Jan. 22, 1963 M. KRAKAUER ET AL 3,074,593

CONSOLE CIGARETTE MERCHANDISING MACHINE

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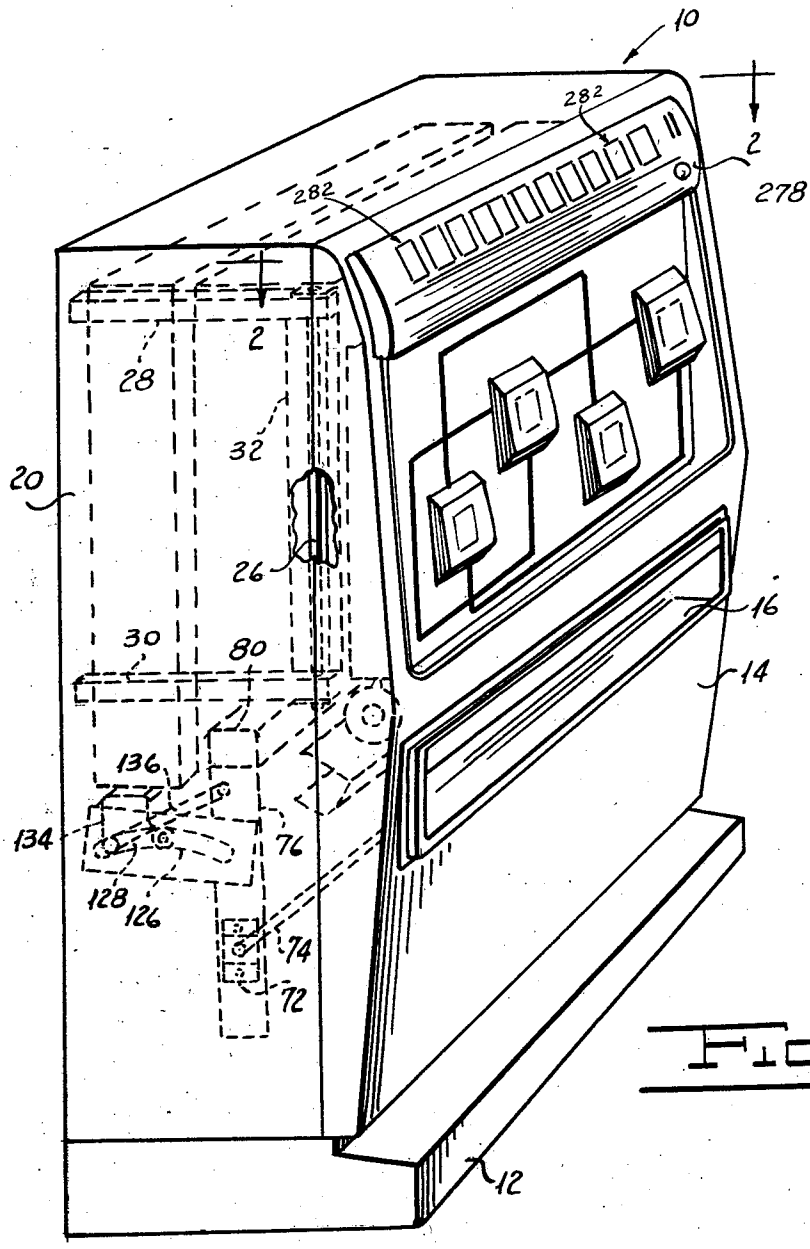


FIG 1

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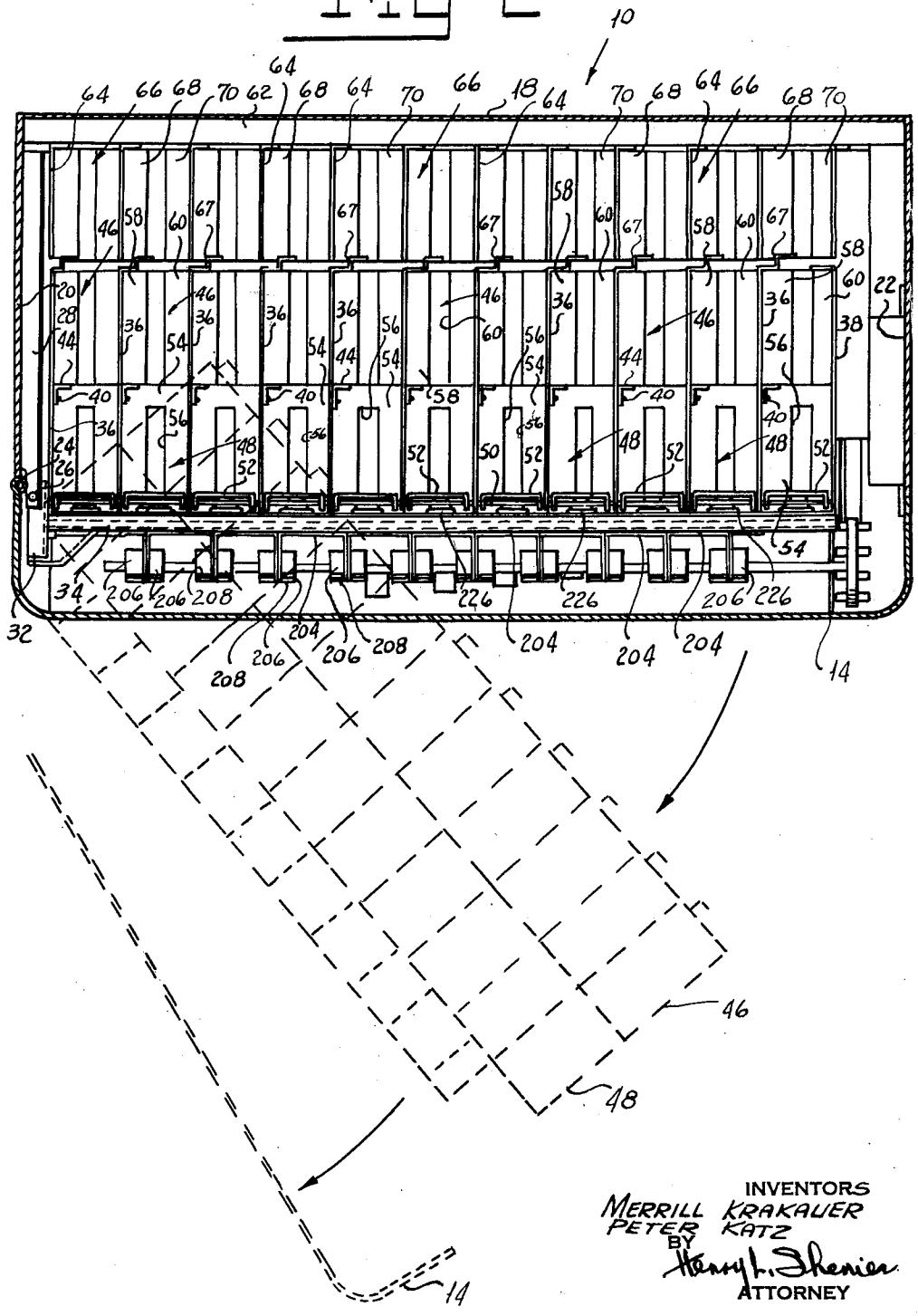
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CONSOLE CIGARETTE MERCHANDISING MACHINE

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Fig 2



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CONSOLE CIGARETTE MERCHANDISING MACHINE

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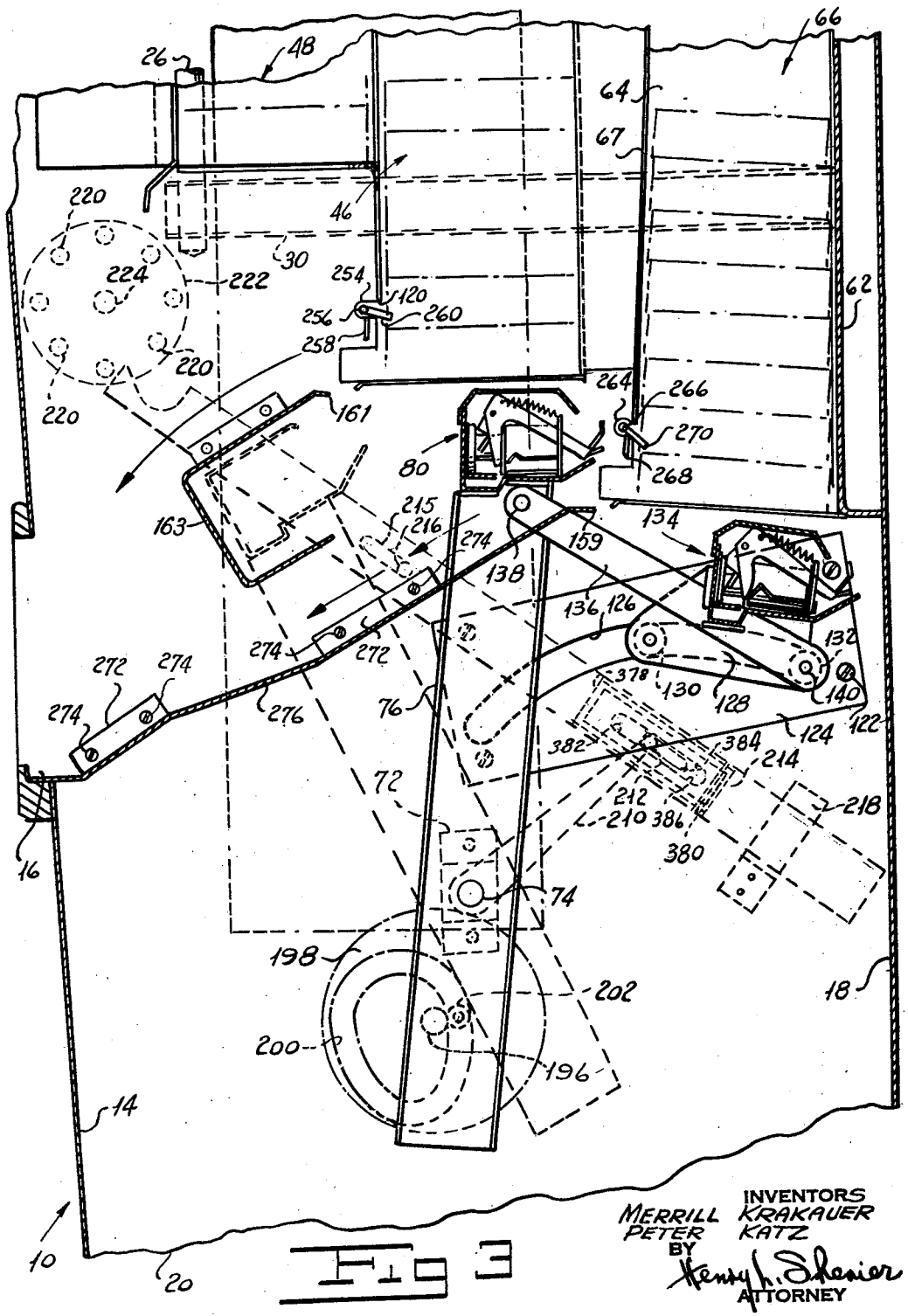


FIG 3

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CONSOLE CIGARETTE MERCHANDISING MACHINE

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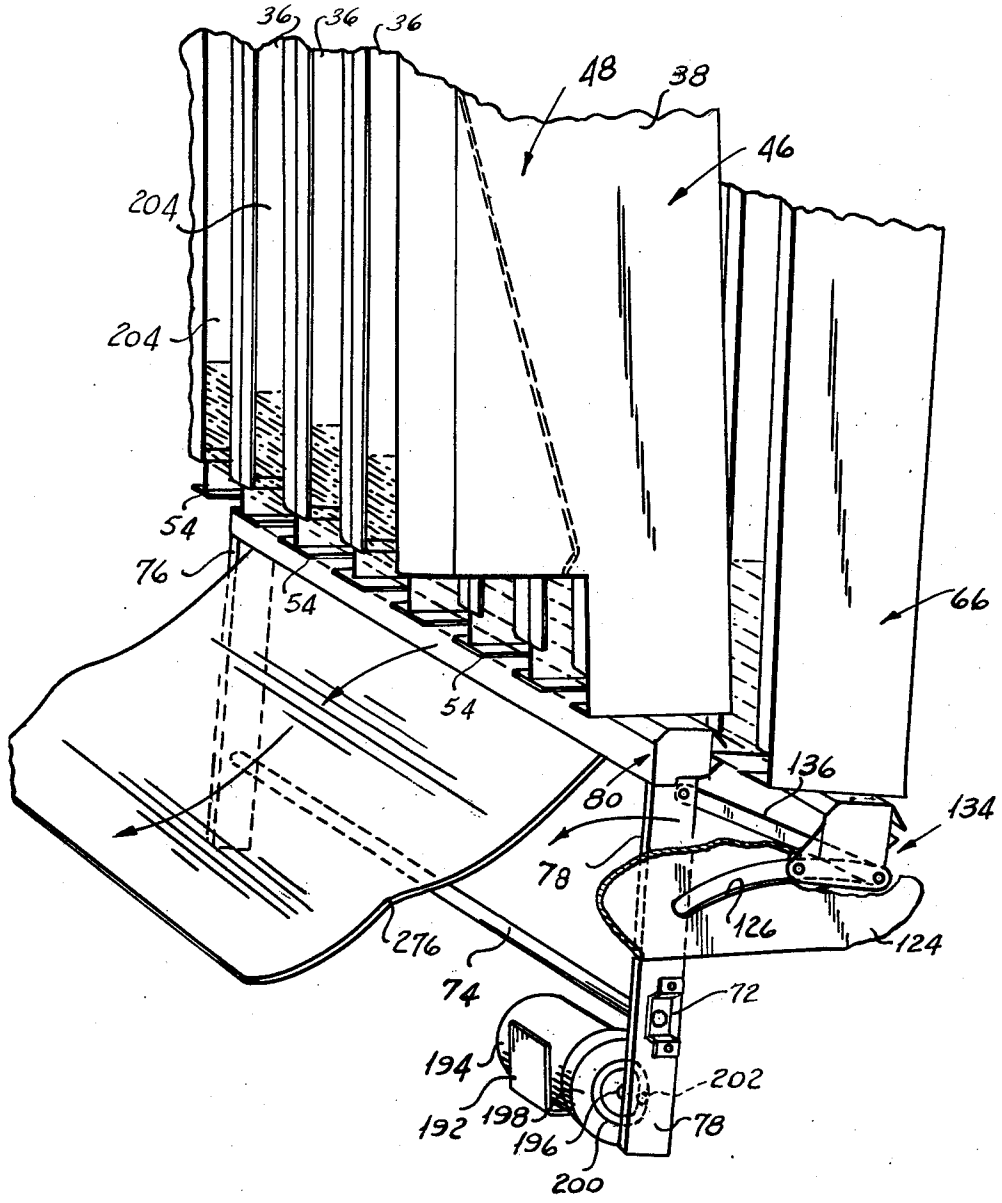


FIG 4

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CONSOLE CIGARETTE MERCHANDISING MACHINE

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Fig 5

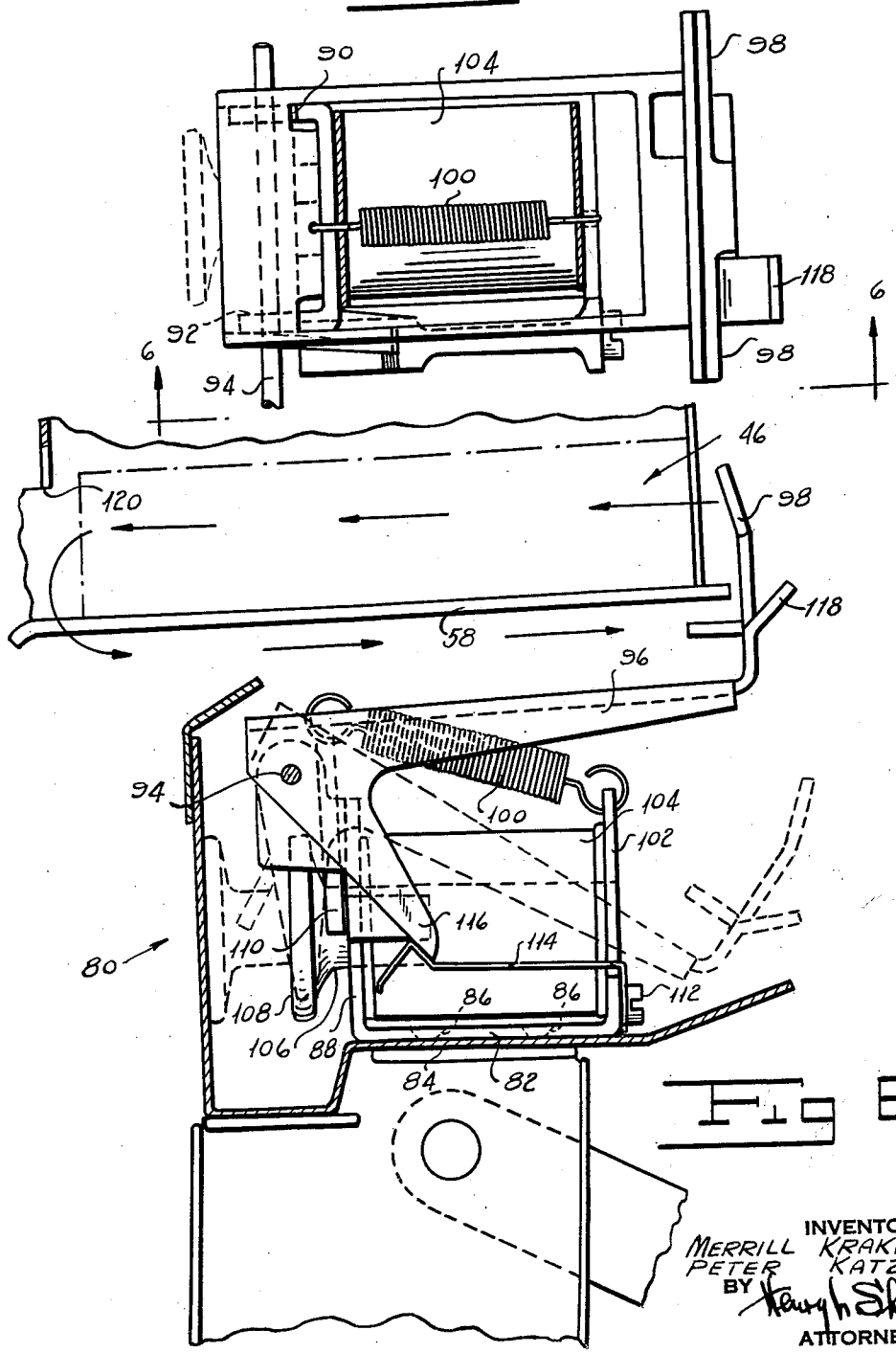


Fig 6

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CONSOLE CIGARETTE MERCHANDISING MACHINE

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FIG 7

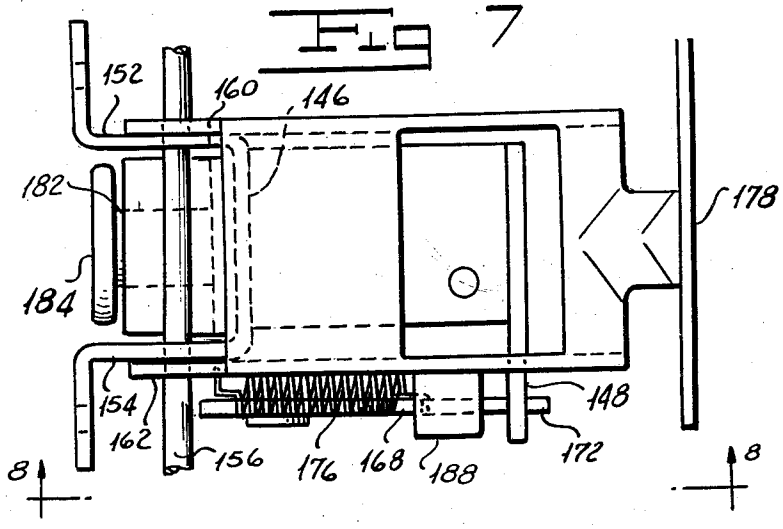
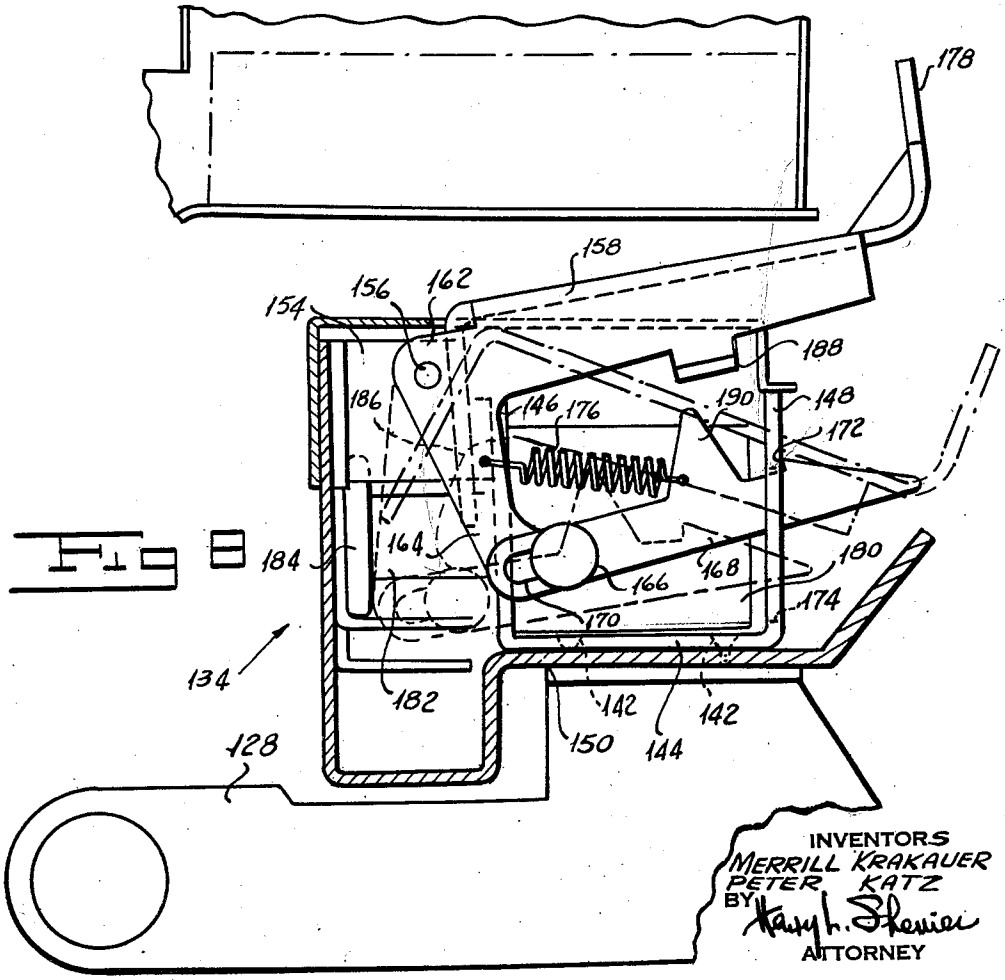


FIG 8



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CONSOLE CIGARETTE MERCHANDISING MACHINE

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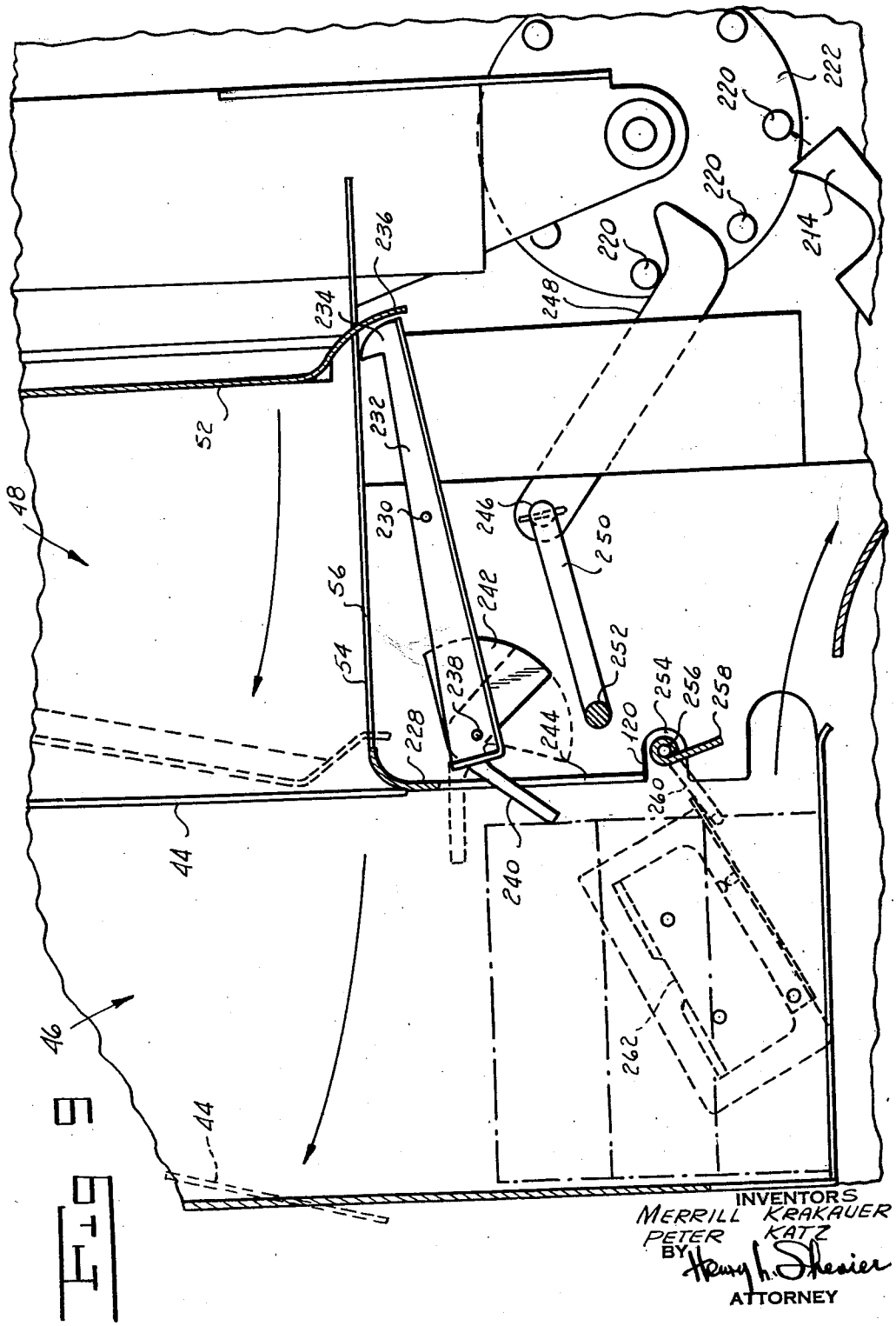


FIG. 5

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CONSOLE CIGARETTE MERCHANDISING MACHINE

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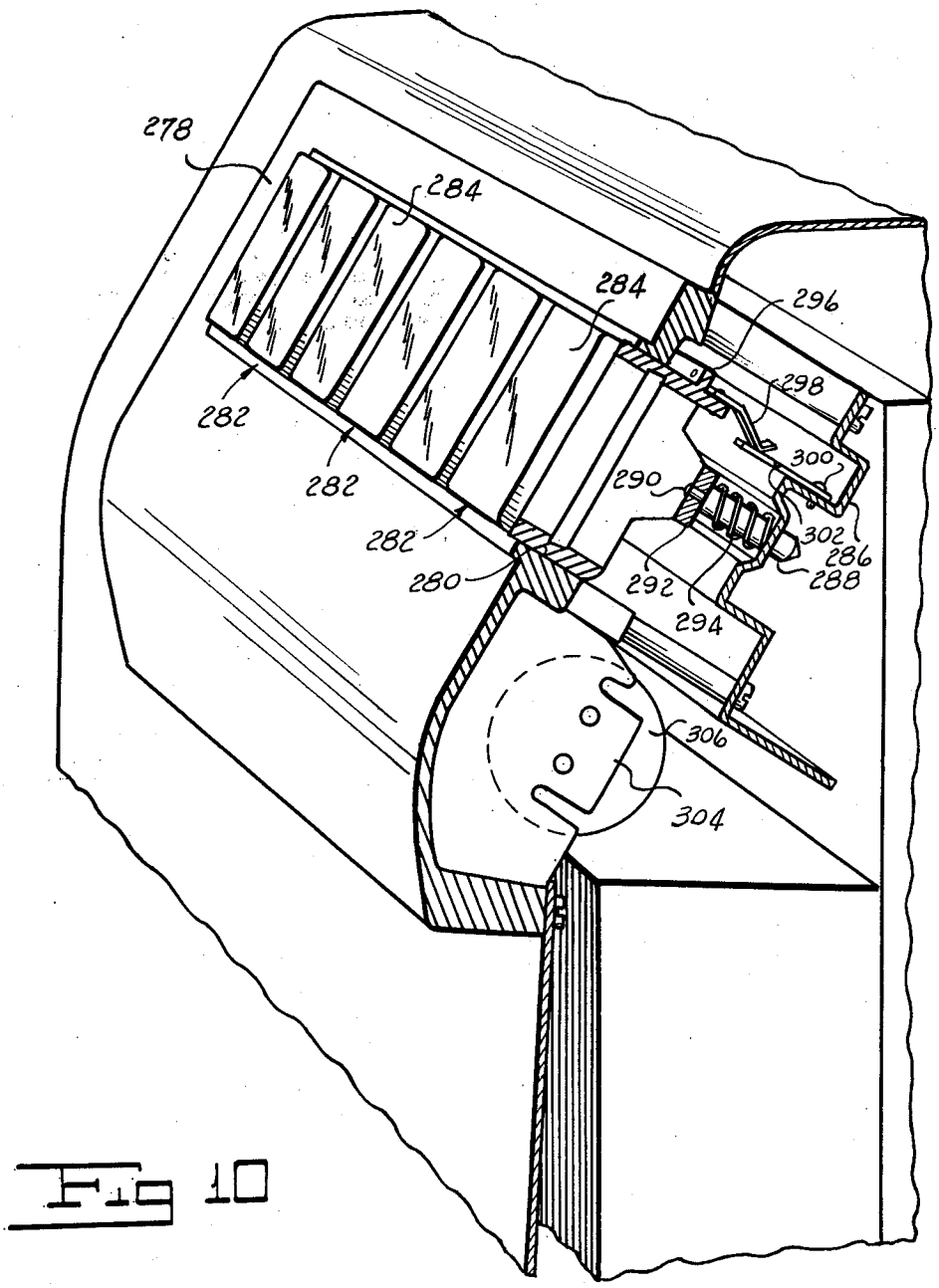


Fig 10

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CONSOLE CIGARETTE MERCHANDISING MACHINE

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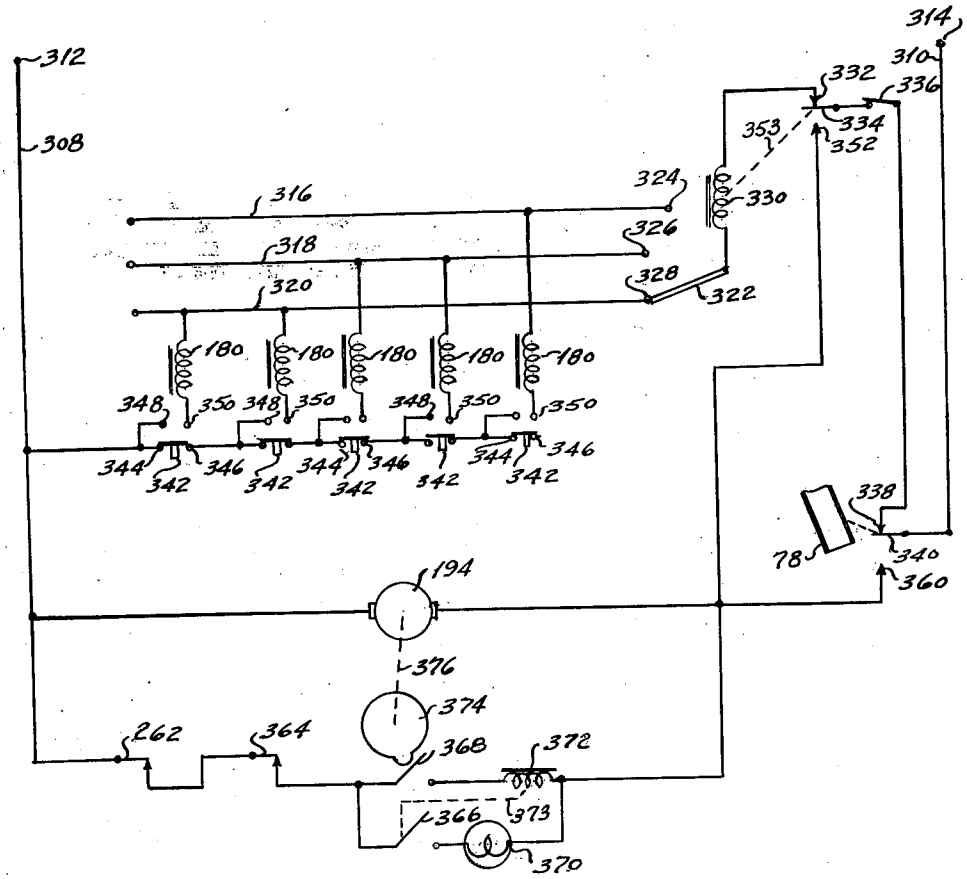


Fig 11

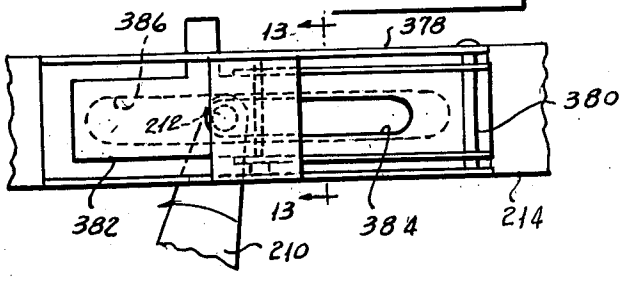


Fig 12

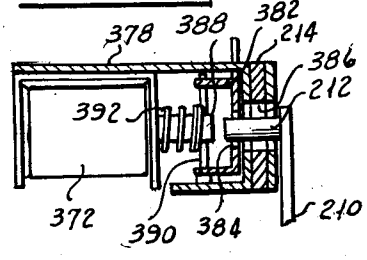


Fig 13

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United States Patent Office 3,074,593 Patented Jan. 22, 1963

3,074,593

CONSOLE CIGARETTE MERCHANDISING MACHINE

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Filed July 12, 1957, Ser. No. 671,617
11 Claims. (Cl. 221—13)

Our invention relates to a console cigarette merchandising machine and, more particularly, to a console cigarette merchandising machine which represents an improvement over cigarette merchandising machines of the prior art.

In the present-day cigarette market it is desirable that a large supply including a great number of various brands and kinds of cigarettes be dispensed from a cigarette merchandising machine. Machines are known in the prior art for dispensing packages of cigarettes in response to the deposit in the machine of a sum in coins aggregating the purchase price of a package of cigarettes.

Some of these machines of the prior art have ejectors which are mounted on carriages and which are selectively rendered operative. Latches carried by the machine columns hold selected ejectors in operative position as they move in the course of a dispensing operation. In this type of machine it is difficult to maintain the alignment of the carriage ejectors with the column-carried latching means. It will be obvious that a misalignment of these members will result in a failure of the machine to dispense an article of merchandise in response to a deposit of coins.

Other machines of the prior art have carriage-mounted ejectors which are biased to operative position and which are held out of operative position by releasable detents or latches. The biasing arrangement employed in this type of machine is relatively uncertain in action as compared with a positive operating means for raising a selected ejector to operative position. As a result machines including ejectors biased to operative position are not as reliable in operation as is desirable.

The machines of the prior art which are adapted to dispense a large number of various kinds and different brands of cigarettes employ complicated drives for selecting and actuating the ejectors associated with the supplies housed in the machines.

We have invented a console cigarette merchandising machine for dispensing a large number of various kinds and different brands of cigarettes. Our machine holds a large supply of cigarettes relative to the space occupied by the machine. It is simple in construction and in operation. Our machine overcomes the disadvantages inherent in ejector and carriage constructions of the prior art.

One object of our invention is to provide a console cigarette merchandising machine for dispensing a large number of different kinds and various brands of cigarettes.

Another object of our invention is to provide a console cigarette merchandising machine which overcomes the disadvantages inherent in cigarette merchandising machines of the prior art.

A further object of our invention is to provide a console cigarette merchandising machine which is simple in construction and operation and which is reliable in operation.

Other and further objects of our invention will appear from the following description:

In general our invention contemplates the provision of a console cigarette merchandising machine having a front ejector carriage and a rear ejector carriage mounted for movement below respective pluralities of front and

rear containers for holding packages of cigarettes. We connect the front and rear carriages in tandem. Respective pluralities of ejectors carried by the front and rear carriages are associated with the respective containers and are normally biased to inoperative position. Our machine includes a selecting means adapted to be actuated to move an ejector corresponding to a selected brand to operative position. A latch on the ejector carrier holds the ejector in the operative position to which it is moved by the selecting means. Drive means responsive to the operation of the selecting means drives one of the carriages to move both carriages with a dispensing stroke and with a return stroke below the containers. As the carriages move in the course of their dispensing stroke the operative ejector forces a package of cigarettes out of its associated column and into a delivery tray. At the end of the dispensing stroke a positive release means on the container unlatches the operative ejector, and the machine parts return to their initial position. Our machine includes means for delivering a packet of matches concomitantly with delivery of a package of cigarettes.

In the accompanying drawings which form part of the instant specification and which are to be read in conjunction therewith, and in which like reference numerals are used to indicate like parts in the various views:

FIGURE 1 is a perspective view of our console cigarette merchandising machine.

FIGURE 2 is a sectional view of our console cigarette merchandising machine taken along the line 2—2 of FIGURE 1 and drawn on an enlarged scale.

FIGURE 3 is a fragmentary sectional view of our console cigarette merchandising machine.

FIGURE 4 is a fragmentary perspective view of our console cigarette merchandising machine.

FIGURE 5 is a plan view showing one form of the ejector assembly of our console cigarette merchandising machine removed from its associated carriage.

FIGURE 6 is a side elevation of the form of ejector assembly shown in FIGURE 5 taken along the line 6—6 of FIGURE 5 and showing the assembly on its carriage.

FIGURE 7 is a plan view of a second form of ejector assembly used on our console cigarette merchandising machine removed from its associated carriage.

FIGURE 8 is a side elevation of the form of ejector assembly shown in FIGURE 7 taken along the line 8—8 of FIGURE 7 and showing the carriage with which the ejector assembly is associated.

FIGURE 9 is a fragmentary sectional view of our console cigarette merchandising machine showing the shift column actuating means of our console cigarette merchandising machine.

FIGURE 10 is a fragmentary perspective view of our console cigarette merchandising machine with parts shown in section.

FIGURE 11 is a schematic view showing one form of electrical circuit which may be used with our console cigarette merchandising machine.

FIGURE 12 is a fragmentary elevation of the operating link drive of our machine.

FIGURE 13 is a fragmentary sectional view of the operating link drive of our machine taken along the line 13—13 of FIGURE 12.

More particularly referring now to FIGURES 1 to 4 of the drawings, our console cigarette merchandising machine includes a cabinet indicated generally by the reference character **10** which is carried by a base **12** and which has a door **14** provided with a delivery opening **16**. Cabinet **10** has a back **18** and respective sides **20** and **22**. A pivot pin **24** carried by the cabinet side **20** pivotally mounts door **14** for movement between an open and a closed position. A hinge pin **26** carried by a

pair of supports 28 and 30 fixed on side 20 by any convenient means such as welding or the like pivotally supports an elongated bracket 32 to which we secure a container support wall 34 by means such as welding. We weld or otherwise mount a plurality of spaced container partitions 36 on the rear surface of wall 34. A wall 38 carried by the wall 34 completes the extreme right-hand containers as viewed in FIGURE 2. Respective pins 40 pivotally support a plurality of elongated guides 44 on partitions 36 to separate the space between adjacent partitions into a plurality of front columnar containers indicated generally by the reference characters 46 and a plurality of shift columnar containers indicated generally by the reference characters 48. A pivot rod 50 carried by the extreme left-hand partition 36 as viewed in FIGURE 2 and by the wall 38 swingably supports the fronts 52 of the shift columnar containers 48. We provide each of the shift columnar containers 48, the sides of which are formed by the front portions of partitions 36, with bottoms 54 having slots 56 which permit entry into the column of the shift column front wall guides to be described in detail hereinafter. Bases 54 support respective supplies of packages of cigarettes in the shift columns.

We form respective pairs of lateral flanges 58 and 60 on the bottom of each of the partitions 36 to support supplies of packages of cigarettes in the respective front containers 46. As can be seen by referring to FIGURE 4, the partitions 36 are cut so that the front containers 46 extend a distance below the associated shift containers 48. A rear container support wall 62 carried by the back 18 of cabinet 10 supports a number of spaced rear container partitions 64 which form respective rear columnar containers indicated generally by the reference characters 66. Respective pairs of lateral flanges 68 and 70 carried by the partitions 64 support supplies of packages of cigarettes in the rear columnar containers 66.

A pair of brackets 72 secured by screws or the like to the respective cabinet sides 20 and 22 rotatably carry a pivot shaft 74 extending across the width of the cabinet 10. Shaft 74 supports for rotation with it a pair of respective front column carrier support arms 76 and 78 adjacent its ends. We mount a front container carriage indicated generally by the reference character 80 on the upper ends of the arms 76 and 78. Carrier 80 supports a plurality of respective ejector assemblies associated with the front columnar containers 46.

Referring now to FIGURES 3, 5 and 6 one form of our ejector assembly includes a U-shaped bracket 82 secured to the base 84 of the carrier 80 by means such as screws 86. One arm 88 of bracket 82 is formed with a pair of ears 90 and 92 which carry a pivot pin 94. Pin 94 rotatably supports an ejector 96 formed with an upright head 98 adapted to be moved through the associated container to eject a package of cigarettes from the container. A spring 100 connected between the ejector 96 and a leg 102 of bracket 82 normally urges the ejector to move to a position clear of the associated container 46. This position of the ejector is shown in broken lines in FIGURE 6. Bracket 82 carries a solenoid winding 104 adapted when energized to draw a core 106 formed with a head 108 into the winding. We form ejector 96 with a depending lug 110 adapted to be engaged by head 108 as core 106 moves into winding 104. A screw 112 secures a spring latch 114 to leg 102 of bracket 82. Assuming that the parts of the ejector assembly are in the broken-line position shown in FIGURE 6 in which they are normally held by spring 100, when winding 104 is energized in a manner to be described hereinafter, core 106 moves into the winding. As the core moves head 108 engages lug 110 to swing ejector 96 into the full-line position shown in FIGURE 6. In the course of this movement a toe 116 formed on the ejector moves into latched position over the spring latch 114. Latch 114 holds the ejector in this raised position as the winding 104 is de-energized.

As will be explained hereinafter carriage 80 is swung forwardly of the container 46 in the course of a dispensing operation to move the elevated ejector pusher 98 into the associated column to dispense a package of cigarettes. We provide the ejector pusher 98 with a projection 118 which engages one of the bottom flanges 60 of a container 46 to cam the ejector to move in a clockwise direction as viewed in FIGURE 6 to move toe 116 out of engagement with latch 114 to permit the ejector to move to its inactive position when pusher head 98 passes out of the opening 120 in the front of the container 46. Pusher 98 is so formed as to prevent the ejector from dropping out of the container before the dispensing operation is complete. As will be apparent from FIGURES 3 and 6 as carriage 80 moves along its arcuate path, the projection 118 moves the ejector 96 in a clockwise direction to cam toe 116 out of engagement with the latch spring 114. It will be appreciated that pusher 98 is a sufficient distance above the container bottom to permit this movement of ejector 96. Following the unlatching operation the pusher 98 rides along the upper surface of the container bottom and as it rides out of the container, spring 100 returns the pusher to its inoperative position.

Any suitable means such as screws 122 or the like mount plates 124 formed with arcuate tracks 126 on the respective sides 20 and 22 of the cabinet 10. Each of a pair of carriage mounting plates 128 carries spaced rollers 130 and 132 disposed in the track 126 of one of the plates 124. We mount a rear ejector carrier, indicated generally by the reference character 134, on the plates 128. Links 136 carried by pins 138 on arms 76 and 78 and by pins 140 on plates 128 connect carriages 80 and 134 in tandem. The ejector assemblies on the carrier 134 may be of the form shown in FIGURES 5 and 6 and described hereinabove.

Referring now to FIGURES 7 and 8 we have shown an alternate form of ejector assembly which may be used either on the front carriage 80 or the rear carriage 134. By way of example we have shown an assembly supported on the rear carrier 134. In this form of our ejector assembly means such as screws 142 secure a U-shaped bracket 144 having legs 146 and 148 to the base 150 of the rear carriage 134. We form the leg 146 of bracket 144 with a pair of supports 152 and 154 which carry a pivot pin 156. We mount the ejector 158 on pin 156 by means of a pair of ears 160 and 162 on the ejector. A depending extension 164 on ear 162 carries a pin 166. We mount a latch 168 on pin 166 by means of a slot 170 formed in one end of the latch. The end of the latch 168 remote from slot 170 is formed with a hook 172 and is disposed in a vertical slot 174 formed in leg 148. A spring 176 connects the depending portion 164 of ejector 158 with the latch 168. Ejector 158 has a pusher 178 adapted to be moved into a columnar container during the dispensing operation in the same manner as is the pusher 98 of an ejector 96. We dispose a solenoid winding 180 in the bracket 144. Winding 180 when energized draws a core 182 formed with a head 184 into the winding 180. Ejector 158 has a depending lug 186 adapted to be engaged by head 184 as it moves to the right as viewed in FIGURE 8 when winding 180 is energized.

Before a dispensing operation is initiated the parts of the form of our ejector assembly shown in FIGURES 7 and 8 are in the broken-line position shown in FIGURE 8. When a winding 180 is energized in a manner to be described hereinafter, core 182 moves to the right as viewed in FIGURE 8 and head 184 engages lug 186 to move ejector 158 in a counterclockwise direction as viewed in FIGURE 8. In the course of this movement latch 168 rides in slot 174 until its hook 172 engages the upper edge of the slot. As the hook 172 is cammed into engagement with the upper edge of slot 174, ejector 158 moves relative to the latch to tension spring 176 so that the spring holds the latch hook into engagement

with arm 148 to retain the ejector 158 in its raised position. Referring to FIGURES 3 and 8 as the carriage 134 completes its stroke, the upper surface of ejector 158 engages a flange 159 formed along the rear edge of a delivery tray 276 and the ejector 158 is cammed in a clockwise direction as viewed in FIGURE 8. In the course of this movement of ejector 158, a foot 188 on the ejector engages an upstanding projection 190 on latch 168 to move hook 172 out of engagement with arm 148 to permit the assembly to fall under the influence of gravity and spring 176 to the broken-line position shown in FIGURE 8 when pusher 178 passes out of the container. In the broken-line position of the assembly latch 168 is brought into engagement with foot 188 by the action of spring 176. In a similar manner as the carriage 80 carrying a raised ejector 158 completes its stroke, the upper surface of the ejector engages a flange 161 formed along the rear edge of one leg of a U-shaped shield 163 carried by the machine frame. When this occurs, the raised ejector is cammed in a clockwise direction as viewed in FIGURE 8 to cause the ejector to be reset in the manner described above. It will be appreciated that, if desired, both flanges 159 and 161 could be replaced by rods carried by the machine frame.

Referring now to FIGURES 3 and 4 a platform 192 in cabinet 10 supports a motor 194 adapted to be energized to drive a shaft 196. We mount a cam 198 having a track 200 on shaft 196 for rotation with the shaft. Arm 78 rotatably supports a cam follower 202 which engages the track 200 of cam 198. The shape of track 200 is such that in the course of one revolution of shaft 196 cam 198 moves arms 76 and 78 forwarldy to the broken-line position shown in FIGURE 3 and again rearwardly to the full-line position shown in FIGURE 3. Owing to the tandem connection between the arms 76 and 78 and plates 128 the carriages 80 and 134 move together forwardly and then rearwardly of the machine. In the course of this movement any ejector raised to operative position ejects a package of cigarettes from its associated container.

Referring now to FIGURES 2 to 4 and 9 we weld or otherwise secure a plurality of U-shaped match containers 204 to the front surface of support wall 34. Each container 204 has a bottom formed by flanges 206 for supporting a column of packets of matches. Vertical flanges 208 on the containers 204 retain the packets in the containers. Our machine includes means for delivering a packet of matches to a customer each time a package of cigarettes is dispensed.

Referring to FIGURES 3, 12, and 13 shaft 74 carries for rotation with it a crank 210 having a pin 212 adapted to drive the match dispenser actuating bar 214. Bar 214 carries a pin 216 which rides in a slot 215 formed in any convenient support panel of the machine. A bracket 218 secured to a machine support panel guides bar 214. This structure is indicated in phantom in FIGURE 3. A bracket 378 secured to bar 214 by any convenient means such as rivets carries a pin 380 which pivotally supports a link 382 formed with a slot 384. Pin 212 passes through a slot 386 formed in the bar 214 and the bracket 378 and into the slot 384. It is to be noted that slot 386 is longer than is the slot 384. When crank 210 rotates with shaft 74 in the direction of the arrow shown in FIGURE 12, pin 212 engages the end of the slot 384 to drive bar 214 to engage one of a plurality of pins 220 carried by a wheel 222 supported on a shaft 224. For each operation on which a package of cigarettes is dispensed bar 214 moves to drive wheel 222 through 45 degrees of rotation to dispense a packet of matches from one of the containers 204. Since the match vending assembly per se forms no part of the instant invention, it will not be described in detail. The details of the match vending assembly are disclosed in the copending application of Christian Gabrielsen, Serial No. 301,553, filed July 29, 1952, for a Match Vending Assembly, now Patent No. 2,923,434, issued February 2, 1960.

Bracket 378 supports the solenoid 372 having an armature 388 connected to link 382 by a pin 390. As will be explained hereinafter solenoid 372 is energized when the supply of cigarettes in a selected column is exhausted to move armature 388 to the left as viewed in FIGURE 13 against the action of a spring 392 to move link 382 out of the path of pin 212 as arm 210 rotates. When this occurs, pin 212 moves in the longer slot 386 in link 214 without driving the link. In this manner we prevent the dispensing of the packet of matches when the supply of cigarettes in the selected column is exhausted. It is to be understood that in the course of its forward movement when a package of cigarettes is dispensed, the bar or operating link 214 empties the coin register coin bucket (not shown) to accept the coins and cancels the credit in the coin totalizer to be described hereinafter. If the selected column is empty, pin 212 will not engage the end of slot 384 and link 214 will not be moved to deliver a packet of matches, accept the coins and cancel the totalizer credit. Pin 212 will, however, engage the end of slot 386 to move link 214 sufficiently far to open the drive motor circuit, reset the coin return latch (not shown) and reset the unlatching solenoid plunger in a manner to be described hereinafter.

Our machine includes means for shifting the packages of cigarettes from a container 48 into the associated container 46 when the supply of cigarettes in the container 46 is exhausted. Referring now to FIGURES 2 to 4 and 9 a plurality of respective springs 226 disposed between the respective shift column fronts 52 and the front support wall 34 normally urge the fronts to pivot in a direction to push the associated packages of cigarettes from containers 48 into containers 46. A rod 230 extending across the machine below the containers 48 carries a plurality of levers 232 associated with the respective containers 48. One end 234 of each of the levers 232 is adapted to engage a foot 236 formed on the corresponding front 52 normally to hold the front in position against the action of the spring 226. The end of each lever remote from end 234 supports a pin 238 which pivotally carries a feeler 240 normally biased by a weight 242 to the position shown in broken lines in FIGURE 9. The bottoms 54 of the columns 48 are formed with depending extensions 228 to provide front walls for the portions of containers 46 extending below containers 48. Each feeler 240 extends through a slot 244 in front wall 228 into the corresponding container 46. When the container 46 houses a supply of packages, a package urges the feeler to the full-line position shown in the figure. It will be noted that pivot rod 230 is so located that the weight of feeler 240 normally biases end 234 into engagement with the foot 236 of front 52.

The cabinet side 22 rotatably supports a shaft 246 carrying an arm 248 and a crank 250 for rotation with it. Each time the bar 214 actuates the match dispensing wheel 222 in the course of a dispensing operation, one of the wheel pins 220 actuates arm 248 to drive crank 250 in a clockwise direction as viewed in FIGURE 9. The end of crank 250 remote from shaft 246 carries a rod 252 extending across the machine below the weights 242 of feelers 240. In the event the supply of packages in a container 46 reaches the predetermined low level, feeler 240 moves to the broken-line position shown in FIGURE 9. In this position of the feeler its weight 242 is in a position to be engaged by bar 252 as crank 250 moves under the action of the match dispensing mechanism. If the weight 242 of a feeler is engaged by bar 252 in the course of its upward movement, the corresponding lever 232 is driven in a clockwise direction as viewed in FIGURE 9 to release the front 52 of the corresponding container. When this occurs, spring 226 moves the front to shift the supply of cigarettes from container 48 into the associated container 46.

At the same time the guide 44 of the column is pivoted to the broken-line position shown in FIGURE 9. As the shift column front 52 swings under the action of the

associated spring 226, foot 236 moves through the slot 56 in the container base 54 until it engages the end of the slot. In this position it guides the packages of cigarettes from the shift column into the front container 48.

Referring now to FIGURES 3 and 9 a plurality of lugs 254 formed on partitions 36 adjacent the bottoms of containers 48 rotatably support a shaft 256 which carries a flap 258, associated with the respective columns 48, for rotation with it. A package of cigarettes being dispensed from any container 48 in the direction of the arrow shown in FIGURE 9 actuates flap 258 to rotate shaft 256 in a counterclockwise direction as viewed in FIGURE 9. Shaft 256 carries for rotation with it a switch actuating arm 260 adapted to actuate a switch 262 when the shaft rotates, for a reason which will be explained hereinafter.

Referring again to FIGURE 3, a plurality of lugs 264 formed on the partitions 64 adjacent the bottoms of containers 66 rotatably support a shaft 266 which carries a flap 268 for rotation with it. A package of cigarettes being dispensed from a rear container 66 actuates flap 268 to rotate shaft 266 in a clockwise direction as viewed in FIGURE 3. Shaft 266 carries for rotation with it a switch actuating arm 270 adapted to actuate a switch, to be described hereinafter, when shaft 266 rotates under the action of a package of cigarettes being dispensed.

Any convenient means such as brackets 272 fixed to the cabinet sides by screws 274 support a delivery chute or tray 276 below the columns of the machine. A package of cigarettes ejected from any container slides down the chute to the delivery opening 16 in door 14.

Referring now to FIGURES 1 and 10 the door 16 carries a panel 278 formed with an opening 280 which slidably carries a plurality of respective selector button assemblies, indicated generally by the reference numeral 282. We form the faces 284 of buttons 282 of a suitable transparent material such as plastic. Translucent labels indicating the brand contained in the container with which the button is associated may be fixed to the button backs or to the faces 284. A bracket 286 extending between the sides of the cabinet door 14 behind the buttons slidably supports a plurality of pins 288 secured by means such as screws 290 to brackets 292 forming part of the respective assemblies 282. Springs 294 carried by pins 288 normally urge the assemblies 282 outwardly of the machine. This outward movement is limited by a stop on pin 288 formed on the assemblies. Any convenient means such as rivets or the like fix spring contactors 298 to the respective assemblies 282. Electrical contacts 300 secure a plurality of insulating lugs 302 to the bracket 286. When an assembly 282 is pushed inwardly of the machine as a selection is made spring contact 298 and its associated contact 300 form one of the selecting switches of our machine. Means such as brackets 304 carried by the panel 278 support a fluorescent lamp 306 below the assembly 282 to illuminate the assembly faces 284.

Referring now to FIGURE 11, one form of electric control circuit which may be used with our machine includes a pair of electrical conductors 308 and 310 connected to the respective terminals 312 and 314 of a suitable source of electrical energy. We connect one terminal of each of the front and rear solenoid windings 180 to one of a plurality of respective price lines 316, 318, and 320 of a coin register including an arm 322 adapted to be stepped in response to the deposit in the machine of coins to engage one of a plurality of contacts 324, 326, and 328 connected to the respective price lines. The coin register including arm 322 and lines 316, 318, and 320 may, for example, be the type disclosed in the copending application of Halstead W. Baker, Jr., Serial No. 600,517, filed July 27, 1956, for an Electromechanical Coin Totalizer, now Patent No. 2,996,163, issued August 15, 1961. The coin totalizer described in the copending application is adapted to dispense articles of merchandise selling at any price of between five cents and fifty cents in five cent increments. For purposes of clarity, only three lines corresponding to three different respective prices have been shown in the drawing.

We connect an unlatching solenoid winding 330 between arm 322 and one contact 332 of a pair of contacts 332 and 352 adapted to be engaged by the arm 334 of a motor start switch. Arm 334 normally engages contact 332. A coin return switch 336 connects the arm 334 to a contact 338 of a by-pass switch having an arm 340 normally held in engagement with contact 338 by a carriage arm such as arm 78. Arm 340 is connected to conductor 310. It will be seen that upon deposit in the machine coin totalizer of a sum in coins corresponding to the value represented by one of the price lines 316, 318, and 320, arm 322 will engage one of the contacts 324, 326, or 328 to energize one of the lines 316, 318, or 320.

We connect one terminal of each of the pusher actuating solenoids 180 to a price line corresponding to the price at which the associated article is to be sold. The other terminals of the solenoids 180 are connected to respective contacts 350 of pairs of contacts 348 and 350 adapted to be bridged by respective push-button switch contactors 342 when a switch is operated to make a selection. The contactors 342 normally bridge pairs of contacts 344 and 346 connected in series to conductor 308. When any switch contactor 342 associated with a solenoid 180 is actuated to bridge its contacts 348 and 350, the circuit of the solenoid is complete from conductor 308 through the contacts 344 and 346 of the switch contactors 342 to the left of the actuated contactor; through the contacts 348 and 350 of the actuated contactor to the solenoid winding 180; through one of the contacts 324, 326, and 328; through arm 322; through winding 330; through arm 334; through switch 336 and through arm 340 to conductor 310. As a result of this action, the pusher corresponding to the selected solenoid winding 180 is elevated and latched in its operative position. It is to be noted that only one winding can be energized at one time. If an attempt is made to actuate more than one contactor 342 at one time only the contactor to the left, as viewed in FIGURE 11, will energize its solenoid.

Energization of the unlatching solenoid winding in the manner described hereinabove frees the coin return lock assembly (not shown) to cause arm 334 to engage contact 352. We have indicated the connection between the unlatching solenoid 330 and the arm 334 schematically by the linkage 353 in FIGURE 11. When arm 334 engages contact 352, the circuit of the selected solenoid 180 is interrupted and the circuit of motor 194 is complete from conductor 308 through the motor, through contact 352 and arm 334, through switch 336 and through arm 340 to conductor 310. As the motor 194 rotates, it moves the carriage arms 76 and 78 to cause arm 78, for example, to release arm 340 to permit it to engage contact 360 to connect the motor 194 directly across conductors 308 and 310. It will be seen that in this position arm 340 bypasses the motor start switch and the coin return switch 336.

As the carriage 80 or 134 moves forwardly, operating link 214 is driven to operate the match dispensing mechanism to deliver a packet of matches and to empty the coin bucket and cancel the credit in the coin totalizer as long as a package of cigarettes is dispensed. Movement of link 214 also resets the unlatching solenoid 330, resets arm 334 and enables the coin return switch 336. When the carriage 80 or 134 returns to its initial position, the arm 78 moves arm 340 out of engagement with contact 360 to interrupt the motor circuit and engages the arm with contact 338 to condition the machine for the next operation.

We connect a respective front dispensing flap switch 262 and a rear dispensing flap switch 364 in series with a normally open empty sensing switch 368 and an empty

sensing solenoid 372 between conductor 308 and contact 360. We connect a signal lamp switch 366 adapted to be operated by solenoid 372 through a linkage 373 in series with a lamp 370 across the circuit including switch 368 and winding 372. A cam 374 driven by motor 194 through a linkage 376 indicated schematically in FIGURE 11 closes switch 368 once during each revolution of motor 194. If, at the time cam 374 closes switch 368, one of the flap switches 262 or 364 is not open, solenoid 372 is energized to close switch 366 to light lamp 370. At the same time solenoid 372 moves link 282 out of the path of pin 212 to prevent a packet of matches from being dispensed to prevent coins in the coin register from being accepted and to prevent cancellation of the credit in the coin totalizer, all of which operations normally are performed by the action of link 214. While these operations are not performed where the column is empty, pin 212 does engage the end of slot 386 to move link 214 through a sufficient distance to reset the coin return, the motor start switch arm 334 and the unlatching solenoid 330 to permit operation of the machine by selection of a column whose supply is not exhausted.

In operation of our machine, a customer deposits in the machine a sum in coins aggregating the purchase price of the article of merchandise he desires to cause arm 322 to engage the corresponding price line. The customer then actuates the contactor 342 corresponding to the desired merchandise to energize a winding 180. In the form of our ejector assembly shown in FIGURE 5, the head 108 moves the ejector 96 to engage its toe 116 with spring latch 114, which holds the ejector in its raised position when the solenoid circuit is interrupted. Unlatching solenoid winding 330 is energized to disable the coin return and to move the motor start switch arm 334 into engagement with contact 352 to complete the circuit of motor 194. As the motor drives the carriage, arm 78 moves contact arm 340 into engagement with contact 360 to connect the motor directly between conductors 308 and 310 to by-pass the motor start switch and the coin return switch. As the motor rotates, it drives cam 198 and follower 202 to drive the carriages 80 and 134 with a forward or dispensing stroke and with a rearward or return stroke. In the course of the dispensing stroke, the elevated pusher 98 pushes a package of cigarettes out of its associated column and onto delivery chute 276. When the projection 118 on ejector 96 engages the bottom of the corresponding column, it cams the ejector 96 downwardly to release toe 116 from latch 114. When the pusher moves out of the column, spring 100 retuurns the ejector to the inoperative position shown in broken lines in FIGURE 6. If our machine is provided with an ejector assembly of the form shown in FIGURES 7 and 8, these assemblies operate in the manner described hereinabove. As the carriages 80 and 134 are driven forwardly, crank 210 on shaft 74 drives bar or link 214 to actuate the match dispensing wheel 222 to deliver a packet of matches, to accept coins, to cancel the totalizer credit, to enable the coin return switch 336 and to reset solenoid 330 and switch 334.

When the supply of packages in a front container 46 reaches a predetermined low level, feeler 240 pivots to position its weight 242 to be engaged by bar 252 as it moves under the action of the match dispensing wheel 222. When this occurs, lever 232 pivots to release wall 52 to permit spring 226 to move the front wall 52 to urge the packages of cigarettes in the shift container 48 into the corresponding front container 46.

As has been explained hereinabove, each time a package of cigarettes is dispensed either from a front container 46 or from a rear container 66, a flap 258 or 268 is operated to open one of the switches 262 or 364. Cam 374 is arranged to close switch 368 at the same time as a switch 262 or 364 is open to prevent energization of signal light 370 and winding 372.

If the supply of cigarettes in a selected container is exhausted, neither of the switches 262 and 364 will open, with the result that solenoid 372 is energized to cause lamp 370 to light. At the same time, coins are not accepted and the totalizer credit is not wiped out. The circuit elements are, however, reset in the manner described hereinabove.

When our machine is to be loaded, door 14 may be swung open to the position shown in broken lines in FIGURE 2. The assembly, including the front containers 46, the shift containers 48 and match containers 204, may be swung outwardly of the machine about hinge pin 26 to permit access to the rear containers of the machine. Thus ready access to all parts of our machine is possible.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and sub-combinations. This is contemplated by and is within the scope of our claims. It is further obvious that various changes may be made in details within the scope of our claims without departing from the spirit of our invention. It is, therefore, to be understood that our invention is not to be limited to the specific details shown and described.

Having thus described our invention, what we claim is:

1. A merchandising machine for dispensing articles of merchandise including in combination means forming a columnar container for housing a supply of articles of merchandise to be dispensed, a carriage, means mounting said carriage for movement adjacent said container, an article ejector, means mounting said ejector on said carriage for selective movement to an operative position at which it is adapted to be moved into said container, means biasing said ejector to an inoperative position, means for moving said ejector to operative position against the action of said biasing means, said carriage mounting means normally positioning said carriage at a location at which said ejector is positioned outside of said container when it is raised to its operative position under the action of said moving means, a toe carried by said ejector, a spring supported by said carriage, said toe engaging said spring as said ejector moves in response to the operation of said ejector moving means to retain said ejector in operative position, means for driving said carriage to move said ejector when raised to its operative position into said container, means responsive to movement of said carriage for moving said toe out of engagement with said spring to release said ejector and means for retaining said ejector in operative position after its release until the dispensing operation is complete.

2. A merchandising machine for dispensing articles of merchandise including in combination means forming a columnar container for housing a supply of articles of merchandise to be dispensed, a carriage, means mounting said carriage for movement adjacent said container, an article ejector, means mounting said ejector on said carriage for selective movement to an operative position at which it is adapted to be moved into said container, means biasing said ejector to an inoperative position, means for moving said ejector to operative position against the action of said biasing means, said carriage mounting means normally positioning said carriage at a location at which said ejector is positioned outside of said container when it is raised to its operative position under the action of said moving means, said container being formed with a bottom, a toe carried by said ejector, a spring supported on said carriage, said toe being cammed over said spring as said ejector moves in response to the operation of said ejector moving means to retain said ejector in operative position, means for driving said carriage to move said ejector when raised to its operative position into said container, a finger operatively connected to said ejector for engaging said container bottom as said carriage moves to disengage said toe from said spring to release said ejector and means for retaining said ejector in its operative position

after its release until the dispensing operation is complete.

3. A merchandising machine for dispensing articles of merchandise including in combination means forming a columnar container for housing a supply of articles of merchandise to be dispensed, a carriage, means mounting said carriage for movement adjacent said container, an article ejector, means mounting said ejector on said carriage for selective movement to an operative position at which it is adapted to be moved into said container, means biasing said ejector to an inoperative position, means for moving said ejector to operative position against the action of said baising means, said carriage mounting means normally positioning said carriage at a location at which said ejector is positioned outside of said container when it is raised to its operative position under the action of said moving means, an arm supported for movement on said ejector, resilient means urging said arm toward said ejector, normally disengaged interengageable means on said arm and on said carriage, said normally disengaged interengageable means being adapted to be engaged to retain said ejector in operative position, means responsive to operation of the ejector moving means for engaging said normally disengaged interengageable means, means for driving said carriage to move said ejector when raised to its operative position into said container, second interengageable means on said ejector and on said arm for releasing said normally disengaged interengageable means and means responsive to movement of said carriage for actuating said second interengageable means.

4. A merchandising machine for dispensing articles of merchandise including in combination means forming a columnar container for housing a supply of articles of merchandise to be dispensed, a carriage, means mounting said carriage for movement adjacent said container, an article ejector, means mounting said ejector on said carriage for selective movement to an operative position at which it is adapted to be moved into said container, means biasing said ejector to an inoperative position, means for moving said ejector to operative position against the action of said biasing means, said carriage mounting means normally positioning said carriage at a location at which said ejector is positioned outside of said container when it is raised to its operative position under the action of said moving means, means comprising interengageable elements respectively mounted on said carriage and on said ejector for retaining said ejector in operative position upon operation of said ejector moving means, means for driving said carriage to move said ejector when raised to its operative position into said container, means responsive to movement of the carriage for disengaging said retaining means during the initial part of the movement of the said carriage and means for retaining said ejector in operative position after the disengagement of said retaining means.

5. A merchandising machine for dispening articles of merchandise including in combination means forming a columnar container for housing a supply of articles of merchandise to be dispensed, said container being formed with a bottom, a carriage, means mounting said carriage for movement adjacent said container, an article ejector formed with a head adapted to engage said container bottom when said ejector is within said container, means mounting said ejector on said carriage for selective movement to an operative position at which it is adapted to be moved into said container, means biasing said ejector to an inoperative position, means for moving said ejector to its operative position against the action of said biasing means, said carriage mounting means normally positioning said carriage at a location at which said ejector is positioned outside of said container when it is raised to its operative position under the action of said moving means, means comprising interengageable elements respectively mounted on said carriage and on said ejector for retaining said ejector in its operative position, means for driving said carriage to move said ejector when raised to its operative position into said container and means responsive to movement of said carriage for disengaging said retaining means to permit said head to engage said container bottom to retain the ejector within the container until the dispensing operation is complete.

6. In a cigarette package-dispensing machine having a container holding a supply of packages of cigarettes and having means comprising a member which moves on each operation of the machine for dispensing a package of cigarettes from said container, a match-dispensing assembly comprising an actuatable member for causing said match-dispensing assembly to deliver a packet of matches, means comprising a normally engaged releasable coupling for connecting said dispensing means member with said actuatable member, means adapted to be actuated to release said coupling, means responsive to the operation of said dispensing means for actuating said release means, means for sensing when a package of cigarettes is dispensed under the action of said package dispensing means and means responsive to the operation of said sensing means for preventing actuation of said release means.

7. In a cigarette package-dispensing machine having a container holding a supply of packages of cigarettes and having means comprising a member which moves on each operation of the machine for dispensing a package of cigarettes from said container, a match-dispensing assembly comprising an operating bar for causing said match-dispensing assembly to deliver a packet of matches, means comprising a pivoted link adapted to connect said operating bar to said movable member, means operatively connecting said link to one of said operating bar and movable member, said link being movable into and out of operative connection with the other of said operating bar and movable member, means for normally urging said link into operative connection with the other of said operating bar and said movable member, means adapted to be actuated to move said link out of operative connection with the other of said operating bar and movable member, means responsive to the operation of said dispensing means for actuating said means for moving said link out of operative connection, means for sensing when a package of cigarettes is dispensed under the action of said package-dispensing means and means responsive to the operation of said sensing means for preventing actuation of said link moving means.

8. In a cigarette package-dispensing machine having a container holding a supply of packages of cigarettes and having means comprising a member which moves on each operation of the machine for dispensing a package of cigarettes from said container, a match-dispensing assembly comprising an operating bar for causing said match-dispensing assembly to deliver a packet of matches, means comprising a pivoted link adapted to connect said operating bar to said movable member, means operatively connecting said link to one of said operating bar and movable member, said link being movable into and out of operative connection with the other of said operating bar and movable member, means for normally urging said link into operative connection with the other of said operating bar and said movable member, means comprising a solenoid and a circuit comprising a normally open switch and a normally closed switch connected in series for energizing said solenoid, means responsive to energization of said solenoid for moving said link out of operative connection, means responsive to movement of a package of cigarettes being dispensed out of said container under the action of said dispensing means for opening said normally closed switch and means responsive to operation of said dispensing means for closing said normally open switch whereby said solenoid energizing circuit is complete when said dispensing means fails to move a package of cigarettes out of said container.

9. In a cigarette package-dispensing machine having a container holding a supply of packages of cigarettes and having means comprising a member which moves

on each operation of the machine for dispensing a package of cigarettes from said container, a match-dispensing assembly comprising an operating bar formed with an elongated slot for causing said match-dispensing assembly to deliver a packet of matches, means comprising a pivoted link formed with an elongated slot adapted to connect said operating bar to said movable member, said movable member comprising a pin extending into said slots, said bar slot having a length which is greater than the length of said link slot, means for urging said link to a normal position at which said pin engages an end of said link slot to provide a driving connection to said bar, means adapted to be actuated to move said link out of its normal position to a position clear of said pin, said bar slot having a length which is greater than the length of said link slot whereby said pin rides free in said bar slot when said link is moved clear of said pin under the action of said actuatable means, means responsive to the operation of said dispensing means for actuating said actuatable means, means for sensing when a package of cigarettes is dispensed under the action of said package-dispensing means and means responsive to the operation of said sensing means for preventing actuation of said actuatable means.

10. A merchandising machine for dispensing articles of merchandise including in combination means forming a columnar container for housing a supply of articles of merchandise to be dispensed, a carriage, means mounting said carriage for swinging movement adjacent said container, an article ejector, means mounting said ejector on said carriage for selective movement from a normally inoperative position to an operative position at which it is adapted to be moved into said container in response to movement of said carriage, means for moving said ejector from its inoperative position to its operative position, latching means comprising first interengageable elements on said ejector and on said carriage and responsive to said ejector moving means for holding said ejector in operative position, means comprising second interengageable elements on said ejector and on one of said first interengageable elements for releasing said latching means, said carriage mounting means normally positioning said carriage at a location at which said ejector is positioned outside of said container when it is raised to its operative position under the action of said moving means, means for driving said carriage to move said ejector when raised to its operative position into said container, and means responsive to movement of said carriage for actuating said second interengageable elements.

11. A merchandising machine for dispensing articles of merchandise including in combination means forming a columnar container for housing a supply of articles of merchandise to be dispensed, a carriage, means mounting said carriage for movement adjacent said container, an article ejector, means mounting said ejector on said carriage for selective movement from an inoperative position to an operative position at which it is adapted to move into said container, means for moving said ejector from its inoperative position to its operative position, said carriage mounting means normally positioning said carriage at a location at which said ejector is positioned outside of said container when it is raised to its operative position under the action of said moving means, a latch, means mounting said latch for pivotal movement on said ejector, resilient means for urging said latch and said ejector to move toward each other, means comprising said resilient means and first interengageable elements on said latch and said carriage for holding said ejector in its operative position, means responsive to movement of said ejector moving means for engaging said interengageable elements, means for driving said carriage to move said ejector when raised to its operative position into said container, means comprising second interengageable elements on said ejector and on said latch for disengaging said first interengageable elements and means responsive to movement of said carriage for actuating said second interengageable elements.

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