

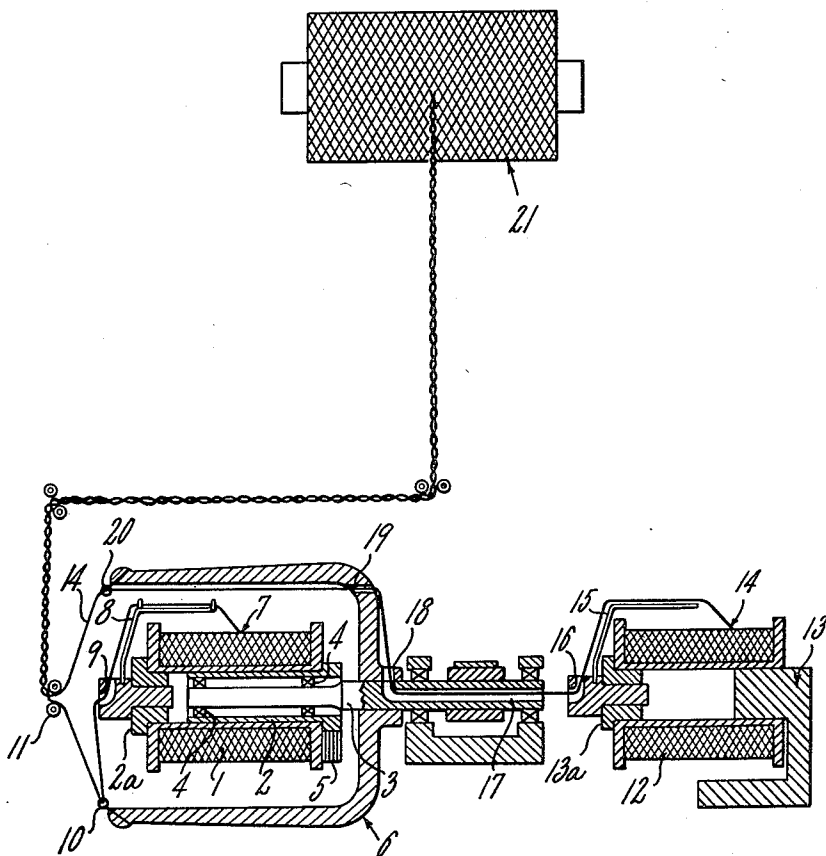
March 15, 1955

P. DE HALLEUX

2,703,958

DEVICE FOR DOUBLING OR CABLING TEXTILE YARNS

Filed Dec. 16, 1949



INVENTOR.
PIERRE DE HALLEUX
BY *Leon H. Krauss*
AGT.

1

2,703,958

DEVICE FOR DOUBLING OR CABLING TEXTILE YARNS

Pierre de Halleux, Brussels, Belgium, assignor, by mesne assignments, to Doutors Societe Anonyme Holding, Luxembourg, Grand Duchy of Luxembourg, a corporation of Grand Duchy of Luxembourg

Application December 16, 1949, Serial No. 133,393

Claims priority, application Belgium December 18, 1948

6 Claims. (Cl. 57—58.36)

This invention relates to thread doubling devices and more particularly to a cable twisting mechanism.

In known doubling apparatus single threads or strands are first doubled on a single bobbin which is mounted on the spindle of the twisting mechanism. The threads thus wound together are reeled off the bobbin onto a winding mechanism. During the reeling-off operation, rotation of the spindle imparts a required twist to the threads.

Further doubling and twisting of yarns, threads or like strands can be effectuated on ring spinning frames. Finally, double twist spindles are known in which a plurality of yarns or strands from respective supply packages, suitably supported, is applied and twisted together at a central spindle portion upon rotation of the spindle.

In devices heretofore employed, the doubling twist is deducted or added to the twist of the individual threads according to whether said doubling twist is imparted in the opposite or the same direction as the twist existing in the individual threads.

In all these known devices, the floor space of the spindle is increased with the count of the yarn due to the ballooning of the yarn.

In the cabling industry, it is possible to prevent the twisting or untwisting of elementary threads or strands by supporting the supports in which the feeding bobbins of said threads are placed by shafts that rotate freely on a plate whose movement imparts the twist to the cable. The shafts of the bobbins can thus travel in the space while remaining parallel to each other, either as a result of the action of a counter-weight on the support or by imparting to the bobbin supports a compensating rotation in the opposite direction to that of the plate. The use of a counter-weight is only possible at reduced spindle speeds. It is apparent that mechanical compensation involves a complication of elements which is somewhat incompatible with the great number of spindles operating in a textile plant and with the speeds of thousands of twists per minute that are imparted to said spindles.

Accordingly, it is an object of the present invention to provide means for effecting the doubling of a plurality of elements or threads, each having an original twist without impairing the original twist of each element or thread.

It is another object of the present invention to provide means of the aforesaid character wherein the elements are submitted to a preliminary over-twist in order to maintain said elements in their original twist when formed into a cable or the like.

It is a further object of the present invention to provide means permitting the doubling of a plurality of elements or threads without imparting a compensating motion to the bobbin carrying the elements or threads.

It is a still further object of the present invention to provide means facilitating the doubling of a plurality of elements in a high speed operation requiring a relatively small amount of floor space.

Briefly described, the present invention comprises a double twist spindle in which the elementary threads are led between two fixed points, each thread passing over an intermediate mobile point situated on said spindle in such a manner that two consecutive twists

2

compensate each other. The spindle limits the "ballooning" of threads by means of a continuous rigid surface integral with the spindle and external to and guiding the threads, one of the packages of elementary threads being placed outside the spindle on a support which is independent of said spindle.

The above objects and description of the present invention will be best understood by reference to the following detailed description of the invention when taken in conjunction with the drawing, wherein:

The single figure schematically illustrates one embodiment of the present invention.

Referring now with particularity to the drawing, there is shown the device for doubling at least a pair of elements which comprises a fixed support 2 forming a part of the fixed portion of the mechanism. Mounted on the support 2 is a spindle 3 which is supported for rotary movement about its axis, the spindle being either horizontally disposed or inclined. Supported by the support 2 is a bobbin 1 which carries one of the elements to be doubled. The spindle 3 is movable independently of the support 2 due to the bearings 4 arranged between the support 2 and the spindle 3. Operatively connected to the support 2 is a counter-weight 5 which maintains the support immovable during rotation of the spindle 3.

Surrounding the bobbin 1 is a bowl-shaped casing 6 which is fixed to the spindle 3 for rotation therewith. The casing has a substantially cylindrical interior and is open at one end.

Spaced from the rotary axis of the spindle 3 is a first guide means 10 which is operatively connected to the spindle for rotary movement therewith by means of the casing 6.

Spaced from the spindle 3 and the open end of the casing 6 is a second guide means 11 which is secured to a fixed portion of the machine at a location substantially along the rotary axis of the spindle 3.

Intermediate the fixed guide means 11 and the adjacent end of the spindle 3, a portion 2a of the support 2 is formed with a third guide means 9 which is likewise arranged along the rotary axis of the spindle 3. Referring to the drawing, it is clear that the second guide means 11 and the third guide means 9 are spaced from each other and are in axial alignment with the spindle 3.

Suitable means 8 are provided for first reeling the thread 7 off the bobbin 1 for successive passage through the third guide means 9, the first guide means 10, and the second guide means 11. The means 8 include a flyer guide provided with openings through which the thread or yarn 7 can be threaded prior to passing into the guide means 9.

Upon rotation of the spindle 3, the thread 7 is twisted in one direction between the third guide means 9 which is fixed and the first guide means 10 which rotates about the spindle axis. The thread 7 is thereafter twisted in the opposite direction between the first guide means 10 and the second guide means 11 which is fixed with respect to the movable guide means 10. Accordingly, the thread 7 reaches the second guide means 11 with the original primary twist.

Spaced from the spindle 3 and the components supported thereon is another fixed support 13 which may likewise be formed from a fixed portion of the device. Mounted on the fixed support 13 is a second bobbin 12 which carries the thread or element 14 which is to be doubled with the thread 7 without impairing its original primary twist. The thread 14 is reeled off the bobbin 12 through a suitable flyer guide 15 which is provided with openings for the threading therethrough of the element 14.

Spaced from the spindle 3 is a fourth guide means 16 which is fixed on a portion 13a of the support 13 along the rotary axis of the spindle 3.

The portion of the spindle 3 arranged exteriorly of the hollow casing 6 is provided with a passageway 17 which extends inwardly from the end of the spindle adjacent to support 13 and terminates contiguous to the closed end of the casing 6. The casing 6 is fur-

ther provided with an opening which is in substantial alignment with the inner periphery of the casing.

As clearly illustrated in the drawing, the thread or element 14 may be successively passed through the flyer guide 15, the fourth guide means 16 which is fixed, and the passageway 17. The element may then be brought to a position exteriorly of the casing 6 by passage through the opening 18 and thereafter to a position along the interior of the casing by passage through the opening 19. The thread is then passed through guide means 20 forming a part of the first guide means and thereafter passed through the fixed guide means 11 for subsequent doubling with the thread 7. It will be understood that the term "first guide means" employed in the specification and the appended claims signifies at least one pair of guide members 10 and 20 substantially diametrically opposed on the wall of casing 6 at the open end thereof.

When the spindle 3 rotates, the element 14 is twisted in one direction between guide means 16 and the exit opening 18, and then in the opposite direction between the movable guide 20 and the fixed guide means 11; thus the element 14 also reaches the fixed guide means 11 with its original twist. At the fixed guide means 11 the elements 7 and 14 may be twisted together, the number of turns of the doubled twist depending on the speed of the casing 6 and the winding speed of the end bobbin 21. Accordingly, with the device of the present invention, it is possible to double yarns, threads and like lengthy elements without impairing the original twist. Further the casing 6 restricts the outward displacement of the threads with respect to the spindle and thereby avoids excessive ballooning of the threads.

Although one embodiment of the present invention has been described, numerous modifications can be made without departing from the scope of the invention as set forth in the appended claims.

What I claim and desire to be protected by Letters Patent, is:

1. A device for twisting together at least two lengthy elements; comprising a first support adapted to receive a first bobbin with a first element, a spindle having two opposite ends and provided with a passageway extending from one end thereof and terminating at the periphery of said spindle intermediate said opposite ends, means mounting the other end of said spindle for rotation on said support about the longitudinal axis of said spindle, a casing secured to said spindle intermediate said support and said passageway for rotation with said spindle, said casing having an open end adjacent said other end of said spindle, a second support spaced from said spindle adjacent said one end of the latter and adapted to receive a second bobbin with a second element, first guide means including a pair of spaced substantially diametrically opposed guide members on said casing, second guide means spaced from said other end of said spindle and positioned substantially adjacent said axis, third guide means on said first support and positioned substantially adjacent said axis and intermediate said second guide means and said other end of said spindle, and fourth guide means on said second support and positioned adjacent said axis and spaced from said spindle, whereby when said first and second bobbins with said first and second elements, respectively, are received on said first and second supports, respectively, said first element is successively received by said third guide means, one of said guide members of said first guide means, and said second guide means for subsequent doubling with said second element, said second element being successively received by said fourth guide means, said passageway of said spindle, the other of said guide members of said first guide means, and said second guide means, whereby displacement of said elements during rotation of said spindle is limited by said casing.

2. A device according to claim 1, wherein said casing is provided with an opening adjacent said passageway of said spindle, whereby said second element is directed through said opening into said casing at a location intermediate said passageway and the other guide member of said first guide means.

3. A device for twisting together a plurality of lengthy elements comprising a hollow casing having an open end, first guide means defining at least one pair of guide members substantially diametrically opposed on the wall of said casing at said open end, a spindle connected to and extending into said hollow casing, second guide means fixed exteriorly of said casing and along the axis of said spindle and spaced a predetermined distance from said first guide means, said spindle being adapted to receive a first bobbin thereon carrying one of said elements, third guide means fixed within said casing adjacent said spindle and adapted to receive said one element from said first bobbin when the latter is received on said spindle for guiding said one element toward one of the guide members of said first guide means, and then to said second guide means in angular relation to said axis.

4. A device according to claim 3, including a support adapted to receive a second bobbin carrying another of said elements and extending without said casing and arranged co-axially with said spindle, and fourth guide means fixed to said support adjacent said spindle, whereby upon receipt of both said bobbins said fourth guide means directs said other element from said second bobbin in the direction of the axis of said spindle, thence through an opening in said casing for engagement with the other of said guide members of said first guide means and then to said second guide means in substantially the same angular direction toward the axis of said spindle as the direction of said one element from said first bobbin to said second guide means.

5. A device according to claim 4, including further guide means spacedly positioned with the axes thereof parallel to the axis of said spindle, to guide a respective element from said second bobbin and from said first bobbin along a path substantially parallel to the axis of said spindle.

6. A mechanism for doubling at least two elements each having an original twist; comprising supporting means, a spindle mounted on said supporting means for rotary movement about its axis, said spindle being provided with a passageway extending inwardly from one end thereof, a hollow casing having an open end connected to said spindle at a location adjacent said passageway, one of said elements being fed from a first bobbin when the latter is connected to said supporting means, the other of said elements being fed from a second bobbin when the latter is arranged in axial alignment with said first bobbin and in spaced relation thereto, first guide means at said open end of said casing, said first guide means defining at least one pair of guide members substantially diametrically opposed on said casing, second guide means arranged for fixed position forwardly of said casing, third guide means substantially in axial alignment with said second guide means and said spindle and spaced from said second guide means, and fourth guide means in axial alignment with said second guide means and said third guide means and adjacent said passageway, whereby said one element may pass from said first bobbin through said third guide means over one of said pair of guide members of said first guide means to said second guide means, while said other element is supplied to said second guide means through said fourth guide means, said passageway and over the other of said pair of guide members of said first guide means for meeting said one element.

References Cited in the file of this patent

UNITED STATES PATENTS

26,894	Pitman	Jan. 24, 1860
1,233,593	Mac Farlane	July 17, 1917
2,343,535	Clarkson	Mar. 7, 1944
2,371,523	Jones	Mar. 13, 1945
2,499,258	Pierce	Feb. 28, 1950
2,503,242	Clarkson	Apr. 11, 1950
2,567,329	Frazier	Sept. 11, 1951