Sept. 29, 1942. P. B. STREICH 2,297,587

PAPER FEED MECHANISM FOR PRINTING MACHINES

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Fig. 1.

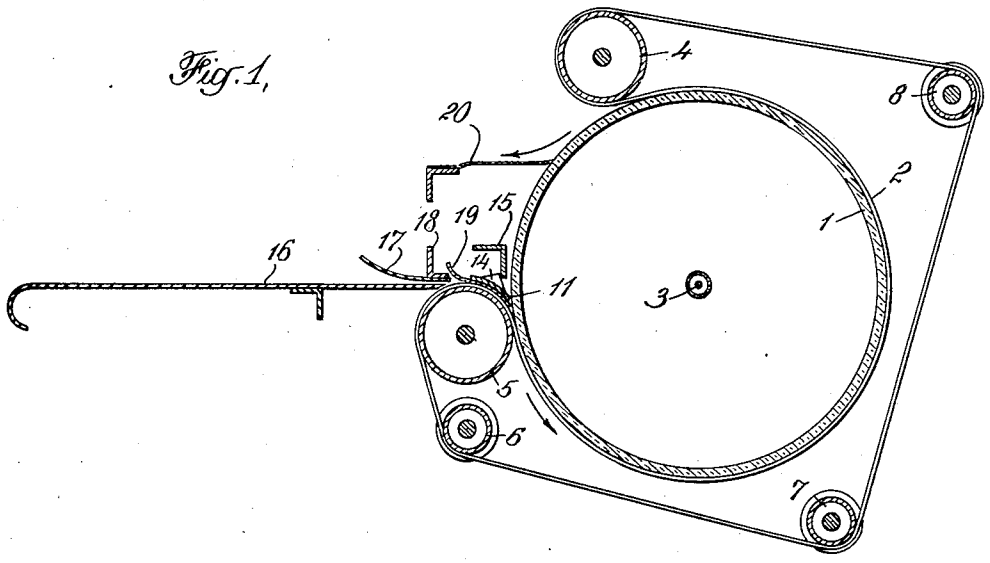


Fig. 2.

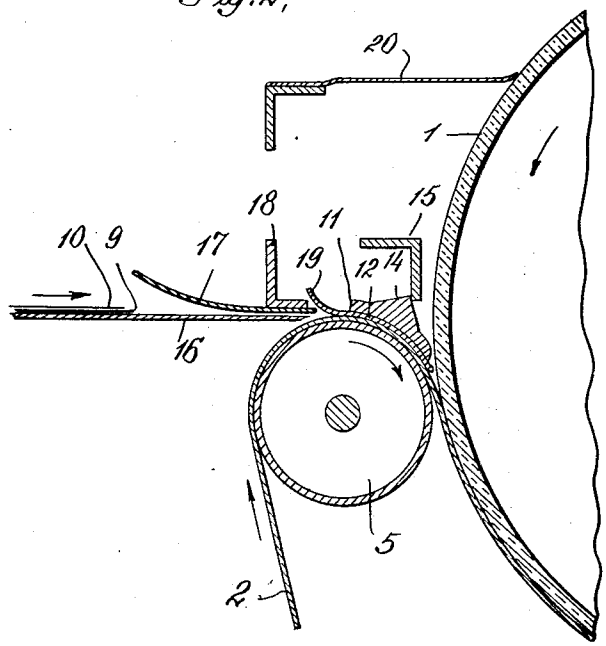
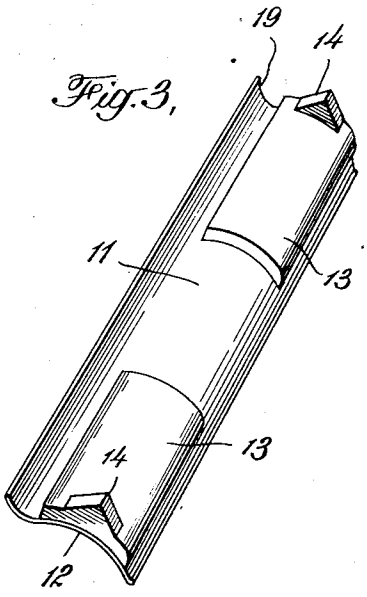


Fig. 3.



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PAPER FEED MECHANISM FOR PRINTING MACHINES

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4 Claims. (Cl. 95—77.5)

The present invention relates to printing mechanisms and more particularly to an improved means for feeding a tracing and sensitized paper to a printing roller.

In photoprinting devices of the type to which the present invention relates, the tracing and sensitized paper are engaged between the outer surface of a transparent printing cylinder and a plurality of endless bands in contact therewith, whereby the tracing and sensitized paper may be carried about a centrally located light source to effect the desired printing.

It is generally desirable to operate the machine at relatively high speeds and it is also preferable to maintain the endless bands under substantial tension to avoid wrinkling and slippage of the paper and tracing. As a result, when the tracing and paper have been received between the bands and the cylinder, adjustment to correct alignment of and to remove creases in the tracing and paper cannot be effected. Heretofore, it has required considerable skill to feed the tracing and paper to the cylinder in correct alignment and to avoid the formation of wrinkles and creases. Accordingly, printing frequently has been carried out under adverse conditions, i. e., with the tracing and paper in an undesirable position and condition.

It is an object of my invention, therefore, to provide a means for feeding the tracing and sensitized paper to the printing roll in correct alignment and without the formation of undesirable creasing and wrinkling.

It is a particular object of my invention to provide means for maintaining the tracing and sensitized paper adjustably in contact with the bands immediately prior to engagement of the tracing and paper between the bands and the printing cylinder.

A further object of my invention is to provide adjusting means which is effective for smoothing and imparting a flat surface to the tracing and paper whereby creasing and wrinkling and the subsequent undesirable effect upon printing is avoided.

Another object of my invention is to provide feeding and smoothing means which is readily adjustable and is adapted to be used in printing operations involving varying thicknesses of paper and tracing.

I accomplish the above objects of my invention, as well as others, in accordance with the following description given in connection with the accompanying drawing, in which:

Figure 1 is a side view partially in cross section of a printing machine provided with my improved feeding and smoothing means;

Figure 2 is an enlarged cross-sectional view of the feeding and smoothing means; and

Figure 3 is a view in perspective of the feed roll shoe.

Referring to the drawing, a glass cylinder 1 is received within a plurality of endless bands 2 and is adapted to rotate about a centrally located light source 3. The endless bands 2 are mounted on a drive roll 4, a feed roll 5 and guide rolls 6, 7 and 8. The sensitized paper 9 and tracing 10 are adapted to be fed between the endless bands 2 and the glass cylinder 1 adjacent the feed roll 5.

Positioned above the feed roll 5 is at least one feed roll shoe 11 which includes a lower element 12 having a portion conforming substantially to the outer surface of the feed roll 5. Preferably a plurality of feed roll shoes 11 arranged in end to end relation are provided. The paper 9 and tracing 10 are supported on a base 16 and are guided to a point between the shoes 11 and the bands 2 by means of a guide member 17 mounted on a bracket 18. One edge of the element 12 is curved upwardly to form a flange 19 which assists in the entry of the paper and the tracing between the shoe and the bands. After being carried about the centrally located light source 3 by the cylinder and bands, the tracing and paper are released onto a suitable platform 20. Each shoe 11 is provided with a plurality of brackets 13 formed with extensions 14 which are adapted to engage guide members 15. With the exception of the prevention of forward movement by the guide members 15, each shoe 11 is otherwise unrestricted and is free to move in an upward direction away from the surface of the feed roll to permit the feeding of varying thicknesses of paper and tracing. By using a plurality of the shoes 11, a more uniform pressure is exerted on the paper and tracing inasmuch as each of the shoes may move independently of the others to conform to the thickness of the paper and tracing.

In utilizing the improved device of my invention, the operator may feed the tracing and the sensitized paper to a point between the feed roll 5 and the feed roll shoes 11, where it may be prevented manually from passing to the printing cylinder 1 and the endless bands 2 until the paper and tracing are adjusted to secure the desired alignment and freedom from creases and the like. In this position the bands exert a drag on the paper and tracing, tending to carry them

toward the cylinder 1. However, the paper and tracing will not be carried positively to the cylinder until the operator releases them. When the proper adjustment is secured, the tracing and paper may be released, whereupon they are urged by the endless bands 2 between the bands and the glass cylinder 1 and printing is carried out in the usual manner.

A further advantage of the improved feed mechanism of my invention is that the change in direction imparted to the paper and tracing, as well as the application of pressure along a continuous line extending the entire width of the paper and tracing effects a smoothing or ironing which is effective for preventing creasing and wrinkling at all times during printing. Moreover, the curved section formed in the paper as it passes under the shoe causes it to be greatly rigidified just before it enters the printing operation, thus facilitiating the ironing effect exerted on the paper and enabling such effect to be preserved during the printing operation.

My invention is susceptible to many variations by one skilled in the art without departure from the concept thereof, and all such variations are intended to be included in the scope of the following claims.

I claim:

1. A printing device comprising a band, a feed roll for positioning said band, a glass cylinder received within a portion of the band, means for driving the band and the cylinder, at least one paper smoothing member located adjacent the feed roll and resting freely on the band, and means for limiting movement of the member with the band, said member being otherwise free to move in any direction relatively to said band.

2. A printing device comprising a plurality of bands, a feed roll for positioning said bands, a glass cylinder received within a portion of the bands, means for driving the bands and the cylinder, at least one paper smoothing member adjacent the feed roll and riding on the bands, said member having a lower surface substantially conforming to the surface of the feed roll, and means for limiting movement of the member in the direction of the movement of said bands, the movement of said member relatively to said bands being otherwise unrestricted.

3. A printing device comprising an endless band, means including a feed roll for positioning said band, a glass cylinder received within a portion of the band, means for driving the band and the cylinder, at least one feed shoe located adjacent the feed roll and resting freely on the band, said shoe having a lower surface substantially conforming to the surface of the feed roll and projections on its upper surface, and an abutment member engageable with said projections to limit movement of said shoe with the band.

4. A printing device comprising at least one endless band, means including a feed roll for positioning said band, a glass cylinder received within a portion of the band, means for driving the band and the cylinder, at least one feed shoe located adjacent the feed roll and riding freely on the band, a guide member adjacent the feed roll, and extensions on the shoe adapted to engage said guide member for limiting movement of said shoe in the direction of movement of said band.

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