May 21, 1946. C. D. TUSKA 2,400,793

TICKET ISSUING MACHINE

Filed April 12, 1945 2 Sheets-Sheet 1

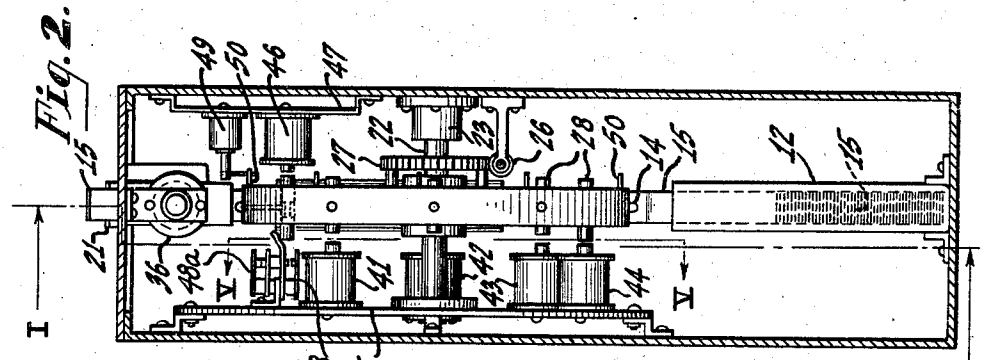

Fig. 2.

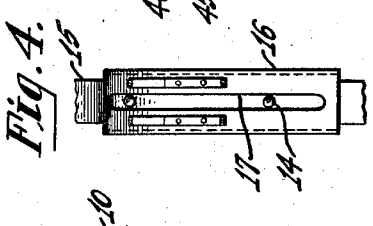

Fig. 4.

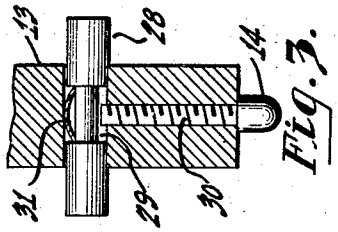

Fig. 3.

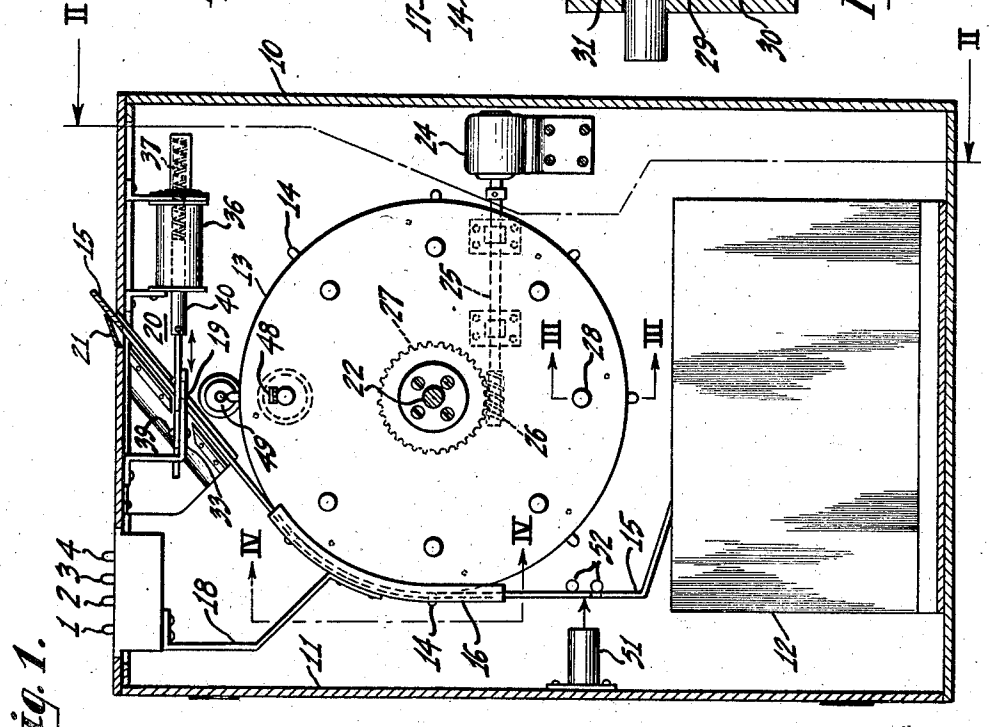

Fig. 1.

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Fig. 5.

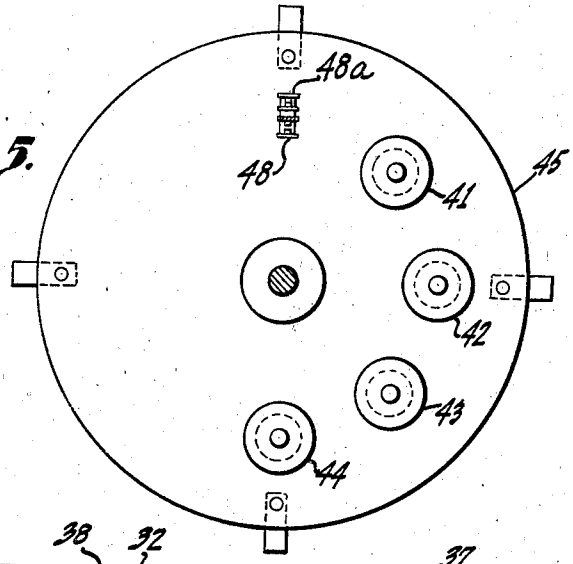


Fig. 6.

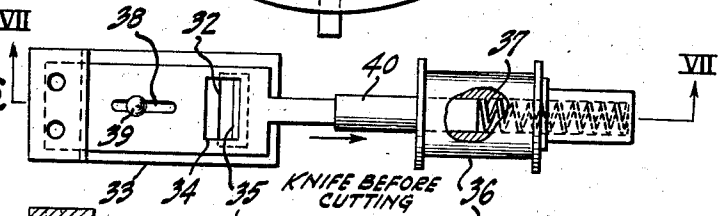


Fig. 7.

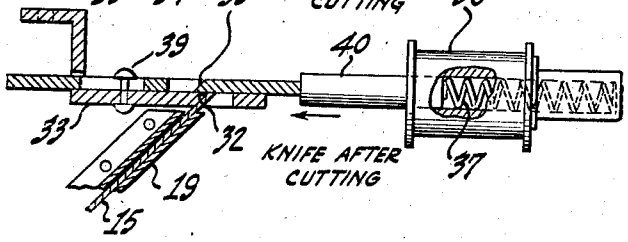
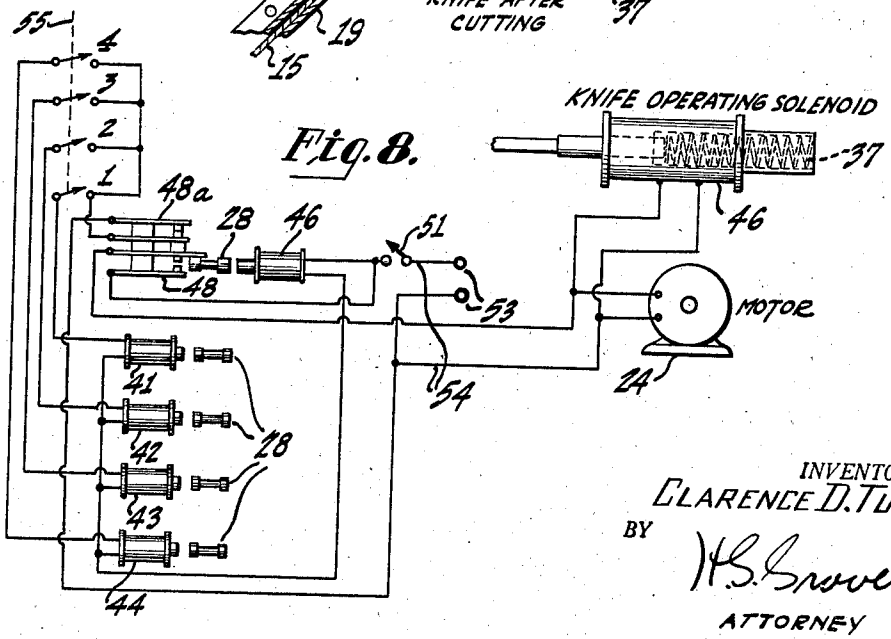


Fig. 8.



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TICKET ISSUING MACHINE

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Application April 12, 1945, Serial No. 587,963

14 Claims. (Cl. 164—49)

This invention relates to improvements in ticket issuing machines of the type in which one or more tickets are selectively issued and cut from a strip of tickets.

Mechanically controlled strip ticket issuing machines are commercially available. An example of a mechanically controlled ticket issuing machine is found in U. S. Patent 2,321,545 which issued to Carl Dodegge on June 8, 1943. The machine disclosed in the Dodegge patent will issue a selected number of tickets, will cut the issued tickets from the strip, will operate throughout only one cycle in the absence of a subsequent selection, and will not operate in the event of a discontinuity in the strip of tickets. These operational steps and controls require a complicated mechanical system, which is expensive to make and to service. Moreover, the mechanical elements are apt to jam or to operate sluggishly and are subject to wear.

An object of the present invention is to provide an improved strip ticket issuing machine in which the operational steps are controlled mainly by electromagnetic means. Another object is to provide an improved ticket issuing machine in which selector buttons are arranged to apply electric power to selector magnets and in which the selector magnets control stops for disconnecting the driving motor from the power supply. Another object is to provide a strip ticket issuing machine in which discontinuities in the ticket supply operate a microswitch which disconnects the power supply. An additional object is to provide an improved strip ticket issuing machine in which the issued tickets are severed from the strip by means of a knife controlled by electric means. A further object is to provide an improved strip ticket issuing machine in which electrical controls are used to stop and to start the machine and to limit the operation to a single cycle after each selector operation.

The invention will be described by referring to the accompanying drawings in which Figure 1 is an elevational view of the ticket issuing machine of the invention; Figure 2 is a view partly in section taken along the line II—II; Figure 3 is a sectional view of the magnetically controlled stops taken along the line III—III; Figure 4 is a sectional view of the ticket guide taken along the line IV—IV; Figure 5 is a sectional view of the selector solenoids and their supporting plate taken along the line V—V; Figures 6 and 7 are respectively plan and sectional views of the ticket severing means; and Figure 8 is a schematic wiring diagram of the device.

Referring to Figs. 1 and 2, the ticket issuing mechanism of the invention is housed within a case 10 which includes a door 11 through which the ticket magazine 12 may be inserted and the mechanism may be serviced. The mechanism includes a ticket feed wheel 13. The feed wheel 13 is provided with projections 14 which engage apertures in the strip of tickets 15. The ticket strip is guided along the feed wheel by a guide member 16 in which the slot 17 provides clearance for the projections 14. The guide member may be supported by a suitable bracket 18. The strips of tickets are fed to an issuing guide 19, an electrically controlled knife or severing means 20, and a trap door 21, all hereinafter described.

The feed wheel 13 is mounted on a shaft 22 which is journaled in bearings 23. The feed wheel 13 is driven by a motor 24. The motor is coupled by suitable means to a shaft 25, and through a worm gear 26 and pinion gear 27 to the ticket feed wheel. The worm and pinion gear arrangement is irreversible so that a pull on the ticket strip 15 will not turn the feed wheel.

As shown in Figs. 1 and 3, a plurality of magnetically controlled stops 28 are slidably positioned within the feed wheel and preferably, although not necessarily, so that the axes of the stops are parallel to the axis of the wheel. A locking means may be provided for the stops. The locking means may consist of a recessed portion 29 which provides shoulders. When the stops are at the extreme left or right, the shoulders engage the end of a screw 30 which may also secure the ticket engaging projections 14. To prevent displacement due to vibration, a small spring 31 may be arranged to engage the feed wheel.

The ticket strip 15 is fed through the issuing guide 19, through the aperture 32 in the plate 33 in the ticket severing mechanism (see Figs. 6 and 7), and through the aperture 34 in the ticket severing knife 35. The strip 15 is finally pushed through the trap door 21 in the top of the case 10. The severing mechanism consists, in addition to the plate 33 and knife 35, of a solenoid 36 and biasing spring 37. The severing knife is held in position and is guided by a slot 38 and rivet 39. The actual severing force is obtained from the biasing spring. The force is stored by the solenoid acting on the magnetic core 40, and the force is released when the energy in the solenoid is released.

Stop actuating solenoids 41, 42, 43, 44 are respectively arranged on one side of the feed wheel

13 opposite successive stops 28. The solenoids are disposed on a plate 45. A starting solenoid 46 is mounted on a plate 47 on the opposite side of the feed wheel. The starting solenoid is arranged to retract the magnetic core which has engaged a motor control switch 48 and a selector cycle control switch 48a. The motor and selector control switches 48 and 48a may be mounted on the plate 45 which supports the stop actuating solenoids. If desired, a counter 49 may be arranged to engage pins 50 on the feed wheel to count the tickets as they are issued.

If the tickets are to be counted as they are issued, it is desirable to provide means, such as a microswitch 51, for interrupting the operation of the microswitch in the event of a discontinuity in the ticket strip. The microswitch operating member may be made to bear upon the ticket strip, which may be backed by studs or rollers 52. In the event of a break in the strip, the microswitch operating member will be released, thereby opening the switch and the power circuit.

In the foregoing description, no attempt has been made to include the electrical circuits, which are diagrammatically illustrated in Fig. 8. In Fig. 8, a suitable power source 53 is connected to the microswitch 51 so that, in the absence of a supply of tickets, the power source is disconnected. One branch of the power source is connected by a pair of leads 54 through the stop switch 48 to the motor 24 and the knife operating solenoid 36. The push buttons 1, 2, 3 and 4 are respectively connected to the selector control switch 48a and to the stop actuating solenoids 41, 42, 43 and 44, and through the starting solenoid to the power source, thus forming the second branch of the electrical circuit. The switches 1, 2, etc., are provided with a switch interlock 55, represented by dash lines, and illustrated in U. S. Patent 2,235,768, which issued to D. G. C. Luck on March 18, 1941. While the switch interlock may be omitted, it is preferable to include an interlock so that an operator can actuate but one switch at a time. It is also desirable to provide impulse type switches which form a single, short contact when actuated. One suitable switch mechanism is illustrated in U. S. Patent 1,927,761, which issued to G. Tauschek on September 19, 1933.

The mode of operation of the device is as follows: If the operator wishes to issue four tickets, switch 4 is actuated. The actuation of switch 4 applies power simultaneously to solenoids 44 and 46. Solenoid 44 will attract the magnetic core stop 28, which will be projected to the left as shown in Fig. 2. At the same time, solenoid 46 will attract the magnetic core 28 which has opened the switch 48 and has closed the selector control switch 48a. As the switch operated core is retracted to the right, switch 48 will complete the power circuit to the motor 24 and to the knife operating solenoid 36 and will open the selector control switch 48a to limit the operation to a single cycle. The motor will immediately start to rotate, thereby driving the ticket wheel 13 in a clockwise direction, as shown in Fig. 1.

As the motor is energized, the solenoid 36 is also energized, thereby actuating the magnetic core 40, and hence the severing knife 35. As the knife is moved toward the right, the biasing spring 37 is compressed and the aperture 32 is opened. The strip of tickets 15 then issues through the aperture 32 and through the trap door 21 until four tickets have been issued. At that time the stop 28 reaches the switch 48, which is thereby opened, shutting off the motor 24. At the same time, power is removed from the knife operating solenoid whereby the biasing spring 37 urges the ticket severing knife toward the left, thus severing the issued tickets from the ticket strip. At the instant the stop switch 48 is opened, the selector control switch 48a is closed, so that the machine has completed one cycle and is ready to begin another. The next cycle may issue from one to four tickets, depending upon the switch 1, 2, etc., actuated by the operator.

Thus the invention has been described as a ticket issuing machine in which a predetermined number of strip tickets may be issued selectively. The mechanism includes a ticket feed wheel which is controlled by electrical means. The controlling means include a series of stops which are actuated by solenoids. An additional solenoid is used to actuate the ticket severing knife. An electrical control disconnects the power supply in the event of a discontinuity in the supply of tickets. Another electrical control limits the operation to single cycles. The relative timing of the several operational steps may be controlled by the relative positions of the solenoids or by relative adjustment of the time constants of the electrical controls. In a similar manner, the length of engagement between the stop 28 and the stop switch 48 may be increased if the motor shows a tendency to coast past the stop position.

I claim as my invention:

1. A ticket issuing machine including in combination a ticket feed wheel, means on said wheel for engaging said tickets, a plurality of movable stops arranged on said wheel, an electrical means for moving a selected one of said stops into operative position, a motor arranged to drive said wheel, means to start said motor, and means controlled by said selected stop for arresting the driving of said wheel.

2. A machine for issuing strip tickets including in combination a ticket feed wheel, means on said wheel for engaging said tickets, a plurality of movable stops disposed on said wheel, an electrical means for moving a selected stop into operative position, a motor arranged to drive said wheel, means controlled by said selected stop for arresting the driving of said wheel, and means for starting a cycle of operation of said machine.

3. A ticket issuing machine including in combination a ticket feed wheel, means on said wheel for engaging said tickets, a plurality of movable stops arranged on said wheel and disposed parallel to its axis, electromagnetic means for moving a selected one of said stops into operative position, a motor arranged to drive said wheel, electrical means to start said motor, and means controlled by said selected stop for arresting the driving of said wheel.

4. A machine for issuing strip tickets including in combination a ticket feed wheel, means on said wheel for engaging said tickets, a plurality of magnetically controlled stops disposed on said wheel, electromagnetic means for moving a selected stop into operative position, a motor arranged to drive said wheel, means controlled by said selected stop for arresting the driving of said wheel, and electrically controlled means for starting a cycle of operation of said machine.

5. A ticket issuing machine including in com-

bination a ticket feed wheel, means on said wheel for engaging said tickets, a plurality of movable electromagnetically controlled stops arranged on said wheel, an electromagnet for moving a selected one of said stops into operative position, a motor arranged to drive said wheel, and a switch connected to said motor and arranged to control the starting of said motor and controlled by said selected stop for arresting the driving of said wheel.

6. A machine for issuing strip tickets including in combination a ticket feed wheel, means on said wheel for engaging said tickets, a plurality of magnetic cores disposed on said wheel and forming selective stops, an electromagnet arranged to act on one of said cores for moving a selected stop into operative position, a motor arranged to drive said wheel, a switch connected to said motor and controlled by said selected stop for arresting the driving of said wheel, and an electromagnet arranged to act on one of said magnetic cores for starting a cycle of operation of said machine.

7. A ticket issuing machine including in combination a ticket feed wheel, a magazine for said tickets, means on said wheel for engaging said tickets, a plurality of movable stops arranged on said wheel, electromagnetic means for moving a selected one of said stops into operative position, a motor arranged to drive said wheel through an irreversible coupling, a switch connected to said motor for controlling the starting of said motor, and means controlled by said selected stop for arresting the driving of said wheel.

8. A ticket issuing machine including in combination a ticket feed wheel, a magazine for a strip of said tickets, means on said wheel for engaging said strip of tickets, a plurality of movable stops arranged on said wheel, electromagnetic means for moving a selected one of said stops into operative position, a motor arranged to drive said wheel through an irreversible coupling, an electrical switch connected to said motor for controlling the starting of said motor, means controlled by said selected stop for arresting the driving of said wheel, and means for severing tickets fed by said wheel.

9. A machine for issuing tickets from a strip including in combination a ticket feed wheel, means on said wheel for engaging said strip of tickets, a plurality of movable stops disposed on said wheel, electromagnetic means for moving a selected stop into operative position, a motor arranged to drive said wheel, electrical means controlled by said selected stop for stopping said motor, electrical means for starting a cycle of operation of said machine, and electromechanical means for preventing the operation of said machine in the event of a discontinuity in said strip of tickets.

10. A ticket issuing machine including in combination a ticket feed wheel, a magazine for a strip of tickets, means on said wheel for engaging said strip of tickets, a plurality of movable stops arranged on said wheel, electromagnetic means for moving a selected one of said stops into operative position, a motor arranged to drive said wheel through an irreversible coupling, electrical means controlled by said selected stop for arresting the driving of said wheel, means for severing from said strip tickets fed by said wheel, and electromechanical means for preventing the operation of said machine in the event of a discontinuity in said strip of tickets.

11. A machine for issuing strip tickets including in combination a ticket feed wheel, means on said wheel for engaging said strip tickets, a plurality of movable stops disposed on said wheel, electromagnetic means for moving a selected stop into operative position, a motor arranged to drive said wheel, a switch controlled by said selected stop for stopping said motor, electromagnetic means for starting a cycle of operation of said machine, and a knife controlled by electromagnetic means for severing from said strip tickets fed by said wheel.

12. A machine according to claim 11 including an electric control for preventing the operation of said machine in the event of a discontinuity in said strip of tickets.

13. A machine according to claim 11 including an electric control for preventing the operation of said machine in the event of a discontinuity in said strip of tickets, and means for limiting the operation of said machine to a selected cycle.

14. A machine according to claim 1 including means for limiting the ticket issuing to a single cycle of operation.

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