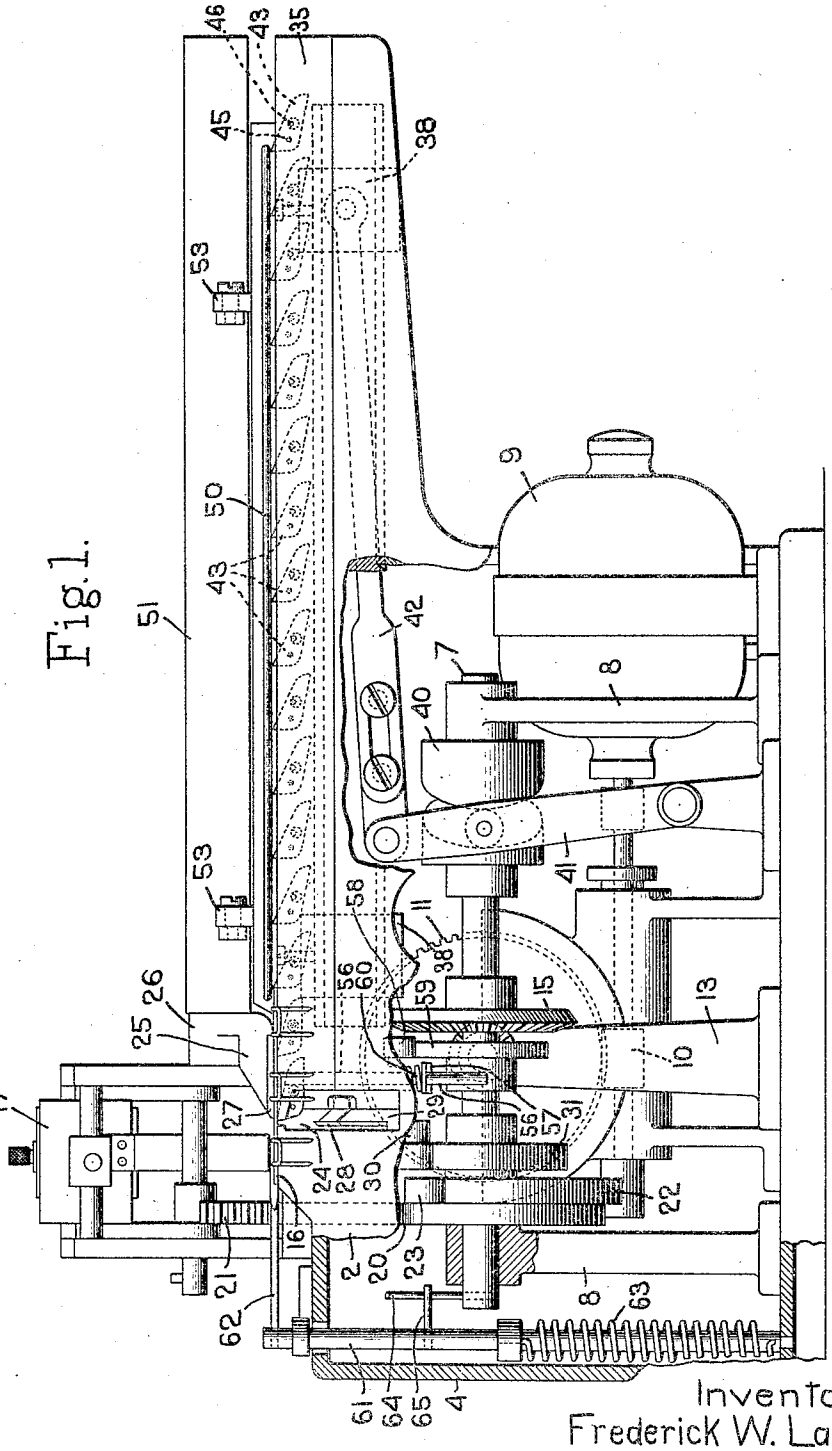
Feb. 14, 1933. F. W. LAENCHER 1,897,201

MACHINE FOR OPERATING UPON A TICKET STRIP

Original Filed March 11, 1924 3 Sheets-Sheet 1

Fig. 1.



Inventor.
Frederick W. Laencher
by Heard Smith & Tennant.
Attys.

Feb. 14, 1933. F. W. LAENCHER 1,897,201

MACHINE FOR OPERATING UPON A TICKET STRIP

Original Filed March 11, 1924 3 Sheets-Sheet 2

Fig. 3.

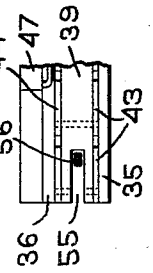


Fig. 2.

Inventor.
Frederick W. Laencher
by Heard Smith & Tennant.
Attys.

Feb. 14, 1933. F. W. LAENCHER 1,897,201

MACHINE FOR OPERATING UPON A TICKET STRIP

Original Filed March 11, 1924 3 Sheets-Sheet 3

Fig. 4.

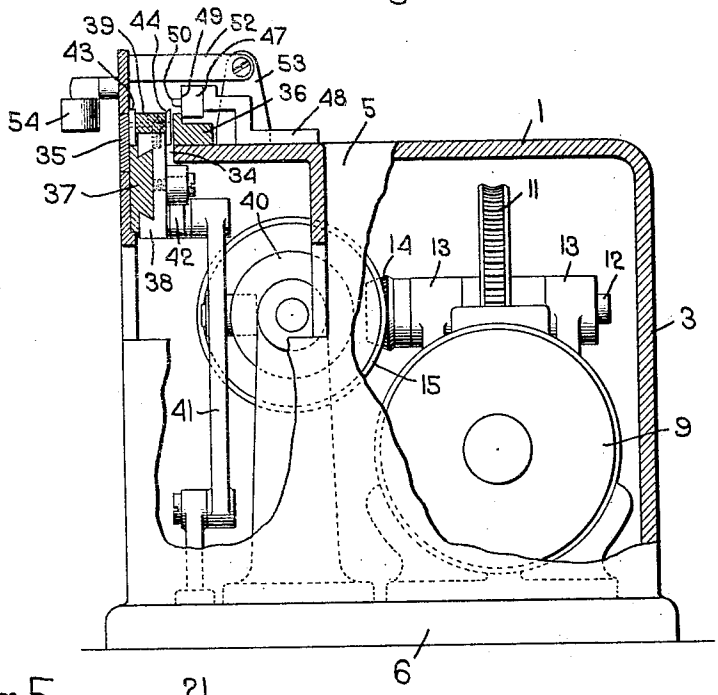


Fig.5.

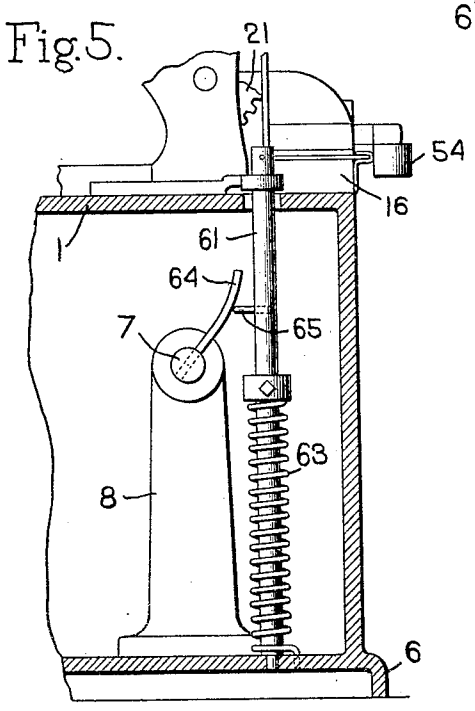
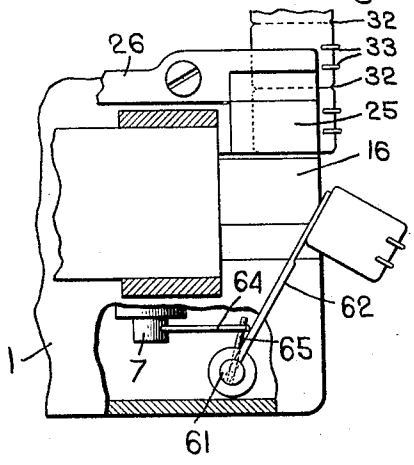


Fig.6.



Inventor.
Frederick W. Laencher
by Heard Smith & Tennant.
Attys.

Patented Feb. 14, 1933

1,897,201

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

MACHINE FOR OPERATING UPON A TICKET STRIP

Original application filed March 11, 1924, Serial No. 698,406. Divided and this application filed September 12, 1930. Serial No. 481,438.

This invention relates to improvements in machines for operating upon a strip of material such as a ticket strip and more particularly in machines for printing and severing individual marking tickets from a marking ticket strip. The invention in a general way involves improvements upon the type of machine made the subject of my Patent No. 1,650,076, granted November 22, 1927, and is a division of my application No. 698,406, filed March 11, 1924, now Patent No. 1,799,912, granted April 7, 1931.

The principal object of the present invention is to provide a machine having a ticket-strip feeding mechanism which will efficiently and properly present to a mechanism for operating upon the strip, such as printing and severing mechanism, the successive sections of the ticket strip, together with means for positively discharging after the completion of each operation the printed and severed section from the machine.

A further object of the invention is to provide a ticket marking machine of relatively simple and of strong construction and one in which the parts are readily accessible for repair and replacement.

The objects and features of the invention will appear more fully from the accompanying description and drawings and will be particularly pointed out in the claims.

The invention is shown in a preferred form in the drawings as embodied in a machine for printing and severing marking tickets fed to the machine in the form of a continuous marking ticket strip.

In the drawings:

Fig. 1 is a front elevation of the machine with a portion thereof broken away and partially in vertical cross section.

Fig. 2 is a top plan view of the machine.

Fig. 3 is a detail of the forward end of the feed bar.

Fig. 4 is a side elevation looking toward the right of Fig. 1 and partially broken away and partially in vertical cross section.

Fig. 5 is a detail in transverse vertical cross section showing the kick-off mechanism.

Fig. 6 is a detail in top plan and partially in horizontal cross section of the mechanism shown in Fig. 5.

The machine herein illustrated comprises a frame of generally rectangular shape comprising a table or bed 1, a front wall 2, a rear wall 3 and end walls 4 and 5, and a suitable base 6, all enclosing with a box-like structure the operating mechanism of the machine. The frame is prolonged at the right to provide for the necessary length of the feeding mechanism.

The main shaft 7 of the machine is shown as extending longitudinally of the frame and supported in suitable bearing standards 8 from the base. All the various mechanisms of the machine are operated directly from this shaft. This main shaft 7 is shown as driven by an electric motor 9 mounted in the frame and driving a worm 10 which in turn drives a worm wheel 11. This worm wheel is mounted on a transverse shaft 12 supported in suitable bearing standards 13. The shaft 12 carries a beveled pinion 14 which drives a beveled gear 15 secured to the main shaft 7.

While the particular operations to be performed upon the ticket strip are independent of the invention in its broader aspects the machine illustrated is particularly designed for the printing and severing from the strip of individual marking tickets each of which may be provided with fastening means such as pins or strings.

In the operation of this machine the ticket strip is fed so as to bring successive sections thereof onto a horizontal platen 16 preferably formed on a raised portion of the bed 1. Mechanisms are provided for severing the section thus fed onto the platen from the remainder of the ticket strip and for printing any desired matter upon the ticket section while it rests upon the platen. But the severing and printing mechanisms form of themselves no part of the present invention and are shown as of the same construction as in my aforesaid patent.

It will be sufficient to note with respect to the printing mechanism that the printing head 17 carrying the movable type 18 is mounted above the bed of the machine and

swings between the inking pad 19 and the platen being operated by the rack 20 and the co-operating toothed sector 21. The rack 20 receives its reciprocating movement from a cam 22 on the main shaft 7 which engages a roller 23 carried by the rack.

The cutting or severing mechanism also needs no extended description. The bed is slotted transversely at 24 at the right of the platen. A plate 25 formed on the end of an overhanging arm 26 is rigidly supported above the bed or that surface which supports the ticket strip immediately to the right of the platen and this plate has removably secured in its bottom face a ledger blade 27 the front edge of which constitutes a cutting edge and extends transversely of the machine at the slot 24. The lower or movable cutter member comprises a cutter blade 28 removably secured to a cutter arm 29 pivoted at the rear of the frame and carrying a roller 30 resting upon the cam 31 on the main shaft. The movable cutter is thus at the required times brought into co-operation with the edge of the ledger blade 27 to sever the ticket strip immediately adjacent the platen. Preferably the mechanisms are so timed that the printing and severing operations take place practically simultaneously.

The ticket strips upon which the machine of this invention may operate may be of varying sizes and designs. They may be plain, continuous straight edged strips or they may, as shown in Fig. 6, be notched at the edges as at 32. They may or may not be provided with fastening devices such as strings or wire fasteners 33 all of a familiar type.

In the machine illustrated the object of the feeding mechanism is to feed the ticket strip so as accurately to present successive ticket sections to the printing and severing mechanism so that the line of severance will take place at the precise point desired such, for example, as across the notches 32 defining the ticket sections. It is very important that the ticket section shall be symmetrical and evenly printed and that, when notched, the line of severance shall take place along the notches.

In the preferred construction illustrated a longitudinal slot or way 34 is formed in the bed of the machine in line with the platen 16 or the position to which the ticket sections are to be fed and the feeding mechanism is mounted to reciprocate in this longitudinal way. The front side of this way is brought up to the level of the platen by a plate 35 secured at the front of the bed and presenting at its top a flat ticket strip supporting surface. The rear side of the way is brought up to the same level by a bar 36 secured to the top of the bed and also presenting at its top a flat ticket strip supporting surface.

A guide rib 37 is secured to the bed and extends longitudinally of the way 34. A slide is mounted to reciprocate upon this guide rib. As illustrated this slide comprises two blocks 38 each having a dovetail fit on the guide rib 37 and a feed bar 39 extending longitudinally of the way and secured by set screws to the blocks 38. This slide comprising the blocks and feed bar is given a reciprocatory movement from the main shaft of the machine. For this purpose a cam 40 rocks a lever 41 connected at its upper end by an adjustable link 42 with the right hand block 38.

The feed bar carries a longitudinal series of strip engaging members which are normally projected above the bottom plane of the ticket strip resting upon the strip supporting surfaces of the plate 35 and bar 36 but which strip engaging members are depressed by the strip. The members of this series are spaced apart longitudinally a distance not less than the width of the ticket. As the series of strip engaging members are secured to the feed bar they are given a bodily reciprocation in unison. The result is that upon each forward movement of the feed bar the strip engaging member projected next to the right of the end of the ticket strip will be brought into engagement with the end of the ticket strip and thus advance the entire strip a predetermined distance or the width of the ticket to be severed therefrom. Suitable means are provided for preventing retrograde movement of the strip after each forward feeding movement.

The strip engaging members are preferably in the form of gravity-operated pivoted pawls arranged in pairs so that each pair acts together against the end of the strip and thus assists in preventing any lateral twisting of the strip. Each pair of pawls is preferably pivoted one at each side of the feed bar as shown at 43 and 44 and each pair is pivoted upon a single pin 45 extending laterally through the feed bar. The body of each pawl extends well to the right of the pivot and thus forms a weight which acts normally to project the point of the pawl upwardly. This upward movement is limited by another pin 46 mounted in the feed bar and extending through an aperture in the pawls.

The ticket strip as it rests upon the supporting surfaces at the top of the plate 35 and bar 36 is aligned and guided by the front surface of a guide bar 47 secured to the brackets 48 which are adjustably mounted by the screw and slot connections to the bed. Two hold-down means are preferably provided for pressing the ticket strip upon the supporting surfaces and for pressing down the pawls or strip engaging members. One of these hold-downs is preferably fixed and comprises a bar or wire 50 secured to and

projecting laterally from the guide 47 and overlying the inner edge of the strip. The other hold-down is preferably movable and comprises a flat bar 51 adapted to rest on the ticket strip directly over the supporting surface at the top of the plate 35. This bar is carried by arms 52 extending rearwardly and pivotally mounted in brackets 53 on the bed. The movable hold-down may also carry, as shown, a vertically pivoted roller 54 to guide the outer edge of the ticket strip adjacent its forward portion.

The plate 35 and the bar 36 extend beneath the ledger blade 27 substantially to the cutting edge thereof so that the ticket strip is supported up to the line upon which it is to be severed. The edge guide 49 also extends beneath the ledger blade 27 so as to guide the ticket strip up to the line of severance. The left hand end of the feed bar 39 is slotted longitudinally at 55 to permit the operation therethrough of the vertical clamping bar 56 which co-operates with the ledger blade 27 and which is slidably mounted in a suitable journal in the frame and passes through the slotted end of an actuating lever 57 pivotally mounted at its rear end and carrying a roller 58 resting upon a cam 59 on the main shaft 7. A helical spring 60 surrounding the clamping bar and seated at its lower end upon a washer resting upon the reduced end of the lever 57 and connected at its upper end to the clamping bar provides a yielding support for the clamping bar thus enabling it properly to clamp the ticket strip against the blade 27 and prevent retrograde movement of the ticket strip during the backward movements of the feeding mechanism. The cam 59 is so shaped and timed that the clamping bar will be raised to engage and clamp the ticket strip at the end of the forward feeding movement and to retain the strip during the backward feeding movement thus enabling the strip engaging members or pawls carried by the feed bar successively to engage the widest ticket for which the machine is adapted and of course to engage the end of the strip upon its forward movement when tickets of less width are to be formed.

It will thus be seen that the ticket strip will be fed with great accuracy. Those strip engaging members or pawls which lie beneath the ticket strip are held pressed down by the strip but the member or pair of members to the right of the end of the ticket strip are projected upwardly. Consequently as the feed bar is moved forward the projected strip engaging members come against the end of the ticket strip and feed it surely and accurately forward the predetermined distance and position the left hand end of the strip upon the platen. The clamping bar then acts to hold the ticket strip and as the feeding mechanism is moved backward the next succeeding strip engaging member or pair of pawls is projected upwardly and the operation is repeated. Thus no matter what material the strip may be made of, whether thick or thin, it will still be fed uniformly and accurately, thus insuring that tickets or sections of the same width shall be operated upon or printed and severed from the strip.

It is very desirable that when the ticket sections are severed from the strip, they shall be removed from the machine. Otherwise they may pile up one on top of the other or be pushed into an undesirable position and clog the machine. In order to secure this result the invention provides a kick-off mechanism which acts at the conclusion of each operation such as printing and severing to remove the severed ticket section off from the platen. For this purpos a vertical shaft 61 is mounted in the frame, projects up through the bed plate, and carries a kick-off arm 62 so mounted as to sweep across the platen when the shaft 61 is rocked. A helical spring 63 connected at its upper end to the shaft and at its lower end to the base of the frame acts to swing the arm 62 normally to the rear of the platen. The shaft 61 is rocked in the opposite direction to sweep the kick-off arm 62 across the platen and wipe the ticket from the platen by means of a wiper arm 64 projecting from the shaft 7 and engaging a pin 65 projecting from the shaft 61. Thus, at each revolution of the main shaft or at each operation of the machine the ticket severed from the strip is surely and accurately discharged from the machine.

An important feature of the invention resides in the relation between the platen and the kick-off device. It will be observed that the face of the platen is in a horizontal plane so that the severed ticket is fed readily and easily thereonto and rests normally thereon. The horizontal platen face upon which the ticket thus rests is smooth and unbroken, thus affording nothing to interfere with the feeding of the ticket thereonto. The kick-off device sweeps across the platen in a horizontal plane parallel with the face of the platen and thus in no way interferes with the construction of the platen and requires no slots therein for its operation. The kick-off device therefore acts accurately and surely in a simple and efficient manner to remove the ticket from the platen and discharge it from the machine.

The ticket strips are readily and successively placed in position in the machine by raising the movable holddown 51 or swinging it back, as shown in Fig. 1. The ticket strip may then be slid beneath the fixed holddown until its rear end is in position to be caught by the strip engaging members and then the movable hold-down swung into position. After the first strip has been introduced into the machine successive ticket strips may be fed into the machine by insert-

ing their forward ends beneath the rear end of the hold-down and pushing them forward until their forward ends approximately reach the rear end of the preceding ticket strip.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A machine for operating upon a ticket strip comprising a horizontal platen, means for feeding a ticket strip step by step to present successive sections thereof onto the platen, means for printing and severing from the strip the sections successively fed onto the platen, a kick-off arm mounted to sweep in a horizontal plane across and parallel with the face of the platen, and means for swinging the kick-off arm at the completion of each printing operation to cause it to sweep the printed and severed section from the platen.

2. A machine for operating upon a ticket strip comprising a horizontal platen, means for feeding a ticket strip step by step to present successive sections thereof onto the platen, means for printing and severing from the strip the sections successively fed onto the platen, a vertical shaft, a kick-off arm carried by the shaft and positioned to sweep in a horizontal plane across and parallel with the face of the platen when the shaft is rocked, a spring connected to the shaft acting to swing the kick-off arm to the rear of the platen, and means for intermittently rocking the shaft against said spring at the completion of each printing operation to swing the arm and thus remove the printed and severed section from the platen.

3. A machine for operating upon a ticket strip comprising a horizontal platen, means for feeding a ticket strip step by step to present sections thereof on to the platen, means for printing and severing from the strip the sections successively fed on to the platen, a kick-off device mounted to move in a horizontal plane across and parallel with the face of the platen transversely of the line of feed of the ticket strip, and means for moving the kick-off device at the completion of each printing operation to cause it to push the printed and severed section from the platen.

In testimony whereof, I have signed my name to this specification.

FREDERICK W. LAENCHER.