

Jan. 4, 1938.

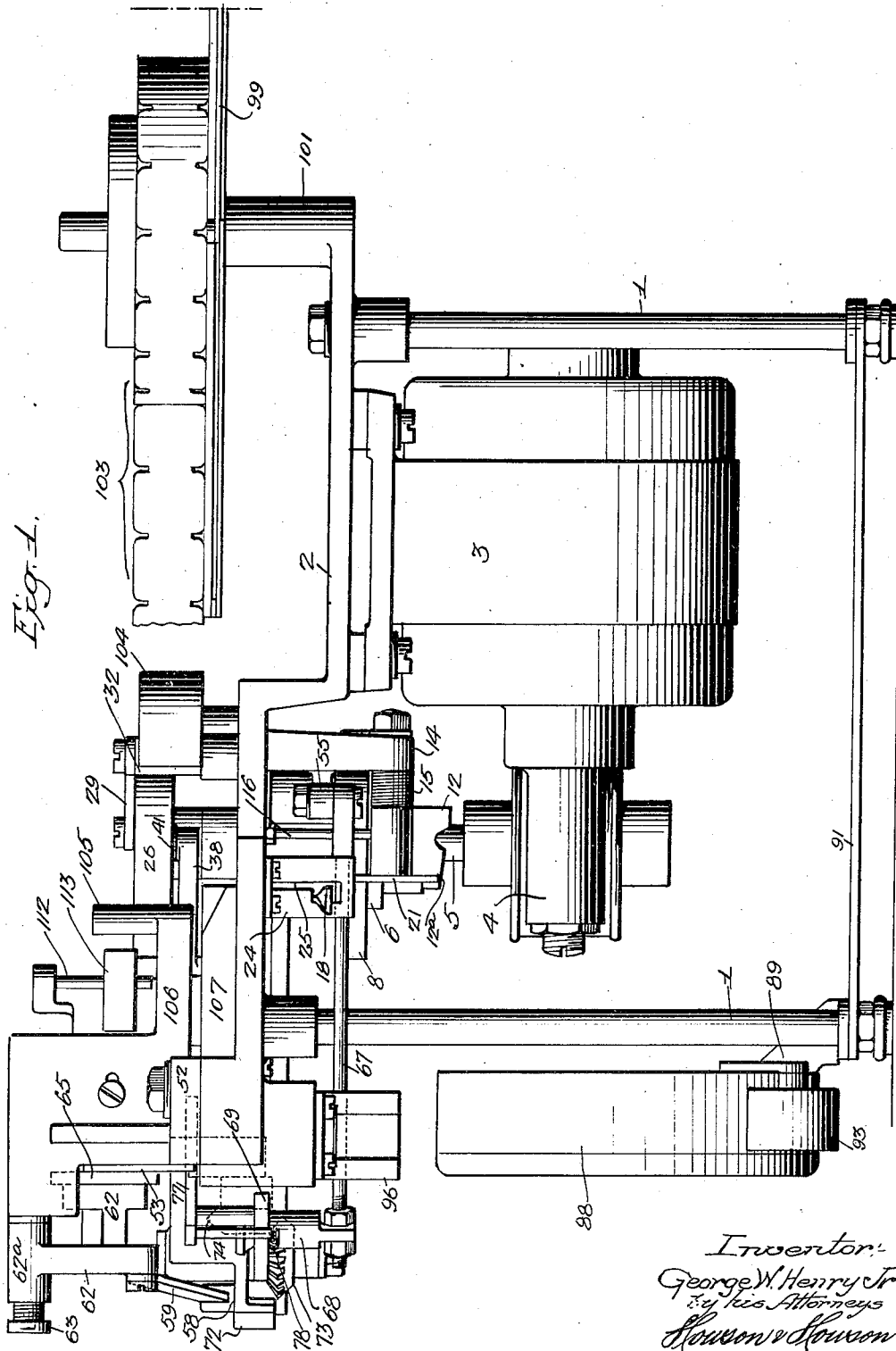
G. W. HENRY, JR

2,104,647

TICKET PRINTING MACHINE

Original Filed June 2, 1933

5 Sheets-Sheet 1



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TICKET PRINTING MACHINE

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5 Sheets-Sheet 2

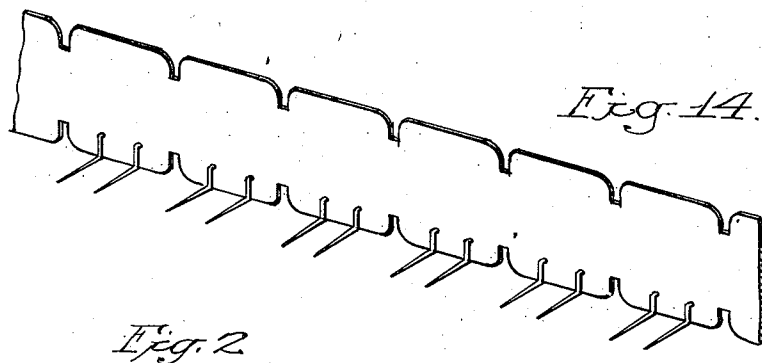
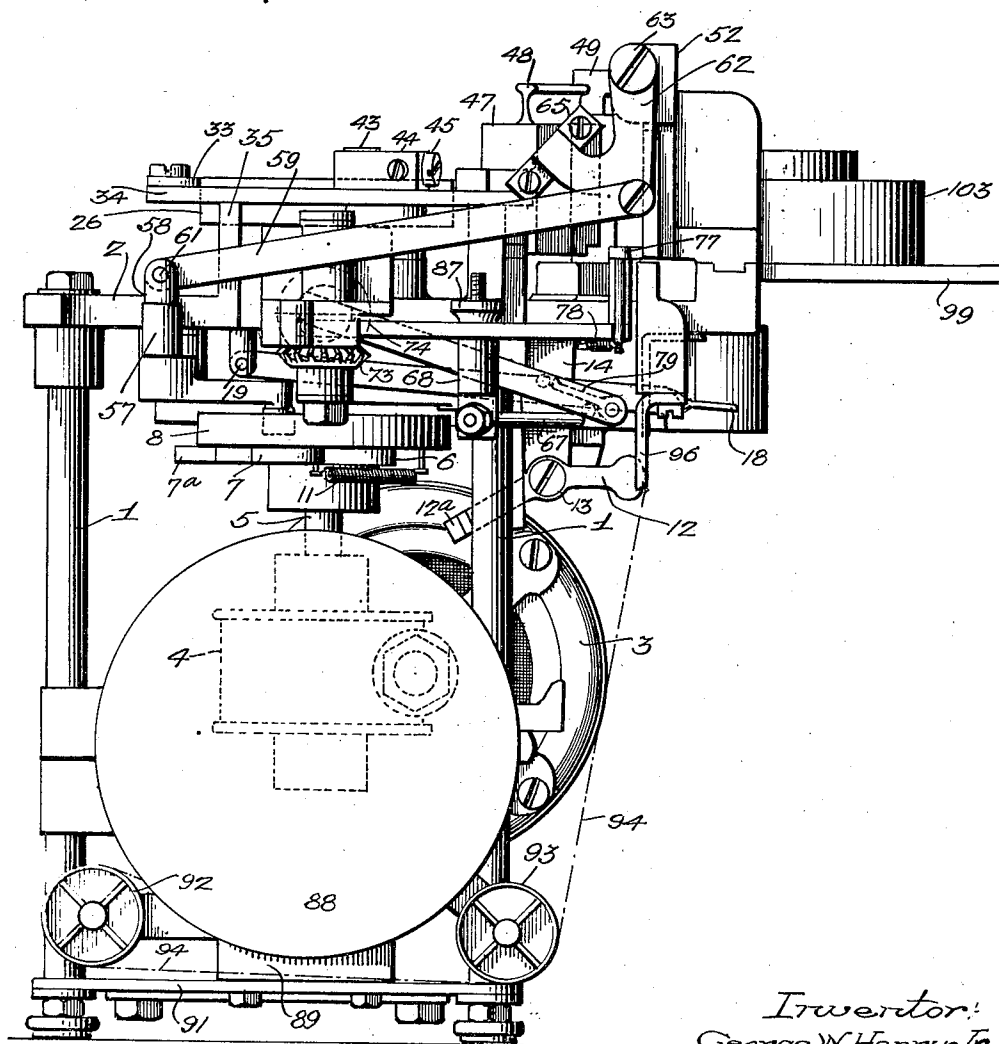


Fig. 2



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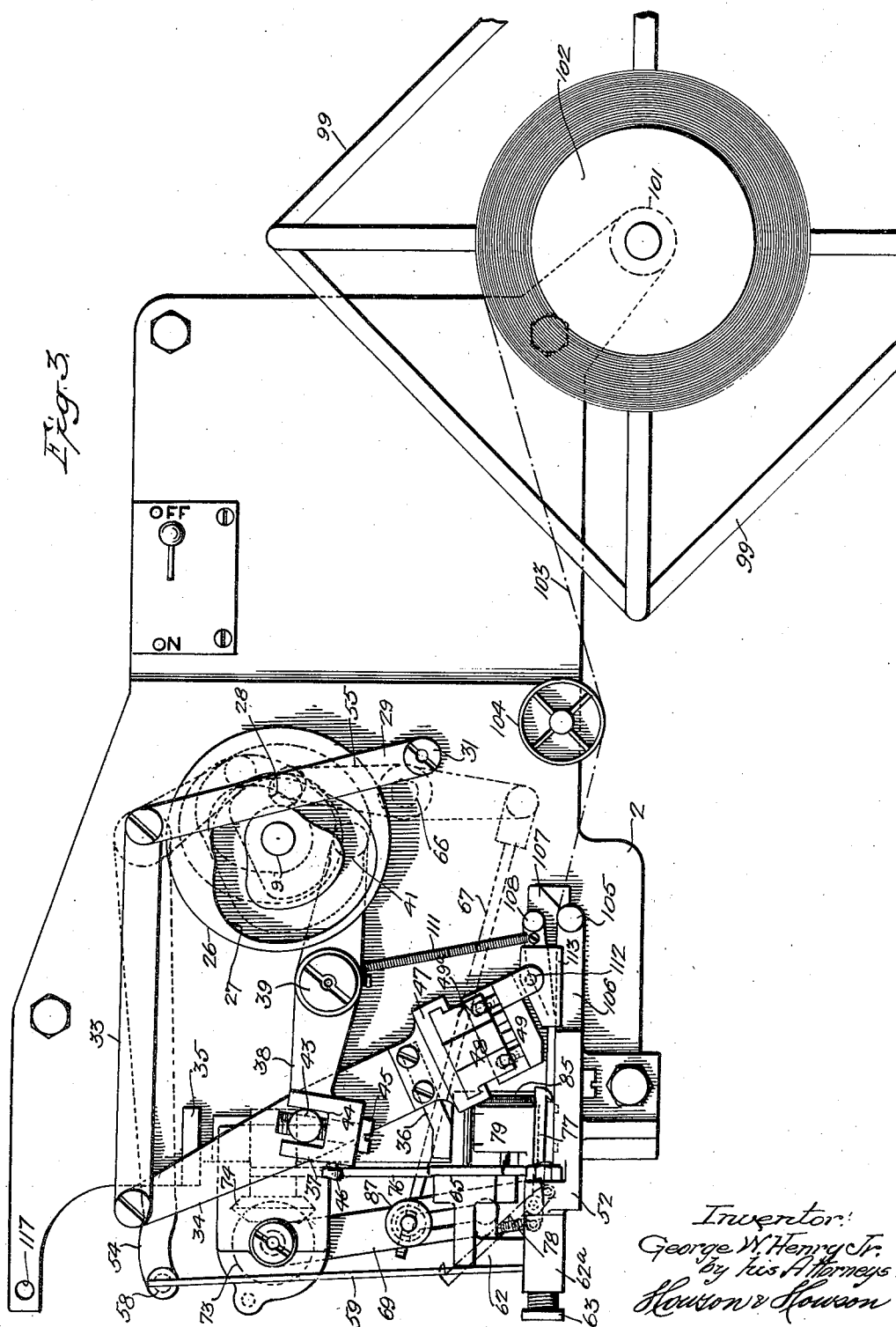
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Fig. 6

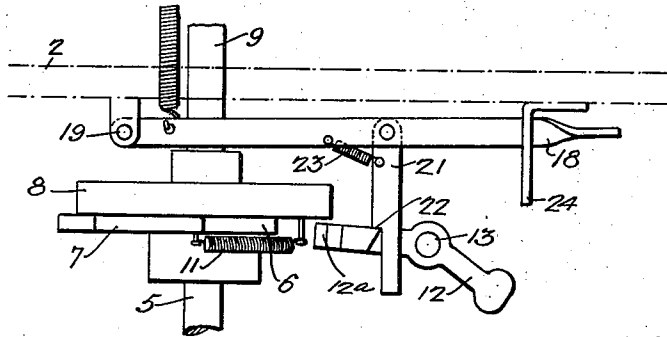


Fig. 12.

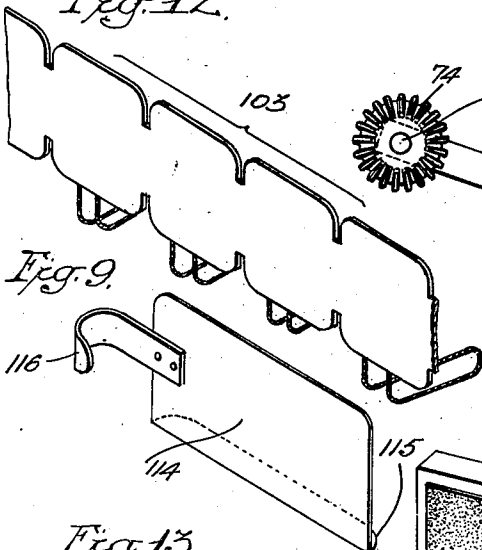


Fig. 9.

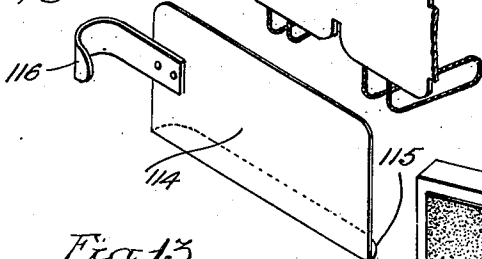


Fig. 7.

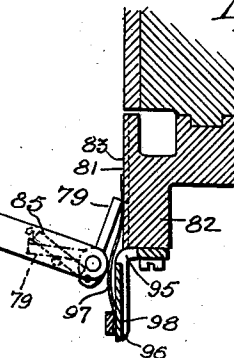


Fig. 8

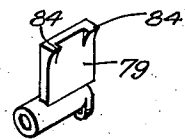


Fig. 10.

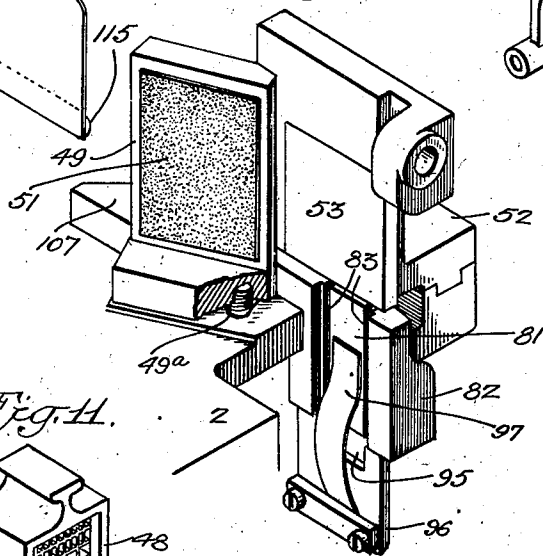


Fig. 13.

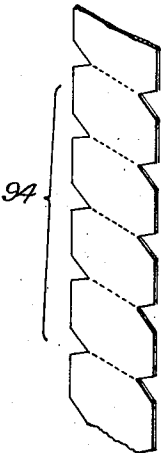
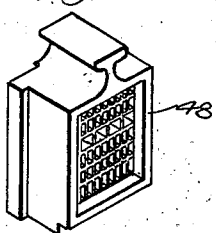


Fig. 11.



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UNITED STATES PATENT OFFICE

2,104,647

TICKET PRINTING MACHINE

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poration of Pennsylvania

Application June 2, 1933, Serial No. 674,092
Renewed June 4, 1937

12 Claims. (Cl. 101—291)

This invention relates to tag-printing machines of the general character disclosed in my prior Patent No. 1,814,923, dated July 14, 1931, and the object of the present invention is to provide a machine of the stated character incorporating certain improved mechanical movements and structural changes affording generally improved operating characteristics and increased durability. The various novel elements of mechanism will be individually set forth in the following description and claims, and are illustrated in the attached drawings, in which:

Figure 1 is a front elevational view of a machine made in accordance with my invention;

Fig. 2 is an end elevation of the machine;

Fig. 3 is a top plan view of the machine;

Figs. 4 and 5 are fragmentary horizontal sectional views illustrating details of the operating mechanism;

Fig. 6 is a fragmentary elevational view showing a further detail of mechanism;

Fig. 7 is a fragmentary sectional view illustrating the details of the label-feeding mechanism;

Fig. 8 is a view in perspective of the label-feeding dog;

Fig. 9 is a view in perspective of the shim plate used as a facing for the printing platen when the machine is used for printing labels;

Fig. 10 is a fragmentary view in perspective showing details of the printing mechanism;

Fig. 11 is a view in perspective of the type box;

Fig. 12 is a view in perspective of a section of a series of tags for the printing of which the machine is adapted;

Fig. 13 is a view in perspective of a series of labels of a form adapted to operation of the machine, and

Fig. 14 is a view in perspective of a strip of pin tickets for printing which the machine is also adapted.

With reference to Figs. 1, 2 and 3 of the drawings, the machine comprises a rigid frame having uprights 1 and a top plate 2, which plate constitutes the base for the greater portion of the mechanism. Suspended beneath the plate is an electric motor 3 which through suitable transmission gearing 4 drives a vertical shaft 5. This shaft carries a ratchet 6 which cooperates with a pawl 7 pivotally secured to the under side of a cam 8, which cam is secured to a shaft 9 journaled in the plate 2 in axial alignment with the shaft 5. A spring 11 normally holds the pawl 7 in engagement with the ratchet 6, and the arrangement is such that rotation of the shaft 5 results, through the interengaged

pawl and ratchet 6—7, in a corresponding rotation of the shaft 9 and of the cam 8. When the pawl 7 is withdrawn from the ratchet 6, the coupling between the shaft 5 and the shaft 9 is broken. The shape of the pawl 7 is best shown in broken lines in Fig. 5, wherein it is shown held by the spring 11 in engagement with the ratchet 6. Means is provided in the form of an adjustable dog 12 for automatically retracting the pawl 7 from the ratchet 6.

This dog is mounted upon a stud 13 projecting from a depending arm 14 of the plate 2, and a spring 15, see Fig. 1, also mounted on the stud, tends to hold the dog 12 in an elevated position as shown in Fig. 6 abutting the lower end of a rod 16, see Fig. 1, which depends from the under side of the plate 2. In this position, the inner end of the dog 12 lies in the path of the outwardly projecting tail portion 7a of the dog 7, see Fig. 5, so that as the pawl is carried around with the cam 8 by reason of its engagement with the ratchet 6, the outer end of the pawl tail 7a engages the surface 12a of the dog 12, which acts as a cam to retract the hooked end of the pawl from the ratchet, the tail 7a of the pawl eventually lodging in the recess 12b of the dog 12 in which it remains. It will be noted that the dog thereby acts not only to disengage the pawl from the ratchet 6, but also as a definite stop limiting the floating movement of the cam 8 and the shaft 9 after the pawl has been disengaged. The pawl is released from the dog 12 and again permitted to engage the ratchet 6 by elevating the outer end of the dog against the pressure of the spring 15 and by thereby depressing the inner end of the dog in which the pawl is engaged. The spring 11 then promptly draws the hooked end of the pawl 7 inwardly against the ratchet. Manipulation of the dog to release the pawl as described may be effected by direct elevation of the outer end of the dog or by depression of a lever 18 which is pivotally secured at 19 to the under side of the plate 2 and which carries a pivotally attached depending arm 21 having a shoulder 22 adapted to engage the upper surface of the inner end of the dog 12, as illustrated in Fig. 6. A spring 23 holds the depending arm 21 resiliently in the operative position with regard to the dog 12, as illustrated. It will be apparent that by depressing the lever 18, the inner end of the dog 12 will be depressed through the medium of the depending rod 21.

Means is also provided for holding the lever 18 in the depressed position to thereby hold the dog 12 in an inoperative position as regards the pawl

7. This means takes the form of a bracket 24 depending from the under side of the plate 2, see Fig. 1, which bracket contains a slot 25 through which the outer end of the lever 18 extends, and this slot has an offset lower portion into which the rod 18 when depressed may be transversely displaced and so held in the depressed position, as shown in Fig. 1. In the resulting adjusted position of the dog 12, actuation of the motor 3 will result in a continuous rotation through the coupling mechanism of the shaft 9; but when the dog 12 is elevated, as shown in Fig. 6 and as previously described, the pawl 7 will be retracted, thereby interrupting operation of the shaft 9, although the shaft 5 continues to operate. By momentarily releasing the pawl, the cam 8 and shaft 9 may be permitted to make one or any desired number of revolutions before the pawl is again retracted, and the dog 12 thereby affords a control means for the mechanism permitting intermittent operation of the mechanism.

As previously set forth, the shaft 9 carries a cam 8 located below the plate 2, and this same shaft also carries above the plate 2 a second cam 26. This cam 26, see Fig. 4, has cam grooves in both its upper and lower faces. The groove 27 in the upper face receives a roller 28 on the under side of a lever 29 pivotally secured at 31 to the top of an upstanding arm 32 on the plate 2. The free end of the lever 29 is connected by a link 33 with a second lever 34 which rests slidably upon the upper surfaces of lugs 35 and 36 projecting upwardly from the plate 2. The lever 34 finds a floating fulcrum 37 on the free end of a lever 38 which is pivotally secured at 39 on a stud projecting upwardly from the plate 2 and whose other end carries a roller 41 engaged in the cam groove 42 on the under side of the cam 26. The fulcrum 37 consists of a pin 43 which extends downwardly through an opening in the lever 34. The upper end of this pin occupies a transverse slot 44 in the free end of the lever 38 in which it is held by means of a screw 45 which extends freely through an opening in the outer end of the arm 38 and is threaded into the pin 43. The screw 45 is releasably locked in the lever 38 by means of a set screw 46, see Fig. 3. This arrangement provides for adjustment between the pin 43 which, as previously described, is journaled in the lever 34, and the outer end of the lever 38.

The free end of the lever 34 has secured thereto a slotted head 47 which constitutes a holder for a type box or frame 48, see Fig. 11. The box 48 may readily be inserted in or withdrawn from the vertical slot in the holder 47 and is formed with a series of cells, see Fig. 11, for reception of type slugs of suitable form, these slugs being inserted in the cells from the rear of the box and projecting from the forward face thereof. When the box is inserted in the holder 47, as shown in Fig. 4, the rear face of the box is, in effect, closed by the abutting surface of the holder and the type held rigidly in position.

Mounted at the top of the plate 2 in adjoining positions, see Fig. 10, are a standard 49, constituting an adjustable mounting for an inking pad 51, and a second standard 52 in which is adjustably supported a printing platen 53. As shown in Fig. 10, the standard 49 is secured to the plate 2 by screws which pass through slots 49a in the plate, thereby permitting adjustment of the standard in a direction normal to the face of the pad. Both the pad 51 and the platen 53 occupy vertical planes, and the oscillatory movement of the type lever 34 effected through the joint ac-

tion of the cam grooves 27 and 42 of the cam 26 and the associated levers is such as to successively bring the type slugs into engagement with the surface of the inking pad 51 and against the platen 53. In this movement, the lever 34 oscillates around the floating pivot 43 into alternative positions aligned respectively with the pad 51 and the platen 53, while the lever 38 in association with the cam groove 42 effects the necessary longitudinal movements of the lever 34 required for contact and subsequent disengagement both with the pad 51 and the platen 53.

As shown in Fig. 5, the cam groove 8a in the top of the cam 8 is occupied by two rollers mounted respectively on the ends of levers 54 and 55. The lever 54 is of the bell crank type and is pivotally mounted on a stud 56 secured in and depending from the plate 2. The opposite end of the lever 54 is provided with a vertically apertured boss 57, see Fig. 2, for reception of a pin 58. The pin 58 is vertically slotted at the top for reception of one end of a flat rod 59 which is pivotally held in the slot by means of a pin 61. The rod at its opposite end is pivotally secured to a lever 62 pivotally mounted upon a screw 63 which is secured in and projects transversely from the platen bracket 52. The hub 62a of the lever 62 is held against the side of the bracket 52 by means of a coiled spring 64 which is confined between the head of the screw 63 and the adjoining end of the hub. The lever 62 carries detachably secured thereto a blade 65 which cooperates with the outer edge of the platen 53, see Fig. 1, to form shears functioning as hereinafter set forth to sever the individual tickets from the strip in which they are fed through the machine. The cam 8 and the interconnecting mechanism oscillates the lever 62 in synchronism with the movement of the printing mechanism so that the blade 65 advances on its cutting stroke during that portion of the cycle of operations in which the printing lever is displaced transversely from the platen toward the inking pad. This lateral displacement of the printing elements from the platen permits operation of the cutting elements in close proximity to the printing position, or in other words, in immediate contiguity to the printing platen so that each ticket as it is printed is immediately severed from the strip, as hereinafter described.

The second lever 55 having operative association with the cam 8 is also pivotally supported at 66 on the under side of the plate 2, and has pivotally secured to its outer end a rod 67 through which the lever 55 is connected to a crank member 68 adjustably secured in and depending from an arm 69, which arm is secured to a shaft element 71 journaled in and depending from a detachable extension 72 of the plate 2. The shaft 71 also carries a bevel pinion 73 which meshes with a second pinion 74 secured to a second shaft element 75 also journaled in the extension member 72 in a position at right angles to the shaft element 71. The shaft element 75 also carries an arm 76 which projects forwardly in more or less parallel relation with the arm 69. The cam 8 through the interconnecting mechanism effects a horizontal oscillation of the arm 69, and through the pinions 73 and 74 a vertical oscillation of the rod 76. As shown in Fig. 5, the arm 69 has pivotally secured to the free end thereof a pawl 77 which in one adjusted position bears at its hooked end against the face of the platen 53 adjacent the lower edge of the latter, the pawl 77 being resiliently held in this position by means

of a spring 78. This spring also is effective to retain the pawl in a retracted position, as shown in broken lines in Fig. 5. The pawl 77 by its reciprocatory movement across the bottom of the platen is effective to intermittently feed the strip of tickets across the platen and successively into the printing position, as hereinafter will be further described.

The crank member 68 occupies a slot 86 in the arm 59, which slot terminates at both ends in a rounded enlargement. The crank element has a part intermediate its ends of a diameter fitting the rounded terminal ends of the slot 86, and is held in position within said enlargements by a nut 87 on the threaded upper end of the crank element. The threaded portion of the element is slidable in the slot 86, and when the nut is backed up upon the screw, the crank element may be released from the rounded end portions so as to be free for adjustment to either end of the slot. The adjustment is for the purpose of regulating the effective stroke of the pawl to accord with tickets of different widths.

The arm 76, see Fig. 7, carries at its outer end a pawl 79, the form of this pawl being shown in Fig. 8. When in its advanced position, as shown in Fig. 7, the pawl rides in a vertical guideway 81 in an integral extension 82 of the plate 2, which extension immediately underlies the platen 53. As shown in Fig. 10, the guideway 81 is provided in its bottom with two vertical slots 83, and the pawl 76 is provided on its outer face and upper edge with projections 84, 84 which enter and slide in these slots. The upper edge of the pawl is held against the bottom of the guideway 81 by means of a spring 85, see Fig. 7, which spring is also effective to hold the pawl 79 in a retracted position, as shown in broken lines. Reciprocation of the pawl 79 effects an upward feed over the face of the platen of a strip of labels of the general character shown in Fig. 13. A roll of these labels is mounted upon a suitable roller (not shown) within a casing 88 mounted on a bracket 89 secured to one of the transverse tie rods 91 which connect the lower ends of the up-rights 1. The casing 88 has a removable cover providing access to the interior and has an opening at the lower rear side from which the strip of labels may be drawn and passed around rollers 92 and 93, see Fig. 2, wherein the strip of labels is indicated in broken lines and by the reference numeral 94. From the roller 93 the strip passes upwardly and through an opening 95 in the depending guide bracket 96 at the bottom of the member 82, see Fig. 10. The strip then passes underneath a leaf spring 97, the lower end of which is clamped at the bottom of the depending bracket 96 and whose upper end rests against the bottom of the guideway 81. This spring places a tension upon the strip which while permitting an advance movement of the strip under actuation by the pawl 79 tends to prevent a reverse movement of the strip. The strip is intermittently and progressively advanced upwardly through the guideway 81 and over the face of the platen 53 by reciprocation of the pawl 79, as previously described.

The guideway 81 is of a width corresponding to one width of label, and in order to provide guide means for labels of lesser width, a second and smaller guideway is formed on the outer face of the depending bracket 96, as indicated at 98 in Fig. 7. The feeding action of these labels of narrower width is identical with that previously described.

The tickets, for printing which the machine is adapted, are provided in strip form, as shown in Fig. 12. A roll of these ticket blanks is mounted upon a horizontal reel 99 rotatably mounted in a boss 101 projecting upwardly from the plate 2. The strip of tickets is placed upon the cylindrical hub portion 102 of the reel, as shown in Figs. 1 and 3, and the strip designated by the reference numeral 103 is passed around a free roller 104 and behind an upstanding pin 105 on an arm 106 extending from the platen bracket 52. The lower edge of the strip of tickets after passing behind the pin 105 rests upon an elevated strip 107 on the plate 2, this strip 107 extending continuously to the outer end of the extension 82, as shown in Fig. 10. Bearing against that portion of the strip 103 which lies behind the arm 106 is a dog 108 which is pivoted at 109 to the top of the strip 107 and which has attached to one end thereof a spring 111 which resiliently holds the inner end of the dog against the strip 103. This dog permits free advance movement of the strip, but tends to retard a reverse movement of the strip.

Slidably mounted upon a pin 112 depending from the top of the ink pad bracket is a weight 113 which normally rests upon the upper edge of the strip 103 and thereby tends to hold the strip downwardly upon the surface 107. The strip passes behind the ink pad bracket 49 and across the face of the platen 53, the strip still resting upon the top of the elevated surface 107. In feeding the strip across the platen, the hooked end of the pawl 77 engages in the recesses between the adjoining tickets, the movement of the pawl corresponding to the width of the individual tickets, and the pawl being so arranged that in each advance movement the connecting web between adjoining tickets is brought into a position registering with the shears 65—53.

It will be noted that the tickets 103 are somewhat thicker than the labels 94. In order to compensate for this relative thinness of the labels 94 and to avoid the necessity for readjustment of the printing bar 34 and the printing elements in changing from ticket printing to label printing, I provide the shim element 114 shown in Fig. 9. This element is adapted for insertion between the ink pad bracket 49 and the platen bracket 52, and has a rearwardly extending flange 115 which lies under the edge of the platen bracket. A hooked extension 116 on the end of the shim element 114 in assembly embraces the outer end of the dog 108. The shim element is thus held in position extending across the face of the platen 53 and supplies the additional thickness required to bring the labels 94 into conformity with the tickets 103.

The mode of operation of the machine will be apparent from the foregoing description. In printing the tickets 103, the label pawl 76 is retracted so that feeding of the labels cannot take place. The strip of tickets is advanced by an intermittent movement across the face of the platen, and each ticket when printed is immediately severed by means of the shear. If it is desired to print the gummed labels 94, the ticket pawl 77 is retracted and the pawl 79 adjusted into the operative position. The shim element is also inserted to compensate for the relative thinness of the gummed labels as previously described. Since in this operation the shear 65 is not employed, provision is made for releasing this element from its operating mechanism and for adjusting it to a retracted position. This is ac-

complished by withdrawing the pin 58 from the arm 54 and drawing the rod 59 rearwardly to a position in which the pin 58 may be inserted in an opening 117 at the rear of the plate 2. In this rearward movement of the rod 59, the shear lever 62 is swung upwardly around its pivot to an elevated position above the top of the printing platen, the lever being retained in this position by the rod 59 after insertion of the pin 58 in the aperture 117. The printing of the labels now proceeds in the manner previously described. The shear mechanism may also be held out of action as described during the printing of tickets of the types shown in Figs. 12 and 14 where it may be desired to print the tickets in the strip. The device permits, for example, printing of the tickets on both sides.

I claim:

1. In a printing machine, the combination with a printing platen, of an ink pad positioned adjacent said platen, a printing member, and means for successively bringing said member into contact with said platen and with the ink pad, means for feeding a strip to be printed across the face of said platen, and means immediately adjoining said platen for severing the printed portion of said strip, said shearing means being operative while the printing member is displaced from the platen in the direction of said ink pad.
2. In a printing machine, the combination with a printing platen, of an ink pad at one side of said platen, shearing means at the opposite side of said platen, a printing member, and mechanism for moving said member successively into engagement with the said pad and with the platen, and means for actuating said shearing means in synchronism with the movement of said printing member to sever the strip while the said member is withdrawn from the platen in the direction of the said pad.
3. In a printing machine, the combination with a printing platen, of means for feeding a strip transversely across the face of said platen, an inking device at one side of said platen, a shear blade cooperating with the opposite side edge of the platen to shear the strip, a printing element, mechanism for successively moving said element into contact with the inking pad and with the platen, and mechanism for actuating said blade in synchronism with the movement of said printing element to shear the strip during the periods when the printing member is withdrawn from the platen in the direction of the inking device.
4. In a printing machine, the combination with a printing member, an inking device, a platen, mechanism for successively bringing said printing member into engagement with the said device and with the platen, said mechanism comprising a floating fulcrum for said printing member, means for swinging said member around the fulcrum to positions in alignment respectively with the inking device and with the platen, and means for actuating the fulcrum to effect a translational movement of the printing member toward and from the inking device and the platen.
5. In a printing machine, the combination with a printing platen and an inking device, of a lever having a fulcrum relatively fixed with respect to said device and platen, a second lever pivotally secured to said first named lever and movable about said pivot to positions aligned respectively with the platen and with said inking device, a printing element carried by said second lever, means for actuating the first named lever to ad-

vance and retract the printing element with respect to said inking device and to said platen, and means operating in synchronism with said actuating means for oscillating said second lever about its pivot into the said aligned positions.

6. In a printing machine, the combination with a printing element, of a floating lever supporting said element, a platen and inking device arranged for successive engagements with said element and having working faces angularly disposed with respect to each other, a pivoted lever constituting a floating fulcrum for said floating lever, and a cam member operatively associated with both of said levers and operative to effect successive movements of said printing element into engagement with the platen and with the inking device.

7. In a printing machine of the stated character, the combination with a horizontal base plate, of a vertically positioned platen extending from said plate, an inking device mounted on said plate adjacent the platen, a lever pivotally mounted on said plate, a floating lever pivotally secured to said first named lever, a printing element carried by said floating lever, means for actuating said levers to successively bring said printing element into engagement with the platen and with said inking device, said means comprising mechanism for oscillating the first named lever about its pivot to advance and retract the said element toward and from the platen and the inking device, and mechanism for oscillating the floating lever about its pivot to traverse the printing element between positions in alignment with the platen and with the inking device.

8. In a printing machine, the combination with a platen, of an inking device relatively fixed with respect to said platen, a shearing device positioned closely adjacent said platen, a printing element, means for traversing said element between positions aligned with the platen and with said inking device, and mechanism for actuating the shearing device in synchronism with the movement of said element whereby the shears are actuated when the printing element is displaced from the platen in the direction of the inking device.

9. In a printing machine, the combination with a printing platen, of an inking device positioned adjacent one side of said platen, a shearing element positioned closely adjacent the other side of said platen, a printing element, means for traversing said element between positions aligned with said inking device and with the platen, and means for actuating the shearing device when the printing element is displaced from the platen in the direction of the inking device.

10. In a printing machine, the combination with a printing platen, of a printing member operatively associated with said platen, mechanism for transversely moving said printing member periodically toward one side of the platen, and shearing means at the opposite side of said platen and synchronized with said printing member so as to operate during the periods when the said member is transversely displaced with respect to the platen.

11. In a ticket printing machine, the combination with a printing platen, of mechanism for intermittently advancing a strip of tickets across the face of the platen to bring said tickets successively into printing position, in which position the advance edge of the ticket lies in alignment with the edge of the platen, a shear element cooperative with the said edge of the platen to sever the printed tickets from the strip, a print-

ing element cooperative with the platen to print said tickets, said printing element in the working position obstructing the said shearing edge of the platen, and means operating in synchronism with the ticket-advancing mechanism for successively actuating said shear and printing elements in their respective functions and for moving said elements respectively into mutually non-obstructive positions after each actuation.

12. In a ticket printing machine, the combination with a printing platen and printing means operatively associated therewith, of mechanism for feeding a strip of tickets intermittently across the face of the platen to bring the tickets successively into printing position, means in proximity to the platen and substantially in alignment with the leading edge of each ticket when the latter

occupies the said printing position for shearing the tickets individually from the strip, said printing and shearing means in their respective working positions being mutually obstructive one to the other, and means operating in synchronism with said feeding mechanism for successively actuating said printing and shearing means and for retracting said means after each actuation into mutually non-obstructive positions, said shear being operative thereby to sever each successively printed ticket from the strip while it occupies the position to which it is advanced by movement of the succeeding ticket into the printing position and prior to the printing of the said succeeding ticket.

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