

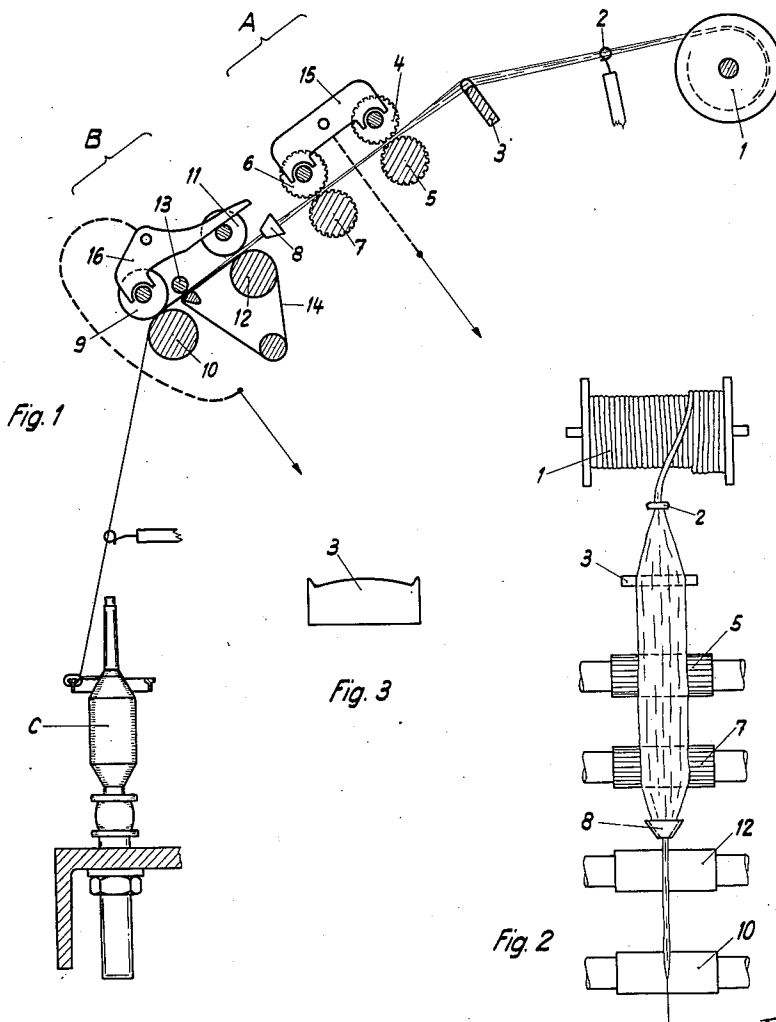
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R. WILDBOLZ

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ARRANGEMENT FOR PRODUCING A SPUN SHORT-FIBER YARN

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Inventor:
Rudolf Wildbolz
by Sommers & Young
Attorneys

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ARRANGEMENT FOR PRODUCING A SPUN
SHORT-FIBER YARN

Rudolf Wildbolz, Winterthur, Switzerland, as-
signor to Actiengesellschaft Joh. Jacob Rieter
& Cie., Winterthur, Switzerland

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1 Claim. (Cl. 19—0.35)

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This invention relates to improvements in the manufacture of a spun short-fiber yarn from artificial filaments or substantially continuous fibers by combining the sequential steps of severing or tearing (stapilizing) the stranded filaments or fibers to form a slubbing of staple fibers, of drawing and then of twisting the latter into a short-fiber yarn, and the main objects of my improvements are to produce a fuller yarn and, consequently, eventually, a softer fabric in a single or continuous operation in order to prevent the disadvantages and inconveniences of prior art methods.

Smooth yarns, which, due to their low filling property, only can be worked up into hard and highly lustrous fabrics, are produced by twisting a plurality of filaments, for example, artificial silk filaments, that is, comparatively long fibers. Such lustrous fabrics, however, have only a limited use. In order to improve the properties of such fabrics, it has been taught in prior art to first sever or cut, that is, stapilize the filaments so as to obtain, after spinning or weaving same, a yarn of higher filling capacity or, respectively, a softer fabric.

In the said known method, it is customary, for example, in case of regenerated cellulose, to cut the stranded filaments, immediately subsequent to its final treatment, into pieces of suitable length, which operation is known as stapilizing, which pieces then are spun in the same manner as cotton, wool and other fibrous materials. The original order of the filaments, however, is disadvantageously broken down by such stapilizing, in that the short lengths of the artificial filaments are very tangled. The latter can be parallelized again, to some degree, only by various lengthy preparatory or corrective processes. Thus, finally, a slubbing or roving is produced which is capable of being worked in conventional draw frames. The entire known operation requires a great deal of work. Furthermore the stapilized fibers, further, are often injured, and much material is wasted in substantial amounts.

In the method according to my present invention, the filaments, in one operation, first are stapilized, then drawn, and finally spun.

The mechanical arrangement according to this invention, comprises, in the order given, a severing or stapilizing apparatus, a conventional drawing or drafting apparatus, and a conventional spinning apparatus.

The said stapilizing apparatus conveniently, comprises two pairs of fluted rollers driven at different speed, the fluted rollers of each pair

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positively engaging each other. In order to produce favorable conditions for such stapilizing, a spreader device, suitably, is arranged in advance of the stapilizing gear, such spreader setting the stranded filaments beside each other. A condenser is disposed intermediate of the stapilizing apparatus and the drawing apparatus so as to facilitate, by gathering up the stapilized fibers, the drawing operation in the drawing apparatus. The stapilizing apparatus and the drawing mechanism conveniently are weighted independently of each other so as to permit of accurately adapting the load on the stapilizing mechanism to the breaking strength of the incoming filaments, without interfering with the loading of the roller pairs in the drawing apparatus.

One form of the mechanical arrangement for carrying out the invention, is schematically shown in the accompanying drawing, in which Fig. 1 shows the entire arrangement in a side view,

Fig. 2 same in front elevation, and

Fig. 3 a form of spreader.

The filaments to be worked, shown in the drawing in stranded or twisted form, are paid out from the bobbin 1 through a thread guide 2 onto a spreader 3 into the stapilizer gear A which comprises the pairs of fluted rollers 4, 5 and 6, 7. The stapilized filaments then pass through a condenser funnel 8 into the conventional drawing gear B, from which the slubbing is delivered onto a ring spindle C for example.

The stranded or twisted filaments are paid out, in form of a single strand, or bundle, from bobbin 1, and are spread on the spreader 2, which has an arcuate track surface (Fig. 3), so that the individual filaments pass into the stapilizer A in a more or less juxtaposed relationship (Fig. 2). The filaments are positively gripped by the intermeshing fluted rollers 4, 5 and 6, 7 respectively. The top rollers 4, 6 may be covered by rubber or some other elastic material, so that the pressure between the two rollers of each pair and the wear thereof is kept within reasonable limits. The roller pair 6, 7 is rotated at a higher speed than the roller pair 4, 5, and the passing filaments are torn apart, provided they are stressed beyond the breaking point. The staple length of the stapilized filaments depends upon the spacing of the roller pairs 4, 5 and 6, 7 as well as from the drafting ratio therebetween. In the condensing trumpet 8, the stapilized filaments are gathered up again into a bundle from which, all the staples are drafted, in known manner in the conventional drawing gear B. In the latter, the staples are seized by the front rollers 9, 10, while

the feed rollers 11, 12 grasp the rear staples. The slip roller 13 together with the traveling belt 14, only serves for controlling the staples floating between the points of grip.

The saddles 15, 16 of the stapilizing gear A and the drawing gear B respectively, are weighted independently of each other so as to permit of accurately adjusting the load on gear A to the breaking strength of the filaments without biasing the load on gear B.

Spreader 3 also could be adapted as comb.

In this way one succeeds in spinning a yarn from filaments, which yarn comprises individual stapilized filament portions. Such yarn has properties different from those of a yarn comprising filaments or twisted excessively long fibres. It is fuller in appearance, and fills the fabric better.

What I claim and desire to secure by Letters Patent is:

Apparatus for producing spun yarns from continuous filaments, comprising a rotatable supply bobbin adapted to carry a sliver of substantially continuous filaments to be unwound therefrom, a spreading device for spreading the sliver unwinding from said bobbin to form a flat sheet of continuous juxtaposed filaments, a tearing mechanism including two successively arranged spaced pairs of cooperating upper and lower rollers having fluted surfaces for gripping said sheet of continuous filaments, means for weighting the upper rollers of both said pairs, the second pair of said pairs of rollers rotating at a greater speed than the first pair of rollers for breaking the filaments passing through said two pairs of rollers into staple fibre lengths, a condenser disposed

at the delivery side of said second pair of rollers for collecting the sheet of staple fibres delivered therefrom to a bundle, a drawing mechanism receiving the bundle of staple fibres from said condenser and drawing the fibres, said drawing mechanism including two successively arranged spaced pairs of cooperating upper and lower gripping rollers, means for weighting the upper rollers of both pairs of drawing rollers independently of said weighting means of the upper tearing mechanism rollers, a slip roller and a travelling belt coacting with each other intermediate said two pairs of rollers of the drawing mechanism, and means for winding the yarn delivered from the drawing mechanism on a package.

RUDOLF WILDBOLZ.

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