Nov. 23, 1954 F. J. BRIGGS 2,694,974

WEB FEED DEVICE FOR TICKET OR LABEL PRINTING MACHINES

Filed Sept. 24, 1951

2 Sheets-Sheet 1

Fig. 1.

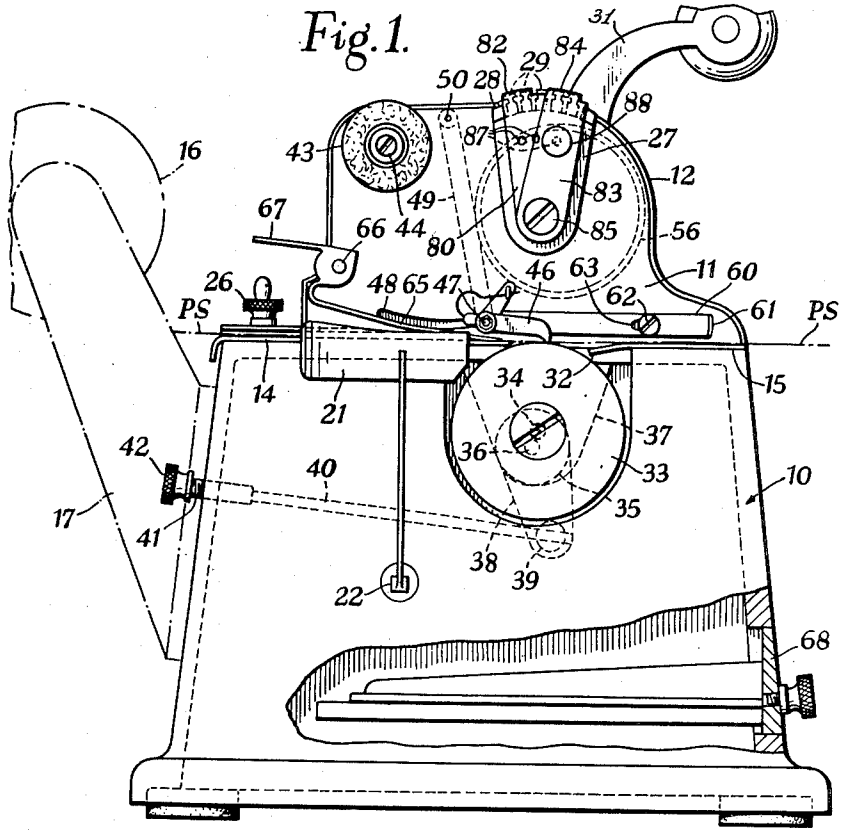
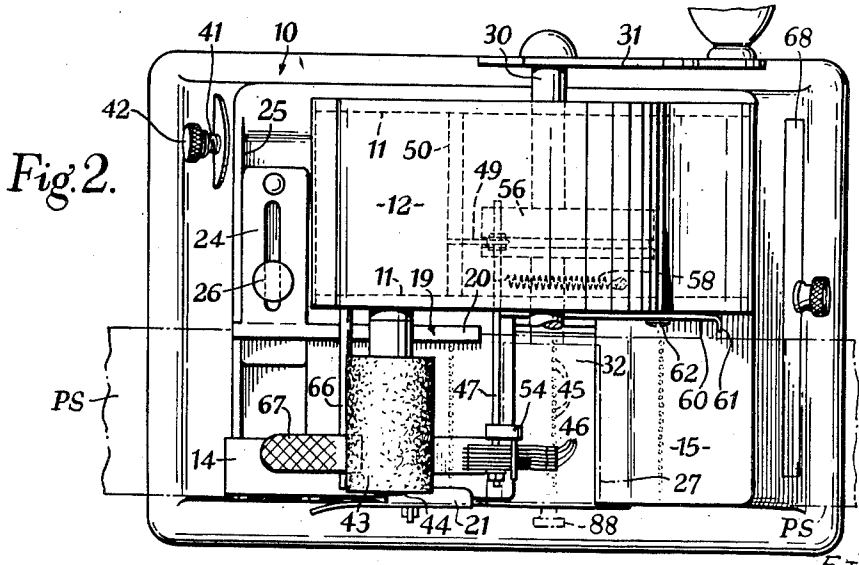


Fig. 2.



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Fig.3.

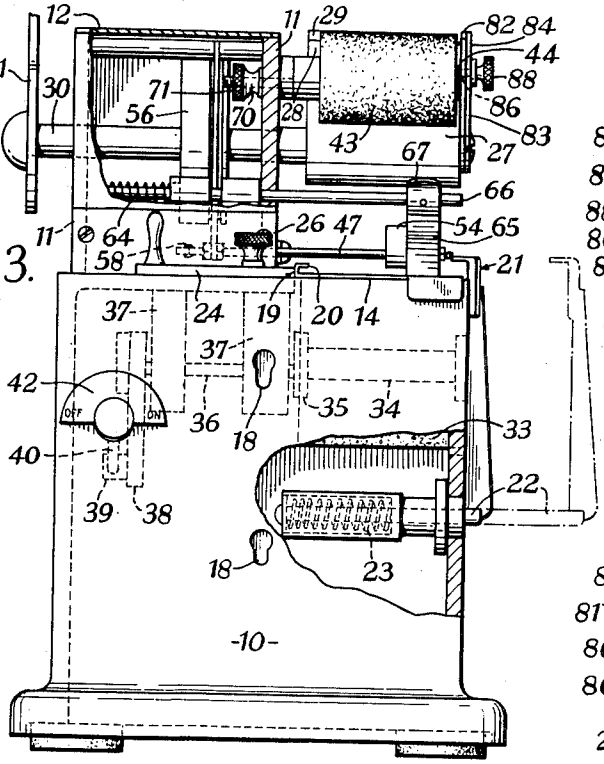


Fig.5.

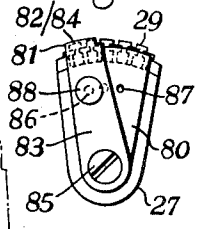


Fig.6.

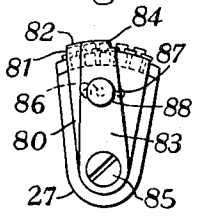
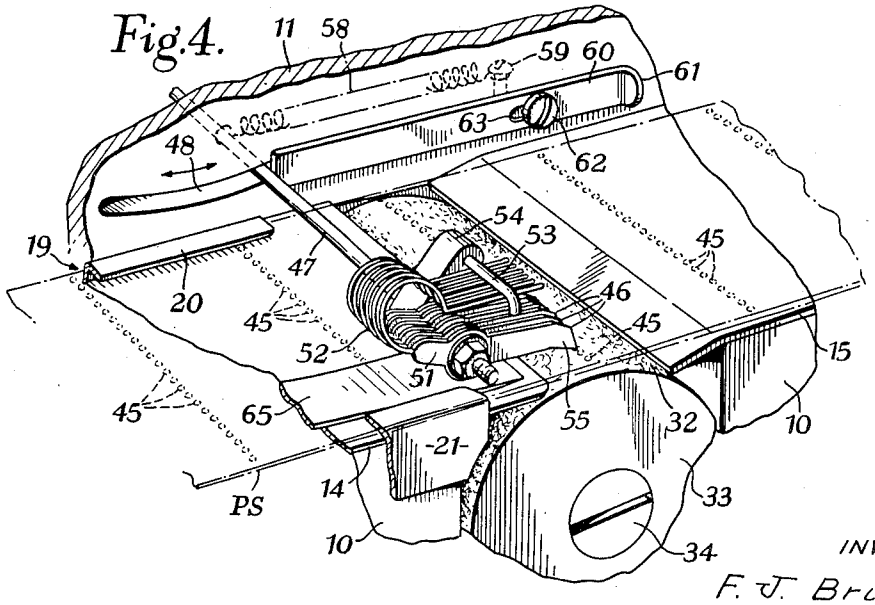


Fig.4.



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2,694,974

Patented Nov. 23, 1954

2,694,974

WEB FEED DEVICE FOR TICKET OR LABEL PRINTING MACHINES

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Application September 24, 1951, Serial No. 247,971

Claims priority, application Great Britain October 25, 1950

3 Claims. (Cl. 101—228)

This invention relates to machines by which strips of perforated ticket- or label-forming material can be over-printed to form, for example, a sales ticket or label.

Examples of such machines are already well known and in general comprise a rotatable cylindrical printing drum whose periphery, over a limited region, is provided with means, such as channels, for attachment thereto of readily replaceable type. In addition to such type it is also customary to provide additional, within the type receiving means or channels, removable feed pads or members placed adjacent to the type-elements but out of alignment with the type-inking means and by which, due to the contact between such pads and the ticket material as the printing drum is rotated, such ticket material is automatically carried forward over a table or other support during each printing operation for a distance substantially equal to the overall length of the ticket.

Such a frictional method of ticket feed is insufficiently accurate, by itself, to ensure that cumulative creep does not take place with the result that the over-printed matter becomes out of register with the receiving area of the ticket and it is again already well known to provide additional correcting or rectifying claws which are reciprocated in contact with a surface of the ticket material before printing so as to engage with the perforations between adjacent tickets and thereby bring the aforesaid row of perforations to a predetermined registered position at the end of each printing operation.

With the known arrangements of the above kind it is necessary to place the aforesaid correcting or rectifying claws away from the cylindrical printing drum whereby they engage with those perforations of the ticket strip which form the trailing edge of a ticket which is one, two or even more tickets behind that ticket which is actually being dealt with by the printing drum at that instant. This arrangement has the disadvantage that it is impossible to secure proper registration and printing of the last ticket or tickets of a strip or roll and the object of the present invention is to provide a simplified and cheapened construction in which such disadvantage is not present.

According to one aspect of the present invention the printing member, instead of being a complete circular section drum, is of sector shape in axial cross section with its circumferential zone preferably limited to an amount just sufficient to accommodate the maximum printing area required, while the aforesaid correcting or rectifying claws are repositioned forwardly, i. e. towards the printing member in the direction of movement of the perforated strip, so as to reciprocate along a path which crosses the rotary path of the printing member and terminates substantially in vertical alignment with the axis of the printing member whereby such claws engage directly with the perforations of the trailing edge of the ticket which has just been printed upon.

The use of the aforesaid sector-shaped printing member provides the requisite space, as such member is rotated, into which the correcting claws can move to engage with the edge of the ticket which has just been printed upon.

In order that the above and other features of the invention may be more readily understood one constructional embodiment will now be described in some detail with reference to the accompanying drawings in which:

Figs. 1, 2 and 3 are side, plan and end views respectively and with parts broken away, of a machine embodying the invention.

Fig. 4 is a detail perspective view illustrating the construction of the reciprocating correcting claws and the means for adjustment of the terminating position of each stroke thereof.

Figs. 5 and 6 are fragmentary views of an adjustable friction feed device, shown in setting positions different from that of Fig. 1. The machine shown in the drawings comprises a base 10 in the form of a substantially rectangular hollow box with an open bottom and upon the upper surface of which is provided two upstanding vertical lugs 11 which, with the aid of a curved cover plate 12, form a second compartment 13 for housing parts of the mechanism. This compartment 13 is positioned towards one side of the base 10 and at the other side of the base are disposed two smooth metal plates 14 and 15 which jointly constitute a table for receiving, supporting and guiding the perforated strip material PS from which the tickets are formed. A supply roll of this strip material, indicated in chain dotted lines at 16 in Fig. 1, is carried in a suitable bracket, also indicated in chain dotted lines at 17, which is detachably mounted on the rear wall of the base 10 with the aid of slots 18 (Fig. 3).

The ticket material is guided during its travel on to the plate 14 of the table by the provision of an inner side lay 19 having an overhanging edge portion 20 to engage one lateral edge of the strip PS while the opposite lateral edge of the strip is guided by an outer side lay 21 in the form of an angle plate whose horizontal upper portion overlies the strip. This lay member 21 is arranged to be movable laterally outwards to a position as shown in chain dotted lines in Fig. 3 to facilitate strip insertion, by being mounted upon a sliding rod 22 which is spring loaded at 23 to return resiliently to the position shown in full line in Figs. 2 and 3.

The strip PS is held in contact with the plate 14 of the table by a blade 65 which is secured upon a projecting and rotatable stud 66 which is interconnected with the base 10 by a helical spring 64 which tends to urge the blade 65 into resilient contact with the upper surface of the strip PS. A finger piece 67 permits the blade 65 to be lifted during insertion of the strip.

Provision for adjusting the strip guiding arrangements to suit ticket material of different widths is afforded by mounting the side lay 19 by means of a slotted lug 24 which is slidable transversely in a guide groove 25 formed in the base 10. The lug 24 is secured in the desired adjustment position by thumb screw 26.

The printing member is in the form of a sector-shaped body portion 27 having a part-cylindrical outer surface 28 slotted as shown for the reception, in the usual way, of removable type elements 29. This printing member 27 is bored coaxially with the outer type-supporting surface 28 for the reception of a shaft 30 which extends through and is journalled in the lugs 11. On the opposite side of the compartment 13 this shaft 30 has an operating handle 31 rigidly secured thereto.

Co-operating with the sector-shaped printing member 27 is an impression roller 33 rotatably mounted upon a spindle 34 and disposed within the base 10 so as to present the uppermost portion of its peripheral surface in the gap 32 formed between the adjacent ends of the plates 14, 15. The spindle 34 is carried in a mounting plate 35 itself rotatably mounted, by means of spindle 36, in lugs 37 which extend downwardly from the underside of the top of the base 10. The opposite end of the spindle 36 is rigidly secured to lever arm 38 whose lower end carries a rotatable stud 39 which receives, in a freely rotatable but axially immovable manner, one end of an adjusting rod 40 which extends rearwardly and passes, by way of an enlarged threaded region 41, through a tapped hole in the rear wall of the base portion. The outer end of the rod 40 terminates in an adjusting knob 42. The spindle 34 is slightly eccentric to the spindle 36 so that, by rotation of the knob 42 and the consequent rocking movement of the lever arm 38 the position of axis of rotation of the impression roller 33 may be altered so as to raise it or lower it relative to the printing mem-

ber 27. In this way, there is provided an adjustment of the amount of printing pressure exerted so as to accommodate different thickness of ticket material.

During rotation of the operating handle 31, the type 29 carried by the printing member 27 travel past and come into light contact with an inking roller 43 formed with a peripheral surface of suitable ink absorbent character and rotatably mounted upon a stub shaft 44 secured to the inwardly disposed lug 11 by an eccentric stud 70 and clamping nut 71 to permit slight alteration of position of the inking roller relative to the type.

The outer end face of the printing member 27 is fitted with a friction-feed device comprising a fixed metal plate 80 having a projection 81 formed with an arcuate surface 82 limited in its length to a dimension equal to two rows of the replaceable type elements 29. This plate 80 is rigidly secured to the member 27 so that the surface 82 lies adjacent to the end of the type receiving zone but just out of line with the inking roller 43. A second plate 83, of flexible metal is arranged in overlapping relationship with the plate 80 and is provided with a projecting arcuate surface 84, also limited in length to a dimension equal to two rows of type elements 29. The plate 83 is pivotally mounted upon the plate 80 to screw 85 at a point coaxial with the shaft 30 and with the centres of curvature of the arcuate surfaces 82, 84. The latter lie just proud of the printing surfaces of the type elements 29 so that as the member 27 is rotated, such surfaces frictionally engage with the surface of the ticket strip material PS near to its outer edge and cause forward feeding movement. The plate 84 can be located in any one of three different positions, one as shown in Fig. 1 where the two surfaces 82, 84 effectively cover an arcuate length of five rows of type elements, another as shown in Fig. 5, where the surfaces are completely overlapped to cover an arcuate length of only two rows of type and as shown in Fig. 6 where the surfaces are only partially overlapped to cover an arcuate of three rows of type. The movable plate 83 is positively located in any adjustment position by entry of a detent 86 thereon into one of several apertures 87 in the plate 80. To alter its position the plate 83 is sprung outwardly and then moved by knob 88. The arcuate surfaces 82, 84 may be ribbed or roughened to increase their tractive effect, if desired.

Co-operating with the perforations 45 in the strip PS are a series of correcting claw members 46, shown more particularly in Fig. 4. These claw members 46 are each freely pivoted upon one end of a rod 47 which extends transversely of the machine through an arcuate slot 48 in the inner lug 11 and is rigidly secured at its opposite end to the lower end of a lever arm 49 which is pivotally mounted upon a spindle 50 extending between the lugs 11 within the compartment 13. Each of the claw members 46 has a rearwardly extending tail 51 to which is rigidly connected one end of a loop shaped wire spring 52, the forward ends of each of such springs being engaged under a bar 53 projecting from an upstanding lug 54 itself rigidly connected to the transverse rod 47. By such spring means each claw member 46 is independently urged downwardly at its forward end which is shaped to provide an engaging point 55 which can drop into any one of the available perforations 45 of the strip PS and so propel the latter in a forward direction when the claws are moved in that direction. The rearward side of each engaging point 55 is ramped to permit rising of the claw member out of engagement with the perforations 45 when such claws are moved rearwardly.

The claws are oscillated bodily backwards and forwards by means of an eccentric cam disc 56 which is rigidly secured to the main operating shaft 30 and is provided with a peripheral groove 57 therein for receiving the edge of the depending lever arm 49. The complete claw assembly is resiliently urged in a forward direction by means of a helical spring 58 located within the compartment 13 and connected at its rearward end around the rod 47 and secured at its forward end to a screw 59 on the base portion 10.

The extent of forward movement of the claws by the spring 58 is adjustably limited by means of a slidable metal strip 60 carrying a turned-over outer end 61 for manipulation and securable in any desired adjustment position by a screw 62 passing through a slot 63 in such strip into the inner lug 11.

A drawer 68 serves to accommodate spare type and any requisite appliances for changing the type.

In operation of the device, handle 31 is rotated whereby printing member 27 is moved anti-clockwise (Fig. 1) so that the type 29 carried thereon are first caused to wipe inking roller 43 and then to travel downwardly and eventually come into printing contact with the strip ticket material PS lying upon plates 14 and 15 at a point which overlies impression roller 33. During this downward movement of printing member 27, cam disc 56 operates upon lever arm 49 to move the assemblage of claws 46 rearwardly to a position where they are out of the path of the descending printing member 27. Contact of the type 29 with the strip material PS causes printing in the usual way and, in conjunction with the arcuate surfaces 82, 84 of members 80, 83 a forward movement of the perforated strip PS due to the simultaneous rotation of the printing member and the impression roller 33. After the printing type 29 and the friction feed surfaces 82, 84 have passed out of contact with the strip PS, the claw assembly, which has now started to move forwardly again under the influence of the cam disc 56 and the helical tension spring 58, first slides over the upper surface of the strip material until one or more of the claws 46 drop into a perforation 45 in such strip. Thereafter the continued forward movement of the claw assembly, consequent upon continued rotation of the handle 31, produces corresponding forward movement of the perforated strip therewith until the claw assembly is arrested at the defined register position by abutment of rod 47 against stop 69. Any further rotation of the handle 31 necessary to bring it again into the position shown in Fig. 1 is thereafter ineffective upon the claw assembly whereby the perforated strip is accurately registered in the required position for the next following printing operation.

By the particular formation described and shown of the printing member 27 in the form of an incomplete cylinder the necessary space is provided beneath such printing member for the positioning of the claws 46 to travel into a location which would otherwise be occupied by a part of the printing member if fully cylindrical. In this way the row of perforations 45 engaged by the claws can be that row which forms the trailing edge of the ticket which has just previously been printed upon and not, as in earlier constructions, with the trailing edge of a ticket which is one, two or more tickets displaced rearwardly from the last printed ticket.

Various modifications may obviously be made without departing from the scope of the invention, for example, the general design of the device may be altered within wide limits while the shaping and construction of the correcting claws and the friction feed means can be modified in accordance with the requirements as also can the means for adjusting the forward termination position of such claws.

I claim:

1. A rotary ticket or label printing machine for use with perforated strip material comprising in combination a feed plate, means for guiding the strip over said feed plate, a rotary printing member mounted on a shaft for rotation above said feed plate and consisting of a cylindrical sector subtending an acute angle, a freely rotatable feed roller mounted for rotation underneath the feed plate, said printing member and feed roller serving for frictional feeding of said strip during printing, and positive strip feeding means adapted to register said strip in printing position comprising a plurality of feeding claws aligned transversely above said strip, means for reciprocating said feeding claws in timed relation with said printing member to engage the strip perforations once in every revolution of said printing member and to feed the strip forward below the printing member whilst cutting the cylinder of revolution described by the printing member, comprising a transverse support bar for the feeding claws, a guide for said support bar, a cam rotated by the shaft of said printing member, and a cam follower connected to said claw support bar, said printing sector being timed to approach its top centre position as the feeding claws approach the end of their forward feeding stroke.

2. A machine as claimed in claim 1 comprising a spring anchored to one end of said support bar to impart a forward feeding stroke to said support bar and claws, and an adjustable stop for limiting the travel of the support bar on the forward stroke.

3. A rotary ticket or label printing machine for use with perforated strip material comprising in combination

a feed plate, means for guiding the strip over the feed plate, a rotary printing member consisting of a cylindrical sector mounted on a shaft above said feed plate, said sector subtending an acute angle at the shaft centre, a freely rotatable feed roller mounted for rotation underneath the feed plate, said printing member and feed roller serving for frictional feeding of said strip during printing, and positive strip feeding means adapted to register said strip in printing position comprising a plurality of feeding claws aligned transversely of said strip and means for reciprocating said feeding claws in timed relation with said printing member to engage the strip perforations once in every revolution of said printing member and whilst entering the surface of revolution described by the printing member to feed the strip forward below the said printing member, comprising a transverse support bar for the feeding claws, a guide for said support bar, a cam rotated by the shaft of said printing member, and a cam follower connected to the said claw support

bar, said printing sector being timed to approach its top centre position as the feeding claws approach the end of their forward feeding stroke.

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