Nov. 10, 1931. E. J. TILLSTROM 1,831,270

PERFORATING ATTACHMENT FOR PRINTING PRESSES

Filed Dec. 4, 1928 2 Sheets-Sheet 1

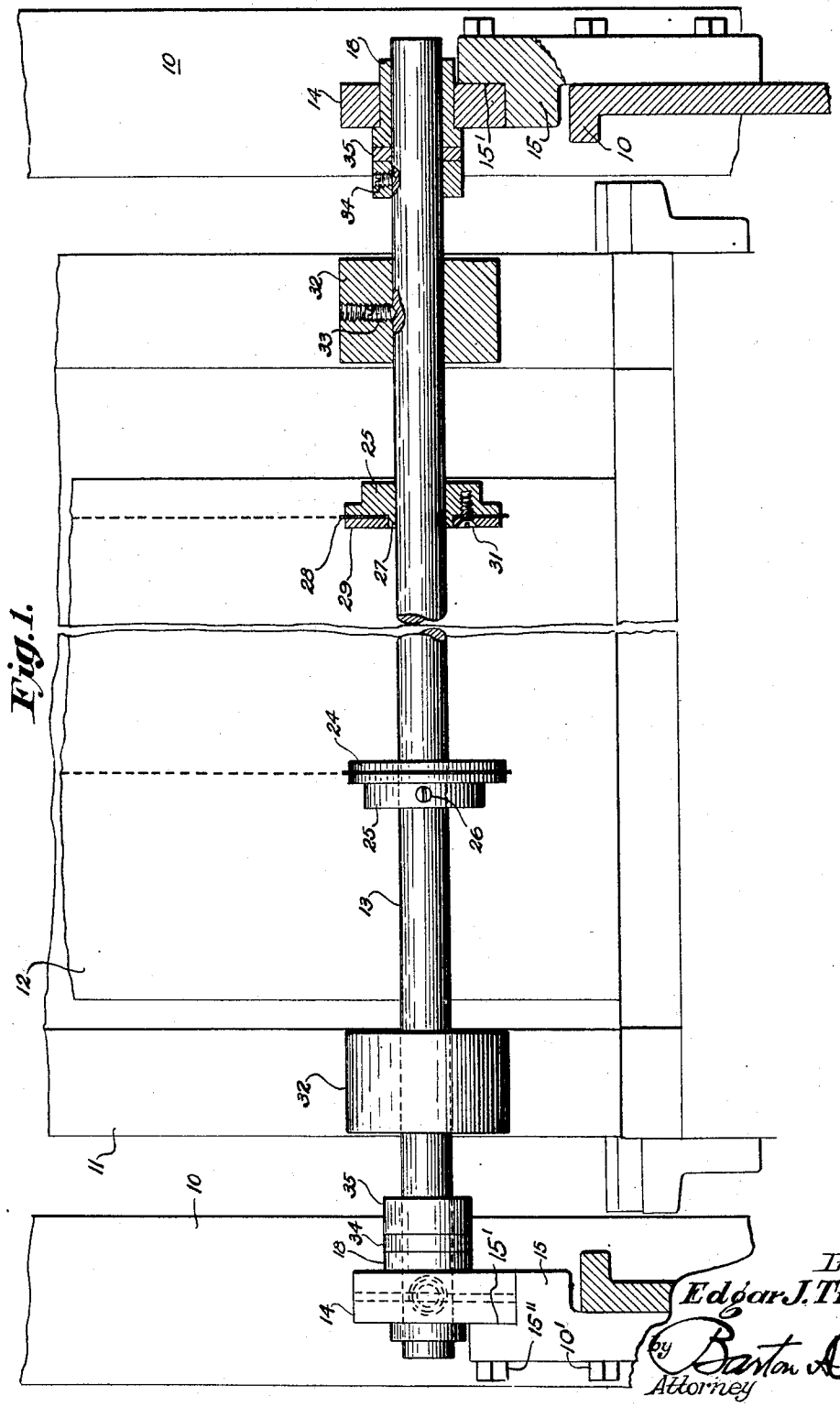


Fig. 1.

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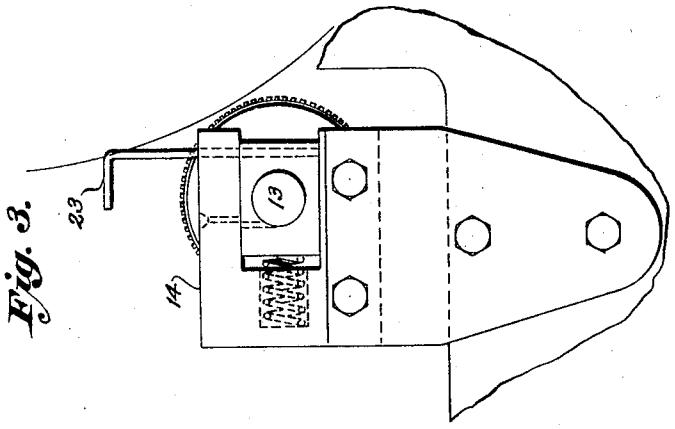


Fig. 3.

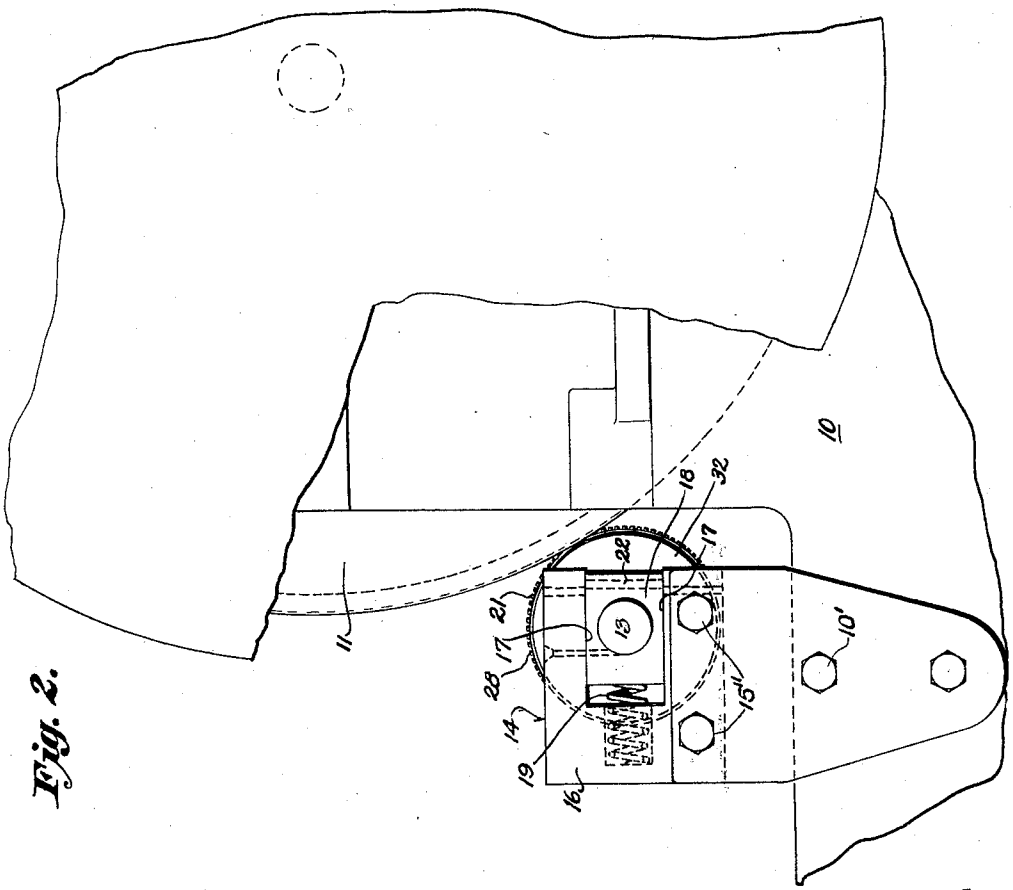


Fig. 2.

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1,831,270

UNITED STATES PATENT OFFICE

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PERFORATING ATTACHMENT FOR PRINTING PRESSES

Application filed December 4, 1928. Serial No. 323,744.

This invention relates to perforating attachments for rotary presses and it has particular reference to an attachment by means of which paper or other fibrous material passing through the press may be perforated for facilitating the subsequent separation of the paper into a number of portions.

In the preparation of printed paper forms for commercial and business use, it has heretofore been customary to print upon the paper such formal matter as may be desired and subsequently to form lines of perforations on the paper between the printed portions. The methods of perforating such printed paper have been open to a number of objections which include, primarily, an undue expenditure of time, loss of paper, and excessive labor. It has been also proposed to perforate the paper on the press by inserting cutting members in the type platen. This proposal, however, is objectionable for the reason that the printing ink soils the perforating element, and so produces a colored or inked series of perforations on the finished stock. Colored perforations are sometimes regarded as indicative of cheap or low-grade material, and hence, are objectionable in the production of a high class product.

The present invention has for its immediate object the provision of means adapted to be associated with a rotary press for perforating the paper in an easy and efficient manner. The perforating means are advantageously so disposed as to avoid any possibility of inking the perforations in the event that the device is used with a printing press, and is also so disposed as to permit of ready manipulation or adjustment.

A typical embodiment of a device embodying the present invention is shown in the accompanying drawings in which:

Fig. 1 is a fragmentary end elevational view of a printing press with a perforating attachment mounted thereon, parts being shown in cross section;

Fig. 2 is a fragmentary side elevational view of the structure shown in Fig. 1; and,

Fig. 3 is a fragmentary side elevational view of the same structure, including means for effecting the disengagement of the perforating discs from the stock on the press roller.

The press includes a frame 10 within which is mounted a rotary cylinder or stock roller 11 adapted to receive paper or other stock 12 which passes around the roller during the process of formation or printing. In front of the roller 11 and extending longitudinally therewith is a shaft 13 mounted in the bearings 14. Said bearings are removably secured to the gibs 15′ of the brackets 15 by the bolts 15″. The brackets 15 are in turn secured to the frame 10 by the bolts 10′. As best shown in Figs. 2 and 3, each bearing 14 comprises a block 16 provided with guides 17 for the reception of a bearing bushing 18 transversely movable toward or away from the roller 11. The bearing bushing extends through the said block and is provided with an enlarged portion having a shoulder 18 abutting said block. Each block 16 is recessed to receive a coil spring 19 which urges the bushing 18 normally toward the roller 11. The block 16 and the bushing 18 are respectively provided with apertures 21 and 22 which are adapted to be aligned when the bushing 18 is pushed away from the roller 11, thereby compressing the spring 19. When so aligned, the bushing 18 may be secured away from the roller 11 by inserting a locking pin 23 as shown in Fig. 3.

Upon the shaft 13 are one or more perforating rollers 24 each of which consists of an annular hub 25 provided with a radially extending threaded aperture for the reception of a set screw 26 by means of which the hub may be secured on the shaft 13 in any desired longitudinal position. Each hub 25 is formed with an off-set annular shoulder 27 upon which may be disposed a toothed perforating disc 28, and which is secured on the hub 25 by means of an annular plate 29 adapted to receive a set screw 31. There are also disposed upon the shaft 13 a pair of contact rollers 32 respectively positioned at the ends of the roller 11 and secured in adjusted position by means of set screws 33. These contact rollers cause the perforating members 24 to be rotated with the shaft 13 when the roller 11 is driven, and further

guide and align the members 24 by means of their two-point contact at opposite ends of the shaft 13. In order to control the depth of perforation in accordance with the size or character of the stock on the roller 11, the contact rollers 32 are advantageously of almost the same outside diameter as the outside diameter of the perforating discs 28. By determining the relation of these diameters, it is possible to select contact rollers or perforating discs, which when associated with each other, will permit of a predetermined penetration of the stock.

It will be understood that in operation with the parts assembled, as shown in Figs. 1 and 2, the stock receiving press roller 11 is driven from a suitable source of power, and the paper 12 passing around the roller is printed by means of type disposed on a platen located below the roller 11. The perforating elements 24 are positioned along the shaft 13 to produce perforations between lines of printing, and this location of the printing edge is fixed by tightening the set screws 26, and also by manipulation of retaining collars 34 and washers 35 disposed adjacent the bearing bushings 18 which act to retain the shoulder 18′ thereof in contact with the bearings 14, thereby retaining the shaft and the parts assembled thereon in fixed relation with the roller 10. When the parts are so positioned, lines of perforations are produced in the stock 12 at predetermined points. Any variation in the thickness of the stock is corrected for by the cooperation of the contact rollers 32 which bear a predetermined relation to the diameter of the discs 28, and also by cooperation with the resiliently pressed bearing bushings 18. Upon the event of variations affecting the position of rollers 32 toward or away from the roller 11, the adjacent discs 28 are constrained to move a like amount, and the adjacent bearing 14 is likewise forced away from the rollers in accordance with the displacement of the contact roller 32. The uniform depth of perforations along predetermined lines is therefore efficiently effected.

It will be understood that the invention is subject to structural modifications in the illustrated embodiment thereof and that the attachment may be applied to a variety of presses and is not necessarily restricted in its utility to the perforation of printed paper. When it is desired to remove the attachment from the press for access to the roller or to the underlying platen, the bushings 18 are pinned to the bearings 14 as previously described, and the screws 15″ are removed therefrom, whereby the entire bearing and shaft assembly may be removed from the brackets in a locked position. This assembly may be subsequently remounted on the brackets 15 by a reversal of this process, without the necessity of adjustment of aligning the shaft or replacing of the perforating rollers thereon. It is desired that the scope of the invention should be determined in accordance with the following claim.

What is claimed is:—

A perforating attachment for a rotary press having a stock receiving roller mounted within the frame thereof comprising a pair of brackets secured to said frame at opposite ends of said roller, bearings mounted in front of and at either end of said press roller and removably secured to said brackets, each bearing having an aperture, a bushing slidably mounted in each of said bearings and each having an aperture, resilient means on the bearings for urging said bushings toward said press roller, a shaft journalled in said bushings, a perforating disc mounted on the shaft, contact rollers positioned on the shaft and maintained in contact with said press roller by said resilient means, said bushings being movable against said resilient means to remove said contact rollers from said press rollers and also to align the aperture in each bushing with the aperture in its corresponding bearing, and removable pin members inserted in the aligned apertures in each bushing and corresponding bearing to lock the bushings in their moved position.

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