

April 26, 1932.

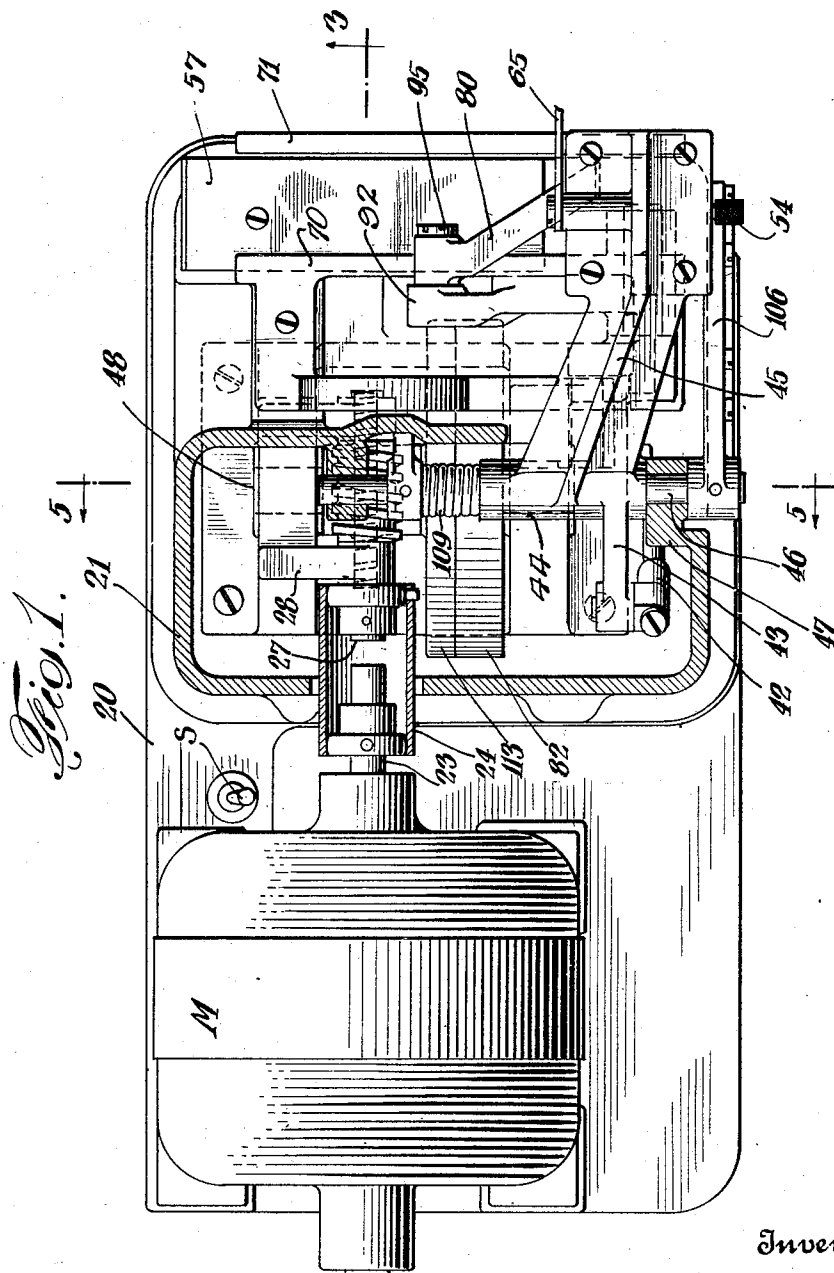
F. W. LAENCHER

1,855,764

TICKET AND APPARATUS FOR PRINTING IT

Filed March 13, 1929

5 Sheets-Sheet 1



Inventor

Frederick W. Laencher
By his Attorneys
Emery, Booth, Vaneay & Whittemore

April 26, 1932.

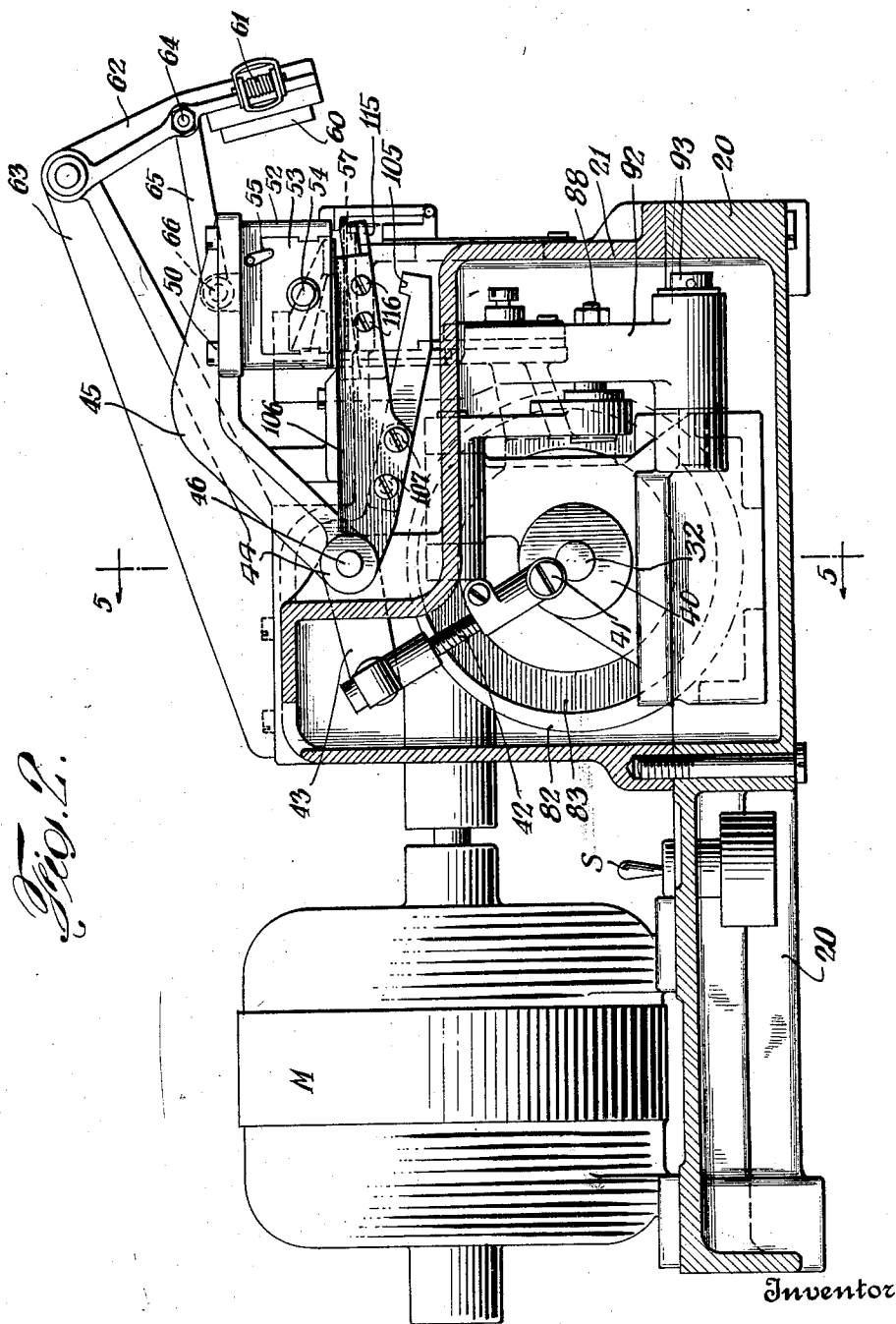
F. W. LAENCHER

1,855,764

TICKET AND APPARATUS FOR PRINTING IT

Filed March 13, 1929

5 Sheets-Sheet 2



Frederick W. Laenchers
By his Attorneys

Emery, Booth, Varney & Whittemore

April 26, 1932.

F. W. LAENCHER

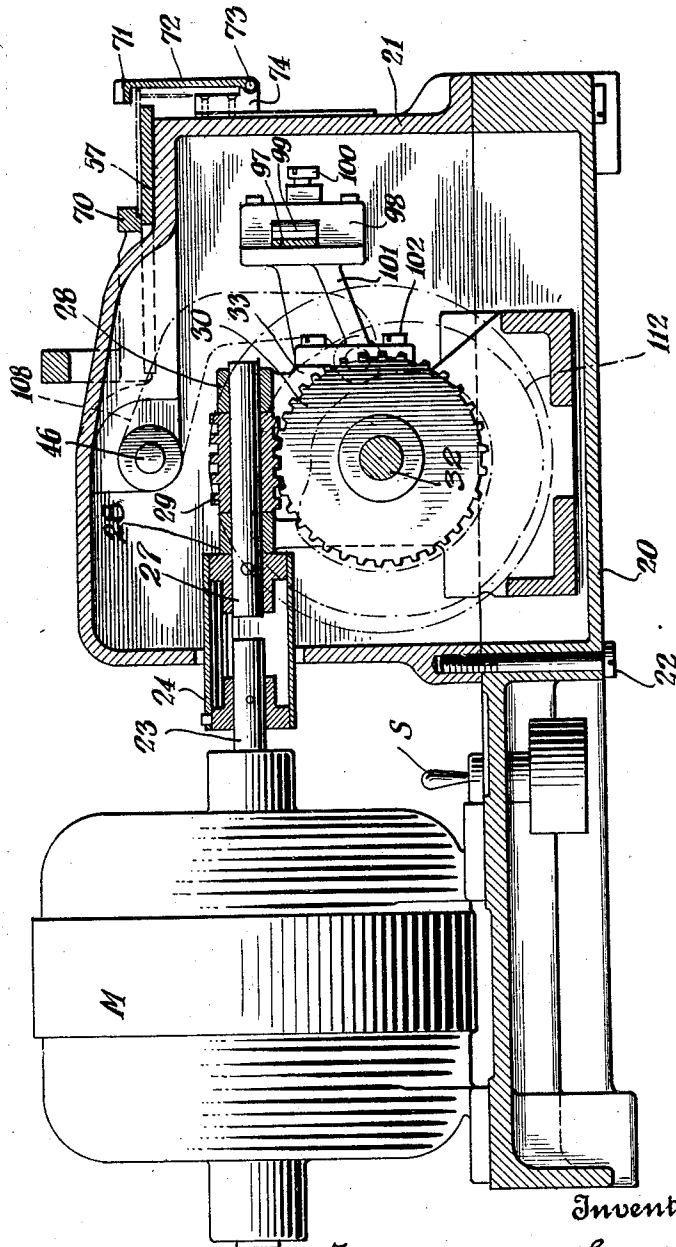
1,855,764

TICKET AND APPARATUS FOR PRINTING IT

Filed March 13, 1929

5 Sheets-Sheet 3

Fig. 3.



Inventor
Frederick W. Laencher
By his Attorneys
Emery, Booth, Varney & Whittemore

April 26, 1932.

F. W. LAENCHER

1,855,764

TICKET AND APPARATUS FOR PRINTING IT

Filed March 13, 1929

5 Sheets-Sheet 4

Fig. 5.

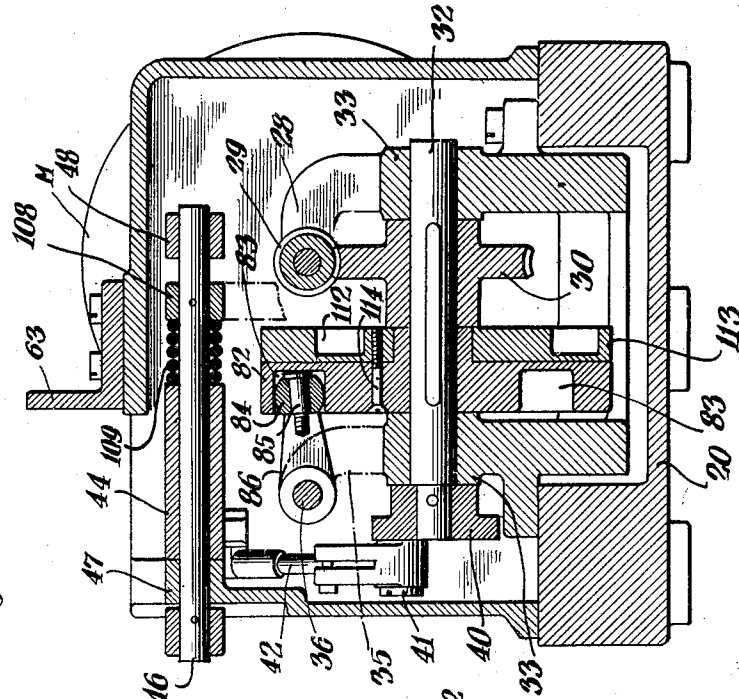
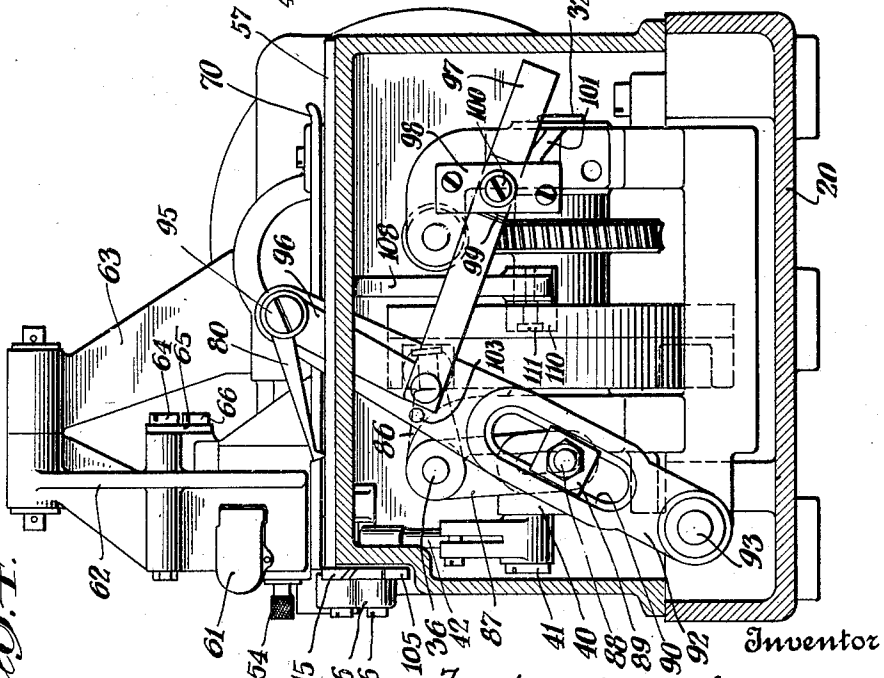


Fig. 4.



Inventor
 Frederick W. Laencher
 By his Attorneys
 Emery, Booth, Varney & Whittemore

April 26, 1932.

F. W. LAENCHER

1,855,764

TICKET AND APPARATUS FOR PRINTING IT

Filed March 13, 1929

5 Sheets-Sheet 5

Fig. 7.

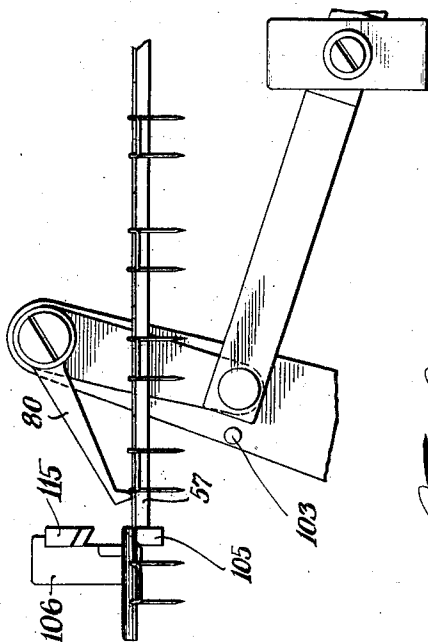


Fig. 9.

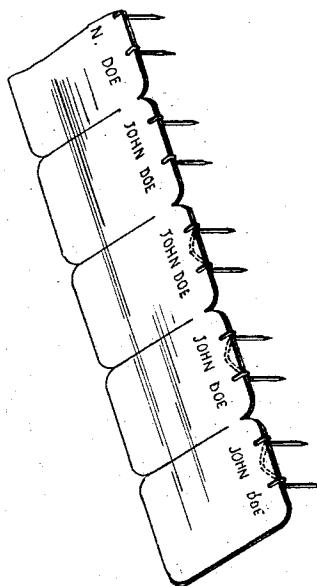


Fig. 6.

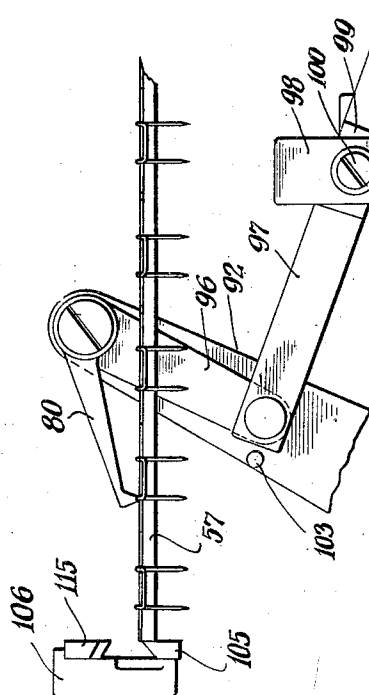
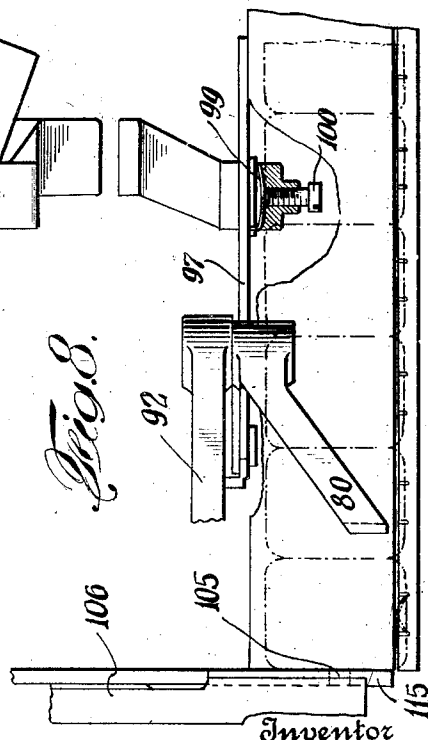


Fig. 8.



Inventor

Frederick W. Laencher
By his Attorneys
Emery, Booth, Varney & Whittemore

UNITED STATES PATENT OFFICE

FREDERICK W. LAENCHER, OF ELMHURST, NEW YORK, ASSIGNOR TO A. KIMBALL COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

TICKET AND APPARATUS FOR PRINTING IT

Application filed March 13, 1929. Serial No. 346,538.

This invention relates to tickets and to apparatus for printing them and has for an object the provision of improvements in this art.

5 The nature and objects of the invention will be best understood by reference to a specific embodiment of the invention which will now be described, this embodiment being also illustrated in the accompanying drawings, in which:

10 Figure 1 is a top plan view of a machine with part of the casing removed;

Figure 2 is a side elevation with part of the casing removed;

15 Figure 3 is a vertical section taken on the line 3—3 of Figure 1;

Figure 4 is a front elevation with part of the casing removed;

20 Figure 5 is a transverse section taken approximately on the line 5—5 of Figures 1 and 2;

Figure 6 is a side elevation of a detail shown in Figure 4;

25 Figure 7 is a similar view with the parts in a different position;

Figure 8 is a plan view corresponding to Figure 6; and

Figure 9 shows a strip of tickets adapted to be served by the machine.

30 The present machine is designed to print and sever tickets from a strip of tickets. The tickets are fed to printing position in successive steps and in order to feed them accurately a feed member is employed to move the strip forward and a stop-member or abutment is employed to locate the tags. A frictional strip-engaging finger serves satisfactorily as the feed member since it will slip over the strip without damaging it after the abutment has stopped the strip. Such a friction member also permits the use of tickets of different widths if the travel of the friction member is of greater length than the smaller ticket widths.

45 The tickets used ordinarily require some attaching means, staples or strings being commonly used, and it has been found most convenient to apply such attaching means to the tickets before they arrive at the present machine. A strip of such tickets provided

with attaching staples is shown in Figure 9.

The device used for stopping the forward travel of the strip in the machine may engage any part of the tickets or a part attached to the tickets but for accuracy I prefer to use 55 partially severed strips and have the stop device or abutment act upon an edge of the ticket.

To avoid interference by the ticket staples the abutment acts on the side of the strip opposite the line of staples so the tickets are slit 60 from the clear side and left attached to each other on the staple side.

The machine, referring to Figure 3, comprises a base 20 on the left end of which a motor M employed to drive the machine is 65 mounted, the motor being controlled by a hand switch S. The right end of the base 20 supports a casing 21 which may be held to the base by screws 22.

70 The shaft 23 of the motor M is flexibly connected by a sleeve coupling 24 with a worm shaft 27 rotatably mounted in fixed bearings 28 between which bearings a worm 29 is keyed to the shaft. The worm 29 meshes with 75 and drives a worm gear 30 keyed to a main shaft 32.

Referring to Figure 5, the main shaft 32 is rotatably mounted in bearings 33 fixed to the base 20, the right bearing casting also providing extensions for the worm shaft bearings 28 and the left bearing casting providing extensions for bearings 35 supporting a 80 rock shaft 36.

85 As shown in Figures 2 and 4, the end of the main shaft 32 has fast thereon a crank disc 40 carrying a crank pin 41 which drives an adjustable connecting rod 42 pivotably attached at its upper end to the end of an arm 43 integral in the hub 44 with a printing arm 90 45, the hub 44 being rotatably mounted upon a cutter shaft 46 supported as shown in Figure 5 in a bearing 47 formed in the casing side wall at the left end and in a bearing 48 attached to the casing top wall at its right end. 95

Referring now to Figure 2, the forward end of the printing arm 45 has attached thereto as by screws 50 a printing head including a chase holder 52. The chase holder slidably receives a chase 53 having a hand knob 54 and 100

locked in the chase holder by a latch 55. Type may be set in the chase holder in the usual way. Strips of tickets may be moved along and backed up during printing by a table
 5 plate 57 (see also Figures 1 and 3) secured to the top of the casing.

In the off position of the printing head, the type may be inked by an inking pad 60 removably secured by a clip 61 to the lower end of
 10 a pad arm 62 pivoted at its upper end to a fixed bracket 63. The pad arm is pivotally connected intermediate its length by a pin 64 to an actuating link 65 pivoted by a pin 66 to the printing arm 45.

As shown in Figures 1 and 3 the strips of tickets may be retained upon the table plate 57 at the rear edge by a retaining strip 70 and at the front edge by the laterally extending flange 71 of a side guide 72 hinged at 73
 20 to a block 74 fixed to the front of the casing. Light springs normally urge the guide 72 against the edge of the ticket strip but the guide may be swung out to accommodate different widths of ticket strips, i. e. tickets of
 25 greater length. Sufficient clearance is left above the block 74 to receive the staples borne by the tickets.

Means is provided for moving a ticket strip along the table plate past printing position. As shown in Figure 4 a reciprocating friction
 30 pusher finger 80 is employed for this purpose, the finger being firmly held down upon the strip of tickets while moving in one (feeding) direction and preferably raised above the ticket strip when moving in the opposite
 35 direction. The finger moves the strip and returns to its original position while the printing head is raised, and dwells in the return position while the printing head is in contact with the strip. That is, the finger and printing
 40 head act in alternation to avoid conflict with each other and to avoid wasted movement of the finger or undesired movement of the strip.

The mechanism for effecting the required movements of the friction finger comprises (Figure 5) a cam disc 82 keyed to the main
 45 shaft 32 and provided in one face with a cam groove 83 within which a spherical cam follower 84 operates, the follower 84 being secured by a screw 85 to the outer end of a cam
 50 arm 86 fixed to the rock shaft 36 previously mentioned.

Referring to Figure 4, the rock shaft 36 also has fixed thereto a block arm 87 provided with a pin 88 at its outer end for pivotally
 55 supporting a slide block 89. The block operates upon guides 90 on the sides of a slot formed in the finger operating lever 92, the lever 92 being pivotally supported by a fixed
 60 pin 93.

At the upper end of the operating lever 92 the finger 80 is swingably mounted upon a
 65 pin 95, the finger having a drag arm 96 attached to it at the pivot. The lower end of

the drag arm 96 is pivoted to a drag bar 97 slidable through a guide 98 and frictionally held therein by a leaf spring 99 tensioned by an adjustment screw 100. In Figure 3 a
 70 bracket 101 for supporting the guide is shown attached by screws 102 to the side of the main shaft bearing casting 33.

When the finger operating lever 92 is swung counter-clockwise as seen in Figure 4 the end of the finger 80 is pressed down because the drag bar 97 exerts a pull on the
 75 drag arm 96 tending to rotate it clockwise together with the finger. On the return stroke of the finger when the lever 92 is swung clockwise the frictional resistance of the drag bar causes the drag arm and finger to be turned
 80 counter-clockwise about the pivot pin 95 thus raising the finger from the ticket strip. A push pin 103 secured in the lever 92 strikes the end of the drag bar after the finger has
 85 been raised sufficiently and prevents higher rise while pushing the drag bar back through its friction guide.

Means is herein provided for accurately stopping tickets in printing position. As
 90 shown in Figure 7 this stop means includes an abutment 105 located near the slitted edge of the ticket strip. In operation the abutment rises beneath a printed ticket which is being pushed off by the friction finger and
 95 lifts one end of the ticket (the slitted end) relative to the following ticket which is held down by the guides and the friction finger. The slitted edge of the following ticket will come against the side of the abutment thus
 100 stopping forward movement of the ticket strip. Thereafter the finger will slip over the surface of the ticket strip in completing its forward stroke, rise and return to its original position and the abutment will be lowered to
 105 permit the next ticket to be pushed off after it is printed.

The mechanism for imparting coordinated movement to the abutment comprises, as best shown in Figure 2, an abutment supporting
 110 arm 106 fixed to the end of the cutter shaft 46, the abutment piece being attached to the arm 106 by screws 107.

Referring to Figure 5, the other end of the shaft 46 just inside the bearing 48 has a cam
 115 arm 108 rigidly attached thereto. Here it may be noted that the hub of the cam arm 108 serves as a fixed rest for a coil spring 109 acting at its other end against the hub 44 of the printing arm 45 to keep the hub pressed
 120 against the side of the casing.

Referring to Figure 4, the cam arm 108 at its lower end supports a cam follower 110, a screw 111 securing the follower to the arm. The cam follower operates (see also Figure
 125 5) within a cam groove 112 of a cam plate 113 attached to the cam disc 82 on the main shaft by screws 114. The shape of the cam groove to impart proper motion to the cam follower and the abutment actuated thereby may be
 130

observed in Figure 3 where it is shown in chain lines.

It is usually desirable to sever the individual tickets from the strip after they have been printed and for this purpose (Figures 2 and 4) a cutting blade 115 is secured to the abutment arm 106 by screws 116. As seen in Figures 4, 6 and 7, the cutting blade 115 cooperates with the end of the table plate 57 to cut the short length of ticket-connecting material on its downstroke just after the abutment has moved away. Since the cutting edge of the blade and the acting edge of the abutment are in the same plane, the cut made by the blade will coincide exactly with the slit previously made.

In operation a strip of partially severed tickets is placed upon the table plate between the guides and pushed by hand along the plate until the first ticket comes beneath the printing head and the machine is started. The printing head descends and prints the first ticket and then ascends. While the printing head is ascending the pusher finger moves toward printing position and carries the strip of tickets with it since it is moved down into frictional engagement with the strip by the drag bar arrangement described. During this feeding movement of the finger the cutting blade is held above the top surface of the table plate and the abutment is held below the plate thus allowing the strip to be passed between them. This stage is illustrated in Figure 6.

The acting portion of the feeding finger may be given any shape or surface required by the character of the table plate and texture of the ticket strips. In the present machine a straight and smooth depending edge operates with entire satisfaction on smooth ticket strips where the table plate has a moderately smooth machine finish.

After the finger has moved the leading edge of the first ticket above it the abutment rises as previously described to stop the strip by engaging the leading slitted edge of the second ticket, the finger sliding over without moving the ticket strip for the remainder of its stroke.

While the printing head is now descending the pusher finger retracts clear of the head and the cutting blade is moved down to sever the first ticket from the second.

From the foregoing description it will be seen that both the machine and the ticket strips are especially designed and prepared to produce assured and satisfactory final results. The slits provide a part upon which the abutment may act and being on the edge of the ticket strip remote from the staples permits a location for the abutment where its action will not be interfered with by the staples. Indentations or cusps made on each edge of the strip between the tickets further assist in the proper alignment of the cutting blade with

the slits and provide easier severance of the tickets.

One embodiment of the invention has been described in considerable detail to furnish a proper understanding of the invention but it is to be understood that various changes and modifications are contemplated as falling within the spirit of the invention expressed in the appended claims.

What I claim is:

1. Apparatus of the character described comprising a table plate and guides for directing a strip of tickets to a printing position therealong, an oscillatory printing head for printing said tickets as they arrive at printing position, means for actuating said printing head including a main shaft, a crank thereon and connecting members serving to transmit motion from said crank to said printing head, means for advancing the ticket strip in steps along said table plate past printing position, said advancing means including a friction pusher finger, a swinging lever pivotally supporting said finger, means to drive said lever from said main shaft, means to press said finger downward when it moves forward and to raise it when it moves backward, said means including a drag arm attached to said finger and to a drag bar frictionally slidable through a guide, a pin on said swinging lever for limiting the rise of said finger on its backward stroke, an abutment swingably mounted at the end of said table plate adapted to lift the end of a previously printed ticket and engage the slitted edge of the next ticket, means for operating said abutment including a grooved cam plate on the main shaft and connections between the cam plate and abutment, and a cutting blade mounted above said abutment adapted to cooperate with the end of said table plate to sever tickets from the strip; said cutting blade being rigidly connected to said abutment and striking said strip at a location transversely spaced from the location engaged by said abutment.

2. Apparatus of the character described for operating upon a ticket strip partially severed at intervals from one edge and having ticket attaching staples along the opposite edge, including a friction finger for feeding said strip forward, a swinging abutment adapted to engage the leading slitted edge of a ticket while lifting the end of the preceding ticket to stop the strip, the finger sliding over the strip in its further forward movement after stoppage of the strip, and means to sever a ticket from the strip while the strip is stopped.

3. Apparatus of the character described for operating upon a ticket strip partially severed at intervals and having ticket attaching staples along one edge, including a reciprocatory friction member for feeding said strip in intermittent steps past a printing position,

means for printing the tickets as they stop in printing position, and means to stop said strip as each ticket arrives at printing position, said stop means including an abutment
 5 arranged to clear said attaching staples and to engage succeeding tickets against their partially severed edges.

4. Apparatus of the character described comprising a strip slide surface, a finger for
 10 pressing a ticket strip against said surface and moving it therealong and a stop for halting said strip, said finger sliding upon said strip after it has halted, the amplitude of movement of said finger being adequate to
 15 serve strips of different ticket widths.

5. Apparatus of the character described comprising a member providing slidable movement of a ticket strip therealong, and a reciprocatory device engaging said strip
 20 upon said member to feed the strip in one direction but being raised above the strip on return direction, and an abutment for halting the forward movement of said strip before the end of the forward stroke of said reciprocating device.

6. Apparatus of the character described comprising a table plate, a reciprocatory device for pressing a ticket strip upon said plate to feed it by frictional engagement in one direction but rising clear of the strip in return direction, and means for actuating said device including a drag device tending to rotate the feed device about a center as it reciprocates.

7. Apparatus of the character described for feeding a ticket strip which is partially severed transversely at intervals comprising a movable abutment for successively stopping the strip by acting upon the severed edges
 40 and a feed finger for successively advancing the strip by frictional engagement with the strip in the region of the unsevered part of the strip.

8. Apparatus of the character described
 45 for acting upon a ticket strip which is partially severed transversely at intervals comprising means for successively moving the strip and a movable abutment for successively stopping the strip by acting against the severed edges.

9. Apparatus of the character described for acting upon a periodically advanced ticket strip which comprises means for successively moving the strip and a stop member
 55 actuated in coordination with the movements of said strip for periodically engaging the strip to stop it.

10. Apparatus of the character described for acting upon a longitudinally advancing
 60 ticket strip which is partially severed transversely comprising a stop member and a cutting member disposed so as to act on different portions of the width of the strip.

11. Apparatus of the character described
 65 for acting upon a longitudinally advancing

ticket strip which is partially severed transversely which comprises a table along which the strip moves, a stop member adapted to rise beneath the strip just beyond the end of the table plate and a cutting member adapted to
 70 descend for cutting the strip in cooperation with the end of the table plate.

12. Apparatus of the character described for acting upon a longitudinally advancing ticket strip which is partially severed transversely which comprises a table along which the strip moves, a stop member adapted to rise beneath the strip just beyond the end of the table plate and a cutting member adapted to descend for cutting the strip in cooperation with the end of the table plate, said stop member and cutting member being mounted upon a single movable support.

13. Apparatus of the character described for acting upon a longitudinally advancing ticket strip which is partially severed transversely which comprises a table along which the strip moves, a stop member adapted to rise beneath the strip just beyond the end of the table plate and a cutting member adapted to descend for cutting the strip in cooperation with the end of the table plate, said stop member and cutting member being mounted upon a single movable support and vertically spaced apart to permit the strip to
 90 be fed forward between them.

14. The method of preparing tickets from a ticket strip which is partially severed transversely at regular intervals and provided with attaching staples at an edge remote from the severed portions, which comprises frictionally advancing the strip in successive steps, halting the strip successively by an abutment cooperating with the edges of the transverse cuts made in partially severing the strips, printing upon the strip while halted by said abutment, and completing the cut across the strip for the tickets as printed.

In testimony whereof, I have signed my name to this specification this 11th day of
 120 March, 1929.

FREDERICK W. LAENCHER.