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CYLINDER DRIVE MECHANISM FOR PRINTING MACHINES

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Fig. 1

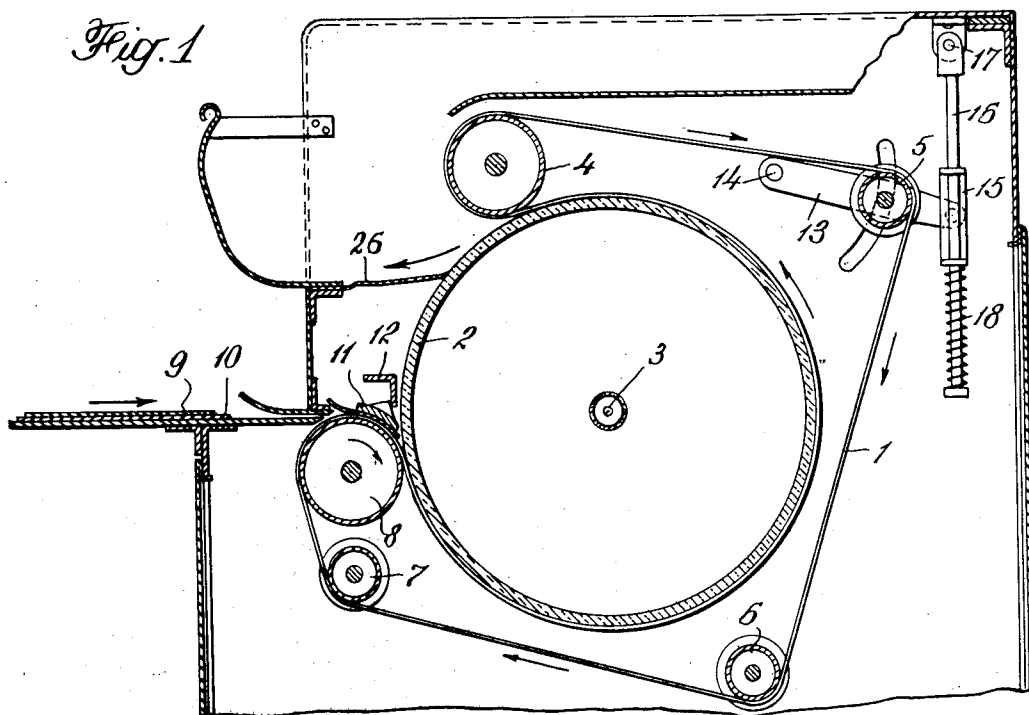
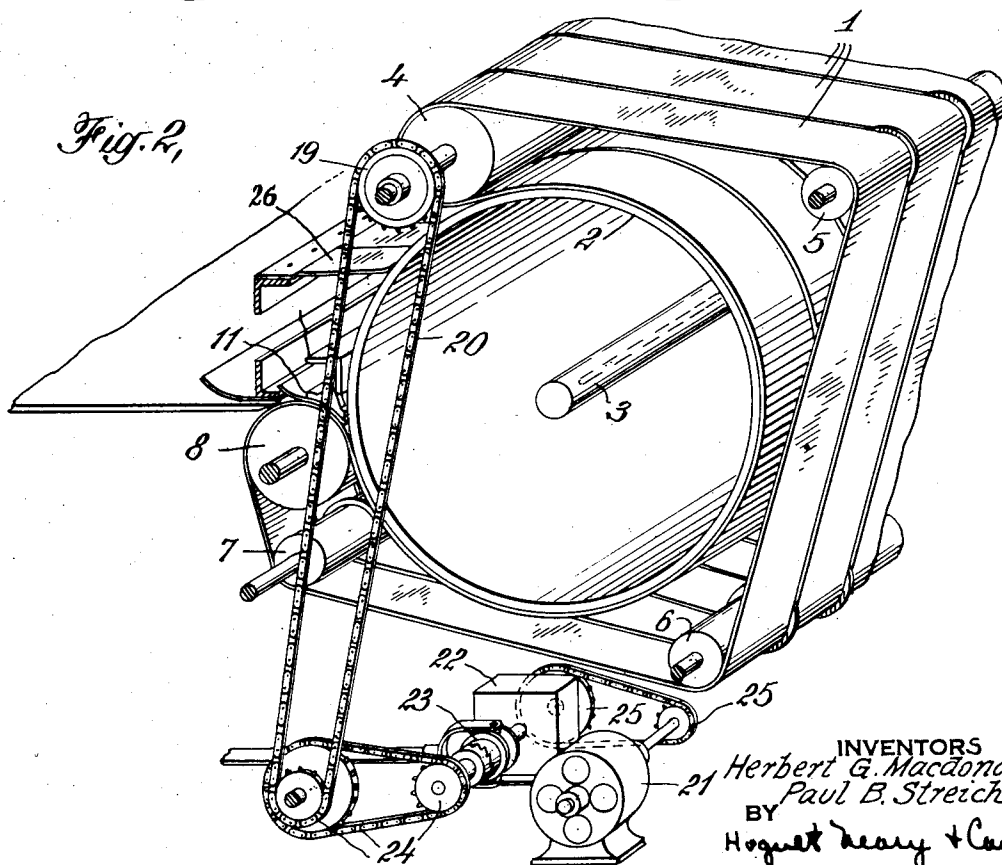


Fig. 2



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CYLINDER DRIVE MECHANISM FOR PRINTING MACHINES

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Application October 17, 1940, Serial No. 361,546

1 Claim. (Cl. 95—77.5)

The present invention relates to printing mechanisms and more particularly to improved mounting and driving means for the printing cylinder and bands associated therewith.

In accordance with the art of reproducing tracings and the like, to which the present invention pertains, the tracing and sensitized paper are carried between the outer surface of a rotating transparent cylinder and a series of endless bands in contact therewith. In this fashion, the tracing and sensitized paper are caused to revolve about a centrally located light source whereby the desired printing is effected.

The means used heretofore for supporting the printing cylinder and for driving the endless bands and the cylinder have been found to have many disadvantages. We have observed, for example, that the endless bands frequently are not maintained under effective and uniform tension, particularly while in contact with the printing cylinder. Furthermore, we have found that the driving means heretofore used frequently causes the paper to become wrinkled and creased with the result that the print is affected undesirably.

Accordingly, it is an object of our invention to provide an improved driving mechanism for the printing cylinder and the endless bands, whereby wrinkling and creasing of the sensitized paper and tracing is avoided effectively.

A further object of our invention is to provide a driving mechanism whereby the endless bands are maintained under the greatest tension while in contact with the printing cylinder.

A further object of our invention is to provide a mounting mechanism for the printing cylinder whereby the cylinder is driven in an improved fashion.

Additional objects of our invention will be apparent as the description proceeds and by reference to the accompanying drawing in which:

Figure 1 is a side view, partially in cross-section, of a printing device embodying our improved mounting and driving means; and

Figure 2 is a diagrammatic view of the printing device showing means for actuating the driving means.

Referring to the drawing, a series of endless bands 1 partially encircle a glass printing cylinder 2 adapted to revolve about a centrally located light source 3. The bands 1 are supported by a drive roll 4, a tensioning roll 5, idler rolls 6 and 7, and a feed roll 8, to be described more particularly hereinafter. Feed roll 8 and drive roll 4 preferably are spaced apart less than the

diameter of the cylinder 2 whereby the cylinder may be cradled in the portion of the bands 1 between feed roll 8 and drive roll 4 with at least half, and, preferably, more than three-fourths of its circumference covered by the bands 1.

The tracing 9 and the sensitized paper 10 are inserted between the endless bands 1 and the glass cylinder 2 adjacent the feed roll 8 which is provided with a feed roll shoe 11 engaged by a guide member 12. The feed roll shoe is described more particularly in the copending application of Paul B. Streich, Serial No. 361,471, filed October 17, 1940.

In accordance with our invention, the cylinder 2 is supported at least partially by the bands 1. The length of the portion of the bands 1 situated between the drive roll 4 and feed roll 8 is controlled to space the printing cylinder away from the lower rolls 6 and 7 supporting the bands, and, if desired, away from the drive roll 4. This may be accomplished by any suitable tensioning means, for example, by the roll 5 mounted upon an arm 13 which is pivoted at one end at 14. The opposite end of the arm 13 is mounted upon a slidable collar 15 mounted on an arm 16 pivoted at 17. The arm 16 is provided with a spring member 18 which normally urges the collar toward the pivot, thereby causing the roll 5 to press against the endless bands 1.

As the spring member 18 is compressed, a greater restoring force is applied to the collar 15. The spring member 18 is of at least sufficient strength when compressed to balance the weight of the cylinder 2 whereby the printing cylinder is maintained away from the lower rolls and caused to float on, and be cradled in, the endless bands. Thus the covered portion of the cylinder 2 is forced laterally against the feed roll 8, and, if sufficient tension is applied to the bands 1, the covered portion of the cylinder also is forced against the drive roll 4.

The endless bands 1, and consequently the printing cylinder 2, are driven by the drive roll 4 which is operated by any suitable source of power in a convenient manner. In the drawing, the drive roll 4 is provided with a sprocket 19 in engagement with a chain 20, which in turn is connected to a variable speed motor 21 through a gear box 22, clutch 23, and two sets of chain and sprocket connecting means 24 and 25. The clutch allows the drive roll to be stopped at any time, thereby permitting the tracings or prints to be withdrawn from the machine, either at the feed roll position or at the drive roll position.

It is to be noted that by driving the bands 1 by

means of the take-off roll 4 over which the endless bands leave the surface of the cylinder 2, the bands are maintained under the greatest tension while in contact with the printing cylinder and all slack is taken out. As a result, creasing of the tracing and sensitized paper is avoided and effective printing is insured throughout the entire operation of the device. In order to facilitate the removal of the tracing and the print from the cylinder 2, a scraper element 26 may be disposed between the feed roll 8 and the take-off roll 4 and engaging the cylinder 2.

It will be apparent that our invention is susceptible to variation by one skilled in the art, and all such variations are intended to be included within the scope of the appended claim.

We claim:

A printing device comprising feed and take-off rolls, said take-off roll being located above and to one side of the feed roll, means for driving said take-off roll, a printing cylinder, at least one band on said rolls and partially surrounding said cylinder, said rolls being spaced apart less than the diameter of said cylinder, a pivoted member disposed above said cylinder, a roll carried by said member, and spring means associated with said member to move said roll bodily upward in a direction against said band to counter-balance the weight of said cylinder and urge the cylinder at least against said feed roll.

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