May 22, 1956 C. A. HARLESS 2,746,748

MOVABLE NIPPING ROLLER DELIVERY FOR A PRINTING MACHINE

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Fig. 1

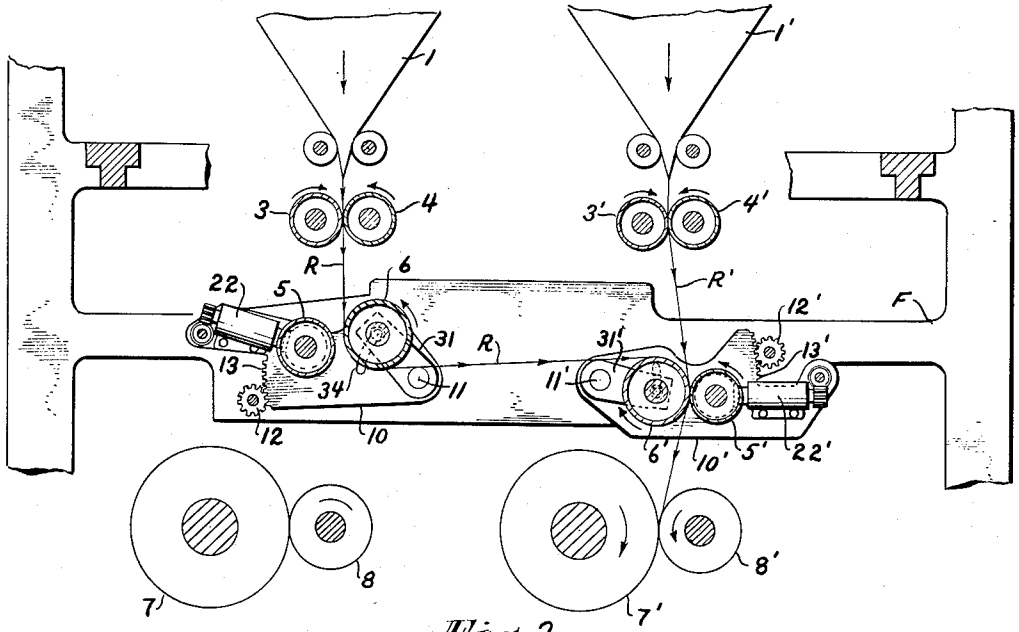



Fig. 2

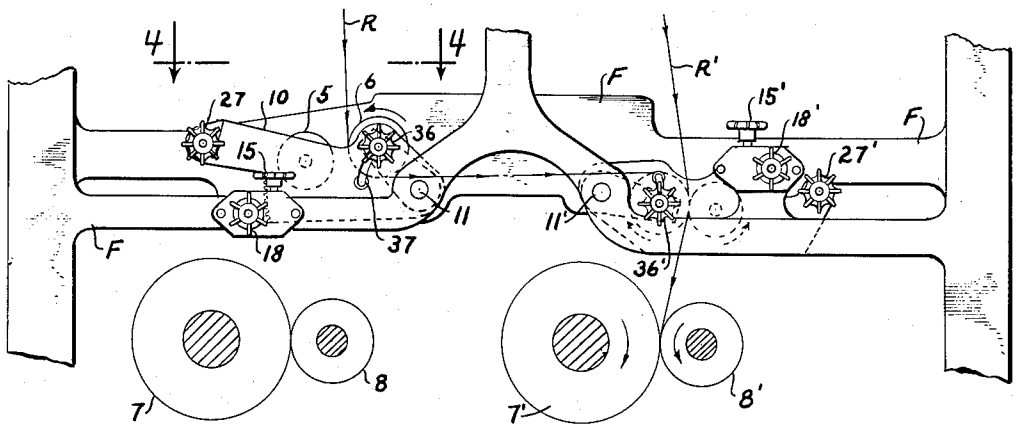
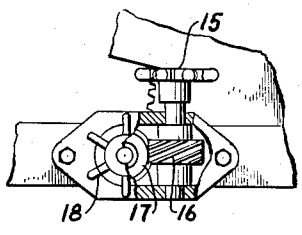



Fig. 3




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Fig. 5

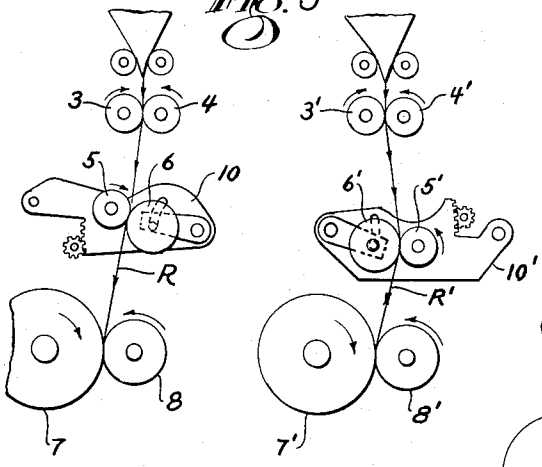



Fig. 6

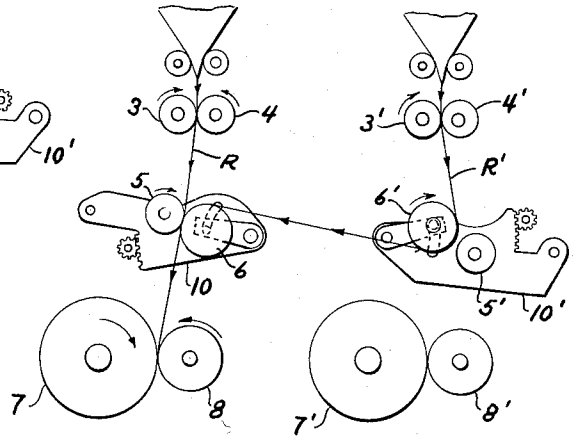



Fig. 7

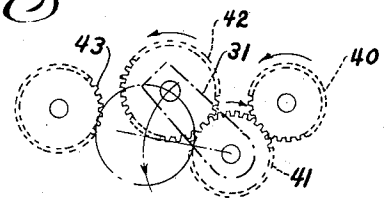



Fig. 8

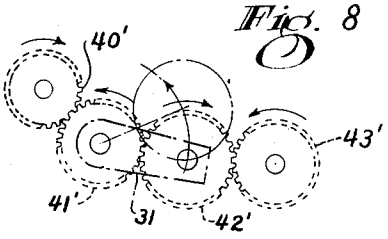
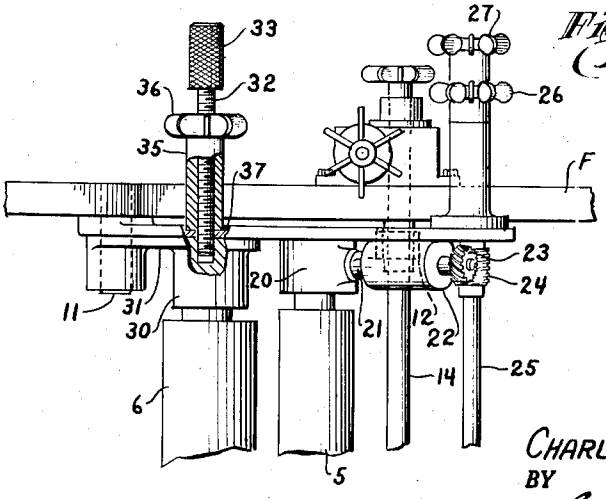



Fig. 4




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2,746,748

# MOVABLE NIPPING ROLLER DELIVERY FOR A PRINTING MACHINE

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Application December 3, 1952, Serial No. 323,844

4 Claims. (Cl. 270—41)

This invention relates to improvements in printing press deliveries. More particularly, the invention is concerned with printing press deliveries of the type in which ribbons of a printed web may be directed to two transverse folding, cut off and delivery mechanisms, or may be associated and fed together to only one of the said mechanisms.

A principal object of the invention is to provide for associating ribbons when desired and effecting the necessary compensation to arrange them in proper relation without using the compensating rollers commonly employed.

A mechanism embodying the invention in a preferred form will now be described with reference to the accompanying drawing, and the features forming the invention will then be pointed out in the appended claims.

In the drawings:

Figure 1 is a section view showing a mechanism embodying the invention in a preferred form;

Figure 2 is an elevation view of part of the mechanism of Figure 1;

Figure 3 is an enlarged elevation view of a part of Figure 2, with parts broken away to show internal structure;

Figure 4 is a plan view on an enlarged scale, looking in the direction of the arrows 4—4 of Figure 2;

Figures 5 and 6 are schematics, showing different operating arrangements of the mechanism of the invention; and

Figures 7 and 8 are gear diagrams showing the drive gears associated with the rollers of Figures 1 and 2.

In the drawing only so much of the structure as is necessary for a full understanding of the present invention is shown. The structure is generally similiar to that of Lamatsch Patent 2,013,497, to which reference may be made for details of structure not involved in the invention, and, hence, not shown herein.

The mechanism in general is of the usual type for handling pairs of ribbons produced by slitting printed webs, and includes formers for longitudinally folding such ribbons, or where the ribbons have been further slitted into two narrower ribbons, for associating such narrower ribbons in face to face relation, and a cross associating and folding mechanism including appropriate nipping rollers. The mechanism is arranged to forward the ribbons to the two folders separately (Figure 5), or to associate the ribbons and deliver them to either of the two folders (Figures 1 and 6).

The mechanism to the left of Figures 1 and 2 includes a former 1, which may longitudinally fold a ribbon R, or if the ribbon has been slit into two narrow ribbons before it reaches the former, it will associate them. Below the former, are an upper pair of nipping rollers 3, 4 and a lower pair of nipping rollers 5, 6 from which the ribbons may pass to the cooperating cross folding cylinders 7, 8, which cut and fold the ribbons transversely to form products in the usual way. The structure to the right



includes similar elements identified by similar reference numerals with prime superscripts.

The frame structure F is indicated so far as necessary to indicate the support of the elements involved in the present invention.

Referring to the left hand mechanism, and particularly to the nipping rollers 5 and 6 and the mounting therefor, this mounting includes a supporting plate 10, pivotally carried in the frame structure on a stub shaft 11, and angularly adjustable about this shaft by means of a pinion 12 engaging a gear sector 13 formed on the plate 10. The pinion is fixed to a shaft 14 journaled in the frame and turnable by means of a hand wheel 15 (Figure 3) through gearing 16, 17 of usual type. The shaft 14 will be locked in position by a hand wheel 18 in the usual way. It will be understood that the shaft 14 serves to operate the mechanisms at both ends of the nipping rollers, and the mounting plate 10 and the associated structure are duplicated at the opposite side of the machine.

The nipping roller 5 is supported at each end in a movable bearing or journal block 20 (Figure 4), fixed to the end of a plunger 21, slidably mounted in a spring housing 22 carried on the plate 10. The spring mechanism for urging the roller 5 toward its cooperating roller 6 may be of usual type and is not shown. The pressure is adjusted by means of a worm wheel 23 driven by a worm 24 carried on shaft 25, and, which, in turn, is turned by means of a handle 26 and locked in adjusted position by a hand wheel 27.

The cooperating nipping roller 6 is supported at each end in a journal or bearing block 30 formed on the end of an arm 31, which is pivotally mounted on the stub shaft 11, previously referred to. A threaded rod 32 having an operating head 33 is fastened into the journal block 30 and is accommodated by an arcuate slot 34 in the member 10, and it permits swinging the roller 6 between positions of Figure 1 and Figures 5 and 6. A sleeve 35 having a hand wheel 36 has an internally threaded bore engaging the thread of rod 32, and is accommodated at each end of the slot 34 in a recess or socket 37. By turning the hand wheel 36, the sleeve 35 may be backed off from the position of Figure 4, so as to clear the plate 10, permitting the swinging of the roller 6 to the other end of the slot 34, whereupon the sleeve 35 may be turned so as to enter the socket 37 and thus lock the roller 6 in the adjusted position. The mechanism mounting the rollers 5′ and 6′ apart from shape and position of parts being similar to that just described and identified by corresponding reference numerals, requires no further description.

The gearing associated with the nipping rollers 5, 6 and 5′, 6′ is carried, as usual, at the opposite end of the frame from that shown in Figure 4 and is shown diagrammatically in Figures 7 and 8. It includes for the rollers 5, 6, a drive gear 40 rotatable on a fixed center and idle gear 41 also rotating on a fixed center, concentric with stub shaft 11, a drive gear 42 for the roller 6 and a drive gear 43 for the roller 5. Arm 31 maintains the gears 41 and 42 in driving engagement in the position of Figure 7, corresponding to the roller position of Figure 1, and also when the arm is swung to bring the gear 42 into the position indicated in phantom when it meshes with gear 43 for driving the nipping roller 5. The gear elements in Figure 8 are identified by similar reference numerals with prime superscripts and require no further description. In Figures 7 and 8, the gearing is indicated in a position corresponding to Figure 1.

The mechanism may be adjusted for any of three deliveries, associating all the ribbons together and feeding them to either the right or left hand folders, as indicated in Figures 1 and 6, or feeding the ribbons R and R′

separately to the two folders, as indicated in Figure 5.

The operation according to Figure 5 in which the ribbons are directed to the two folders is according to usual practice and requires no special comment.

With respect to the operation according to Figures 1 and 6, it will be observed that the plates **10** and **10'** are shaped somewhat differently and carry the elements supported by them in somewhat different positions. The nip of rollers **5'** and **6'** when in running engagement (Figure 1) is somewhat lower than the nip of rollers **5** and **6** when these rollers are in running engagement (Figure 6), and the roller **6'** in its upper position (Figure 6) is in a lower position than the roller **6** when adjusted to its upper position as shown in Figure 1. In consequence, the length of travel of the ribbons R' from the nip of the upper rollers **3'**, **4'** to the nip of rollers **5**, **6** (Figure 6) is greater than the length of travel of the ribbons R from the nip of rollers **3**, **4** to the nip of rollers **5'**, **6'** (Figure 1). This change of position as between the two mechanisms permits adjustment of the plates **10** and **10'** so as to associate all the ribbons together properly for feeding to either folder, and taking into account stagger of the plates on the cylinder on which the initial full width web is printed. In feeding all the ribbons to either folder, the path of travel will include in the one case two sets of nipping rollers between the former and the folder, and in the other also two sets of nipping rollers with a single driven compensating roller **6** or **6'** as the case may be.

What is claimed is:

1. In a printing machine folder, means for delivering two sets of traveling ribbons separately to each of a pair of cutting and folding mechanisms and for associating the said sets if ribbons together and delivering the associated ribbons selectively to either of the said mechanisms, the said means comprising for each set of ribbons an upper pair of nipping rollers and a lower pair of nipping rollers, and mounting means for each lower pair of nipping rollers, including means for setting the two rollers in a cooperating engaging position and alternatively in a separated position, whereby either set of ribbons may be led through its lower pair of nipping rollers when in cooperating engagement, or around one of said rollers, when separated, and thence to the other pair of lower nipping rollers to associate it with the other set of ribbons, and means for adjusting the position of the middle two of the four lower nipping rollers to register the associated sets of ribbons, the last said means comprising pivotally mounted rigid supporting members and means for fixing the same in a selected adjusted position.

2. In a printing machine folder, means for delivering two sets of traveling ribbons separately to each of a pair of folding and cut off mechanisms and for associating the said sets of ribbons together and delivering the associated ribbons selectively to either of the said folding and cut off mechanisms, the said means comprising for each set of ribbons an upper pair of nipping rollers and a lower pair of nipping rollers, and a mounting means for each lower pair of nipping rollers, the said mounting means comprising at each end of the pair of rollers a support plate, spring pressed members carried by the said plate for journaling one of the said rollers, means movable on the said plates for journaling the other of the said rollers, and settable between a position where the said other roller is in engagement with its cooperating roller and in a position where it is separated therefrom, whereby either set of ribbons may be led through its lower pair of nipping rollers in cooperating engagement, or around one of said rollers, when separated, and to the other pair of lower nipping rollers to associate it with the other set of ribbons, and means for adjusting the position of the said support plates to register the associated ribbons.



3. In a printing machine folder, means for delivering a pair of traveling ribbons separately to each of a pair of folding and cut off mechanisms and for associating the two said ribbons together and delivering the associated ribbons selectively to either of the said folding and cut off mechanisms, the said means comprising for each ribbon an upper pair of nipping rollers and a lower pair of nipping rollers, and a mounting means for each lower pair of nipping rollers, the said mounting means comprising at each end of the pair of rollers a support plate, spring pressed members carried by the said plate for journaling one of the said rollers, means movable on the said plates for journaling the other of the said rollers, and settable between a position where the said other roller is in engagement with its cooperating roller and in a position where it is separated therefrom, whereby either ribbon may be led through its lower pair of nipping rollers in cooperating engagement, or around one of said rollers, when separated, and to the other pair of lower nipping rollers to associate it with the other ribbon, means pivotally supporting the said support plates and gearing for adjusting the position of the said support plates about their pivots to register the associated ribbons.

4. In a printing machine folder, means for delivering a pair of traveling ribbons separately to each of a pair of folding and cut off mechanisms and for associating the two said ribbons together and delivering the associated ribbons selectively to either of the said folding and cut off mechanisms, the said means comprising for each ribbon an upper pair of nipping rollers and a lower pair of nipping rollers, and a mounting means for each lower pair of nipping rollers, the said mounting means comprising at each end of the pair of rollers a support plate, spring pressed members carried by the said plate for journaling one of the said rollers, means carried by arms pivotally mounted on the said plates for journaling the other of the said rollers, and settable between a position where the said other roller is in engagement with its co-operating roller and in a position where it is separated therefrom, whereby either ribbon may be led through its lower pair of nipping rollers in co-operating engagement, or around one of said rollers, when separated, and to the other pair of lower nipping rollers to associate it with the other ribbon, and means for adjusting the position of the said support plates to register the associated ribbons.

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