Oct. 3, 1933. R. H. HELSEL 1,928,785

TICKET ISSUING MACHINE

Filed Dec. 12, 1930 4 Sheets-Sheet 1

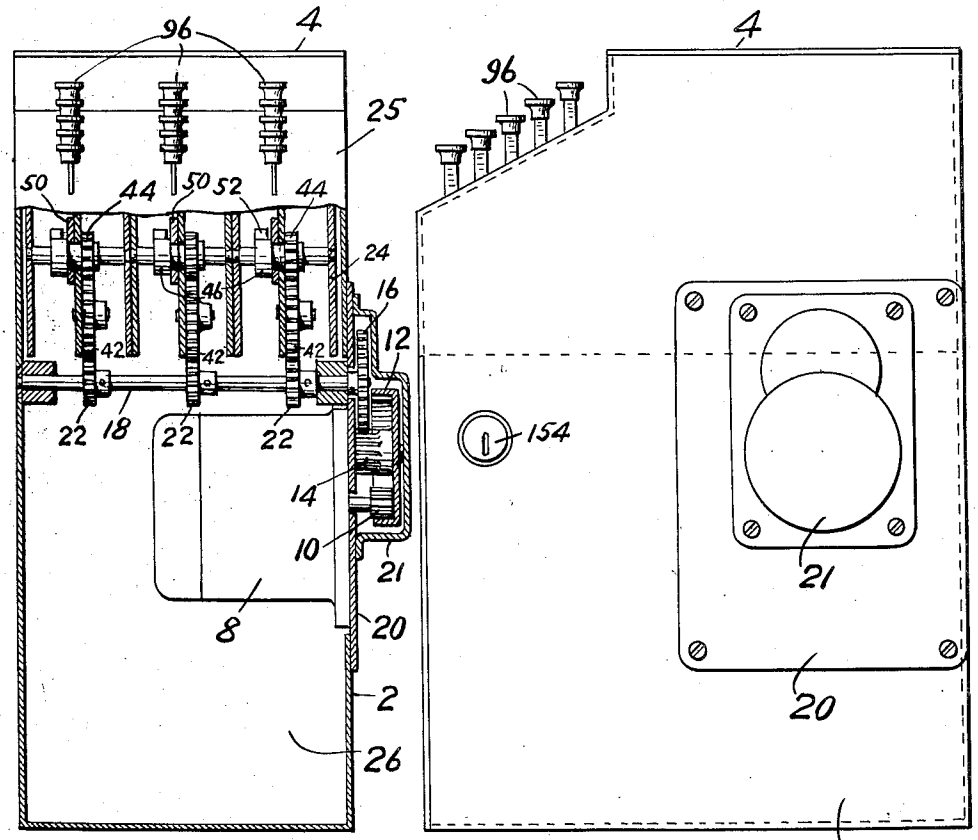


FIG. 2. FIG. 1.

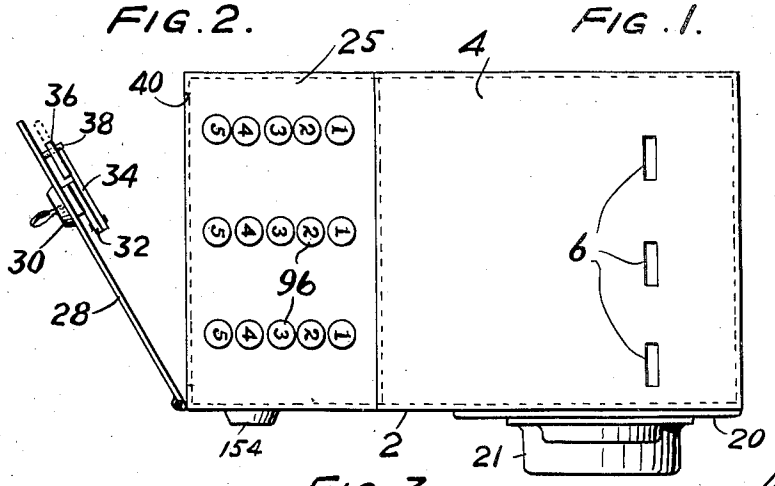


FIG. 3.

WITNESS:

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TICKET ISSUING MACHINE

Filed Dec. 12, 1930 4 Sheets-Sheet 2

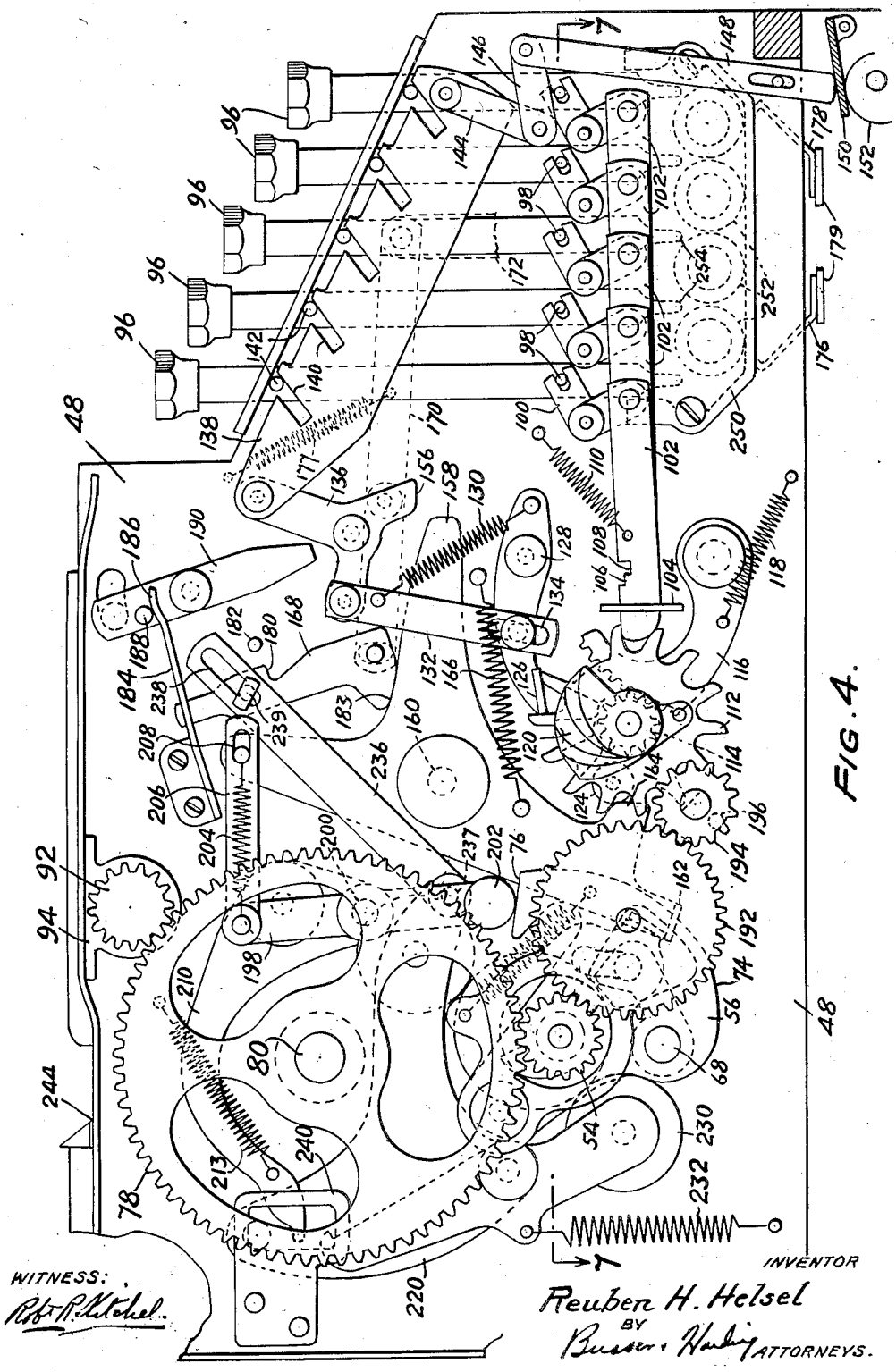


FIG. 4.

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TICKET ISSUING MACHINE

Filed Dec. 12, 1930 4 Sheets-Sheet 3

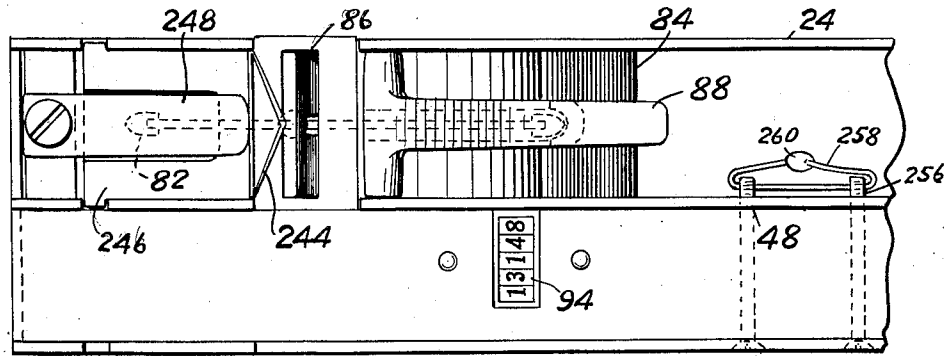


FIG. 6.

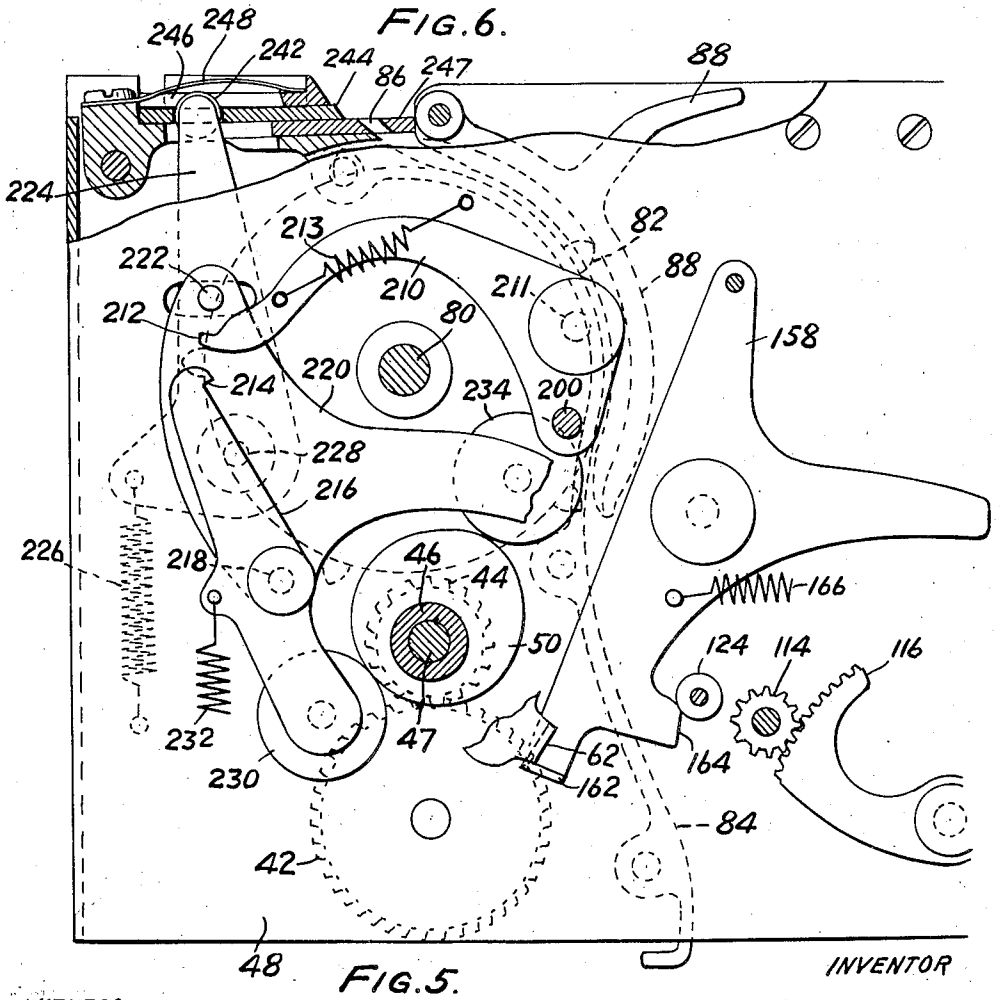


FIG. 5.

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TICKET ISSUING MACHINE

Filed Dec. 12, 1930 4 Sheets-Sheet 4

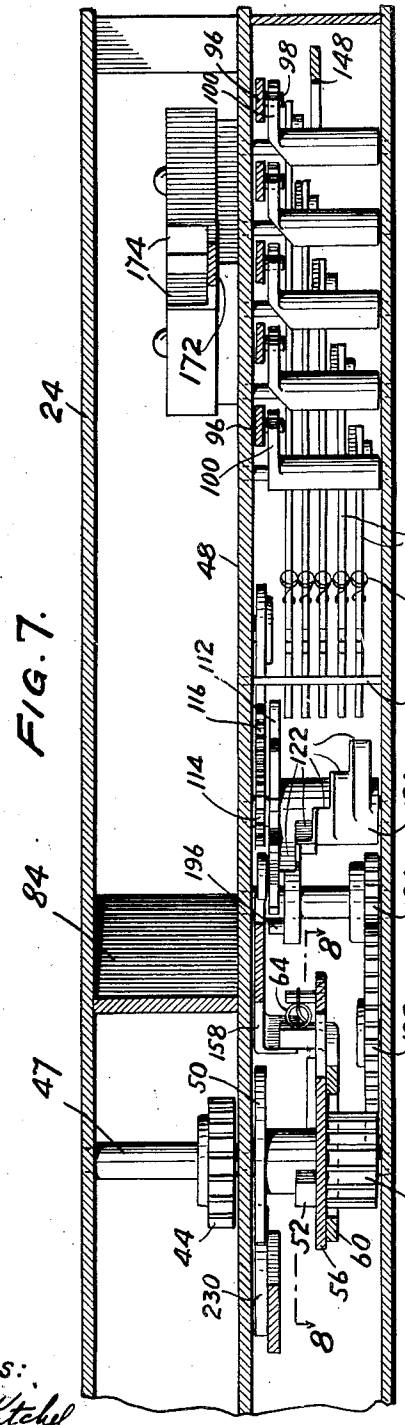


FIG. 7.

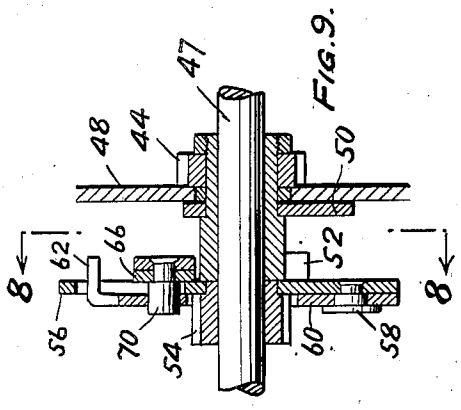


FIG. 9.

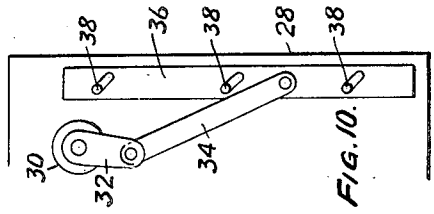


FIG. 10.

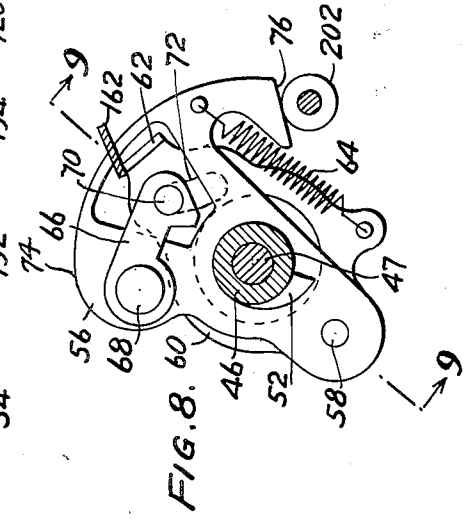


FIG. 8.

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Patented Oct. 3, 1933

1,928,785

UNITED STATES PATENT OFFICE

1,928,785

TICKET ISSUING MACHINE

Reuben H. Helsel, Long Island City, N. Y., assignor to General Register Corporation, Brooklyn, N. Y., a corporation of Pennsylvania

Application December 12, 1930
Serial No. 501,804

54 Claims. (Cl. 164—42)

This invention relates to a ticket issuing machine of the type designed to operate upon depression of a selected key to issue either one or a predetermined plurality of tickets.

The machines customarily used in theaters or other places of amusement or the like are generally called upon to issue several varieties of tickets indicating the seats or services to which the patron is entitled. A machine of this character accordingly contains mechanisms which are in part duplicates, there being other parts which are common, particularly in the driving connections. As usually constructed the duplicate parts are complete duplicates in that they are designed to handle exactly the same size tickets; and, in fact, the controlling mechanism is of a type consistent only with the use of uniform tickets. Furthermore, the machines have even the duplicate parts so interconnected that any failure of one part prevents use of the entire mechanism even though the part may be associated with one ticket strip only.

It is a broad object of the present invention to provide a machine of this general character which is highly flexible in use in that a number of substantially duplicate mechanisms are provided which in operation are quite independent of each other except as they are driven from a common source of power subject to control by any one of the mechanisms. The duplication of mechanisms just referred to relates rather to the essential mode of operation rather than details since the mechanisms in one machine may issue different sizes of tickets and may be designed with various limitations as to the numbers which may be issued upon a single depression of a key. In carrying out this object, the invention provides an arrangement whereby the removal or replacement of units is readily effected and whereby absence or inoperativeness of any unit does not affect those with which it is associated. In the preferred form of the invention the mere placing of a unit in the casing effects its electrical and mechanical connection with the drive without requiring any additional operations. Because of this, if an unskilled user of the machine desires to remove one unit because it is defective or because he desires to replace it, he may do so and substitute another without summoning any skilled mechanics from the manufacturer. To guard against emergencies a user may have in his theatre a substitute unit which may be placed in the machine in a few minutes and used while the replaced unit is shipped to the manufacturer for repairs, the units being so compact that shipping is greatly facilitated. The advantage of this may be readily seen when it is considered that in the case of breakdown of present machines which are too bulky to be readily removed, it is necessary to issue the tickets by hand until expert aid may be summoned, probably from a great distance. The general object of the invention relating to the provision of a flexible machine includes not only an arrangement for readily replacing individual units but also an arrangement whereby the power drive is readily accessible and replaceable.

It is another object of the invention to provide means whereby the various units may be individually or collectively locked against operation.

Various other objects relate to features of the individual units. Among these is an improved selector mechanism by which the number of tickets to be issued is determinable.

Another object relates to an improved strip severing mechanism which is operative only at the end of the series of tickets to be issued so that strips of tickets up to the capacity of the machine may be delivered as units.

A further object of the invention relates to an improved switch control.

Still another object has reference to an improved key interlocking arrangement whereby depression of more than one key is prevented.

It is also an object of the invention to provide an improved clutch controlling means of simple construction.

The accomplishment of the above objects and others which will later appear and need not here be enumerated will be apparent from the following description, read in conjunction with the accompanying drawings, in which:

Fig. 1 is a side elevation of a preferred modification embodying the invention;

Fig. 2 is a vertical section therethrough illustrating particularly the driving connections to the individual units of which the disclosed machine has three;

Fig. 3 is a plan view of the machine;

Fig. 4 is a side elevation of one of the units, a side cover plate being removed to more clearly show the mechanism;

Fig. 5 is a vertical sectional view showing certain parts appearing in the left hand portion of Fig. 4, various overlying parts being omitted or partially broken away and others being shown in section;

Fig. 6 is a plan view of the rear portion of the unit;

Fig. 7 is a horizontal section of the unit taken

on the plane indicated by line 7—7 in Fig. 4, certain parts being omitted;

Fig. 8 is a section taken on the plane indicated by lines 8—8 in Figs. 7 and 9 showing details of the clutch;

Fig. 9 is a section taken on the plane indicated by line 9—9 in Fig. 8; and,

Fig. 10 is an inside elevation of the door locking arrangement.

The operating parts of the machine are mounted in a suitable housing designated as a whole by 2, this housing being provided with a removable cover plate 4 having formed therein suitable openings 6 through which the tickets may be ejected, these openings being preferably normally closed by pivoted plates which may be lifted by the tickets in the usual manner.

Power for the operation of the machine is derived from a motor 8 on the shaft of which is secured a pinion 10 meshing with the internal gear 12. This gear carries a pinion 14 driving a gear 16 carried by the cross shaft 18. The motor and various gears are supported by a plate 20 removably secured to a side wall of the housing and the gears are encased by a cover 21. By reason of this arrangement, the motor and entire driving assembly may be readily removed from the machine for cleaning, repairs or replacement.

In the present instance the machine is designed to contain three separate, identical operating units although it will be obvious that it may be designed to hold any desired number of units or only a single unit. To effect operation of each of these units from the one motor, the shaft 18 carries pinions 22 each of which meshes with a gear carried by a unit designated generally as 24. These units are located side by side in the housing and may be removed vertically when the cover plate 4 and the key cover plate 25 are taken off. Replacement is very easy since as the unit is dropped into place the gears will automatically enter into mesh, it being immaterial, as will be pointed out later, what relative position the gears assume. The space 26 below the shaft 18 and motor 8 is adapted to receive the supplies of tickets which are threaded to the units.

The front of the casing is closed by a metallic door 28 which is provided with a special locking arrangement to avoid springing. This arrangement includes a rotatable key operated barrel lock 30 carrying a lever 32 which is connected by a downwardly extending link 34 to a locking slide 36 provided with diagonally arranged slots through which extend pins 38 carried by the door. This arrangement is such that when vertical movement is applied to the slide 36 it simultaneously moves laterally to engage or disengage the flange 40 at the side of the opening opposite the hinges. The slide 36 is of quite substantial height so as to engage the flange through a considerable vertical extent and thereby prevent opening of the door by springing as is sometimes possible when simple locking bolts are used. Interlocking means of any suitable type are provided to prevent removal of either of plates 4 or 25 when the door is locked.

Since the various units 24 are similar, one only need be described in detail, this being particularly illustrated in detail in Figs. 4 to 9. The gear adapted to mesh with a pinion 22 for the transmission of power to the machine is designated 42, this gear in turn meshing with a pinion 44 secured to a sleeve 46 journalled on a fixed shaft 47 secured to the side walls of the frame of the unit. The sleeve 46 passes through the intermediate plate 48 providing a mounting for a number of parts of the mechanism and on the side of this plate opposite the pinion 44 the sleeve carries a cam 50 and also a driving lug 52.

Also journalled on the shaft 47 is a pinion 54 which carries a plate 56. Pivoted to the plate 56 at 58 is a controlling member 60 having at its free end a laterally turned position 62 projecting through a clearing opening in the plate 56. A spring 64 reacting between the plate 56 and member 60 normally urges the latter to cause the pawl 66, pivoted to the plate at 68, to move inwardly into the path of the driving lug 52, this being effected by the engagement of a pin 70 carried by the pawl within a cam slot 72 formed in member 60. The plate 56 is provided with a cam surface 74 and an abutment face 76, the utility of which will be brought out later.

The pinion 54 meshes with the large gear 78 secured to shaft 80 which on the opposite side of plate 48 carries the feeding pin wheel 82 provided with pins adapted to engage the holes between the individual tickets of the usual type of ticket strip which passes to the pin wheel from the supply over a guide 84 and which is ejected by the pin wheel through the opening 86 aligned with the openings 6 in the plate 4. The member 88 pivoted above the pin wheel serves to tension the strip and maintain it engaged with the pins which move through a groove formed in its underside. The member may be manually lifted to facilitate the introduction of a ticket strip. A pinion 92 meshing with the gear 78 drives the revolution counter 94 carried by the unit but normally hidden by the top plate 4. The pin wheel which is shown is provided with five pins and is hence moved through one-fifth of a revolution for the issuance of each ticket. At the same time, pinion 54 makes one revolution as does also pinion 92 which drives the counter.

There have so far been described the driving connections between the motor and the strip-moving pin wheel including the clutch arrangement shown in Figs. 8 and 9. There will now be taken up those elements whereby these connections are controlled to effect the issue of one or more tickets, the specific unit here shown being designed to issue up to five tickets.

The operation of the machine is initiated by depression of a selected one of keys 96 each of which includes a stem guided in the frame for vertical sliding movement and carrying a pin 98 engaged by a bifurcated arm of a bell crank 100 pivoted in the frame. The depending arm of each of the bell cranks is pivoted to a corresponding one of a number of fingers 102 which pass through slots in a spacer 104. Each of the fingers 102 is provided with a notch having two steps 106 and 108 and is held upward by an individual spring 110.

Arranged to rotate on a fixed pin is a ratchet wheel 112 to which is secured a pinion 114 meshing with the teeth of a segment 116 pivoted to the frame and urged in a counterclockwise direction as viewed in Fig. 4 by a spring 118. Also secured to the ratchet wheel is a selector 120 provided with a plurality of steps 122, one of which corresponds with each of the fingers 102 and is adapted to engage its end upon rotation. These steps are angularly spaced to correspond with the teeth of the ratchet wheel. The ratchet wheel also carries a roller 124 the purpose of which will be hereafter pointed out.

A detent 126 pivoted at 128 to the frame is adapted to engage the teeth of ratchet wheel

112 to normally prevent its rotation under the action of spring 118, the detent being urged into active position by spring 130 reacting between it and link 132. The link has a slot 134 in its lower end which receives a pin carried by the detent, and is pivoted at its upper end to one arm of a spider 136. An upwardly extending arm of the spider is pivoted to a plate 138 provided wtih oblique slots 140 arranged to receive pins 142 carried by the key stems. The plate 138 is confined to parallel motion by reason of the fact that its forward end is pivoted to an arm 144 of a bell crank, the other arm 146 of which is connected to the upper end of a guided link 148 the lower end of which is engageable by a pivoted plate 150 extending transversely of the housing so as to be engageable with the links 148 of all of the units therein. A cam 152 is arranged to be rotated by a barrel lock 154 (Fig 1) so as to cause the plate 150 to rotate upwardly. When the lock is turned so that the plate 150 is in lowered position, the keys 96 may be depressed since plate 138 is free to move to the right and push link 148 downwardly. On the other hand the keys cannot be depressed when the plate 150 is in upper position since link 148 cannot move downwardly. Thus the lock 154 is effective to lock all of the various units and prevent any operation of the machine.

A third arm 156 of the spider moves when a key is depressed over the forwardly extending arm of a lever 158, pivoted at 160, thereby preventing its counterclockwise movement. This lever is provided with an upwardly turned end 162, as viewed in Figs. 4 and 5, arranged to engage the turned portion 62 of member 60. The lever is also provided with a projection 164 adapted to be engaged by the roller 124 which, as already pointed out, is carried by the ratchet wheel 112. A spring 166 urges the lever 158 in a counterclockwise direction about its pivot tending to move it whenever roller 124 disengages the projection 164.

Located above the forwardly extending arm of the lever and arranged to be moved upwardly thereby is a member 168 pivoted to a lever 170 through the medium of a pin passing through an elongated slot in plate 48. The lever 170 which is pivoted midway of its ends is connected at its other end to a metallic link 172 suitably insulated therefrom and having portions 174 engageable with spring pressed carbon contact points electrically connected respectively to terminals 176 and 178, which, when the unit is placed in the casing, are arranged to contact with spring contacts 179 connected in the circuit of motor 8. The arrangement is such that the various switches of the separate units are in parallel so that closure of any one will effect operation of the motor. The preferred switch may be replaced by any equivalent switch and is not herein described in detail since it forms the subject matter of my Patent 1,893,027, dated January 3, 1933. The switch is normally held open by spring 177.

The member 168 is provided with a hook 180 arranged to cooperate with a fixed pin 182. It is to be noted that contact between member 168 and lever 158 takes place at 183, at one side of the pin whereby member 168 is pivoted to lever 170.

A spring 184 secured to plate 48 projects forwardly in front of the upper end of member 168 thereby holding it against the plate. This spring has the additional function of holding the individual unit lock in either operative or inoperative position. To this end, it is provided with an arched end 186 over which moves the pin 188 carried by the locking lever 190 which may be rocked by manipulation of a suitable knob on its upper end to move its lower end either in or out of the path of the rearwardly extending arm of spider 136. The pin is, of course, yieldingly held on one side or the other of end 186 of the spring.

A gear 192 meshes with pinion 54 and in turn drives pinion 194 which carries a pin 196 adapted to engage the teeth of ratchet wheel 112 and thereby impart to it a step by step counterclockwise rotation in opposition to the tension of spring 118.

A lever 198 turns about a pin 200 as pivot and carries at one end a roller 202 adapted to ride over a cam surface 74 of plate 56 and also to drop behind and engage the abutment face 76 thereof. A spring 204 reacts between the upper end of the lever and a pin 208 carried by lever 158, normally drawing the lever to such position that the inner end of a slot formed in a link 206 pivoted to lever 198 engages the pin 208 which passes therethrough.

The pin 200 forming the pivot for lever 198 is carried by a lever 210 (Fig. 5) which is pivoted at 211 to plate 48, and acted upon by tension spring 213. This lever has a nose 212 engageable by the hook 214 formed on the end of lever 216 which is pivoted at 218 to the lever 220. The lever 220 is in turn pivoted through a pin 222 to the knife operating lever 224 normally urged by a spring 226 in a counterclockwise direction about its fixed pivot 228. A follower roller 230 carried by the lower end of lever 216 is urged into contact with cam 50 by a spring 232. A follower roller 234 pivoted on lever 220 also engages the cam 50 at a point approximately opposite the roller 230.

A link 236 is pivoted to 220 at 237 and has a slotted end 236 sliding over a pin 239 on member 168.

A holding plate 240 extends over the ends of levers 210 and 216 to hold them close to plate 48 and in position to cooperate with each other.

The upper end of lever 224 carries a roller 242 which lies within an opening in knife blade 244 whereby oscillation of lever 224 serves to move the knife across the opening 86 to sever a ticket, the knife cooperating with the forward edge of the opening which acts as a ledger blade. It is to be noted that the knife blade has a projecting center portion which enters a hole in the strip whereupon cutting takes place in both directions outwardly. A plate 246 overlies the knife to hold it down upon the plate 247 in which the slot 86 is formed, a leaf spring 248 supplying the necessary tension.

To prevent the simultaneous depression of two keys, a chamber 250 is provided in which are located rings 252. The aggregate clearances of the rings with each other and the ends of the chamber are such that only one of the ends 254 of the key stems may enter between two adjacent rings, this action serving to take up the clearance. Since the rings have only limited ranges of movement, they are always ready to properly receive and be cammed sidewise by the ends 254.

To prevent tampering with the machine and particularly the counter, the side and central plates may be connected together by bolts 256 extending through one and threaded into the other and arranged to receive through suitable openings in their ends a wire 258 the ends of which are connected by a seal 260.

The parts having now been described, the operation of the machine will now be taken up in de-

tail. The machine is designed to issue one to five tickets upon depression of the corresponding key, the upper key issuing one, the next two, and so on, the lowest issuing five. Of course, other grouping of the keys may be provided. To illustrate the most elaborate action of the machine whereby more than one ticket may be issued upon a single depression of a key, the operation will be described following the depression of the second key to issue two tickets. From this the action to issue one or more than two will be obvious.

Initially, all of the parts of the machine will be in the positions illustrated in the various figures, with the exception, as will be pointed out later, of lug 52 and cam 50 which may assume any arbitrary position of rest. In view of the last previous operation of knife 244, the end of the ticket strip will be positioned at the top of slot 86, the next hole being located on the forward pin shown in Fig. 5. It will be assumed that plate 150 is in lowered position and lock 190 is in the condition illustrated.

As the key moves downwardly, its end 254 moves between two of rings 252 whereby the depression of any other keys either simultaneously or subsequently is prevented. The corresponding bell crank 100 will be rocked and the finger 102 connected thereto (the second from the bottom in Fig. 7) will be moved rearwardly until the step 106 moves into alignment with plate 104 whereupon the finger will be lifted by spring 110. The movement of key 96 has now passed what might be termed a critical point since it will not rise even though released due to the engagement of the step 106 and 104. While the key has so far been insufficiently depressed to effect selection or any other operation, nevertheless the machine is locked against any actuation by another key until the first key is fully depressed and a complete cycle is initiated.

During all of the movement of the key, the plate 138 is caused to move forwardly turning spider 136, and almost immediately bringing arm 156 over the forwardly extending arm of lever 158 so as to prevent counterclockwise rotation thereof. The link 132 has some free movement upward before raising detent 126 because of the provision of slot 134.

In the further downward movement of the key, the finger 102 continues to move rearwardly until step 108 passes 104 whereupon it is further raised by spring 110. Subsequently to this occurrence, detent 126 is raised out of engagement with the ratchet wheel 112. Spring 118 now moves the ratchet wheel, selector 120 and roller 124 in a clockwise direction until the second step 122 of the selector strikes the extended finger pressing the same downwardly and thereby causing both steps 106 and 108 to clear the plate 104. Since the key is still depressed, the finger 102 is held rearwardly thereby positively stopping the ratchet wheel and its associated rotating elements. It is to be noted that lever 158 is no longer held against the action of spring 166 by the roller 124 but only by the arm 156. The steps just noted complete the operations occurring when the key is depressed, the various parts maintaining their positions until release of the key takes place.

When the key is depressed it moves against only the relatively slight tension of the corresponding spring 110 and spring 130. However, as soon as lever 158 is released, the strong spring 166 additionally serves to raise the key through the camming action of 158 on 156 tending to rotate it counterclockwise. A quick positive rise of the key is thus insured.

As the key moves upward following release, the corresponding finger 102 moves forwardly. This finger, however, does not clear the step 122 (Fig. 7) until after the detent 126 has dropped sufficiently to lie in the path of the second tooth of the ratchet wheel beyond that originally held thereby. Accordingly, when the finger does clear the step, the ratchet wheel may move only through a very small arc to bring the tooth into engagement with the detent.

Up to this time, the arm 156 engages lever 158 preventing its movement, even though roller 124 now lies away from 164. As the key reaches its extreme upper position, the lever 158 is released thereby initiating the power operation of the machine.

When the lever 158 rocks under the action of spring 166, several events take place simultaneously. The engagement of member 168 by the lever at 183 causes the member to rock about its pivotal connection with lever 170 and also move bodily upward, the pin 239 sliding in slot 238 until hook 180 lies above pin 182. As lever 170 rocks, the switch is closed thereby completing the motor circuit and starting the motor 8. It is to be noted that the engagement of hook 180 with pin 182 holds the switch closed until such engagement is positively disturbed. The movement of lever 158 is limited by the closure of the switch.

At the same time the end 162 of lever 158 releases the turned portion 62 of element 60. Spring 64 thereupon rocks the element about pivot 58 relatively to plate 56 causing pin 70 to be cammed inwardly by slot 72 to bring pawl 66 into the path of driving lug 52. Accordingly, when the lug 52 engages the pawl, positive drive of pinion 54 by the motor occurs. Attention may be called at this point to the fact that when the machine is idle, only those parts in the train of mechanism from the pawl 66 onward have definitely fixed positions; those parts from the motor to lug 52 may occupy any positions depending upon overrun of the motor after the subsequent parts are positively stopped. Furthermore it may be noted that these parts rotate upon operation of any unit, not only that with which they cooperate. Their position when at rest is consequently quite arbitrary. When the motor starts, the lug 52 may have more or less movement prior to engagement with the pawl. This feature of the operation will be again referred to in connection with the operation of cam 50 which, as already pointed out, moves with lug 52. For present purposes it may be noted that cam 50 does bear a definite relationship to pinion 54 when the unit is operating since lug 52 engages pawl 66 during the time the pinion is positively driven.

Another event occurring upon the release of lever 158 is the rocking of lever 198 whereupon roller 202 moves a short distance forwardly.

Pinion 54 and gear 78 have a 1: 5 ratio so that one revolution of the pinion corresponds to the issue of one ticket inasmuch as the gear 78 drives the feed wheel having five pins. During the mid portion of the first revolution of the pinion 54, the pinion 194 moves correspondingly, being of the same diameter, and pin 196 rotates the ratchet wheel 112 through an arc corresponding to one tooth against the tension of spring 118. Pawl 126 is raised and, as soon as the next tooth

passes it, it snaps inwardly to hold it when the ratchet wheel is again released by pin 196.

This movement of the ratchet wheel does not bring roller 124 into contact with projection 164 and accordingly lever 158 maintains its extreme position under the action of spring 166. As the pinion 54 completes its first revolution, the cam 74 of plate 56 engages roller 202 causing the lever 198 to rock. When the lever 158 is in its extreme position, the range of oscillation of lever 198 is insufficient to cause the outer end of the slot in link 206 to engage the pin 208. Furthermore, the effective torque of spring 204 about center 211 is less than that of spring 213 about the same center, and therefore lever 210 does not rock. Of course the parts may be so designed that, even though the end of the slot may engage pin 208, the oscillation imparted to lever 210 is of small and ineffective range so long as lever 158 is in its extreme position.

The tendency of spring 232 to move lever 220 about pin 222 to bring roller 234 into contact with cam 50 is quite small and accordingly the roller 234 maintains its outer position due to friction of the parts when once moved thereto by the cam and until forced inwardly as hereafter described. The knife operating lever 224 remains retracted under the action of spring 226. Lever 216 oscillates idly about pivot 218 as roller 230 follows cam 50 due to the tension exerted by spring 232.

In view of the above actions, the first revolution of pinion 54 effects the projection of the leading ticket through the slot 86 without the occurrence of any severing action. Since the switch remains closed and end 162 of lever 158 is out of the path of 62, a second revolution gets under way without further manipulation of a key.

When the second revolution takes place, the pin 196 again causes the ratchet wheel to move through an arc equivalent to the angle between successive teeth, detent 126 snapping behind the one which it holds when the machine is stationary. In this case, however, roller 124 engages projection 164 rocking lever 158 in a clockwise direction as viewed in Fig. 4.

Member 168 is no longer engaged by the lever but remains hooked on pin 182 thus maintaining the switch closed. Cam 50 engages roller 234 positively preventing movement of lever 220 under the indirect urge of spring 232 and accordingly link 236 cannot at this time tend to move member 168.

When cam 74 now oscillates lever 198 the movement of its upper end is prevented by the engagement of pin 208 with the outer end of the slot in which it lies. Lever 210 must therefore rock against the tension of spring 213 to a position wherein nose 212 lies below hook 214. Immediately after the movement of lever 210, the cam 50 rocks lever 216 so that hook 214 engages the nose 212 whereby lever 210 is held down even after roller 202 falls behind abutment face 76.

The turned end 162 of lever 158 is now in the path of end 62 of the element 60. As the plate 56 continues to move, the element 60 is retarded whereupon the pin 70 is cammed outwardly in slot 72 and the pawl 66 is disengaged from lug 52. Disengagement becomes complete as the roller 202 passes off the end of cam surface 74 and the roller then drops behind the abutment face 76 preventing reverse movement of plate 56 under the action of spring 64 and so maintaining the pawl in disengaged position. The movement of roller 202 is not at this time to its extreme position since 210 is still held down by hook 214.

Before considering the further action of the parts a brief résumé of their conditions at the time the pawl is disengaged may well be made. The ticket strip will be stationary with the first two tickets projected and the hole between the second and third directly aligned with the knife. Cam 50 will be in such position with respect to rollers 230 and 234 that the former will be just slightly outward of its extreme inner position and moving further outwardly, and that the latter will be approximately at its extreme outward position and about to move inwardly. The hook 214 will be engaged with nose 212 preventing upward movement thereof, and link 236 will not yet have released member 168 from pin 182 to open the motor switch.

As the motor continues to operate, cam 50 will revolve with lug 52. During further revolution of cam 50, roller 230 will be moved outwardly faster than roller 234 can move inwardly and therefore, as lever 216 rocks about nose 212 as pivot, lever 220 is also rocked by reason of its connection with lever 216 at 218. Roller 234 then travels slightly on cam 50 acting as a fulcrum and pin 222 is swung to throw the knife operating lever 224 forwardly thus moving the knife to sever the ticket strip.

When the lever 220 rocks due to this action and also the continued inward movement of roller 234, link 236 disengages member 168 from pin 182 and the switch is opened by the action of spring 177. While the supply of current is thus cut off from the motor, its momentum together with the momentum of the other parts will generally serve to rotate cam 50 to entirely complete the cycle. The use of member 168, it will be observed, maintains the motor energized as long as possible; in fact, preferably until after the disengagement of the clutch.

Following the extreme outward movement of roller 230 whereby the knife is caused to sever the strip, the roller again moves inwardly so that hook 214 is disengaged from nose 212. Lever 210 is thus freed to be moved upwardly by spring 213 and roller 202 moved to its extreme forward position. Also, during this action, the knife operating lever is released so that it is positively retracted by the action of cam 50 on roller 234, spring 226 normally acting to maintain the knife retracted after such action.

While the forward motion of the knife is well under way at the time the current through the motor is interrupted and accordingly the severing of the strip invariably takes place completely even though the overrun of the motor is slight, the overrun may be insufficient to complete the return of the knife. This is, however, immaterial since the knife will be fully returned in the beginning of the next operation of any of the units and at least before the lug 52 gets around to a position to engage the pawl 66.

From the above description of the operations involved in the issuance of two tickets the operations involved in the issuance of one or more than two tickets will be clear. The determination of the number of tickets to be issued depends on the selected position of ratchet wheel 112 which is stepped backwardly one tooth during the issuance of each ticket, the operation coming to an end when roller 124 engages extension 164 of lever 158. It is to be noted that the knife

operates only after the last ticket of the series has been projected through the slot 86.

Gear 92 has the same radius as pinion 54 and therefore advances the counter mechanism one unit for each ticket issued.

The clutch mechanism disclosed herein is essentially similar to that illustrated and claimed in my Patent 1,919,651, dated July 25, 1933.

As already pointed out the initial positions of lug 52 and cam 50 are immaterial and accordingly gears 42 of the various units may mesh with gears 22 in any positions. Thus it is that the units may be located in the machine ready for operation by merely dropping them into place, electrical connections being simultaneously made due to the presence of spring contacts 179 suitably carried by insulating members secured in the frame. As already mentioned the various switches are connected in parallel.

While adhering to the same general principles of construction, units may obviously be provided capable of location in the same housing and of being driven by gears 22 but designed to issue different size tickets. In general mere change of gear ratios will accomplish this.

The motor and drive connections may be as readily removed as the units for replacement or repairs. Accordingly, long delays in cases of breakdown are avoided.

Locking of the entire machine may be accomplished through lock 154. Locking of the units may be effected by members 190 which prevent oscillation of the spiders 136, these members being inaccessible for fraudulent manipulation since they are normally covered by the locked cover plate 4.

One of the primary advantages of the machine lies in the ease of operation since the slightest effort serves to depress a key and initiate operation. This is due to the fact that the effort on the key is used only to release parts for operation by springs which are tensioned during a previous operation, instead of being used to positively move relatively heavy elements. It is to be noted that only light springs oppose the depression of a key which is raised by the strong spring 166 in addition to the light springs so that return is insured.

The machine has also the advantage that it may be started from any position. That is, if failure of power causes the machine to stop at any point during a cycle, restoration of power will move it through the remaining part of the cycle. The effect of failure of overrun has already been mentioned.

What I claim and desire to protect by Letters Patent is:

1. A ticket issuing machine comprising means for delivering a ticket, a key, a motor, and means rendered operative by release of the key following a depression thereof for causing the motor to actuate the ticket delivering means, said last means remaining inoperative until such release occurs.

2. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, and means rendered operative by release of a key following a depression thereof for causing the motor to actuate the ticket delivering means, said last means remaining inoperative until such release occurs.

3. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon depression of a key to determine the number of tickets to be issued in the next cycle of operation, and means rendered operative by release of the key for causing the motor to actuate the ticket delivering means, said last means remaining inoperative until such release occurs.

4. A ticket issuing machine comprising means for delivering a ticket, a key, a motor, means rendered operative by release of the key following a depression thereof for causing the motor to actuate the ticket delivering means, said last means remaining inoperative until such release occurs, and means preventing rise of the partially depressed key until a full depression thereof is made.

5. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon depression of a key to determine the number of tickets to be issued in the next cycle of operation, means rendered operative by release of the key for causing the motor to actuate the ticket delivering means, said last means remaining inoperative until such release occurs, and means preventing rise of a partially depressed key until a full depression is made.

6. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon depression of a key to determine the number of tickets to be issued in the next cycle of operations, means rendered operative by release of the key for causing the motor to actuate the ticket delivering means, said last means remaining inoperative until such release occurs, and means preventing rise of a depressed key until the determining means operates.

7. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon depression of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a member having variable movement depending upon the key depressed, and means rendered operative by release of the key for causing the motor to actuate the ticket delivering means, said last means remaining inoperative until such release occurs.

8. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon depression of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a member having variable movement depending upon the key depressed and elements for imparting a step by step return movement to the member upon the issuance of each ticket, and means rendered operative by release of the key for causing the motor to actuate the ticket delivering means.

9. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon depression of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a member having variable movement depending upon the key depressed and elements for imparting a step by step return movement to the member upon the issuance of each ticket, means

preventing rise of a depressed key until the determining means operates, and means rendered operative by release of the key for causing the motor to actuate the ticket delivering means.

10. A ticket issuing machine comprising means for delivering a ticket, a key, a motor, means lightly yieldingly resisting depression of the key, means rendered operative immediately upon complete depression of the key for more strongly yieldingly urging the key to raised position, and means rendered operative by release of the key for causing the motor to actuate the ticket delivering means.

11. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means lightly yieldingly resisting depression of a key, means rendered operative immediately upon complete depression of a key for more strongly yieldingly urging the key to raised position, and means rendered operative by release of a key for causing the motor to actuate the ticket delivering means.

12. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon depression of a key to determine the number of tickets to be issued in the next cycle of operation, means lightly yieldingly resisting depression of a key, means rendered operative immediately upon operation of the determining means for more strongly yieldingly urging the key to raised position, and means rendered operative by release of the key for causing the motor to actuate the ticket delivering means.

13. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a member having a variable movement depending upon the key manipulated and elements for imparting a step by step return movement to the member upon the issuance of each ticket, and means controlled by the keys for causing the motor to actuate the ticket delivering means.

14. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a member having a variable forward movement depending upon the key manipulated and elements for imparting a step by step return movement to the member upon the issuance of each ticket, means controlled by the keys for causing the motor to actuate the ticket delivering means, and means for preventing actuation of the ticket delivering means by the motor until said member makes its forward movement.

15. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of manually operable keys controlling the delivering means, a plurality of links, one connected with each key, said links being movable longitudinally against spring tension upon depression of their corresponding keys and arranged to move transversely of their lengths during depression of the keys to engage means restraining them from reverse longitudinal movements under the spring tension, and means operable immediately upon complete depression of a key to free its link from the restraining means.

16. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of manually operable keys controlling the delivering means, a plurality of links, one connected with each key, restraining means, said links being movable longitudinally against spring tension upon depression of their corresponding keys and arranged to move transversely of their lengths during depression of the keys to engage the restraining means whereby they are held against reverse longitudinal movements under the spring tension, a member spring urged in one direction, and normally held against movement by the spring, and means whereby depression of a key releases said member, said member in its movement engaging a link to free it from the restraining means.

17. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of manually operable keys controlling the delivering means, a plurality of links, one connected with each key, restraining means, said links being movable longitudinally against spring tension upon depression of their corresponding keys and arranged to move transversely of their lengths during depression of the keys to engage the restraining means whereby they are held against reverse longitudinal movements under the spring tension, a member spring urged in one direction, and normally held against movement by the spring, and means whereby depression of a key releases said member, said member in its movement engaging a link to free it from the restraining means, and being stopped by the link in one of a plurality of positions depending on the link engaged.

18. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a member, a spring, said member being released upon manipulation of a key and having a variable movement under the action of the spring depending upon the key depressed, and means for imparting a step by step return movement to the member upon the issuance of each ticket, and means controlled by the keys for causing the motor to actuate the ticket delivering means.

19. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a normally restrained rotary member having a plurality of steps, a spring urging the member in one direction, elements associated with the keys, one of said elements being connected with each key whereby it is projected upon manipulation thereof, means operating upon manipulation of a key for releasing said member whereby it moves under the action of the spring until a step thereof engages a projected element, and means for imparting a step by step return movement to the member upon the issuance of each ticket, and means controlled by the keys for causing the motor to actuate the ticket delivering means.

20. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of

operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a member having a variable movement depending upon the key depressed and elements for imparting a step by step return movement to the member upon the issuance of each ticket, means controlled by the keys for causing the motor to actuate the ticket delivering means, and means operating to stop the further issuance of tickets when the member is fully returned.

21. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a member, a spring, said member being released upon manipulation of a key and having a variable movement under the action of the spring depending upon the key depressed, and means for imparting a step by step return movement to the member upon the issuance of each ticket, means controlled by the keys for causing the motor to actuate the ticket delivering means, and means operating to stop the further issuance of tickets when the member is fully returned.

22. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a normally restrained rotary member having a plurality of steps, a spring urging the member in one direction, elements associated with the keys, one of said elements being connected with each key whereby it is projected upon manipulation thereof, means operating upon manipulation of a key for releasing said member whereby it moves under the action of the spring until a step thereof engages a projected element, and means for imparting a step by step return movement to the member upon the issuance of each ticket, means controlled by the keys for causing the motor to actuate the ticket delivering means, and means operating to stop the further issuance of tickets when the member is fully returned.

23. A ticket issuing machine comprising means for delivering one or more tickets from a strip in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, means controlled by the keys for causing the motor to actuate the ticket delivering means, means controlled by the determining means to stop the further issuance of tickets when the selected number has been issued, a member arranged to idly oscillate during a cycle, and means cooperating with the member at the end of a cycle whereby its oscillation is effective to sever the ticket strip.

24. A ticket issuing machine comprising means for delivering one or more tickets from a strip in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, means controlled by the keys for causing the motor to actuate the ticket delivering means, means controlled by the determining means to stop the further issuance of tickets when the selected number has been issued, a knife, an element normally holding a fixed position, a lever pivoted thereto and arranged to idly oscillate during a cycle, means engaging and holding one end of the lever at the end of a cycle whereby further oscillation thereof moves the element, and means connecting the element and knife whereby movement of the element effects operation of the knife to sever the ticket strip.

25. A ticket issuing machine comprising means for delivering one or more tickets from a strip in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, means controlled by the keys for causing the motor to actuate the ticket delivering means, means controlled by the determining means to stop the further issuance of tickets when the selected number has been issued, a knife, an element normally holding a fixed position, a lever pivoted thereto and arranged to idly oscillate during a cycle, means engaging and holding one end of the lever at the end of a cycle whereby further oscillation thereof moves the element, means connecting the element and knife whereby movement of the element effects operation of the knife to sever the ticket strip, and means for returning the knife prior to the issuance of a ticket in a subsequent cycle.

26. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, a clutch, means controlled by the keys for energizing the motor and engaging the clutch whereby the motor drives the ticket delivering means, means for disengaging the clutch at the end of a cycle of operation, and means whereby the overrun of the motor after disengagement of the clutch drives parts of the mechanism.

27. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, a clutch, means controlled by the keys for energizing the motor and engaging the clutch whereby the motor drives the ticket delivering means, means for disengaging the clutch and deenergizing the motor at the end of a cycle of operation, and means whereby the overrun of the motor after its deenergization drives parts of the mechanism.

28. A ticket issuing machine comprising means for delivering one or more tickets from a strip in a cycle of operation, a plurality of keys, a motor, a clutch, means controlled by the keys for energizing the motor and engaging the clutch whereby the motor drives the ticket delivering means, means for disengaging the clutch at the end of a cycle of operation, a knife operable to sever the ticket strip, and means whereby the overrun of the motor after disengagement of the clutch effects movement of the knife.

29. A ticket issuing machine comprising means for delivering one or more tickets from a strip in a cycle of operation, a plurality of keys, a motor, a clutch, means controlled by the keys for energizing the motor and engaging the clutch whereby the motor drives the ticket delivering means, means for disengaging the clutch and deenergizing the motor at the end of a cycle of operation, a knife operable to sever the ticket strip, and means whereby the overrun of the motor after its deenergization effects movement of the knife.

30. A ticket machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, a clutch, means controlled by the keys for energizing the motor and

engaging the clutch whereby the motor drives the ticket delivering means, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, and means controlled by the determining means to disengage the clutch.

31. A ticket machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, a clutch, means controlled by the keys for energizing the motor and engaging the clutch whereby the motor drives the ticket delivering means, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, and means controlled by the determining means to disengage the clutch and deenergize the motor.

32. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means rendered operative only by release of a key following a depression thereof for causing the motor to actuate the ticket delivering means through a cycle of operation, and means for preventing a depression of a second key following depression of the first until the completion of a cycle of operation.

33. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means rendered operative only by release of a key following a depression thereof for causing the motor to actuate the ticket delivering means through a cycle of operation, and means for preventing a depression of a second key following such release of the first until the completion of a cycle of operation.

34. A ticket issuing machine comprising a frame having side plates, means for delivering one or more tickets in a cycle of operation including a rotatable member, a plurality of keys, a motor, means controlled by the keys for causing the motor to actuate the rotatable member, a counter driven by the rotatable member and located between the side plates, and sealing means connecting the side plates.

35. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor, a plurality of self-contained key controlled ticket issuing units independently and simultaneously receivable in the casing and guided thereby into operative connection with the intermediate driving devices, and means whereby manipulation of a key of any of the units may energize the motor.

36. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor, a self-contained replaceable key controlled ticket issuing unit receivable in the casing and guided thereby into operative connection with the intermediate driving devices, and electrical connections including engageable contacts carried by the casing and unit whereby manipulation of a key of the unit may energize the motor.

37. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor, a plurality of self-contained key controlled ticket issuing units independently and simultaneously receivable in the casing and guided thereby into operative connection with the intermediate driving devices, and means whereby manipulation of a key of any of the units may energize the motor, each of the units having a clutch mechanism engageable by manipulation of the keys of that unit whereby one of the units may be operated without affecting any other unit or units.

38. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor, a plurality of self-contained key controlled ticket issuing units independently and simultaneously receivable in the casing and guided thereby into operative connection with the intermediate driving devices, and means whereby manipulation of a key of any of the units may energize the motor, each of the units having a clutch mechanism engageable by manipulation of the keys of that unit whereby two of the units may be simultaneously operated without affecting each other.

39. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor, a plurality of self-contained ticket issuing units independently and simultaneously receivable in the casing and guided thereby into operative connection with the intermediate driving devices, and a common means for simultaneously locking the units against operation.

40. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor, a plurality of self-contained ticket issuing units independently and simultaneously receivable in the casing and guided thereby into operative connection with the intermediate driving devices, a common means for simultaneously locking the units against operation and means for individually locking the units against operation.

41. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor, and a plurality of self-contained ticket issuing units independently and simultaneously receivable in the casing and guided thereby into operative connection with the intermediate driving devices, the motor and intermediate driving devices being removable as a unit from the casing.

42. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor, and a self-contained replaceable ticket issuing unit receivable in the casing and guided thereby into operative connection with the intermediate driving devices, the motor and intermediate driving devices being removable as a unit from the casing.

43. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a rotary member having a plurality of steps, a spring urging the member in one direction, a key controlled restraining device normally holding the rotary member against movement by the spring, elements associated with the keys, one of said elements being connected with each key whereby it is projected upon manipulation thereof into the path of one of the steps, connections between the various parts whereby, upon depression of a key, there successively occur movements of an element into the path of a step and release of the member by the restraining device for movement under the action of the spring, and whereby upon release of a key the restraining device again becomes operative to hold the member against further movement and then the

element is withdrawn to normal position, and means for imparting a step by step return movement to the member upon the issuance of each ticket and means controlled by the keys for causing the motor to actuate the ticket delivering means.

44. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, said determining means including a rotary member, a spring urging the member in one direction, a key controlled restraining device normally holding the rotary member against movement by the spring, elements associated with the keys, one of said elements being connected with each key whereby it is projected upon manipulation thereof into the path of the member, connections between the various parts whereby, upon depression of a key, there successively occur movements of an element into the path of the member, and release of the member by the restraining device for movement under the action of the spring, and whereby upon release of a key the restraining device again becomes operative to hold the member against further movement and then the element is withdrawn to normal position, and means for imparting a step by step return movement to the member upon the issuance of each ticket, and means controlled by the keys for causing the motor to actuate the ticket delivering means.

45. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor including a gear mounted in the casing, and a self-contained replaceable ticket issuing unit including a driving gear, said unit being receivable in the casing and guided thereby so that the driving gear of the unit meshes with the gear mounted in the casing to provide driving connections between the motor and unit.

46. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor, including a plurality of gears mounted in the casing, and a plurality of self-contained ticket issuing units each including a driving gear, said units being independently and simultaneously receivable in the casing and guided thereby so that their driving gears mesh with the gears mounted in the casing to provide driving connections between the motor and the units.

47. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor including a plurality of gears mounted in the casing, a plurality of self-contained key controlled ticket issuing units each including a driving gear, said units being independently and simultaneously receivable in the casing and guided thereby so that their driving gears mesh with the gears mounted in the casing to provide driving connections between the motor and the units, and means whereby manipulation of a key of any of the units may energize the motor.

48. A ticket issuing machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, a clutch, means controlled by the keys for energizing the motor and engaging the clutch whereby the motor drives the ticket delivering means, means controlled by the keys for determining the number of tickets to be issued, and means for disengaging the clutch after the clutch makes, in a cycle of operation, a number of revolutions corresponding to the number of tickets issued as determined by the key depressed.

49. A ticket machine comprising means for delivering one or more tickets in a cycle of operation, a plurality of keys, a motor, a clutch, means controlled by the keys for energizing the motor and engaging the clutch whereby the motor drives the ticket delivering means, means controlled by the keys for determining the number of tickets to be issued, means actuated upon manipulation of a key to determine the number of tickets to be issued in the next cycle of operation, and means controlled by the determining means to disengage the clutch after the clutch makes a number of revolutions corresponding to the number of tickets issued.

50. A ticket issuing machine comprising means for feeding a ticket, a motor, a clutch, means for energizing the motor and engaging the clutch whereby the motor drives the ticket feeding means, means for disengaging the clutch at the end of a cycle of operation, and means whereby the overrun of the motor after disengagement of the clutch drives parts of the mechanism.

51. A ticket issuing machine comprising means for feeding a ticket, a motor, a clutch, means for energizing the motor and engaging the clutch whereby the motor drives the ticket feeding means, means for disengaging the clutch and deenergizing the motor at the end of a cycle of operation, and means whereby the overrun of the motor after its deenergization drives parts of the mechanism.

52. A ticket issuing machine comprising means for feeding a ticket strip, a motor, a clutch, means for energizing the motor and engaging the clutch whereby the motor drives the strip feeding means, means for disengaging the clutch at the end of a cycle of operation, a knife operable to sever the ticket strip, and means whereby the overrun of the motor after disengagement of the clutch effects movement of the knife.

53. A ticket issuing machine comprising means for feeding a ticket strip, a motor, a clutch, means for energizing the motor and engaging the clutch whereby the motor drives the strip feeding means, means for disengaging the clutch and deenergizing the motor at the end of a cycle of operation, a knife operable to sever the ticket strip, and means whereby the overrun of the motor after its deenergization effects movement of the knife.

54. A ticket issuing machine comprising a casing, a motor, intermediate driving devices arranged to be driven by the motor, and a self contained replaceable ticket issuing unit receivable in the casing and guided thereby into operative connection with the intermediate driving devices, said unit and casing including cooperating means whereby energization of the motor is controlled by mechanism in said unit.

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