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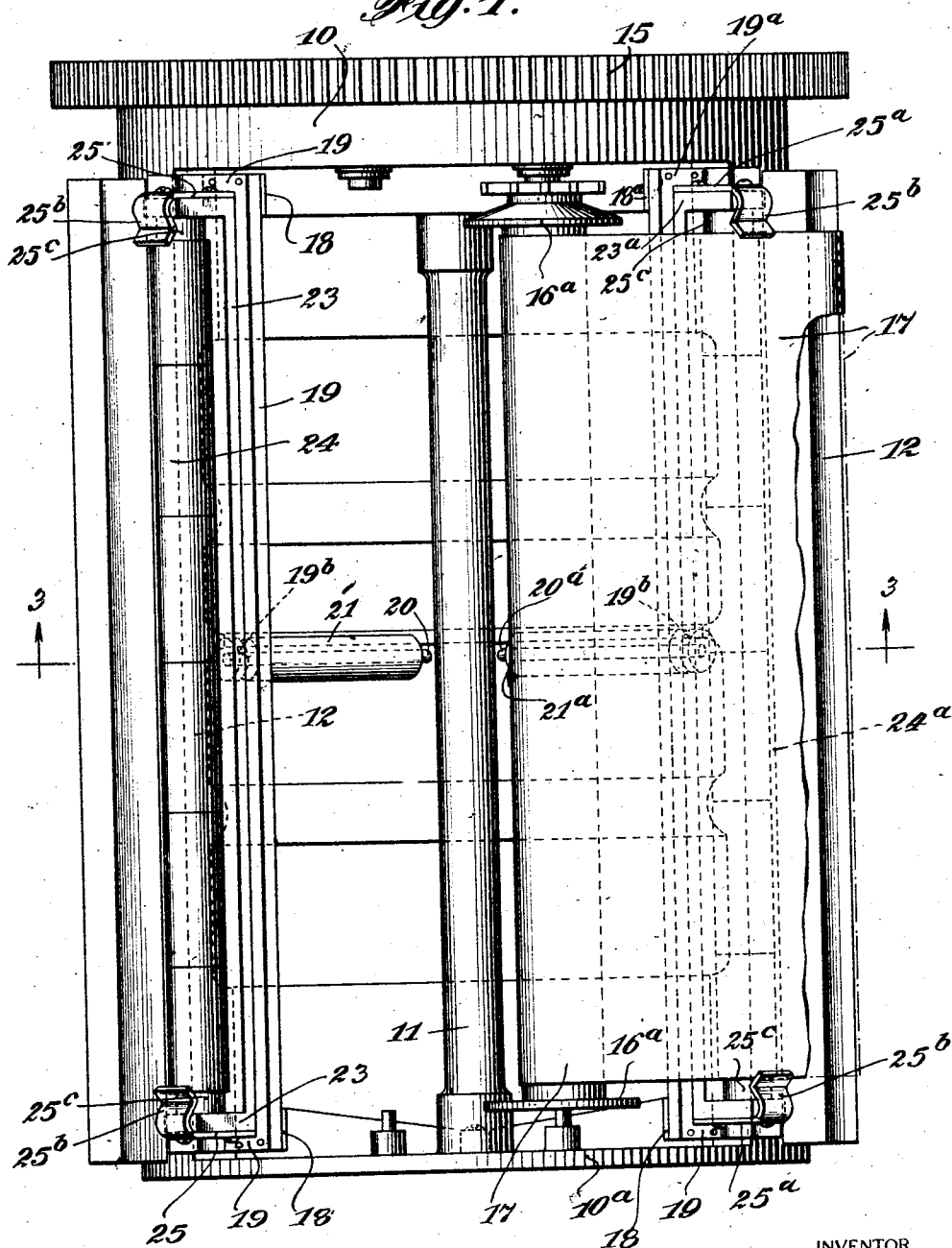
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C. F. GREEN
MEANS FOR CONTROLLING THE TRAVEL OF THE INK RIBBON
USED WITH ROTARY PRINTING MACHINES

Filed Sept. 16, 1926

3 Sheets-Sheet 1

Fig. 1.



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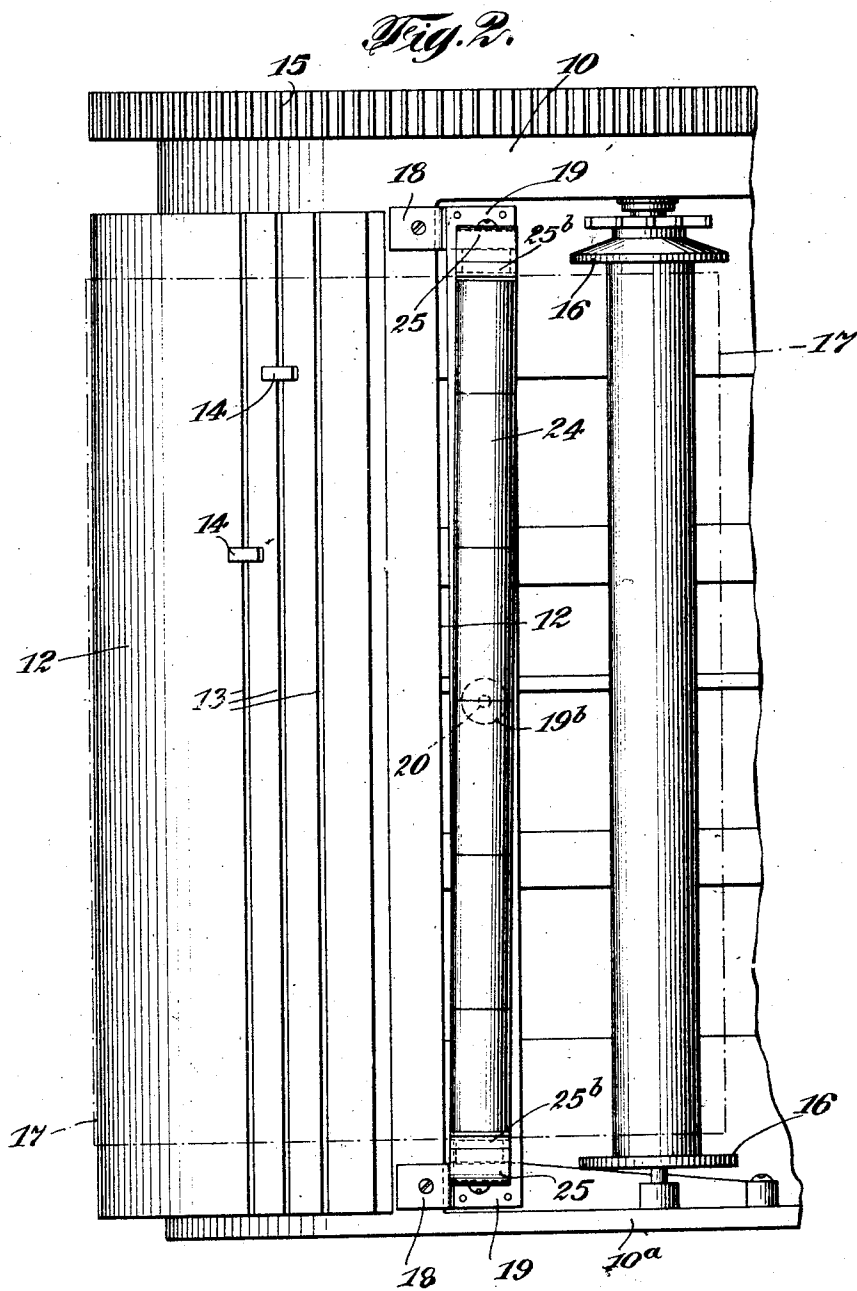
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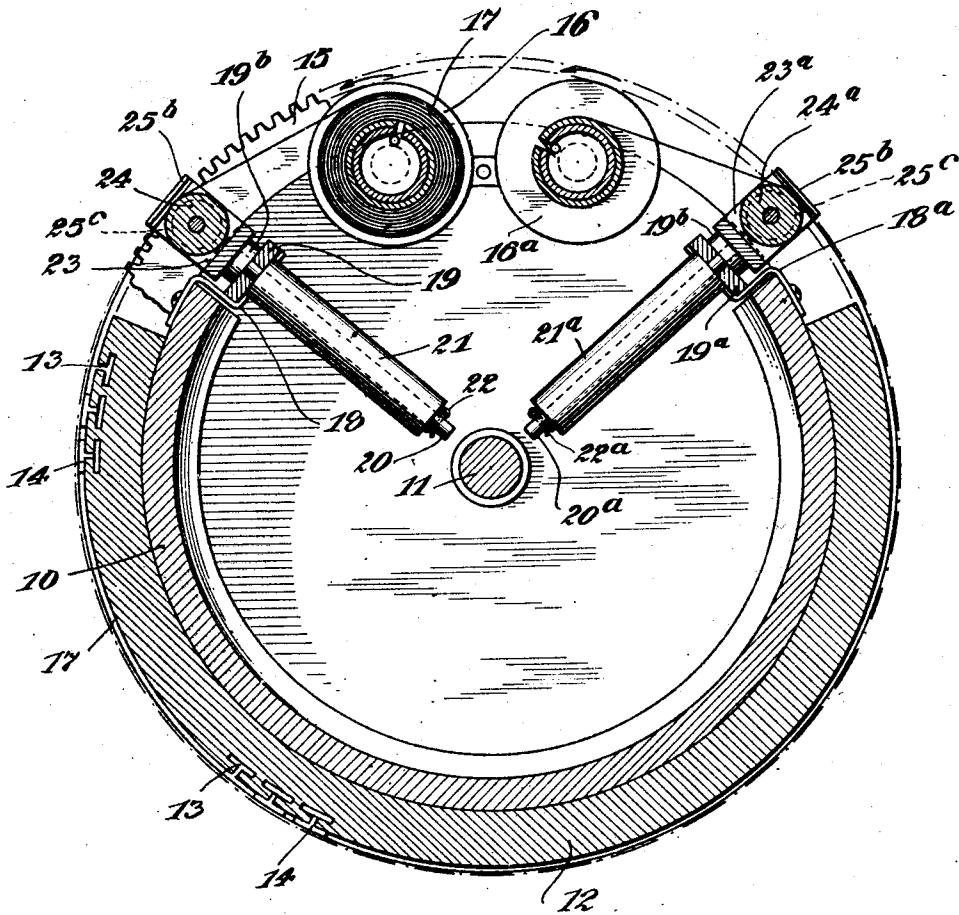
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Fig. 3.



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UNITED STATES PATENT OFFICE.

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MEANS FOR CONTROLLING THE TRAVEL OF THE INK RIBBON USED WITH ROTARY PRINTING MACHINES.

Application filed September 16, 1926, Serial No. 135,722, and in Great Britain January 15, 1926.

The present invention relates to means for controlling the travel of the ink band or ribbon used on rotary printing machines of the type in which the type is carried on a rotating drum or cylinder, over which the ribbon is moved by internal mechanism, so that it is afforded a movement over the type faces independently of the rotation of the printing cylinder.

in either direction a little out of parallel with the shaft of the cylinder.

In order that a clearer understanding of this invention may be had, attention is hereby directed to the accompanying drawings, forming a part of this application and illustrating one possible embodiment of the invention.

Referring to the drawings, Fig. 1 is a plan view of the cylinder of a rotary printing machine, to which is shown applied the means for controlling the printing ribbon; Fig. 2 is a fragmentary plan view showing the ribbon being corrected in its travel by the guiding means; and Fig. 3 is a sectional view through the printing cylinder showing the ribbon spools and the guiding means for the ribbon over the printing surface.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring the drawings, the printing cylinder consists of flanged discs 10 and 10^a secured to a main shaft 11, and to the discs is attached the printing segment 12, which is formed with the usual groove or channels 13 for the type 14, and the flange 10 is formed with, or has secured thereto, a gear wheel 15 for rotating the printing cylinder. Between the discs 10 and 10^a are pivoted the pair of ribbon spools 16 and 16^a (Fig. 3), the ribbon 17 from which passes over the type faces 14.

Secured to the flanged discs, as by way of screws as shown, are brackets 18, 18^a, to which are similarly secured stay bars 19, 19^a.

Passing through the stay bars are pivots 20, 20^a fitting in tubular sleeves 21, 21^a, the said pivots being retained in the sleeves, and prevented from accidental detachment by means of split pins 22, 22^a.

The other ends of the pivots 20, 20^a are secured in open brackets or frames 23, 23^a in which are supported rollers 24, 24^a free to turn under the action of the ribbon 17. These rollers are preferably formed as a series of short rollers, as shown, which have the effect of reducing the drag of the ribbon on the deflecting movement of the roller and making the roller more sensitive to the pull of the ribbon. Between the frames and the stay bars 19, 19^a are fitted washers 19^b for the pivots 20, 20^a.

At the ends of each frame 23, 23^a are se-

In such machines, the ribbon is wound on a pair of spools mounted at opposite ends of the type space, and the ribbon passes from one spool over the portion of the cylinder carrying the type onto the other spool, the movement of the ribbon over the type being reversed, either automatically or by other means, when fully wound onto one spool.

Hitherto, with machines of this type, there has been a tendency for the ribbon to wander or deviate from its proper line of travel centrally between the spool ends, owing to uneven disposition of the type on the cylinder, and consequently it has been necessary during the operation of the machine to stop occasionally and to pull the ribbon by hand to a central position. Unless this is done, the ribbon will ultimately mount up at one end of the spool, which will interfere with its free movement and possibly leave some of the type uncovered.

The principal object of the present invention is to provide means whereby the line of travel of the ribbon is controlled, the control being such that the ribbon is wound up on either spool centrally or approximately so.

Other objects of this invention will be in part obvious and in part pointed out hereinafter.

In accordance with this invention, pivoted guide rollers are placed between the spools and the portion of the cylinder carrying the type, whereby, when the ribbon runs over to one side or the other, one of the guide rollers is deflected out of square with the line of travel of the ribbon; which has the effect of correcting its deviation and causing it to be wound centrally on the spool. In the present construction, each guide roller is a little longer than the width of the ribbon, and is carried in an open-sided frame, which is pivoted below the roller midway between its ends, at right angles to its axis, and radially to the cylinder, so that the roller can swing

cured, as by means of screws, small plates 25, 25^a.

Each of the plates is bent over the frames and is formed substantially V-shape, as at 25^b, so that the plates overhang and almost touch the rollers 24, 24^a.

Normally, the rollers can revolve freely under the action of the ribbon 17, and the ribbon runs over the rollers clear of the overhanging plates 25, 25^a.

If, however, the ribbon runs over to one side, as depicted diagrammatically in Fig. 2, the edge of the ribbon is jammed between one of the rollers 24 and the V-shape indent 25^b of the plate 25, and that end of the roller is pulled forward, swinging the roller or series of rollers 24 out of square with the line of travel of the ribbon 17, with the result that the ribbon is guided back towards the opposite end of the spool 16^a.

The overhanging plates 25, 25^a are made flexible enough to allow the ribbon to be pulled between the plate and the roller, so that the movement of the ribbon 17 is not checked. As soon as the ribbon is free from action with the portion 25^b of the plate 25, the roller 24 will be free to assume its normal position, that is to say, square with the line of travel of the ribbon.

It has been found advantageous slightly to cut away a part of the circumference of the rollers 24 and 24^a at each end as far as each extends under the parts 25^b of the plates 25, 25^a, leaving about one-third only of its circumference the full size as represented by 25^c (Fig. 1). This enables the edge of the ribbon to get well under the part 25^b, so that it is well gripped between the plate and the roller.

Although one roller, or set of rollers, may be sufficient to prevent the ribbon from mounting the sides of either spool, it is preferable to provide two rollers, one between each spool and the portion of the cylinder carrying the type.

It is to be understood that the method of mounting the rollers may be varied to suit special circumstances, and the means whereby the ribbon is caused to deflect the rollers may also be modified, without departing from the spirit of the invention, which resides in guide rollers mounted in frames pivoted centrally and means whereby, when the ribbon runs over to one side, one of the rollers is deflected by the ribbon from its normal position, out of square with the travel of the ribbon, and the ribbon is so guided back to its proper course.

As will be observed from the drawings each roller 24, 24^a is formed a little longer than the width of the ribbon 17, so that the ribbon travels clear of the plates 25, 25^a, so long as it is passing centrally over the rollers.

What I claim is:—

1. The combination with a printing ma-

chine of the character described, including a type carrying drum, an ink ribbon disposed over the type, and spools for the ribbon, one at each end of the type space, of means for maintaining the ribbon in alignment with said spools as it travels from one to the other in either direction, said means comprising a guide roller pivoted on the drum adjacent to and in advance of each spool, means on each roller whereby when the ribbon deviates sidewise at a roller said roller will be pivoted on the drum and will deflect the ribbon back into alignment with the adjacent spool, each of said rollers being slightly longer than the width of the ribbon and being rotatably mounted in a frame, said frame being pivoted midway between its ends to the drum at right angles to the axis of the frame and radially to the drum, whereby each roller may swing in either direction out of parallel with the axis of the cylinder, and a plate attached to each end of each pivoted frame, the plates on each frame overhanging and almost touching the extremity of the roller in the frame, said plates being adapted to be engaged by the ribbon when it moves toward the corresponding end of the roller, whereby the roller is turned on its pivot and the ribbon deflected back into alignment with the adjacent spool.

2. The combination with a printing machine of the character described, including a type carrying drum, an ink ribbon disposed over the type, and spools for the ribbon, one at each end of the type space, of means for maintaining the ribbon in alignment with said spools as it travels from one to the other in either direction, said means comprising a guide roller pivoted on the drum adjacent to and in advance of each spool, means on each roller whereby when the ribbon deviates sidewise at a roller said roller will be pivoted on the drum and will deflect the ribbon back into alignment with the adjacent spool, each of said rollers being slightly longer than the width of the ribbon and being rotatably mounted in a frame, said frame being pivoted midway between its ends to the drum at right angles to the axis of the frame and radially to the drum, whereby each roller may swing in either direction out of parallel with the axis of the cylinder, and a plate attached to each end of each pivoted frame, the plates on each frame overhanging and almost touching the extremity of the roller in the frame, said plates being adapted to be engaged by the ribbon when it moves toward the corresponding end of the roller, whereby the roller is turned on its pivot and the ribbon deflected back into alignment with the adjacent spool, each roller being cut away slightly beneath said overhanging plates to facilitate the ribbon engaging between the plates and roller when it deviates from its normal path.

3. The combination with a printing machine of the character described, including a type carrying drum, an ink ribbon disposed over the type, and spools for the ribbon, of
5 means for maintaining the ribbon in alignment with said spools as it travels from one to the other, said means including a guide roller slightly longer than the width of the ribbon, rotatably mounted on a frame piv-
10 oted midway between its ends to the drum at right angles to the axis of the frame and radially to the drum, whereby the roller may swing in either direction out of parallel
with the axis of the cylinder, and a plate on each end of the frame overhanging and
15 almost touching the extremity of the roller in the frame, whereby when the ribbon deviates toward one side of the drum it engages between an overhanging plate and the roller
20 to pivot the roller, the roller thereupon acting to move the ribbon into normal alignment with said spools.

This specification signed this 7th day of September, 1926.

CHARLES FREDERICK GREEN.