

French Worsted Drawing

By Leon Faux

Circular or Soleil Gills.

This gill-box shown at Fig. 115, combines two fundamental types, that of the straight comb by the elements of the comb P, which are the bars; and that of the circular or porcupine comb by the circular movement of the bars. The machine has 68 bars .32 inch wide, each carrying two rows of pins having working heights of .64 to 1 inch and set 10 to 11 pins per inch for merino wool.

The bars rest on eccentric guides E x, fixed on the shaft A x. They are given a continuous circular movement by the discs S, called *soleils*, in which are cut the grooves s to engage the shoulders at the extremities of the bars.

The passageways G, formed by the slope of the eccentric E x and the supports R, guide and support the bars in all of their positions. From a^1 to a^2 the pins penetrate the layer of fibers as in the case of the ordinary porcupine roller. From a^2 to a^3 the bars gradually assume an upright position

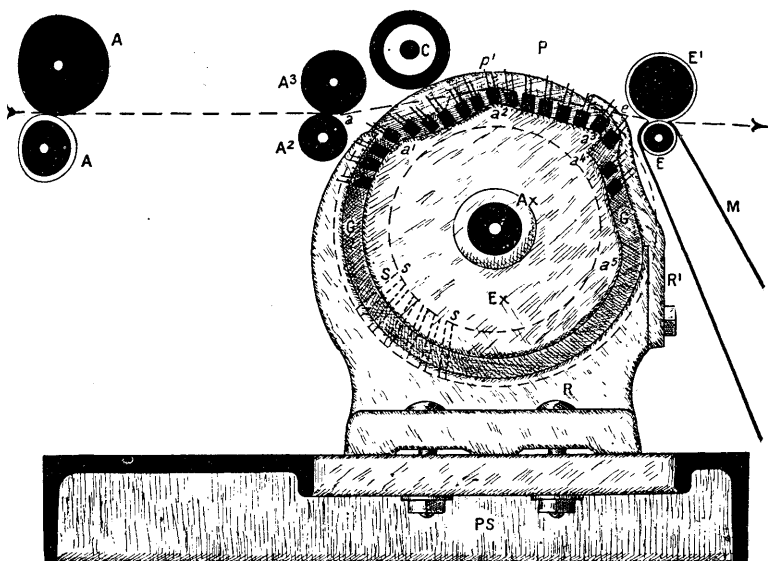


Fig. 115. Circular Gill-Box.

at right angles to the movement of the wool, and then assume a position inclined toward the drawing point. Between a^3 and a^1 each bar is withdrawn successively from the fibers while guiding them as near as possible to the drawing point, after which they are carried to the positions a^1 through the passageway G.

Anti-Flexion Drawing Rolls.

It will be noticed for example in Figs. 106, 107 and 109 that the diameter of the upper or press-roller E' is approximately the same as that of the lower drawing roll E. In the intersecting gill-box it is necessary to incline the line connecting the centers E E' if the upper roller E' is larger than the lower roll, this position reducing the pressure on the wool; it otherwise is necessary to make the upper roll E' smaller in order to bring the center line vertical and obtain the full amount of the pressure. An upper roll of small diameter, however, is incompatible with the high pressure that is required. The pressure which is applied by the hooks C, Fig. 116, on the free ends of the roll cause a flexion of the roll which results necessarily in an irregular drawing action across the width of the apron.

Offerman has invented a device patented by Skene and Devallee to prevent the flexion on a small upper roll. To ac-

complish this the small rollers R', Fig. 116, are fastened on the roller shaft E' between the end of the shaft and the pressure hook C. Each of these small rollers R' rolls on another small roller R, fixed on the shaft E of the lower drawing roll. As the diameters of the small rollers R' R are determined by the distance between the centers of the upper

Fig. 116.

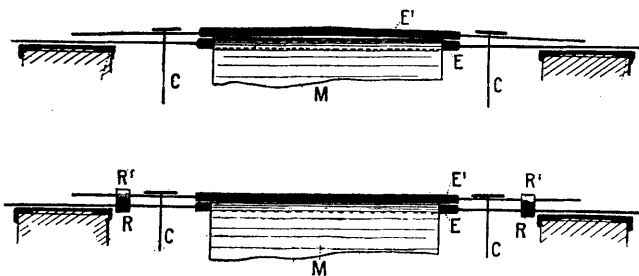


Fig. 117. Anti-Flexion Drawing Rolls.

and lower drawing rolls E E' when under pressure, there is a contact between the small rollers R R' with enough pressure of the apron to give the required draft of the wool.

This arrangement prevents the flexion of E', which can be nearly as small as E, the pressure of each hook C being exerted between two resistances approximately equal.

The flexion of small drawing rolls in gill-boxes is also counteracted by making the roll slightly convex, this convexity amounts to about 1/32 inch on a 1-inch roll, with the result that the flexion of the roll causes the convex line to straighten during the drawing process.

Different Types of Gill-Boxes.

Gill-boxes are usually built with three or four heads, and sometimes with as many as six. They can be divided into three classes:

1. The machines in which the different heads have but one drive, each head delivering the sliver to a spool. This type is used for gilling combed top, also for the first passage in the mixing group in preparation for spinning.

2. The gill-boxes with four heads with a separate drive for each pair of heads. This type is used for gilling combed top.

3. Mixing gill-boxes. Each head has an independent drive. In this type of machine the drawing rolls are necessarily driven at the same speed. The independent drive enables each head to operate with a different draft, making it possible to produce a uniform mixture from feeds of combed sliver varying widely in weight. All the different layers of wool, combined and super-imposed on each other, are fed to an auxiliary head placed crossways at the side of the machine and which unites all of the layers into one sliver. This auxiliary head, which may or may not draw the wool, delivers to a spool or a can the material with the width reduced and which has been formed by combining all of the slivers delivered by the different heads. This method gives much more uniform mixtures because they are formed by superimposing all of the slivers drawn by the heads of the machine and thus forming only one sliver. On the ordinary gill-box which delivers the sliver directly from each head to a spool or can, the mixture is made by simply placing side by side the different slivers that are doubled into each head.