Oct. 31, 1944. B. H. FREEDMAN 2,361,392

TICKET ISSUING MACHINE

Filed Dec. 27, 1940 5 Sheets-Sheet 1

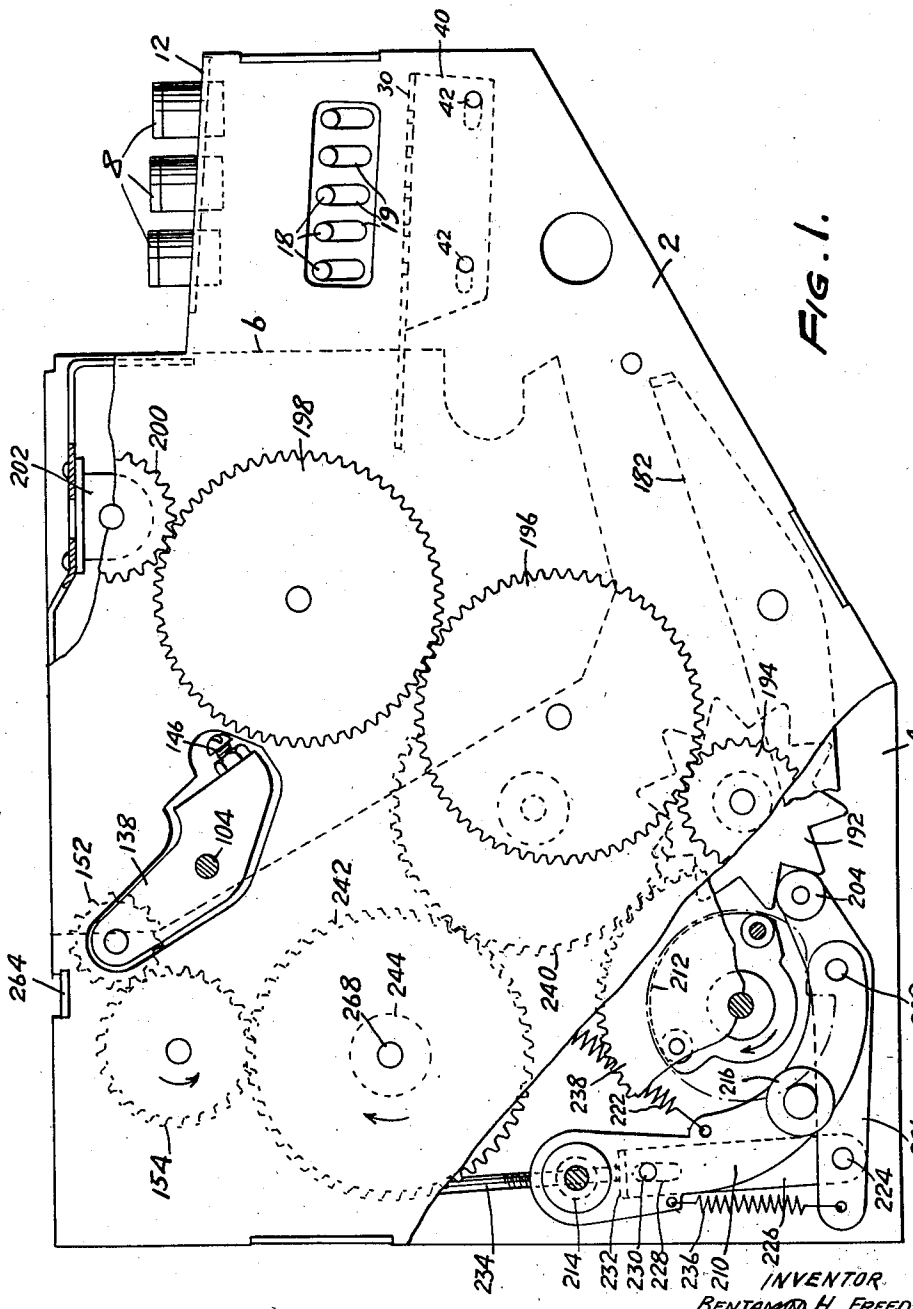


FIG. 1.

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TICKET ISSUING MACHINE

Filed Dec. 27, 1940 5 Sheets-Sheet 2

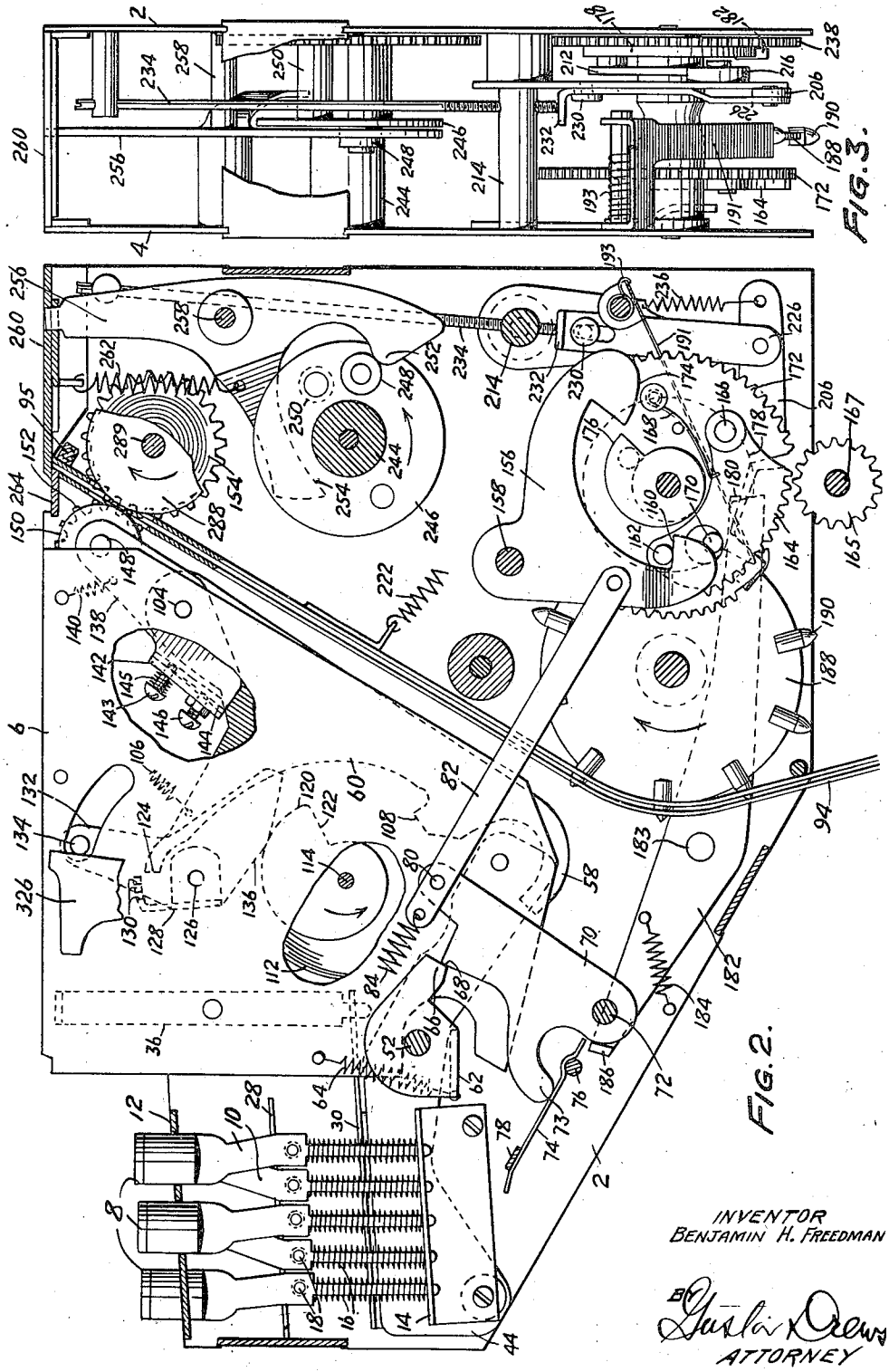


FIG. 3.

FIG. 2.

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Oct. 31, 1944. B. H. FREEDMAN 2,361,392

TICKET ISSUING MACHINE

Filed Dec. 27, 1940 5 Sheets-Sheet 3

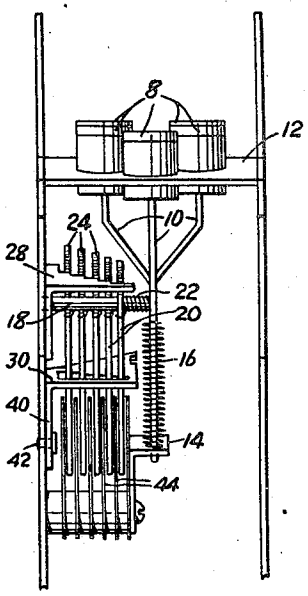


FIG. 5.

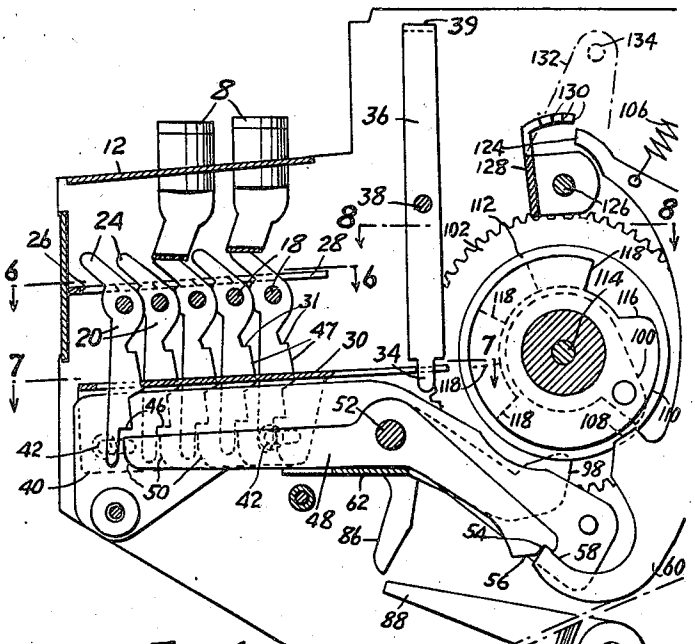


FIG. 4.

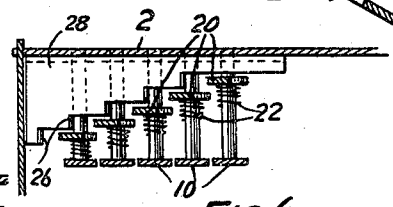


FIG. 6.

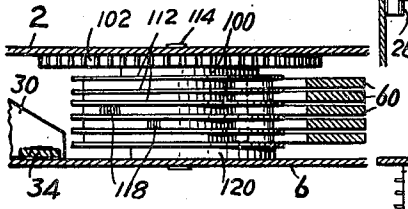


FIG. 8.

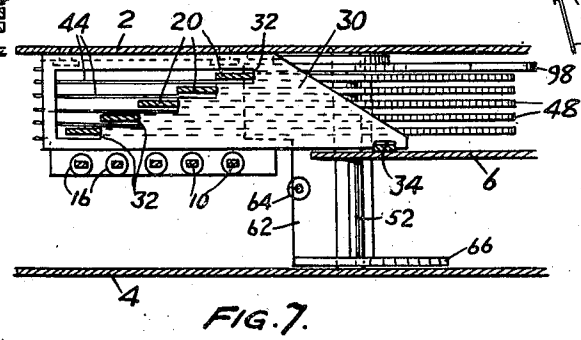


FIG. 7.

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TICKET ISSUING MACHINE

Filed Dec. 27, 1940 5 Sheets-Sheet 4

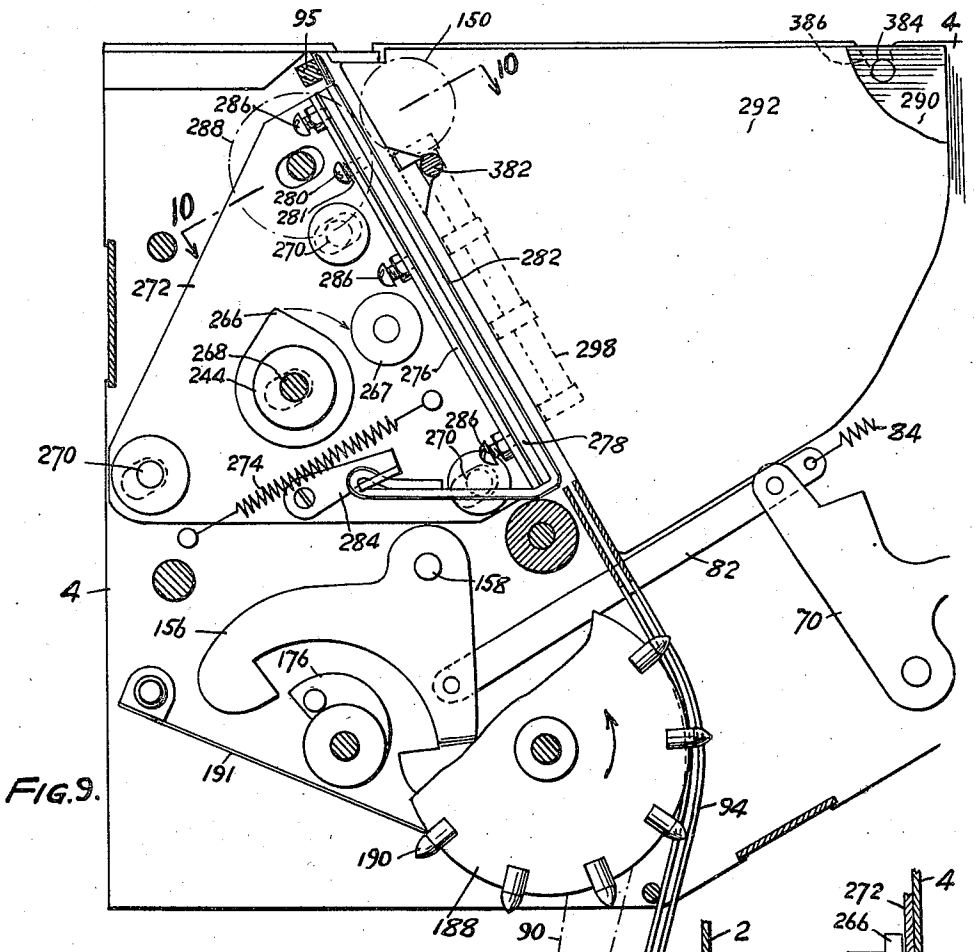


FIG. 9.

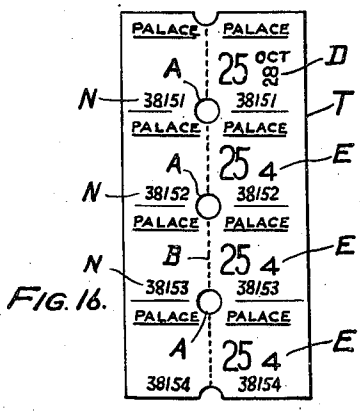


FIG. 16.

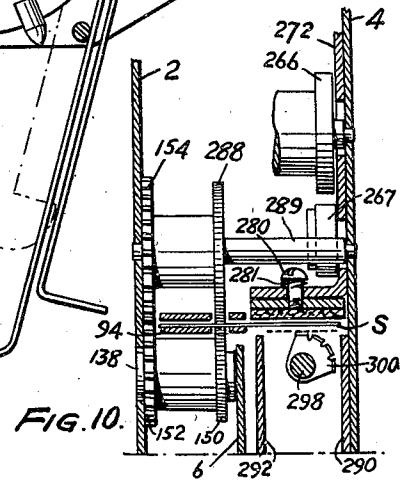


FIG. 10.

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Oct. 31, 1944. B. H. FREEDMAN 2,361,392

TICKET ISSUING MACHINE

Filed Dec. 27, 1940 5 Sheets-Sheet 5

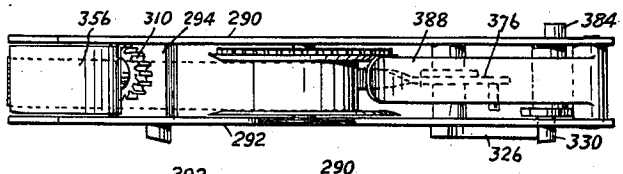


FIG. 12.

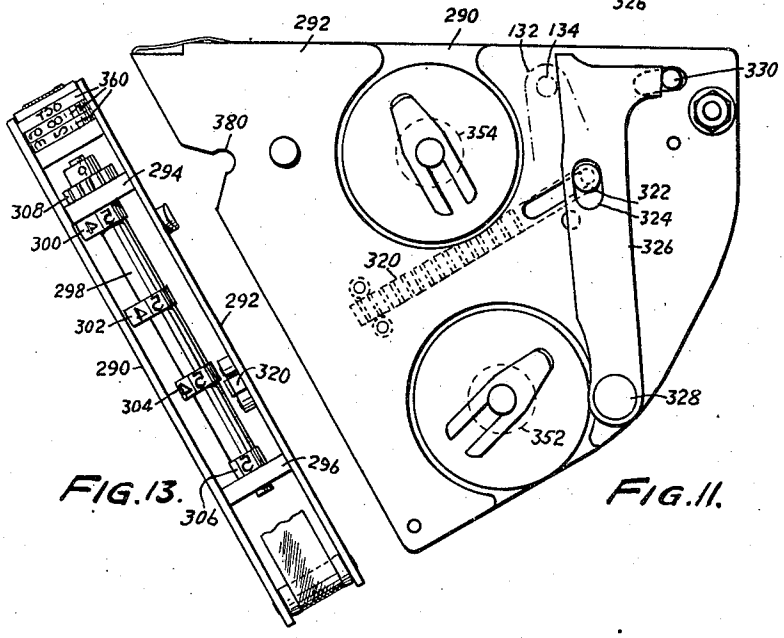


FIG. 13.

FIG. 11.

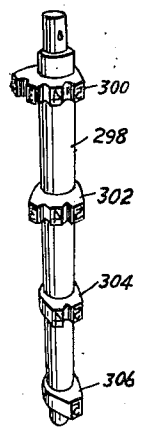


FIG. 15.

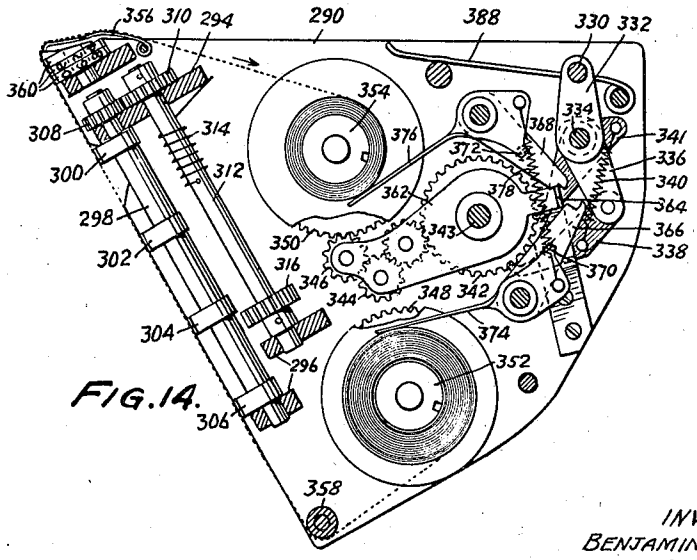


FIG. 14.

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Patented Oct. 31, 1944

2,361,392

UNITED STATES PATENT OFFICE

2,361,392

TICKET ISSUING MACHINE

Benjamin H. Freedman, Asbury Park, N. J.

Application December 27, 1940, Serial No. 371,858

17 Claims. (Cl. 101—68)

This invention relates to a ticket issuing machine, particularly adapted for the issuance of tickets for places of amusement.

It has been proposed for the purpose of providing a better check on the honesty of employees of theaters and the like, and to facilitate accounting, to identify each ticket issued as part of a group of tickets with the total number of tickets issued in the group. For example, if four tickets are issued simultaneously, each ticket, or, at any rate, each except the first ticket, should be marked with the number "4" or some equivalent identifying character. It has also been proposed that instead of issuing a group of rather readily separable tickets of the present type, there should be issued what is, in fact, one ticket, comprising, however, a number of sub-tickets or unit areas not readily separable from each other, the entire ticket being severable along a weakened or perforated line extending lengthwise of the ticket and transverse to the various sub-tickets.

It is one object of the present invention to provide a machine for issuing tickets of the general type just indicated, identifying them with numbers or other characters indicative of the total issued in a single cycle of operation. The invention, however, is not solely adapted for the issue of tickets of the type described above, but may be used for printing matters upon tickets of conventional type.

A further object of the invention in the provision of selecting means for the issue of one or more tickets or sub-tickets in a cycle of operation, depending upon depression of a selected key interconnected with a selective printing mechanism.

These and other objects of the invention relating to details of construction and operation will be apparent from the following description, read in conjunction with the accompanying drawings, in which:

Figure 1 is a side elevation, partially broken away, of a ticket issuing unit embodying the improvements indicated above;

Figure 2 is a vertical sectional view viewing the unit from the opposite side and showing particularly various elements located behind one of the side plates;

Figure 3 is a rear elevation of the unit with certain parts broken away to show details;

Figure 4 is a further fragmentary vertical section of the unit partially broken away in the lower right hand corner thereof to show a control means dependent upon the presence of supply strip;

Figure 5 is a front elevation showing certain details of the key controlling mechanism;

Figure 6 is a fragmentary horizontal section taken on a plane the trace of which is indicated at 6—6 in Figure 4;

Figure 7 is a similar section taken on a plane the trace of which is indicated at 7—7 in Figure 4;

Figure 8 is a horizontal section illustrating in particular a group of cams determining the period of operation of the machine;

Figure 9 is a fragmentary vertical section showing in particular details of a platen mechanism and the manner in which a printing unit is associated with it;

Figure 10 is a fragmentary section taken on the plane the trace of which is indicated at 10—10 in Figure 9;

Figure 11 is a side elevation of a printing unit;

Figure 12 is a plan view of the printing unit;

Figure 13 is a face view of the printing unit looking toward the printing elements thereof;

Figure 14 is a vertical section through the printing unit;

Figure 15 is a perspective view of an adjustable printing element involved in said unit; and

Figure 16 is an elevation of a ticket adapted to be issued by the improved machine.

A complete ticket issuing machine embodying the principles of the present invention comprises usually a plurality of separate units each adapted for the issue of tickets of a single denomination. These units are received in conventional fashion in a single casing and are adapted to be driven by a single motor connected to a countershaft provided with individual pinions for the various units into mesh with which pinions the driving gears of the various units move as they are placed in proper position within the casing. Since the case and counter shaft arrangement form no part of the present invention, it need not be described herein. The arrangement may be of conventional type, as described, for example, in Patent No. 2,097,485, dated November 2, 1937, to Reuben H. Helsel. The present inventions are embodied in each of the separate units and only one unit will be described in detail.

Each unit comprises a pair of side plates 2 and 4 and an intermediate plate 6 to serve as the principal supports for the various operation elements. Other bracket arrangements, cross-brackets, etc. are provided, as will be evident hereafter, but since they may take various convenient forms, they will not be described in detail.

The machine comprises a set of keys 8 which

may, for example, and as disclosed, be five in number for the purpose of issuing one to five tickets, unit areas or subtickets in a single operation. Each of the keys 8 is provided with a shank 10, the various shanks being shaped to bring their lower portions in substantially a single vertical plane extending lengthwise of the unit. The cylindrical portions of the keys slide in circular openings in a transverse top plate 12, and the lower ends of the shanks are guided in openings in a bracket 14. Each of the shanks has extending laterally therefrom a pin 18 having limited movement within a corresponding vertical slot 19 in a bracket 28 secured to the side plate 2 of the unit. Mounted on each of the pins is a rocking lever 20, each being normally urged by an individual spring 22 in a counter-clockwise direction, as viewed in Figure 4. Each of the levers 20 is provided with a forwardly and upwardly projecting upper end 24 overlapping, in a vertical direction, a corresponding step 26 provided on the bracket 28. The levers 20 are arranged, as illustrated, in staggered relationship and have their lower ends extending between spacer plates 44 which serve to keep them separated and in proper lateral position.

The levers 20 extend downwardly through an opening in a locking plate 30 provided with a series of steps 32 adapted to engage shoulders 31 on the levers as described hereafter. The plate 30 is engageable by the lower end 34 of a rocking lever 36 pivoted at 38 and provided with a turned upper end 39 engageable by the operator to lock the machine. The plate 30 is mounted for forward and rearward movement by reason of the provision thereon of a downwardly directed flange 40 provided with slots embracing pins 42 carried by the side plate 2 of the machine.

The levers 20 are provided with downwardly facing shoulders or steps 46 and with sloping edges 47 normally engaging the steps 32 of the plate 30, under the action of springs 22.

Corresponding to each of the levers 20 there is a lever 48 having its forward end 50 projecting beneath the step 46 of its corresponding lever 20. These levers 48 project between the spacing plates 44 previously mentioned and are pivoted on a common rod 52 extending across the machine. The levers 48 have downwardly and rearwardly extending arms of equal length provided with notches 54 and sloping cam surfaces 56 adapted to cooperate with the turned ends 58 of a series of detent levers 60 of which there is one for each of the levers 48.

Mounted also upon the pin 52 is a yoke 62 having a flat portion underlying all of the levers 48 and adapted to be engaged by them. A spring 64 normally urges this yoke 62 in a clockwise direction, as viewed in Figure 2. The yoke is provided with an arm 66 engaged by an abutment portion 68 of a lever 70 pivoted on a pin 72 and provided with a nose 73 adapted to engage a switch controlling plate 74 secured to a transverse pin 76 pivoted in the frame. Each of the plates 74 is provided with an ear 78 arranged to extend laterally of the unit and overlap the corresponding plate 74 of the next unit; or, in the case of the last unit, the ear 78 engages the motor-controlling switch. This arrangement is identical with that illustrated and described in Patent No. 2,103,720, dated December 28, 1937, to Reuben H. Helsel. It is sufficient to mention herein that by reason of this interengagement of the switch controlling plates, the rocking of the yoke 62 in any unit by any of the keys thereof is effective to close the switch energizing the common driving motor.

To the upper end of the lever 70 is pivoted at 80 a link 82 urged forwardly by a strong spring 84 connected between it and a fixed portion of the frame. The connections of this link will be hereafter described.

The yoke 62 is provided with a depending arm 86 with which cooperates a forwardly extending arm 88 carried by a shaft 89 which also carries a depending lever 90 provided with a rounded end 92 engageable, under the action of spring 96, with the ticket supply strip S passing upwardly through the guide channel, indicated at 94, which guide channel is pivoted at its upper end at 95 so as to be movable for insertion of the ticket strip, as indicated hereafter. This guide channel is formed primarily of two spaced strips of metal between which the ticket stock passes.

The yoke 62 is also provided with a rearwardly extending arm 98, which is adapted to be acted upon at a suitable time in the cycle of the machine by a cam 100, which forms one of a group of cams carried by a hub secured to a gear 102 and rotatably mounted upon a fixed transverse pin 114.

The various levers 60 previously mentioned are pivoted on a common transverse pin 104 and urged in a counter-clockwise direction as viewed in Figures 2 and 4 by means of individual springs 106 connected between them and a fixed portion of the frame. Each of the levers 60 is provided with a cam follower portion 108 which is normally spaced from an individual corresponding cam 110. There is a cam 110 corresponding to each of the levers 60, and all of these cams have rises 116 located in the same angular position relative to the gear 102. However, these cams terminate at different positions, indicated at 118, the cam corresponding to the issue of one ticket having the greatest angular extent, the cam corresponding to the issue of two tickets having less angular extent, and so on, up to the cam controlling the issue of five tickets, which has the least extent. These various cams are spaced by discs 112 between which the follower portions 108 of the various levers project so as to be properly positioned for cooperation with their respective cams.

The hub of the group of cams just referred to also carries a cam 120, as illustrated in Figure 2, provided with a drop 122.

On a transverse pin 126 is mounted a yoke 128 provided with four steps, illustrated at 130, arranged to engage the ends 124 of the levers 60, which are operated in the issuing of two to five tickets. There is no step provided corresponding to the lever 60 which operates in the issuing of a single ticket, its end 124 being inoperative. The yoke 128 is provided with a bell crank, one end of which, 132, carries a pin, 134, projecting laterally through the plate 6 for the purpose hereafter described. The other arm, 136, of the bell crank follows the cam 120, under the action of a spring urged member 326 engaging the pin 134.

On the pin 104, providing the pivot for the levers 60 is journalled a yoke member 142 embracing the group of levers and provided with a plate 144, engageable by the levers under the adjustment afforded by a pair of screws 146, the plate being loosely held inside the transverse portion of the yoke by means of a screw 143 threaded into the plate and passing loosely through an open-

ing in the yoke and pressed outwardly by a compression spring 145. The yoke 142 is provided with an upwardly extending arm 138 urged in a counter-clockwise direction, as viewed in Figure 2, by a weak spring 140 and supporting, on a pivot pin 148, a knurled feed roller or disc 150 to which is secured a pinion 152 meshing with a gear 154, to which is secured a cooperating knurled feed roller or disc 288 journalled on a fixed pin 289. The rollers 150 and 288 are arranged to pinch and feed the ticket strip passing upwardly through the guide 94, and for this purpose extend into slots in the plates forming the guide 94.

Returning to the connections of the link 82, that link is pivoted to a double-armed lever 156, which is mounted on a stud 158. One arm of this lever is formed as a hook 160 adapted to be engaged by a pin 162 carried by a gear segment 164 pivoted at 166 to a gear 172 and urged outwardly by a spring 168 toward a position which, in operation, is limited by a pin 170 projecting from the gear 172 through an enlarged opening in the segment 164. The gear 172 is cut away for a portion thereof, which is adapted to be bridged by the segment 164. In its inner position, this segment permits a gap in the continuity of the teeth, and consequently the teeth are out of mesh with the individual pinion 165 for the unit carried by the common countershaft 167, for the several units. On the other hand, when the segment 164 is released, its teeth provide a continuous set with the teeth of gear 172, and meshing and proper drive will result. This clutching arrangement is not new in this particular machine, and its function and operation are the same as in prior Patent No. 2,219,650, dated October 29, 1940, to Reuben H. Helsel.

Mounted to rotate with the gear 172 is a cam 176 which, by engagement with the other arm 174 of the lever 156 serves to restore it to the position shown following its displacement in the cycle of operation. Also secured to and rotating with the gear 172 is a cam 178 provided with a notch 180 behind which there engages the rear end of a lever 182 pivoted at 183 to the frame and urged by a spring 184 in a counterclockwise direction, as viewed in Figure 2. The lever 182 has a turned forward end 186, which, in the stationary position of the machine, underlies the rear end of the switch controlling plate 74. As will be pointed out hereafter, this lever serves to maintain the switch closed until the cycle is completed.

A pinwheel 188, provided with pins 190, is journalled in the frame of the machine in such fashion as to project the pins 190 through a slot in the ticket guide 94 and into engagement with the openings in the ticket strip feeding through the guide. The purpose of the movement of the guide 94 about its pivot 95 previously referred to is to permit the guide to be moved away from the pins so that they will not obstruct the feeding of the ticket strip through the guide in the initial threading of the machine. A spring 222 normally urges the guide into the position illustrated in Figure 2. This spring 222 serves also to apply tension to another member, hereafter referred to.

A blade 191 urged by a spring 193 toward the pinwheel 188 serves by engagement behind the pins 190 to prevent any retrograde movement of the pinwheel. It yields readily to permit free forward movement of the pinwheel.

Secured to the shaft of the pinwheel 188 is a star wheel 192 having V-shaped notches therein corresponding in number to the pins 190. Secured also to the pinwheel shaft to rotate with it is a pinion 194 which, through intermediate gears 196 and 198 drives the pinion 200 of the counter 202. As will be pointed out hereafter, the pinwheel does not serve to drive the ticket strip, but is rotated by the feed of the ticket strip. Accordingly, the counter serves only to count the actual tickets issued by the machine. An operation in the absence of the ticket strip at the position of the pinwheel 190, even if it occurred due to a failure of the lever 90 to effect its control, would not result in registration by the counter.

Adapted to engage within the notches of the star wheel 192 is a roller 204 carried at the forward end of a lever 206 pivoted at 208 to a lever 210, which is mounted on a transverse pin 214 and is provided with a roller 216 arranged to be acted upon by a cam 212 rotating with the gear 172. The spring 222 heretofore referred to serves to urge the roller 216 toward the cam 212.

To the link 206 is pivoted at 224 another link 226 provided with a slot 228 embracing a pin 230 carried by lever 210. The link 226 has a turned upper end 232 abutting, under the action of the spring 236, the lower end of a screw 234 threaded through the pin 214 and having its upper end extending to the top of the unit so as to be readily adjustable. As will be evident from Figure 1, the adjustment of the abutment screw 234 serves for the accurate positioning of the roller 204, in effect approximately about pin 208, and hence for the accurate angular positioning of the star wheel 192. This adjustment is important to insure that the proper portion of the ticket strip is presented to the severing knife at the time cutting takes place.

Rotating also with the gear 172 is the gear 238, which drives gear 240 and through it a gear 242 provided with a hub 244. This last gear 242 drives the pinion 154, to which is secured the feed roller 288.

To the hub 244 of gear 242 is secured a disc 246 carrying on opposite faces thereof rollers 248 and 250, respectively, adapted to act upon the arms 252 and 254 of the knife operating lever 256 pivoted upon a transverse pin 258 and engaging at its upper end the movable knife 260. This knife 260 is urged downwardly by a spring 262 reacting between it and the lever 256 into proper engagement with the fixed blade 264 to effect proper cutting of the ticket strip fed through the guide 94.

The hub 244 of the gear 242, which is journalled upon a fixed pin 268, carries a cam 266 adapted to engage a follower roller 267 carried by a plate 272, which is provided with guiding slots embracing pins 270, so that it may be moved by the action of cam 266 against the tension of spring 274 in an upward and forward direction transverse to the direction of extent of the upper portion of the guide 94. The plate 272 is provided with an outwardly turned flange 276, extending parallel to the guide 94, outside of which flange there is a plate 278 loosely mounted on the flange 276 by means of a screw 280 threaded into the plate 278 and loosely passing through an opening in the flange. A spring 281 surrounding the screw serves to urge the plate 278 rearwardly to a position determined by a plurality of set screws 286, which serve as limiting stops. To the face of the plate 278 there is secured a platen material of leather or the like 282 having its end anchored in an arm 284 fixed

to the plate 272. As will be pointed out hereafter, printing on the ticket strip is effected by the action of cam 266 in forcing the backing platen material 282 against the ticket strip to press it in turn against an inked ribbon backed by type.

Printing is effected through the medium of a unit illustrated in detail in Figures 11 to 15. This unit comprises side plates 290 and 292 serving as supports for the various operating parts of the unit. In cross-brackets 294 and 296 there is mounted a type carrying member or spindle 298 which, as illustrated in Figure 15, contains spaced type groups or bands 300, 302, 304 and 306. All four of these carry the numeral "5" in axial alignment. The groups 300, 302 and 304 carry the numeral "4" in axial alignment. The groups 300 and 302 carry the numeral "3" in axial alignment, and the group 300 additionally includes the numeral "2." The member 298 is provided at its upper end with a pinion 308 meshing with a pinion 310 carried by a shaft 312 mounted parallel to the member 298. A spring 314 normally urges the shaft 312 in a direction to cause the member 298 to move beyond the position corresponding to the numeral "2" in printing position.

A pinion 316 secured to the lower portion of the shaft 312 is in mesh with a rack 320, suitably guided along the side plate 292 and provided at its upper end with a pin 322 projecting into a slot 324 in a lever 326 pivoted at 328 to the plate 292. This lever 326 is the one previously referred to and illustrated in Figure 2 as engaging pin 134 of the lever 132. When the machine is in the rest position, the engagement of the lever 326 with pin 134 results in pulling the rack 320 in opposition to the spring 314 to cause the type faces numbered "5" to be approximately in printing position. Actually, their position is slightly beyond the printing position, so that a slight movement under the action of spring 314 causes them to reach proper printing position.

The upper end of the lever 326 engages a pin 330 carried by the upper end of an arm 332 secured to a shaft 334, pivoted in the plates 290 and 292. The shaft 334 carries a depending arm 336 to which is pivoted a pawl 338 urged into engagement with a ratchet wheel 342 by means of a spring 340 reacting between the pawl and a detent 341, also engaging the teeth of the ratchet 342 and pivoted freely on the shaft 334. The ratchet 342 is journalled upon a pin 343, on which there is also journalled a frame 362 provided with pins carrying lower and upper pinions 344 and 346, which mesh with each other and through an intermediate pinion with the ratchet wheel 342. The pinion 344 is adapted at proper times to mesh with a gear 348 while the pinion 346 is adapted to mesh with a gear 350. These gears respectively carry the inked ribbon carriers 352 and 354, which support conventional spools of typewriter ribbon passing over a spring member 356 to maintain tension and about a guide roller 358 across the faces of the type elements carried by member 298. Additionally, they extend across the type elements on slugs 360 which may, for example, carry dating characters or other information such, for example, as the name of a theater or the like.

The frame 362 has a tail portion 364 projecting laterally and adapted to be alternately engaged by the notched ends of levers 366 and 368 journalled on fixed pins. Within openings in these levers there project the turned ends 370 and 372 of pivoted feeler blades 374 and 376 bearing upon the reels of inked ribbon.

The mechanism last referred to is for the purpose of feeding the ribbon and reversing the direction of feed at proper times. The feeding is accomplished by the action of pawl 338, retrograde movement being prevented by the detent 341, the feeding taking place whenever the lever 326 moves rearwardly in an issuing operation. The feelers 374 and 376 serve in a fashion which will be obvious to shift the frame 362 to cause either pinion 344 or pinion 346 to drive the inked ribbon.

The printing unit is made readily removable and replaceable in the machine. This end is accomplished by providing it with a notch 380 engageable with a pin 382 in the machine frame and by providing it additionally with a pin 384 engageable in a notch 386 in the machine frame. The latter notch is so arranged as to take the force of printing applied by the platen 282 without disturbing the printing unit. To facilitate removal of the unit, it may be provided with a member 388 pivoted on a transverse pin and liftable by the finger of an operator to serve as a handle for removing the unit.

The type of ticket to be issued by the unit is illustrated in Figure 16 at T. The strip S fed into the machine is provided with central openings illustrated in the ticket at A and provided down its center line with perforations, indicated at B. The ticket strip is preferably not provided with the usual transverse weakened or perforated lines, but is, in fact, preferably of stock which cannot be readily torn along a well defined transverse line. The strip is preprinted, for example, with the name of the theater, the price and with serial numbers, indicated at N. Each ticket issued may comprise one to five sub-tickets. For example, in Figure 16 the ticket T comprises four sub-tickets on the uppermost one of which the machine prints the date indicated at D and on each of the next three the number "4" indicated at E. The ticket is designed to be used in carrying out a checking and accounting system, which need not be described herein. It will suffice to state that the ticket issued by the machine is presented to the ticket taker, who will tear it lengthwise along the line of perforations B, presenting the left hand portion, as illustrated in Figure 16, to the customer and depositing the right hand portion containing the date D and the members E in the usual receptacle. If the ticket contains but a single sub-ticket or unit area, according to the embodiment illustrated, it will have the date printed thereon. On the other hand, if the ticket contains more than one sub-ticket or unit area, according to the present embodiment, the whole number of sub-tickets or unit areas will be printed on each sub-ticket subsequent to the first. Examination of the stubs and their use in special fashions serves as a check on various factors and facilitates accounting. The present invention is not concerned with the form of ticket, but solely with the fashion in which the ticket of this type is produced and issued.

The operation of the improved mechanism may now be described. In all of the figures of the drawings, the parts are shown in their initial rest positions, immediately prior to the initiation of a ticket printing and issuing operation. As was explained heretofore, the complete ticket machine will generally comprise a series of units such as that illustrated, and in such case the

ears 78 of the plates 74 of the successive units will overlap, the last of these serving to control the closing of a master switch which will energize the common driving motor for the entire set of units. As also explained above, beneath the gear 172 of each of the units is a pinion 165 carried by a common transverse shaft 167. Initially, however, the pinions do not mesh with anything, because the segments 164 of all of the units are withdrawn upwardly out of meshing position.

It will be evident from the operations hereafter described that two or more units of the machine may be simultaneously operating without interference with each other.

The locking lever 36 will be in the position illustrated in Figure 4 to maintain the plate 30 in its rearmost position, so that the key control elements will be operative. The ticket strip S will be located in the unit, holding outwardly the lever 90, and accordingly removing the arresting arm 88 from an interfering position with respect to the depending arm 86. The ticket strip will be located with its upper end, which will pass through one of the openings A, directly at the position of meeting of the knife blades 260 and 264.

The operation of the machine is initiated by depression of any one of the keys 8. It will be assumed that there is depressed the key which will effect the issue of four sub-tickets, i. e., of the ticket of Figure 16.

As the key moves downwardly, it will carry with it through the medium of its pin 18 a lever 20, which will, in turn, engage the free end 50 of the corresponding lever 48, moving slightly rearwardly to effect this result as the sloping edge 47 moves down the corresponding step of the plate 30. As the lever 48 rocks, its notch 54 will release the corresponding lever 60, the cam follower portion 108 of which will drop against the surface of its corresponding cam 110. At the same time, its end 124 will move slightly upwardly into the path of the corresponding step 130 of the yoke 128. As the lever 48 rocks, it will also rock the yoke 62, causing detent 66 to release lever 70, which is urged in a counterclockwise direction by the strong spring 84. As the lever 70 rocks, its end 73 depresses plate 74, thereby, directly or through intermediate units, closing the motor energizing switch of the machine. At the same time, through link 82 the member 156 is rocked releasing the pin 162 on the segment 164 to permit it to drop into mesh with the pinion 165 directly beneath it. All of the parts are thereby set up for the beginning of the issuing operation.

As the rotation of the gear 172 begins, the rise of the cam 178 will rock the lever 182 against the tension of spring 184 to engage the tail of the plate 74, thereby effecting the holding down of this plate in addition to that resulting from the lever 70. As will be evident hereafter, this action of lever 182 serves to maintain the switch closed and the driving motor energized until the end of the cycle of operation, despite the fact that the lever 70 must be restored to its initial position well prior to the end of the cycle.

Through the train of gearing the feed disc 288 will immediately start to rotate. However, it cannot feed the ticket strip because, at this time, the movement of the lever 60 will not have been sufficient to press the feed disc 150 against the ticket strip to pinch it for the feeding operation.

In the very early part of the operation, the roller 250 on the disc 246 will engage the arm 254 of the knife controlling lever 256 to withdraw the movable blade from the end of the ticket guide, so that when feeding takes place, the ticket strip may move freely outwardly.

Very shortly after the beginning of the cycle, the cam 122 will clear the arm 136 so that the yoke 128 may rock in a clockwise direction as viewed in Figure 4. The movement of the yoke under the action of the spring 314 of the printing unit will take place to the extent determined by engagement of one of its steps with the end 124 of the lever 60, which has been rocked. As a result, the arm 326 of the printing unit, which is connected to the rack 320, is permitted to move some predetermined distance which will, in the present case, be sufficient to move the three "4's" of the member 298 into printing position behind the inked ribbon. As this movement takes place, the pin 330 will be released by arm 326 serving accordingly to rock shaft 334 to retract pawl 338. Later in the cycle of operation this action is reversed, and consequently the pawl 338 will impart a step to the inked ribbon to advance it. The advancing steps, as will be evident, will be of different lengths, depending on the number of sub-tickets issued, but since all that is required is movement of the ribbon, the extent in each operation being immaterial, no fine adjustments of this mechanism for length of feed are necessary.

The printing member 298 having been set up, as just described, the printing action may occur. This is effected by the action of cam 266 on follower roller 267 to press the platen 282 against the ticket strip forcing it against the inked ribbon backed up by the ticket including, of course, the dating or other slugs indicated at 360. Accordingly, in the present instance, the portion of the ticket strip which will form the first sub-ticket is impressed with the date, while the next three sub-tickets will be impressed with the number "4." As will be evident from the shape of the cam 266, the platen is substantially immediately released under the action of the spring 274. Feeding of the ticket strip may accordingly commence.

Feeding begins when the follower portion 108 of the actuated lever 60 drops off the end of its corresponding cam 118. In the present instance, in the issue of four sub-tickets, the cam with which the actuated lever 60 will be engaged will be the second in order of increasing length. When such dropping off of the follower portion 108 occurs, the lever 60 will move sufficiently under the action of its strong spring 106 to rock the feed disc 150 into tight pinching engagement with the ticket against the action of its weaker retracting spring 140. The ticket strip will, therefore, begin its movement.

Just prior to this event, the cam 212 will have engaged roller 216 on lever 210, thereby effecting the retraction of roller 204 from the notch of the star wheel 192. As a result, the pinwheel 188 is free to move with the ticket strip and will, in turn, rotate the gear 200 of the counter 202 to cause it to record the number of sub-tickets issued.

The feed of the ticket strip continues until the follower 108 of the actuated lever 60 rides up the rise 116 of its cam 110, thereby releasing the disc 150 from its engagement with the strip. The total feeding movement imparted to the ticket strip is desirably slightly in excess of the amount

necessary to bring the proper cutting line in alignment with the knives. As soon as the feeding action ends, the roller **216** is released by the cam **212** to permit the roller **204** to drop into the notch of the star wheel **192**, then presented to it. It will be evident that a camming action of the roller on the teeth of the star wheel can occur, and this serves to move slightly in a forward or rearward direction the star wheel so as to adjust the ticket strip to align a proper portion thereof, preferably one of the openings A, with the knives. The blade **191** does not interfere with this action, being suitably located with respect to the pins. Its function is solely to prevent retrograde rotation of the pinwheel which might result in the ticket strip's dropping out of the guide after the star wheel is released by the roller **204**.

It will be evident that the adjustment afforded by the screw **234** thus insures accurate alignment of the ticket strip with the knives. Slight non-uniformities of manufacture make it desirable to provide this adjustment, though when once set no further adjustment is generally necessary. The adjustment is, of course, essentially that of the lever **206** about the pivot **208**.

By the above operations the ticket strip will have been brought into position for cutting. The cutting action is effected by engagement of the roller **248** with the arm **252** of the knife lever **256**. The ticket is thereby delivered to the patron through the usual slot in the top plate of the machine.

In the meanwhile, the parts which have been displaced are being brought back to their initial positions. Arm **136** of the yoke **128** will be rocked by cam **120** to effect the restoration of the yoke and with it of the lever **326** and the printing element **298**, which will be returned slightly beyond the printing position for the "5's." The feeding of the inked ribbon takes place in this action. Near the end of the cycle of operation, the cam **100** will engage the arm **98** of the yoke **62**. Accordingly, the lever **48**, which was rocked, will be forcibly moved to its original position, the cam **56** acting upon the end **58** of the displaced lever **60** to move it outwardly to a position to engage within the notch **54**. As the yoke **62** rocks, the portion **66** will move in front of the edge **68** of the lever **70**, which, just prior to this time, will have been rocked rearwardly by the action of cam **176** on the upper arm of the double-armed lever **156**. While this motion of the lever **70** will release the switch controlling plate **74**, the switch will remain closed due to the action of the lever **182**.

The positioning of **156** by cam **176** results in bringing the hook **160** into the path of pin **162** of the segment **164** where it remains when cam **176** clears arm **174** because of engagement of **70** with detent **66**. As the pin **162** is thus arrested, the segment **164** is released from mesh with the driving pinion, and accordingly the operating parts of the unit stop. Just as the gear **172** reaches its final position, the lever **182** drops off the cam **178**, thereby releasing the switch plate **74** to permit the switch to open.

The restoration of the keys may have taken place by their release immediately after the operation of the machine began. However, even if they were continuously held down, the machine would not operate through another cycle. This result is due to the fact that immediately after the levers **20** are lowered sufficiently to initiate action of the machine by releasing lever **70** and one of the levers **60**, their upper ends **24** will engage steps **26**, swinging them forwardly to disengage their shoulders **46** from lever ends **50**. Accordingly, further and quite unavoidable depression of any one of the keys will result in the swinging of the shoulder **45** into such position as not to be engageable by a lever **48** when the latter is restored to its initial position. Subsequent operation of the machine cannot, therefore, occur until the key is released and subsequently depressed.

Locking of the machine is simply effected by the use of the lever **36**, which is so rocked as to move the plate **30** forwardly. By this action, the steps of the plate are caused to rock the levers **20** to such position that upon their depression they will fail to engage the levers **48**. If after such locking any key is depressed, the result will be the latching down of such depressed key by engagement of its shoulder **31** beneath the corresponding step **32** of plate **30**. This is desirable not only to indicate that the machine is in locked condition, but to prevent tampering with the keys.

In the event the ticket strip runs out, the unit is immediately locked by the movement of arm **88** into the path of the arm **86** of the yoke **62**. The lever **92** engages the ticket strip sufficiently below the knives to insure that there is always sufficient present to permit the issue of the maximum number of tickets.

In the issue of a ticket containing any different number of sub-tickets, the action is essentially the same. In case only one sub-ticket is issued, however, the yoke **128** is not arrested by any of the levers **124**, and accordingly may move until the pin **134** strikes the end of the slot through which it passes in the plate **6**. This movement is sufficient to cause the printing element **298** to move beyond the printing position of the "2." Accordingly, the sole printing that takes place is that due to the slugs **360**.

It is of course obvious that the spindle **298** may be provided with a greater or less number of type carrying zones or bands **300**, **302**, **304** and **306**, in other words, for a five unit area ticket, a type zone such as **300** may be provided for each of the five ticket unit areas instead of merely for four, or on the other hand, the spindle **298** may be provided with only one, two or three type carrying zones or bands for one, two or three of the ticket unit areas of a ticket composed of five ticket unit areas, without departing from the spirit of the invention.

It is of course also obvious that instead of numeral type, the type carrying zones or bands such as the zones **300**, **302**, **304** and **306** may have other indicia type such as that relating to transportation, industry or distribution, without departing from the general spirit of the invention. As an instance, instead of numeral type, the spindle **298** may be provided with three type zones having type indicative of three different classes of passengers such as "master," "servant" and "animal pet." In such case the type of the particular zone might preferably be rotatably mounted on the spindle **298** so that a ticket could be produced either containing a single ticket unit area marked with an indicia indicative of "master"; or a two unit area ticket issued in which one unit area is marked with indicia indicative of "master," and the other unit area marked with indicia indicative of "servant"; or on the other hand, a three unit ticket issued with one unit area marked with indicia indicative of "master," a second unit area marked with indicia indicative of "servant," and a third unit area marked with indicia indicative

of "animal pet." When the type bands are rotatably or adjustably mounted on the spindle 298, various combinations of the aforesaid may readily be produced for printing tickets of one, two, or more, unit areas.

It is of course obvious that instead of the date type unit 360, independent of the spindle 298, a removable slug having supplemental indicia could be mounted on the spindle 298 without departing from the general spirit of the invention.

It is also believed obvious that it is immaterial whether the printing operation is effected by causing the platen 262 and ticket strip to be moved toward the type on the spindle 298 or to effect this impression with the ticket strip stationary and the type carrier movable, so far as concerns the scope of the present invention.

I claim:

1. A ticket dispensing machine having a feed mechanism for advancing a length of ticket strip corresponding to a plurality of unit areas in turn corresponding to the number of patrons to be admitted on the ticket, means for controlling the feed mechanism according to the length of ticket to be issued, selecting means for determining the actuation of the controlling means including independent keys, printing mechanism including a spindle having a plurality of type carrying bands thereon spaced apart to register with a succession of unit areas on the ticket strip, a bracket for rotatably mounting said spindle, means operatively associating said spindle with said selecting means for rotating said spindle to position the desired type on said bands into printing position for a predetermined number of unit areas of the ticket strip, and means operatively associated with said spindle to effect an impression of the type selected simultaneously on the selected succession of unit areas of the ticket strip and operatively associating said controlling means with said type impressing means to actuate said feeding mechanism after having effected a type impression to discharge a ticket composed of the selected number of unit areas.

2. A ticket dispensing machine having a feed mechanism for advancing a length of ticket strip corresponding to a plurality of unit areas in turn corresponding to the number of patrons to be admitted on the ticket, means for controlling said feed mechanism according to the length of ticket to be issued, selecting means for determining the actuation of the controlling means including independent keys, printing mechanism including a spindle having a plurality of type carrying bands thereon spaced apart to register with a succession of unit areas on the ticket strip, a bracket for pivotally mounting said spindle, means operatively associating said spindle with said selecting means for rotating said spindle to position the desired type on said bands into printing position, the successive bands including in alinement a highest numeral type, each band but one including in alinement the next highest numeral type and so on to the smallest numeral type carried by the bands, means for effecting an impression of like numeral type of said bands on a succession of unit areas, the total number of unit areas corresponding to the numeral type selected, means for operatively associating said controlling means with said impression effecting means to initiate the discharge of the succession of unit areas of the ticket strip so selected, and means for thereupon severing the succession of unit areas so discharged as a ticket from the original ticket strip.

3. A ticket dispensing machine having a printing mechanism including a spindle having a plurality of bands of type spaced from one another axially to register with a succession of unit areas of a ticket strip, these several bands having numeral type, the highest numeral type of which are in alinement with one another, the several bands but one having their next highest numeral type in alinement with one another and so on, leaving one band with the numeral type on all of the several bands and in addition the lowest numeral type in a column by itself, the type of each band terminating in a cylindrical surface so that the like numeral type of the several bands may be impressed simultaneously on a succession of unit areas of a ticket strip, a bracket for rotatably mounting said spindle, a ticket strip feeding means, actuating mechanism for successively rotating the spindle to position the type selected, thereupon effecting an impression, and next effecting a feeding of the strip, and selecting mechanism operatively associated with said control mechanism for selecting type on the spindle and determining the distance of feed of the strip to correspond.

4. In a ticket dispensing machine, the combination of a feeding mechanism for feeding a succession of unit areas of a ticket strip corresponding to the number of persons to be admitted on a predetermined ticket, a printing mechanism for printing on a plurality of said unit areas a numeral corresponding to the number of unit areas constituting the ticket being issued, and selecting mechanism including independent keys operatively associated with said feeding mechanism and said printing mechanism, each key determining the feed of a particular number of successive unit areas and the printing of a corresponding numeral on the ticket so issued, the printing mechanism including a spindle having a plurality of bands spaced axially from one another, each band having formed thereon one or more numeral type, the impression faces of each of which type is disposed in a common cylindrical surface.

5. In a ticket dispensing machine, the combination of a feed mechanism for feeding a succession of unit areas of a ticket strip corresponding to the number of persons to be admitted on a predetermined ticket, a printing mechanism for printing on a plurality of said unit areas a numeral corresponding to the number of unit areas constituting the ticket being issued, and selecting mechanism including independent keys operatively associated with said feeding mechanism and said printing mechanism, each key determining the feed of a particular number of successive unit areas and the printing of a corresponding numeral on the ticket so issued, the printing mechanism including a spindle having a plurality of bands spaced axially from one another, each band having formed thereon one or more numeral type, the impression faces of each of which type is disposed in a common cylindrical surface; with one band having only the highest numeral type, a second band having only the highest numeral type and the next lower numeral type with the highest numeral type in axial alinement with the highest numeral type on the first band named, the third band having the highest numeral type in alinement with the highest numeral type of the first two bands, the next lower numeral type in alinement with the next lower numeral type on the said second band and a second lower numeral type, and other bands as required having the number of the numeral type

increasing the denomination of the numeral type decreasing in the order named.

6. In a ticket dispensing machine, the combination of a feed mechanism for a ticket strip having a succession of ticket unit areas, a printing mechanism including a plurality of type zones positioned to register with a succession of ticket unit areas, each type zone including indicia in alinement with any like indicia on other zones, control mechanism operatively associated with said printing mechanism to select one or a plurality of like indicia into printing position and also to position the feed mechanism to correspond to the indicia selected, and actuating means for effecting an impression of the indicia selected while the ticket strip is at rest and thereupon advancing the ticket strip to dispense a number of ticket unit areas corresponding to the feeding position and indicia selected.

7. In a ticket dispensing machine, the combination of a feed mechanism for a ticket strip having a succession of ticket unit areas, a printing mechanism including a plurality of type zones positioned to register with a succession of ticket unit areas, each type zone including indicia in alinement with any like indicia on other zones, control mechanism operatively associated with said printing mechanism to select one or a plurality of like indicia into printing position and also to position the feed mechanism to correspond to the indicia selected, and actuating means for simultaneously effecting an impression of all of the indicia selected and thereupon advancing the ticket strip to dispense a number of ticket unit areas corresponding to the feed position and indicia selected.

8. In a ticket dispensing machine, the combination of a feed mechanism for a ticket strip having a succession of ticket unit areas, a printing mechanism including a plurality of type zones positioned to register with a succession of ticket unit areas, each type zone including indicia in alinement with any like indicia on other zones, control mechanism operatively associated with said printing mechanism to select one or a plurality of like indicia into printing position and also to position the feed mechanism to correspond to the indicia selected, a platen for supporting the advance portion of the ticket strip in printing position relative to said printing mechanism, and means for actuating said platen and ticket strip into engagement with said printing mechanism to effect an impression of the indicia selected and thereupon advancing the ticket strip to dispense a number of ticket unit areas corresponding to the feeding position and indicia selected.

9. In a ticket dispensing machine, the combination of a feed mechanism for a ticket strip having a succession of ticket unit areas, a printing mechanism including a plurality of type zones positioned to register with a succession of ticket unit areas, each type zone including indicia in alinement with associated indicia on other zones, control mechanism operatively associated with said printing mechanism to select one or a plurality of associated indicia into printing position and also to position the feed mechanism to correspond to the indicia selected, and actuating means for effecting an impression of the indicia selected while the ticket strip is at rest and thereupon advancing the ticket strip to dispense a number of ticket unit areas corresponding to the feeding position and indicia selected.

10. In a ticket dispensing machine, the combination of a feed mechanism for a ticket strip having a succession of ticket unit areas, a printing mechanism including a plurality of type zones positioned to register with a succession of ticket unit areas, each type zone including indicia in alinement with associated indicia on other zones, control mechanism operatively associated with said printing mechanism to select one or a plurality of associated indicia into printing position and also to position the feed mechanism to correspond to the indicia selected, a platen for supporting the advance portion of the ticket strip in printing position relative to said printing mechanism, and means for actuating said platen and ticket strip into engagement with said printing mechanism to effect an impression of the indicia selected and thereupon advancing the ticket strip to dispense a number of ticket unit areas corresponding to the feeding position and indicia selected.

11. In a ticket dispensing machine, the combination of a feed mechanism for a ticket strip having a succession of ticket unit areas, a printing mechanism including a rotatably mounted spindle having a plurality of type zones positioned to register with a succession of ticket unit areas, each type zone including indicia in alinement with associated indicia on other zones, control mechanism operatively associated with said printing mechanism to rotate said spindle to select one or a plurality of associated indicia into printing position and also to position the feed mechanism to correspond to the indicia selected, and actuating means for effecting an impression of the indicia selected while the ticket strip is at rest and thereupon advancing the ticket strip to dispense a number of ticket unit areas corresponding to the feeding position and indicia selected.

12. A ticket dispensing machine having a feed mechanism for dispensing a length of ticket strip corresponding to a plurality of unit areas in turn corresponding to the number of patrons to be admitted on the ticket, a printing mechanism comprising a plurality of printing indicia each corresponding to a different number of unit areas and corresponding in position to a plurality of successive unit areas of the length of ticket strip, selecting means for simultaneously setting the feed mechanism to dispense a predetermined number of unit areas and for setting the printing mechanism to print indicia corresponding to the number of unit areas to be dispensed, and means for actuating said printing mechanism and said feed mechanism so that said printing mechanism may impress the desired indicia on the ticket strip at one time and only thereupon feeding motion will be imparted to the ticket strip.

13. A ticket dispensing machine having a feed mechanism for dispensing a length of ticket strip corresponding to a plurality of unit areas in turn corresponding to the number of patrons to be admitted on the ticket, a printing mechanism comprising a plurality of printing indicia each corresponding to a different number of unit areas and opposed in position along the strip to different unit areas of the length of ticket strip, selecting means for simultaneously setting the feed mechanism to dispense a predetermined number of unit areas and setting the printing mechanism to print indicia corresponding to the number of unit areas to be dispensed, and means for successively actuating said printing mechanism and

said feed mechanism so that said printing mechanism may impress the desired indicia on the ticket strip at one time and only thereupon feeding motion will be imparted to the ticket strip.

14. A ticket dispensing machine having a feed mechanism for dispensing a length of ticket strip corresponding to a plurality of unit areas in turn corresponding to the number of patrons to be admitted on the ticket, a printing mechanism comprising a plurality of printing indicia each corresponding to a different number of unit areas and opposed in position along the strip to different unit areas of the length of ticket strip, selecting means for simultaneously setting the feed mechanism to dispense a predetermined number of unit areas and setting the printing mechanism to print an indicia corresponding to the number of unit areas to be dispensed, and means for actuating the printing and feed mechanism to effect issuance of the selected number of unit areas of the ticket strip bearing corresponding indicia thereon, said last named means effecting the printing while the ticket strip is stationary.

15. A ticket dispensing machine having a feed mechanism for dispensing a length of ticket strip corresponding to a plurality of unit areas in turn corresponding to the number of patrons to be admitted on the ticket, a printing mechanism comprising a plurality of printing indicia each corresponding to a different number of unit areas, said indicia being opposed in position along the strip to different unit areas of the length of ticket strip, selecting means for simultaneously setting the feed mechanism to dispense a predetermined number of unit areas and for setting the printing mechanism to print indicia corresponding to the number of unit areas to be dispensed, and means for actuating said printing mechanism and said feed mechanism.

16. A ticket dispensing machine comprising means for guiding a ticket strip, means for feeding the ticket strip variable distances along said guiding means to issue different numbers of unit areas thereof, means controlling said feeding means to determine the extent of feed, and marking means selectively controlled by said feed controlling means and comprising indicia arranged to mark different unit areas when they occupy their original positions prior to the beginning of feed, said marking means marking on at least the trailing unit area of the dispensed portion of said strip data varying with the extent of feed in a cycle of operation.

17. A ticket dispensing machine comprising means for guiding a ticket strip, means for severing portions from said strip, means for feeding the ticket strip variable distances along said guiding means to issue different numbers of unit areas thereof, means controlling said feeding means to determine the extent of feed and the length of strip severed, and marking means selectively controlled by said feed controlling means and comprising indicia arranged to mark different unit areas when they occupy their original positions prior to the beginning of feed, said marking means marking on at least the trailing unit area of the dispensed portion of said strip data varying with the extent of feed in a cycle of operation.

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