Nov. 14, 1950 R. I. N. WEINGART 2,529,750

TICKET MACHINE

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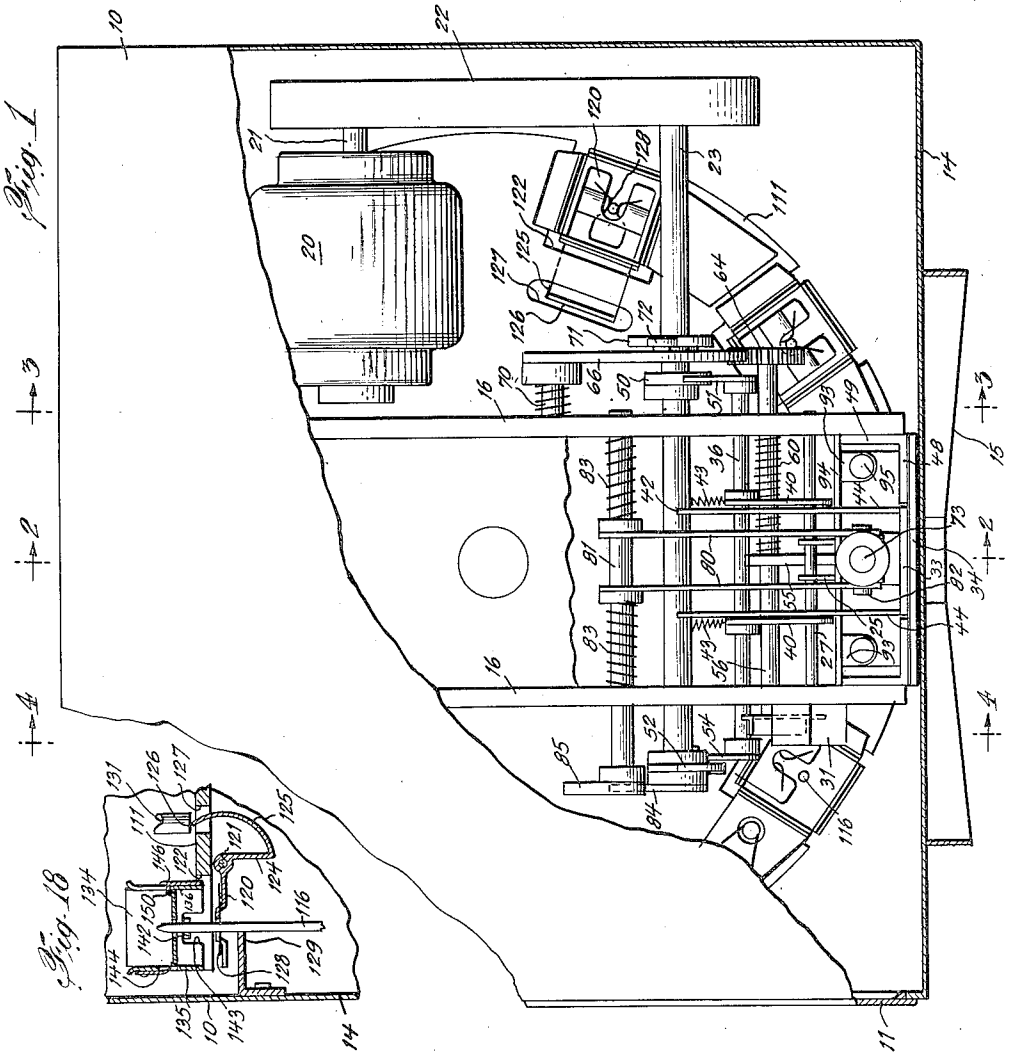


Fig. 1

Fig. 18

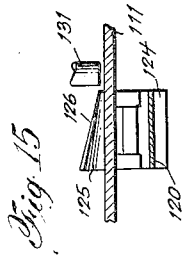


Fig. 15

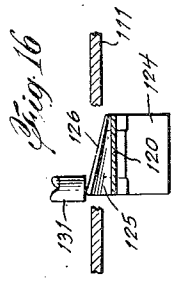


Fig. 16

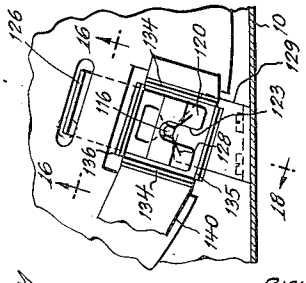


Fig. 17

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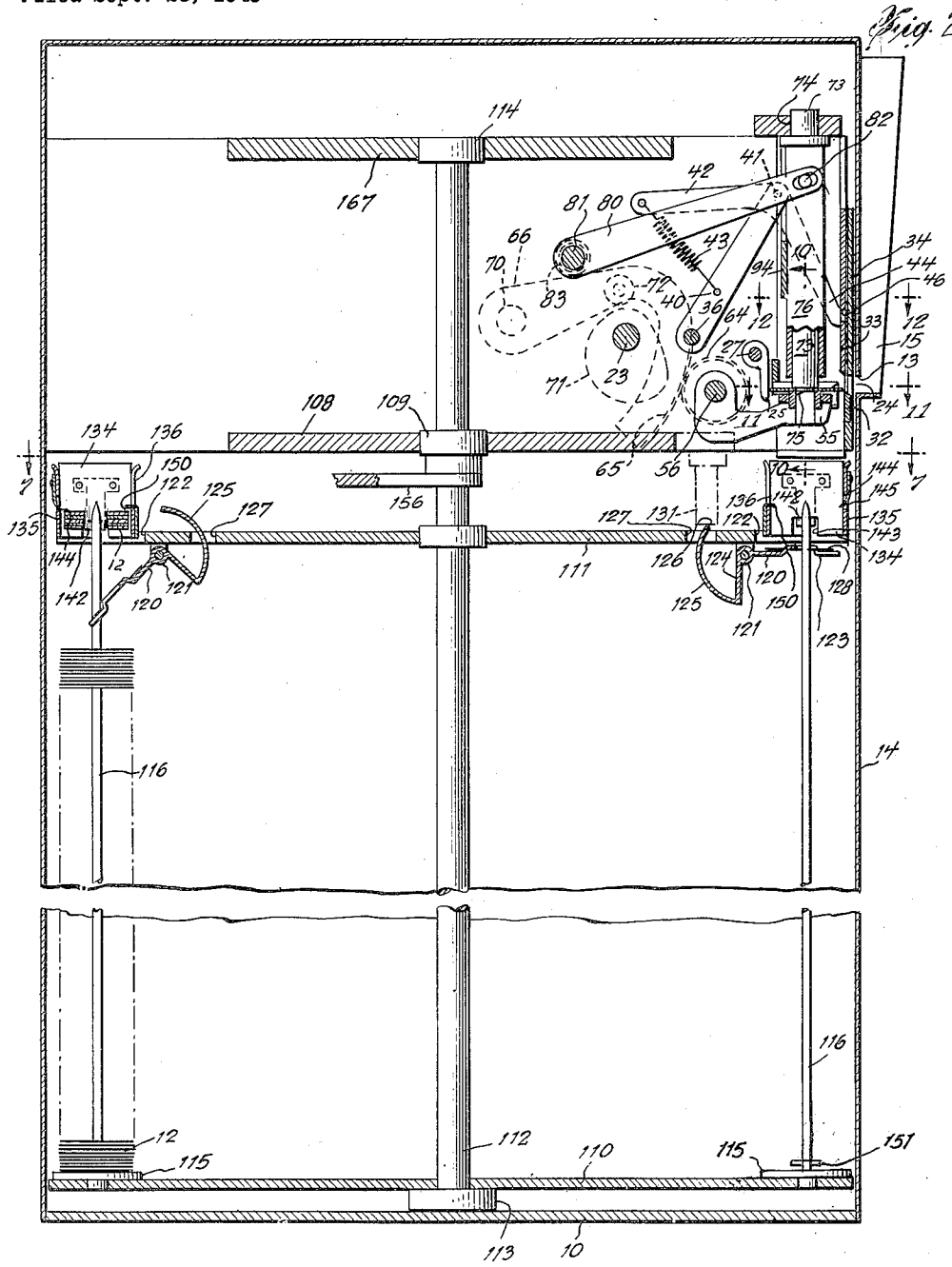
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TICKET MACHINE

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Fig. 2



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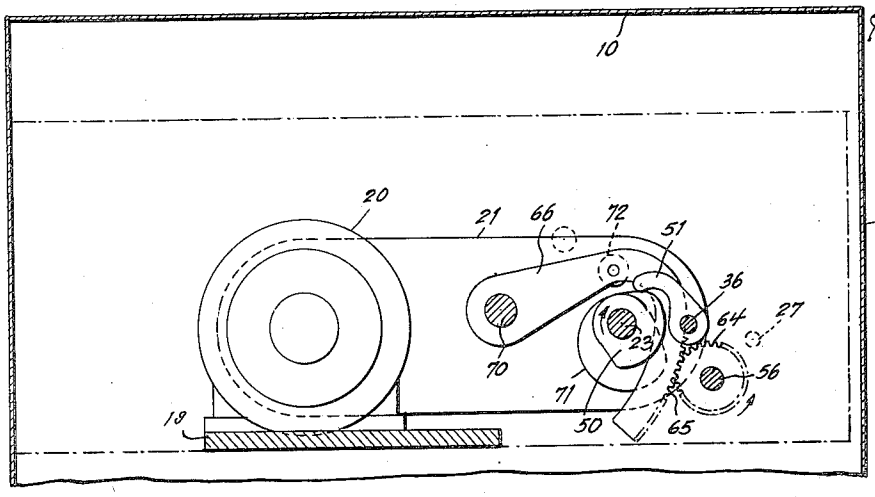
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TICKET MACHINE

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Fig. 3



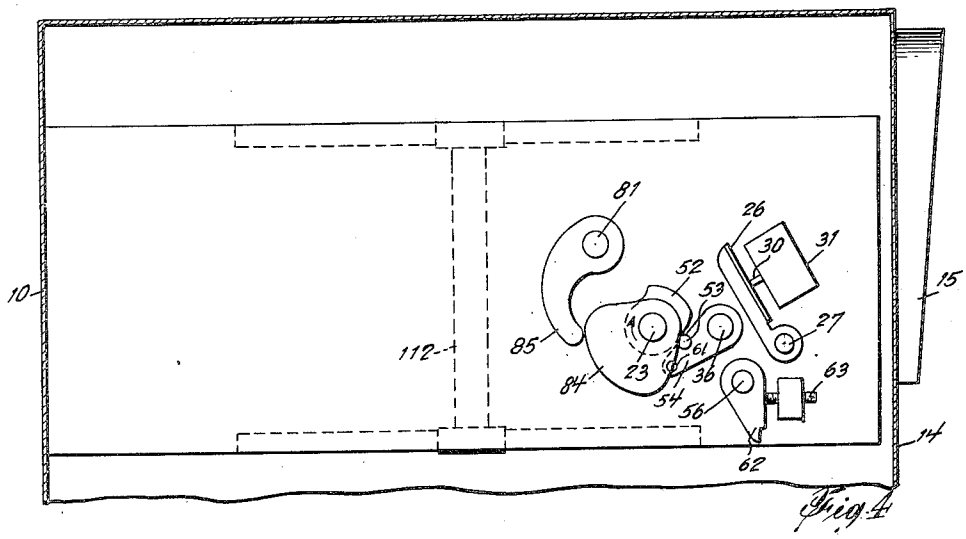


Fig. 4

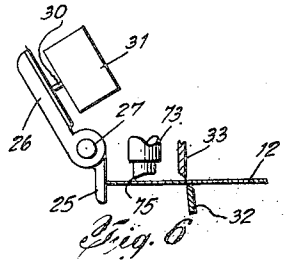


Fig. 6

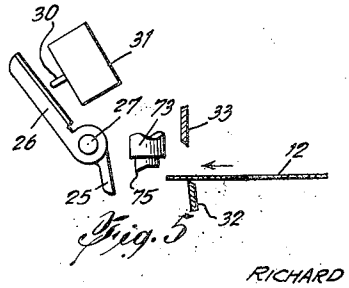


Fig. 5

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TICKET MACHINE

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Fig. 7

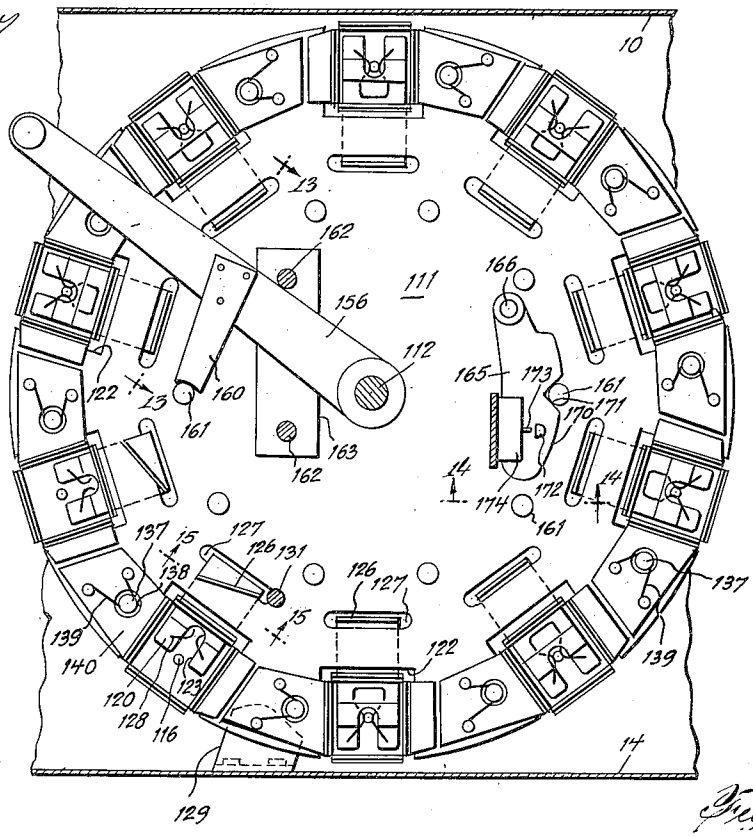


Fig. 13

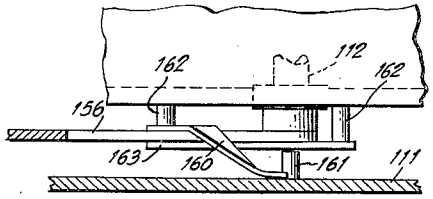


Fig. 20

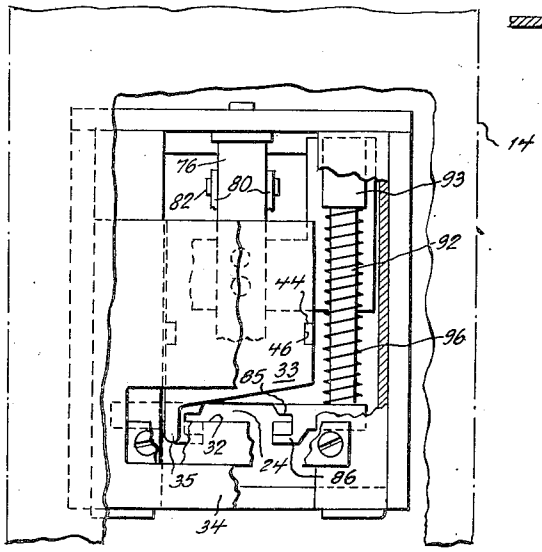
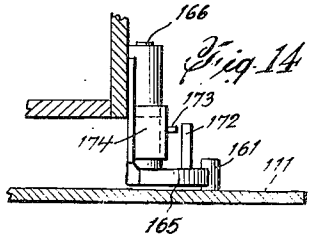


Fig. 14



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TICKET MACHINE

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Fig. 8

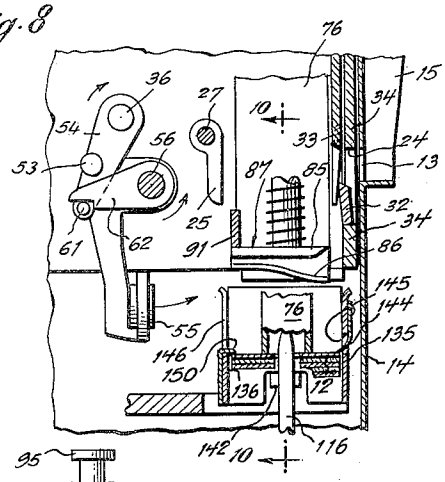


Fig. 9

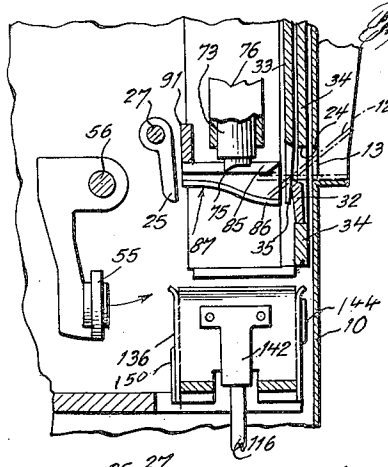


Fig. 10

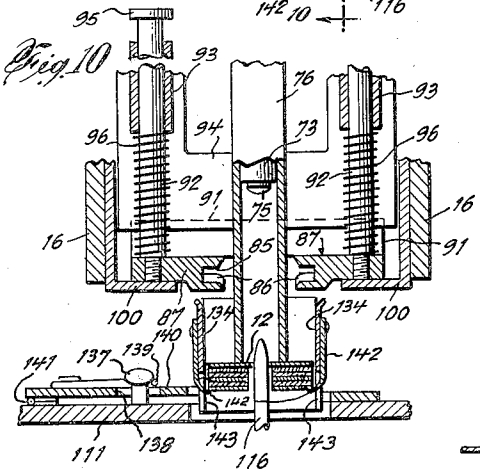


Fig. 11

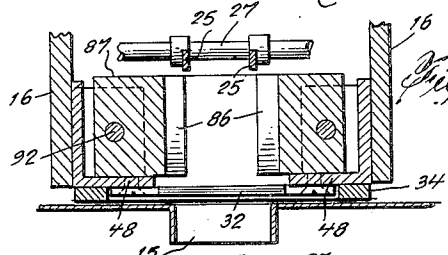
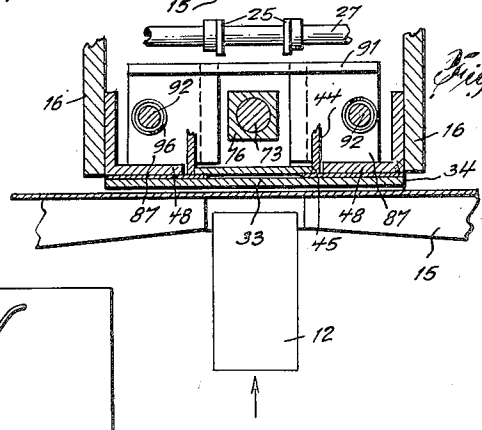


Fig. 12



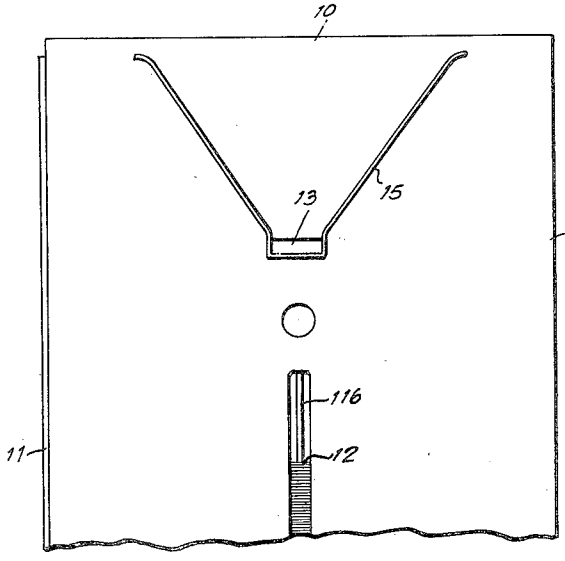


Fig. 19

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TICKET MACHINE

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Fig. 21

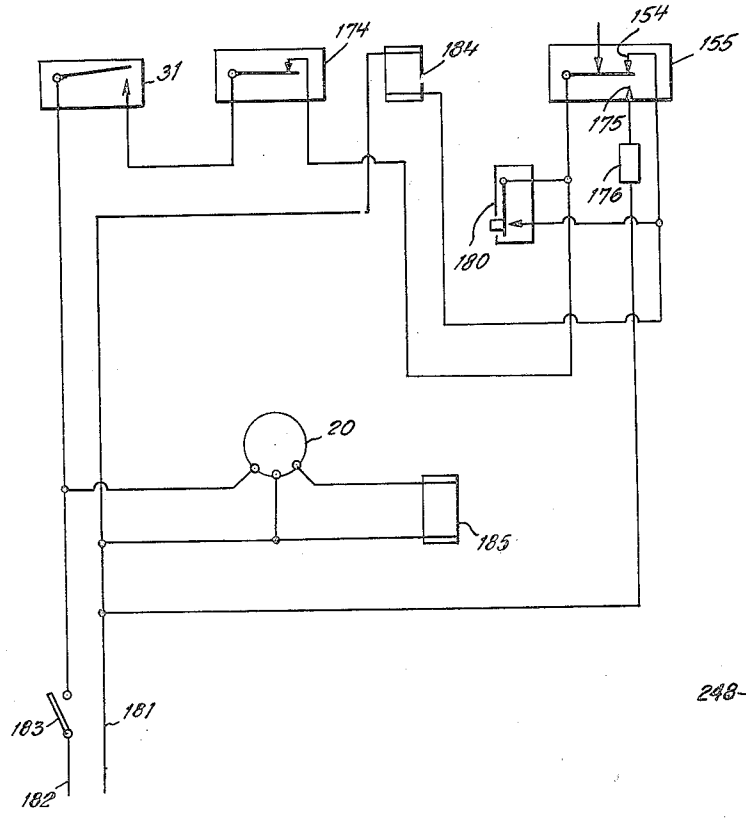


Fig. 27

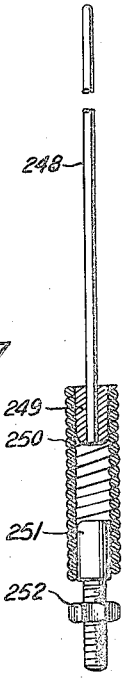
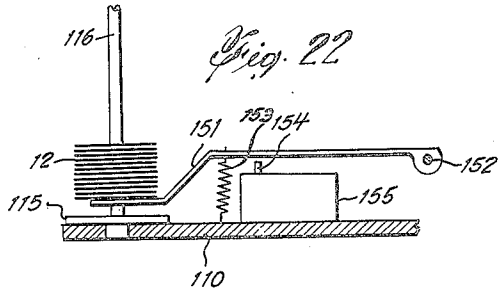


Fig. 22



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TICKET MACHINE

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Fig. 23

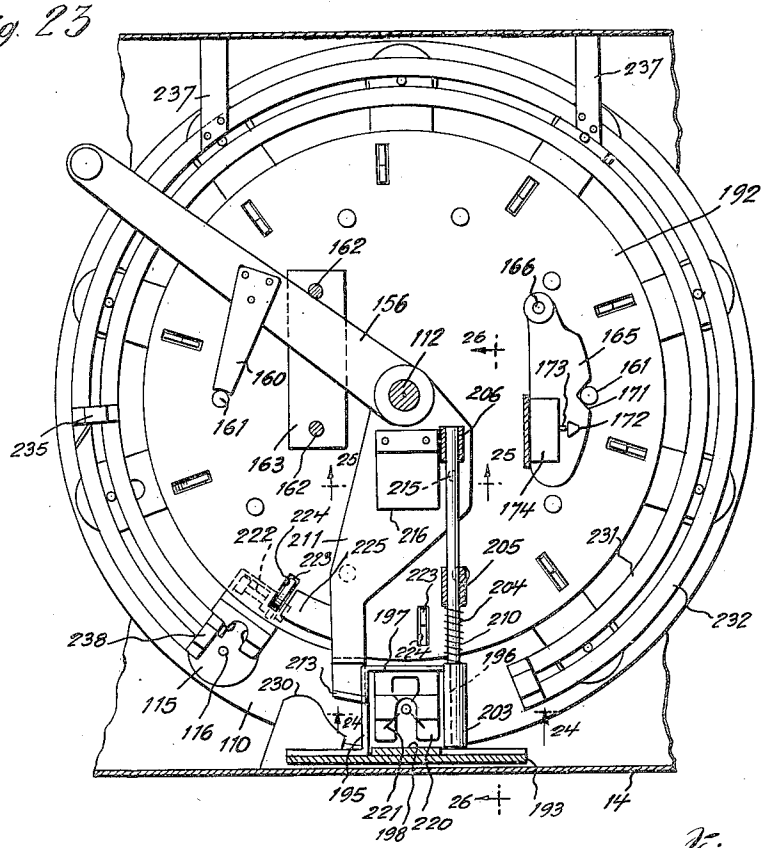


Fig. 24

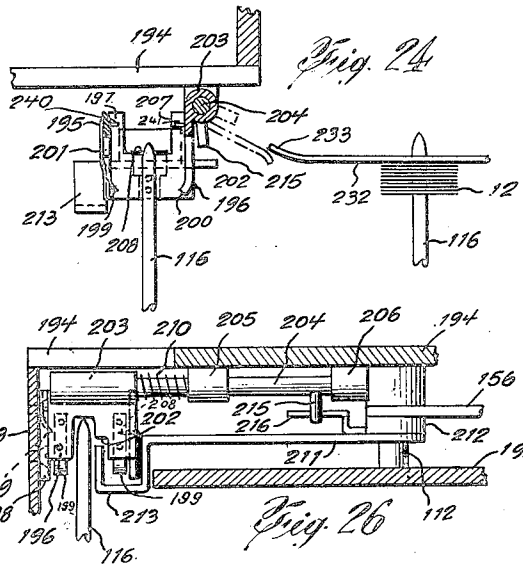


Fig. 25

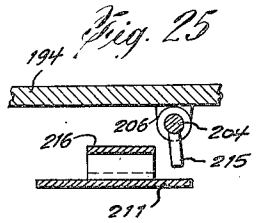


Fig. 26

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Patented Nov. 14, 1950 2,529,750

UNITED STATES PATENT OFFICE

2,529,750

TICKET MACHINE

Richard I. N. Weingart, New York, N. Y.

Application September 28, 1949, Serial No. 118,307

20 Claims. (Cl. 164—15)

1

This invention relates to ticket machines, and relates more particularly to a novel apparatus designed primarily, although not exclusively, for motion picture theatres. The present application is a continuation-in-part of my co-pending application on "Ticket Machines" filed January 28, 1948, Serial No. 4,863, now abandoned. It is an object of the present invention to provide an automatic machine which severs the patron's stub from the ticket, perforates the theatre's stub, and then deposits the perforated stub on a spindle.

Another object of the invention is to provide a ticket machine which will very considerably reduce, if not wholly eliminate, losses to theatre owners due to collusion between the ticket collector and the ticket seller. The common practice, and one which is difficult to detect, is for the collector to fail to tear the ticket. The patron is thus given no stub at all, or, in the case of a party, there will be given fewer stubs than members of the party. The untorn tickets are then returned in due time to the seller, who sells them a second time on his own account.

Patrons generally proceed directly from the ticket seller to the ticket collector, and the present machine makes use of this fact, plus the fact that tickets are required by law to be consecutively numbered, for detecting such practices. Each theatre's stub is deposited on a spindle to which the collector has no access, and if any considerable number of tickets appear out of a generally consecutive numerical order, there is a fair presumption of irregularity.

Another object of the invention is to provide a novel mechanism for cutting and punching the theatre's stub, and then stripping the stub from the punch and depositing it on a spindle.

A further object of the invention is to provide a novel rotatable spindle-supporting assembly for plural spindles, wherein one spindle may be completely filled with tickets before the assembly is rotated to position the next spindle for ticket application.

Yet another object of the invention is to provide automatic means for notifying the collector when one spindle is filled so that he may rotate the assembly to position the next spindle in ticket-applying position. Since it is desirable to have the rotatable assembly turned manually to position each successive spindle in ticket-receiving position, it sometimes happens that the assembly is not rotated far enough, which could cause difficulty. Accordingly, the machine of the present invention further provides means for rendering the mechanism inoperative unless the fresh spindle is properly positioned.

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Another and highly important object of the invention is to provide novel supporting means for the upper section of a relatively long spindle, while at the same time providing means for permitting tickets to pass downwardly on the spindle. In this connection, a hinged flap having spindle-grasping means holds the spindle in its normal, upright position. Above the flap and adjacent the upper end of the spindle is a generally square receptacle or cup through which the tickets pass. The lowermost tickets move the hinged flap out of spindle-supporting position, and thereafter, as long as such spindle is being used, the uppermost tickets disposed within and firmly supported against lateral movement relative to the cup provide adequate support for the spindle. Thus, the tickets form a bushing element between the spindle and the cup for maintaining the position of the upper end of the spindle while always providing means permitting downward movement of the tickets on the spindle. Spring elements associated with the cup prevent upward movement of the tickets which are positioned therein.

In the drawings:

Fig. 1 is a plan view of a machine embodying the present invention, a portion of the housing being broken away to show internal parts of the machine.

Fig. 2 is a broken, vertical section taken on line 2—2 of Fig. 1.

Fig. 3 is a broken, vertical section taken on line 3—3 of Fig. 1.

Fig. 4 is a broken, vertical section taken on line 4—4 of Fig. 1.

Fig. 5 is a broken side elevation, partly in section, showing the relation of the ticket to the switch which is actuated by the ticket, the knives and the punch.

Fig. 6 is similar to Fig. 5, but shows the relation of the parts as the ticket is about to be cut.

Fig. 7 is a horizontal section taken on line 7—7 of Fig. 2.

Fig. 8 is a broken side elevation, partly in section, showing the relation of the ticket punch to the ticket spindle.

Fig. 9 is a broken section taken on line 9—9 of Fig. 2.

Fig. 10 is a broken section taken on line 10—10 of Fig. 8 and Fig. 2.

Fig. 11 is a broken section taken on line 11—11 of Fig. 2.

Fig. 12 is a broken section taken on line 12—12 of Fig. 2.

Fig. 13 is a broken section taken on line 13—13 of Fig. 7.

Fig. 14 is a broken section taken on line 14—14 of Fig. 7.

Fig. 15 is a broken section taken on line 15—15 of Fig. 7.

Fig. 16 is a broken section taken on line 16—16 of Fig. 17.

Fig. 17 is a broken plan view of the top of the spindle-supporting assembly.

Fig. 18 is a broken section taken on line 18—18 of Fig. 17.

Fig. 19 is a broken front elevation of the housing.

Fig. 20 is a broken front elevation of the machine, showing the relation of the ticket slot and the knives.

Fig. 21 is a circuit diagram.

Fig. 22 is a broken side elevation of the weight-operated switch at the lower end of a ticket spindle.

Fig. 23 is a horizontal section similar to the section shown in Fig. 7, but showing a modified form of spindle assembly.

Fig. 24 is a broken section taken on line 24—24 of Fig. 23.

Fig. 25 is a broken section taken on line 25—25 of Fig. 23.

Fig. 26 is a broken section taken on line 26—26 of Fig. 23.

Fig. 27 shows an alternative means for mounting the lower end of the ticket spindle.

The machine of the present invention is enclosed within an upright housing 10 of generally rectangular shape and provided with a vertically-hinged door 11 for gaining access to the operative parts of the machine. The theatre's stub 12, which will be hereinafter referred to as the "ticket," is arranged to be inserted through an opening 13 in the front wall 14 of the housing. Such front wall may further be provided with ticket guiding means 15 which form no part of the present invention.

The cutting, punching and stripping assembly is mounted in a frame structure at the upper end of the housing which includes side frames 16. The frame structure includes a base 19 which supports a motor 20 whose shaft 21 passes into a one-revolution clutch assembly which may be disposed within a casing 22. No details of this assembly are shown since it is conventional and is arranged to produce one revolution of a main drive shaft 23 each time the circuit is closed, as hereinafter pointed out.

The ticket passes into an opening 24 in a front plate 34 (Fig. 20) and contacts spaced paddles 25 mounted on shaft 27. Also keyed to shaft 27 is an arm 26 which contacts a pin 30 associated with a snap-action electric switch 31. The switch is normally held open by a spring (not shown). Momentary closing of the switch starts a cycle of operation.

Cutting means comprise a lower, fixed knife 32 and an upper, reciprocating knife 33, preferably having a cutting edge which is non-parallel with the edge of the fixed knife. The fixed knife is supported within an opening in front plate 34, and is so mounted as to have its cutting edge inclined slightly rearwardly, as shown in Fig. 9. The movable knife is formed with a lower projection 35 which is disposed to the rear of the fixed knife. Means for moving the knife comprise a knife-actuating shaft 36 to which are keyed spaced levers 40. At the outer end of each lever 40 a bell-crank lever is pivotally mounted at 41 (Fig. 2). One arm 42 of the latter lever is urged toward lever 40 by means of a spring 43. The outer terminal of the other arm 44 of the bell-crank lever is received within an opening 46 in the movable knife. It will thus be seen that as levers 40 are oscillated, the knife cuts the ticket.

Means for rocking the knife shaft 36 comprise a cam 50 carried on the drive shaft 23 which engages a cam follower 51 keyed to the knife shaft. As the follower is moved upwardly, when viewed as in Fig. 3, lower arm 44 of the bell-crank lever moves downwardly, thus moving the knife with a rapid stroke. Springs 43 assure firm engagement between the cutting blades. The knife is returned by means of a cam 52 carried on drive shaft 23, such cam engaging a pin 53 carried on a lever 54 also keyed to knife shaft 36. In its movement, the knife 33 is guided between plates 48 whose angular extensions 49 are secured to side frames 16 (Fig. 1).

A female die 55 for perforating the ticket is keyed to a shaft 56. Die shaft 56 is urged in a counter-clockwise direction by means of a spring 60 carried concentrically thereof, and is normally held against such rotation by means of a second pin 61 carried on lever 54 which engages the outer end of a lever 62 carried on the die shaft 56 (Fig. 8). Thus, as the knife shaft is rocked in one direction for cutting, pin 61 releases the die for travel under the driving influence of spring 60, its movement being limited by means of fixed pin 63 carried by the frame which engages lever 62, as shown in Fig. 4. A pinion 64 is keyed to die shaft 56 which moves a curved rack 65 downwardly when the die moves to cutting position. The rack is carried on an arm 66 mounted on a shaft 70. Return of the die is effected by means of a die return cam 71 which engages a roller 72 mounted on arm 66. As the die is returned to starting position, pin 61 picks up lever 62, as shown in Fig. 8.

Die 55 cooperates with a fixed punch 73 mounted in the frame at 74. In view of the fact that the die has an arcuate rather than a straight-line movement, it is provided with a lower projection 75 on the side adjacent the axis of the die shaft in order to enable the punch to cut with a shearing action. After the tickets have been punched, they are removed from the punch by means of a tubular stripper 76 mounted for sliding movement on the shank of the punch.

Downward movement of the stripper is effected by levers 80 carried on shaft 81. There is provided a pin-and-slot connection 82 between the outer end of each lever 80 and the stripper. The levers are urged upwardly by means of springs 83 carried concentrically of shaft 81, and they are driven downwardly by a cam 84 on drive shaft 23 which drives cam follower 85 on shaft 81.

Fig. 9 shows the starting position of the stripper. One ticket or a plurality of folded tickets pass through openings 13 and 24 and into a ticket frame 87 of special construction. The ticket frame is open in the center, as shown in Fig. 10, to permit the stripper to move downwardly, and it is defined on each side by an upper, horizontal wall 85 and a lower wall 86 which is downwardly inclined at its forward edge. The two portions of the ticket frame are connected by bar 91. Lower walls 86 of the ticket frame have the particular contour shown because of

the necessary clearance between the frame and the knife, and means must be provided for positively guiding the tickets to punching position. These lower walls also prevent the tickets from getting under the frame.

Frame 87 is mounted at the lower ends of guide pins 92 which are supported for sliding movement in bushings 93 which are secured to a cross-frame 94, which is of U shape, the central, cut-away portion permitting clearance for downward movement thereof. The ticket frame is urged downwardly relative to bushings 93 by compression springs 96. The stripper 76 is rigidly secured to the mid-section of the cross-frame.

After the ticket has been received in the ticket frame 87 and the movable knife 33 has descended, levers 80 are timed to descend, thus moving the stripper and the stripper assembly including the ticket frame downwardly. Downward movement of the latter is arrested, however, by stops 100 carried by frames 16 while allowing the stripper to continue to descend.

The rotatable spindle-supporting assembly includes a lower disc 110 and an upper disc 111 carried by a shaft 112 journalled for rotative movement in bearings 113, 114 and 109, the latter two bearings being mounted in frame members 107 and 108, respectively. Means for supporting the lower ends of ticket spindles 116 may comprise spaced sockets 115 on the lower disc which receive such ticket spindles and these spindles may, if desired, have tapered slots in their upper pointed ends to receive a cord (not shown). Thus, after the tickets have been applied to the spindles and it is desired to unload the machine, the cord is inserted in the slot and the tickets stripped from the spindle onto the cord.

Means for affording initial support to each spindle comprise a centering flap 120 which may be stamped from sheet metal and which is hinged at 121 on the lower surface of disc 111. The disc is provided with a generally rectangular cut-away portion 122 adjacent each flap. The flap has an opening 123 for the spindle and a U shaped wire spring 128 mounted within the opening and formed with a constricted portion which normally retains the spindle within the opening when the flap is horizontal. The flap is provided with a downward extension 124 and an arcuate, rear extension 125 having a spiral-shaped cam surface 126. Rear extension 125 is disposed in an opening 127 in the disc.

When tickets are to be removed from the spindle, the flap has rotated downwardly on its hinge to vertical position and out of engagement with the spindle. Suitable latch means (not shown) may be provided for holding the flap in such vertical position. The flaps are automatically brought back to horizontal position by a fixed pin 131 carried by the frame and which engages cam surface 126 as the spindle-supporting assembly is rotated after the tickets have been removed. Pin 131 is located near front wall 14 of the housing, as shown in Fig. 7 and in broken lines in Fig. 2.

It will be noted in Fig. 7 that the flap about to be engaged by pin 131 is still in its downward position, whereas the flap immediately to the right of the pin has been moved upwardly to horizontal position. Immediately after the flap has been moved to this position the spindle 116 is moved inwardly to be engaged by spring 128 associated with the flap by means of bracket 129 (Figs. 7, 17 and 18) mounted on front wall 14 of the housing, which cams the spindle rearwardly.

A generally square, tubular receptacle or cup is disposed above each flap. This cup is formed with opposed side walls 134, a front wall 135, and a rear wall 136. Each cup is carried at one end of a bracket 40, the opposite end being hinged on a horizontal axis on the disc, as shown at 141. The cup may thus be lifted upwardly away from the spindle and the flap when it is desired to remove tickets from the spindle. For the purpose of retaining bracket 140 in the horizontal position shown in Fig. 10, a headed pin 137 mounted in disc 111 passes through an opening 138 in the bracket, and the head of the pin is engaged by a wire spring 139.

The opposed side walls of the cup are provided with flat springs 142, the lower terminals of which extend through openings 143 to the interior of the cup adjacent the lower edges of such walls. The front wall 135 is provided with a flat spring 144, the lower terminal of which extends into the interior through an opening 145 substantially midway between the upper and lower edges of the wall. If desired, the latter spring may be of inverted U shape, and the spaced terminals extend through plural openings in such wall. Finally, the rear wall 136 is provided with a slot 146 extending downwardly from its upper edge to provide clearance for die 55, and at the lower end another spring 150, generally on the same plane as spring 144, extends into the cup.

The relationship between the cup with its springs, the spindle, and the flap is clearly shown in Figs. 2 and 18. Initially, the flap is in horizontal, spindle-supporting position. After the tickets have been cut and punched, they are moved downwardly by stripper 76 and into the cup. The tickets vary in size somewhat, depending upon whether or not they are perpendicular to the cutting knives when cut. In any event, the proportions of the cup are such as to cause its edges to engage the tickets as they descend. The tickets 12 first engage springs 144 on the front wall and 146 on the rear wall, and such springs prevent upward movement of the tickets out of the cup. Passing springs 144 and 150, the tickets engage springs 142 which restrain further downward movement of the tickets. As more tickets enter the cup, the lowermost one eventually passes springs 142 in the side walls and contacts flap 120, moving the same downwardly and out of engagement with the spindle. The tickets in the lower section of the cup between upper springs 144 and 150 and lower springs 142 are on the spindle, and thus the tickets form the support for the upper end of the spindle, and the flap has no further spindle-supporting function.

Automatic means for signalling the ticket collector when a spindle has been filled comprise a pressure-operated switch arranagement shown in Fig. 22. A lever 151 hinged at 152 is disposed to one side of the spindle so as to permit the spindles to rotate without interference. The lever is located adjacent the spindle to which the tickets are being applied, and as the tickets descend, the pressure exerted thereby eventually overcomes the resistance of a spring 153, thus permitting the lever to descend and depress a contact 154 of a switch 155, which will be referred to in the description of the circuit.

After a spindle has been filled, the spindle support is rotated to position the next spindle in ticket-receiving position by means of a lever 156

freely journalled at its inner end upon shaft 112. The opposite end of the lever projects through an elongated opening (not shown) in the side wall of housing 10 just above door 11. The lever carries an arm 160 whose outer end is bent downwardly and engages one of a plurality of spaced pins 161 mounted on the upper surface of disc 111. Movement of the lever is limited by means of spaced pins 162 carried between a plate 163 and the frame (Fig. 13). Limit pins 162 are so spaced apart as to cause the spindle assembly to rotate the precise distance between two spindles, providing the lever is moved the full distance of permitted travel. If the operator is careless in moving the lever its full permitted distance, trouble would occur since the next spindle would not be positioned to receive the tickets.

To obviate this difficulty, the following means are employed to open the main circuit and thus render knives and punch inoperative if the spindle is not properly positioned. A lever 165 is pivoted at 166 on the frame, and is urged outwardly by a spring (not shown), the lever having a cam surface 170 of such contour and position as to be contacted by one of pins 161 during rotation of the spindle assembly. As the assembly rotates, pin 161 cams lever 165 rearwardly, and when in proper position pin 161 drops into a slot 171 in the lever, thus permitting the lever to move outwardly to normal position. A post 172 carried by lever 165 engages a contact 173 of a switch 174 which is normally closed. As long as lever 165 is in its outward position, the circuit is closed, and if the spindle assembly fails to reach its proper location the circuit remains open.

Reference is now had to the circuit shown in Fig. 21 which includes power lines 181 and 182, and a manually-operated switch 183. When the ticket or tickets are inserted within the ticket opening, the ticket contacts paddles 25, thus closing switch 31, and the current then flows through power line 182, through switch 31, through normally-closed centering switch 174, through normally-closed limit switch 155 associated with the spindles, through a solenoid 184 associated with the one-revolution clutch assembly, through motor 20 and its circuit including a condenser 185, and back to power line 181. Limit switch 155 is bi-polar for the purpose of adding a few more tickets to the spindle, or for the purpose of enabling the ticket collector to add one ticket with his name or number thereon. By depressing pushbutton 180, the circuit is closed for the purpose of cutting and punching the last ticket and depositing it on the spindle.

The operation of the device is as follows. The theatre patron will purchase a ticket from the ticket seller and proceed to the ticket collector. The ticket collector takes the ticket, which comprises the patron's stub portion and the theatre's stub portion, and passes the same through slot 13 in the front wall of the housing. The inner edge of the ticket contacts spaced paddles 25, which closes the circuit and starts the apparatus through one cycle of operation. This produces one revolution of main drive shaft 23, which, in turn, cuts the theatre's stub portion from the patron's stub portion. Substantially simultaneously therewith, die 55 moves upwardly to perforate "the ticket," and stripper 76 thereupon descends, moving the ticket into the cup to a point below springs 144 and 150. The ticket is now free to move downwardly on the spindle until it encounters lower springs 142 which act as a shelf. The distance between the upper and lower springs is sufficient to accommodate six or eight tickets, which thereafter serve to retain the spindle centered relative to the cup or receptacle. As more tickets are added to the spindle, the lowermost tickets are moved below the lower springs 142 and eventually encounter the hinged flap, moving it downwardly and out of spindle-engaging relation. In the event that the ticket collector receives two or more tickets from the patron instead of a single ticket, he folds them in the usual way and inserts the folded tickets through the opening 13, and the operation continues in the same manner as for one ticket.

As soon as a spindle has been filled, the weight-responsive switch 154 closes the auxiliary circuit and rings a bell or otherwise announces the fact to the ticket collector. This opens the main circuit and thus prevents further tickets from enjoying the cutting, punching and stripping operation. In the event, however, that the ticket collector desires to place a few more tickets on the spindle, he may do this by depressing pushbutton 180. A spindle is now filled, and the ticket collector rotates the entire spindle assembly by moving lever 156 one increment of movement. This positions the next spindle in ticket-receiving position. The operation continues until all the spindles are filled, at which time the hinged door 11 is opened and the tickets removed in the manner earlier described.

The rotatable, spindle-supporting assembly constituting the first embodiment of the invention provided one cup or receptacle for each spindle, the several cups being carried by and being rotatable with the upper disc of the assembly. In the embodiment of the invention illustrated in Figs. 23 to 26, only a single cup is employed, such cup being mounted in fixed relation adjacent the front wall 14 of the casing. The upper disc 192 of the assembly is mounted on shaft 112, and the assembly is manually rotated by lever 156 which carries arm 160 which successively engages pins 161 on the upper disc. Such disc likewise supports the same centering mechanism as disc 111 including lever 165, switch 174, etc. The spindles 116 are mounted in the sockets 115 carried on lower disc 110.

The cup is carried by a plate 193 secured to the frame, and includes a side wall 195 on the entrant side, a hinged side wall 196 on the exit side, a rear wall 197, and a front wall 198. Side wall 195 on the entrant side is formed with a vertical opening 201 extending upwardly from its lower edge to permit the spindle 116 to pass into the cup when the spindle assembly is rotated. The opening is somewhat wider than the width of the spindle, and on each side of the opening a flat spring 199 is secured which extends downwardly into the cup adjacent its lower edge.

Hinged side wall 196 is formed with an opening 202, as shown in Fig. 26, and is formed at its upper end with a boss 203 having an opening which receives a shaft 204 in force fit or other fixed relation. The shaft is journalled in bearings 205 and 206 on the lower surface of frame 194. A spring 210 urges the shaft in a clockwise direction, when viewed as in Fig. 24, to normally retain the wall in closed or vertical position. The lower edge of hinged wall 197 is curved inwardly, as shown at 200. This curved edge 200 and the lower terminals of springs 199 form a shelf to afford temporary support for the tickets in the same way that springs 199 form a shelf to afford temporary support for the tickets in the

same way that springs 142 in the first embodiment of the invention form such a shelf.

It was earlier pointed out that as the tickets in the first embodiment move into the cup, they are temporarily restrained against downward movement by such springs 142, and that when additional tickets are added to the spindle, springs 142 retract sufficiently to permit further downward movement of the tickets on the spindle. In the present instance, when this occurs, springs 199 on the entrant wall 195 retract, and lower, inwardly-curved edge 200 of the hinged wall is permitted to retract slightly due to the holding action of spring 210 carried on shaft 204.

Rear wall 197 is formed with an opening 207 to provide clearance for die 55. On the lower edge of such opening, a flat spring 208 prevents upward movement of the tickets, and a similar spring 209 on the same plane as spring 208 is secured on the front wall 198 to prevent upward movement of the tickets. Thus, at all times a plurality of tickets, usually six or eight, is retained in the cup between the upper and lower sets of springs, the tickets acting to center the spindle relative to the cup.

A lever 211 is keyed to bushing 212 and is arranged to move conjointly with manually-movable lever 156. At its outer end, lever 211 has a generally U shaped portion 213, the outer leg of which is arranged to pass into the cup through opening 201 on entrant wall 195 and thus push the tickets carried on the spindle and the spindle itself out of the cup. Shaft 204 is provided with a pin 215 which is engaged by a bracket 216 carried on lever 211. Accordingly, as the spindle assembly is rotated one increment of movement, bracket 216 causes rotation of the shaft 204 and of hinged wall 196 from the position shown in full lines in Fig. 24 to that shown in broken lines. Conjointly with this movement, pusher 213 pushes the tickets at the upper end of the spindle and the spindle itself from the cup. Then, as arm 156 returns to starting position, lever 211 and bracket 216 similarly retract, thus freeing pin 215 and hinged wall 196.

The spindles are all supported adjacent their upper ends by flaps 220 having springs 221 which engage the spindles. These flaps which are pivotally mounted on upper disc 192, as shown at 222, are generally similar to the hinged flaps shown in the first embodiment of the invention, except that in place of the spiral-shaped cam member 125 provided therein, such flaps 220 carry generally sector-shaped plates 223 which, when the flaps are in lowered position, pass upwardly through slots 224 in upper disc 192.

After the tickets have been removed from the spindles, it is, of course, necessary to make certain that the flaps are raised upwardly to spindle-supporting position before each successive spindle is rotated to ticket-applying position. For this purpose, a fixed plate 225 carried by the frame is arranged to engage the sector-shaped plate 223 adjacent the spindle one increment removed from ticket-applying position. Thus, as long as plate 223 is in raised position, the spindle assembly cannot be rotated, since such plate engages fixed plate 225 acting as a stop. Therefore, the operator raises the flap and moves the spindle into engagement with the spring carried thereby, at which time it is possible to rotate the spindle assembly one further increment.

It sometimes happens, however, that although the flap has been duly raised, the spindle has nevertheless not been moved far enough inwardly, and in order to insure proper inward positioning of the spindle in contact with spring 221, a fixed cam plate 230 is carried by the frame adjacent the front wall of the housing. The spindle thus contacts this plate and is moved rearwardly. Thus, this arrangement differs from that shown in the first embodiment in that the spiral-shaped plates carried by the flaps are automatically moved to lowered position and the flaps to upper position as the spindle assembly is rotated. In the embodiment of Figs. 23 to 26, inclusive, however, the flaps are manually raised, but the arrangement is foolproof since the spindle assembly cannot be rotated unless the flaps are in raised position.

After a spindle has been filled with tickets and the uppermost portion of the spindle and the tickets carried thereon are moved out of the cup or receptacle, they no longer have the support afforded by the flap 220 since the flap is in lowered position, and also, such spindles do not have the continuing support of the individual cup provided for each spindle of the first embodiment. In order to support the several spindles for the balance of their travel after leaving the cup, there is provided an inner, annular ring 231 and an outer, annular ring 232, which rings are spaced apart a distance slightly greater than the diameter of the spindles. These concentric rings have their starting point at 233, and at this point they are slightly upwardly bent, as shown in Fig. 24. Portion 233 likewise forms a stop for upward movement of hinged wall 196.

The rings are maintained in their spaced relation by means of inverted, U shaped brackets 235 at spaced intervals around their peripheries, the brackets being sufficiently high to permit the upper end of the spindle to pass therebeneath. Thus, the inner ring 231 is carried by the outer ring 232, and the latter is supported by brackets 237 at spaced intervals around the frame. The last of the U shaped brackets is shown at 238, at which point the rings end, and there is thus an area between bracket 238 and the spindle in ticket-applying position where the spindles have no support for their upper ends. It is in this area that the upper ends of the spindles may be moved slightly outwardly to permit tickets to be removed therefrom.

The hole punched in the ticket by die 55 is of slightly greater diameter than the diameter of the spindles. In most instances, the ticket stripper, having a flat lower surface, pushes the ticket or tickets directly downwardly. In some instances, however, one edge of the ticket may not be properly centered relative to the cup, and thus move downwardly at an inclined angle rather than in a horizontal position. In order to obviate this difficulty and to insure the ticket arriving on the spindle, there may also be provided a plurality of spaced shelves 240 and 241, as shown in Fig. 24, adjacent the upper end of the cup. Accordingly, if one edge of the ticket during its downward movement precedes the other, the leading edge encounters one of these shelves, which retards further downward movement of the ticket until the other edge contacts the other shelf.

In place of the rigid mounting for the lower ends of the spindles earlier described, the modified structure shown in Fig. 27 may be used. In this instance the spindle 248 is received at its lower end in a bushing 249 with a force-fit. The bushing, in turn, is mounted in the upper end of a helical spring 250 and the lower end of the

spring receives a stud 251 having a reduced threaded section 252 at its lower end. The latter passes through an opening in lower disc 110 and is secured by a nut 253.

This arrangement gives adequate support for the lower end of the spindle and has certain advantages over the more rigid mounting.

While two forms or embodiments of the invention have been shown and described herein for illustrative purposes, and the construction and arrangement incidental to specific applications thereof have been disclosed and discussed in detail, it is to be understood that the invention is limited neither to the mere details or relative arrangement of parts, nor to its specific embodiments shown herein, but that extensive deviations from the illustrated forms or embodiments of the invention may be made without departing from the principles thereof.

What I claim is:

1. In a ticket machine, the combination of a ticket cutter for cutting the ticket from the patron's stub portion thereof, a punch for perforating the ticket, a spindle disposed below the punch, and means comprising a stripper associated with the punch for applying the punched tickets to the spindle, a support for the lower end of the spindle, and means for providing support for the upper end of the spindle while permitting downward travel of the tickets thereon, such means comprising a retractable element formed with spindle-holding means, a receptacle which receives the upper end of the spindle in spaced relation, the receptacle being open at its upper and lower ends and being arranged to receive the tickets and afford support against lateral movement thereof as they are applied to the upper end of the spindle, the lowermost ticket being arranged to move the retractable element out of spindle-supporting position as the tickets within the receptacle support the spindle relative to such receptacle, and means for retaining plural tickets within the receptacle in such spindle-supporting position including plural, vertically-spaced fingers extending into the receptacle.

2. In a ticket machine, the combination of a ticket cutter for cutting the ticket from the patron's stub portion thereof, a punch for perforating the ticket, plural spindles arranged to be successively positioned relative to the punch, and means for applying the punched tickets to the spindles, a support for the lower end of each spindle, and means for providing support for the upper end of the spindle while permitting downward travel of the tickets thereon, such means comprising a hinged, retractable element formed with spindle-holding means, a receptacle adjacent the upper end of the spindle which is open at its upper and lower ends and which is arranged to receive the tickets and afford support against lateral movement thereof as they are applied to the upper end of the spindle, the lowermost ticket being arranged to move the retractable element out of spindle-supporting position as the tickets within the receptacle support the spindle relative to such receptacle, and means comprising fingers in the receptacle restraining downward movement of the tickets in order to retain a plurality of tickets in spindle-supporting position.

3. In a ticket machine, the combination of a rotatable ticket spindle assembly, plural ticket spindles mounted at their lower ends thereon in spaced relation, means for successively positioning one spindle in ticket-applying position, a ticket cutter for severing the ticket from the patron's stub portion thereof, a punch disposed above such one spindle, a die cooperating with the punch for perforating the ticket, and means comprising a stripper carried on the punch for applying the punched tickets to the spindle, means for providing support for the upper end of the spindle while permitting downward travel of the tickets thereon, such means comprising a hinged plate formed with spindle-holding means, a receptacle adjacent the upper end of each spindle which is open at its upper and lower ends and which is arranged to receive the tickets and afford support against lateral movement thereof as they are applied to the upper end of the spindle, the lowermost ticket being arranged to move the hinged plate out of spindle-supporting position as the tickets contained therein suppport the spindle relative to the receptacle, means comprising spring fingers in the receptacle restraining upward and downward travel of the tickets in order to retain a plurality of tickets in such spindle-supporting position, and means for returning the hinged plates to spindle-supporting position as the assembly is rotated, such means comprising a cam associated with each plate and a fixed pin arranged to successively engage the cams as the assembly is rotated.

4. In a ticket machine, the combination of a ticket cutter for severing the ticket from the patron's stub portion thereof, a punch for perforating the ticket and plural spindles arranged to be successively positioned relative to the punch, means for supporting each spindle at its lower end and means for providing support for the upper end of the spindle while permitting downward travel of the tickets thereon, such means comprising a retractable element formed with spindle-holding means, a fixed, tubular receptacle adjacent the upper end of the spindle in ticket-applying position, such receptacle being arranged to receive the tickets and afford support against lateral movement thereof as they are applied to the upper end of the spindle, the entrant side of the receptacle having an opening to permit a spindle to pass into the receptacle, a hinged door on the exit side of the receptacle to permit the spindle with tickets thereon to pass out of the receptacle, the lowermost ticket on the spindle being arranged to move the retractable element out of spindle-supporting position as the tickets within the receptacle support the spindle relative to such receptacle.

5. In a ticket machine, the combination of a frame, a drive shaft journalled in the frame, a knife for cutting the patron's stub from the ticket, a ticket frame for receiving the ticket, a punch extending downwardly into the ticket-receiving area of the frame, a ticket-receiving spindle below and axially aligned with the punch, a movable die cooperating with the punch for perforating the ticket, a ticket stripper for removing the ticket from the punch, a receptacle which receives the upper end of the spindle in spaced relation and which is proportioned to receive the punched ticket as it is moved downwardly by the stripper, the tickets within the receptacle acting to generally center the spindle within the receptacle, vertically-spaced, retractable fingers extending into the receptacle to retain a plurality of the tickets in such spindle-centering position, a retractable member supporting the upper section of the spindle and being arranged to be retracted upon contact with the lowermost ticket as it passes downwardly on the spindle, and

means operatively connecting the knife, the die and the stripper with the drive shaft to actuate such members substantially simultaneously.

6. In a ticket machine, the combination of a frame, a drive shaft journalled in the frame, a motor for rotating the shaft, a fixed knife and a movable knife mounted for reciprocating movement and cooperating with the fixed knife for cutting the patron's stub from the ticket, a ticket frame provided with opposed recesses for receiving the ticket, a fixed punch extending downwardly into the ticket-receiving area of the frame, a ticket-receiving spindle below and axially aligned with the punch, a movable die cooperating with the punch for perforating the ticket, a ticket stripper carried concentrically of the punch, a receptacle which receives the upper end of the spindle in spaced relation and which is proportioned to receive the punched ticket as it is moved downwardly by the stripper, the tickets within the receptacle acting to generally center the spindle within the receptacle, vertically-spaced, retractable fingers extending into the receptacle to retain a plurality of the tickets in such spindle-centering position, a retractable member below the receptacle for supporting the upper section of the spindle and being arranged to be retracted upon contact with the lowermost ticket as it passes downwardly on the spindle, and means operatively connecting the movable knife, the die and the stripper with the drive shaft to actuate such members, a normally closed, weight-responsive switch at the lower end of the spindle arranged to be opened when a predetermined quantity of tickets have been applied to the spindle, and a circuit including the motor, said weight-responsive switch, and a switch arranged to be closed by a ticket inserted in the ticket frame.

7. In a ticket machine, the combination of a rotatable spindle assembly including upper and lower discs, plural ticket spindles mounted at their lower ends on the lower discs, retractable members on the upper discs affording a support for the upper sections of the spindles, means for manually rotating the assembly to successively position one spindle in ticket-applying position, a frame, a fixed ticket punch generally aligned with said one spindle, a ticket frame having opposed recesses for receiving the ticket to be punched, cutting means for cutting the ticket from the patron's stub portion thereof, a movable die cooperating with the punch to perforate the ticket, a ticket receptacle below the ticket frame which receives the upper end of the spindle in spaced relation thereto and which is proportional to receive the punched tickets which form a bushing between the spindle and the receptacle, a ticket stripper associated with the punch for moving the punched tickets into the receptacle, the lowermost ticket being arranged to move the retractable spindle support out of contact therewith, and a drive shaft with driving means therefor journalled in the frame and operatively connected with the cutting means, the die and the stripper, a motor connected with the drive shaft, centering means for the spindle assembly including a normally closed switch arranged to be opened when one spindle is unaligned with the punch, a switch arranged to be closed when contacted by a ticket in the ticket frame, and a circuit including the motor and said switches.

8. In a ticket machine, the combination of a rotatable spindle assembly including upper and lower discs, plural ticket spindles mounted at their lower ends on the lower disc, retractable members on the upper disc affording a support for the upper sections of the spindles, means for manually rotating the assembly to successively position one spindle in ticket-applying position, a frame, a fixed ticket punch generally aligned with said one spindle, a ticket frame for receiving and supporting the ticket to be punched, cutting means for cutting the ticket from the patron's stub portion thereof, a movable die cooperating with the punch to perforate the ticket, a ticket receptacle below the ticket frame which receives the upper end of the spindle in spaced relation thereto and which is proportioned to receive the punched tickets which form a bushing between the spindle and the receptacle to generally center the spindle relative to the receptacle, a plurality of spaced fingers within the receptacle for retaining a plurality of tickets in such spindle-centering relation, a ticket stripper associated with the punch for moving the punched tickets into the receptacle, the lowermost ticket being arranged to move the retractable spindle support out of contact therewith, and a drive shaft with driving means therefor journalled in the frame and operatively connected with the cutting means, the die and the stripper.

9. In a device of the character described, the combination of a spindle for receiving punched tickets, a flexible support for the lower end of the spindle, means for supporting the upper end of the spindle comprising a retractable member arranged to grasp the spindle and a tubular member receiving the upper end of the spindle in spaced relation, such tubular member being proportioned to receive the tickets and afford lateral support therefor as they pass downwardly onto the spindle, the tickets within such tubular member being arranged to retain the spindle in spaced relation relative to the tubular member, vertically-spaced, fingers extending into the tubular member to retain a plurality of tickets in spindle-supporting relation, the lowermost ticket being arranged to move the retractable member out of spindle-supporting position.

10. In a device of the character described, the combination of a spindle for receiving punched tickets, a support for the lower end of the spindle, means for supporting the upper end of the spindle comprising a retractable member arranged to grasp the spindle, a tubular member receiving the upper end of the spindle in spaced relation, such tubular member being proportioned to receive the tickets and afford lateral support therefor as they pass downwardly onto the spindle, spring elements on the inner surface of the tubular member at varying distances from the lower edge thereof for retaining a plurality of the tickets in such tubular member, the tickets within such tubular member being arranged to retain the spindle in spaced relation relative to the tubular member, the lowermost ticket being arranged to engage and move the retractable member out of spindle-supporting position as additional tickets are applied to the spindle.

11. In a device of the character described, the combination of a spindle for receiving punched tickets, a support for the lower end of the spindle, means for supporting the upper end of the spindle comprising a hinged, retractable member arranged to grasp the spindle and a generally rectangular receptacle which is open at its upper and lower ends and which receives the upper end of the spindle in spaced relation, such tubular member being proportioned to receive the tickets and

afford lateral support therefor as they pass downwardly onto the spindle, the side walls of the receptacle having openings therein, and vertically-spaced fingers passing through such openings into the receptacle to prevent upward movement of the tickets out of the receptacle and to retain a plurality of tickets against falling from the receptacle, the tickets within such tubular member being arranged to retain the spindle in spaced relation relative to the tubular member, the lowermost ticket being arranged to move the retractable member out of spindle-supporting position as additional tickets are applied to the spindle.

12. A ticket machine comprising plural spindles for receiving punched tickets and a rotatable spindle-supporting assembly upon which the lower ends of the spindles are mounted, means comprising a hinged, retractable member for affording initial support for the upper section of each spindle and means whereby tickets carried at the upper end of the spindle afford a continuing support therefor, such means comprising a tubular member which receives the upper end of the spindle in spaced relation thereto, the tubular member being proportioned to receive the punched tickets and provide lateral support therefor while such tickets retain the spindle generally centered relative to the tubular member, fingers within the receptacle above and below the upper end thereof for retaining plural tickets in such spindle-supporting relation, the lowermost ticket being arranged to move the retractable member out of spindle-supporting position as additional tickets are applied to the spindle.

13. A ticket machine comprising a frame, plural spindles for receiving punched tickets and a rotatable spindle-supporting assembly upon which the lower ends of the spindles are mounted, means for rotating the assembly to successively position one spindle in ticket-applying position, means comprising a hinged, retractable member carried by the frame for affording initial support for the upper section of the spindle, and means whereby tickets carried at the upper end of such spindle afford continuing support therefor, such means comprising a tubular member which receives the upper end of said spindle in spaced relation thereto, the tubular member being proportioned to receive the punched tickets and provide lateral support therefor while such tickets retain the spindle generally centered relative to the tubular member, means comprising fingers for retaining plural tickets in the tubular member against upward and lowered movement relative to the upper end of the spindle, the lowermost ticket being arranged to move the retractable member out of spindle-supporting position as tickets are applied to the spindle, the tubular member having on its entrant side an opening to permit the spindle to pass thereinto, and a hinged door on its exit side to permit the ticket-filled spindle to pass out of the tubular member.

14. In a ticket machine, the combination of a rotatable support, plural spindles secured at their lower ends on such support, means affording support for the upper ends of each spindle as tickets are applied thereto, and means for cutting patrons' stub portions from the tickets, punching the tickets and depositing them on the spindle, the upper spindle support comprising a retractable member arranged to grasp the spindle and a tubular member receiving the upper end of the spindle in spaced relation, the tubular member being proportioned to receive the punched tickets as they are deposited on the spindle and afford lateral support for such tickets which, in turn, retain the spindle generally centered relative to the tubular member.

15. A ticket machine comprising plural spindles for receiving punched tickets and a rotatable spindle-supporting assembly upon which the lower ends of the spindles are mounted, means comprising a retractable member for affording initial support for the upper end of each spindle and means whereby tickets carried at the upper end of the spindle afford a continuing support therefor, such means comprising a fixed, tubular member which receives the upper end of the spindle which is in ticket-applying position, the spindle being disposed in spaced relation to the tubular member, such tubular member being proportioned to receive the punched tickets and provide lateral support therefor while such tickets retain the spindle generally centered relative to the tubular member, and a ticket pusher arranged to push the tickets on a filled spindle from the tubular member, one of the walls thereof having an opening to admit the pusher, the opposed wall being hinged, the lowermost ticket being arranged to move the retractable member out of spindle-supporting position as additional tickets are applied to the spindle.

16. In a machine for receiving punched tickets, the combination of a plurality of spindles mounted at their lower ends and means for successively positioning one spindle in ticket-receiving position, retractable members for normally supporting the upper sections of the spindles, a receptacle carried by a frame and positioned to receive the upper end of said one spindle in spaced relation thereto, the walls of the receptacle being proportioned to receive a punched ticket which is thereupon received on said spindle, the receptacle including a fixed entrant wall having an opening therein and a hinged exit wall, the several walls being provided with vertically-spaced, inturned fingers which guide the tickets in their passage through the receptacle and retain a plurality of tickets therein to generally center the spindle relative to the receptacle, and a ticket pusher arranged to enter the receptacle through the entrant wall when a filled spindle is moved therefrom to push the tickets at the upper end of the spindle from the receptacle.

17. In a machine for receiving punched tickets, the combination of a frame, a rotatable assembly journalled in the frame, plural spindles mounted at their lower ends on the assembly in spaced relation, means for manually rotating the assembly to successively position one spindle in ticket-receiving relation, a receptacle carried by the frame and positioned to receive the upper end of said one spindle in spaced relation thereto, the walls of the receptacle being proportioned to receive a punched ticket which is thereupon received on said spindle, the receptacle including a fixed entrant wall having an opening therein and a retractable exit wall, each being provided at its lower end with an inturned finger which restrains downward movement of tickets on the spindle, such tickets acting to generally center the spindle relative to the receptacle, a ticket pusher associated with said manual rotating means arranged to enter the receptacle through the opening in the entrant wall when the assembly is rotated to push the tickets at the upper end of the spindle from the receptacle, and means further associated with the rotating means to

move the retractable door to open position conjointly with rotation of the spindle.

18. In a machine for receiving punched tickets, the combination of a frame, a rotatable assembly journalled in the frame, plural spindles mounted at their lower ends on the assembly in spaced relation, hinged, retractable members for normally supporting the upper sections of the spindles, a lever for manually rotating the assembly to successively position one spindle in ticket-receiving relation, a generally rectangular ticket receptacle carried by the frame and positioned to receive the upper end of said one spindle in spaced relation thereto, the receptacle including an entrant wall having an opening and a movable exit wall, the receptacle being provided with vertically-spaced, inturned fingers which restrain downward and upward movement of tickets on the spindle, such tickets acting to generally center the spindle relative to the receptacle, a ticket pusher associated with said lever arranged to enter the receptacle through the entrant wall when the assembly is rotated to push the tickets at the upper end of the spindle from the receptacle, and means associated with the pusher to move the exit wall to open position conjointly with rotation of the spindle.

19. In a machine for receiving punched tickets, the combination of a frame, a rotatable assembly journalled in the frame and including upper and lower discs, plural spindles mounted at their lower ends on the lower disc in spaced relation, hinged, retractable members for normally supporting the upper sections of the spindles, means for manually rotating the assembly to successively position one spindle in ticket-receiving position, a receptacle carried by the frame and positioned to receive the upper end of said one spindle in spaced relation thereto, the walls of the receptacle being proportioned to receive a punched ticket which is thereupon received on said spindle, the receptacle including a fixed entrant wall and a hinged exit wall, each having an opening therein and being provided at their lower ends with an inturned finger which restrains downward movement of tickets on the spindle, such tickets acting to generally center the spindle relative to the receptacle, a ticket pusher associated with said manual rotating means arranged to enter the receptacle through the entrant wall when the assembly is rotated to push the tickets at the upper end of the spindle from the receptacle, and means further associated with the rotating means to move the hinged door to open position conjointly with rotation of the spindle.

20. In a ticket machine, the combination of a ticket cutter for cutting the ticket from the patron's stub portion thereof, a punch for perforating the ticket, plural spindles arranged to be successively positioned relative to the punch, and means for applying the punched tickets to the spindles, a support for the lower end of each spindle, and means for providing support for the upper section of the spindle while permitting downward travel of the tickets thereon, such means comprising a hinged, retractable element formed with spindle-holding means, a fixed receptacle which is positioned adjacent the upper end of the spindle which is in ticket-applying position and which receives such spindle in spaced relation thereto, the walls of the receptacle being proportioned to receive a ticket which is thereupon received on said spindle, the receptacle including a fixed entrant wall having an opening therein and a hinged exit wall, each being provided at its lower end with a finger which restrains downward movement of tickets on the spindle, such tickets acting to generally center the spindle relative to the receptacle, a ticket pusher associated with said manual rotating means arranged to enter the receptacle through the entrant wall opening when the assembly is rotated to push the tickets at the upper end of the spindle from the receptacle, and means further associated with the rotating means to move the hinged door to open position conjointly with rotation of the spindle.

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