Dec. 20, 1960 G. WERNER 2,964,898

CROSS WINDING APPARATUS FOR TEXTILE DRAWING FRAMES

Filed March 13, 1959 2 Sheets-Sheet 1

FIG. 1a.

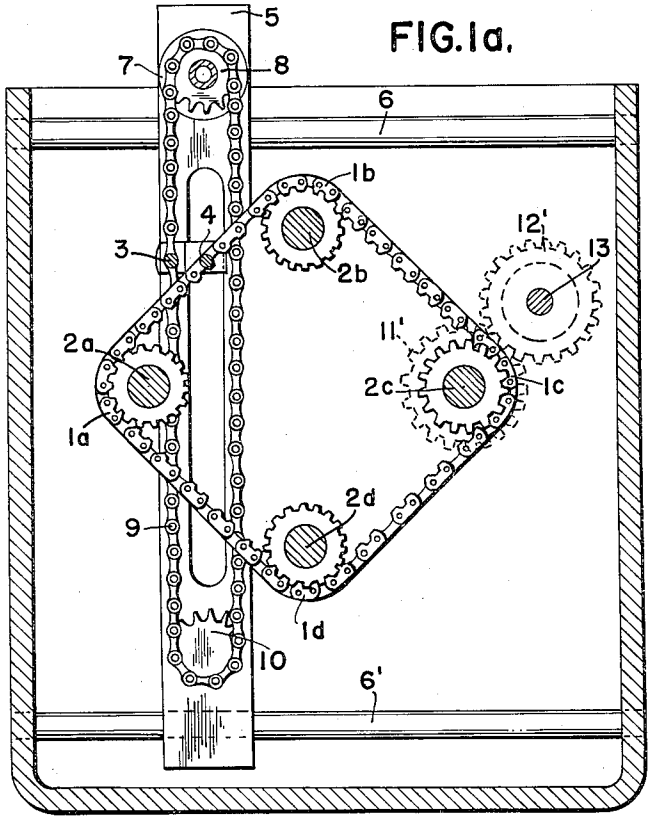
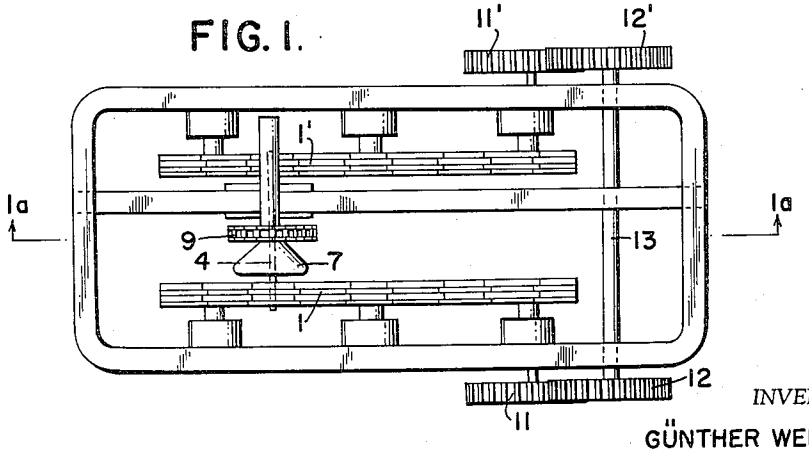


FIG. 1.



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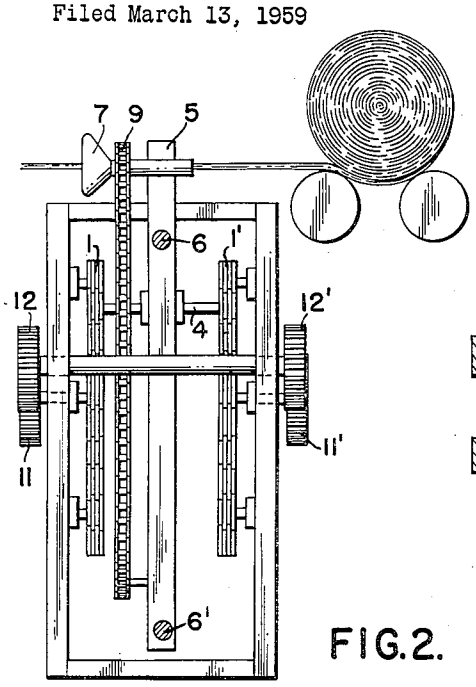


FIG. 2.

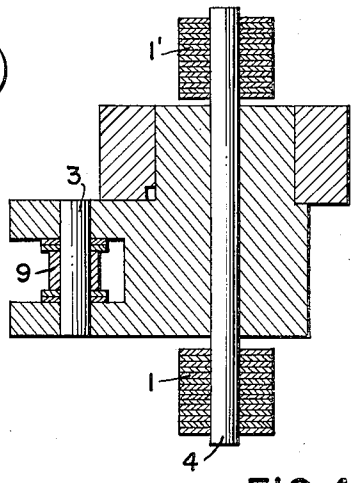
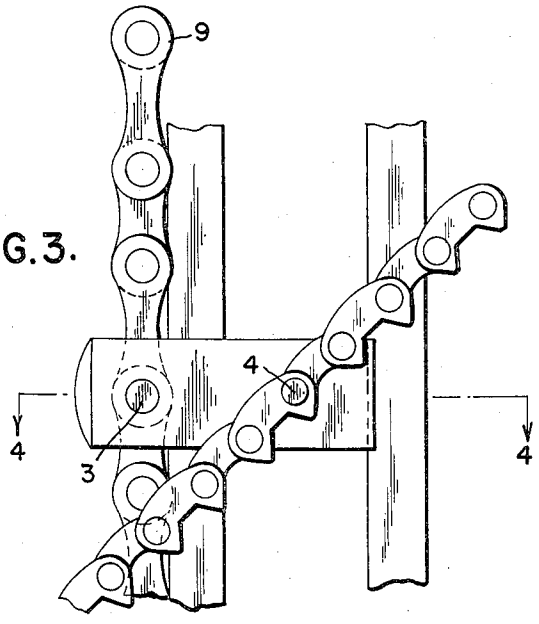


FIG. 4.

FIG. 3.



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United States Patent Office 2,964,898
Patented Dec. 20, 1960

2,964,898

CROSS WINDING APPARATUS FOR TEXTILE DRAWING FRAMES

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Filed Mar. 13, 1959, Ser. No. 799,136

Claims priority, application Germany Apr. 23, 1958

8 Claims. (Cl. 57—34)

The present invention relates to improvements in cross winding apparatus for textile drawing frames and is particularly concerned with means for imparting a false twist to the sliver in production of cross windings and which provides substantial technical advantages in comparison with the known devices of this character.

Such devices are known in the art in which a cross winding is produced by the fact that the winding is formed on two balling head rollers or driving rollers or on one balling head roller or driving roller wherein a tube for imparting a false twist changes its position and during the changing movement also executes a rotary movement. In most cases the reversal in rotation of the false twist tube occurs at the end positions of the change or feed movement, i.e. at the two ends of the coil bobbin or ball to be formed. The reversal in the rotation of the false twist tube at these dead centres results, however, in the formation of a soft winding at these points since the sliver to be wound receives no false twist at this point. Attempts have therefore been made to offset the reversal point of the rotary movement of the false twist tube from the end points of the change or feeder stroke.

In order to avoid the considerable complication hitherto involved in the provision of such false twist tubes executing a change movement the invention provides that the drive for an actuating element producing the twist movement and the change movement is effected by means of an endless belt or chain drive which is guided over reverser rollers in such manner that the component of the direction of driving movement for effecting the rotary movement of the false twist tube and the component of the driving movement producing the change motion are arranged at an angle one to the other so that the reversal of the twist movement is effected before the reversal of the change movement.

One constructional example of the invention is shown by way of example on the accompanying drawing,

Figure 1 is a longitudinal cross-sectional view taken on line 1*a*—1*a* of Figure 1*a* looking in the direction of the arrows to illustrate various structural details of the invention.

Figure 1*a* is a side elevational view of the device showing the casing in section to illustrate the sprocket chains or flexible elements and sprocket pulleys therefor.

Figure 2 is an end elevational view of the mechanism showing the same arranged to traverse the filament or sliver on a winding bobbin.

Figure 3 is an enlarged detail view of the chain operated slide movable in the guide frame end;

Figure 4 is a cross-sectional view taken on line 4—4 of Figure 3 illustrating the manner in which the transmission elements or chains are connected to the slide in the guide frame.

The mechanism provides a rectilinear guide **5** movably mounted for reciprocable movement on spaced parallel guide rods **6** and **6'**.

In the embodiment shown on the drawings an endless transmission element **1** which may be a chain or a belt

of rubber or synthetic material or a steel strip, is guided over four reverser or support sprocket wheels or pulleys **2***a*, **2***b*, **2***c*, **2***d* arranged in such a manner that the axes of the wheels lie at the corners of a four-sided figure which may be a rectangle or preferably a square or parallelogram with the runs of the transmission element extending obliquely to the parallel guide bars **6** and **6'**.

The transmission element **1** embodies a projecting pin **3** rotatably supported in a slide block **4** which follows the path of the transmission element as it traverses the reversal points marked **1***a*, **1***b*, **1***c*, and **1***d*. During this movement the slide block **4** reciprocates in the rectilinear guide **5** and moves this backwards and forwards on the slide support rods **6** and **6'**.

A falses twist tube **7** serving as a guide for the sliver **14** passing towards the winding **15** shown in conventional form is rotatably supported on the guide **5** and receives a rotary movement by means of a sprocket wheel or pulley **8** and an endless transmission element such as a chain **9** passing over the reverser wheel **10** and also connected to the slide block **4** by a pin **3**. The reversal in the rotary direction of the false twist tube is effected at the reversal points **1***b* and **1***d* while the reversal of the change or feed motion of the tube **7** is effected by the horizontal component of movement of the slide block **4** at the reversal points **1***a* and **1***c*, the spacing of which corresponds to the width of the winding required.

In order to secure a satisfactory operation of the device it is convenient as shown in Fig. 2 to drive the slide block **4** by means of two parallel chains or the like **1** and **1'** the drive of which is effected from the shaft **13** by means of gear wheels **11** and **11'** providing a transmission to the gear wheels **12**, **12'** on the shafts carrying the pulleys **2***c*.

The invention includes the provision of means for varying the direction and mutual angle of the two components of movement so as to correspond to any particular requirements and for this purpose the support wheels or pulleys may be mounted on adjustable carriers.

What I claim is:

1. In a textile drawing frame means for imparting a false twist to a fibre sliver, comprising a traversing feeder tube, means to impart a change movement to the tube during the traversing movement of said tube, means to rotate the tube in one direction and the other successively, an endless transmission element guided over a plurality of reverser pulleys with the runs extending obliquely to the traversing movement of said tube, means on said transmission element to impart a rotary false twist movement to the feeder tube and also a translatory movement thereto both such movements being of a reciprocatory character with reversal of direction at different points in the travel of said last named means.

2. Driving means for a false twist tube in a winder for a textile drawing frame in which the tube executes a reciprocatory change movement and during the course of a movement in each direction rotates in one direction and the other, comprising an endless transmission element, a plurality of reverser pulleys for said element positioned to cause the belt to follow the shape of a closed figure having two obliquely directed sides, a driver on said element, follower means engaged by said driver and means whereby said follower means transmits the change movements to the false twist tube and additionally transmits rotary movement successively in opposite directions during the course of each change movement.

3. Driving means for a false twist tube in a winder for a textile drawing frame comprising a winder support, a false twist tube through which a fibre sliver to be wound is passed towards the winder support to produce a winding thereon, a reciprocable support for said false

twist tube, said tube being rotatably mounted in said support, a die block slidably mounted on said support, a flexible endless transmission element in a plane parallel to said support, a plurality of guide pulleys for said transmission elements, said guide pulleys positioned to cause the endless transmission element to be disposed in the form of a closed figure every side of which is disposed obliquely to the support, means on said transmission element providing an operative connection therewith to the die block so that the latter causes reciprocation of the carrier and imparts a change movement to the false twist tube and simultaneously imparts a displacement to the die block along said support, and operative connection means between said die block and the false twist tube so that rotary motion is imparted thereto in the course of the change movement, reversal in the direction of rotation of the twist tube being timed to occur during the course of the change movement.

4. Driving means as claimed in claim 3 wherein the die block is slidably mounted in a slot in the support.

5. Driving means according to claim 4 wherein the die block is operatively connected to the twist tube by means of a further flexible transmission element.

6. Driving means according to claim 3 wherein the support is slidably mounted on guide rails so that the twist tube moves backwards and forwards to an extent determined by the spacing of two of the guide pulleys to provide the change movement for effecting a cross winding, and the die block moves relatively to the support at right angles to the movement of said support on the rails, the reversal of the movement of the die block occurring at the point where the endless transmission element traverses the other two guide rollers and during the course of the change movement.

7. In a textile drawing frame for imparting a false twist to a fiber sliver, comprising rectilinear guide, guide means for said rectilinear guide to guide said rectilinear guide during its to and fro traversing movement, a feeder tube rotatably supported by said rectilinear guide, a flexible member extending parallel with said rectilinear guide

and drivingly engaging said feeder tube, an endless transmission element guided over a plurality of pulleys with the runs extending in a direction oblique to the direction of traversing movement of said rectilinear guide, a slide block mounted in said rectilinear guide operably connected with said flexible element and said transmission element, and means for driving said transmission element whereby said rectilinear guide will be moved to and fro and said feeder tube will be rotated in reverse directions during its travel between the limits of said traversing motion.

8. In a textile drawing frame for imparting a false twist to a fiber sliver, comprising a rectilinear guide movable in a direction to traverse a fiber on a bobbin, a rotary feeder tube mounted on said rectilinear guide, pulley means on the other end of said rectilinear guide, an endless flexible element arranged over said pulley means and drivingly connected with said rotary feeder tube, a series of pulleys arranged adjacent said rectilinear guide with one set of pulleys arranged in horizontal alignment and the other set of pulleys arranged in vertical alignment, an endless transmission element trained over said pulleys, a block slide in said rectilinear guide movable longitudinally thereof, means connecting said block slide to said flexible element, means connecting said block slide to said transmission element and means for driving said transmission element whereby said rectilinear guide will be moved to and fro to feed a sliver and traverse the same on a bobbin with rotation of said rotary feeder tube occurring simultaneously during the traversing movement and rotating in first one direction and then the other from a central point along the path of said traversing movement and between the limits thereof.

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