

METALLIC DRAWING ROLLS.

The following description and illustration are of the metallic drawing rolls, for drawing the fibre of cotton and other materials as manufactured by the Metallic Drawing Roll Company, Indian Orchard, Mass.

No one thing in the economy of cotton manufacture has been more ardently desired than an efficient substitute for the leather covered drawing roll. This roll remains in practically the same state as when perfected by Arkwright in 1767, and aside from the shell roll is perhaps the only thing about the mill which has not been improved upon. The attempts to improve it have been many, so many, in fact, as to lead a large number of mill men to declare the roll incapable of improvement.

The principal topic for discussion at the semi-annual meeting of the New England Cotton Manufacturers' Association at Boston a few weeks ago, was this metallic roll, with an exhaustive paper regarding it by Mr. H. L. Pratt, of the Bates Manufacturing Company, Lewiston, Maine, from which we obtain the following description:—

Referring to the engravings here shown, it will at once be noticed that the rolls are practically gears. They are provided with collars shown at A A in Fig. 1, and more prominently illustrated in Fig. 2. These collars are identical in action with the shrouding sometimes used on heavy gearing to strengthen the teeth, being made to the exact pitch diameter of the gears. These collars touch and move in pure rolling contact, thereby preventing the points of the teeth from coming in contact with the bottom of the flutes or grooves, as they only intersect each other 44-1000 of an inch. This separation is clearly shown in Fig. 1, and also in the cross section shown in Fig. 3.

The separation of the gears affords sufficient space for the sliver, and thereby prevents the crushing and cutting of the fibre, which has proved fatal to all other attempts to run interlocking rolls in the past. The space referred to for the sliver is clearly shown in the drawing at B B, Fig. 1. This space is amply sufficient to permit the cotton to be compressed within the limit of its elastic capability, which gives the drawing effect of a cushioned roll without any of its disadvantages.

Fig. 1.—The straight line above indicates a sliver from leather rolls; the crimped line shows sliver from metallic rolls, and illustrates why metallic rolls deliver one-third more product.

The question of the wear of collars at once arises. By referring to Fig. 2, we notice that the collars move, as before mentioned, in pure rolling contact, that is, without slipping, hence the wear, if there be any, is reduced to a minimum, and would probably no more than keep pace with the inappreciable wear on the top of the flutes caused by the friction of the sliver being drawn. In fact, I think there is no doubt that the collars will last during the ordinary life of a frame.

Bearing in mind that the metallic rolls are practically gears, adjusted by means of the collars, with sufficient "clearance" for the sliver, a moment's reflection will show that the bite or nip is at the point of contact of the interlocking flutes, being distributed through

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