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2,728,112

GILL DRAWING FRAME

Original Filed April 22, 1947

Fig. 1.

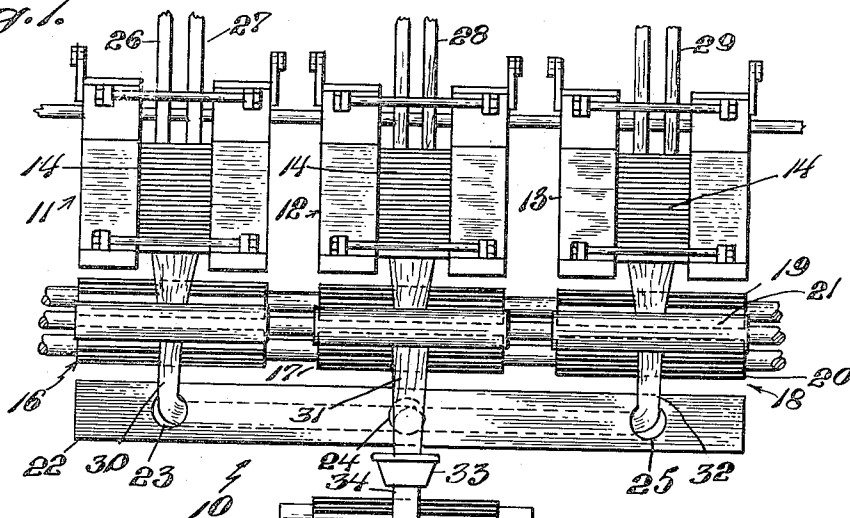


Fig. 2.

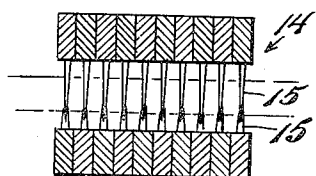
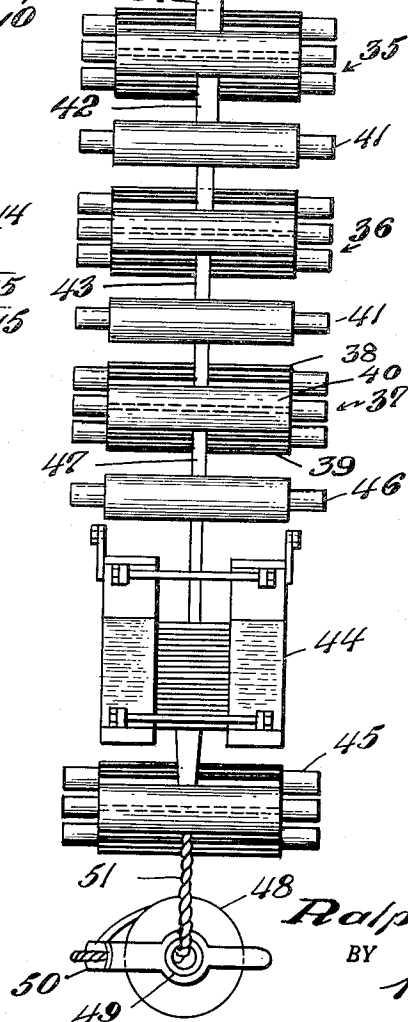
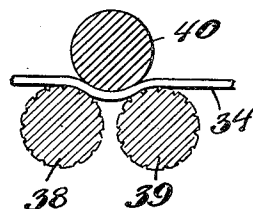


Fig. 3.



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GILL DRAWING FRAME

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Original application April 22, 1947, Serial No. 743,023, now Patent No. 2,567,467, dated September 11, 1951. Divided and this application May 8, 1951, Serial No. 225,169

3 Claims. (Cl. 19—130)

This invention relates to a method and an apparatus for drawing wool and like fibers preparatory to the spinning process. This application is a division of my co-pending application filed April 22, 1947, Serial No. 743,023, for Drawing Frame, issued September 11, 1951, Patent No. 2,567,467.

In the conventional processing of wool fibers and the like as received from the Noble combs preparatory to the spinning process, the sliver of wool fibers is passed through a set of gill drawing frames for the blending, drawing and doubling of the slivers. In order to transfer the slivers from one gill frame to the other it is necessary to package the slivers after each pass through a gill frame. This conventional manner of processing wool fibers involves much labor in that the slivers must be packaged to be removed from the gill frame for transfer to another of the said sets of gill frames and also requires considerable inventory of containers, package cores and the like.

One of the objects of this invention is to improve generally upon the conventional practice of processing wool as mentioned above.

Another object of this invention is the provision of a drawing apparatus wherein a single pass of the wool slivers therethrough will produce a slubbing comparable to a like product produced by the separate action on the slivers by the conventional set of gill drawing frames.

A more specific object of the invention is the provision of a gill drawing apparatus for blending, drawing, and doubling of wool slivers and imparting a twist to the sliver as packaged.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a plan view illustrating diagrammatically a drafting apparatus embodying my invention;

Figure 2 is a sectional view of a plurality of faller bars for combing yarn fibers; and

Figure 3 is a transverse sectional view through a set of drafting rollers shown in Figure 1.

In general the method of the present invention comprises acting upon a plurality of groups of slivers as received from a Noble comb in a manner to comb and draft the fibers of the sliver of each group into a combined single sliver. The plurality of unit combined slivers are guided without imparting twist thereto to be again combined into a single sliver which is drafted such as by being passed through a plurality of sets of drafting rollers to further draw and reduce it in size. The reduced sliver, without imparting twist thereto, is further combed and drafted and then packaged with a twist imparted thereto so as to provide a slubbing ready for the spinning process. Thus, the individual slivers from the Noble combs are combined, blended, and drafted without imparting a twist thereto until the time of packaging for transfer to the spinning machines, thereby eliminat-

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ing the removing of packages from individual gill heads and transporting these to other gill heads to be further acted upon.

Referring to the drawings for a more detailed description of the invention, 10 designates generally an apparatus, shown more or less diagrammatically in Figure 1, which is particularly adapted for carrying out the method of processing wool according to the present invention. The apparatus comprises a plurality of gill heads 11, 12 and 13, each of a construction similar to the other and positioned side by side. These may be supported on a proper frame (not shown) and each may be of any well-known manufacture but preferably constructed as disclosed in the above-mentioned co-pending application. Each gill head has a set of faller bars 14 having pins 15 for passing through the wool fibers to straighten the same in parallelism in a usual manner. Each gill head has a set of drawing rollers 16, 17, and 18, respectively, positioned in front of the faller bars of the set to draw the fibers through the said faller bars. These rollers may be conveniently arranged in line with each other, as shown in Figure 1 of the drawing, so as to be driven in unison by a common source (not shown). Each set of drawing rollers comprises a pair of lower fluted rollers 19 and 20 and a smooth upper roller 21. The faller bars of each set are advanced through the wool fibers by mechanism not shown, and the sets of faller bars of the gill heads are arranged to be advanced in unison also by mechanism not shown.

In front of the drawing rollers 16, 17, and 18, I mount a transfer plate or guide 22 which has a plurality of openings 23, 24, and 25 therethrough with the openings 23 and 25 positioned centrally of the rollers 16 and 18 and the opening 24 centrally of the rollers 17. A plurality of slivers 26 as received from the Noble combs are arranged in groups containing a number depending upon the finished product desired. In the present instance there are three groups 27, 28, and 29 of said slivers, each consisting of two slivers 26. The group 27 is so guided as to be passed through the gill head 11 to be combed, drawn, and combined into a single sliver 30. The slivers 26 of the groups 28 and 29 are similarly passed through the gill heads 12 and 13 to be similarly combined into single slivers 31 and 32, respectively. The slivers 30 and 32 as delivered from the drafting rollers 16 and 18 are passed through the openings 23 and 25, respectively, and led beneath the guide 22 to pass upwardly through the opening 24 to be led therefrom through a funnel or trumpet guide 33. The sliver 31 as delivered from the roller 17 passes over the guide 22 to extend through the trumpet 33 to be merged with the other two slivers to emerge from the trumpet in a single sliver 34. The sliver 34 is received from the guide 33 and is acted upon to draw the fibers thereof to reduce the size of the sliver by means of a plurality of sets of drawing rollers 35, 36, and 37.

The sets of drawing rollers are mounted in spaced relation in front of the guide 33 and extend in line with each other. Each set of drawing rollers may be of a usual construction and may each consist of two driven lower fluted rollers 38 and 39 and an upper smooth roller 40. Between these sets of drawing rollers there is positioned a pair of driven carrier rollers 41 for supporting the stretches 42 and 43 of the sliver 34 extending between the rollers 35, 36 and 37. These carrier rollers 41 may also be of any approved design and are driven in timed relation with the drawing rollers 35, 36 and 37 by a usual train of gears or the like (not shown). Each of said sets of drawing rollers 35, 36, and 37 is rotated at a speed so that the rollers 37 will rotate at a higher surface speed than the rollers 36, and the rollers 36 likewise will be rotated at a greater surface speed than the rollers 35,

whereby a progressive drawing of the sliver 34 will be had as passed through these sets of drawing rollers.

A single gill head 44 is positioned in front of the drawing rollers 37 and in line therewith. This gill head 44 is of a construction similar to that of the construction of the before-mentioned gill heads 11, 12, and 13, and is also provided with a front set of drawing rollers 45 similar to the drawing rollers of the above-mentioned gill heads. A set of driven smooth surface, carrier rollers 46 is positioned between the drafting rollers 37 and the gill head 44 to support the stretch 47 of the sliver 34 extending therebetween. A second combing of the fibers of the wool sliver 34 is provided by means of the head 44 and the fibers are additionally drawn by means of the rollers 45. It will, of course, be understood that the speed of rotation of the rollers 45 will be very much greater than the speed of the rollers 37. These rollers 45 may be also rotated in unison with the other moving elements of the apparatus by means not shown. The sliver as delivered from the drafting rollers 45 is taken up by means of a take-up package 43 which is rotated by means of a spindle 49 of a usual packaging and twisting mechanism which also includes a flier 50 for imparting a twist 51 to the sliver prior to the packaging thereof, thereby forming the sliver into a slubbing ready for the usual spinning process.

I have shown an apparatus having three gill heads, three sets of drafting rollers, and a single gill head positioned in front of the said sets of drafting rollers for the final combing and drafting of the wool fibers prior to the twisting into a slubbing. However, the specific number of gill heads and sets of drafting rollers may be increased or decreased in accordance with the character of the material acted upon and the product desired. For example, in some instances but two gill heads may be provided and these placed in spaced relation in line with each other and the sets of drafting rollers positioned therebetween and providing an apparatus such as would be produced by omitting the outer gill heads 11 and 13 in the showing of Figure 1. For clearance in illustrating my invention, I have omitted showing the supporting structures for the various elements shown in the drawings and also the means for operating the various movable elements in timed relation with each other, these forming no part of the present invention and may be readily supplied or furnished by those familiar with the art.

I claim:

1. An apparatus for processing wool in sliver form comprising a plurality of gill heads positioned side by side, a plurality of separate units of upper and lower drawing rollers, said units being positioned in tandem relation in front of said gill heads for receiving the slivers from said gill heads for further drawing thereof, a guide positioned between said gill heads and the said units through which said slivers pass to be combined into a single sliver and guided to said units, each of said units providing a separate drawing of said sliver, a pair of carrier rollers positioned in the space between adjacent units in line

therewith to receive and support the sliver as fed from one unit to the adjacent unit, an additional gill head positioned in front of said drawing units to receive the sliver and means for imparting a twist to the sliver.

2. An apparatus for processing wool in sliver form comprising a plurality of gill heads positioned side by side, a transfer plate for effecting a doubling of the slivers into a single sliver as delivered from said gill heads, a plurality of separate units of upper and lower drawing rollers arranged in tandem relation and positioned in front of said transfer plate to receive the merged slivers, a guide positioned between said gill heads and the said units through which said slivers pass to be combined into a single sliver and guided to said units, each of said units providing a separate drawing of said sliver, a pair of carrier rollers positioned in the space between adjacent units in line therewith to receive and support the sliver as fed from one unit to the adjacent unit, an additional gill head positioned in front of the said units to receive the merged sliver as delivered therefrom to further comb the fibers thereof, a second unit of upper and lower drawing rollers positioned in front of the second gill head to receive the sliver as delivered therefrom and means positioned ahead of said second unit for receiving said sliver for packaging and imparting a twist thereto.

3. An apparatus for processing wool in sliver form comprising a plurality of gill heads positioned side by side, a transfer plate for effecting a doubling of the slivers into a single sliver as delivered from said gill heads, a guide for receiving the merged sliver, a plurality of separate units of upper and lower drawing rollers arranged in tandem relation in front of said guide for receiving said merged sliver for further drawing the fibers thereof, each of said units providing for a separate drawing of said sliver, a pair of carrier rollers positioned in the space between adjacent units in line therewith to receive and support the sliver as fed from one unit to the adjacent unit, a gill head positioned to receive the merged sliver as delivered from the said drawing units, a second unit of drawing rollers positioned to receive and further act on the sliver as delivered from the last-mentioned gill head and means positioned in front of said second set of drawing rollers for receiving and packaging and imparting a twist to the merged sliver.

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