Nov. 7, 1944. W. B. PAYNE 2,362,088

FORM DISPENSING APPARATUS

Filed Dec. 19, 1942 4 Sheets-Sheet 1

Fig.-1

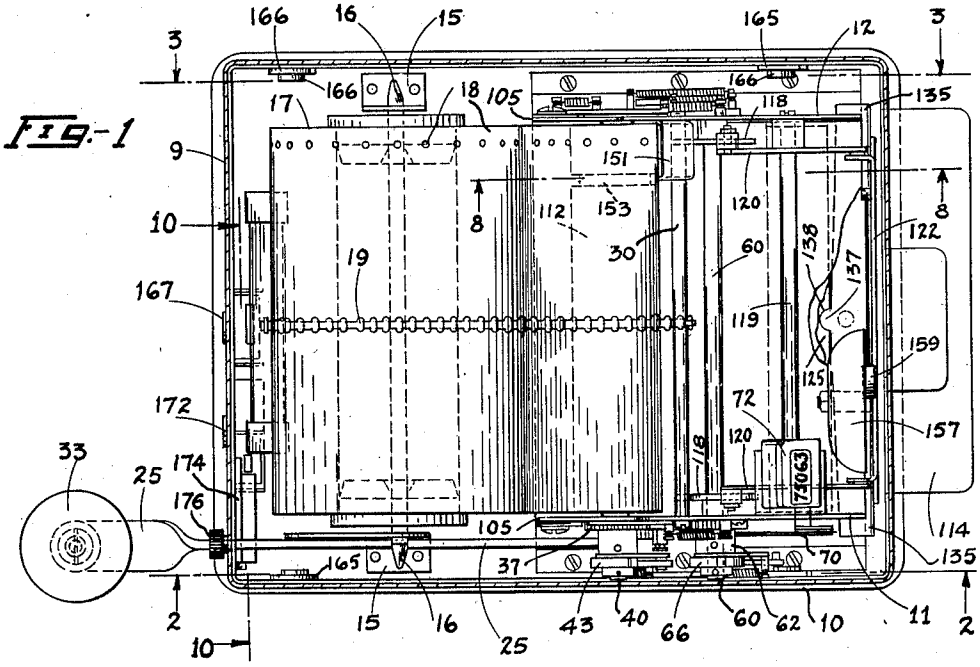


Fig.-3

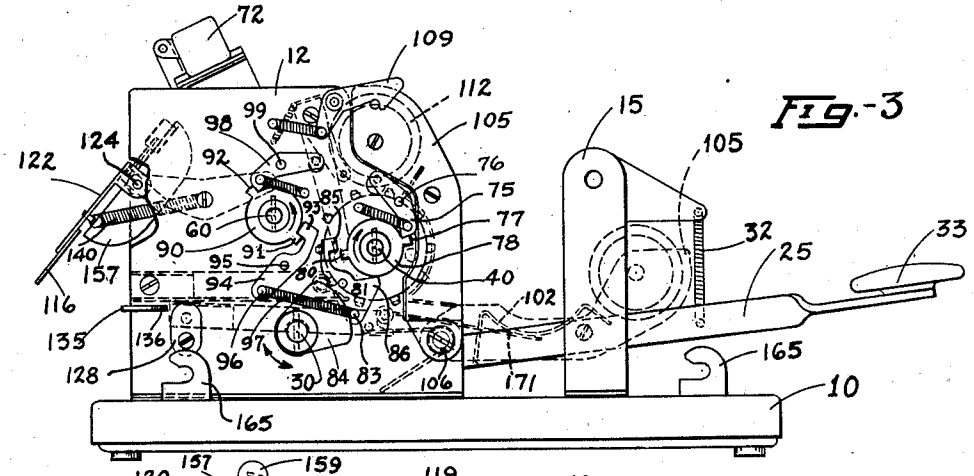
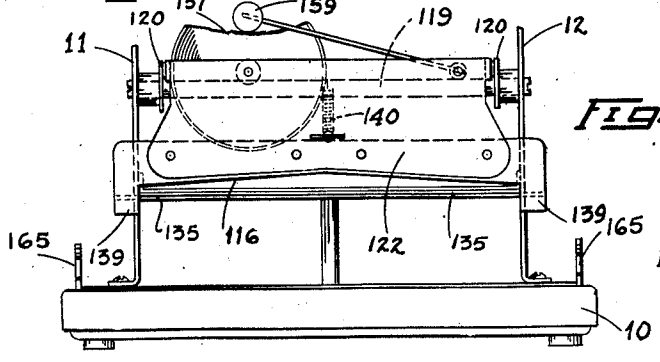


Fig.-4



INVENTOR.
WALTER B. PAYNE
BY Raymond E. Cohen

Nov. 7, 1944. W. B. PAYNE 2,362,088

FORM DISPENSING APPARATUS

Filed Dec. 19, 1942 4 Sheets-Sheet 2

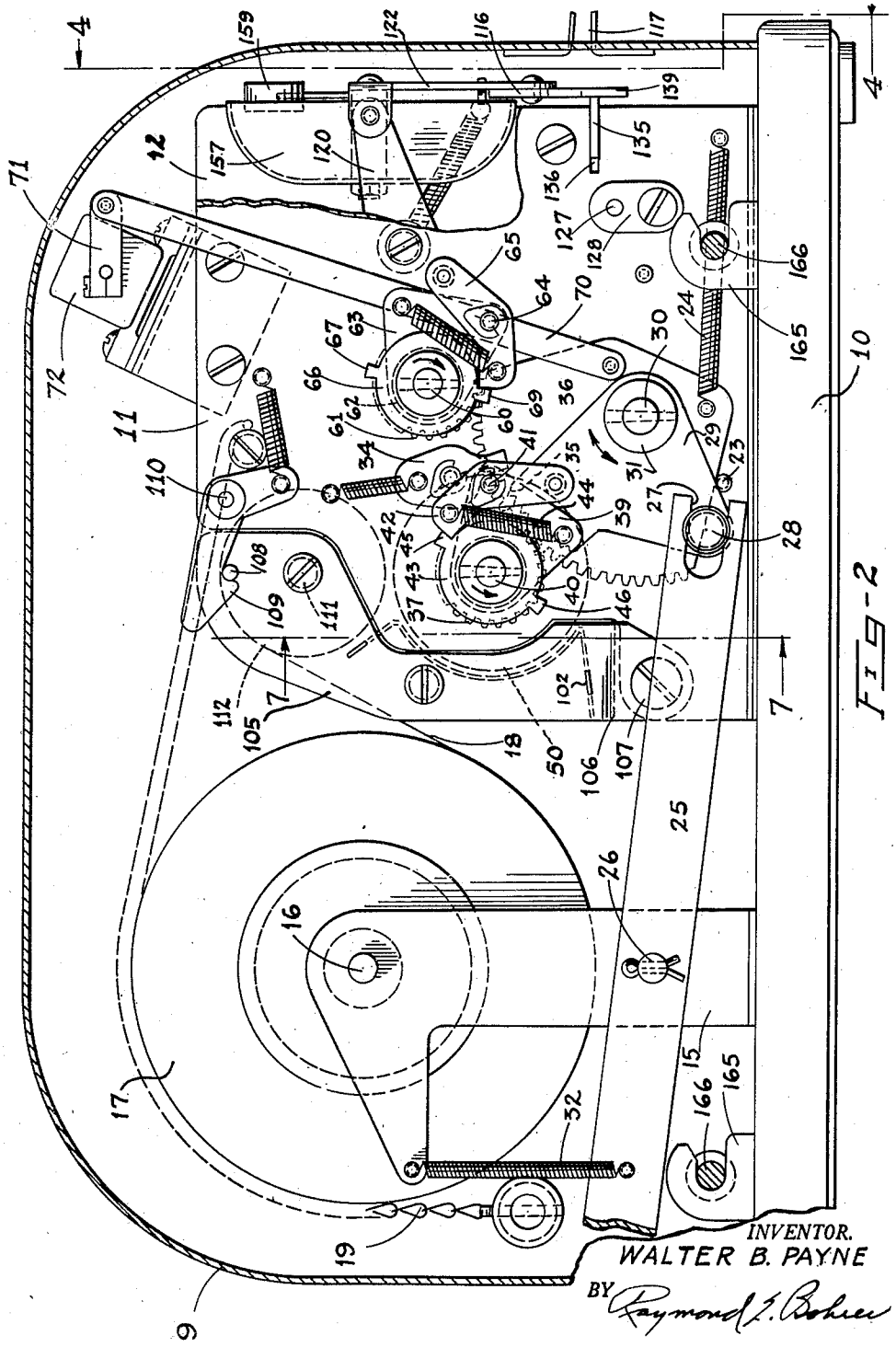


FIG-2

INVENTOR.
WALTER B. PAYNE
BY Raymond F. Bohren

Nov. 7, 1944. W. B. PAYNE 2,362,088

FORM DISPENSING APPARATUS

Filed Dec. 19, 1942 4 Sheets-Sheet 3

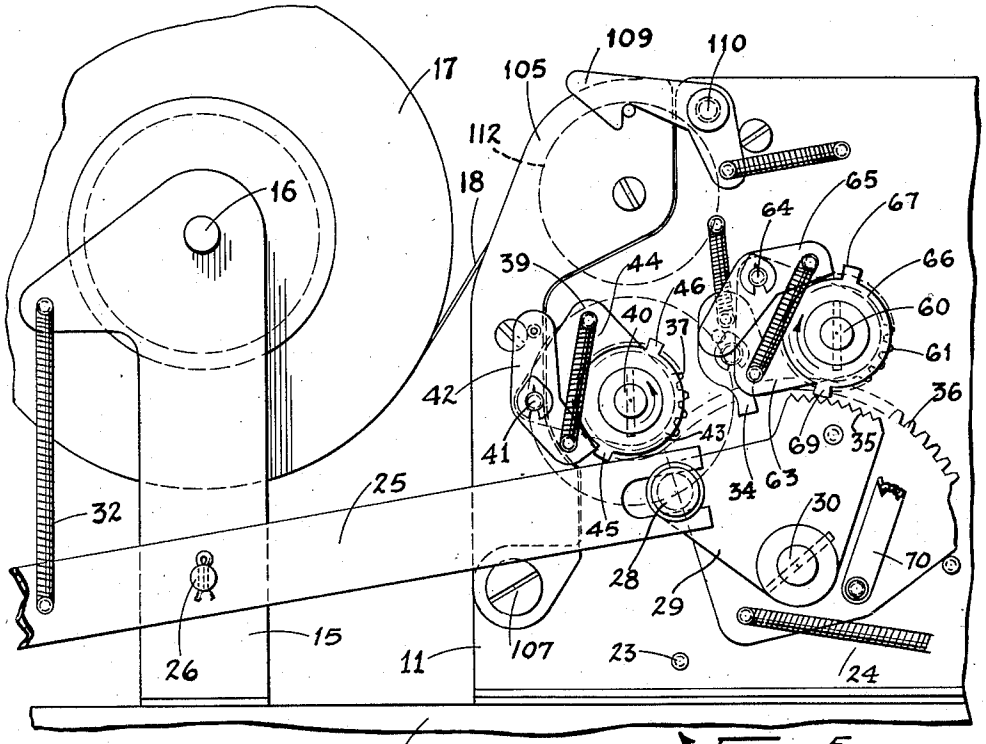


FIG. 5

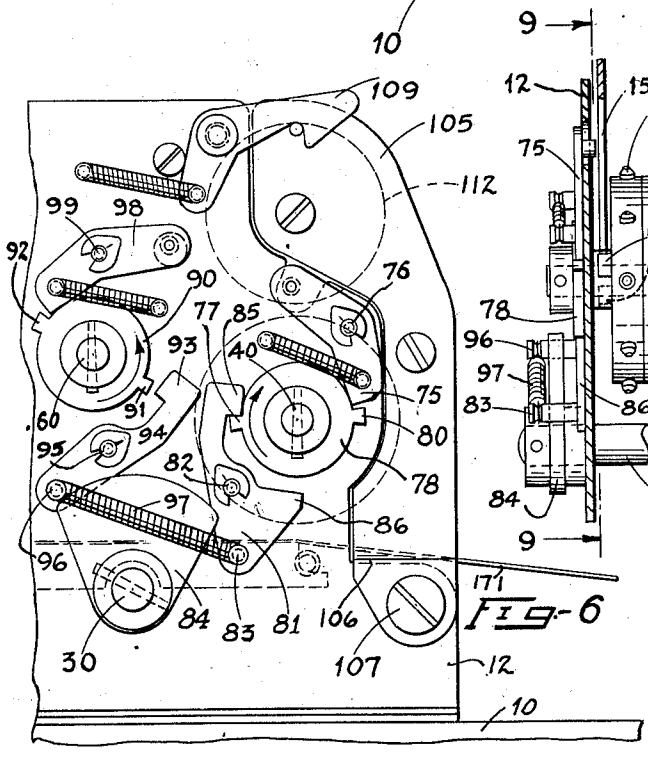


FIG. 6

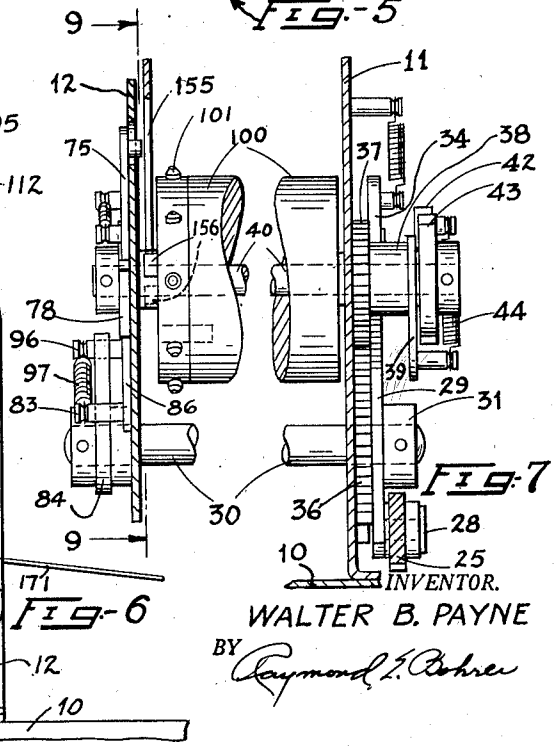


FIG. 7

INVENTOR.
WALTER B. PAYNE
BY Raymond L. Bohren

Nov. 7, 1944. W. B. PAYNE 2,362,088

FORM DISPENSING APPARATUS

Filed Dec. 19, 1942 4 Sheets-Sheet 4

Fig. 8

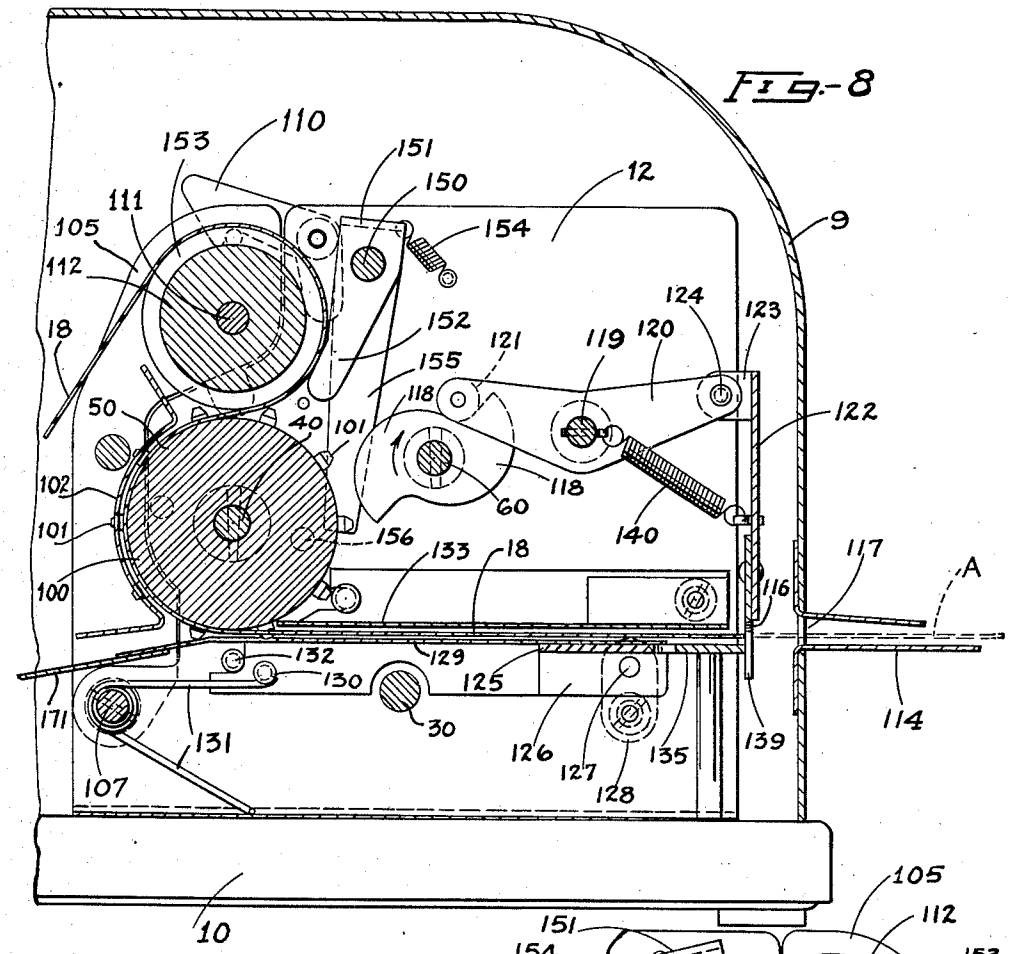


Fig. 10

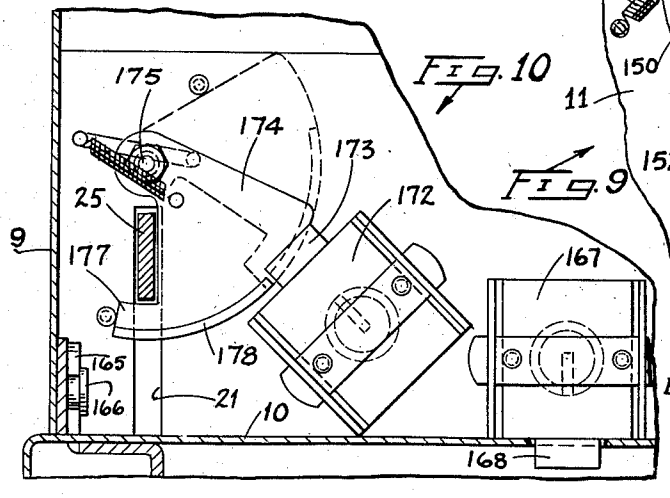
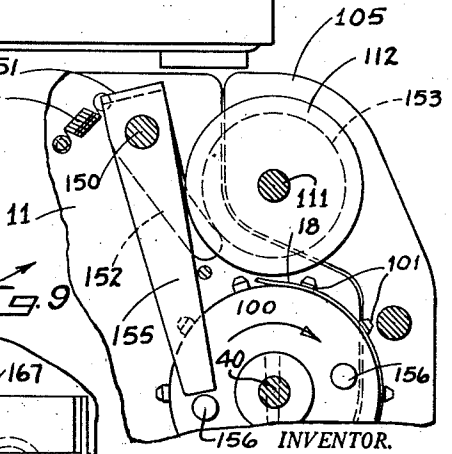


Fig. 9



INVENTOR.
WALTER B. PAYNE
BY Raymond L. Bohren

Patented Nov. 7, 1944 2,362,088

UNITED STATES PATENT OFFICE

2,362,088

FORM DISPENSING APPARATUS

Walter B. Payne, Rochester, N. Y., assignor to The Todd Company, Inc., Rochester, N. Y., a corporation of New York

Application December 19, 1942, Serial No. 469,537

10 Claims. (Cl. 164—49)

The invention relates to an improvement in a form dispensing apparatus, and more particularly to an appliance adapted to receive and hold a continuous strip of printed form stationery in roll or packet form, and by which the leading end of the web is intermittently advanced to position successive forms at a severing position and there transversely divided into individual sheets for ejection from the machine.

The present invention is designed for use by banks, and mercantile and industrial establishments wherein checks, drafts, profit-sharing certificates, and other forms or instruments are issued in the normal course of business. An important advantage of the machine resides in the fact that it provides positive control over the forms prior to issuance, and permits an official of an establishment to delegate the actual task of issuing the forms from time to time to a subordinate. Upon actuation of the machine, the forms are positively dispensed and accounted for so that an executive may verify and check the items issued for any period. This improved machine provides safeguards and controls to promptly disclose any irregularities so as to discourage any improper use of the forms by a dishonest employee.

Heretofore, it has been common practice to use loose or padded forms as required without any positive means of controlling or accounting for the items issued. In certain other instances, continuous form stationery has been used, but largely as a convenient and efficient manner of handling the forms to be passed through printing or writing devices. The prior practices have not provided internal control over the use and issuance of instruments or forms likely to be fraudulently redeemed or rendered negotiable by an unscrupulous employee or other party gaining access thereto.

It is well known that one of the greatest sources of loss at the present time, in check disbursement procedures, is the manipulation made by a dishonest employee. Obviously, the initial step of an inside job is to obtain a genuine instrument or form that may be forged and readily negotiated. Such manipulations are usually undertaken by a trusted employee in position to cover up the transaction as well as to destroy all evidence of the crime. This is one of the reasons that persons found guilty of embezzlement invariably have followed the criminal practice over a long period of time without being discovered. Applicant's improved dispensing machine fills a long felt need as it provides one of the missing links to complete internal control in check disbursement procedures. It provides a means whereby a disbursing officer may delegate the task of disbursing funds by check to others without danger that the forms may be unknowingly misused. The applicant's machine must be conditioned for operation by the disbursing officer and all subsequent actuations for any period are positively accounted for and subject to scrutiny. The machine eliminates the necessity of prolonged investigations or frequent inventory of unused forms in the hands of a subordinate. Furthermore, the machine provides a modern, convenient, efficient and economical mode of dispensing forms.

Certain types of mercantile organizations follow the practice of issuing profit-sharing certificates of one form or another as a means to retain established customers and to provide an incentive to prospective customers. These certificates or coupons represent certain value and if not properly controlled may be carelessly or otherwise issued by an employee. The applicant's improved device not only affords a simple and efficient mode of issuing such certificates, but also provides a means whereby the number of certificates issued from time to time may be checked with the actual receipts for a given period. The improved machine is particularly adapted for dispensing such forms not only because the forms are required to be issued in the order arranged on the supply strip, but neither the customer nor the clerk is aware of the number or value before the form is actually ejected or dispensed.

An object of the invention is to provide a generally improved and more satisfactory machine of its kind which may be constructed economically, efficient and positive in action, and not likely to get out of order, as well as to provide a means and mode of operation effective to provide control over its actuation and positively record all actuations thereof.

Another object of the invention is to provide control devices for a selectively operated magazine type of dispensing machine designed to positively and accurately advance a strip of preprinted form stationery without transverse perforations to a severing position and there sever the strip into individual form sheets.

A still further object is to provide a positively controlled escapement means adapted to prevent the form strip from being advanced to position the terminal form at severing position other than by a predetermined sequence of operation of the actuating mechanism, thereby affording effective

protection against anyone manipulating the machine and gaining access to a form without its being properly accounted for by the machine register.

A further object is to provide key operated locking means for the displaceable machine casings so as to prevent unauthorized access to the form supply roll or pack as well as the recording register and other internal operating mechanism of the machine; and an independent key operated locking means for the operating means to prevent unauthorized actuation of the device.

Still another object resides in the provision of intermittent feeding means having positive and frictional engagement with the continuous form strip and being adapted to prevent the strip from being advanced when the machine is at rest as well as to positively and accurately advance the strip measured distances without danger of buckling or otherwise altering its course during the cycle of operation of the machine.

It is a still further object of the present invention to provide an improved self-adjusting severing means to divide the preprinted form strip into individual form length sheets, and a severing means of a nature to produce a clean and straight cut between successive forms of the strip.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof and the mode of operation, or their equivalents, as hereinafter described or illustrated in the accompanying drawings.

Referring to the drawings:

Fig. 1 is a plan view of the machine with the cover in cross section.

Fig. 2 is a vertical section taken substantially on the line 2—2 of Fig. 1, showing the parts in normal position.

Fig. 3 is a side elevation taken substantially on the line 3—3 of Fig. 1 with the top casing removed and certain parts moved to abnormal positions.

Fig. 4 is a fragmentary end elevation taken substantially on the line 4—4 of Fig. 2, showing the guillotine severing means and audible signal mechanism.

Fig. 5 is a fragmentary side elevation similar to Fig. 2 but showing the position assumed by the drive mechanisms at the end of the first half of the operating cycle when the operating handle is fully depressed.

Fig. 6 is a fragmentary side elevation similar to Fig. 3 but showing the position assumed by the escapement mechanisms at the end of the first half of the operating cycle of the machine.

Fig. 7 is a fragmentary vertical section taken substantially on the line 7—7 of Fig. 2, showing the strip feed means and the relation of the parts of the drive and escapement mechanisms.

Fig. 8 is a vertical section taken on the line 8—8 of Fig. 1, showing various details of arrangement of the feed mechanism, severing device, and other mechanism of the machine.

Fig. 9 is a fragmentary vertical section taken substantially on the line 9—9 of Fig. 7, showing the holding device effective to prohibit actuation of the machine when the form strip is depleted.

Fig. 10 is a fragmentary vertical section taken approximately on the line 10—10 of Fig. 1 showing the casing lock and the locking mechanism for the operating handle.

The present apparatus is of a small, compact, registering type for storage of a roll or pack of preprinted forms such as bank checks, profit-sharing certificates, coupons, or other forms of the character to be dispensed one at a time. The machine has intermittently operated feed and severing mechanisms for advancing a continuous strip of preprinted form material measured distances to present successive forms to strip severing position and there transversely divide it into a succession of individual forms. Each form advanced to severing position is accounted for on a register visible through a sight opening in the casing. The top casing is normally retained on the base by a key-operated lock, and a key-operated locking means is also provided to prevent unauthorized operation of the apparatus. There is also provided an automatic means for locking the machine against operation when the supply of forms has been depleted.

Referring to the drawings in detail, the apparatus is provided with a base 10 upon which is mounted spaced main supporting frames 11 and 12. Also mounted on the base are spaced vertical supporting members 15 having aligned apertures to receive a rod 16 for rotatably supporting a supply roll 17. The supply roll 17 consists of a continuous web of preprinted form material composed of bank checks, profit-sharing coupons, or other preprinted forms. Suitable tension means, such as the weighted strap 19, rests over the supply roll 17 to prevent the strip from unwinding too freely. In the operation of the machine, the leading end of the strip 18 is passed around the guide roller 112 to the feed means generally indicated by the reference numeral 50 for intermittent advancement to strip severing position "A" generally indicated by dotted lines in Fig. 8 of the drawings.

A cross shaft 30 supported by the side frames 11 and 12 has its opposite ends extending exteriorly of the frames. As viewed in Figs. 2, 5, and 7, and oscillatable driving means is arranged at one end of the shaft 30 adjacent the side frame 11. This driving means is effective to actuate a ratchet drive mechanism for the feed means 50 during the rearward stroke thereof or through the first half of the operating cycle of the machine. The driving means is also effective to actuate a second ratchet drive mechanism for the severing means during the forward stroke thereof or during the second half of the operating cycle of the machine, all of which will be hereinafter described in detail. As viewed in Figs. 3, 6, and 7, a common control means is carried at the other end of the shaft 30 adjacent the side frame 12 and is effective to control independent escapement mechanisms for the feed and severing mechanisms in a manner also to be hereinafter described.

The oscillatable driving means arranged on the shaft 30 adjacent the side plate 11 includes the gear segment 36 and a drive member 29 fixed to one another and carried by a hub 31 pinned to the shaft 30. As best shown in Figs. 1 and 2, a stud 28 carried by the oscillatable drive member 29 is engaged by the bifurcated end 27 of an operating lever 25 pivoted intermediate its ends at 26 to one of the supporting members 15. The other end of the operating lever 25 extends through a slot 21 in the machine casing 9 and is provided with a suitable knob or handle 33. A tension spring 32 connected to the lever 25 and the support 15 normally tends to retain the operating lever in the normal raised position. A second spring 24 connected to the segment 36 and to the side frame 11 tends to normally retain

the segment in contact with the stop pin 23 on the side frame 11.

As viewed in Figs. 2 and 7, the feed shaft 40 rotatably supported by the side frames 11 and 12 has its ends extending beyond the frames. The ratchet drive mechanism for the feed shaft 40 includes a gear 37 carried by a hub 38 loosely mounted on the shaft 40. The gear 37 meshes with the gear segment 36 and is effective to move the rocker arm 39 also fixed to the hub 38. The rocker arm 39 carries a stud 41 upon which is pivoted a spring-pressed ratchet dog 42 cooperating with the ratchet plate 43 pinned to the shaft 40. A spring 44 connected to the dog 42 and to the arm 39 retains the dog in engagement with the ratchet plate 43. The ratchet plate 43 is provided with oppositely disposed teeth 45 and 46 adapted to be alternately engaged by the ratchet dog 42.

It will now be clear that upon movement of the oscillatable drive segment 36 by depression of the operating handle 25, the gear 37 will be rotated to move the rocker arm 39 in a counterclockwise direction as shown in Fig. 2. Upon movement, the ratchet pawl 42 carried by the rocker arm 39 will engage the tooth 45 of the ratchet plate 43 to affect the rocking of the feed shaft 40 approximately 180°. As previously stated, the feed ratchet mechanism is actuated upon the rearward stroke of the drive means to advance the strip step-by-step during the first part of the operating cycle of the machine.

As best seen in Figs. 1, 2, and 3, a second cross shaft 60 also supported by the side frames 11 and 12 has its ends extending beyond the frames and is effective to operate the severing mechanism in the manner hereinafter described. The ratchet drive mechanism for the severing shaft 60 includes a gear 61 carried by the hub 62 loosely mounted on the shaft. The gear 61 also meshes with the drive segement 36 and is effective to move the rocker arm 63 also fixed to the hub 62. The rocker arm 63 carries a stud 64 upon which is pivoted the spring-pressed ratchet dog 65 cooperating with the ratchet disc 66 having oppositely disposed teeth 67 and 69. It will now be clear that as the oscillatable drive mechanism including the gear segment 36 is initially moved in a clockwise direction from the position shown in Fig. 2 to that shown in Fig. 5, the ratchet dog 65 will be moved about the ratchet disc 66 to cooperate with the tooth 67 without rocking the shaft 60. However, during the first half of the operating cycle the feed shaft 40 has been rocked approximately 180° through the action of the ratchet pawl 42.

Upon the return stroke of the operating handle 25, the oscillatable drive mechanism including the segment 36 is adapted to rotate the gear 61 in a clockwise direction as viewed in Fig. 5, so as to move the rocker arm 63 to cause the pawl 65, through its engagement with the tooth 67 of the ratchet disc 66, to rock the severing shaft 60 in a clockwise direction. Through this period of rotation, the shaft 60 is rocked approximately 180° to affect operation of the severing mechanism during the last half of the operating cycle of the machine.

Referring to Fig. 2 of the drawings, a link 70 connected at one end to the gear segment 36 is operatively connected to the actuating arm 71 of a suitable accumulating register 72 suitably supported on the side frame 11. Therefore, it will be clear that each actuation of the oscillatable drive mechanism will be effective to actuate the arm 71 to positively count each operating cycle of the machine. The register 72 is visible through a sight-opening provided in the casing 9 of the machine.

The oscillating drive plate 29 is provided with a toothed portion 35 adapted to cooperate with a spring-tensioned full stroke dog 34 pivoted to the side frame 11, in a manner well known in the art. The full stroke mechanism including the toothed portion 35 and the dog 34 requires a complete cycle of the machine once the operating handle has been shifted substantially from normal position. The mechanism disclosed is of the nature which is effective on both the forward and rearward stroke of the drive mechanism. Full stroke mechanisms of this character require that the dog be released from the teeth of the ratchet near the end of the paths of travel. Therefore, upon the initial movement of the drive mechanism in the present machines, there is a short period before the full stroke dog becomes effective.

As viewed in Figs. 1, 3, and 6 of the drawings, the escapement mechanisms for controlling the feed shaft 40 and the severing shaft 60 are arranged adjacent the outside wall of the side plate 12. As viewed in Fig. 3, the spring-pressed stop pawl 75 pivoted at 76 to the side frame 12 normally engages either one of the oppositely arranged teeth 77 or 80 of an escapement disc 78 pinned to the feed shaft 40. This stop pawl serves to prevent any retrograde movement of the feed shaft 40. The spring-tensioned escapement latch 81 pivoted at 82 to the side frame 12 carries a stud 83 extending into the path of movement of a common control cam 84 fixed to the main shaft 30. When the machine is at rest or in normal position as shown in Fig. 3, the cam 84 is effective to hold the hook-shaped portion 85 of the latch 81 out of the path of movement of the teeth of the escapement disc 78. However, when in said normal position the cam 84 is effective to hold the stop portion 86 of the escapement latch 81 in the path of the teeth of the disc 78, such as the tooth 77 shown in Fig. 3. Therefore, the feed shaft 40 cannot be rocked sufficiently to advance a form of the strip 18 to severing position unless the cam 84 is shifted by movement of the shaft 30. The feed escapement mechanism including the toothed disc 78 and the latch 81 is therefore effective to prohibit substantial rotation of the feed shaft except upon normal actuation of the operating mechanism.

In the normal operation of the machine, the shaft 30 is rocked in a counterclockwise direction to move the cam 84 from the position shown in Fig. 3 to that shown in Fig. 6. In the course of this movement, the cam 84 moves away from the stud 83 on the spring-tensioned escapement latch 81 and the stop portion 86 is displaced to allow the lug 77 to pass as the shaft 40 is rocked by the ratchet dog 42. At the same time the pivotal movement of the latch 81 causes the hook-shaped portion 85 of the latch 81 to be thrown into the path of the oncoming lug 77 of the disc 78. It will be clear that the feed escapement mechanism not only prevents the feed shaft 40 from being rocked appreciably except by the drive mechanism of the machine but it serves to also limit the extent of movement thereof during the operating cycle of the machine. The stop portion 86 of the latch 81 is not withdrawn until the dog 34 is fully engaged with the full stroke ratchet plate 35.

The escapement mechanism for the severing shaft 60 includes the escapement disc 90 pinned

to the shaft 60 and having oppositely disposed teeth 91 and 92. Normally, the hook-shaped portion 93 of the escapement latch 94, pivoted at 95 to the side frame 12, is in holding engagement with one of the teeth of the disc 90. Therefore, the severing shaft 60 is normally held against any rocking movement in a counterclockwise direction as viewed in Fig. 3 or held against rotation in a clockwise direction as viewed in Fig. 2. The hook portion 93 is effective to prevent any counterclockwise rotation of the shaft 60, Fig. 3, until the control cam 84 on shaft 30, at the very last part of the rearward stroke of the drive mechanism, engages the stud 96 carried by the latch 94. As the operating mechanism concludes the first half of the operating cycle and after the feed shaft 40 has been actuated, the cam 84 through its engagement with the stud 96 is effective to withdraw the hook-shaped portion 93 of the escapement latch 94 to free the shaft 60 for rocking movement by the drive pawl 65. A spring 97 connected with the escapement latch 81 and the escapement latch 94 serves to keep both of the latch members under tension. A spring-tensioned stop dog 98 pivoted at 99 to the side plate 12 cooperates with the escapement disc 90 to prevent any retrograde movement of the severing shaft 60. It will now be seen that the escapement mechanism including the latch 94 and the disc 90 prohibits actuation of the severing mechanism except when released by the control cam 84 at a predetermined part of the operating cycle of the machine.

As best seen in Figs. 1, 7, and 8, the feed means 50 carried by the feed shaft 40 is disposed between the side plates 11 and 12. The continuous strip 18 of form material to be advanced through the device is provided with longitudinally spaced feed apertures, preferably adjacent one marginal edge. The feed means for the form strip includes a cylindrical feed roller 100 fixed to the feed shaft 40 and made of any suitable material to provide somewhat of a frictional surface so as to assist in the advance of the strip 18 upon rotation of the feed shaft 40. The roller 100 is provided with spaced aligning and feed pins 101 adjacent one end thereof and which are adapted to successively enter the feed apertures provided in the strip 18. The feed means extending the width of the web not only provides a high degree of frictional engagement with the strip but also positive engagement to hold the strip against withdrawal as well as to intermittently advance and accurately position successive forms at severing position.

Auxiliary frames 105 are arranged on each side of the machine in substantial alignment with the side frames 11 and 12. The auxiliary frames 105 have an offset portion 106 at which point they are pivotally supported on a cross rod 107 carried by the side frames 11 and 12. The auxiliary frames 105 are adapted to be swung about the pivot 107 and moved from the full-line position to the position shown by the dotted lines in Fig. 3, in order to displace the assembly to facilitate inserting and threading the form strip 18 through the machine. Each auxiliary frame 105 carries a stud 108 adapted to be engaged by the spring-pressed latching pawl 109 pivoted at 110 to the main side frames of the machine. The pawls 109 serve to normally hold the auxiliary frame assembly 105 in the full-line position shown in Figs. 2 and 3.

A cross rod 111 having its ends supported by the auxiliary frames 105 rotatably supports a guide roller 112 made of any suitable material. When the frame assembly 105 is in latched position, the roller 112 is held in spaced parallel relation to the feed roller 100 with the axis thereof substantially in alignment with a vertical axis passing through the center of the feed shaft 40. The roller 112 not only serves to generally guide the strip 18 in its advance to the feed mechanism 50 in a flat and substantially even tensioned state, but also, because of its location serves to guide the strip in a path to contact at least half of the peripheral surface of the feed means. Due to this arrangement, the strip 18 is lead in a path to be engaged by a substantial number of aligning and feed pins 101 as well as over a substantial portion of the frictional surface of the feed roller 110. An arcuate guide plate 102 carried by the auxiliary frames 105 is provided with an elongated slot aligned with the path of movement of the feed pins 101.

Below the path of movement of the strip 18, as it passes beyond the feed means 50, there is provided a supporting member 125 having depending portions 126 supported on studs 127 passing through suitable openings in the side frames 11 and 12, Fig. 8. The studs 127 are carried by a removable plate 128 secured to the exterior of the side frames. Also pivoted at 127 is a lower flanged guide plate 129 which normally rests in association with the feed roller 100. The forward end of the guide plate 129 is provided with an aperture aligned with the path of movement of the feed pins 101. The flanged portions of the guide plate 129 carry a stud 130 engaged by the grasshopper spring 131 which serves to normally retain the forward end of the plate in cooperative engagement with the feed means 50. A stud 132 carried by the side frames 11 and 12 holds the guide plates spaced from the feed roller 100. An upper guide plate 133 supported by the side frames 11 and 12 serves to strip the form web from the feed pins 101 in its course of advance.

The severing mechanism for dividing the strip 18 into individual sheets, and which is actuated by the driven severing shaft 60, will now be described. Referring to Figs. 1, 4, and 8, similarly shaped cams 118 are pinned to shaft 60 adjacent each of the side frames 11 and 12. Cam follower rollers 121 carried by the bell crank levers 120 mounted on a cross rod 119 are held in contact with the cams 118 through the action of the spring 140. Any movement of the shaft 60 rocks the levers 120 having the reciprocal blade holder 122 pivoted thereto at 124. A guillotine blade 116 suitably secured to the holder 122 is adapted to reciprocate through a substantial plane of movement at right angles to the path of the strip 18. The blade 116 is shaped to converge toward its ends so as to cut from the marginal edges of the strip to the center thereof. The blade 116 has depending end portions 139, best seen in Figs. 2 and 4, which project downwardly to contact the ends of the horizontally arranged self-adjusting cooperating knife blade or cutting bar 135. The horizontally arranged bar 135 is freely guided at its ends in slots 136 formed in the side plates 11 and 12. On the edge opposite the cutting edge, the bar 135 is provided with arcuate projection 137 intermediate its ends. The arcuate projection 137 engages a correspondingly shaped recess 138 formed in the cross member 125 supported by the studs 127. The spring 140 connected to the cross rod 119 and the blade holder 122 tends at all times to rock the lever 120 in a counterclockwise direction, Fig. 8, to keep the cam roller

121 in cooperative engagement with the cam 118 and normally hold the blade holder 122 in raised position. The spring 140 also serves to hold the severing blade 116 and cutting bar 135 in cooperative relation under tension. It will be seen that inasmuch as the spring-tensioned depending end portions 139 of the vertically arranged blade 116 engage the ends of the horizontally arranged cutter bar 116, the bar will readily swivel about the point 137 intermediate its end so as to be self-adjusting to maintain the cutting edge thereof parallel at all times with the blade 116.

As best seen in Figs. 8 and 9, a control device is provided to prohibit actuation of the machine when the supply strip 18 of forms is about exhausted. A cross rod 150 having its ends supported by side frames 11 and 12 carries a yoke member 151. This yoke member is formed with a downwardly projecting portion 152 aligned with an annular groove 153 formed in the guide roller 112. As long as the web 18 is passing over the roller 112, the portion 152 of the yoke 151 is prevented from entering the groove 153. A spring 154 normally holds the yoke 151 under tension so that as soon as the strip 18 is exhausted, the yoke is rocked in a clockwise direction, Fig. 8. The other end of the yoke 151 is provided with a downwardly projecting arm 155 which is adapted to enter the path of the pins 156 caried on the side of the feed roller 100. When the strip 18 is exhausted and the yoke 151 is permitted to rock from the position shown in Fig. 8 to that shown in Fig. 9, the portion 155 of the yoke 151 is shifted into the path of one of the studs 156 to prohibit any further rotation of the feed means until the supply strip 18 is replenished. It will be clear that if the feed shaft 40 is held from rotation by the engagement of the arm 155 with the stud 156, the feed ratchet dog 42 will be unable to advance, and thereby hold the oscillatable drive mechanism from moving and in turn prohibit depression of the operating handle 25.

The present machine is provided with an audible signal to clearly announce each time the machine has been actuated. Referring to Figs. 1, 2, and 4, a bell 157 is supported on the knife blade holder 122. It will be seen from Fig. 8 that the contour of the cams 118 is such as to permit a quick sudden return of the reciprocating holder 122 under the tension of the spring 140. This action causes the bell hammer 159 to vibrate sufficiently to produce a distinct audible signal.

The machine is provided with a removable casing 9 having the ejection slot 117 and is adapted to be locked on the base 10 in order to prevent any unauthorized party from gaining access to the internal operating mechanism and the forms carried by the roll 17. The base 10 is provided with upwardly projecting retaining members 165 adapted to receive studs 166 carried by the case 9. A key-operated lock 167 shown in Figs. 1 and 10, has a bolt 168 adapted to pass through an opening in the top of the base to prevent displacement of the cover 9 with relation to the base 10. It will be clear that an authorized individual may unlock the lock 167 to withdraw the bolt 168 to thereby permit the casing 9 to be shifted to displace the studs 166 from the slots in the retaining members 165.

When it is desired to insert a supply roll 17 to replenish the supply of forms, the casing is removed as above described. In order to facilitate threading the leading end of the form strip 18 through the machine, the latches 109 are raised to permit the auxiliary frame 105 to be rocked about the pivot 107 from the full-line position to the dotted line position shown in Fig. 3. As the auxiliary frame 105 is moved to the latter position, the arcuate guide plate 102 supported by the auxiliary frame contacts the projecting portion 171 of the pivoted lower guide plate 129 so as to displace the forward end of the plate 129 from the feed pins 101. Lowering the free end of the guide plate 129 permits the strip to be readily positioned in the guideway between the plates 129 and 133, and the proper apertures of the strip 18 positioned on the aligning pin 101. After the strip has been properly positioned with respect to the feed means, the auxiliary frame is again raised to the latched position shown in Figs. 3 and 8 of the drawings. As the auxiliary frame is raised, the arcuate plate 102 moves away from the projection 171 of the lower guard plate 129 and the spring 131 is effective to again raise the guard plate 129 so that the slot therein registers with the feed pins 101 and the plate is generally positioned to facilitate proper advance of the strip.

In a machine of the class of the present invention it is desirable to prevent unauthorized operation thereof. For this reason a key-operated lock 172 is provided to enable the operating handle 25 to be locked against depression. As best shown in Figs. 1 and 10 of the drawings, the bolt 173 of the lock 172 is adapted to cooperate with a holding plate 174 pivoted at 175 to the casing 9. A knob 176 on the exterior of the casing 9 permits the holding member 174 to be manually shifted from the ineffective position shown by the dotted lines to the effective position shown by full lines in Fig. 10. The holding member 174 is provided with a latching portion 177 which is adapted to pass beneath the operating lever 25 to prohibit depression thereof. In locked position, the bolt 173 is positioned in the path of the flange 178 of the holding member 174. Therefore it will be seen that the machine is capable of being locked against unauthorized operation.

Sequence of operations

The following is a brief summary of the sequence of operations:

After the machine has been loaded with a supply of forms, the official or disbursing officer of a business institution positions the cover 9 on the machine and locks the lock 167 to prevent unauthorized access to the form supply 17 as well as the register 72, and other parts of the operating mechanism. The executive lock 172 is effective to prevent unauthorized actuation of the operating handle 25. In view of the fact that the terminal end of the form strip 18 normally lies adjacent the severing knife and well within the machine, as shown in Fig. 8 of the drawings, it cannot be readily grasped for the purpose of manually pulling same from the machine. Furthermore, the escapement means including the latch 81 normally prevents the feed means 50 from rotating sufficiently to permit the end of the strip from being pulled or otherwise advanced a form length. When the feed means is normally held against rotation, the pins 101 cooperating with the strip apertures and the frictional surface of the feed roller 100 tend to resist any advance of the strip by manipulations. Therefore, the device is substantially tamper-proof against anyone's taking a form from the device except through the conventional registering operation of the device.

After taking a reading of the register, an official may condition the machine for normal operation by unlocking the lock 172 which permits the knob 176 to be turned to displace the holding member 174 from the path of the operating lever 25. In the operation of the device to dispense a form, the operating lever 25 is depressed to advance the strip 18 to position the terminal form at severing position "A" indicated by the dotted lines in Fig. 8. The terminal form is subsequently severed from the strip 18 and rests on the dispensing tray 114 so that it may be removed by a clerk or customer, depending upon the use that is being made of the device.

The depression of the operating lever 25 initiates movement of the oscillatable drive member 29 to rock the shaft 30. The cam 84 on shaft 30, Fig. 3, is effective to retain the stop portion 86 of escapement latch 81 in the path of the tooth 77 until the full-stroke dog 34 is in cooperative engagement with the teeth of the full-stroke ratchet 35. Therefore, the extent to which the feed shaft 40 may be rotated by manipulation of the operating handle 25 before the full stroke mechanism becomes effective is positively limited. Any such rotation of the feed shaft 40 is not sufficient to cause the feed means 50 to advance the terminal end of the strip into the ejecting slot 117. Upon the continued rotation of the shaft 30 the cam 84 moves away from the spring-tensioned escapement arm 81 to permit it to rock about its pivot to displace the stop portion 86 out of the path of the tooth of the disc 78. In the latter position the latch portion 85 of the escapement arm 81 is placed in the path of the oncoming tooth of the disc 78 to limit the extent of rotation of the feed shaft 40.

The movement of the drive member 29 and the shaft 30 initiates the action of the ratchet drive mechanism for the feed shaft 40 during the first half of the operating cycle of the machine. The clockwise rotation of the gear segment 36 on shaft 30, as seen in Fig. 2, through the gear 37 causes the ratchet dog 42 to rock the feed shaft 40 in a counterclockwise direction. The shaft 40 is rocked approximately 180° and sufficiently to rotate the feed roller 100 having the feed pins 101 to advance the strip a predetermined form length. The latch portion 85 of the escapement arm 81 prevents any overthrow of the shaft 40 and the stop dog 75 prohibits any retrograde movement thereof.

As the drive mechanism nears the end of the rearward stroke, the control cam 84 engages the stud 96 on the escapement latch 94 to disengage the latter from the tooth of the escapement disc 90 on the severing shaft 60. Therefore, after the strip 18 has been advanced and at the end of the first half of the operating cycle, the severing shaft 60 is released for rotation. As viewed in Fig. 5, at this part of the operating cycle the dog 65 of the ratchet drive mechanism is engaged with the tooth 67 of the ratchet disc 66 fixed to the shaft 60. Upon the return stroke of the oscillatable drive member 29 and segment 36, the ratchet dog 65 will be effective to rock the shaft 60 approximately 180°. This movement will be effective to actuate the guillotine knife 116 to sever the form advanced to severing position "A" from the strip 18. It will be clear that the feeding and severing mechanisms operated in predetermined timed sequence serve to provide a mode of operation that assures accurate intermittent advance of the strip 18 and severance only after the terminal form has been properly positioned at severing position.

As best seen in Fig. 3 of the drawings, the pivotal support of the knife holder 122 permits the assembly to be manually rocked to the abnormal position shown. Therefore, the horizontally arranged knife blade 135 may be readily removed from the slots 136 of the side frames for sharpening or replacement.

From the above description it will be apparent that there is thus provided a device of the character described embodying the particular features of advantage heretofore set forth as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction, and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

It will be understood that I desire to comprehend with my invention such modifications as come within the scope of the claims and the invention.

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

1. A form dispensing apparatus wherein a continuous strip of preprinted form material having longitudinally spaced feed apertures is advanced through predetermined distances to present successive forms in strip severing position and there transversely divided into a succession of individual forms, including a feeding device having spaced pins for positive engagement with the strip apertures and being adapted to intermittently advance the strip in one direction to severing position, an intermittently operated severing device for transversely dividing the strip progressively with its advancement, an oscillatable driving means, a full stroke mechanism associated with said driving means, ratchet drive mechanism connecting said driving means with said feeding device and being adapted to actuate the feeding device solely during the forward stroke of the driving means, a second ratchet drive mechanism connecting said driving means with said severing device and being adapted to actuate the severing device solely during the return stroke of said driving means, and manual means for oscillating said driving means.

2. In a strip feeding and severing apparatus wherein a continuous strip of material bearing spaced printed forms is intermittently advanced to a strip severing position and there transversely divided into a succession of individual forms, including a strip feeding device for intermittently advancing the strip to position the terminal form at severing position, a severing device for transversely dividing the strip into individual form sheets, manually actuated operating means, drive mechanism operatively connected to said operating means and being adapted to actuate said feeding device and said severing device in a predetermined sequence, a releasable escapement mechanism associated with said feeding device and normally restricting movement of the feeding device, said feed escapement mechanism being adapted to be shifted from normal position to release said feeding device for actuation and moved to a second position effective to limit the movement of the feed device to the advancement of the strip a form length, a second releasable escapement mechanism associated with said severing device and normally prohibiting movement of the severing device, said severing escapement mechanism being adapted to be temporarily shifted to

release the severing device for actuation and then to be repositioned to restrict the severing device to a single actuation, and a common control member for said escapement mechanisms, said control member operatively connected with said operating means and movable to render said escapement mechanisms effective in predetermined sequence, the construction and arrangement being such that said drive mechanism for the feeding and severing devices and said control member for the escapement mechanisms are so synchronized that the strip is advanced and transversely divided at predetermined spaced intervals into individual forms of uniform size.

3. In a strip feeding and severing apparatus wherein a continuous strip of material bearing spaced printed forms is intermittently advanced to a strip severing position and there transversely divided into a succession of individual forms, including a strip feeding device for intermittently advancing the strip to position the terminal form at severing position, a severing device for transversely dividing the strip into individual form sheets, manually movable operating means, drive mechanism operatively connected to said operating means and being adapted to actuate said feeding device and said severing device in a predetermined sequence, an escapement mechanism associated with said feeding device and normally positioned to restrict the initial movement of said feed device and the advancement of the strip, said feed escapement mechanism being adapted to be shifted from normal position to release said feed device for actuation and moved to a second position effective to prevent the feed device from advancing the terminal form beyond the severing position, and a control member for said feed escapement mechanism being operatively connected with said operating means, the construction and arrangement being such that said drive mechanism and said control member for the feed escapement mechanism are so synchronized that the forms of the strip are positively and accurately advanced to severing position and there cut into individual form sheets.

4. An apparatus wherein a continuous strip of preprinted form material is advanced through measured distances to present successive forms in strip severing position and there transversely cut into a succession of individual forms, including an intermittently operated strip feeding device for advancing the strip to severing position, an intermittently actuated severing device for transversely dividing the strip progressively with its advancement, cyclically operable driving means, ratchet drive mechanism connecting said driving means with said feeding device and being adapted to actuate the feeding device solely during the first half of the operating cycle of the driving means, a second ratchet drive mechanism connecting said driving means with said severing device and being adapted to actuate the severing device solely during the second half of the operating cycle of the driving means, and a register device positively connected to said driving means and being adapted to record each cycle of operation of the apparatus.

5. An apparatus wherein a continuous strip of form material having longitudinally spaced apertures is intermittently advanced a predetermined distance to present successive forms in strip severing position and there transversely cut into a succession of individual sheets, including a supporting frame, an intermittently driven shaft supported parallel to the path of advance of the strip by said frame, strip feed means for advancing the strip to severing position including a cylindrical feed roller and a pin feed sprocket mounted on said driven shaft for unison rotation, said feed roller adapted during each quiescent period to provide frictional resistance to the advance of the strip but being adapted upon rotation to assist in the advance of the strip as well as to prevent the strip from buckling or otherwise altering its course of advance, said feed pin sprocket positively engaging the strip apertures to normally retard advancement of the strip but being adapted upon rotation to accurately control the advancement of the strip, means for guiding the strip during its advancement and retaining the strip apertures in feeding engagement with the pins of said feed sprocket, intermittently operable severing means for transversely dividing the strip into individual form sheets and cyclically operable actuating means for operating said feed means and said severing means in predetermined sequence during the cycle of operation of the apparatus.

6. An apparatus wherein a continuous strip of preprinted form material having longitudinally spaced apertures is intermittently advanced a predetermined distance to present successive forms in strip severing position and there transversely cut into a succession of individual sheets, including a supporting frame, an intermittently driven shaft supported by said frame parallel to the path of advance of the strip, rotary strip feed means for successively advancing the strip to severing position comprising a cylindrical feed roller mounted on said driven shaft and having spaced feed pins thereon adjacent one end, said feed roller adapted during quiescent periods to provide frictional resistance to any advance of the strip but being adapted upon rotation to assist in the advance of the strip, said roller feed pins adapted to positively engage the strip apertures to normally hold the strip from being slipped about said feed roller when at rest but being adapted upon rotation with said roller to maintain control over as well as to accurately advance the strip a predetermined distance, a normally latched movable auxiliary frame assembly pivotally mounted on said supporting frame, a guide roller rotatably supported by said auxiliary frame in spaced parallel relation to said feed means, said auxiliary frame being adapted to normally retain said guide roller in a position to divert the path of travel of the strip so that it passes over at least half of the peripheral feed surface of said feed means, severing means for transversely dividing the strip into individual form sheets, and cyclically operable means for actuating said feed means and said severing means in a predetermined sequence during the cycle of operation of the apparatus.

7. An apparatus wherein a continuous strip of preprinted form material having longitudinally spaced apertures is intermittently advanced a predetermined distance to present successive forms to strip severing position and there transversely cut into a succession of individual forms, including a supporting frame, an intermittently driven shaft supported parallel to the path of advance of the strip by said frame, rotary strip feed means for intermittently advancing the strip to severing position including a feed roller and a pin feed sprocket mounted on said driven shaft for unison rotation, said feed roller adapted when at rest to provide frictional resistance to the advance of the strip but being adapted upon rotation to assist in the advance of the strip, said

feed pin sprocket positively engaging the strip apertures and adapted when at rest to resist any advancement of the strip but being adapted upon rotation to control and accurately advance the strip a predetermined distance, an auxiliary frame assembly pivotally connected to said supporting frame and movable from an effective to an ineffective position, a guide roller supported in spaced parallel relation to said feed means by said auxiliary frame, said auxiliary frame assembly being adapted when in the effective position to retain said guide roller in a position to divert the path of travel of the strip so that it passes over at least half of the peripheral surface of said feed means, said auxiliary frame being adapted when in said ineffective position to displace said guide roller from said feed means so that the leading end of the strip may be readily threaded through the machine, intermittently actuated severing means for transversely dividing the strip into individual form sheets, and operating means for actuating said feed means and said severing means in predetermined sequence during the cycle of operation of the apparatus.

8. A form dispensing apparatus wherein a continuous strip of preprinted form material is intermittently advanced measured distances to present successive forms in a strip severing position and there transversely separated into individual sheets, including a supporting frame, a strip feeding device supported on said frame for intermittenly advancing the strip to position the terminal form of the strip at severing position, a self-adjusting cutter bar arranged in a plane parallel to but at one side of the path of advancement of the strip, a cross member carried by said frame, said cutter bar having its opposite ends guided in slots formed in said frame and being swivelly connected intermediate its ends with said cross member, a guillotine blade coacting with said bar and being adapted to cut the terminal form advanced to severing position from the strip, said blade mounted to reciprocate through a substantially vertical plane of movement at right angles to the path of advancement of the strip, means for holding said blade in association with said bar under tension, whereby said bar is adapted to swivel intermediate its ends to maintain its cutting edge parallel at all times with said blade, and means for actuating said feed device and said guillotine blade in a predetermined sequence during the operating cycle of the apparatus.

9. A form dispensing apparatus wherein a continuous strip of preprinted form material is intermittently advanced a predetermined distance to present successive forms of the strip in severing position and there transversely cut the strip into individual sheets, including a pair of spaced side frames, a strip feeding means supported between said frames for intermittently advancing the strip to position the terminal form of the strip at severing position, a self-adjusting cutter bar horizontally arranged in a plane parallel to but on one side of the path of advance of the strip, a cross member supported by said frames, said cutter bar having its opposite ends freely guided in horizontal slots formed in said side frames and being swivelly connected intermediate its ends with said cross member, a guillotine blade mounted to reciprocate through a substantially vertical plane of movement at right angles to the path of advancement of the strip, said blade having an intermediate cutting portion normally positioned on the side of the path of advance of the strip opposite said bar and projecting end portions normally coacting with said bar, spring means for said blade being adapted to retain the projecting end portions thereof in association with said bar under tension and effective to cause said bar to swivel intermediate its ends to maintain the edge thereof parallel at all times with said blade, and means for actuating said feed device and said guillotine blade in a predetermined sequence during the operating cycle of the apparatus.

10. A form dispensing apparatus of the storage and registering type wherein a continuous supply strip of checks, certificates, or other preprinted material is intermittently advanced to present successive forms of the strip in severing position and there separated into individual sheets, including a base having retaining members, means for supporting a supply of form material carried by said base, a strip feed device supported by said base and being adapted to intermittently advance the strip to successively position the forms at severing position, strip severing means supported on said base and being adapted to sever the forms from the strip, means for actuating said feeding device and said severing means in a predetermined sequence, a register connected with said actuating means to record each form advanced to severing position, a displaceable cover provided with a register sight-opening and an elongated form dispensing outlet, said cover having means for cooperating with said base retaining members, a key-operated lock carried by said cover and having a locking bolt being adapted to cooperate with the base to prevent displacement of said case cooperating means from said base retaining members to prohibit unauthorized removal of the cover to gain access to the form supply, register or operating mechanisms of the apparatus, and a second key-operated lock carried by said case for locking said actuating means against unauthorized actuation

WALTER B. PAYNE.