

E. G. ETES
VENDING MACHINE

Filed July 27, 1961

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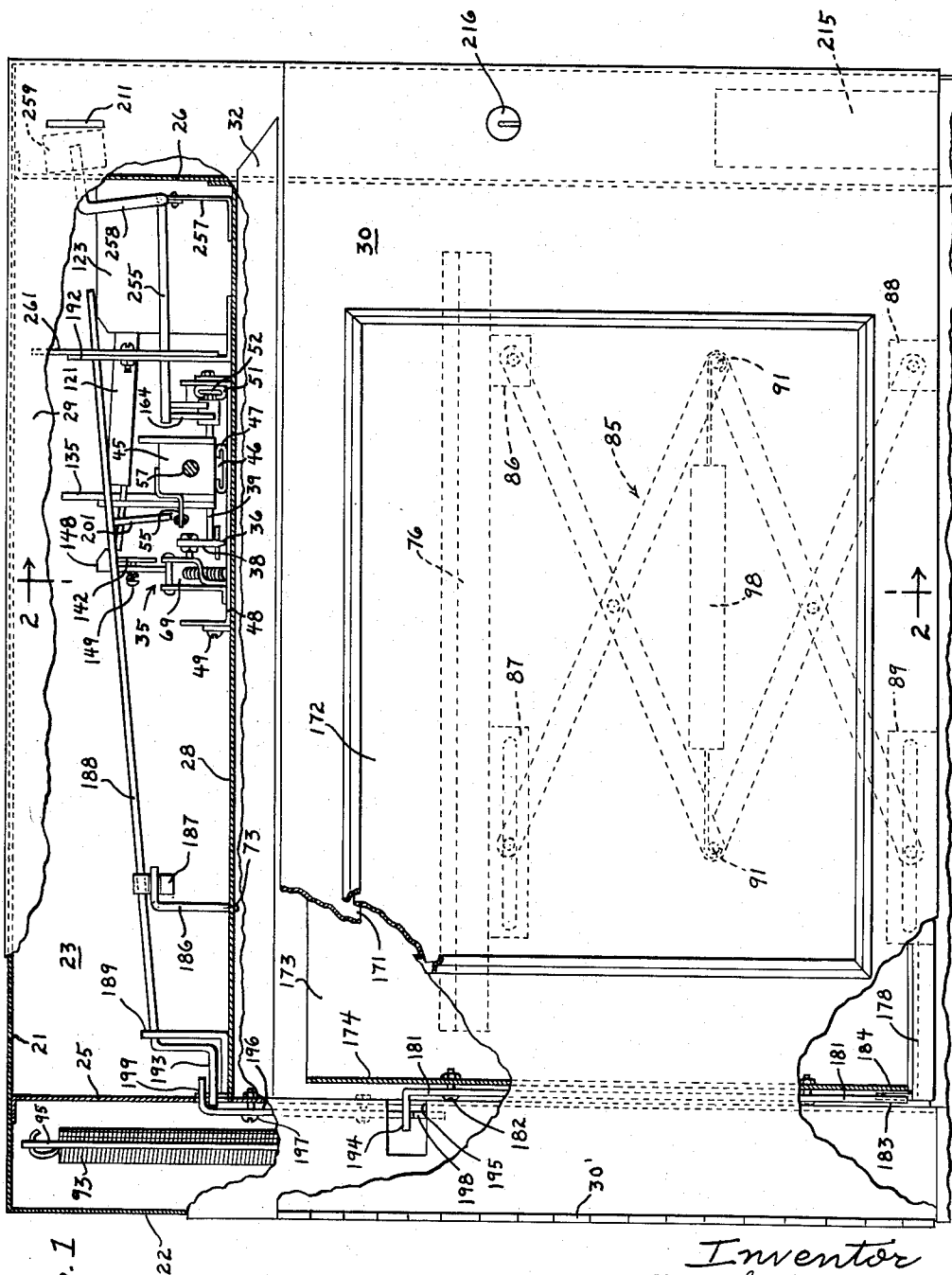


Fig. 1

Inventor
Elmer G. Etes

By McCanna, Morabach + Pillate
Atty's

Dec. 17, 1963

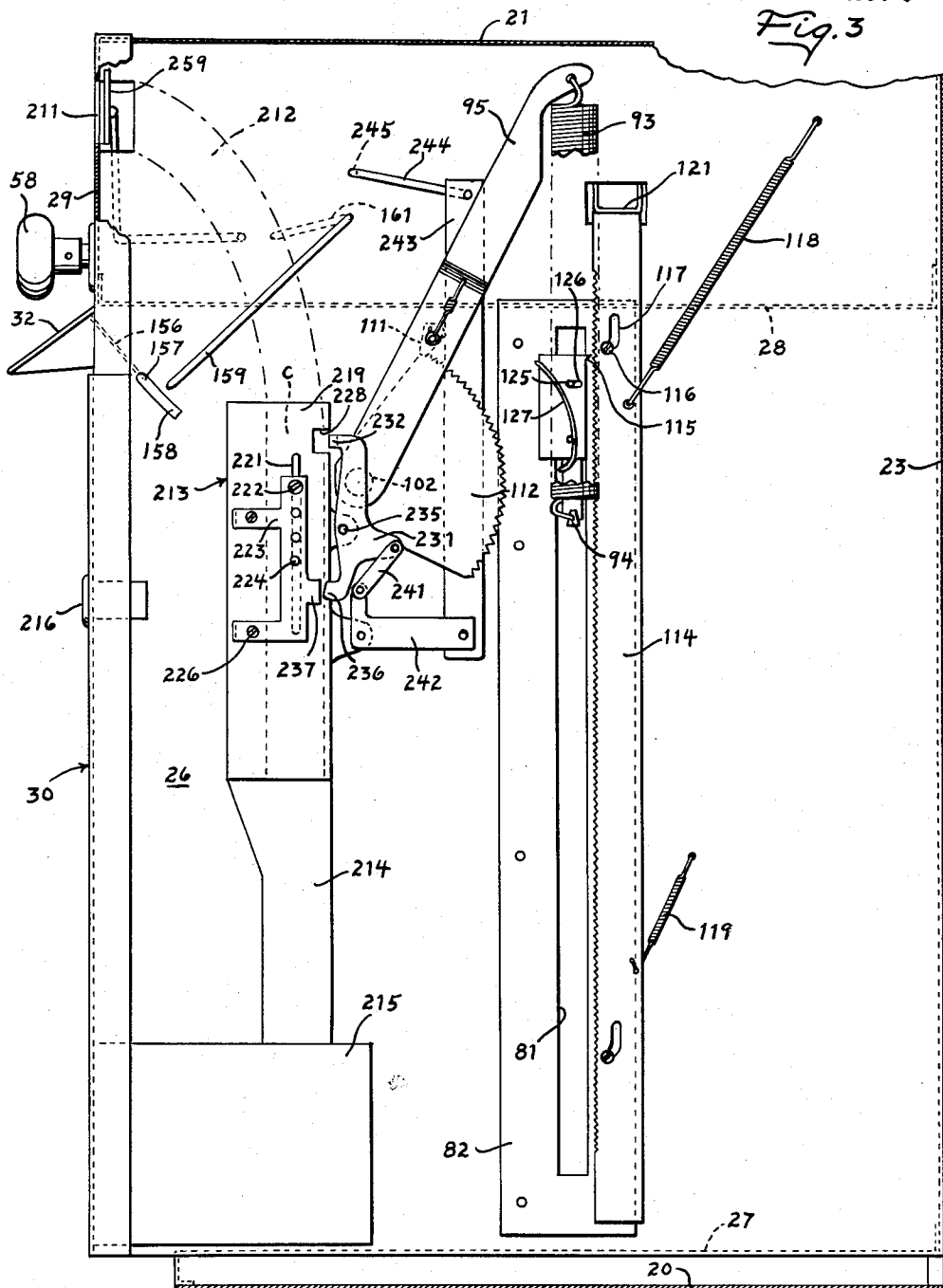
E. G. ETES
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3,114,475

Filed July 27, 1961

7 Sheets-Sheet 3

Fig. 3



Inventor
Elmer G. Etes
By McCanna, Morsbach & Pelote
Atty's

Dec. 17, 1963

E. G. ETES
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3,114,475

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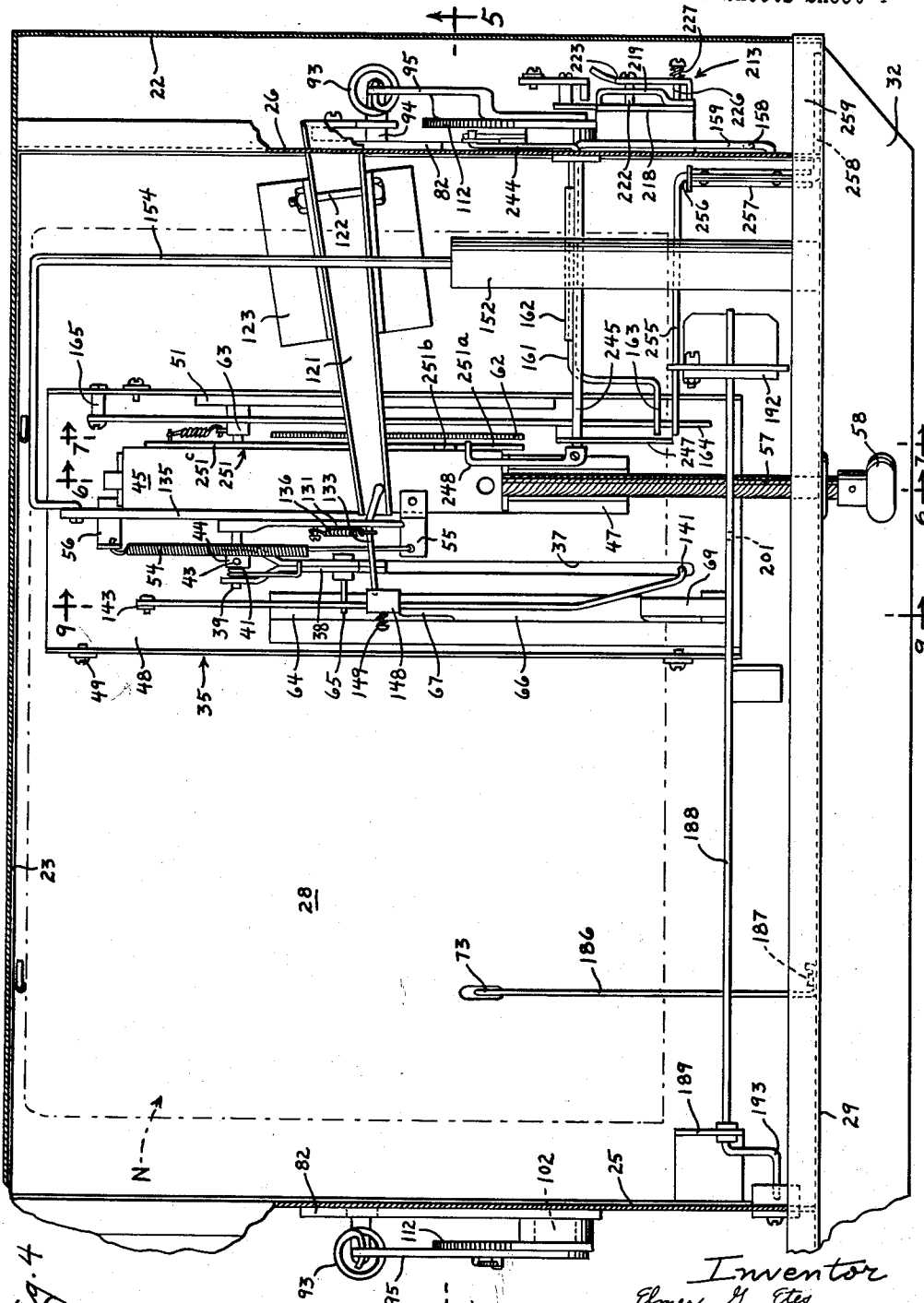


Fig. 4

Inventor
Elmer E. Etes
By McCanna, Morebach & Pillate
Atty's

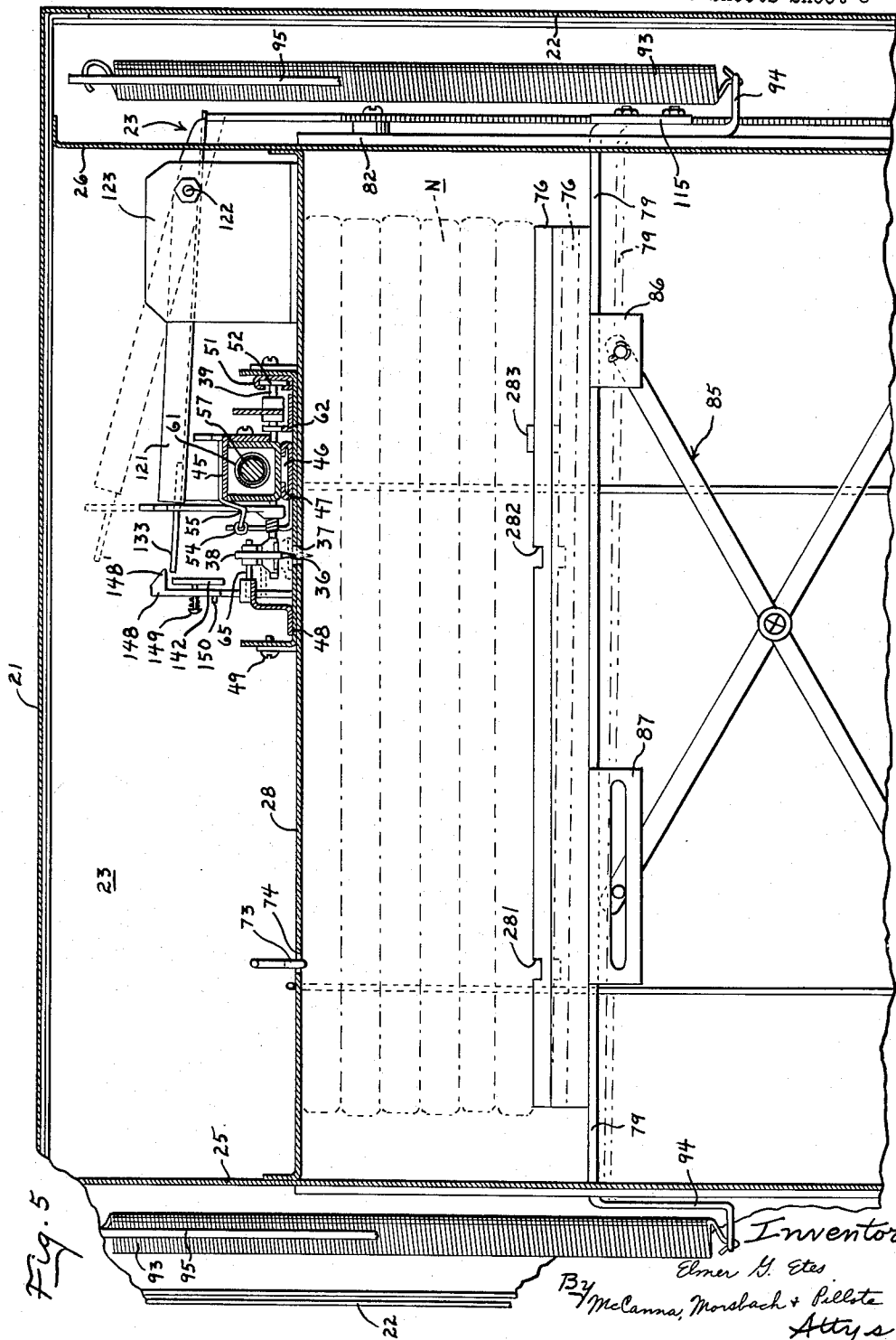
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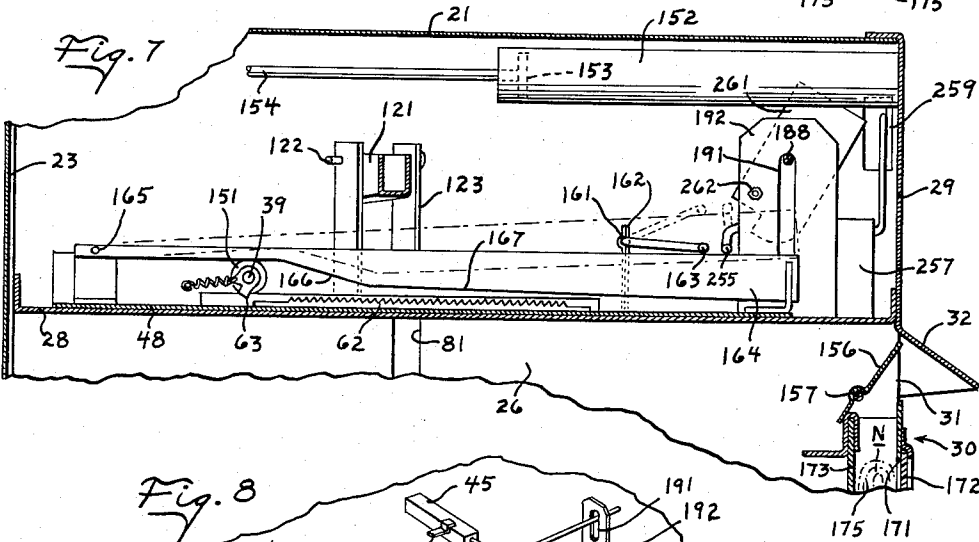
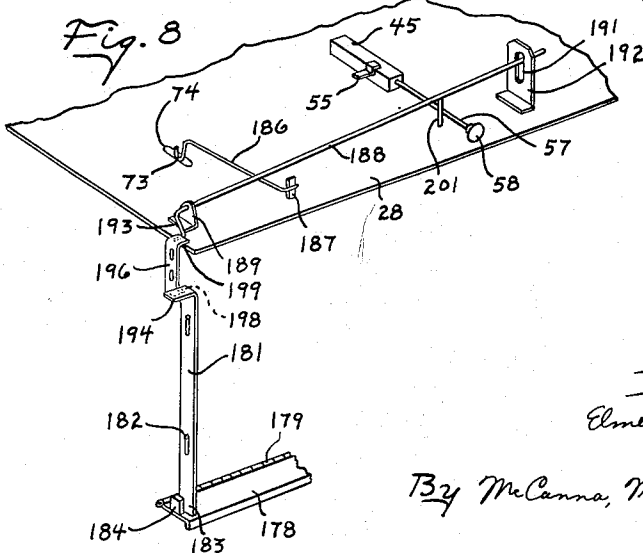
7 Sheets-Sheet 5



E. G. ETES
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7 Sheets-Sheet 6



Inventor
Elmer H. Etes

By McCanna, Morsbach & Pillote

Atty's

Dec. 17, 1963

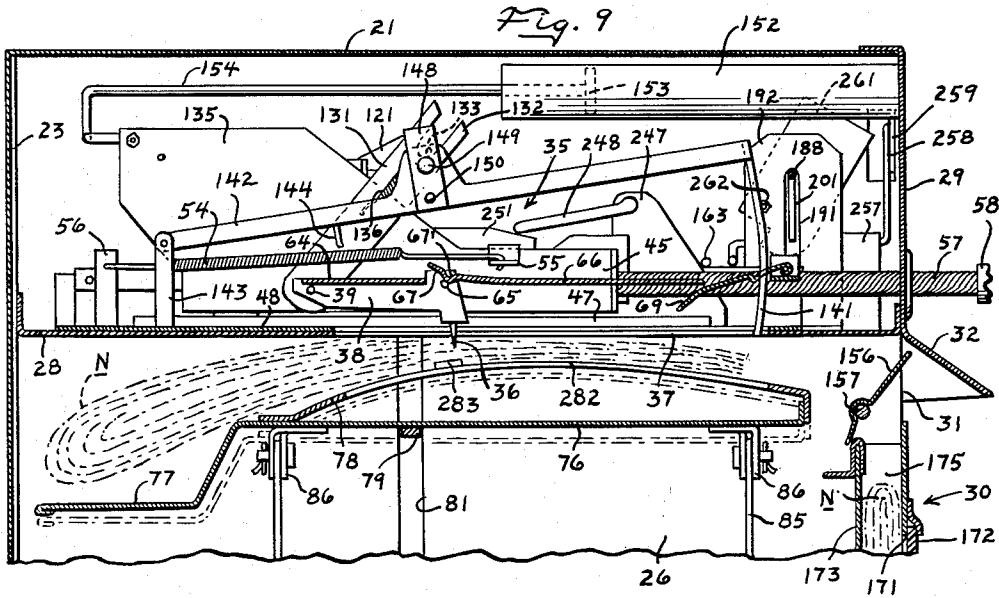
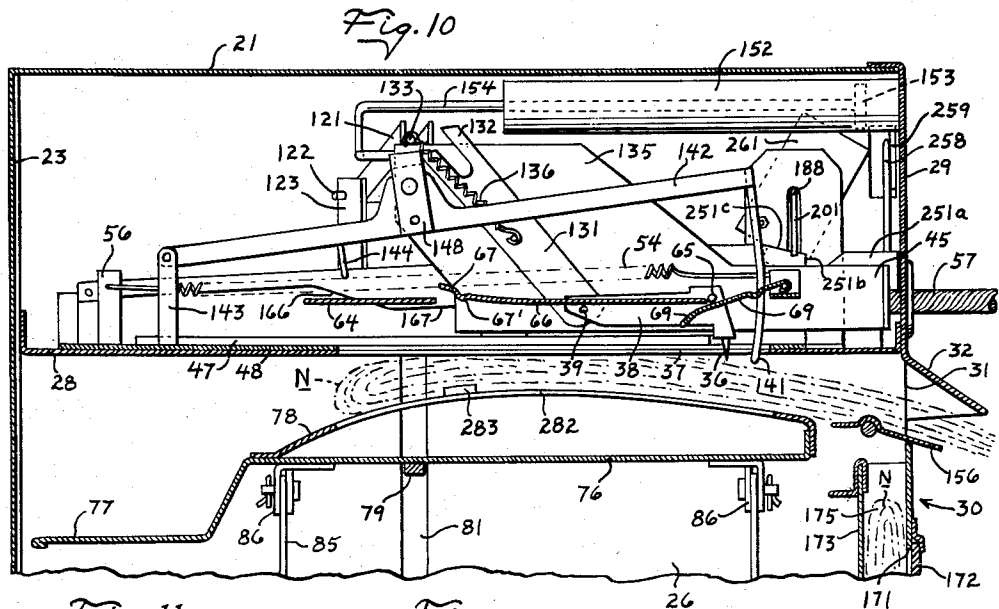
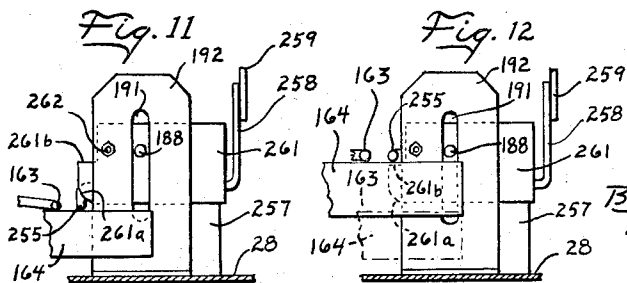
E. G. ETES

3,114,475

VENDING MACHINE

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7 Sheets-Sheet 7



Inventor
Elmer H. Etes

By
McCanna, Morabach & Peltz
Atty's

1

3,114,475

VENDING MACHINE

Elmer G. Etes, Rockford, Ill., assignor to The Newsomatic Corporation, Beloit, Wis., a corporation of Wisconsin

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22 Claims. (Cl. 221—103)

This invention relates to an apparatus for vending newspapers, magazines and the like.

An important object of this invention is to provide an improved method and apparatus for dispensing newspapers, magazines and the like off a stack, and which will reliably effect dispensing of papers having widely different thickness.

A more particular object of this invention is to provide a method and apparatus for dispensing newspapers, magazines and the like in which a feed finger is impaled into the end paper on a stack while the end paper is compacted, to provide a controlled depth of penetration of the feed finger into the end paper, and the pressure on the end paper is thereafter relieved to facilitate sliding of the end paper off the stack by the impaled feed finger.

A further object of this invention is to provide a machine for vending magazines, newspapers and the like having an improved arrangement for moving the end paper off the stack with a twisting motion to separate the end paper from the remainder of the stack.

Another object of this invention is to provide a machine for vending newspapers, magazines and the like having an improved apparatus for advancing a stack of papers to the dispensing mechanism, which stack advancing means maintains a substantially constant pressure between the end paper and the dispensing mechanism, and which stack advancing means can be easily retracted for loading a new stack thereon using only one hand.

Still another object of this invention is to provide a machine for dispensing magazines, newspapers and the like, and which is arranged to lock the end paper on the stack against movement, except during operation of the dispensing mechanism during a normal dispensing cycle, to thereby prevent robbing of papers from the machine.

Yet another object of this invention is to provide a machine for vending magazines, newspapers and the like, which machine supports a display paper separate from the main stack of papers and in a position to enable easy viewing of the display paper, and wherein mechanism is provided for automatically dispensing the display paper after the last paper has been dispensed from the stack of papers in the machine.

An additional object of this invention is to provide a coin operated vending machine for dispensing magazines, newspapers and the like and which will automatically block introduction of coins into the machine whenever the dispensing mechanism is not in its proper position and also when the last paper has been dispensed from the machine.

The vending machine of the present invention is characterized by the provision of a sharpened feed finger which is arranged to impale the end paper on the stack to move the end paper of the stack.

An important feature of the present invention resides in the provision of means for compacting the end paper during impaling of the feed finger therein to provide a controlled depth of penetration of the feed finger into the end paper and apparatus for automatically shifting the dispensing mechanism and the stack of papers away from each other during a dispensing cycle a distance sufficient to at least partially relieve the pressure on the end paper, to thereby facilitate sliding of the end paper off the stack.

Another feature of this invention resides in the arrangement of the path of movement of the feed finger laterally

2

offset from the center of the stack to move the end paper relative to the stack with a twisting motion, and a presser finger which engages the stack at a suitable point to form a pivot point for the end paper as it is moved relative to the stack with the twisting motion.

Another feature of this invention resides in the provision of a tray for supporting the stack of papers and tension springs for elevating the tray and the stack of papers to the dispensing mechanism, and which springs are arranged to apply a lifting force to the tray which progressively decreases as the stack of papers is depleted and which is sufficient to counterbalance the tray and the stack of papers and press the end paper at the top of the stack against the dispensing mechanism with a light pressure sufficient to compact the end paper.

A further feature of this invention resides in the provision of a stop pin for holding the end paper to prevent robbing of the papers, and mechanism operated by the dispensing mechanism for automatically moving the stop pin out of engagement with the end paper during a dispensing cycle.

An additional feature of this invention resides in the provision of apparatus for supporting a display paper separate from the stack of papers, and apparatus operated after the last paper has been dispensed from the stack and responsive to operation of the dispensing mechanism in normal fashion to automatically dispense the display paper.

Still another feature of this invention resides in the provision of a coin control apparatus for the dispensing mechanism in which operation of the dispensing mechanism actuates the coin control apparatus to determine the presence of the coin or coins of proper denomination; the coin apparatus locks the dispensing mechanism against movement in the absence of the proper coins; the dispensing mechanism releases the coins from the coin control mechanism if the proper coins are present; and the dispensing mechanism operates to prevent the introduction of coins during a dispensing cycle and also after the last paper has been discharged from the machine.

These, together with various ancillary objects and advantages of this invention will be more readily appreciated as the same becomes better understood by references to the following detailed description when taken in connection with accompanying drawings wherein:

FIG. 1 is a front view of the machine with parts broken away and shown in section to illustrate details of construction;

FIG. 2 is a vertical sectional view through the machine taken on the plane 2—2 of FIG. 1;

FIG. 3 is an end view of the machine, with the housing broken away to illustrate the parts of the mechanism;

FIG. 4 is a top view of the dispensing machine with the top of the housing removed;

FIG. 5 is a fragmentary vertical sectional view taken on the plane 5—5 of FIG. 4;

FIG. 6 is a fragmentary vertical view taken on the plane 6—6 of FIG. 4;

FIG. 7 is a fragmentary vertical sectional view taken on the plane 7—7 of FIG. 4;

FIG. 8 is a diagrammatic view illustrating the apparatus for dispensing the display newspaper after the last paper has been dispensed from the stack;

FIGS. 9 and 10 are fragmentary vertical sectional views taken on the plane 9—9 of FIG. 4, and illustrating the dispensing mechanism in different moved positions thereof; and

FIGS. 11 and 12 are fragmentary views illustrating the apparatus for closing the coin slot, in different moved positions thereof.

The vending machine of the present invention is gen-

erally adapted for dispensing newspapers, magazines and the like, hereinafter generally referred to as papers. The vending machine is enclosed in a housing and, advantageously, the housing includes an outer shell having a bottom 20, a top 21, spaced sides 22 and a rear wall 23. An inner frame, forming part of the housing, is provided for supporting the various parts of the dispensing machine and the inner frame is preferably arranged for insertion and removal as a unit from the outer shell. As shown, the inner frame includes spaced side walls 25 and 26, a bottom wall 27 and a top dispensing panel 28 extending between the side walls and spaced below the top of the outer shell, to separate the outer shell into an upper compartment for receiving the dispensing mechanism and a lower compartment for storing papers. A front panel 29 extends upwardly from the forward edge of the panel 28 and across the upper portion of the outer shell to form a closure therefor. A door designated generally by the numeral 30 is hingedly attached to one side wall of the outer shell by a hinge 30' and is arranged when closed, to extend across the open front face thereof as is clearly shown in FIG. 1. The upper edge of the door 30 is spaced below the panel 28 to form a dispensing opening 31 therebetween and a rain shield or deflector 32 is attached to the upper edge of the front panel 29 and extends downwardly and outwardly over the dispensing opening 31 to inhibit the entrance of rain, snow and the like. With this arrangement, the door 30 can be swung open about its hinge 30' and the inner frame then inserted or withdrawn as a unit from the outer shell. Any suitable means, not shown, may be provided for locking the inner frame to the outer shell to prevent unauthorized removal of the same.

The dispensing mechanism 35 is of the type disclosed in the applicant's copending application for "Vending Machine," filed June 3, 1957, Serial No. 663,126, now Patent No. 3,023,928. The dispensing mechanism is mounted on the top dispensing panel 28 and in general includes a feed finger 36 which is mounted for movement toward and away from the dispensing opening 31 and which is extended through a slot 37 in the panel to impale the end paper on the stack and advance the same toward the dispensing opening. As shown, the feed finger 36 is attached to a feed arm 38, and which arm is pivotally mounted on a pin 39 at the end thereof remote from the feed finger. The arm supports the feed finger for movement in a plane transverse to the panel 28, to permit extension and retraction of the feed finger through the slot 37 and, as best shown in FIG. 4, a spring 41 is disposed around the pin 39 and has one end thereof engaging the arm and the other end engaging a set screw 43 on a collar 44 carried by the pin. The spring 41 normally urges the arm downwardly to extend the feed finger through the slot 37, and the collar 44 and set screw 43 are angularly adjustable on the pin to adjust the pressure applied by the spring. The pin 39 is attached to a carriage 45, and which carriage has guides 46 on the underside thereof (see FIGS. 5 and 6) which are slidably mounted in a trackway 47. The trackway 47 is conveniently secured to a tray 48 which is preferably removably attached to the panel 28 as by fasteners 49. The trackway 47 supports the carriage for reciprocation toward and away from the dispensing opening and, conveniently, a second trackway 51 (FIGS. 4 and 5) is mounted on the tray and slidably receives a follower 52 attached to the pin 39 to inhibit tilting of the carriage.

The carriage 45 is yieldably urged in a direction away from the dispensing opening by a spring 54 having one end attached by a bracket 55 to the carriage and the other end attached by a bracket 56 to the tray 48. An element 57 is attached to the carriage and extends through an opening 57' in the front panel 29 of the housing and has a knob 58 at its outer end for manually drawing the carriage toward the dispensing opening, to thereby move

the feed finger through a dispensing stroke. The element 57 is advantageously in the form of a multi-stranded cable having a sufficient rigidity to normally maintain the substantially straight line configuration best shown in FIG. 6, and which cable is nevertheless sufficiently flexible to withstand substantial bending without permanent deformation or damage. The cable preferably has a lost-motion connection to the carriage and, as shown in FIG. 6, a collar 59 is attached to the cable as by a set screw 59', and a spring 61 is interposed between the carriage and the collar to yieldably urge the collar against the forward end of the carriage. A ratchet bar 62, best shown in FIGS. 4 and 7, is mounted on the tray 48 and a pawl 63 is swingably mounted on the pin 39 attached to the carriage. The pawl 63 cooperates with the ratchet bar 62 to prevent retrograde movement of the carriage after the carriage has begun its forward or dispensing stroke, and to also prevent retrograde movement of the carriage after the carriage has begun its return stroke, to thereby prevent an operator from oscillating the carriage intermediate the ends of its stroke in an attempt to withdraw more than one paper at a time. As previously described, the collar 59 on the element 57 engages the carriage so that the carriage is positively moved forward when the knob 58 is pulled, to thereby move the feed finger forwardly through a dispensing stroke. Since the element 57 has a lost-motion connection to the carriage, inward pushing of the knob 58 cannot return the carriage, until after the carriage has been moved through its full dispensing stroke, and has reached its full forward position. At that time, the spring 54 is operative to retract the carriage. Since the element 57 is laterally flexible, the machine cannot be damaged by lateral pressure applied to the knob 58, and cannot cause injury to someone passing the machine in the event the operator element is allowed to remain in its extended position and projects forwardly of the machine.

The feed arm 38 has a cam follower 65 on the end adjacent the feed finger 36 and a cam track 66 is attached to the tray 35 alongside the feed slot 37 for positively extending the feed finger through the slot to thereby impale the end paper with a controlled depth of penetration. As best shown in FIG. 2, the cam follower 65 on the feed arm is normally supported on a ledge 64 at one end of the cam track 66. The cam track 66 has a cam face 67 adjacent its rear end inclined downwardly and forwardly to positively force the cam follower and the feed finger 36 downwardly, during movement of the feed finger toward the dispensing opening, as shown in FIG. 9. During the dispensing stroke, the follower rides on the dwell portion at the underside of the cam track and the length of the feed finger 36 is selected so that the feed finger extends a preselected distance, for example about $\frac{3}{16}$ of an inch, below the underside of the panel 28 and into the top paper therebelow. A cam plate 69 is provided at the forward end of the cam track and extends forwardly and upwardly to retract the feed finger out of the slot. The cam plate 69 is yieldably urged against the underside of the cam track 66 by a spring 71 (FIG. 2) so that, during movement of the feed finger away from the dispensing opening, the cam follower is guided onto the dwell portion at the upperside of the cam track as best shown in FIG. 10. The cam face 67 is advantageously formed with a relatively sharp nose 67' to produce relatively rapid impaling of the feed finger in the upper paper to thereby minimize tearing of the paper as the feed finger enters the same.

As disclosed in the aforementioned application, the feed slot 37 and the single feed finger 36 are advantageously located at a point laterally offset from the center of the stack of papers so that the feed finger moves the end paper off the stack with a "twisting" motion. In accordance with the present invention, a presser finger 73 is mounted to extend through an opening 74 in the panel 28 at a point laterally offset to the other side of the

5

center of the stack. The presser finger is yieldably urged into engagement with the end paper in the stack, in a manner described hereinafter, and inhibits sliding movement of the paper at that point so that the paper tends to pivot or twist relative to the stack about the presser finger as the feed finger moves the other end of the paper toward the dispensing opening. The presser finger thus aids in assuring movement of the end paper with a twisting motion relative to the stack, and which twisting motion aids in breaking the bond between the end paper and the paper adjacent thereto to the end that only one paper is dispensed at a time.

The stack of newspapers, designated generally by the letter N, is supported on a tray 76 and provision is made for advancing the tray toward the panel 23 with the face of the end paper in the stack engaging the panel. The newspapers are stacked on the tray with the folded edges thereof located remote from the dispensing opening. When papers are stacked with all of their folds located adjacent one side of the stack, the folds to build up to a somewhat greater depth than the remainder of the paper and, accordingly, the rear portion 77 of the tray 76 is offset below the body of the tray, as shown in FIGS. 2, 9 and 10, sufficient to accommodate the increased bulk of the folds in the complete stack. In addition, the tray is formed with a top face 78 which has a convex configuration from front to rear as shown in the aforementioned figures, with the apex of the convex portion of the tray located slightly forwardly of the cam face 67 on the cam track 66. Straps 79 extend from opposite ends of the tray 76 and through a guide slot 81 in the respective end wall 25 and 26, and slotted reinforcing bars 82 (FIG. 3) are attached to the side walls around the guide slots 81 to laterally guide the tray during movement thereof toward and away from the panel 23. The tray is conveniently maintained in a position generally parallel to the panel 23, as it moves toward and away therefrom, by front and rear sets of articulated bars forming front and rear lazy-tongs type assemblies designated generally by the numeral 85. As shown, one end of each of the lazy-tongs assemblies is connected by brackets 86 and 87 to the tray and the other end of each assembly is connected by brackets 88 and 89 to the bottom wall 27. The front and rear lazy-tongs assemblies are connected by tie bars 91 (see FIG. 2) to effect elevating and lowering of the front and rear ends of the tray in unison.

The tray 76 is yieldably urged upwardly toward the panel 23 with a controlled pressure sufficient to counterbalance the weight of the tray and the stack of papers thereon and to additionally press the top paper against the underside of the panel with a slight pressure sufficient to compact the top paper. As shown, a tension spring 93 is provided at each end of the tray. One end of each spring 93 is attached to an offset portion 94 on the strap 79 and the other end of each spring is attached to a respective arm 95. The arms 95 are normally disposed in a raised position as shown in FIG. 3. When the tray 76 is in its lowermost position and supports a full stack of papers, the springs 93 are extended a maximum amount, the extension decreasing as the stack of papers is depleted and the tray moves upwardly. The springs 93 are selected in accordance with the weight of the full stack of papers to be handled by the machine, to overbalance the weight of the full stack of papers when the tray is in its lowermost position by an amount sufficient to lightly press the top paper against the panel, and to apply a progressively decreasing pressure to the tray as the stack of papers is depleted and the tray moves upwardly until the tray reaches a substantially fully elevated position with only one paper on the tray. At that time, the springs are arranged to apply only a very light upward pressure to the tray sufficient to compact the top paper. In the embodiment shown, an auxiliary spring 98 is provided between the bars 91 on the lazy-tongs

6

assembly 85, and which auxiliary spring is selected to substantially counterbalance the weight of the tray and lazy-tongs. Alternatively, the spring 98 could be omitted and the strength of the springs increased to also counterbalance the weight of the tray and lazy-tongs assemblies.

The arms 95 are supported for vertical swinging movement on trunnions 102 rotatably supported in the side walls 25 and 26, and generally L-shaped levers 103 are non-rotatably secured to trunnions 102 and disposed at the inner sides of the side walls. The levers 103 extend downwardly along the inner faces of the side walls 25 and 26 and are interconnected at their lower ends by a cross bar 104 (FIG. 2) which extends across the lower portion of the housing adjacent the front side thereof. A sleeve like handle 105 is rotatably supported on the bar 104 for turning relative thereto and latches 106 are attached to the sleeve handle for movement therewith and cooperate with keepers 107 on the bottom wall 27 to latch the levers in the position shown in FIG. 2. A spring 108 is disposed around the bar 104 and engages the levers 103 and the latches 106 to yieldingly urge the latches in a counterclockwise direction as viewed in FIG. 2 to their latched position and a stop 109 is provided on each lever to engage the latches as shown in FIG. 2. Thus, the sleeve handle 105 can be grasped by one hand and turned slightly in a clockwise direction to release the latches 106, and the handle then pulled outwardly to swing the levers 103 about the trunnions 102 to thereby lower the arms and the tray 76. After the stack of papers has been positioned on the tray, the handle 105 is pushed downwardly to return the levers to the position shown in FIG. 2, at which time the latches 106 engage the keepers 107 to latch the arms in their raised position. In order to facilitate raising of the arms 95 in progressive fashion against the tension of the elevating spring 93, a pawl 111 is provided on each arm and cooperates with a toothed sector plate 112 disposed concentric with the trunnions 102. The pawls 111 operate to prevent retrograde movement of the arms during raising of the arms.

An important feature of the present invention resides in the provision of mechanism for partially relieving the pressure between the end paper in the stack and the top dispensing panel 23, after the feed fingers 36 have been impaled into the end paper, to thereby facilitate subsequent sliding of the end paper off the end of the stack. As previously described, the tray moves upwardly as the stack of papers thereon is depleted. Apparatus is provided for engaging the tray and shifting it downwardly a preselected distance from its previous position, after the feed finger has been impaled into the end paper. As best shown in FIG. 3, a toothed bar 114 is disposed alongside the vertically extending guideway 81 on the panel 26. A pawl 115 is mounted on the strap 79, and the bar 114 is mounted by means of pins 116 and angulated guideways 117 for movement sequentially to the left into engagement with the pawl and then downwardly, to shift the pawl downwardly in response to downward movement of the bar 114. The bar 114 is normally urged upwardly and to the right by diagonally extending tension springs 118 and 119. In the form shown, a lever 121 is pivotally mounted intermediate its ends by a pin 122 on brackets 123 attached to the panel 23. The outer end of the lever 121 engages the upper end of the bar 114 for moving the latter downwardly, and means responsive to movement of the feed finger through a dispensing stroke is provided for elevating the inner end of the lever.

As shown in FIG. 3, the nose portion 115 of the pawl is normally spaced a slight distance from the toothed bar 114 and, when the bar is moved downwardly, the angulated slots 117 and pins 116 sequentially move the bar into engagement with the pawl 115 and thereafter move the pawl downwardly to depress the tray 76. The pawl is preferably supported for limited lateral shifting movement,

as by the pin and slot construction 125 and 126 shown in FIG. 3, to accommodate the lateral movement of the bar 114 after the bar engages the pawl. A spring 127 is provided to maintain a yieldable pressure between the pawl and the toothed bar, after the bar has been moved into engagement with the pawl.

The lever 121 is operated in response to movement of the feed finger through a dispensing stroke and for this purpose an arm 131 is mounted on the carriage for vertical swinging movement. The arm is conveniently mounted on the pin 39 and has a forked forward end 132 arranged to engage a finger 133 on the inner end of the lever 121 as the carriage 45 is moved forwardly in a dispensing stroke. The arm 131 swings upwardly as the carriage moves forwardly, to rapidly elevate the inner end of the lever 121. The initial upward movement of the inner end of the lever 121 accommodates the lost-motion between the outer end of the lever 121 and the bar 114, and also the lost-motion which occurs during lateral shifting of the bar 114 into engagement with the pawl 115, and the parts are so arranged that the lever 121 does not produce substantial downward shifting movement of the tray 76 until after the feed finger engages the cam face 67 and is forcibly impaled in the compacted end paper on the stack. Thereafter, further forward movement of the carriage advances the feed finger toward the dispensing opening and simultaneously elevates the inner end of the lever 121 to depress the bar 114 and the tray 76 a distance sufficient to at least partially relieve the pressure between the end paper and the panel. Since the folded papers are somewhat "spongy" they tend to expand slightly when the pressure is relieved so that the end paper does not drop away from the panel. In order to prevent movement of the tray back toward the panel, before the completion of the dispensing stroke, a cam plate 135 is mounted on the carriage 45 for movement therewith and the upper edge thereof extends substantially tangent to the path of movement of the finger 133 on the lever 121, to thereby support the lever in its fully raised position as shown in FIG. 10. As will be noted, the finger 133 rides along the upper edge of the cam plate 135 and, in the particular form shown, the forked end of the lever is relatively short because of the limited overhead clearance so that the finger 133 passes completely out of the forked end. A spring 136 is preferably attached to the finger 133 and to the arm 131 to aid in guiding the finger back into the forked end of the arm during return movement of the carriage. In the present vending machine wherein the feed finger engages the end paper relatively closer to one end of the stack than the other, to move the end paper with a "twisting" motion, it is advantageous to provide a single tray shifting means at the end of the stack closest to the feed finger. With this arrangement, the end of the tray adjacent the feed finger will be depressed to a somewhat greater extent than the other end, as shown in phantom lines in FIG. 5, to further facilitate movement of the end paper with a "twisting" motion.

In order to prevent unauthorized withdrawal of the papers from the stack through the dispensing opening 31, a stop apparatus is provided for positively anchoring the top paper against movement off the stack and for releasing the top paper only during movement of the dispensing finger in a dispensing stroke. As shown, a stop pin 141 is mounted as by an arm 142 for movement through the forward end of the slot 37 in the panel 28, into and out of position in front of the papers at the upper end of the stack. The arm 142 is conveniently pivotally mounted as by a bracket 143 at the end remote from the stop pin 141, and the arm is urged downwardly as by gravity until a support pin 144 engages the ledge 64 to support the arm 142 in the position shown in FIG. 2 in front of the stack of papers N.

The stop pin 141 is elevated out of position in front of the stack during movement of the feed finger 36 in a

dispensing stroke, by means of a latch which is mounted by pins 149 and 150 on the lever 142 for limited lateral shifting movement relative thereto. As best shown in FIG. 5, the latch has a portion 148' that overlies the lever 142 and is disposed in the path of movement of the finger 133 on the lever 121 so that the stop arm 142 is elevated when the inner end of the lever 121 is elevated during a dispensing stroke. For reasons set forth hereinafter, the nose portion 148' of the latch is normally spaced above the finger 133 a short distance to prevent elevating of the stop pin during the initial forward movement of the carriage 45. After a preselected forward movement of the carriage 45, the finger 133 on the lever 121 engages the latch 148 to elevate the stop pin 141 as shown in FIG. 9. The arrangement is made such that the stop pin 141 is elevated to completely clear the top paper in the stack at about the time the feed finger 36 moves past the cam surface 67 and impales the end paper, to prevent interference with the normal dispensing movement of the end paper. The finger 133 on the lever 121 moves in an arcuate path about the pivot pin 121 as the lever is elevated, and the finger 133 and latch 148 are arranged so that the finger moves out of engagement with the latch after the feed finger 36 has moved the end paper a short distance such as three-fourths inch relative to the stack. At that time, the stop pin 141 drops back and rides on the end paper as shown in FIG. 10 during the remainder of the dispensing stroke. Thus, as soon as the end paper is moved completely off the stack, the stop pin can return to the position shown in FIG. 2 to prevent withdrawal of subsequent papers, except by operation of the dispensing mechanism during a normal dispensing cycle. When the lever 121 is returned to its lower position at the completion of the dispensing cycle, the finger 133 engages the cam face on the upper edge of the latch to shift the latch laterally and permit the finger 133 to move past the same.

In order to prevent excessively rapid operation of the dispensing mechanism which may cause the feed finger 36 to tear the paper instead of dispensing the same, a dash-pot type governor is connected to the carriage. As shown, the dash-pot includes a cylinder 152 conveniently attached to the front panel 29, a piston 153 in the cylinder and a rod 154 connecting the piston to the cam plate 135 on the carriage 45. As shown in FIGS. 4 and 10, the rod 154 is shaped to clear the lever 121 in all positions of the carriage.

A dispensing gate 156 is mounted on a rod 157 in the dispensing opening 31, for movement into and out of a position substantially closing the dispensing opening, to inhibit the introduction of a hand, a wire or similar device for withdrawing papers from the machine without operating the vending mechanism. The rod 157 has a lateral finger 158 (FIG. 3) at one end, and a locking arm 159 is arranged for engagement with the finger 158 to lock the gate 156 against opening, except during an actual dispensing operation. As best shown in FIG. 4, the arm 159 has a laterally extending trunnion portion 161 which extends through the end wall 26 and is rotatably supported in a bracket 162 on the top panel 28 for movement about a generally horizontal axis parallel to the front of the machine. A crank 163 is eccentrically connected to the other end of the trunnion 161, and the crank overlies a lever 164 which extends parallel to the path of movement of the carriage 45 and is pivotally mounted by a pin 165 adjacent its rear end remote from the crank 163. As best shown in FIG. 7, the lever 164 overlies a roller 151 which is mounted on the pin 39 for movement with the carriage, and the lever 164 has a downwardly inclined cam face 166 at its underside which merges with a generally straight dwell portion 167. The roller is arranged to engage the cam face 166 as the carriage and feed finger are moved forwardly in a dispensing stroke, to thereby elevate the lever 164 and to maintain the same elevated during the remainder of the forward

9

dispensing stroke. As the lever is elevated, the crank 163 is raised from the solid line position shown in FIG. 7 to the dotted line position shown therein to thereby move the arm 159 out of engagement with the finger 158 and allow the gate 156 to open. Conveniently, the length of the finger 158 is made sufficiently long to just slightly overbalance the gate 156 to normally urge the gate to its closed position.

Provision is made for mounting a display newspaper in the housing and, as best shown in FIG. 1, the door 30 is formed with a display opening 171 which is closed as by a transparent panel 172. A paper receiving pocket is provided at the rear side of the door for supporting a paper behind the display opening and, as shown, includes a rear panel 173 and spaced side panels 174 and 175. A gate or closure 178 is provided at the bottom of the pocket for supporting the paper therein and the gate is hingedly mounted by a hinge 179 for swinging movement into and out of its closed position best shown in FIG. 2. A latch is provided for releasably holding the gate in its closed position and includes a bar 181 mounted for limited sliding movement by pins 182 on the end panel 174 of the pocket (see FIGS. 1 and 8). The latch has a finger 183 at its lower end which is arranged to engage a keeper 184 on the gate 178, to latch the same against opening, when the bar 181 is in its lowered position.

Apparatus is provided for automatically moving the latch bar 181 to a position releasing the gate 178 in response to movement of the dispensing mechanism through a dispensing stroke, after the last paper has been dispensed from the stack, to thereby dispense the display paper from the door. The previously described presser finger 73 is advantageously employed to also function as a detector to determine when the last paper is dispensed from the stack. As best shown in FIGS. 4 and 8, the finger 73 is supported by an arm 186, and which arm is mounted for vertical swinging movement in a bracket 187 attached to the front panel 29 of the inner frame. The arm 186 underlies a rod 188 which, as shown in FIGS. 1 and 4, extends generally parallel to the front of the vending machine. The rod 188 is loosely supported at one end for turning and limited swinging movement in a bracket 189 and the other end of the rod is supported for vertical sliding movement in a slot 191 formed in a bracket 192. The rod 188 has an eccentric crank 193 at the end adjacent the latch bar 181. As best shown in FIGS. 1 and 8, the latch bar 181 has a lateral projection 194 at its upper end which is movable into and out of an opening 195 in the side wall 25 as the door is swung between an open and closed position. A bar 196 is mounted as by pins 197 on the end panel 25 for limited sliding movement, and the bar has a hook portion 198 at one end which underlies the lateral projection 194 on the latch bar, and a lateral projection 199 at its upper end which overlies the crank 193.

When one or more papers remains on the tray 79, the top paper engages the presser finger 73 to support the finger and arm 186 in its raised position shown in FIG. 1. The arm 186, when raised, supports the rod 188 in the elevated position shown, and the rod 188 has a lateral finger 201 which extends downwardly therefrom. The finger 201 is arranged to terminate above the path of travel of the carriage 45 when the rod 188 is in its raised position, and to project into the path of travel of the carriage when the rod moves downwardly in response to exhaustion of the stack of papers on the tray. As best shown in FIG. 1, the finger 201 terminates above the bracket 55 when the rod is raised and, when the arm 186 and rod 188 move downwardly in response to exhaustion of the stack of papers on the tray, the finger 202 projects into the path of movement of the bracket 55 on the carriage. During the subsequent operation of the carriage through a dispensing stroke, the bracket 55 engages the finger 201 and turns the rod 88 through an angle in

10

a counter-clockwise direction indicated by the arrow in FIG. 8. This turns the crank 193 and elevates the bar 196 and latch bar 181 to release the gate 178. The display paper in the door is then dispensed through the open bottom of the door so that all papers in the machine can be dispensed under the control of the dispensing mechanism.

The vending machine is coin controlled and, as shown in FIGS. 1 and 3, the machine has a coin receiving slot 211 in the front panel 29, which slot is connected through a coin chute 212 shown in phantom in FIG. 3, to a coin mechanism designated generally by the numeral 213. Coins discharged from the coin mechanism pass through a chute 214 into a coin collection box 215. The coin collection box is advantageously positioned to underlie the door 30 when the latter is closed, and the door is arranged to be locked in its closed position as by a lock 216 to prevent unauthorized removal of the papers from the machine, or removal of the coin box 215. The coin mechanism 213 is shown in FIGS. 3 and 4 and includes spaced plates 218 and 219 which define a coin chute therebetween. One of the plates 219 has a slot 221 therein and a coin stop finger 222 is mounted on a bracket 223 to project into the slot and stop a coin designated C in proper position therein. As shown the stop finger 222 can be adjustably positioned along the slot 221, as in different openings 224, to adapt the machine for operation with different denominations of coins, or with different numbers of coins. The bracket 223 is supported for limited shifting movement away from the plate 219 and, as shown, is mounted on pins 226 and yieldably urged toward the plate 219 by springs 227 (see FIG. 4). The coin chute plates 218 and 219 have a slot 228 in one edge and a toggle 231 is formed with a detector finger 232 which is adapted to project into the slot 228 to detect the presence of the proper coin in the chute. The toggle 231 is pivotally mounted intermediate its ends on a pin 235 and has a finger 236 at its other end arranged to engage a striker 237 on the bracket 223 to shift the bracket away from the plate 219 and to withdraw the coin stop 222 from the chute. The toggle 231 is connected through a link 241, bell crank 242 and link 243 to a crank 244. The crank is attached to a rod 245 which is rotatably mounted at one end in the end wall 26 and at the other end in a bracket 247 for movement about a generally horizontal axis paralleling the front of the machine. An arm 248 is attached to the other end of the rod 245 and engages a cam plate 251 attached to the carriage. The cam plate 251 is best shown in FIG. 6 and has a first dwell portion 251a arranged to engage the arm 248 and support the same when the carriage is in its fully retracted position shown in FIG. 6. The dwell portion 251a is arranged so as to support the aforementioned toggle 231 in an intermediate position shown in FIG. 3, when the arm 248 engages the dwell 251a. The cam plate also has a notch 251b defining a stop. As the carriage 45 moves forwardly in a dispensing stroke, the arm 248 can drop into the notch and turn the toggle 231 in a counter-clockwise direction as viewed in FIG. 3, so that the coin detector finger 232 can enter the notch 228 in the coin chute. If a coin is present in the coin mechanism, the detector finger does not move all the way into the notch and in turn supports the arm 248 so that it does not engage the stop 251b. Alternatively, if no coin, or if a coin of the wrong denomination is present in the slot, the finger 232 can move all the way into the slot 228 so that the arm 248 will drop into the notch 251b and engage the stop to prevent further forward movement of the carriage. If, as previously described, the proper coin is in the coin mechanism, the arm 248 does not drop into the slot but instead engages the cam face 251c which cams the arm upwardly to a level somewhat higher than the cam face 251a. This turns the toggle 231 in a clockwise direction from the position shown in FIG. 3 and

moves the finger 236 against the striker 237 to withdraw the coin stop 222 from the coin chute and allow the coin to drop into the box 215. At the completion of the dispensing stroke, the carriage returns to the position shown in FIG. 6 and the cam face 251a returns the arm 248 to an intermediate position to support the toggle 231 in the position shown in FIG. 3.

The vending machine is advantageously arranged so as to prevent the entrance of coins into the coin slot 211 whenever the dispensing carriage 45 is not in its proper retracted position, and to also prevent introduction of coins after the display paper has been dispensed from the door. For this purpose, an arm 255 is positioned to overlie the lever 164 and is attached to a rod 256 which is rotatably supported in a bracket 257 for movement about a generally horizontal axis paralleling the side wall 26. An arm 258 is attached to the other end of the rod 256 and carries a stop plate 259 which is movable into and out of a position overlying the coin slot 211. The arm is normally positioned as shown in FIG. 1 with the plate uncovering the opening 211. As the carriage 45 is moved forwardly in a dispensing stroke, the lever 164 is elevated in the manner previously described and moves the arm 258 and plate 259 to a position blocking the coin slot 211, to thereby prevent the introduction of coins until the carriage returns to its normal position.

A latch plate 261 is pivotally mounted by a pin 262 on the guide plate 192 and the rod 188 engages the latch plate to normally hold the same in a raised position shown in FIG. 9, when the rod 188 is raised. Upon exhaustion of the stack of papers on the tray 76, the rod 188 drops and the latch plate 261 moves downwardly to the position shown in FIG. 11, sufficient clearance being provided around the pivot pin 262 to permit the latch plate to swing about the pin 262 as the rod 188 moves downwardly in the slot 191. The latch plate has a cam nose 261a (see FIGS. 11 and 12) at the underside, and which nose overlies the rod 255 when the lever 164 is in its lowered position, as shown in FIG. 11. When the carriage is moved forwardly in a dispensing stroke after the stack of papers on the tray 76 has been exhausted, to dispense the paper in the door 39, the lever 164 elevates the arm 255 and cams the latch plate 261 in a counter-clockwise direction until the arm 255 clears the nose portion 261b on the latch plate. When the lever 164 is thereafter lowered, the arm 255 remains supported on the nose 261b of the latch plate to thereby hold the arm in a position blocking the coin slot. With this arrangement it will be noted that the presser finger 73 performs the additional function of also controlling operation of the coin slot, and that the coin slot is not permanently closed until after the display paper has been dispensed from the door.

As best shown in FIG. 5, the tray 76 is formed with an opening 281 for receiving the presser finger 73 when the last paper has been dispensed from the stack, to allow downward movement of the same and the tray is also formed with a slot 282 for receiving the feed finger 36, to prevent dulling of the feed finger during movement through a dispensing stroke after the last paper has been dispensed from the stack. In order to inhibit sliding of the stack of papers on the tray, a means, such as a rubber button 283, is provided on the upper surface of the tray to engage the bottom of the stack and to inhibit sliding movement of the same.

From the foregoing it is thought that the construction and operation of the vending machine will be readily understood. The machine is loaded by first opening the door 39 and then moving the handle 105 to release the latch and elevate the levers 103 to thereby lower the tray support arms 95. The tray 76 moves downwardly as the arms 95 are lowered and the stack of papers is positioned on the tray with the folded edge of the stack disposed at the rear and overlying the offset 77 in the

tray. The arms are thereafter elevated by moving the lever 103 back to the position shown in FIG. 2 and the springs 93 apply a pressure to the tray sufficient to counterbalance the weight of the stack of papers and to press the top paper against the panel 28 with a slight pressure. The top paper in the stack pushes the presser arm 73 upwardly to thereby elevate the rod 88, and elevating of the rod moves the latch plate 261 to its inoperative position shown in FIG. 9 and also moves the finger 201 out of the path of movement of the bracket 55 on the carriage. The display paper is then positioned in the pocket on the front door 39 and the gate 178 at the lower end of the door is latched in its closed position by the bar 181.

In order to remove a paper from the stack, a coin is inserted into the slot 211 and the knob 53 then pulled forwardly. As the carriage 45 moves forwardly, the follower 65 on the arm 33 drops off the shelf 64 and the spring 21 moves the arm and the feed finger downwardly with a snap action to impale the feed finger into the end paper. As the feed finger advances, the follower engages the cam surface 67 which positively forces the feed finger 36 downwardly and further impales the same in the paper. At this point, the arm 131 on the carriage operates the lever 121 to depress the tray 76 a short distance sufficient to at least partially relieve the pressure between the stack of papers and the panel and thereby facilitate movement of the end paper off the stack. At the completion of the dispensing stroke, the feed finger 36 is retracted from the paper and out of the slot 37 by the cam plate 69.

At the beginning of the dispensing stroke, the stop pin 141 is in its lower position and projects in front of the top papers in the stack to lock the top papers against withdrawal, and the gate 156 is locked in its closed position by the arm 159. During the initial movement of the carriage through a dispensing stroke, the roller 151 carried by the carriage operates the lever 164 to move the arm 159 out of its gate locking position. The latch 143 is arranged relative to the finger 133 on lever 121 such that the stop pin is not moved out of position in front of the stack until after the stop 251b on the cam plate 251 has pressed the arm 248, to prevent release of the stop pin except when a coin of proper denomination is in the coin mechanism. Continued forward movement of the carriage 45 elevates the inner end of the lever 121 and thus raises the stop pin out of position in front of the stack of papers. In addition, elevating of the lever 164 closes the coin slot as previously described. After the dispensing mechanism has moved the end paper a preselected distance off the stack, the finger 133 on the lever passes out of engagement with the latch 143 on the arm 142 to allow the stop pin 141 to move downwardly and ride on the top paper on the stack. When the stack of papers on the tray has been exhausted, the presser finger 73 moves downwardly and allows the rod 188 to drop. During the subsequent dispensing stroke, the bracket 55 on the carriage 45 engages the pin 201 on the rod 188 to turn the rod and thereby release the latch bar 181 to open the gate 178. Movement of the carriage through a dispensing stroke after the last paper has been dispensed from the stack also elevates the lever 164 to raise the arm 255 above the latch plate 261, to thereby lock the coin slot control in its closed position.

I claim:

1. A machine for vending newspapers, magazines and the like comprising, a dispensing panel, a newspaper support tray for supporting a stack of papers with one end face of the stack substantially paralleling said panel, means yieldably urging said support tray toward said panel to advance the tray toward the panel as the stack is depleted and for pressing the stack against the panel with a sufficient pressure to compact the end paper against the panel, a feed finger mounted for movement in a direction transverse to said panel to impale the end

paper in the stack and also mounted for movement through a dispensing stroke along a path generally parallel to the panel to move the end paper off the stack, tray shifting means engageable with said support tray in all operative positions thereof for shifting the support tray a preselected distance from the position to which the tray is advanced by said yieldable means and in a direction away from said panel sufficient to at least partially relieve said pressure between the end paper and the panel, and means operative during movement of said feed finger through said dispensing stroke for operating said tray shifting means to facilitate movement of the end paper relative to the panel and off the end of the stack, said tray shifting means including a rack bar paralleling the path of movement of the support tray, a pawl on the tray, and means for moving the rack bar in a direction to engage the pawl and thereafter move the pawl and tray away from the panel.

2. A machine for vending newspapers, magazines and the like comprising, a housing having an elongated dispensing opening therein, a panel in said housing adjacent said dispensing opening, paper support means for supporting a stack of papers in said housing with one edge paralleling said dispensing opening and for yieldably urging the stack of papers toward said panel to press the face of the end paper in the stack against said panel with sufficient pressure to compact the end paper, said panel having an elongated slot therein extending transverse to said dispensing opening and laterally offset a substantial distance to one side of the center of said stack, a dispensing mechanism for moving the end paper crosswise of the stack with a twisting motion to separate the end paper from the paper adjacent thereto, said dispensing mechanism comprising a single feed finger mounted for reciprocatory movement longitudinally of said slot, manually operable means for moving said feed finger toward and away from said dispensing opening, means operative when the feed finger is moved toward said dispensing opening for extending the feed finger through the slot to impale the end paper in the stack, the path of movement of said feed finger being laterally offset a substantial distance from the center of the stack to effect movement of the end paper relative to the stack with a twisting motion and to project a corner of the paper through said dispensing opening, and means operative when said feed finger is extended for shifting said paper support means away from the panel sufficient to at least partially relieve said pressure between the end paper and the panel and thereby facilitate movement of the end paper relative to the panel and off the end of the stack.

3. The combination of claim 2 including a smooth presser finger mounted for engagement with the face of the end paper in the stack at a point laterally offset a substantial distance to the other side of the center of the stack to provide a pivot point for the end paper as it is moved off the stack with a twisting motion.

4. A machine for vending newspapers, magazines and the like comprising, a housing having a dispensing opening therein, a panel in said housing and extending to a point adjacent said opening, a paper support tray in said housing mounted for movement toward and away from said panel, means yieldably urging said tray toward said panel to advance a stack of papers to the panel and for pressing the face of the end paper on the stack against said panel with a pressure sufficient to compact the end paper, a feed finger mounted for movement in a direction transverse to said panel to impale the end paper in the stack and also mounted for movement through a dispensing stroke along a path generally parallel to said panel to move the end paper off the stack and partially through said opening, manually operable means mounted for reciprocation on said panel for moving said feed finger through said dispensing stroke, a pawl attached to said tray, a rack positioned alongside the path of movement of said pawl and mounted for movement in a direction to engage the pawl and thereafter move the pawl

and tray in a direction away from the panel a distance sufficient to at least partially relieve said pressure between the end paper and the panel, and rack operating means responsive to movement of said manually operable means for moving said rack to relieve the pressure between the end paper and the panel after the feed finger impales the end paper.

5. The combination of claim 4 wherein said rack operating means includes a lever mounted for pivotal movement intermediate its ends, said lever having one end portion engaging said rack, and an arm pivotally attached to said manually operable means and engaging the other end of said lever for moving the latter in response to reciprocation of said manually operable means.

6. A machine for vending newspapers, magazines and the like comprising, a housing having a dispensing opening therein, a dispensing mechanism mounted in said housing, above the bottom thereof, a newspaper support tray for supporting and elevating a stack of papers, guide means mounting said tray for vertical movement in said housing toward and away from said dispensing mechanism, a pair of arms mounted for vertical swinging movement on said housing adjacent opposite ends of said tray, a tension spring connecting each arm to a respective end of the tray to yieldably urge the tray upwardly toward the dispensing mechanism when the arms are elevated, a lever attached to each arm for elevating and lowering the same, a cross bar connecting said levers to effect simultaneous and equal movement of said levers and the arms connected thereto, said arms being operative when lowered to relieve the tension on said springs and thereby allow the tray to move downwardly for loading a stack of papers and operative when moved upwardly to tension said springs to yieldably urge the tray and the stack of papers thereon toward the dispensing mechanism, and means for selectively locking said arms in the upper position thereof.

7. The combination of claim 6 wherein said locking means includes a handle mounted on said cross-bar for turning relative thereto and latch members connected to said handle to thereby enable operation of said latch members and movement of said levers with one hand.

8. The combination of claim 6 wherein said guide means includes a lazy-tongs mechanism connected to said tray and to said housing.

9. A machine for vending newspapers, magazines and the like comprising, a housing defining an enclosure having a dispensing opening therein, means for supporting a stack of papers in said housing, a dispensing mechanism in said housing operable to move a paper off the stack and through said opening, detector means operative to detect when the last paper is dispensed from said stack, said housing having a display opening therein, means including a movable gate for supporting a paper separate from said stack and behind said display opening, means for holding said gate in a closed position, and means operatively connected to said detector means and to said dispensing mechanism for opening said gate in response to operation of said dispensing mechanism after the last paper has been dispensed from said stack.

10. The combination of claim 9 wherein said vending machine is coin controlled and includes a coin slot, and means operatively associated with said detector means and responsive to operation of said dispensing mechanism after the last paper has been dispensed from the stack for closing said coin slot.

11. A machine for vending newspapers, magazines and the like comprising, a housing defining an enclosure having spaced sides, a top and a door hingedly mounted at the front, said housing having a dispensing opening therein, means for supporting a stack of papers in said housing, a dispensing mechanism in said housing operative to move an end paper off the stack and through said dispensing opening, said door having a view opening therein and means including a gate for supporting a newspaper on the

15

door behind said view opening, means for locking said gate in a paper supporting position, means for detecting when the last paper is dispensed off the stack, and means operatively associated with said detecting means and with said dispensing mechanism for releasing said locking means in response to operation of said dispensing mechanism after the last paper has been dispensed from the stack.

12. A machine for vending newspapers, magazines and the like comprising, a housing having an elongated dispensing opening therein, a panel in said housing adjacent said dispensing opening, paper support means for supporting a stack of papers in said housing with one edge paralleling said dispensing opening and for yieldably urging the stack of papers toward said panel to press the face of the end paper in the stack against said panel with sufficient pressure to compact the end paper, said panel having an elongated slot therein extending transverse to said dispensing opening and laterally offset a substantial distance to one side of the center of said stack, a dispensing mechanism for moving the end paper crosswise of the stack with a twisting motion to separate the end paper from the paper adjacent thereto, said dispensing mechanism comprising a single feed finger mounted for reciprocatory movement longitudinally of said slot, manually operable means for moving said feed finger toward and away from said dispensing opening, means operative when the feed finger is moved toward said dispensing opening for extending the feed finger through the slot to impale the end paper in the stack, the path of movement of said feed finger being laterally offset a substantial distance from the center of the stack to effect movement of the end paper relative to the stack with a twisting motion and to project a corner of the paper through said dispensing opening, a detector finger mounted to yieldably engage the face of the end paper on the stack at a point laterally offset a substantial distance to the other side of the center of the stack to provide a pivot point for the end paper at it is moved off the stack with a twisting motion, said vending machine including a coin operated mechanism for controlling operation of said manually operable means and a coin slot for feeding coins to said coin operated mechanism and means operatively connected to said detector finger for closing said coin slot after all the papers have been dispensed from the stack.

13. A machine for vending newspapers, magazines and the like comprising, a housing having an elongated dispensing opening therein, a dispensing panel in said housing adjacent said dispensing opening, a paper support panel mounted in said housing for movement toward and away from said dispensing panel, means yieldably urging said support panel toward said dispensing panel with sufficient pressure to compact the end paper in the stack, said dispensing panel having an elongated slot therein extending transverse to said dispensing opening and laterally offset a substantial distance to one side of the center of the stack, a dispensing mechanism for moving the end paper crosswise of the stack with a twisting motion to separate the end paper from the paper adjacent thereto, said dispensing mechanism comprising a single feed finger mounted for reciprocatory movement longitudinally of said slot, manually operable means for moving the feed finger toward and away from said dispensing opening, means operative when the feed finger is moved toward said dispensing opening for extending the feed finger through the slot to impale the end paper in the stack, the path of movement of said single feed finger being laterally offset a substantial distance from the center of the stack to effect movement of the feed finger relative to the stack with a twisting motion and to project a corner of the paper through said dispensing opening, support panel shifting means engageable with only one end of said support panel at said one side of the center of the stack operable to shift said one end of the support panel away from said dispensing panel a dis-

16

tance sufficient to at least partially relieve said pressure between the end paper and the stack, and means operative when the feed finger is extended toward said dispensing opening for operating said support panel shifting means.

14. The combination of claim 13 including a smooth presser finger mounted for engagement with the end paper in the stack at a point laterally offset a substantial distance to the other side of the center of the stack to provide a pivot point for the end paper as it is moved off the stack with a twisting motion.

15. A machine for vending newspapers, magazines and the like comprising, a housing having a face wall and an elongated dispensing opening in said face wall, a dispensing mechanism including a slide mounted for reciprocation along a path transverse to said face wall, a feed finger mounted on said slide for movement therewith toward and away from said dispensing opening, means for supporting and advancing a stack of papers to said feed finger, means for reciprocating said slide, said means including means yieldably urging said slide in a direction away from said face wall to retract the slide, an elongated element mounted on said slide for sliding movement relative thereto in a direction paralleling the path of movement of the slide, resilient means disposed between said slide and said element yieldably urging said element relative to said slide in one direction toward said face wall, stop means on said element and said slide limiting movement of said element relative to said slide in said one direction, said element extending through said face wall for manual operation to extend the slide toward said face wall, said element being laterally flexible and resilient to bend when substantial lateral pressure is applied thereto and being sufficiently stiff to normally maintain a general straight configuration when pulled or pushed in an axial direction, said resilient means between said slide and said element being adapted to yield when said element is pushed to avoid damage to the machine.

16. A machine for vending newspapers, magazines and the like comprising, a housing having a dispensing opening therein, a dispensing mechanism mounted in said housing above the bottom thereof, a generally horizontal newspaper support tray for supporting and elevating a stack of papers to said dispensing mechanism, guide means mounting said tray for vertical movement in the housing toward and away from said dispensing opening, a pair of arms mounted for vertical swinging movement on said housing adjacent opposite ends of said tray, a tension spring connecting each arm to a respective end of the tray to yieldably urge the tray upwardly toward the dispensing mechanism when the arms are elevated, means operable to elevate and lower said arms in unison, said arms being operative when lowered to relieve the tension on the springs and thereby allow the tray to move downwardly for loading a stack of papers and operative when moved upwardly to tension said springs to yieldably urge said tray and the stack of papers thereon toward said dispensing mechanism, and means for selectively locking said arms in the upper position thereof.

17. A machine for vending newspapers, magazines and the like comprising, a housing having a dispensing opening therein, a dispensing mechanism mounted in said housing above the bottom thereof, a generally horizontal newspaper support tray for supporting and elevating a stack of papers to said dispensing mechanism, guide means mounting said tray for vertical movement in the housing toward and away from said dispensing opening, a pair of arms mounted for vertical swinging movement on said housing adjacent opposite ends of said tray, a tension spring connecting each arm to a respective end of the tray to yieldably urge the tray upwardly toward the dispensing mechanism when the arms are elevated, means operable to elevate and lower said arms in unison, said arms being operative when lowered to relieve the tension on the springs and thereby allow the tray to move

downwardly for loading a stack of papers and operative when moved upwardly to tension said springs to yieldably urge said tray and the stack of papers thereon toward said dispensing mechanism, a toothed sector plate concentric with the pivot axis of said arms, and a pawl engageable with said sector during elevating of said arms to prevent retrograde movement of the arms, as the arms are moved upwardly.

18. The combination of claim 16 including a lazy tongs assembly for maintaining said tray generally horizontal as it moves toward and from said dispensing mechanism, said lazy tongs assembly having pairs of relatively crossing pivotally interconnected links attached to said tray and to said housing.

19. A machine for vending newspapers, magazines and the like comprising, a housing defining an enclosure having a dispensing opening therein, means for supporting a stack of papers in said housing, a dispensing mechanism in said housing operable to move a paper off the stack and through said opening, detector means operable to detect when the last paper is dispensed from the stack, said housing having a display opening therein, means for supporting a display paper separate from said stack and behind said display opening, means operatively connected to said detector means and to said dispensing mechanism for dispensing said display paper in response to operation of said dispensing mechanism after the last paper has been dispensed from said stack.

20. A machine for vending newspapers, magazines and the like comprising, a housing having a dispensing opening therein, means supporting a stack of papers in the housing, a reciprocable dispensing mechanism operative when moved toward the dispensing opening to engage the end paper on the stack and slide the same at least part-way off the stack and through the opening, a member mounted to extend between the lead edge of the end paper and the dispensing opening and into the path of movement of the end paper toward said dispensing opening to restrain the end paper against withdrawal, and means responsive to movement of said dispensing mechanism toward said dispensing opening for sequentially moving the member out of the path of movement of the end paper to allow movement of the same by said dispensing mechanism and for moving the member into engagement with the end paper after a short movement of the end paper and before the dispensing mechanism has completed its movement toward the dispensing opening whereby the member is operative to move into the path of the next adjacent paper upon withdrawal of the end paper.

21. A machine for vending newspapers, magazines and the like comprising, a housing having a dispensing opening therein, means for supporting a stack of papers in said housing, a dispensing mechanism including a feed finger mounted for movement across the face of the end

paper on the stack toward and away from the dispensing opening, means responsive to movement of the feed finger toward the dispensing opening for extending the feed finger into engagement with the end paper to move the same at least partially off the stack and through the opening, an arm mounted for swinging movement in a plane generally parallel to the path of movement of the feed finger, a member mounted on said arm to extend between the lead edge of the end paper and the dispensing opening and into the path of movement of the end paper toward said dispensing opening to restrain the end paper against withdrawal, and means responsive to movement of the feed finger toward said dispensing opening for moving the member out of the path of movement of the end paper to allow movement of the same by said dispensing mechanism and for moving said member into engagement with the end paper after a short movement of the end paper and before the feed finger has completed its movement toward the dispensing opening whereby the member is operative to move into the path of the next adjacent paper upon withdrawal of the end paper.

22. A machine for vending newspapers, magazines and the like comprising, a housing having a dispensing opening therein, means for supporting a stack of papers in said housing, a dispensing mechanism including a feed finger mounted for movement across the face of the end paper in the stack toward and away from said opening, means responsive to movement of the feed finger toward the dispensing opening for extending the feed finger into engagement with the end paper to move the same at least partially off the stack and through the opening, a member mounted to extend between the lead edge of the end paper and the dispensing opening and into the path of movement of the end paper toward the dispensing opening to restrain the end paper against withdrawal, and means responsive to movement of the feed finger toward said dispensing opening for moving said member out of the path of movement of the end paper on the stack to allow movement of the same by said dispensing mechanism and for moving said member into engagement with the end paper on the stack after a short movement of the end paper whereby the member is operative to move into the path of the next adjacent paper upon withdrawal of the end paper.

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