is prevented from rotating more than a quarter of a revolution by upwardly projecting stops 114 and 116 on top the case 2. The handle 112 is normally held against the stop 114 by means of a coil spring 118 secured at one end to a collar 120 and having its opposite end abutting a coin chute 122. The collar 120 is loosely mounted upon the cam hub 106 in order that it may be rotated to regulate the tension of the spring 118, a set screw 124, Figs. 2 and 5, being provided to lock said collar 120 to the hub 106 at any point of its adjustment.

The coin chute 122 extends down through the top of the case 2 and terminates above the cam 90, as best shown by Fig. 6, where it is supported by a bracket 126 projecting from the stationary member 54. One side of the coin chute 122 is open and communicates with the upper end of the tube 86 and the opposite closed side of said coin chute has an ejector 128, Figs. 12 and 15, whereby small coins or slugs C will be forced into the tube 86 instead of entering the coin slots 80 in the slotted wheel 78. Coins of proper size are prevented from being forced by the ejector 28 into the tube 86 by a marginal depending flange 130 on the side of the coin chute that communicates with the tube 86.

The upper portion of the coin chute 122 is normally closed against the passage of a coin by means of the inturned end 132 of a coin check 134, Figs. 2, 12 and 13, said inturned end 132 projecting through a slot 136 in the coin chute. The coin check 134 is preferably in the form of a lever mounted intermediate its ends upon the circular terminal 138 of a bar 140 fixed to one side of the coin chute 122. A coil spring 142 embracing the bar 140 and bearing at one end against the coin chute and at its opposite end against the coin check 134 normally holds the latter in closed position.

The coin check 134 is moved to open position by means of an arm 144 fixed at one end to a tubular shaft 146 rockably mounted upon a stationary shaft 148 upon which it is supported by a collar 150. The stationary shaft 148 is secured at its lower end to the base plate 42 and at its upper end in a boss 152 depending from the member 54. The lower portion of the tubular shaft 146 is provided with a fixedly mounted spring

member 154, the free end of which is normally held in the path of the bottled goods as the latter approach the sprocket wheels 30.

156 designates a door for normally closing the delivery opening 20 in the case 2. Said door 156 is provided with a pair of fixedly mounted bearings 157 rockably mounted upon the shaft 50. The door 156 is normally held in closed position by a coil spring 158 against a stop 160 secured to the shaft 50 by suitable means such as a set screw 162. The spring 160 bears at one end against the door 156 and is secured at its opposite end to a collar 163 fixed to the shaft 50 by suitable means such as a set screw 164.

The door 156 is pushed open by each bottle as the latter is carried into position beneath the delivery opening 20. As the door 156 is pushed open it actuates a lever 161 rockably mounted upon the shaft 50 and provided with an arm 163, Figs. 1 and 14, which is carried against the spring member 154, and through the intermediary thereof and the tubular shaft 146 and the arm 144, holds the coin check 134 in closed position so that another coin cannot pass through the coin chute 122 until the bottle which forced the door 156 open is removed through the delivery opening 20.

Briefly stated, the operation is as follows: All of the bottle holders 32, excepting the one beneath the delivery opening 20 are supplied with bottled goods which rest upon the bottom of the case 2. The bottle bearing against the spring member 154 causes the latter, through the intermediary of the tubular shaft 146 and the arm 144 to hold the coin check 134 in open position. Upon insertion of a proper coin into the coin chute 122, said coin is conducted into the slot 80 registering with the lower end of said coin chute. The handle 112 is then rotated to the right, Fig. 2, a quarter of a revolution, causing the forward end 97 of the cam 90 to impinge against the coin and through the intermediary thereof, carry the slotted wheel 78 forward one step through one-fourth of a revolution. As the slotted wheel 78 is carried forward, as stated, it rotates the tubular shaft 60 therewith and said shaft 60, through the intermediary of the cog wheels 58 and 56, rotates the sprocket wheels 30 through an arc of sufficient length to cause the sprocket chains 26 to carry the first loaded bottle holder 32 into delivery position beneath the opening 20 where it is reliably held in place through the intermediary of the lugs 34 fitting into the registering recesses of the sprocket wheels 30. As the holder 32 carries the bottle into delivery position said bottle contacts and forces the door 156 open, so that the customer may reach into the case 2 through the delivery opening 20 and withdraw the bottle. As the door 156 is swung open by the initial bottle, said door actuates the lever 161 and causes the latter to force its arm 163 against the spring 154 so that said spring and the succeeding bottle against which it is pressing, will yield sufficiently to close the coin check 134 through the intermediary of the shaft 146 and the arm 144. Just as soon as the customer withdraws the initial bottle the door 156 is swung to closed position against the stop 160 by the spring 158. Opening of the door as stated, relieves the pressure of the arm 163 upon the spring member 154 so that the pressure exerted thereon against the abutting bottle will cause said spring member to open the coin check 134 through the intermediary of the shaft 146 and the arm 144, so that another coin may follow the path of the first coin and the second bottle be brought into position for delivery in the same manner as the initial bottle.

The initial coin remains in the slotted wheel 78 until the third coin has been inserted and carried around one-fourth of a revolution in the same manner as the first and second coins, whereupon said first coin is brought into registry with the inclined delivery slot 84 through which it passes the coin tube 86 and is conducted thereby to the cash drawer 88. After the handle 112 has been turned to the right it may be manually carried back to initial position, or automatically carried back through the action of the spring 118, and as the cam 90 moves backwardly with said handle 112 the slotted wheel 78 is prevented from turning backwardly therewith by the notched wheel 64 and the detent 68. Shoud any of the coins for any reason stick and fail to pass down into the delivery slot 84 it will be positively forced down into said slot by the pawl 100, the toothed end of which is suddenly forced down upon the coin by the spring 104, causing the tooth 98 to enter the underlying slot 80. As the cam 90 is returned to initial position, its raised surface 96 passes beneath the tooth 98 and lifts the latter out of the slot 80 leaving the wheel 78 free to advance another step. The foregoing operations may be repeated until the last bottle passes the spring member 154, whereupon the spring 142 closes the coin check 134 against the passage of other coins until the bottle holders 32 are restocked.

From the foregoing description it is apparent that I have provided a vending machine well adapted for the purpose intended, and while I have shown and described the preferred construction, combination and arrangement of parts I reserve all rights to such changes and modifications as properly fall within the spirit and scope of the invention as claimed.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:

1. In a vending machine, a conveyer consisting of two pairs of sprocket wheels having diametrically opposed recesses with angular corners, mechanism for driving one pair of said sprocket wheels, a pair of endless sprocket chains arranged to travel around said sprocket wheels, a plurality of equally spaced cylindrical bottle holders, and angular lugs securing said holders to the sprocket chains and adapted to enter and snugly fit within said recesses in the sprocket wheels.

2. In a vending machine, a case having a horizontally disposed bottom and a delivery opening, a self-closing door for normally closing said opening, and an endless conveyer arranged to travel in a horizontal circuit within said case and including a plurality of annular vertically disposed bottle holders for receiving and sliding bottled goods in a vertical position over the floor of the case to said delivery opening and causing said bottle goods to open the self-closing door.

In testimony whereof I affix my signature.

SAMUEL M. COFFMAN.