This invention relates to the paper piercing means of a folding couple for paper printing machines and the like. This is a division of my application, Serial No. 326,861, filed December 18, 1929, patented August 9, 1932, No. 1,870,543.

The principal object of the invention is to provide means whereby the paper behind the pins when they are projected through it will be yieldingly supported at points surrounding the pins so that there will be less danger than heretofore of the pins mutilating the paper when forced through it.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is a sectional view of part of the two cylinders of a folding couple showing a preferred embodiment of this invention on the cutting cylinder, and

Fig. 2 is a similar view showing the folding cylinder supplied with the same form of cushion.

As is well known the impaling pins of the folding and cutting cylinders of a folding couple are required to extend through several sheets for the purpose of carrying the sheets around when no longer connected with the web in front. These pins are projected out from the surface of the cylinder on which they are mounted into the surface of the other cylinder. For that reason the other cylinder has to be provided with suitable clearance holes so that the pins can pass into it freely and they have to be large enough to permit of the slight necessary movement which the edge of the pin describes due to its projection beyond the pitch line of the cylinder.

This clearance is detrimental to the proper impaling of the paper by the pins due to the fact that it involves the removal of the surface of the cylinder for a short distance around the pin and thus eliminates the support that the cylinder would otherwise furnish behind the paper and close to the pin where it enters the same. When the pins get dull they necessarily deflect the paper out of its course and force it back into the rectangular recesses usually employed for that purpose. They have a comparatively wide area in which this action can take place. This displaces the paper on the cylinder and tends to cause an irregular cut to be produced and a ragged edge left around the impaling pins.

I greatly reduce the difficulties above mentioned in the following way:

The folding cylinder 10 and cutting cylinder 11 are provided with impaling pins 12 and 13, respectively, which work in the ordinary manner. Also the cutting blade 14 operates as usual, but instead of having the clearance holes 20 and 21 open I fill it with resilient material such as soft rubber 22 and 23. Then the impaling pins can enter this soft substance and yet the paper on the outside of the cylinder will be back up sufficiently to avoid the deep bending of the paper with the pins inserted, even when they are somewhat dulled.

In this case it will be seen that the pins have plenty of opportunity for the necessary movement and yet the paper is backed up to a considerably greater extent than has been the case in previous forms on the market.

Although I have illustrated and described only one form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited in this respect but what I do claim is:

1. In a folding couple, the combination with the two cylinders thereof, of impaling pins carried by one of said cylinders, the other cylinder having clearance holes, and yielding means filling the clearance holes in the other cylinder for receiving said impaling pins for the purpose described.

2. In a folding couple, the combination with a folding cylinder and a cutting cylinder, of impaling pins carried by one cylinder, and clearance holes in each cylinder filled with soft rubber to support the paper passing over the surface thereof and receive the impaling pins from the other cylinder.

3. In a folding couple, the combination with the two cylinders thereof, of impaling pins carried by the folding cylinder at an angle to a radial plane, the other cylinder having clearance holes, and soft rubber filling the clearance holes in the other cylinder for receiving said impaling pins and yieldingly supporting the paper as it is fed into the couple toward the cutting blade on both sides of the pins.

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