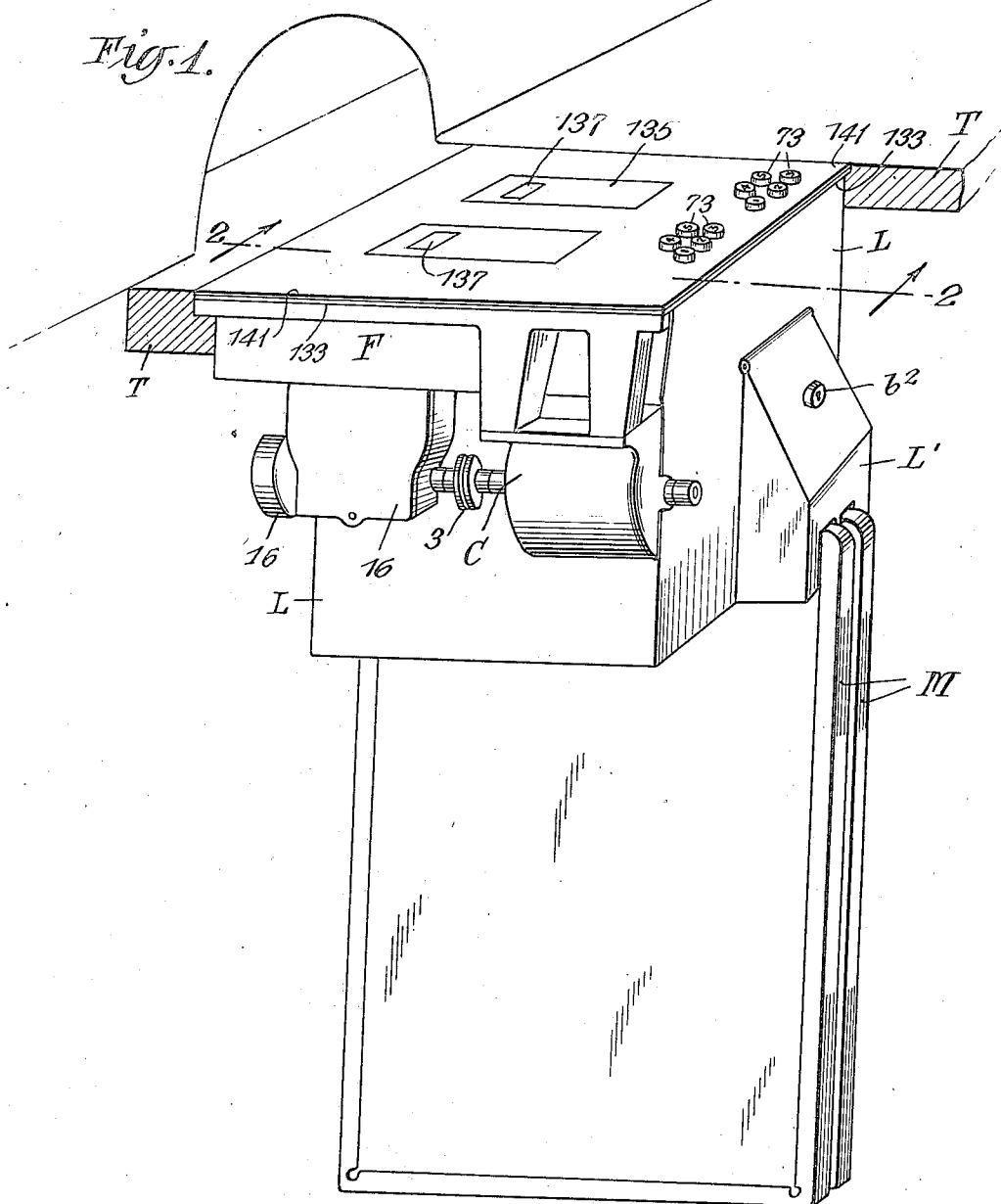


R. H. HELSEL.
TICKET ISSUING MACHINE.
APPLICATION FILED JULY 26, 1918.

Fig. 1.



Harold Crocker

INVENTOR
R. H. Helsel
BY
C. B. Billings
his ATTORNEY

R. H. HELSEL.
TICKET ISSUING MACHINE.
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1,304,977.

Patented May 27, 1919.

9 SHEETS—SHEET 3.

Fig. 3.

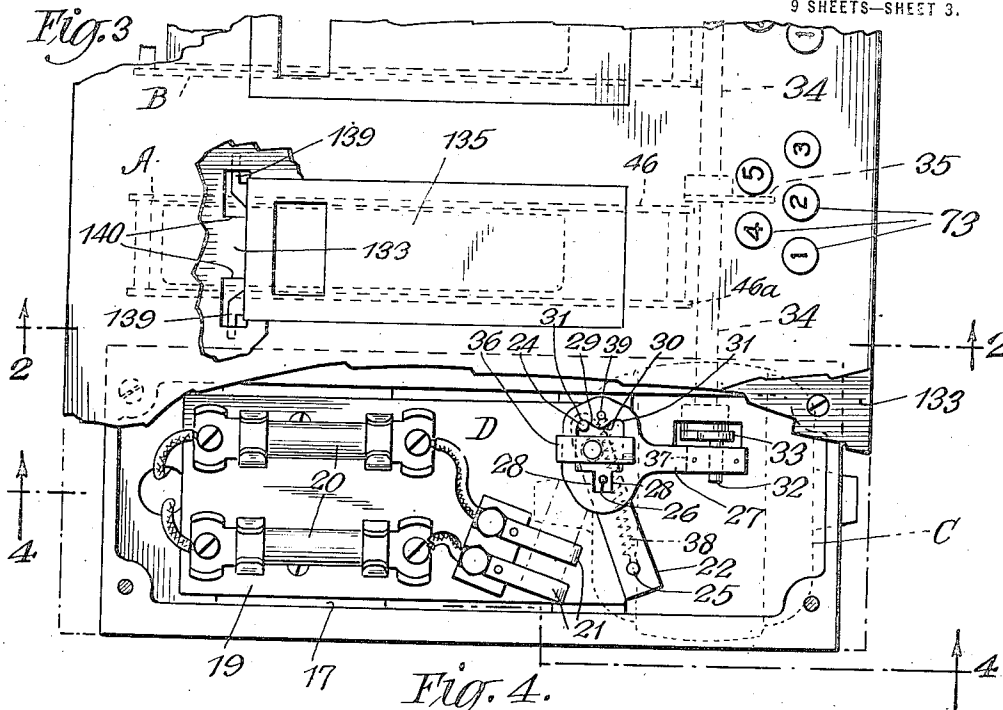


Fig. 4.

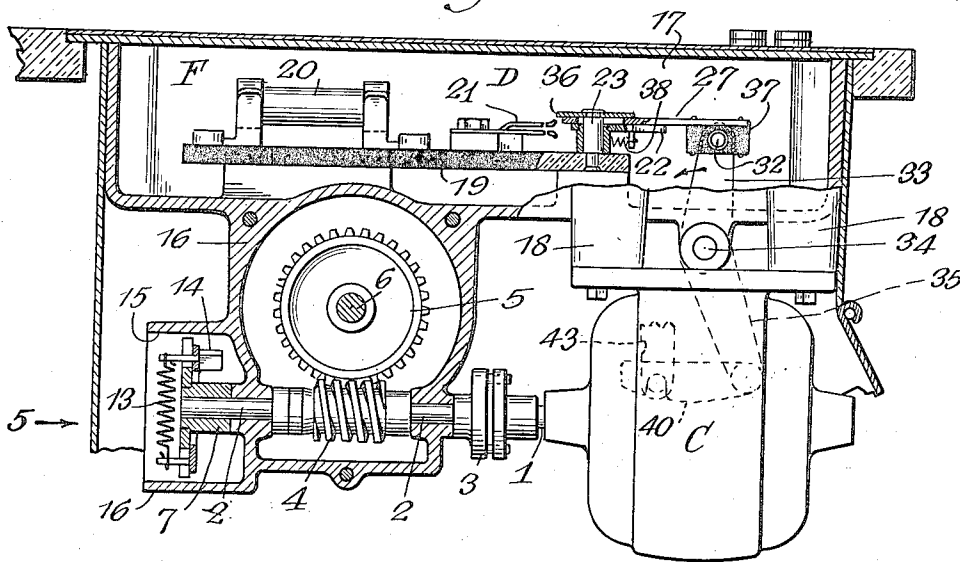
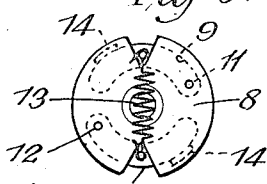


Fig. 5.



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INVENTOR

R. H. Helsel

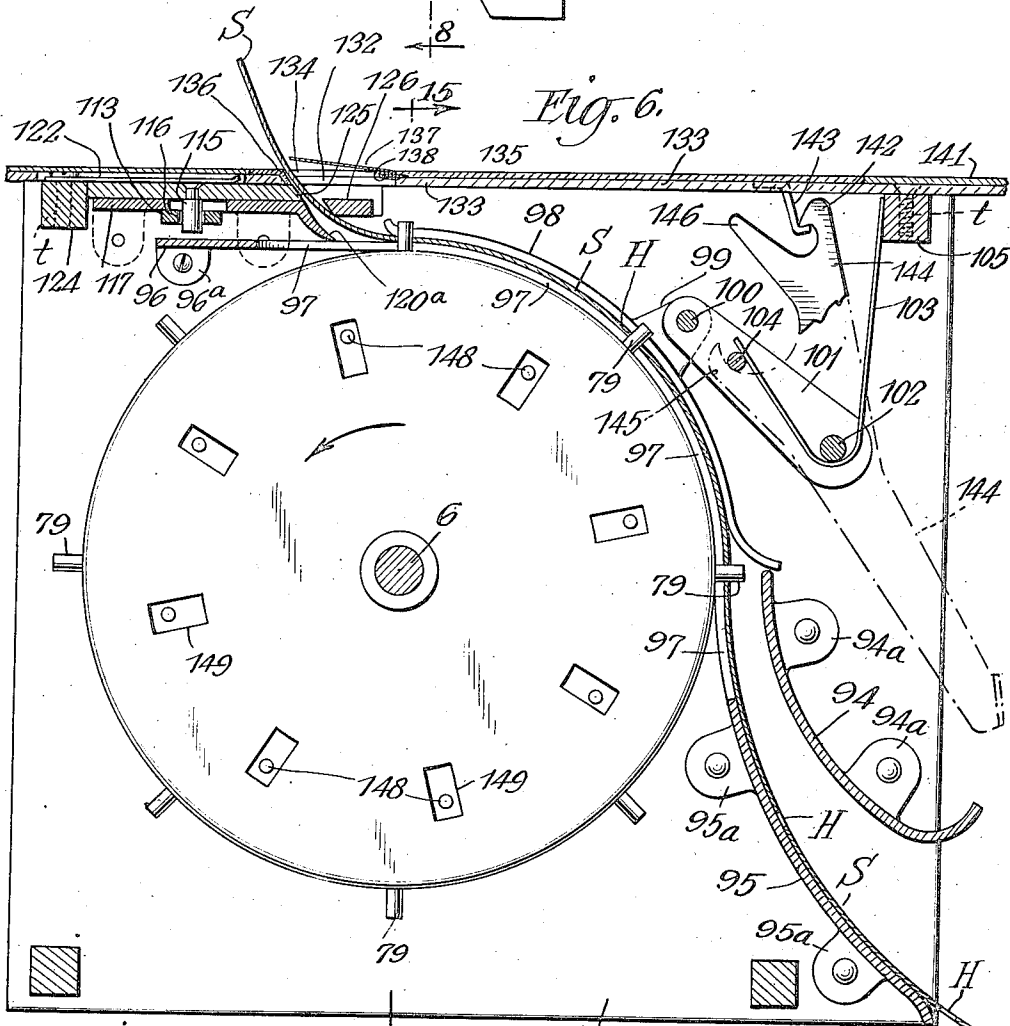
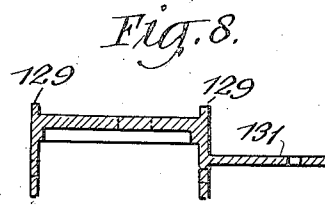
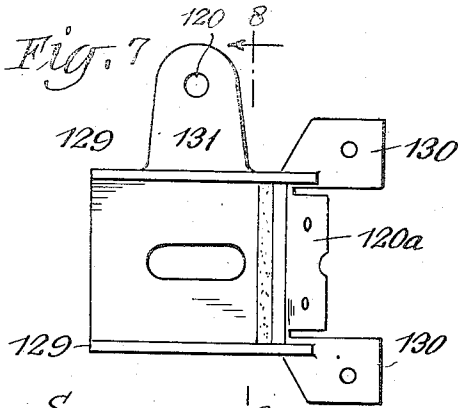
BY

Comelia C. Pillsbury
ATTORNEY

1,304,977.

R. H. HELSEL,
TICKET ISSUING MACHINE.
APPLICATION FILED JULY 26, 1918.

Patented May 27, 1919.
9 SHEETS—SHEET 4.



Handwritten signature: Harold Crocker

INVENTOR
R. H. Helsel
Counselors C. Pillsbury
his ATTORNEY

1,304,977.

9 SHEETS—SHEET 5.



INVENTOR

R. H. Helsel

B1

BY
Crestina C. Billings
her ATTORNEY

ATTORNEY

R. H. HELSEL.
TICKET ISSUING MACHINE.
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1,304,977.

Patented May 27, 1919.

9 SHEETS—SHEET 6.

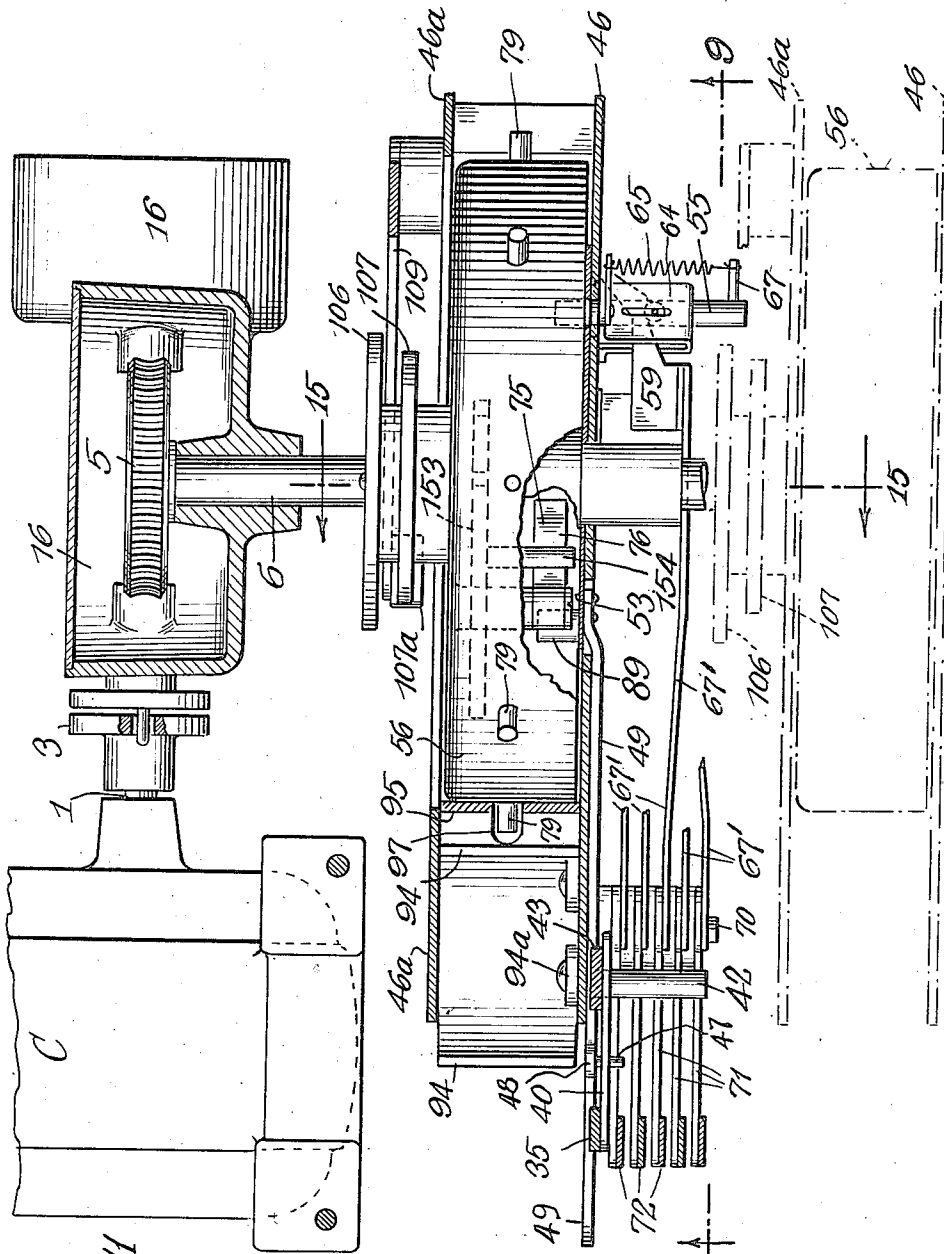


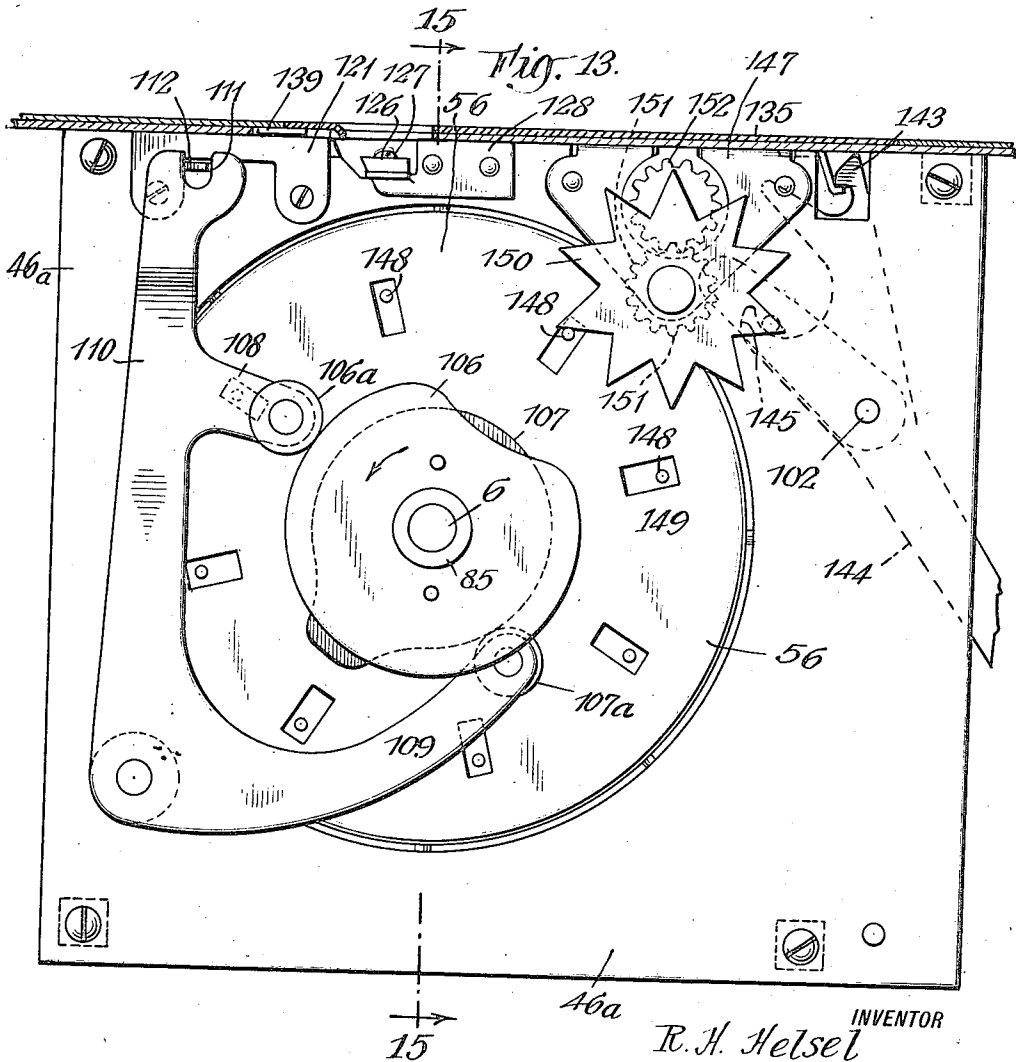
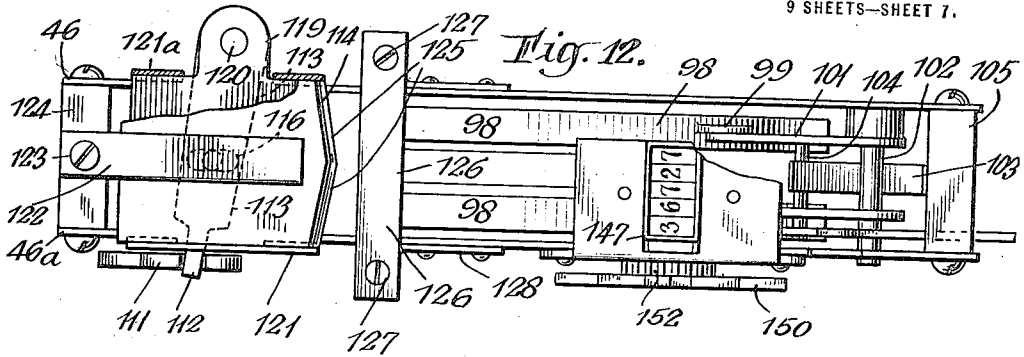
Fig. 11

drawn to show

INVENTOR
R. H. Helsel
BY
C. B. Bittling
his ATTORNEY

1,304,977.

9 SHEETS—SHEET 7.



Harold Crocheon

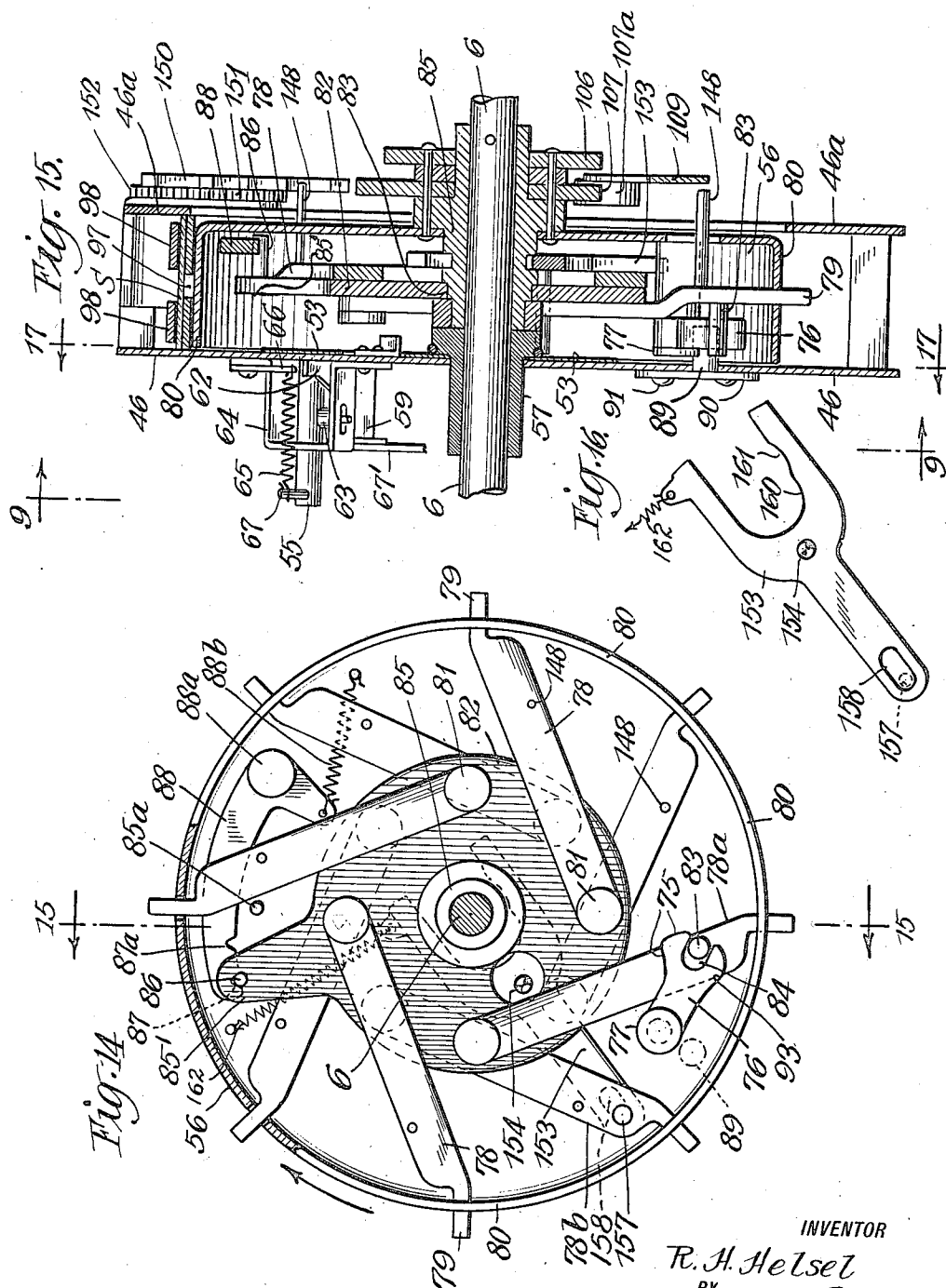
INVENTOR
R. H. Helsel
BY
Cousins C. Billings
his ATTORNEY

1,304,977.

R. H. HELSEL.
TICKET ISSUING MACHINE.
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9 SHEETS—SHEET 8.

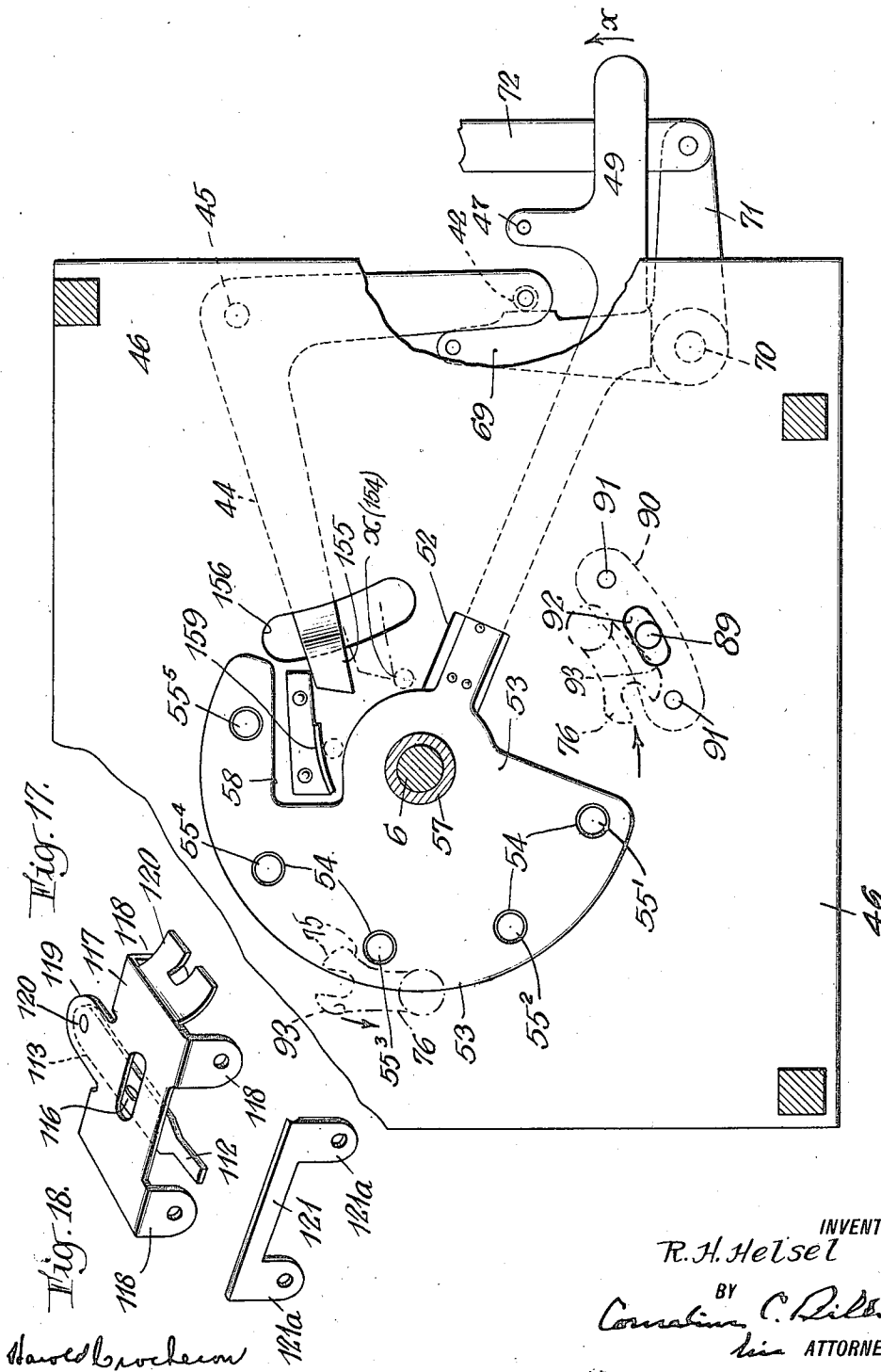


stamped on rockers

INVENTOR
R. H. Helsel
BY
C. C. Billing
ATTORNEY

1,304,977.

Patented May 27, 1919.
9 SHEETS—SHEET 9.



UNITED STATES PATENT OFFICE.

REUBEN H. HELSEL, OF LONG ISLAND CITY, NEW YORK, ASSIGNOR TO THE AUTOMATIC TICKET SELLING AND CASH REGISTER COMPANY, OF NEW YORK, N. Y., A CORPORATION.

TICKET-ISSUING MACHINE.

1,304,977.

Specification of Letters Patent.

Patented May 27, 1919.

Application filed July 26, 1918. Serial No. 246,891.

To all whom it may concern:

Be it known that I, REUBEN H. HELSEL, a citizen of the United States, and a resident of Long Island City, Queens county, New York, have invented certain new and useful Improvements in Ticket-Issuing Machines, of which the following is a specification.

This invention relates to a ticket issuing machine in which the ticket mechanism is built in separate units, any number of which may be assembled adjacent to one another for issuing tickets of either the same or different denominations, each unit being capable of issuing in the particular embodiment of the invention illustrated either one, two, three, four or five tickets according to the particular selective key depressed by the operator. A single motor and switch are employed to control the operation of the several ticket issuing units in a manner to be hereinafter described.

One of the objects of the invention is to construct a machine capable of delivering various numbers of tickets of different denominations as selected by an operator.

Another object is to build each ticket issuing unit identical so that the cost of manufacture will be kept down.

Another object is to provide ticket issuing units which are so designed that part of its mechanism may operate without issuing tickets while one of its companion units operates to issue tickets.

A further object is to provide a ticket issuing rotor provided with means whereby different portions of its revolution may be utilized to issue various numbers of tickets and which is under the selective control of an operator.

A further object is to provide means whereby the selective keys may be depressed to a position flush with the top plate of the ticket issuing machine and held in such a position to render inoperative the particular unit that they control and also provide a flush top for that portion of the machine to facilitate the passing of money over the top of the machine in making change.

Another object is to so design the various parts of each ticket issuing unit in such a manner that practically all of its pieces can be punched out of sheet metal thereby

making it possible to build the machines on the interchangeable plan, greatly reducing the cost of manufacture.

Another object is to combine and interrelate the various elements and sub-combinations of parts to be hereinafter described in such a manner as to effectively perform the various functions set forth.

The invention is illustrated in the accompanying drawings in which similar characters refer to similar parts in the several views.

Figure 1 is a perspective view of a ticket issuing machine employing two ticket issuing units.

Fig. 2 is a vertical sectional view illustrating one of the ticket issuing units in side elevation and showing the magazine for holding the reel of tickets which supplies the ticket issuing unit shown, the view being a section substantially on line 2—2 of Figs. 1 and 3.

Fig. 2^a is a detail section on line 2^a—2^a of Fig. 2 illustrating the supporting means for ticket reel magazines.

Fig. 3 is a plan view partly broken away illustrating the general arrangement of two adjacent ticket issuing units and the common switch for controlling the operation of a common motor which is adapted to drive any number of adjacent units.

Fig. 4 is a vertical section on line 4—4 of Fig. 3 illustrating the motor drive and switch control.

Fig. 5 is a detail view of the motor governor, being a view from the left of a portion of Fig. 4.

Fig. 6 is a central longitudinal section through one of the ticket issuing units with the feed rotor shown in elevation.

Figs. 7 and 8 are detail views of an alternative construction of knife mounting.

Fig. 9 is a side elevation of one of the ticket issuing units, being a view on line 9—9 of Fig. 11, illustrating the opposite side from that shown in Fig. 2.

Fig. 10 is a detail section illustrating the means for operating one of the knock-out pins, same being a view on line 10—10 of Fig. 9.

Fig. 11 is a detail view, partly in section and partly in plan, showing the drive from

the motor to the first ticket issuing unit and showing an adjacent unit indicated in broken lines.

Fig. 12 is a plan view of a single ticket issuing unit with certain of the parts which would appear outside of the frame plates omitted.

Fig. 13 is a side elevation of the part shown in Fig. 12 illustrating principally the knife actuating mechanism and the register.

Fig. 14 is a detail view of the "feed rotor," being viewed from the left of Fig. 15.

Fig. 15 is a vertical transverse section through one of the ticket issuing units, being a view on the line 15—15 of Figs. 6, 11, 9 and 13.

Fig. 16 is a detail view of a resetting member carrying a pin which acts on the mechanism for resetting the switch and raising the selective keys.

Fig. 17 is a detail view illustrating a mechanism for resetting the switch and means whereby the knock-out pins may be rendered inoperative.

Fig. 18 is a view illustrating parts of a knife mechanism as it is manufactured when the parts of the same are punched up from sheet metal.

Referring first to Figs. 1 to 4, in the embodiment of the invention illustrated I have shown two adjacent ticket issuing units A and B adapted to be driven by a single motor C, which receives its current through a control switch D to be hereinafter more fully described. Corresponding with each of the ticket issuing units A and B there is a magazine M adapted to hold a reel of tickets R. While I have herein shown only two ticket issuing units, it is to be understood that any number of units may be employed according to the requirements of the particular business in which the machine is to be used, it having been elected in this particular instance to show a machine for issuing tickets of admittance to motion picture houses in denominations of ten cent and fifteen cent tickets.

Referring to Fig. 4, the armature shaft 1 of the motor C is connected with a shaft 2 by means of a self-aligning coupling 3, and said shaft 2 has secured thereto a worm 4 which drives a worm gear 5 secured to the main shaft 6 common to all of the ticket issuing units. The motor C for driving this machine must necessarily act very quickly and it is capable of developing a powerful starting torque. In practice it has been found desirable to use a governor to secure a drive of uniform operation, and to these ends a governor 7 is employed which is secured to the end of the shaft 2, as illustrated in Figs. 4 and 5. This governor comprises a disk 8 carrying two arms 9 and 10, which are pivoted at 11 and 12 and retracted in-

wardly by a spring 13. Each arm 9 and 10 is formed with a lip 14 which may, if necessary or desirable, be provided with a suitable friction pad. When the motor is started centrifugal action will force the arms 9 and 10 outwardly against the action of the spring 13 and will cause them to bring the lips 14 in contact with the cylindrical wall 15 of the housing 16. The housing 16 is part of the power unit F and this unit contains a chamber 17 for inclosing and supporting the switch D, legs 18, to which the motor is secured, and suitable bearings for the shafts 2 and 6. Within the chamber 17 a slab 19 of suitable insulation is provided for supporting the fuses 20 and the fixed contacts 21 of the switch D. The movable member or switch blade 22 of the switch D is pivoted on a shouldered stud 23, which stud is riveted to the insulated base 19. One end of the switch blade 22 is provided with a pin 24 and the other end with a pin 25, and intermediate the two pins is a third pin 26. The switch blade receives a quick snap motion which is transmitted through a slotted switch plate 27, which has a notch 28 formed therein for co-action with a pin 26 and double inclines 29, having a peak 30 between the two inclines, and valleys 31 at the opposite ends of the inclines.

The slotted switch plate 27 is given a sliding motion by the pin 32 carried by a lever 33 which is secured to a shaft 34, which shaft is rocked by a lever 35 by means to be hereinafter set forth. The plate 27 is guided by a rectangular washer 36 which is secured by the shoulder and the head of the stud 23 in such a manner that it is free to easily slide back and forth by reason of the movement of the lever 33 and also laterally by reason of the inclined surfaces 29 formed therein. The plate 27 has secured to its underside a fiber block 37 which is provided with an aperture of sufficient size to permit a slight transverse movement of the plate in operation. When the shaft 34 is rocked in the direction of the arrow, the plate 27 will be moved toward the left by a lever 33 which action will cause the notch 28 to engage the pin 26 carried by the switch blade and a further movement will rock the switch blade to its intermediate position, at the same time causing the pin 24 to ride up the incline 29 toward the peak 30 formed in the plate 27. As the switch blade 22 passes its dead center the spring 38 will cause the blade to quickly snap into engagement with the two fixed blades 21 thereby closing the motor circuit, it being understood that the dimensions of the slot 28 are such as to allow sufficient lost motion to permit the spring 38 to snap the switch blade 22 so that it will move faster than it would be moved by the mere mechanical co-action between the plate 27 and the pin 26 as actuated by the rocking

lever 33. One end of the spring 38 is secured to the pin 25 on the switch blade and the opposite end is secured to a pin 39 projecting from the underside of the slotted switch plate 27. The mechanism provides means whereby the motor circuit is quickly made and broken to prevent arcing, it being understood that the switch may be opened in a manner similar to that described when the shaft 34 and arm 33 are moved in the opposite direction.

The above described mechanism, namely, the motor drive and control switch are all carried either within or by the casting F and are herein collectively termed the power unit.

One power unit is capable of driving a number of individual ticket issuing units which are connected with the power unit in a manner to be hereinafter described.

Referring to Figs. 9 and 11, each ticket issuing unit is provided with an arm 35 as above described, and is capable of rocking the shaft 34 to operate the switch in the above described manner, and each arm 35 is connected by means of a latch 40 having a notch 41 engaging a universal bar 42 secured to an arm 43 of a bell crank lever 44, which is pivoted at 45 to a side plate 46 of the ticket issuing unit. When necessary or desirable any unit may be rendered inoperative by raising the latch 40 so that the notch 41 therein will be disengaged from the universal bar 42, and in such raised position the arm 35 will be capable of rocking back and forth without affecting the unit with which it is normally associated. This latch 40 is raised by means of a pin 47 carried by an ear 48 of a lever 49 which lever is raised when it is desired to render one of the ticket issuing units inoperative. The lever 49 is also provided with a pin 50, which coöperates with depressions in an impositive spring lock 51 secured to the side plate 46, whereby the said lever may be held in position to either render the unit operative or inoperative as desired. The lever 49 as best shown in Figs. 17, 11 and 9, extends through an opening 52 in the side plate 46 and has riveted or otherwise secured thereto a thin semi-circular plate 53 provided with a number of openings 54, which, when the unit is in operative position, are in register with the knock-out pins 55¹, 55², 55³, 55⁴, 55⁵, which pins control the number of tickets to be fed by the rotor 56. The lever 49 and its connected plate 53 are movable through an arc concentric with the main shaft 6, the said plate 53 being pivoted on a hub 57 which is rigidly secured to the side plate 46. The plate 53 is cut away, as shown at 58 in Fig. 17, to prevent interference with and permit of securing a cam plate to be hereinafter described to the side plate 46 of a unit. When the lever 49 is moved in the direction of the

arrow X in Fig. 17, the apertures 54 will be moved out of register with the pins 55¹, 55², 55³, 55⁴, 55⁵ to prevent the inward movement or travel of the same, as will be presently described. The pins 55¹, 55², 55³, 55⁴, 55⁵ control the number of tickets fed by the rotor 56 and they are each actuated as shown in Figs. 9, 10, 11 and 15 by means of a slidable cam plate 59 having a notch 60, an inclined surface 61 and a straight portion 62, as clearly shown in Fig. 10, which coöperate with rollers 63 carried by the knock-out pins 55. These knock-out pins are each guided in punched up brackets 64 secured to the side plate 46, and said pins 55 are urged inwardly by a spring 65, one end of which is secured to a spring anchorage 66 secured to the brackets 64 and the other end of which engages a pin 67 carried by the knock-out pin 55. The cams 59 are moved to their different operative positions by means of connecting links 67' to which they are secured, these links being pivotally connected at 68 with the arms 69 of bell cranks loosely pivoted on a stud 70 suitably secured to the side plate 46. The arms 71 of these bell cranks are connected with levers 72, the upper end of which are provided with keys 73. The ticket issuing unit illustrated is designed to issue either one, two, three, four or five tickets as may be selected by the operator. The keys 73 project through suitable apertures in the top plate of the machine and are numbered from one to five to enable the operator to select the desired number of tickets to be issued. There are, therefore, five links 72, bell cranks 71, links 67', cam plates 59 and knock-out pins 55, as shown in Figs. 9 and 11, whereby the number of tickets issued is controlled. Each bell crank 69 is provided with a projection 74 which engages the universal bar 42 with which the latch 40 above described co-acts. It is, therefore, clear, than when any of the keys 73 are depressed the universal bar 42 will rock the bell crank 43 and thereby transmit motion through latch 40 to arm 35 to rock the shaft 34, which will actuate the switch arm 33 to operate the motor switch above described. At the same time the particular link 67' connected to the bell crank 69 will move its cam plate 59 outwardly in the direction of the arrow Y in Figs. 9 and 10, which will permit the knock-out pin 55 selected to move inward through the plate 46 by action of the spring 65, the roller 63 at such time traversing the incline 61 of the cam plate and finally resting on the straight portion 62 thereof. This action will cause the particular knock-out pin 55 selected to project into the dotted position shown in Fig. 10, in which position it is adapted to engage a cam surface 75 (Figs. 14 and 17) of a control dog 76, which dog is pivotally secured by a stud 77 to the casing of the

rotor 56. The rotor 56 is provided with a plurality of feed arms 78, each of which has a rounded end 79 projecting through suitable apertures in the flange 80 of the rotor and adapted to engage with holes H which are formed in the ticket strip S. The inner ends of these arms are pivoted at 81 to a rocking plate 82. One of the arms 78^a is different from the others in that it is provided with a pin 83 which projects into a slot 84 formed in the end of the control dog 76. Inasmuch as all of the arms 78 are pivoted to the rocking plate 82, it follows that when the control dog is rocked to move the arm 78^a all the other arms 78 carried by the plate will be rocked an equal amount.

The rocking plate 82 is rotatably mounted on a cylindrical portion 83 (Fig. 15) of a hub 85 securely fastened to the rotor 46. This hub also forms a mounting for several of the other parts of the rotor to be hereinafter described. The rocking plate 82 has an arm 85' formed thereon, which is provided with a pin 86 adapted to cooperate with notches 87 and 87^a in an impositive lock 88, which is pivoted at 88^a to a stud secured to the shell of the rotor, a spring 88^b acting to impositively hold the plate 82 in its two positions. A stop pin 85^a arranged to be engaged by the arm 85' forms a positive back stop for the rocking plate. When the rocking plate is in the position shown in Fig. 14 the ends 79 project beyond the periphery of the feed rotor 56 and are then in position to feed the ticket strip. When the rocking plate is turned by means of the control dog 76 to such position that its pin 86 engages the notch 87^a in the impositive lock 88, the ends 79 of the arms 78 will be withdrawn inwardly so that the rotor 56 may revolve idly, that is to say, without feeding tickets. The ends 79 are arranged to be knocked outwardly by any one of the knock-out pins 55¹, 55², 55³, 55⁴, 55⁵, which may be selected by coming in contact with the cam surface 75 on the control dog 76, which by reason of the pin and slot connection 83 and 84 will actuate the rocking plate 82 in such direction that the end 79 will project beyond the periphery of the rotor 56 and assume the position shown in Fig. 14, and in a similar manner after the desired number of tickets have been issued the control dog 76 will have traveled through an arcuate path of sufficient length to come into contact with the knock-in pin 89 indicated in Figs. 15 and 17 in full lines and in broken lines in Fig. 14 (as it really would not appear in that figure) said knock-in pin being secured to a plate 90 which is fastened on the outside of the side plate 46 by means of screws 91, the pin projecting through a slot 92 as seen in Fig. 17. The plate 90 is secured to the plate 46 by a pin and slot connection as shown so that the

angular position of the pin 89 may be adjusted relatively to the first knock-out pin 55 to accurately time the operation of the rotor by an actual test of the unit, and when the same is once actually located it may be pinned or otherwise permanently fixed in place, or if desired, the pin 89 may be accurately located by dead reckoning and riveted directly to the side plate 46.

In the operation of delivering tickets I will first describe the manner in which the control dog 76 and knock-out and knock-in pins cooperate to issue the number of tickets corresponding to the particular key 73 depressed.

The radial angular spacing of the pins 55¹, 55², 55³, 55⁴, 55⁵ is equal to the radial angular spacing of the holes H in the ticket strip S and also to the registering ends 79 of the said arms 78. The cycle of the machine is such that approximately only one half of the revolution of the rotor is utilized to select and issue tickets, and the remaining portion of the revolution is utilized to operate and reset the switch and keys, as will be hereinafter described.

Referring to Figs. 17, 9 and 14, the rotor is arranged to be revolved in the direction of the arrows by the shaft 6 from the instant that the motor switch is closed and until the same is opened. In order to close the motor switch it is necessary to depress one of the keys 73, which action also rocks one of the bell cranks 69, thereby actuating its corresponding link 67' and cam plate 59. This action will cause one of the knock-out pins, for example the pin 55³, to be pulled inwardly by its spring 65, thereby bringing it into the path of the control dog 76 so that when the rotor carries said control dog around to the position indicated in the dotted lines in Fig. 17 the camming action of the surface 75 and the pin 55³ will cause the control dog to be rocked outwardly thereby rocking the plate 82 and knocking out the ends 79 of all the arms 78, which ends will pass through registering openings H in the ticket strip S. A further rotation of the rotor will naturally feed the ticket strip as long as the pins 79 are in engagement therewith. Such engagement will exist until the control dog 76 rotates around to such position that another cam surface 93 formed on the outer side of the control dog engages the knock-in pin 89, which will move the control dog inwardly and by reason of the pin and slot connection 83 and 84 cause all the said arms 78 to be withdrawn and thereby break the driving engagement between the rotor and the ticket strip.

The above operation would be repeated for issuing any number of tickets, namely, from one to five inclusive in the embodiment herein illustrated, it being clear that

the number of tickets issued is proportional to the angular spacing between the particular knock-out pin 55 selected, which acts to bring the ticket strip into operative engagement with the rotor, and the knock-in pin 89, which acts to break the engagement between the rotor and the strip. Stated in another way, the peripheral distance measured on the rotor from the radial line passing through the center of the knock-in pin to a radial line passing through the center of the particular knock-out pin selected determines the length of ticket strip to be fed, and as one ticket is equal in length to the peripheral distance measured on the rotor between two radial lines passing through the adjacent knock-out pins, it follows that the length of ticket strip fed will be equal to the distance between the knock-out pin 55 selected and the knock-in pin 89 measured on the periphery of the rotor in the direction of the rotation of the rotor as indicated by the arrow in Fig. 17, it being understood that the ends 79 of the feed arms 78 remain in feeding engagement with the ticket strip only from the time that the control dog 76 engages one of the knock-out pins 55 until the control dog comes into engagement with the knock-in pin 89, thereby withdrawing the ends 79 from feeding engagement with the ticket strip.

The ticket reel R is held in a sheet metal magazine M, one of these magazines being provided for each ticket issuing unit. These magazines are conveniently supported in the manner shown in Fig. 2^a by means of folded strips *m* which are spot welded or otherwise secured to the magazines M. The strips *m* are U-shaped as shown and arranged to be slidably supported on flanges *m*¹ formed in a plate *m*², which is secured to and forms part of the casing C of the machine. This form of support affords a convenient method for sliding the magazine in or out when necessary or desirable.

Referring to Fig. 6, the ticket strip S is fed through a flaring mouth formed in the ticket issuing unit by the curved guide plates 94 and 95, the plates being provided with ears 94^a and 95^a, which are secured by rivets or other suitable means to the side plates of the unit. The guide 94 is of comparatively short length and terminates approximately in line with the horizontal center line of the rotor shaft 6, while the inner guide 95 is considerably longer and embraces the rotor for approximately one quarter of its circumference and terminates at 96 where it is fastened by an ear 96^a to the side plate of the unit. This guide plate 95 is slotted at 97 to permit the passage of the ends 79 of the feed arms. The ticket strip is held in engagement with the guide 95 and also with the ends 79 of the feed arms by means of spring pressed guide shoes 98

which are located on each side of the pins 79 so as to exert an even pressure on the face of the ticket strip as shown in Figs. 12 and 15. These shoes are each provided with an ear 99 which is pivotally connected at 100 with an arm 101 loosely mounted on a rock-shaft 102 and urged in a counter-clockwise direction by a spring 103, one end of which impinges against the pin 104 carried by the arm 101, and the other end against the spacing post 105, which post serves to connect two of the side plates of the unit. The shoes 98 exert by means of the spring 103 a constant gentle pressure on the ticket strip to insure its proper cooperation with the ends 79 of the feed arms carried by the rotor.

A knife is provided for severing the tickets to be issued by the rotor and it is operated from the shaft of the rotor, and its operation is so timed that it cuts off the tickets to be issued at a point in line with the feed holes H in the ticket strip. The mechanism for operating the knife is shown chiefly in Figs. 6, 7, 8, 12 and 13, and comprises a pair of complementary cams 106 and 107 which are secured to the hub 85 of the rotor, which hub is in turn secured to the shaft 6 as shown in Fig. 15. These cams cooperate with rollers 106^a and 107^a mounted on the arms 108 and 109 of the knife operating lever 110. This lever is forked at 111 for engagement with the end 112 of a short lever 113, which acts to reciprocate a knife blade 114 by means of a pin 115 secured to the knife (Fig. 6) cooperating with a slot 116 formed in the lever 113. In one construction I form the guides and supporting mechanism for the knife of metal punchings, as shown in Figs. 6, 9, 12, 13 and 18, while in another form I utilize a die casting, as shown in Figs. 7 and 8. In the form shown in the former figures the supporting bracket for the knife 117 is provided with ears 118 for attachment to the side plates 46 and 46^a of the ticket issuing unit and with an ear 119 to which the pivot 120 for the lever 113 is secured. A curved guide lip 120^a is formed on the bracket to assist in guiding the ticket strip into a cutting position. Separate punchings 121 serve as side guides for the knife, these punchings having ears 121^a which register with the ears 118 of the bracket 117 and are secured to the side plates 46 and 46^a by the same means that secure the bracket 117. The knife is guided on top by a leaf spring 122, which is secured by means of a screw 123 to the spacing post 124 between the side plates 46 and 46^a. The cutting edge 125 of the knife is beveled, as shown in Fig. 6, and in plan is shaped with oppositely inclined forward edges, as shown in Fig. 12, to insure a good shearing action. A stationary ledger blade 126 is secured by screws 127 to brackets 128, which in turn are riveted or otherwise se-

cured to the side plates 46 and 46^a of the unit.

When a die casting is utilized for the knife mounting the flanges 129 serve the same function as the punchings 121 formerly described, and the ears 130 form a mounting for the ledger blade 126 and, therefore, dispense with the necessity of having brackets 128. An ear 131 is formed integral with the casting and provides a pivot 120 for the knife lever similar to that provided by the ear 119 on the bracket 117, and a guide 120^a serves the same function as does the guide 120 above described.

The tickets are fed through an opening 132 formed in the supporting plate 133 (Fig. 6) and through a registering opening 134 formed in the throat plate 135. This throat plate is bent down at 136 to form a neat guide for ejecting the ticket and a light hinged cover 137 is pivoted by the hook connection 138 to the throat plate and is provided to close the opening after the tickets have been ejected, thereby preventing the possibility of dropping coins or other foreign matter into the machine, and also forming a flush top for the machine. The throat plate 135 is hingedly connected by means of prongs 139 (Figs. 13 and 3) which pass through openings 140 in the plate 133 as shown. The throat plate is normally held locked flush with the top plate 141 by means of a hook 142 cooperating with a detent 143 secured to the underside of said throat plate. The hook 142 is formed on the end of a lever 144 pivoted on the shaft 102 which supports the arms 101, and this lever 144 is provided with a prong 145 adapted to engage the pin 104 connecting the levers 101. Another prong 146 formed near the free end of the lever is arranged to contact with the detent 143 when the said lever is rocked to disengage the hook 142 from the detent 143 of the throat plate. By rocking the lever 144 it will thus be seen that the throat plate will be unlocked so it may be removed and the shoes 98 will be swung away from the rotor thus making it possible to easily initially thread the ticket strip into position to cooperate with the ends 79 of the feed arms.

The mechanism thus far described serves chiefly to select a number of tickets to be issued and actuate the means for feeding and cutting off the number of tickets selected. A register 147 is provided for counting the number of tickets issued by the machine and this register is conveniently operated by pins 148 which are secured to the feed arms 78 and project through slots 149 formed in the wall of the rotor. The pins 148 cooperate with a star wheel 150 which is connected by gears 151 and 152 for driving the register 147. When the pins 79

of the feed arms 78 are in feeding position, the pins 148 carried by said arms 78 will be in an outward position in which they engage the teeth of the star wheel, but when the feed arms 78 are withdrawn the pins 148 will also be drawn inwardly to such a position that they will not cooperate with the star wheel 150. It, therefore, follows that the register will only be actuated at times when the feed arms are in feeding position and will therefore correctly record the number of tickets issued by the rotor.

After the rotor has fed the selected number of tickets and the knife has cut them off, it is, of course, necessary that the machine be reset to subsequently perform the same operation over again and the mechanism for this resetting will now be described.

A forked lever 153 shown in Figs. 14 and 16 carries pin 154 adapted to co-act with the end 155 of the bell crank lever 44 above mentioned, the end 155 projecting through a slot 156 in the side plate 46 as shown in Fig. 17. When the arms 78 are moved outwardly one of them 78^b, which is provided with a pin 157, carries with it the forked lever 153. However, when the arms 78 move inward, due to the lost motion between the pin 157 and slot 158, they do not move the arm 153 inward. The pin 154, therefore, remains in the outward position shown in Fig. 14, in which position it will engage the end 155 of the bell crank 44, as shown at X (154) in Fig. 17. By this engagement the bell crank will be rocked about its pivot 45, causing the universal bar 42 carried thereby to reset the bell crank 69 and any key lever 72 and key 73 which may have been depressed, and as the latch 40 is hooked over the universal bar 42 (Fig. 9) it follows that the shaft 34 will be rocked thereby causing arm 33 to operate the switch 22, in this instance breaking the motor circuit. After this has happened the pin 154 will have come into engagement with the cam plate 159 secured to the side plate 46 of the unit, which will force the forked lever 153 inward to a position in which the outer end of the slot 158 will come into engagement with the pin 157 carried by the arm 78^b. The fork lever 153 is provided with two depressions 160 and 161, which act to impositively hold the said lever against centrifugal force in its two different positions, the spring 162, anchored to the rotor as shown in Fig. 14, acting to seat the depressions against the center hub 85 of the rotor. After the pin 154 has been reset by the cam plate 159 one complete cycle of operation has been completed and the machine is in condition to repeat the operation.

The rotor travels at a very high speed and it takes merely a fraction of a second for one cycle to be completed. The momen-

tum imparted by the motor is such that the keys of two or more of the ticket issuing units may be simultaneously depressed or depressed in rapid succession and the rotor of each unit will properly issue the selected number of tickets even though the motor circuit be broken by the action of the bell crank 44 as described. The same would be true even if five or six units were placed side by side and operated from one motor control by a single switch, it being understood that the motor operates at a very high speed, namely, 2400 to 3000 revolutions per minute. Therefore, there is no objection or interference with the proper operation of the different units even if an operator depresses the key on one unit before one of the adjacent units has completed its cycle.

Referring to Figs. 2 and 6, the different units are secured to the supporting plate 133 by screws *t* which are threaded into the spacers 105 and 124 which connect the side plates 46 and 46^a of each unit. The supporting plate is rabbeted into a marble slab T forming part of the desk or counter of the ticket seller's booth, the plate 141 forming a neat polished flush top-plate for the machine.

The several units are inclosed by the casing L secured in any suitable manner to the supporting plate 133.

This casing is provided with a protruding hinged door L' which is provided to give access to the magazines M and the ticket units when necessary to put a new reel of tickets in the machine.

The door is securely locked by a spring pressed dog *l* having a hooked end *l'* which engages a cross bar *l*² secured to the casing. The dog has a tail *l*³ which coacts with the bolt *b'* of a spring lock *b*². Each of the magazines M is provided at its forward end with an upstanding lip M¹ which is normally in lock engagement with a cross bar *L*² secured to the hinged door L'. As thus constructed it is clear that when the door L' is locked only the holder of the key for the lock *b*² can gain access to the interior of the units and the several magazines M. The magazines are provided with a hinged door M² through which the ticket reel is inserted and which can only be opened when the magazines are withdrawn because of the engagement of the hinged door L' with the lip M' when the door L' is locked.

As changes of construction could be made within the scope of my invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

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

1. In a device of the class described for issuing different numbers of tickets from a continuous ticket strip, a rotor, keys corresponding to the number of tickets desired to selectively control the period of driving engagement between the rotor and the said ticket strip, and means controlled by the rotor and operated once only during each rotation thereof for selectively severing the issued ticket or tickets in multiple.

2. In a ticket issuing machine, a rotor carrying a plurality of feed arms arranged to be moved into and out of position to engage the ticket strip for selected varying periods of time, and means for controlling the selected periods of time that said feed arms will engage the ticket strip.

3. In a ticket issuing machine, a rotor, feeding arms carried by the rotor arranged to be engaged and dis-engaged from the ticket strip, selective means for controlling the period of time that said feeding arms are held in engagement with the ticket strip whereby different numbers of tickets may be fed from the strip.

4. In a ticket issuing machine, a rotor, a plurality of feed arms carried thereby, a control dog for simultaneously moving the several feed arms either into or out of position to engage with the ticket strip, a plurality of movable knock-out pins arranged to co-act with said control dog, and selective means whereby the different knock-out pins may be singly moved to bring them into position to engage said control dog and cause it to move the feed arms into position to engage the ticket strip.

5. In a ticket issuing machine, a rotor, a plurality of feed arms carried thereby, a control dog for simultaneously moving the several feed arms either into or out of position to engage with the ticket strip, a plurality of movable knock-out pins arranged to co-act with said control dog, selective means whereby the different knock-out pins may be singly moved to bring them into position to engage said control dog and cause it to move the feed arms into position to engage the ticket strip, and means arranged to co-act with said control dog to subsequently move the feed arms and thereby disengage the ticket strip from the rotor.

6. In a ticket issuing machine, a rotor, a plurality of feed arms carried thereby, a control dog for simultaneously moving the several feed arms either into or out of position to engage with the ticket strip, a plurality of movable knock-out pins arranged to co-act with said control dog, selective means whereby the different knock-out pins may be singly moved to bring them into position to engage said control dog and cause it to move the feed arms into position to engage the ticket strip, and a fixed pin dis-

posed in the path of said control dog and arranged for engagement therewith to retract the feed arms from engagement with the ticket strip after the desired number of
5 tickets has been issued.

7. In a ticket issuing machine, a rotor, a plurality of feed arms carried thereby, a control dog for simultaneously moving the several feed arms either into or out of position to engage with the ticket strip, a plurality of movable knock-out pins arranged to co-act with said control dog, selective means whereby the different knock-out pins may be singly moved to bring them into position to engage said control dog and cause it to move the feed arms into position to engage the ticket strip, a knife actuated in synchronism with the rotor and arranged to sever the tickets to be issued from the strip
15 after the rotor has fed the desired number of tickets.

8. In a ticket issuing machine, a rotor including a plurality of feed arms, a disk to which said feed arms are pivotally connected, and means whereby said disk may be partially rotated to simultaneously move said feed arms into and out of engagement with the ticket strip.

9. In a ticket issuing machine, a rotor including a plurality of feed arms, a disk to which said feed arms are pivotally connected, means whereby said disk may be partially rotated to simultaneously move said feed arms into and out of engagement with the ticket strip, and an impositive lock to hold said disk in its two operative positions.
35

10. In a ticket issuing machine, a rotor including a plurality of feed arms, a disk to which said feed arms are pivotally connected, a control dog whereby said disk may be partially rotated, a plurality of movable knock-out pins arranged so that any one of them may be brought into position for engagement with said control dog to cause it to move said feed arms into position to engage the ticket strip and a fixed knock-in pin arranged to co-act with said control dog to disengage the feed arms from the ticket strip.
45

11. In a ticket issuing machine, a rotor including a plurality of feed arms, a disk to which said feed arms are pivotally connected, a control dog whereby said disk may be partially rotated, a plurality of movable knock-out pins, selective means for individually moving said knock-out pins into position for engagement with said control dog to cause said feed arms to be moved outward into engagement with the ticket strip, and a fixed knock-in pin cooperating with said control dog to move the feed arms inward to disengage them from the ticket strip.
50

12. In a ticket issuing machine, a rotor

comprising a cylindrical shell, a disk movable relatively to said shell in a circular path, a plurality of feed arms, each having one end pivotally connected to said disk and its free end passing freely through the cylindrical shell and means whereby the disk may be moved relatively to the shell to cause the ends of the feed arms to be either moved outward beyond the cylindrical surface of the shell or inward and substantially flush with the cylindrical surface of the shell.
65 70 75

13. In a ticket issuing machine, a rotor, a plurality of feed arms carried thereby, a control dog for moving said feed arms into and out of feeding engagement with the ticket strip, knock-out pins controlling the outward movement of said feed arms, a knock-in pin for causing the inward movement of said feed arms, selective keys and intermediate means for individually moving said knock-out pins into position for engagement with said control dog, and means actuated by the rotor for resetting said keys and intermediate means to their initial normal position.
80 85 90

14. In a ticket issuing machine, a rotor, a plurality of feed arms carried thereby, a control dog for moving said feed arms into and out of feeding engagement with the ticket strip, knock-out pins controlling the outward movement of said feed arms, a knock-in pin for causing the inward movement of said feed arms, separate means for individually moving said knock-out pins into and out of position for engagement with the control dog, operating members connected with said last mentioned means, a control member carrying a universal bar arranged for engagement with said operating members, a motor for driving the rotor, a switch for controlling the supply of current thereto, means whereby the said switch is operated to start the motor when any one of said operating members are actuated in one direction, and means carried by the rotor for moving said control member to open said switch, break the motor circuit and reset said operating members.
95 100 105 110

15. In a ticket issuing machine, a rotor, knock-out pins controlling the period of feeding engagement between the rotor and the ticket strip, selective keys for actuating said pins, a motor for driving said rotor, a switch controlling the motor, means whereby the actuation of any of said keys will close the switch, start the motor and subsequently reset the keys and stop the motor.
115 120

16. In a ticket issuing machine, a ticket issuing rotor, feed arms carried by said rotor, knock-out pins for moving said feed arms into engagement with the ticket strip, a knock-in pin for moving said feed arms to disengage them from the ticket strip,
125

cam plates for controlling the movement of said knock-out pins and selective means for moving said cam plates.

17. In a ticket issuing machine, a ticket issuing rotor, feed arms carried by said rotor, knock-out pins for moving said feed arms into engagement with the ticket strip, cam plates for controlling the movement of said knock-out pins and means for preventing the movement of said knock-out pins even though the cam plates be moved to ticket feeding position.

18. In a ticket issuing machine, a ticket issuing rotor, feed arms carried by said rotor, knock-out pins for moving said feed arms into engagement with the ticket strip, cam plates for controlling the movement of said knock-out pins, a motor for driving said rotor, a switch for controlling said motor, means actuated by the rotor for moving said switch, and means whereby the knock-out pins can be prevented from moving into position to co-act with said feed arms and said switch actuating means can be disengaged from the rotor.

19. In a ticket issuing machine, a ticket issuing rotor, feed arms carried by said rotor, knock-out pins for moving said feed arms into engagement with the ticket strip, yielding means acting to move said knock-out pins into position to move said feed arms and cam plates shaped to permit said yielding means to move said knock-out pins into position to operate said feed arms and to move said pins out of operative position.

20. In a ticket issuing machine, a ticket issuing rotor, feed arms carried by said rotor, knock-out pins for moving said feed arms into engagement with the ticket strip, yielding means acting to move said knock-out pins into position to move said feed arms, cam plates shaped to permit said yielding means to move said knock-out pins into position to operate said feed arms and to move said pins out of operative position, and means whereby said knock-out pins can be prevented from moving into position to operate said feed arms regardless of the position of said cam plates.

21. In a ticket issuing machine, a ticket issuing rotor, means for controlling the length of ticket strip fed by said rotor, selective keys for actuating said controlling means, means for rendering said controlling means inoperative, and supporting means for said rotor and controlling means including a top plate, the said keys being so arranged that when the controlling means is rendered inoperative they may be depressed to a fixed position in which their upper faces will be flush with said top plate.

22. In a ticket issuing machine, a rotor arranged to feed at least one ticket at a time from a continuous strip, fixed curved

plates for guiding the ticket strip, yielding guide plates for maintaining the ticket strip in position to coöperate with the rotor, a top plate and a throat plate having openings therein to permit the passage of the ticket strip therethrough, means for locking said throat plate to the top plate and a single means whereby said yielding guide plates are moved away from the rotor and said throat plate is unlocked to facilitate the initial threading of the ticket strip.

23. In a ticket issuing machine, a plurality of ticket issuing units each having a rotor and selective means for controlling the number of tickets issued thereby, a driving shaft with which all of said rotors are permanently connected so as to be driven in unison, a single motor for driving said driving shaft and a single switch arranged to be operated from any one of said units to control said motor.

24. In a ticket issuing machine, a plurality of ticket issuing units located adjacent to one another, each unit having a ticket issuing rotor, and means for selectively controlling the number of tickets issued thereby, a single motor common to all of said rotors, said motor being arranged to drive the rotors at such a speed that two or more of said units may operate to feed tickets either simultaneously or in rapid succession at will.

25. A machine for issuing tickets of different denominations comprising a plurality of separate units arranged adjacent to one another and driven by a single motor which is controlled by a single switch, each unit including a rotor, feed arms carried thereby arranged to be moved into and out of engagement with the ticket strip, and selective means for controlling the period of time that said feed arms shall remain in engagement with the ticket strip to determine the number of tickets to be fed.

26. In a ticket issuing machine, a plurality of ticket issuing units, each unit including a ticket issuing rotor and means whereby said rotor may operatively engage the ticket strip for varying periods to feed different numbers of tickets, and means for individually suppressing the feeding action of any of said rotors when desired.

27. In a ticket issuing machine, a plurality of ticket issuing units each including a rotor, selective keys and means actuated thereby for varying the number of tickets respectively issued by each of said rotors, a main shaft to which the several rotors are permanently secured so as to be driven in unison, a motor for driving said shaft, and a single switch arranged to be actuated to start said motor when any key of any of the several units is depressed.

28. In a ticket issuing machine, a plu-

ality of ticket issuing units each having means whereby various numbers of tickets may be issued, a plurality of magazines for holding the tickets for supplying the different units, and means for locking said magazines in position.

29. In a ticket issuing machine, a plurality of ticket issuing units each having means whereby various numbers of tickets may be issued, a plurality of magazines for holding the tickets for supplying the different units, a casing inclosing the several units, guides secured to said casing for supporting said magazines, a cross bar arranged to engage a lip on said magazines and a single lock carried by a hinged extension of said casing arranged to lock the several magazines in their operative position.

30. A ticket issuing machine including a rotor, feed arms carried thereby, the end of said arms being shaped to enter holes in a ticket strip, an operating dog adapted to move said arms into and out of engagement

with the holes in the ticket strip, and knock-out pins arranged to co-act with said operating dog to determine the period of engagement between the feed arms and the ticket strip.

31. A ticket issuing machine including a rotor, feed arms carried thereby, the end of said arms being shaped to enter holes in a ticket strip, an operating dog adapted to move said arms into and out of engagement with the holes in the ticket strip, knock-out pins arranged to co-act with said operating dog to determine the period of engagement between the feed arms and the ticket strip, and a knock-in pin arranged to co-act with said operating dog to break the engagement between the feed arms and the ticket strip.

In witness whereof I have hereunto set my hand at the city, county and State of New York, this 24 day of July, 1918.

REUBEN H. HELSEL.

In presence of—

A. GADE,

SAMUEL H. DE ROY.