Jan. 14, 1941. R. TAINE 2,228,794

GUIDE FOR A SLIVER, ROVING, OR THE LIKE IN DRAWING FRAMES

Filed June 20, 1939

Fig. 1

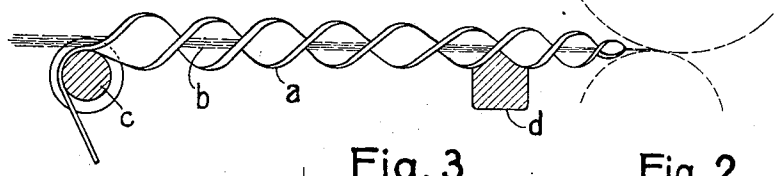


Fig. 3

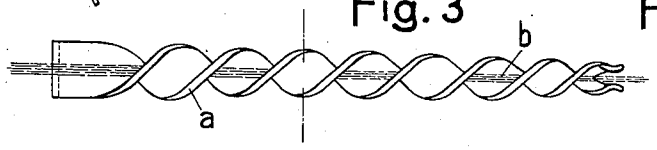


Fig. 2

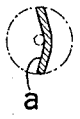


Fig. 4

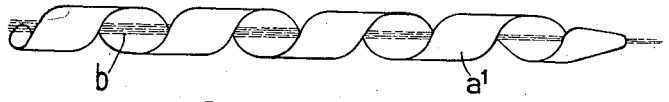


Fig. 5

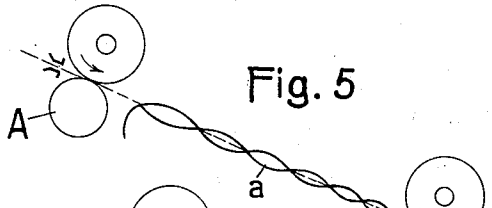


Fig. 6

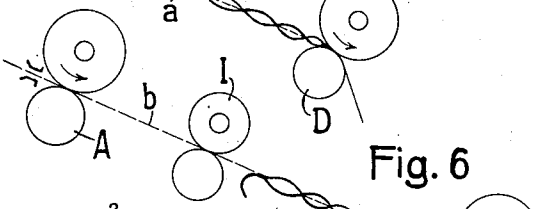


Fig. 7

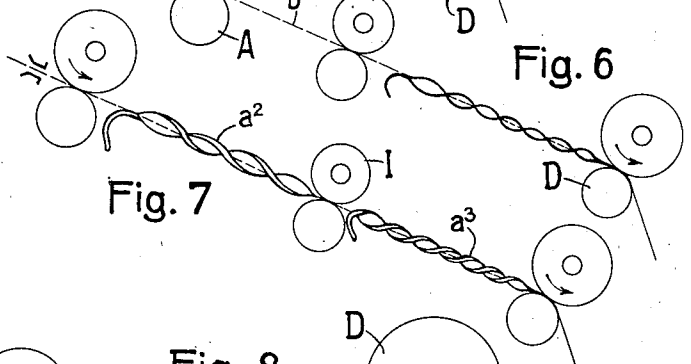
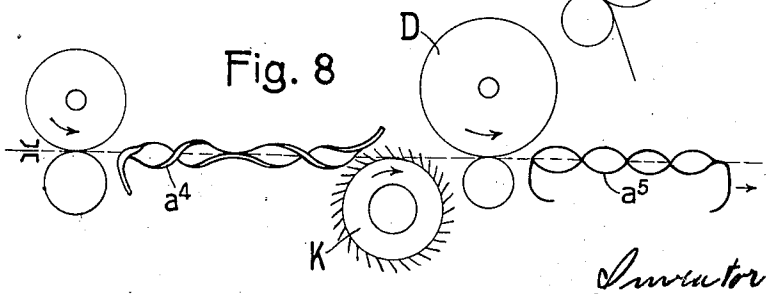


Fig. 8



Inventor:
R. Taine
By E. F. Wendroth Atty

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GUIDE FOR A SLIVER, ROVING, OR THE LIKE IN DRAWING FRAMES

Roger Taine, La Madeleine - lez - Lille, Nord, France, assignor of one-half to Société Alsacienne de Constructions Mecaniques, Mulhouse, Ht. Rhin, France

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7 Claims. (Cl. 19—157)

The present invention consists in guides having the form of twists or helicoids of concave section adjacent the passage in the guide, which are placed between the rollers of the drawing frames of textile combing, preparing and in particular spinning machines.

These guides, of metal, are electrically grounded to the main body of the machine by their supports and are rapidly exchangeable so that guides having characteristics best adapted to the textile materials to be dealt with can be used and easily exchanged when the material is changed.

The two principal objects of the invention are:

(1) To put the guide into close enveloping contact over a considerable length, with the textile material in the zone in which the actual drawing takes place, so as to draw off and neutralize by grounding, the static electricity generated by the intense friction of the fibres during the drawing.

(2) To condense and consolidate the sliver, slubbing or roving over a considerable length during the drawing, giving it a regular round and not flat section (contrary to what happens in drawing frames with multiple cylinders or rubbers utilized hitherto, all working on flattened sections resulting in irregular drawing which leaves something to be desired).

This condensation of the sliver or the like increases the cohesion of the fibres among themselves (the measure of cohesion being determined by the concavity of the section of the guide along the wall of its passage) and ensures satisfactory retention of short and medium fibres by the compacting of the fibres themselves; this results in regular and rational drawing, effective retention of the fibres up to a very short distance from the nip of the drawing rollers and certainty that all the fibres remain perfectly parallel and well staggered during drawing, and the draft can be of a very high value. The above mentioned concavity rounds the sliver or the like and facilitates its conduction in a straight line towards the drawing rollers, reducing the friction of the sliver or the like against the guide, which friction is proportional to the length of the guide.

For certain textiles and for high drafts, the end of the guide can be fashioned into the form of a funnel, to constrict the width of the sliver or the like at the moment of its entry between the drawing rollers (in the manner of the conduits known in flax spinning frames).

The practical and industrial results envisaged by the present invention are:

A. The production by a simple process of a smooth, round and very regular yarn, having well parallelized fibres, with high draft even at high speeds of spinning, while reducing breakages.

B. The possibility (for any given textile) compared with known systems, of increasing the fineness, the output, the strength and the quality of the yarn produced, while making less waste and reducing the net cost of spinning.

C. The possibility of better working of materials having very short fibres, because the retention of the fibres is carried very close up to the drawing rollers and is no longer limited by the diameter of the rollers.

D. The possibility of reducing the temperature and humidity of the mill because the present device is essentially a de-electrifying device, thus obtaining more hygienic conditions for the operators.

The present invention can take various forms in its construction and applications; it enables slivers, slubbings or rovings to be drawn irrespective of whether they are twisted or not.

Some embodiments of the invention are shown by way of example in the accompanying drawing.

Figure 1 shows a guide *a* of the twisted or helicoidal type, produced by twisting a metal strip of curved section so that the concavity is towards the passage for the sliver or the like *b* formed along the axis of the guide. The latter is supported by two metallic supports *c*, *d* mounted in a drawing frame (not represented) so as to be electrically grounded and to thus discharge static electricity.

Figure 2 shows the curved section of said guide *a*, and Figure 3, which is a plan view thereof, shows the end fashioned to form a constricting conduit.

Figure 4 shows a modification in which a similar guide passage is formed by milling a spiral groove in a solid metal bar a^1.

Figure 5 shows an example of the application of the device to a spinning frame for very short fibres, A being the feed rollers, D the drawing rollers and *a* indicating diagrammatically the metallic helical guide for the sliver or roving.

Figure 6 shows a similar application but for fibres of medium length; the intermediate cylinders I serve to facilitate guiding of the sliver or the like while avoiding an excessive length of the guide of the invention.

Figure 7 relates to the spinning of long and slippery fibres; there are two metallic sliver-guides a^2, a^3 of opposite hand and an intermediate roller pair I assisting in guiding the sliver.

Figure 8 shows the application of the device on a preparing machine with a rotary gill comb K. The twist in the guide a^4 comprises two parts of opposite hand, which facilitates the mounting of

the sliver in the machine. In this case the guide necessarily ceases at the location of the comb K, but it is partly continued by an additional guide a^5 on the other side of the drawing rollers D in order to discharge the last residues of static electric charges, at the same time consolidating and rounding the drawn sliver with a view for example to its being tightly wound.

Other arrangements can be used without departing from the principles above explained, and the invention can be combined with other known devices such as gill bars, rubber leathers, elastic rollers and so forth.

In some cases the guides instead of being grounded to the body of the machine, can be insulated and supplied with a suitable neutralizing current produced by a source specially provided to this end.

What I claim is:

1. A guide for a sliver, slubbing, roving or the like comprising a helicoidally formed piece of electrically conducting material having a passage along its axis, a cross section of said material being concave adjacent said passage and means for neutralizing charges of static electricity collected by said piece of material when in use.

2. In a textile machine the combination comprising a drawing frame, a helicoidally formed piece of electrically conducting material having a passage along its axis, a cross section of said material being concave adjacent said passage and an electrical connection between said machine and said piece of material to discharge static electrical charges.

3. A guide for a sliver, slubbing, roving or the like in a drawing frame, comprising a metal strip of curved section, helically twisted to form an axial passage towards which the concave face of the strip is turned and means for neutralizing charges of static electricity collected by said strip when in use.

4. A guide for a ribbon or sliver in a drawing frame, comprising a metal member having a helical groove of such section cut into it as to form an axial passage therethrough, the section of the metal being concavely curved on the face constituting the wall of the passage and means for neutralizing charges of static electricity collected by said metal member when in use.

5. A guide for a sliver, slubbing, roving or the like comprising a helicoidally formed piece of electrically conducting material having a passage along its axis, a cross section of said material being concave adjacent said passage, means for neutralizing charges of static electricity collected by said piece of material when in use, and said passage being constricted at one end thereof.

6. A guide for a sliver, slubbing, roving or the like comprising a helicoidally formed piece of electrically conducting material having a passage along its axis, a cross section of said material being concave adjacent said passage, means for neutralizing charges of static electricity collected by said piece of material when in use, and said helicoidally formed piece of material having portions thereof wound in opposite directions.

7. In a textile drawing frame, a pair of helicoidally formed guides wound in opposite directions, said guides being located between the feed rollers and the drawing rollers of said frame and an electrical connection grounding said guides.

ROGER TAINE.