Oct. 3, 1933. W. H. COMPTON 1,928,928

AUTOMATIC CARD PRINTING AND VENDING MACHINE

Filed Nov. 12, 1930 6 Sheets-Sheet 1

Fig. 1

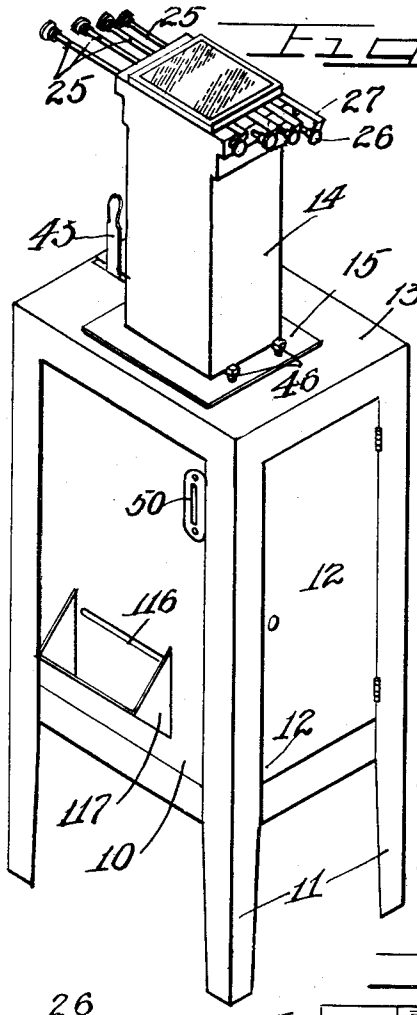


Fig. 6

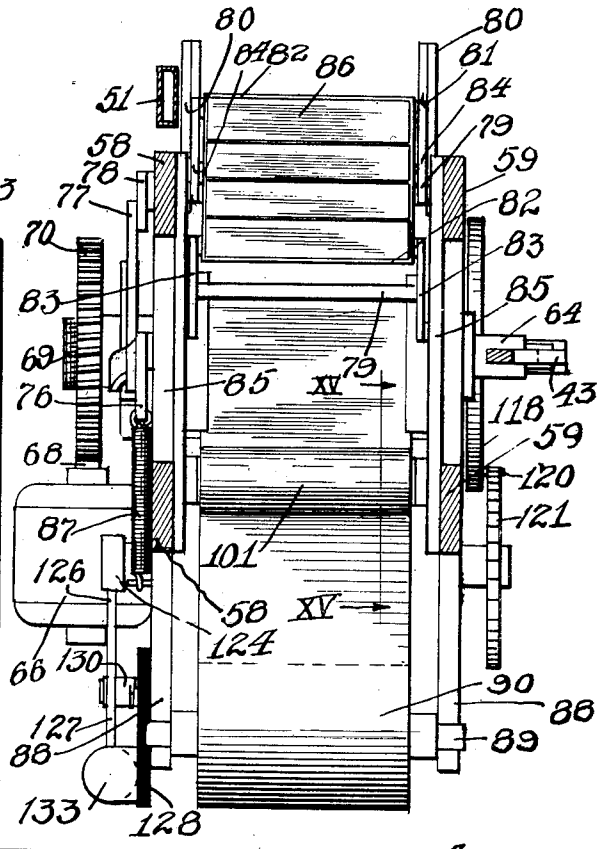
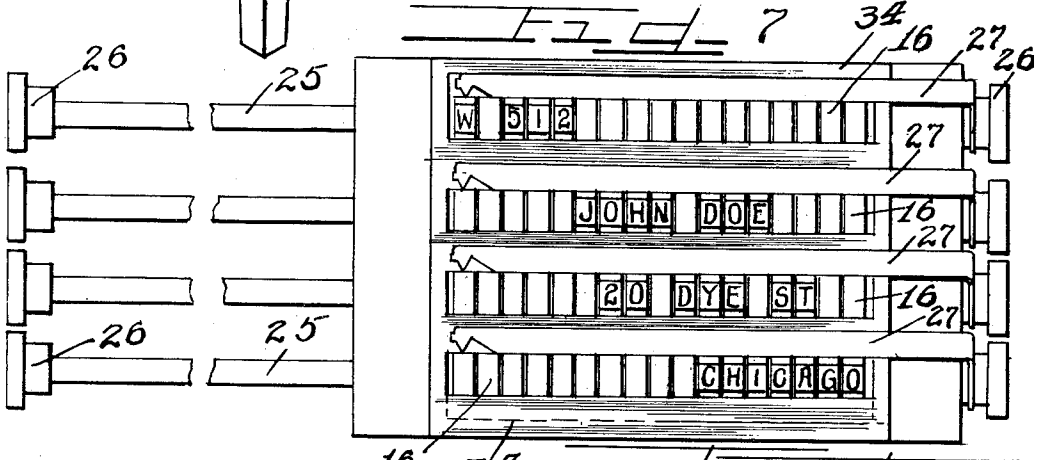


Fig. 7



Inventor

Walter H. Compton.

By Charles Allen Attys.

Oct. 3, 1933. W. H. COMPTON 1,928,928

AUTOMATIC CARD PRINTING AND VENDING MACHINE

Filed Nov. 12, 1930 6 Sheets-Sheet 2

Fig. 2

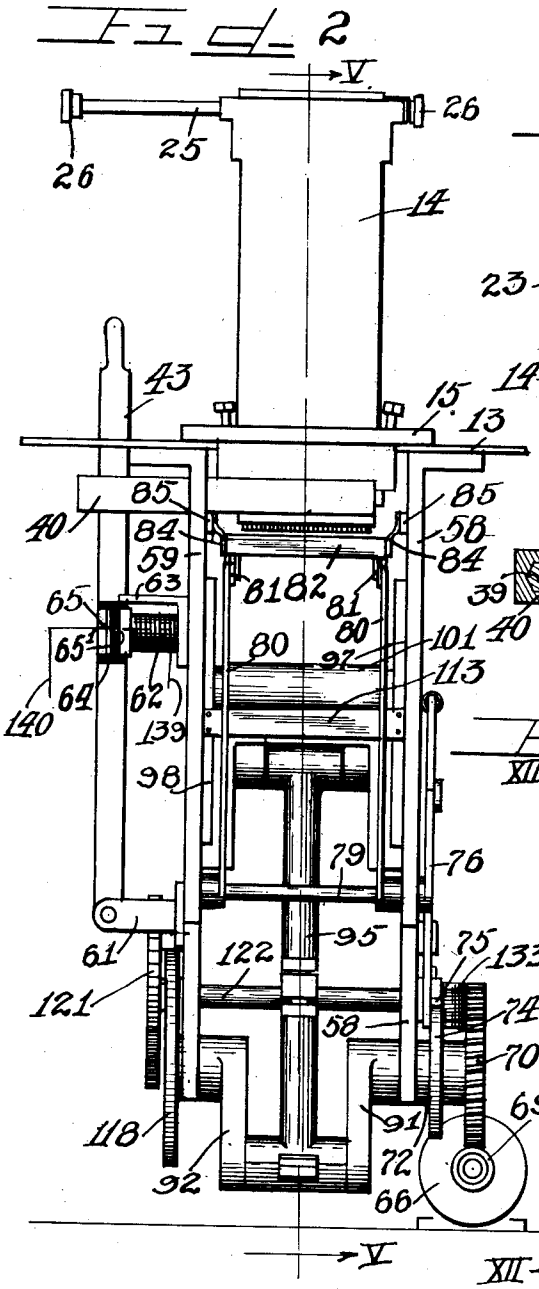


Fig. 8

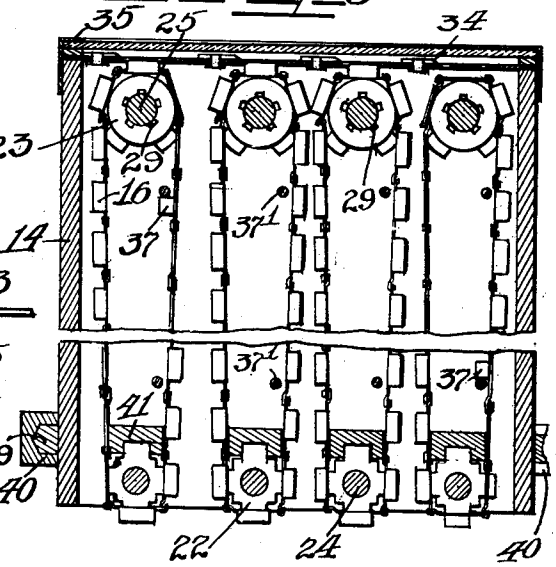
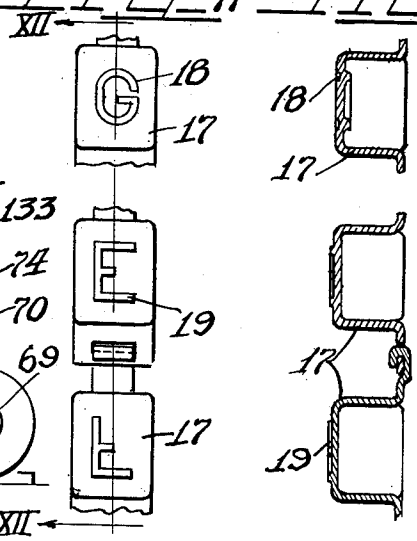


Fig. 11 Fig. 12



Inventor
Walter H. Compton.
By Atty

Oct. 3, 1933. W. H. COMPTON 1,928,928

AUTOMATIC CARD PRINTING AND VENDING MACHINE

Filed Nov. 12, 1930 6 Sheets-Sheet 3

Fig. 3

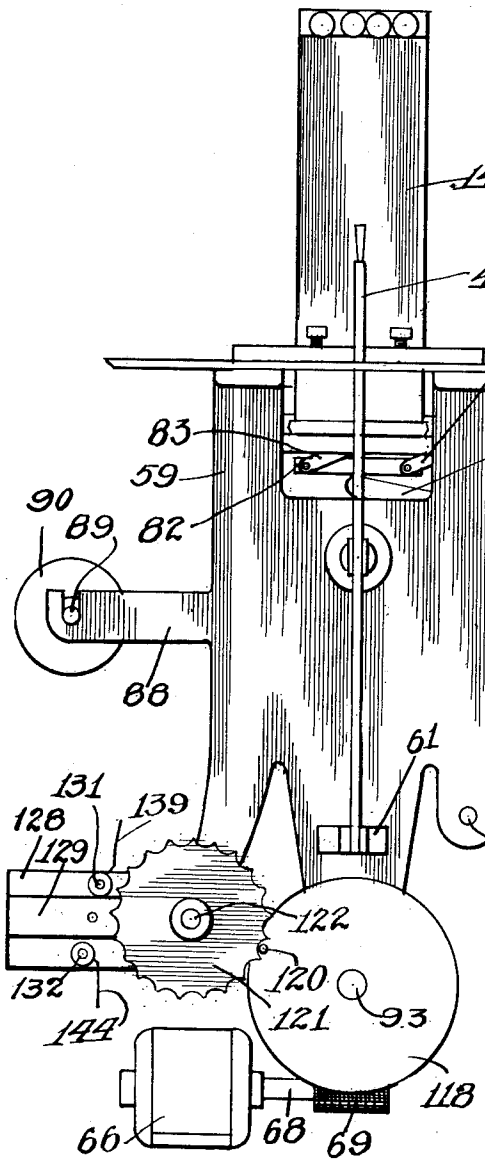
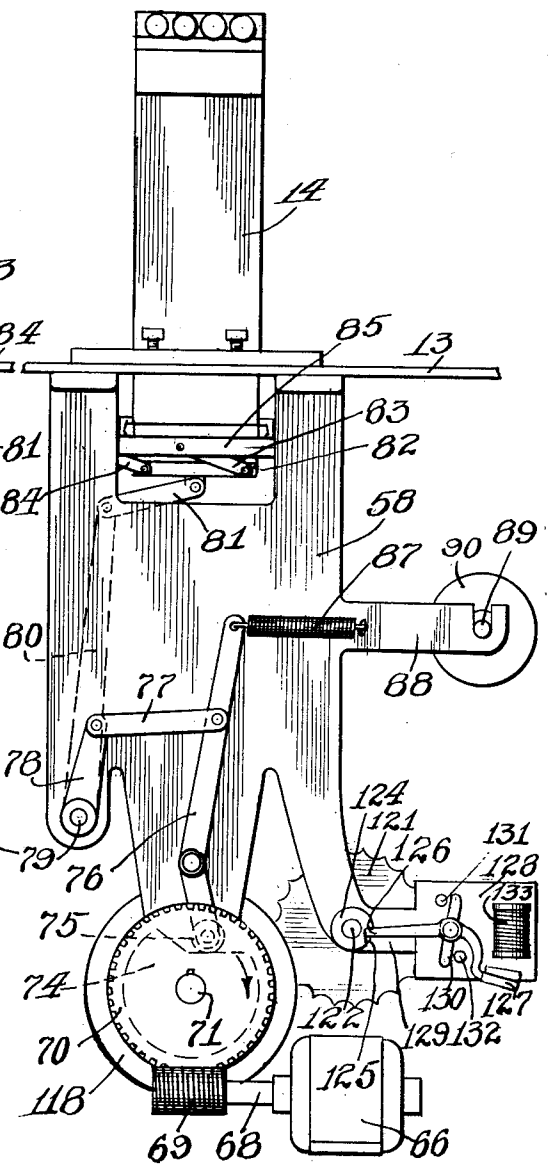


Fig. 4



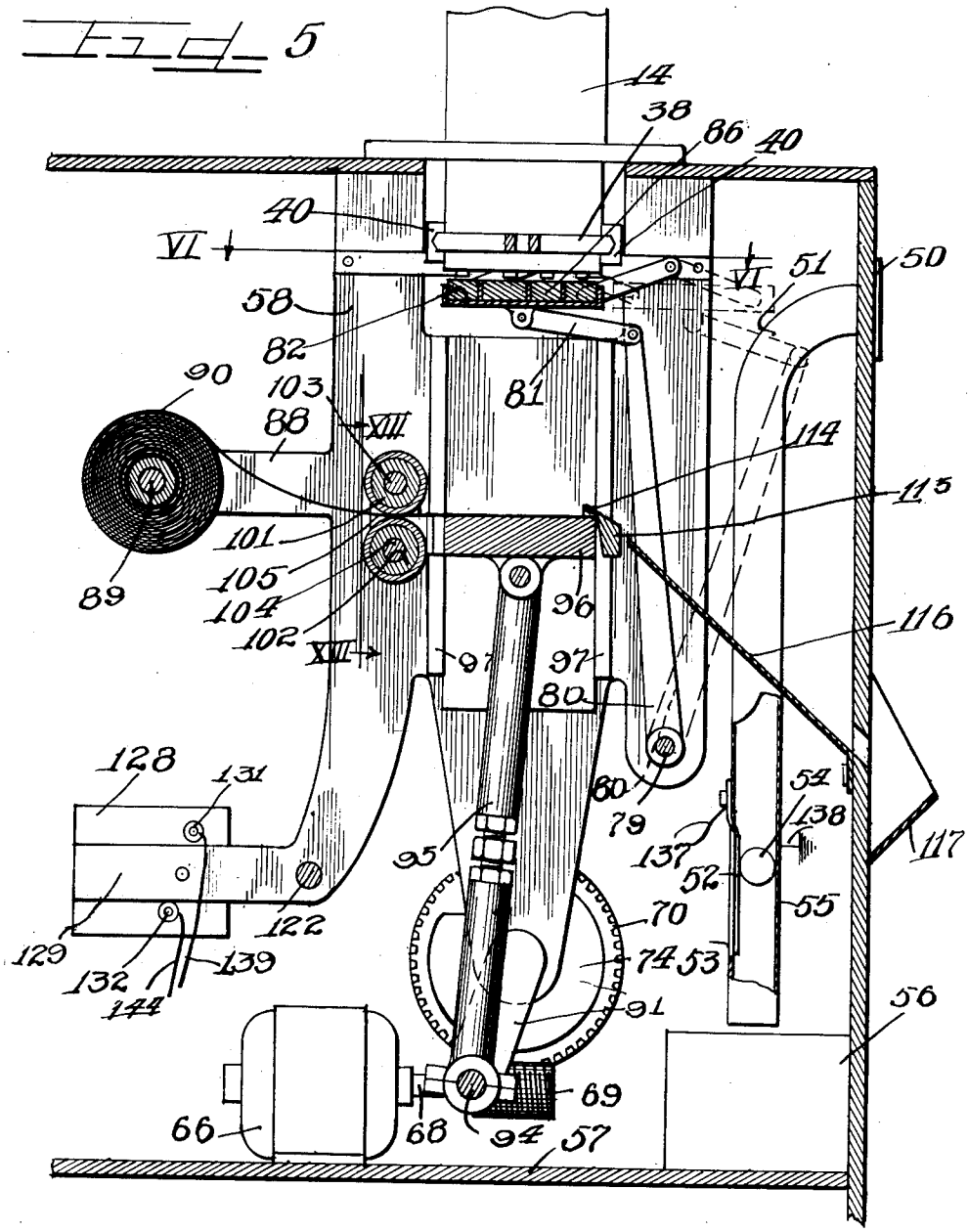
Inventor
Walter H. Compton.
By Charles Fillo. Attys.

Oct. 3, 1933. W. H. COMPTON 1,928,928

AUTOMATIC CARD PRINTING AND VENDING MACHINE

Filed Nov. 12, 1930 6 Sheets-Sheet 4

Fig. 5



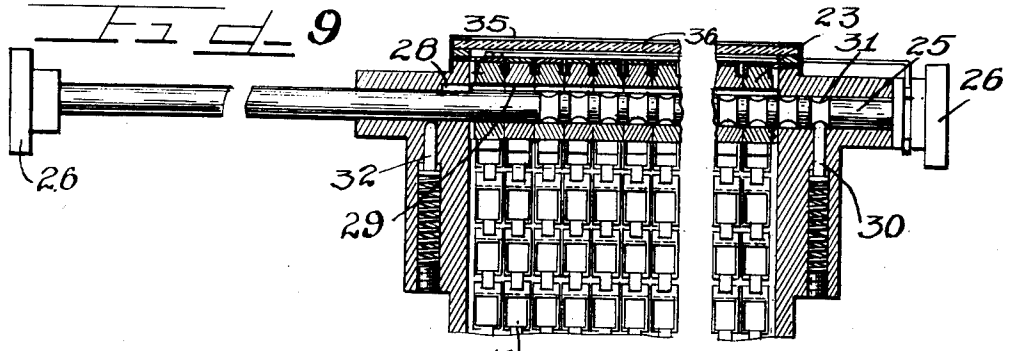
Inventor
Walter H Compton
Charles Miller
By Attys.

Oct. 3, 1933. W. H. COMPTON 1,928,928

AUTOMATIC CARD PRINTING AND VENDING MACHINE

Filed Nov. 12, 1930 6 Sheets-Sheet 5

Fig. 9



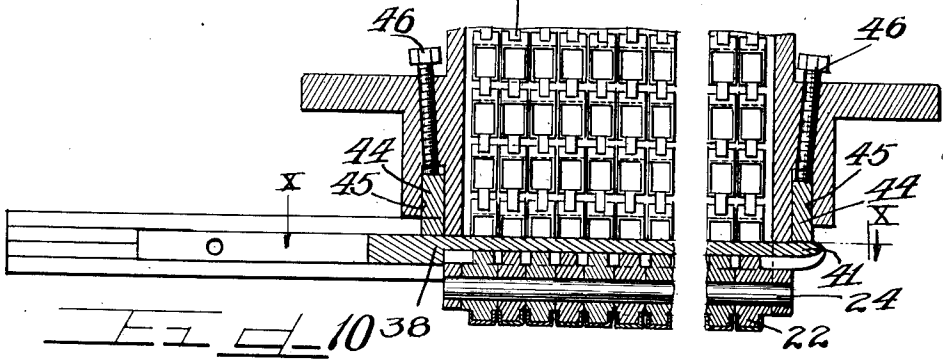
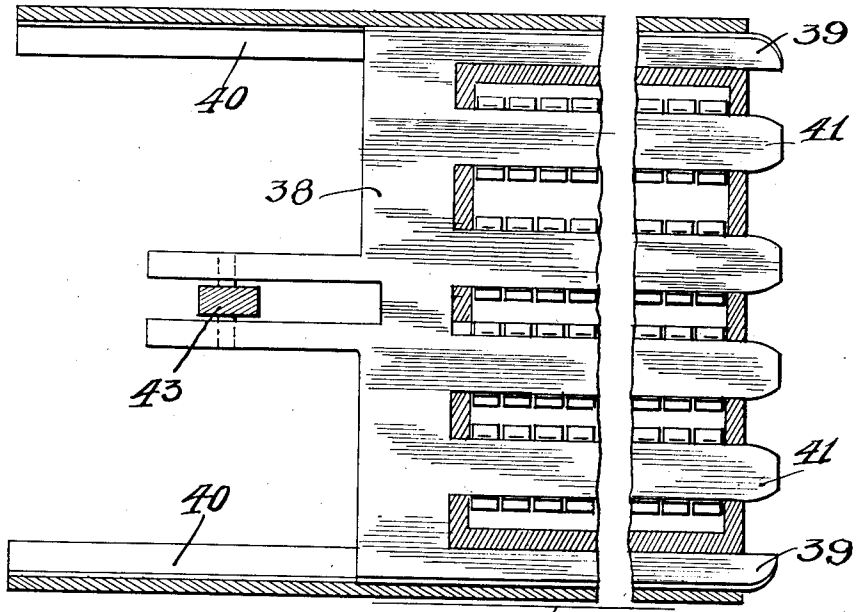


Fig. 10



Inventor
Walter H. Compton.
By Atty.

Oct. 3, 1933. W. H. COMPTON 1,928,928

AUTOMATIC CARD PRINTING AND VENDING MACHINE

Filed Nov. 12, 1930 6 Sheets-Sheet 6

Fig. 15

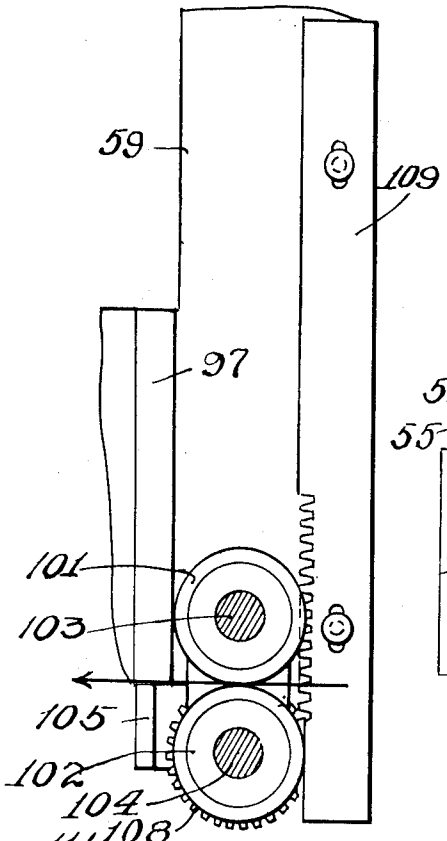


Fig. 16

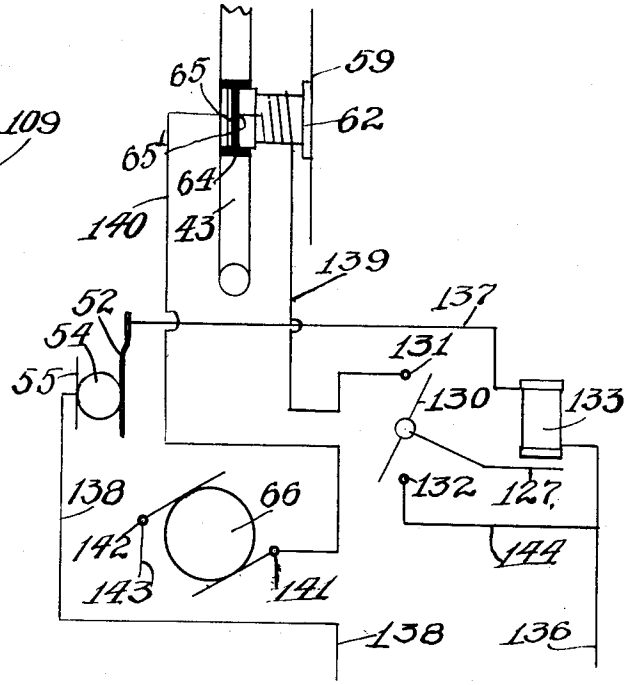


Fig. 13

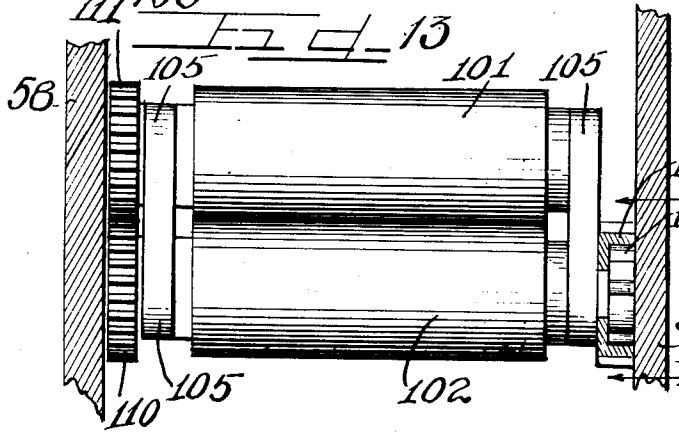
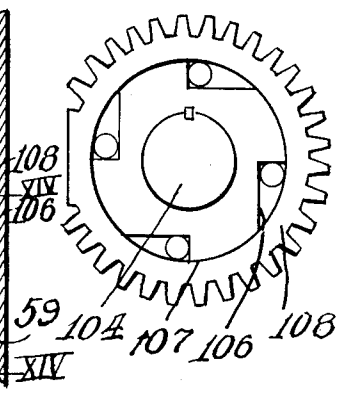


Fig. 14



Inventor
Walter H Compton
Charles Allen
by Attys.

Patented Oct. 3, 1933 1,928,928

UNITED STATES PATENT OFFICE

1,928,928

AUTOMATIC CARD PRINTING AND VENDING MACHINE

Walter H. Compton, Fort Madison, Iowa, assignor of one-half to Samuel Darling, Fort Madison, Iowa, and one-half to Frank Grandinetti, Chicago, Ill.

Application November 12, 1930
Serial No. 495,079

15 Claims. (Cl. 101—98)

This invention relates to a printing and vending machine to automatically print and deliver to the purchaser a plurality of cards, such as business, calling cards, labels and the like.

An object of the invention resides in the provision of card printing machine for automatically vending a plurality of cards therefrom in response to the insertion of a coin in the machine.

Another object of this invention is to provide a vending machine actuated by the aid of a coin for automatically printing and cutting from a roll of tape, and ejecting from the machine a plurality of cards, labels and similar articles having predetermined characters thereon.

Another object of this invention is to provide a coin controlled vending machine for automatically printing in one or more colors a predetermined quantity of identification cards, labels, and the like.

A further object of this invention is to provide a machine of the character described having coin controlled means for automatically printing and vending, from a continuous roll of tape in one setting of the machine, a designated number of business, calling cards, labels, and similar articles.

A still further object of this invention is to provide a card printing and vending machine having means for selectively arranging in desired formation a plurality of characters, and means operable by the aid of a coin for automatically printing the selected characters on a predetermined number of cards, labels and the like.

In accordance with the general features of this invention, there is provided a card printing and vending machine of the character described having manually operable mechanism for selectively setting and grouping different characters in desired formation for observation, and other mechanism operable by the aid of a coin for reproducing the setting of the selected characters on a designated number of cards, labels, and the like.

Another feature of this invention resides in the provision of a coin controlled card printing and vending machine having a plurality of similar type carrying chains arranged in spaced rows, with a series of chains in each row, and mechanism for actuating the chains for selectively grouping certain characters thereon in a desirable and predetermined arrangement to be printed.

Still another feature of this invention relates to the provision of a card printing and vending machine having a plurality of similar chains, each chain carrying a set of indicating and a set of type or printing characters, the indicating set of characters being selectively movable into a visible position during the making of the desired set-up and the corresponding printing characters being at the same time moved into a position for reproducing the set-up on a designated number of cards, labels, and other similar articles. The indicating characters serve to show to the operator of the machine the type set-up he is making or has made to be printed prior to the operation of the machine to print a plurality of cards from the type or character he has set up and desired to be printed.

Other objects and advantages of this invention will more fully appear from the following detailed description taken in connection with the accompanying drawings, which illustrate a single embodiment thereof, and in which:

Figure 1 is a perspective view of the machine of this invention;

Figure 2 is an enlarged front elevation of the machine with the cabinet thereof removed;

Figure 3 is an enlarged side elevation of the machine illustrating the motor drive, inking, and automatic stopping mechanism;

Figure 4 is an opposite side view of the parts illustrated in Figure 3;

Figure 5 is an enlarged fragmentary section taken on the line V—V of Figure 2, showing in general the feeding, inking, printing, and severing mechanism;

Figure 6 is a section taken on the line VI—VI of Figure 5, looking in the direction indicated by the arrows and showing the position of the inking pad during the printing operation;

Figure 7 is an enlarged plan view showing a selected indicating character set-up.

Figure 8 is an enlarged partly sectional side elevation of the type chains, sprocket, and locking mechanism;

Figure 9 is a fragmentary partly sectional view illustrating the type chain set up mechanism and drawn to an enlarged scale with intermediate portions between the top and bottom of the figure and between the right and left sides of the figure broken away.

Figure 10 is a fragmentary section taken substantially on the line X—X of Figure 9 illustrating the chain aligning and locking mechanism;

Figure 11 is an enlarged fragmentary view showing the chain links with the type and indicating characters thereon;

Figure 12 is a section of the chain links taken substantially on the line XII—XII of Figure 11.

Figure 13 is an enlarged sectional view of the feed roller mechanism taken substantially on the line XIII—XIII of Figure 5.

Figure 14 is an enlarged end view of the feed roller one-way gear clutch drive mechanism taken on the line XIV—XIV of Figure 13.

Figure 15 is an enlarged section taken substantially on line XV—XV of Figure 6 illustrating the tape feed roller rack rotating mechanism; and

Figure 16 is the schematic wiring diagram of the machine electric control circuit.

As shown on the drawings:

A suitable cabinet 10 having legs 11, and a normally locked entrance door 12, is provided with an apertured top member 13 for receiving a chain housing 14, which housing has its flanged plate 15 suitably secured to the member 13. The housing 14 carries the chain setting up and printing mechanism.

The setting up and printing mechanism consists of a plurality of type carrying chains 16, which may be arranged in any desirable number of rows. However, for the purpose of describing the invention the chains are arranged in four rows as best illustrated in Figures 7 and 8. The chain mechanism comprises a duplicity of similar parts, so it is thought that the description of one set of chain mechanism will suffice for all the chain mechanisms.

Each chain has two complete sets 18 and 19 of aligned characters, such as alphabetical, numerical, punctuation marks, blank spaces, etc., on the interconnected links 17 thereof (Figures 8, 11, and 12). Each of the characters of one set 18 is depressed in the face of the link and filled with luminous material for indicating to the operator the type set-up being made and which will be more fully described hereinafter. Each of the characters of the other set 19 extends beyond the face of the link to function as printing type during the printing operation.

The chains are supported in rows inside the housing 14 by respective sprocket wheels 22 and 23, which are freely mounted on respective shafts 24 and 25 suitably journalled in the housing. The shaft 25 extends beyond the side of the housing and is provided with a finger gripping knob 26 at each end thereof for facilitating the longitudinal moving of the shaft.

The chains 16 in each row are selectively and independently actuated by the respective shafts 25 for making the desired character set-up; for example, if the left chain in row 1 (Figure 7) is selected for setting up the character W, the respective shaft 25 is slidably moved to the right until its attached pointer 27 indicates that a key 28 (Figure 9) secured on the shaft 25 is in engagement with one of the aligned keyways 29 in the left or first chain drive sprocket wheel 23. A spring actuated detent 30 disposed in the housing 14 (Figure 9) engages a corresponding aligned groove 31 in the shaft 25 for maintaining the shaft in endwise position. A similar detent 32 also positioned in the housing 14 contacts with the periphery of the shaft 25 for upwardly exerting pressure thereon.

The shaft 25 is then rotated for actuating the left chain 16 in the first row to move the desired indicating character, in this instance, character W, to the observation position between the corresponding opening in a plate 34 mounted in the top portion of the housing 14. Positioned above the plate 34 on the housing is a cover 35 having a transparent plate 36 for permitting observation of the chain characters and for protecting the indicating characters.

When the desired indicating character W has been moved to the position where it can be seen by the operator, the corresponding printing type character W is in alignment therewith in the printing position projecting beyond the lower portion of the housing.

The printing type character links in each chain travel only about the respective sprocket 22 and are prevented from being moved to the observation set up position by a stop member 37 (Figure 8), which member projects inwardly from one of the blank links in each chain so as to engage either of the fixed pins 37, depending upon the direction the chain is traveling for preventing further movement of the chain in that direction.

After the first or any desired chain in the row has been actuated to set up the desired indicating character, any other chain in the row can be selectively actuated by simply moving its shaft 25 horizontally in the proper direction until the pointers 27 carried thereby indicate that the shaft key 28 is aligned in one of the key-ways 29 of the selected chain drive sprocket 23.

Thereafter, the rotation of the shaft 25 in the proper direction actuates the selected chain for moving the desired indicating character or blank as the case may be to the observation or set-up position, and the corresponding type character is simultaneously moved to the printing position. The other chains in the same row are prevented from moving by the friction of the chain sprocket hubs which frictionally engage the hub of the adjacent chain sprockets. In this manner the type carrying chains in any row can be selectively and independently actuated by the proper manipulation of the respective shafts 25 for enabling any desired character set-up to be made for the reproduction thereof on any desired number of cards, labels, and the like.

A locking plate 38 (Figures 8, 17, and 10) having outer spaced fingers 39 slidably disposed in guides 40 positioned in housing 14, is provided with inner spaced fingers 41 disposed above the sprockets 22 in each row of chains. The fingers 41 are each provided with a groove in the under portion thereof so that when the locking plate is slidably moved to the right by a hand lever 43 pivotally connected thereto, the groove slidably engages one of the teeth in each sprocket 22 in the respective rows for aligning each row of type and for locking the sprocket to prevent movement of the type carrying chain during the printing operation.

A pair of spaced bars 44 (Figure 17) positioned in respective grooves 45 in the housing 14 are vertically actuated by adjusting screws 46 associated therewith for adjusting the pressure on the locking plate 38 so as to enable the fingers of the plate to properly align the type character.

A slotted coin receiving plate 50 attached to the outer side of the housing 10 supports a coin receiving chute 51 vertically disposed in the interior of the cabinet. Threadedly secured to the lower portion of the coin receiving chute is a spring contact 52, which is formed to extend through the opening 53 into the interior of the chute 51 for contacting with a desired size coin 54 (Figure 5). The coin 54 in the position as illustrated in Figure 5 acts as a conductor for closing an electrical circuit between the contact 52 and the coin chute at 55, which acts as the ground connection. A receptacle 56 is supported on a bottom member 57 within the cabinet 10 for receiving the coin after it passes through the coin chute.

Positioned within the cabinet 10 and having

their flanged portions secured underneath the top 13 thereof is a pair of spaced supporting members 58 and 59 connected together by bar 60 suitably secured thereto. The supporting members carry the tape, inking, and feeding mechanism which will more fully be described hereinafter.

Secured to the outside face of the supporting member 59 is an outwardly projecting bracket 61 which pivotally supports the lower end of the operating lever 43. The lever projects upwardly and extends through and beyond the top 13 of the cabinet 10 (Figures 2 and 3). The operating lever when moved to the right for actuating the locking plate 38 has its intermediate portion fitting into a slot in the head of a solenoid 62, which solenoid is supported by a bracket 63 secured to the outer face of the supporting member 59 (Figure 2).

Attached to one side of the operating lever 43 (Figs. 2 and 16) is an insulated plate 64 which carries an electrical contact 65 that engages with an electrical contact 65' of the solenoid. The solenoid is energized for attracting and holding the lever 43 in operative position during the printing operation by the action of the coin 54 closing the circuit. The closing of the coin circuit simultaneously actuates the motor 66 secured to the bottom 57 of the cabinet 10.

Keyed on the outer end of the motor shaft 68 is a worm 69 which meshes with a worm gear 70 secured on a shaft 71 which is suitably journaled in the hub 72 of the supporting member 58. Mounted on the shaft 71 is a cam 74 which engages a roller 75 for actuating a lever 76 having its intermediate lower portion pivotally connected to the lower part of supporting member 58 (Figures 2 and 4).

The rotation of the cam 74 in a clockwise direction, as viewed in Figure 4, pivotally actuates the lever 76 and the lever 77 pivotally connected thereto for pivotally moving a lever arm 78 having its upper end connected to the outer end of the lever 77. The lower end of the lever arm 78 is keyed on a shaft 79 having the end portions thereof suitably journalled in the spaced supporting members 58 and 59.

A pair of upwardly extending spaced levers 80 having their lower ends keyed on the shaft 79 between the members 58 and 59 are pivotally connected to the outer side of a pair of spaced inclined lever arms 81, which arms have their inner ends pivotally connected to a pair of downwardly spaced lugs of an inking tray 85 (Figures 2, 3, 4, and 5). A pair of spaced upwardly inclined lever arms 83 and 84 are pivotally connected at their ends to each side of inking tray 82 adjacent the ends thereof. The upper ends of each pair of lever arms 83 and 84 are pivoted to respective cross bars 85 suitably secured to the supporting members 58 and 59, respectively. The inking tray as best illustrated in Figure 5 consists of four (4) individual inking pads 86, each of which is aligned with a row of printing type for inking the type to permit the reproduction thereof on cards, labels, and the like.

It is to be noted that the inking tray 82 is provided with individual inking pads, each of which may be saturated with a different color ink to allow each row of type to be reproduced in a different color, or, if desired, the inking pads may be saturated with the same color ink for reproducing all the rows of type in the same color.

When the ink tray leverage mechanism is in the position illustrated in Figure 5, a coil spring 87 (Figure 4) connected to the upper end of lever arm 76 and the supporting member 58 maintains the roller 75 into engagement with the cam 74 for enabling the leverage mechanism to upwardly pivot the inking tray 82 for actuating the pads 86 to apply ink to the rows of printing type projecting from the bottom portion of the housing 14. After the ink has been applied to the type, the cam 74 will have rotated in a clockwise direction (Figure 4) so that the rise thereof engages the roller 75 for pivotally actuating the interconnected leverage mechanism to downwardly swing the inking tray 82 away from the printing type.

Each of the supporting members 58 and 59 have at the intermediate portion thereof an outwardly extending arm 88 (Figures 3, 4, and 5), which support a shaft 89 carrying a roll of card material 90. The shaft 71, which is actuated by the motor 66 through the worm 69 and worm gear 70, projects through the supporting member 58 for rotating a crank 91 keyed to the inner end thereof adjacent the inside surface of supporting the member 58. A spaced similar crank 92 is mounted on a shaft 93, which is suitably journalled to the lower inside surface of the supporting member 59 in alignment with the crank 91. The lower ends of the cranks 91 and 92 are connected by a shaft 94 which shaft has suitably journalled thereto the lower end of an adjustable connecting rod 95. The connecting rod is actuated by the cranks for reciprocating a plunger 96 suitably journalled to the top portion of the adjustable connecting rod. The plunger 96 slides between guide members 97 and 98 carried by the respective supporting members 58 and 59, (Figures 2 and 5).

The reciprocating plunger carries the mechanism for feeding the card material over the top surface of the plunger. The feeding mechanism consists of an upper roller 101 and a lower roller 102 secured on the respective shafts 103 and 104, which shafts are journalled in a pair of spaced brackets 105 secured to the reciprocating plunger 96 (Figures 5, 13, and 15). Disposed on the shaft 104 between the bracket 105 and the inner surface of the supporting member 58 is a one-way drive clutch, comprising an inner idler clutch member 106 keyed on the shaft 104 (Figures 13 and 14). The member 106 is provided with peripheral pockets for receiving ball bearings 107. A mutilated gear drive clutch member 108 engageable with an adjustable rack 109 secured to the supporting member 59 freely rotates in a counterclockwise direction about the periphery of the inner clutch member on the upward stroke of the plunger (Figure 14).

On the downward travel of the plunger, the mutilated gear 108 engaged by the rack 109 is rotated in a clockwise direction as viewed in Figure 14 for contacting with the ball bearings 107 for actuating the inner clutch member 106, which rotates the shaft 104 and the feed roller 102 keyed on the shaft (Figures 13 and 15). A gear 110 keyed on the opposite end of the shaft 104 meshes with a gear 111 secured on the end of the shaft 103 for rotating the upper roller 101. The rollers are rotated in opposite directions for gripping and feeding the card tape across the top surface of the plunger on downward stroke thereof. The card material, after printing of the characters thereon, is moved across the plunger so that the printed portion thereof extends through the opening between the

top surface of the plunger and a movable shear member 114 secured on the plunger.

Mounted between the supporting members 58 and 59, as best illustrated in Figure 5, is a fixed shear blade 115, which cooperates with the shearing member 114 on the downward stroke of the plunger for cutting the printed card material into desirable length cards. The cards then drop over the tapered edge of the shear blade 115 into an inclined chute 116 and are discharged into a receiving receptacle 117 secured to the outside of the cabinet 10 (Figures 1 and 5).

The machine is provided with mechanism for automatically stopping the motor when the desired number of cards have been printed and delivered to the operator. This mechanism consists of a disk 118 mounted on the shaft 93 which is keyed to the crank 92 for rotation therewith. A pin 120 projecting from the disk engages a tooth of a serrated disk 121, which is mounted on a transverse shaft 122 suitably journalled in the lower portion of the supporting members 58 and 59, as best illustrated in Figures 3 and 4.

The disk 118 is timed to operate in synchronism with the printing and delivery mechanism so that it will rotate one revolution for every card that is printed and delivered to the operator. Thus, for every revolution of the disk 118, the disk 121 is advanced one tooth. The number of teeth in the disk 121 corresponds to the predetermined number of cards which are to be printed before the machine mechanism is automatically stopped. When the disk 121 has made one complete revolution, a circular cam 124 secured on the shaft 122 will have rotated so that a peripheral slot 125 thereof will be in the position as best illustrated in Figure 4 for receiving the outer end of a pivotal solenoid armature 127, which is counterweighted at the opposite end thereof for overbalancing the armature to open the motor circuit, thus stopping the machine.

The armature 127 is pivotally secured to an insulated mounting plate 128 which is supported on a lateral projecting arm 129 of the supporting member 58 (Figures 3 and 4).

A contact arm 130 projecting from the pivoted portion of the armature engages a pair of fixed contacts 131 and 132 extending through the plate 128. The arm 130 is actuated to bridge the contacts for closing an electrical circuit when a solenoid 133 also mounted on the plate 128 is energized to attract the armature 127 by the coin 54 closing the solenoid and motor circuits.

The electrical circuit diagrammatically illustrated in Figure 16 for actuating the motor is as follows:

The lever 43, when manually moved to the operating position slides into the slotted portion in the outer head of the solenoid 62 with the inner edge thereof abutting the back portion of the solenoid slots. In this position, the insulated contact 65 carried by the lever engages the insulated contact 65' of the solenoid coil for closing one of the open positions of the motor circuit.

The motor circuit is inoperative until the coin 54 passing through the chute 51, momentarily engages the contact spring 52 and the inside of the chute at 55 to act as an electrical conductor therebetween for closing the circuit to permit current, such as ordinary house current and the like, to flow from a suitable source through a line conductor 136, for energizing the solenoid 133 connected thereto. Current flowing through the solenoid passes through an interconnected conductor 137 to the spring contact 52 connected thereto. The current then flows through the coin 54, the chute 51, and a line conductor 138 attached to the chute 51 at 55. The current passing through the line conductor 138 is returned to a suitable source of energy for completing the coin circuit.

The current flowing through the solenoid coil energizes the solenoid 133 for upwardly pivoting the armature in engagement therewith. The upward movement of the armature 127 pivotally actuates the arm 130 into engagement with the fixed contacts 131 and 132 for permitting current to flow through a conductor 139 to the interconnected solenoid 62. The current flowing through the solenoid coil energizes the solenoid to attract and hold the lever 43 positioned in the solenoid slot in operating position while the machine is printing and vending cards. The current then flows from the solenoid 62 through the contacts 65' and 65 and a conductor 140 connected to the contact 65 to a terminal 141 of the motor 66. Current from the motor 66 flows through a terminal 142 connected thereto and a conductor 143 connecting the terminal 142 with line conductor 138, thus completing the motor circuit which actuates the motor 66 for operating the machine mechanism.

The coin 54, after it has traveled past the contact 52 and dropped into the coin box 56, opens the coin circuit which deenergizes the solenoid coil 133. However, the armature 127 is held in its up-position by the outer end 126 thereof riding on the periphery of the cam 124 for maintaining the bridging arm 130 in engagement with the contacts 131 and 132, thus permitting current to flow through a conductor 144 connecting the fixed contact 132 and line conductor 136, thereby maintaining the motor circuit closed, until the desired number of cards is printed which the machine is set to vend to the purchaser for a certain designated coin.

The operation of the machine is briefly as follows:

The machine of this invention is compactly constructed so that it can be easily transported to any desirable place, where its electrical circuit can be connected to a suitable source of electrical energy such as ordinary house current and the like. Thereafter, the machine can be operated by a purchaser who desires to have a designated number of cards printed such as calling cards, business cards, labels and the like. The purchaser first determines the characters which he wishes to appear on the card.

The desired characters are then set up on the machine by simply gripping the finger knob 26 and horizontally moving the actuating shaft 25 until the pointer 27 connected thereto indicates the selected chain for setting up the first character to appear on the calling card. For example, if the character set up illustrated in Figure 7 is to be made, the pointer 27 will indicate that the actuating shaft 25 in the first row has been horizontally moved so that the key 28 thereof will be aligned in one of the keyways 29 of the first chain drive sprocket 23 in the first row of chains. Thereafter, the rotation of the shaft 25 actuates the drive sprocket 23 for moving the chain until the desired character (in this instance, "W") appears in the opening of the plate 34, which readily can be seen by looking through the transparent plate 36.

It is to be noted that each chain carries two complete sets of characters and blank spaces sufficient for making any desired set-up. The desig-

nating set of characters is depressed in the links of the chain flush with the outer surface thereof for indicating the desired set-up. The type or printing set consists of characters raised above the outside surface of the links for reproducing the desired character set-up on the cards, labels or the like (Figures 11 and 12).

The shaft 25 is prevented from horizontal movement during manipulation of the chain by a spring actuated detent 30 which engages the respective shaft groove 31 in alignment therewith. When the first chain of the first row has been actuated so that the desired indicating character "W" can be seen by the operator the type or printing character "W" will be positioned on the sprocket 22 projecting from the lower portion of the housing 14 in alignment with indicating character "W". After the first character has been set up, the actuating arm 25 is horizontally moved to the right until the indicators 27 indicate the next selected chain for setting up the second desired character. In the set-up illustrated in Figure 7, a blank space is required between the first character "W" and third character "5". Thereafter, the second drive sprocket 23 is actuated by the rotation of the shaft 25 through the cooperation of the key 28 for moving the second chain in the first row until a blank link can be seen by the operator. At the same time a blank printing link is aligned with the indicating blank link in the printing position below the lower end of the housing 14.

In this way any chain in a row can be selectively actuated for making a desired indicating character set-up. After one row of characters has been set up, each succeeding row of characters may be set up in a similar manner so that any desired set-up can be made for reproduction thereof on a desired number of calling cards, labels and the like.

Upon completion of the set-up in each row, the characters are aligned and locked in position by manually moving the hand lever 43 towards the housing 14 for actuating the locking plate 38 connected thereto. The fingers 41 of the locking plate slidably move between the chains in each row, with the groove portion thereof engaging a tooth of each of the sprockets 22 in each row for aligning the characters and preventing rotation of the sprockets during the printing operation. The pressure of the locking fingers against the teeth of the sprocket may be varied by the transverse bars 44 which are actuated by the adjusting screws 46.

The coin 54 is then inserted into the chute 51, and during the travel therethrough it momentarily contacts with the spring contact 52 and a portion of the inside of the chute at 55 to function as a conductor to close an electric circuit for permitting current to flow through the solenoid 133. The solenoid energized by the current passing therethrough upwardly pivots the armature 127 and downwardly moves the outer end 126 thereof out of the peripheral slot 125 of the cam 124. The bridging arm 130 of the armature is moved into engagement with the fixed contacts 131 and 132, thereby closing the motor circuit and starting the motor 66. At the same time the solenoid 62 is energized for maintaining the lever arm 43 in its operative position during the printing operation.

The armature arm 127 is maintained in its up position by the outer end 126 thereof riding on the periphery of the cam 124, although the solenoid 133 has been deenergized by the opening of the circuit as soon as the coin 54 has passed by the spring contact 52 and dropped into the coin box 56. The motor circuit continues to remain closed until the desired number of cards has been printed.

The starting of the motor 66 (Figure 4) rotates at a reduced speed the cam 74 secured on the shaft 71 through the worm 69 and the worm gear 70. When the cam is rotated to the position illustrated in Figure 4, the spring 87 pivotally actuates the lever arm 76 connected thereto for keeping the roller 75 in frictional engagement with the periphery of the cam. The movement of the lever arm 76 to the right actuates the lever arms 77, 78, and 80 in the same direction for upwardly pivoting the levers 81, 83, and 84, to upwardly pivot the inking tray 82 for forcing the inking pads 86 against the printing characters projecting below the lower part of the housing 14. As soon as the printing type has been inked the cam 74 moves the lever arm 76 to the left actuating the interconnected leverage mechanism for enabling the inking tray 82 to be pivoted downwardly and inwardly out of the way of the reciprocating plunger 96, as illustrated by the dotted lines in Figure 5.

It is to be noted that an individual inking pad 86 is provided for each row of type so that each pad can be saturated with a different color ink for reproducing each row of type in a different color on the printed cards, if desired. However, the pads 86 may be saturated with the same color ink for printing the cards in the same color.

The plunger 96 is actuated in synchronism with the inking mechanism so that, when the inking tray is downwardly pivoted out of the way, the plunger 96 is upwardly actuated by the connecting rod 95 for moving the card tape 90 against the printing type for printing the desired character set up on the tape.

The tape is held between the feed rolls 101 and 102 which are idle during the upward travel of the plunger, as the drive clutch member 108 of the one-way clutch drive actuated by the teeth thereof engaging the teeth of the rack 109 is rotated in a counterclockwise direction about the inner clutch member 106 keyed on the roller drive shaft 104 (Figure 14).

After the characters have been printed on the tape the plunger is downwardly actuated, and the mutilated gear clutch drive member 108 (Figure 14) is then clockwise rotated so that its inner periphery frictionally engages the ball bearings 107 for actuating the inner clutch member 106. The inner clutch member rotates the drive shaft 104, which shaft rotates the rollers 101 and 102 in opposite directions for feeding the printed portion of the tape to project beyond the plunger. When the tape has moved the desired distance, the mutilated portion of the gear clutch drive member comes in contact with the lower portion of the rack for preventing further rotation of the tape feeding rollers 101 and 102.

Before the plunger 96 has reached the limit of its downward travel, the printed portion of the tape projecting beyond the plunger underneath the movable shear member 114 which cooperates with the stationary knife 115 for shearing the projecting portion of the tape into predetermined length cards. The cards, then, slide down the inclined chute 116 into the receptacle 117.

The mechanism for automatically stopping the machine is actuated in synchronism with

the feeding, cut-off and delivery mechanisms from the crank 92, which rotates the disk 118 connected thereto one complete revolution for every card that is printed and delivered to the purchaser. For every complete revolution of the disk, the serrated disk 121 is advanced one tooth by the detent 120 secured to the disk 118 which contacts with the teeth of the disk 121 (Figures 3 and 4). When the disk 121, which has teeth corresponding to the number of cards to be printed, is rotated one complete revolution, the peripheral slot 125 of the cam 124 (Figure 4) will be in position for receiving the outer end 126 of the armature 127 for enabling the counterweight on the opposite end of the armature to downwardly pivot the armature. The downward movement of the armature pivotally moves the bridging arm 130 out of engagement with the contacts 131 and 132, thereby opening the motor circuit and stopping the motor 66. Thereafter, the machine cannot be actuated until a suitable coin has again been inserted in the coin chute 51.

From the foregoing, it is obvious that I have provided a printing and vending machine for printing and vending from a continuous roll of tape a designated number of business, calling cards, labels, and similar articles, and which machine is also provided with means for automatically stopping the machine after a designated number of cards has been printed and delivered to the operator or customer.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

I claim as my invention:

1. A printing and vending machine, including a plurality of chains, sprockets for said chains, each chain carrying a duplicate set of characters, means for selectively actuating said chains for making a desired character set-up, means slidable between said chains, for aligning and locking said chains in the set-up position, said slidable means comprising a plurality of channeled fingers engageable with teeth of said sprockets for positively locking said sprockets, and means for moving a tape against said characters for reproducing the characters thereon, and actuating means for said tape moving means.

2. In a device of the character described, a plurality of type chains, sprockets for said chains each of said chains having indicating and printing characters thereon, and means for selectively actuating said chains for bringing said indicating characters into view for making a desired character set-up, said means simultaneously moving said printing characters into printing position in alignment with said indicating characters, locking means for said sprockets comprising a plurality of integrally formed fingers each having a tapered end and a channeled face, guiding means for said locking means, and means for sliding said locking means over said sprockets such that teeth of the sprockets engage within the channels in said fingers for rigidly holding said sprockets from relative movement.

3. In a device of the character described, a plurality of rows of type chains, sprockets for said chains each of said chains carrying indicating and printing characters thereon, and a shaft for selectively actuating the chains in each row for moving said indicating characters to a set-up position, said shaft simultaneously moving said printing characters into printing position in alignment with said indicating characters, locking means for said sprockets comprising a plurality of integrally formed fingers each having a tapered end and a channeled face, guiding means for said locking means, and means for sliding said locking means over said sprockets such that teeth of the sprockets engage within the channels in said fingers for rigidly holding said sprockets from relative movement.

4. A printing machine of the class described, comprising a plurality of indicating characters, a plurality of printing characters associated therewith, means for selectively moving said indicating characters for making a desired character set-up, said last means simultaneously actuating said printing characters to a printing position, a roll of card material positioned below said printing characters, a reciprocating plunger for upwardly moving said card material for enabling said printing characters to be reproduced thereon, rollers for feeding the card material across said plunger, and clutch means operable on the downward movement of said plunger for actuating said rollers, said clutch means including an inner clutch member having a plurality of pockets, a ball in each of said pockets, and a gear outer clutch member cooperating with said ball for rotating said inner clutch member.

5. A printing and vending machine, including a plurality of type chains arranged in side by side relation, said chains being supported on wheels engaging the same, a shaft slidable through certain wheels of the several chains, the shaft being axially movable for selective engagement with any of the type chains for moving said selected chain to set up the desired printing character, a type locking plate including a plurality of fingers formed integrally with said plate and engageable with certain of said wheels to prevent relative movement of the same, and indicia means for indicating when said shaft is in position to move a selected type chain to set up desired type matter.

6. In a printing machine of the class described, supporting members, a plurality of type chains arranged in side by side relation, sprockets at each end of said chains engaging said chains for supporting and moving the same, a shaft slidable axially through certain sprockets of the several chains and including means for selective engagement with the sprockets for moving selectively any of said chains to set up the desired printing characters, a locking plate slidably guided in said supporting members, said locking plate including a plurality of integrally formed fingers disposed for engaging the sprockets at one end of said chains for positively locking all of the chains from relative movement.

7. In a printing machine of the class described, supporting members, a plurality of type chains arranged in side by side relation, sprockets at each end of said chains engaging said chains for supporting and moving the same, a shaft slidable axially through certain sprockets of the several chains and including means for selective engagement with the sprockets for moving selectively any of said chains to set up the desired printing characters, a locking plate slidably guided in said supporting members, said locking plate including guide fingers

on opposite edges thereof, and a plurality of intermediate locking fingers engageable with the sprockets at one end of the chains for locking said chains from relative movement.

8. In a printing machine of the class described, supporting members, a plurality of type chains arranged in side by side relation, sprockets at each end of said chains engaging said chains for supporting and moving the same, a shaft slidable axially through certain sprockets of the several chains and including means for selective engagement with the sprockets for moving selectively any of said chains to set up the desired printing characters, a locking plate slidably guided in said supporting members, said locking plate including a plurality of integrally formed fingers disposed for engaging the sprockets at one end of said chains for positively locking all of the chains from relative movement, pressure plates in said supporting members engageable with said locking plate for holding the locking plate on the sprockets.

9. In a printing machine of the class described, supporting members, a plurality of type chains arranged in side by side relation, sprockets at each end of said chains engaging said chains for supporting and moving the same, a shaft slidable axially through certain sprockets of the several chains and including means for selective engagement with the sprockets for moving selectively any of said chains to set up the desired printing characters, a locking plate slidably guided in said supporting members, said locking plate including guide fingers on opposite edges thereof, and a plurality of intermediate locking fingers engageable with the sprockets at one end of the chains for locking said chains from relative movement, pressure plates in said supporting members engageable with said locking plate for holding the locking plate on the sprockets, and adjustable means for varying the pressure of said pressure plates.

10. In a printing machine of the class described, supporting members, a plurality of type chains arranged in side by side relation, sprockets at each end of said chains engaging said chains for supporting and moving the same, a shaft slidable axially through certain sprockets of the several chains and including means for selective engagement with the sprockets for moving selectively any of said chains to set up the desired printing characters, a locking plate slidably guided in said supporting members, said locking plate including a plurality of integrally formed fingers, each of said fingers having channeled grooves therein and being disposed for engagement over certain teeth of the sprockets adjacent one end of the same for positively locking the sprockets from relative movement.

11. In a printing machine of the class described, supporting members, a plurality of type chains arranged in side by side relation, sprockets at each end of said chains engaging said chains for supporting and moving the same, a shaft slidable axially through certain sprockets of the several chains and including means for selective engagement with the sprockets for moving selectively any of said chains to set up the desired printing characters, a locking plate slidably guided in said supporting members, said locking plate including a plurality of integrally formed fingers, each of said fingers having channeled grooves therein and being disposed for engagement over certain teeth of the sprockets adjacent one end of the same for positively locking the sprockets from relative movement, pressure plates in said supporting members engageable with said locking plate for holding the locking fingers on the sprockets.

12. A printing and vending machine including a plurality of type chains, sprockets on said chains, each said chain carrying a duplicate set of characters, means for selectively actuating said chains for making a desired setup, a type locking plate including a plurality of fingers engageable with certain of said sprockets to prevent relative movement of the same.

13. A printing and vending machine including a plurality of type chains, sprockets on said chains, means for selectively actuating said chains, for making a desired setup, a type locking plate including a plurality of fingers engageable with certain of said sprockets to prevent relative movement of the same, and means for moving a tape against said setup type for reproducing the characters of the type thereon, and actuating means for said tape moving means.

14. A printing and vending machine including a plurality of type chains, sprockets on said chains, means for selectively actuating said chains for making a desired setup, a type locking plate including a plurality of fingers engageable with certain of said sprockets to prevent relative movement of the same, and indicia means for indicating when said chain selecting means is in position to move a selected type chain to set up desired type matter.

15. A printing and vending machine including a plurality of type chains, sprockets on said chains, means for selectively actuating said chains for making a desired setup, a type locking plate including a plurality of fingers engageable with certain of said sprockets to prevent relative movement of the same, and means for moving a tape against said setup type for reproducing the characters of the type thereon, and actuating means for said tape moving means, and indicia means for indicating when said chain selecting means is in position to move a selected type chain to set up desired type matter.

WALTER H. COMPTON.