Oct. 14, 1958 H. A. SCHRENK ET AL 2,855,750

THREAD TWISTING DEVICE

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Fig. 1

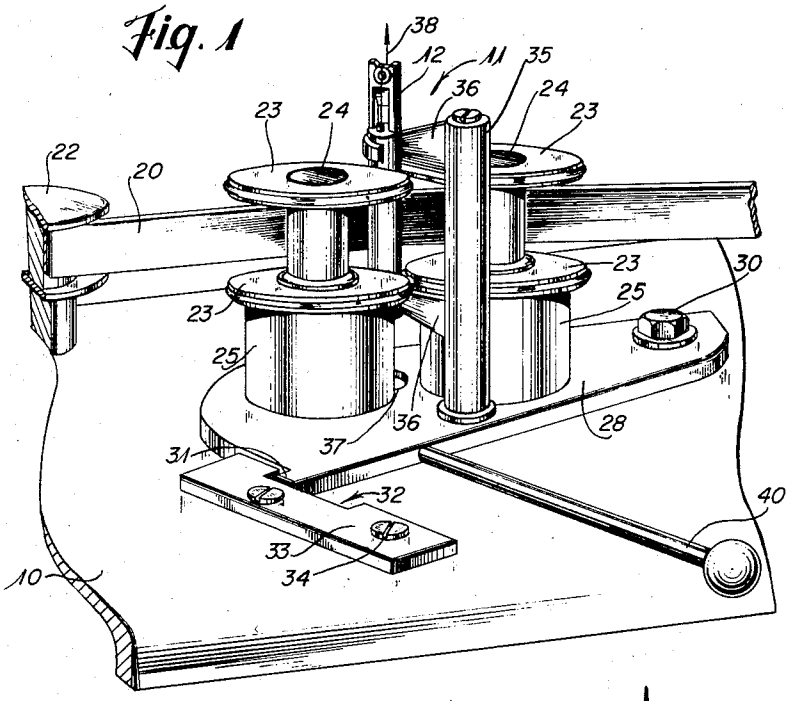


Fig. 2

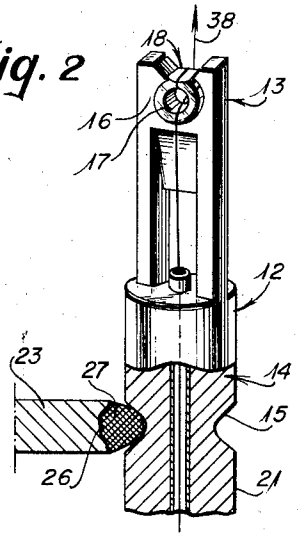
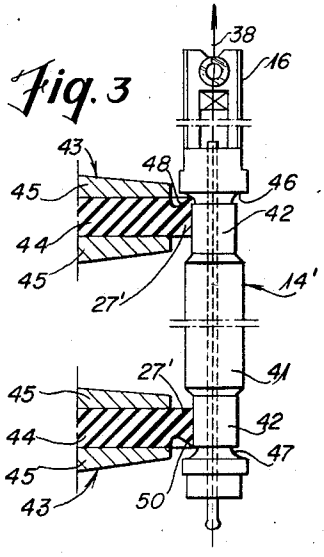


Fig. 3



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THREAD TWISTING DEVICE

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Claims priority, application Netherlands May 14, 1956

16 Claims. (Cl. 57—77.3)

This invention relates generally to a device for imparting twist to a continuous length of running yarn and more particularly to a bearing arrangement for a false twisting device of the rotating tube type.

It is known to impart twist, particularly false twist, to thread by the use of a rotating tube. A tube of the general type to which this invention relates is shown and described in application Serial No. 628,919, filed December 17, 1956, and owned in common herewith. The spindle of a false twisting device of this type usually is mounted for rotation in ball and/or roller bearings. While certain advantages are to be gained by the use of such a bearing arrangement, a concomitant disadvantage is that rotation of the spindle above 60,000 revolutions per minute produces accelerated bearing wear, resulting in considerable down time for maintenance purposes. On the other hand, if the speed of rotation is kept below this critical figure, additional time is required to impart the necessary turns per meter to the thread being processed, which thread must be fed through the tube at a reduced rate.

This problem concerning limited speed of spindle rotation becomes more apparent when considered in the light of twisting devices used for curling thermoplastic threads, such as polyamide. In order to curl thermoplastic thread satisfactorily according to one method, thread is fed from a supply to a twist stop, through a heating means and a cooling zone to a false twisting device, from which the thread is discharged onto suitable take-up means, if desired. At least 3000 turns per meter must be temporarily placed in the thread as the same passes through the false twisting device. With a maximum spindle speed of 60,000 revolutions per minute, it can readily be seen that the velocity of thread passing through the tube cannot exceed 20 meters per minute, which velocity is much too low for economical operation on a commercial scale.

One of the objects of this invention is to provide a thread twisting device not having the disadvantages of known devices.

Another object of this invention is to provide a thread twisting device capable of operation at speeds in excess of those heretofore possible.

A further object of this invention is to provide a new method and apparatus for supporting a driven shaft for high speed rotation.

Another object of this invention is to provide a bearing arrangement for a false twisting spindle which permits rotation of the spindle at high speeds without excessive wear.

Still another object of this invention is to provide a bearing arrangement for a high speed false twisting spindle capable of movement from operative to inoperative position while maintaining the spindle in driving relationship with the bearing.

An additional object of this invention is to provide a novel bearing arrangement capable of positioning a twisting spindle both radially and axially while supporting the same for rotation at high speed.

In accordance with the present invention, the drive spindle of a tube-type false twisting device is urged, by means of a drive belt, into the throat between one or more pairs of freely rotatable discs, each pair consisting of discs rotatably mounted about displaced axes. In this manner, the false twisting device is floatingly mounted or radially positioned between the freely rotatable discs and the drive belt. By properly designing the periphery of the supporting discs and the cooperating running surfaces of the spindle, it is possible also to axially position the spindle by use of these supporting discs.

The throat between two cooperating discs may be defined as that wedge-shaped space enclosed by adjacent portions of the outer periphery of respective discs, and may be formed by mounting two discs for rotation about axes which are displaced a distance greater than the sum of the disc radii but less than the sum of the disc radii and the diameter of the twisting spindle, or by slightly overlapping cooperating discs.

Additional objects and advantages of the present invention will become apparent upon consideration of the following detailed description taken in conjunction with the accompanying drawings, in which:

Figure 1 is a perspective view showing one embodiment of a twisting device constructed in accordance with the present invention;

Figure 2 is an elevational view, partly in perspective and partly in section, showing a portion of the device illustrated in Figure 1, but on a larger scale; and

Figure 3 is a side view, partly in section, showing another embodiment of the bearing arrangement according to this invention.

With attention now directed to Figures 1 and 2, the first embodiment will be described. Reference numeral **10** represents the frame of a machine used for curling thermoplastic threads according to the false twisting process. On this frame **10** a series of false twisting devices, indicated generally at **11**, are mounted, only one of which is shown in Figure 1, and only one of which will be described, it being understood that the remaining devices will be identical to that shown in the drawing. The false twisting device **11** comprises a tubular member **12** having a longitudinal passageway therethrough, which member, in this embodiment, is generally cylindrical. The upper portion **13** of tubular member **12** imparts twist or curl to thread traveling therethrough and the lower portion **14** serves as a spindle for receiving a driving force. The tubular spindle **14** is provided with two running surfaces or peripheral grooves **15**, only one of which is shown, for receiving the supporting discs to be described hereinafter.

A diametrically extending bracket **16** is formed integrally with the upper portion **13** of the tubular member **12** and serves as a support for a thread guide or encircling body **17**, which is generally cylindrical in configuration with a bore extending therethrough. A channel **18** is formed in the extreme upper surfaces of bracket **16** and guide **17**, which channel defines a localized path for thread travel. Attention is directed to said co-pending application Serial No. 628,919 for additional details of a sapphire thread guide useful in this connection and for the mode of operation thereof.

A driven endless belt **20**, only a portion of which has been shown, imparts rotation to the tubular member **12** of false twisting device **11**. The belt **20** is urged into contact with the driving surface **21** of spindle **14** by a series of guide rollers, one of which is shown at **22**. The drive surface extends axially of the spindle between peripheral grooves **15**, as can be seen in the drawings, and the belt may be driven by any conventional means, not shown. By virtue of the serpentine fashion in which

it passes alternately between spindles **14** and guide rollers **22**, the belt **20** exerts a continuous pressure against the spindle, urging the same into the throat formed between the peripheral rims of adjacent supporting discs **23**.

In the embodiment of Figures 1 and 2, two supporting discs **23** are affixed in spaced relationship to a shaft **24**, two shafts being provided for the four discs shown. These shafts are mounted for rotation in housings **25**, within which may be provided roller, ball or any other conventional type of bearings. The axial spacing of the discs along each of the disc-supporting shafts **24** corresponds to the axial spacing of peripheral grooves **15** along spindle **14**. As can be seen from Figure 2, each of the discs **23** is provided with a peripheral recess **26** in which a rim or tire **27** is mounted. It is preferred that these rims be formed from wear-resistant rubber or other elastic material and that the same be vulcanized to the discs **23**, although other means of attachment, such as by adhesion or screws, obviously could be employed. The aforementioned pressure exerted by driving belt **20** on spindle **14** maintains a portion of peripheral grooves **15** in contact with the rims **27** of four cooperating discs **23**, these discs being disposed in opposed pairs, as can be seen upon inspection of the drawings. The profile of rims **27** is selected so that a rim **27** does not extend completely into a corresponding groove **15** but, rather, is supported by the flanks thereof, as shown in Figure 2. The rim of each supporting disc therefore acts in the manner of a thrust bearing to prevent shifting of the spindle in an axial direction, as well as to provide a bearing surface for the rotation thereof. The drive belt **20** and supporting discs **23** together position the spindle radially, as can be seen upon inspection of Figure 1.

The housings **25** are fixed in predetermined spaced relationship to an intermediate plate **28**. This plate is mounted for oscillation about bolt **30** which extends through suitable apertures in frame **10** and one end of intermediate plate **28**, thus pivotally securing the plate to frame **10**. A tooth **31** projects from the end of plate **28** remote from the bolt **30** and cooperates with notch **32** in a positioning member **33** to limit oscillation of intermediate plate **28** about the pivot point represented by bolt **30**. The positioning member may be secured to plate **10** by any conventional means, such as screws **34**. Any known latching means (not shown) may be provided for locking tooth **31** in either operative or inoperative position within said notch **32**.

In order to prevent the spindle **14** from dropping out of position when plate **28** is moved counterclockwise about pivot **30**, which terminates the driving relation between belt **20** and the spindle, a retaining mechanism is provided. This mechanism comprises a column **35** which is fixed onto intermediate plate **28** and a pair of arms **36** which project laterally from the column and terminate in a curved portion surrounding the spindle. The curved or hook portions of arms **36** are designed so as not to contact the spindle when the same is urged against belt **20** and discs **23** but to catch and retain this spindle when the twisting device is shifted to inoperative position away from the driving belt, thus preventing separation of rubber rims **27** from peripheral grooves or running surfaces **15**.

A suitable aperture represented at **37** is provided both in the frame **10** and in intermediate plate **28** to permit passage of thread **38** from a supply source located beneath the frame **10** into and through the longitudinal passageway in tubular member **12**. It is to be understood that this aperture in plate **28** must be of sufficient size to permit swinging of the plate about pivot **30** without damaging the thread. A handle **40** is secured to plate **28** in order to expedite manipulation of the same between operative and inoperative positions.

In the use of the above-described device for twisting thread formed from thermoplastic material, a bobbin holder, a thread supply means, a twist stop and a heater

are arranged in a known manner below the frame **10**. Inasmuch as these elements are known and do not contribute directly to the present invention, they have not been shown. Sufficient free space must be provided between the heater and the false twisting device to allow cooling of the thread before passage into the twister. Furthermore, a thread discharge means should be provided above the false twister. The thread supply means and the twist stop may be formed as one unit, if desired, by the use of a pair of pressure rollers connected to a suitable drive means. This localizes the twist point and prevents twist from running back past the point of contact between the pressure rollers. A metal tube having an inner diameter of about 0.6 mm. may be used as a heater, it being understood that the tube should be included in an electric circuit in a known means and should be so dimensioned that its temperature may be raised by the current up to the required degree. The necessary length of the tube will, of course, depend on the velocity of the thread passing therethrough and the desired degree of heat to be derived therefrom. The cooling zone may consist either of a free space in air or of a metal tube similar to the heater, but having a cooling mantle or cooling fins. A positively driven roller may serve as a thread discharge device to withdraw thread from the twister.

In the operation of the embodiment disclosed in Figures 1 and 2, a package with the thread to be twisted is placed on the bobbin holder and the free end of thread is passed between the pressure rollers, through the heater and into the longitudinal passageway of twisting device **11**, which device is locked in inoperative position for threading-in. The thread thereupon is passed through said passageway and into the bore of thread guide **17**, with one winding placed around the upper portion of the guide, as explained in said application Serial No. 628,919. From the guide **17** the thread passes to the thread discharge device and then onto a suitable take-up mechanism. As soon as the heater reaches the required temperature the entire device may be brought into motion and the spindle **14** may be shifted into contact with drive belt **20** by manipulation of handle **40**, upon release of the means for locking plate **28** in inoperative position.

As a specific example of operation, a 30 denier, 10 filament thread formed from polycaprolactam was twisted 4000 turns per meter at a speed of 40 meters per minute. The spindle **14**, having a diameter of 4.5 mm., was driven at a velocity of 160,000 R. P. M. from a belt **20** traveling at a linear speed of 38 meters per second. The supporting discs **23** had a diameter of 40 mm. and, therefore, rotated at approximately only one-ninth the speed of the spindle **14**. A tube having a length of 35 cm. and a temperature of 160–170° C. was used as a heater, and the thread was cooled, prior to passage through the false twisting device, by means of a tube having an inner diameter of 0.6 mm. and a length of 12 cm. which was kept at a temperature of 15° C. by a continuous supply of running water. With the device operating in the foregoing manner, a very good twisting effect was obtained at commercially acceptable operating speeds. The elastic rims of the supporting discs and the peripheral grooves in the spindle did not show any appreciable wear after weeks of operation.

With attention now directed to Figure 3, wherein like parts are identified by like reference numerals, the second embodiment of this invention will be described. The basic design and operation of this modification is essentially the same as that shown in Figures 1 and 2, and the manner in which the spindle is pressed by belt **20** against opposed pairs of freely rotatable supporting discs is identical, as is the manner in which the thread **38** is passed through the longitudinal passageway of tubular member **12** and wound around the sapphire thread guide **17** mounted within bracket **16**. In this embodiment, however, the tubular member **12** is not cylindrical, as in

the first embodiment, but has sections of different diameter in the spindle portion thereof.

The enlarged portion **41** of spindle **14'** serves as a pulley over the surface of which belt **20** is passed in serpentine fashion as described hereinabove. On either side of this enlarged pulley portion, cylindrical running surfaces **42** of reduced diameter are provided. Each of these running surfaces cooperates with a pair of supporting discs **43**, only one disc of each pair being shown in Figure 3. The discs **43** are rotatably supported by housings similar to those described in connection with the first embodiment. Again, these discs are identical in construction but with the lower disc mounted in an inverted manner, as shown in Figure 3, for purposes to appear hereinafter. Each disc **43** comprises a core segment **44** of wear-resistant rubber or other elastic material and two metallic plates **45** of smaller diameter mounted on either side of the core segment. In view of the relative size of the metallic plates and core, the latter projects outwardly of the plates to form an elastic rim or tire **27'** of trapezoidal-like cross section which is adapted to contact a running surface **42**. The axial spacing between discs **43** on a particular supporting shaft again corresponds with the axial spacing of running surfaces **42** along spindle **14'**.

Adjacent to the running surfaces **42** and on the sides thereof nearest the respective upper and lower ends of spindle **14'** there are further provided conically shaped abutments **46**, **47**. A circumferential groove is cut or otherwise formed in one lateral face of each disc core **44**, thus producing a ridge which constitutes a transition between the peripheral face and one lateral face of each core. These ridges appear at **48** and **50** in the upper and lower supporting discs **43**, respectively, and face outwardly in opposite directions in order to cooperate with correspondingly facing abutments. As a result of the trapezoidal shaped section of the elastic rim **27'** and the conical shape of the abutments **46**, **47**, there is only a line contact between the transition ridges and abutments, which substantially reduces wear on these elements. The cooperating abutments **46**, **47** and ridges **48**, **50** operate as thrust bearings in a manner similar to the operation of corresponding members in the first embodiment.

If the weight of the tubular member **12** shown in the embodiment of Figure 3 exceeds the axial force exerted by thread **38** traveling upwardly therethrough, as usually is the case, it can be seen that only the upper abutment **46** and upper transition ridge **48** are necessary to prevent axial displacement of the tubular member. The lower abutment **47** and lower ridge **50** are necessary, however, in order to prevent axial displacement caused by sudden jolts when the device is first started. As mentioned hereinabove, the remainder of the false twisting device of Figure 3 may be constructed in a manner similar to that shown in Figures 1 and 2.

The devices described above may be modified in various respects without departing from the spirit of the present invention. Although it is generally preferred that the thread pass vertically upward through the spindle in order to promote symmetrical wear of the peripheral grooves and rims, it is also possible to operate the device with the thread running in the opposite direction. This latter direction is preferred, for example, when using a ring twisting machine as a means for taking up the treated thread.

Although in each of the embodiments shown the supporting discs are fixedly mounted in pairs on freely rotatable shafts, it is of course possible to mount each disc rotatably on fixed shafts or to fix the discs in pairs on a hub which is freely rotatable around such a shaft. Various alternatives are possible within the scope of this invention.

Furthermore, the invention is not restricted to the mounting of false twisting spindles of the type shown in the drawings. Other types, for example, those in which the threads are guided around rollers which are rotatable either around the center line of the spindle or around an axis vertical thereto or those in which guide bars are used, may be mounted in a bearing arrangement such as disclosed herein.

It is not absolutely necessary that the supporting discs which together form a throat have an equally large diameter or that they be rotatable on parallel shafts. Suitable throats may be formed by disposing the shafts in non-parallel relationship and also by utilizing discs of different diameters. Moreover, it is not necessary that the outer peripheries of a pair of discs necessarily oppose each other in a common plane. For example, staggered or offset discs may form a throat into which the spindle could be urged.

In the most simple embodiment of the latter example, the discs may rotate in parallel planes around parallel shafts. In this case, however, the distance between shafts should be less than the sum of the disc radii. As a result of disc overlap, the angle enclosed between the tangents, applied to these discs at the point where the discs start to overlap, becomes large. This large angle, which preferably is 80°, offers the advantage that those components of the force exercised by the driving belt on the spindle which are radially directed with respect to the discs increase in proportion to the tangential components. This prevents undesirable non-rotatable clamping effects of the discs on the spindle.

Preferably, only two pairs of discs, or two throats, are used in the actual practice of this invention for the reason that very accurate machining of the spindle and an equally accurate arrangement of the discs is required if three or more throats are provided. In certain cases, however, more than two throats may be advantageous, such as, for example, when using a somewhat elastic spindle.

The driving belt system may consist of a single belt or rope or a number of belts and ropes. If one belt only is used, then the same belt not only must rotate the spindle but also must press or resiliently urge the spindle against the supporting discs. If more than one driving belt is used, these belts could engage the spindle at different peripheral or axial portions thereof and therefore provide a more relaxed and uniform drive. This driving system, however, results in a more noisy operation than when using only one belt.

Various means may be provided, in addition to or in lieu of the running surfaces described hereinabove, for preventing axial displacement of the tubular member. For example, electromagnetic or permanent magnet means may be used for this purpose. In a simple embodiment of this positioning method, an annular magnet may be fixed on the vertically arranged spindle of a twisting device adapted to twist thread moving downwardly, the poles of the magnet pointing to different spindle ends. Moreover, a second annular magnet also with axially arranged poles may be mounted around the spindle and below the first-mentioned magnet. Axial displacement is prevented by arranging like poles of the respective magnets adjacent to one another. The strength of the magnets is so chosen that during a twisting operation the force of repulsion of the magnet poles maintains the spindle in a floating position against the resultant action of thread tension and spindle weight. If, in this arrangement, the weight of the spindle is sufficiently high, it is also possible to maintain the axial position thereof while twisting a thread moving vertically upward. In the case of a lightweight spindle, the second magnet should be mounted above the spindle supported magnet and this also should be done in a manner that like poles are adjacent one another. In order to prevent the spindle from dropping out of the mounting when in inoperative position, an abutment may be provided which cooperates with a flange or the like on the twisting spindle only when the spindle is in inoperative position, such as the retaining member described hereinabove.

Furthermore, it is possible to mount other ring magnets, having axially directed poles, freely with respect to the spindle, both above as well as below the spindle supported magnet, the mounting again being such that like poles of these magnets are adjacent to like poles of the spindle supported magnet. A spindle floatingly mounted in this manner remains axially positioned irrespective of the direction of travel and tension of the thread.

Instead of providing a permanent magnet fixed with respect to the spindle, it is possible, if the spindle consists of magnetizable material, to magnetize the same by means of a coil freely arranged around the axis thereof and included in a suitable electric circuit. The poles of this electromagnet should cooperate with one or more magnets mounted freely around the spindle in the manner indicated hereinabove. Other variants of this magnetic positioning principle are also possible.

According to the preferred embodiments described above, however, the supporting discs which serve as a bearing for radially positioning the rotating spindle also serve as a means for preventing axial displacement thereof. In these embodiments four discs forming two opposed pairs are used, one or both of the discs of each pair cooperating with portions of the spindle to prevent axial displacement in either direction. In the first embodiment, each disc is used for this purpose, since each disc extends into a peripheral groove provided in the spindle. These peripheral grooves are annular and extend in a plane vertical to the center line of the spindle over the entire circumference of the same, and are preferably symmetrical with respect to a plane intersecting the lowermost point of the groove and extending normal to the spindle axis. The number of grooves formed in the spindle should amount to two or more, if all the throat-forming discs extend therein, which is not absolutely necessary.

If only two peripheral grooves are formed therein, support of the spindle may be obtained only by providing a pair of discs at each groove. The presence of a higher even number of peripheral grooves in the spindle offers the advantage of having each groove cooperate with one disc only and the possibility of arranging the respective axes of rotation of the discs closer together, with the discs even overlapping as viewed in the direction of the center line of the spindle.

A much preferred embodiment of this type consists in a spindle provided with four peripheral grooves, each groove cooperating with the rim of only one disc and with the discs mounted sufficiently close to overlap, as explained above, resulting in very little wear between the spindle and discs. Also, axial displacement of the spindle is practically non-existent. Such a stability cannot be obtained by clamping the cylindrically shaped spindle between one or more driving belts, guided or not, across positioning members or between a driving belt and a rotating cylinder, as previously suggested.

The discs and spindle may consist entirely of metal, which of course requires accurate machining of the cooperating surfaces, or, the discs may be provided with elastic rims as shown in the drawings. In this event, it is preferred that the disc consist of a metal central portion, in the outer vertical edge of which a peripheral recess is provided for accommodating a rim or tire consisting of a wear resistant rubber or other suitable elastic material.

The outer profile of the elastic rims and the profile of corresponding peripheral grooves in the spindle preferably are of such cross-section that at the point of greatest diameter the rim does not rest against the flanks of the grooves but, rather, contacts points on either side thereof. This arrangement operates very satisfactorily for positioning the spindle axially. Although the supporting discs may also have different diameters, it is preferred to use the embodiments described in connection with the drawings, wherein all of the discs are of

the same diameter and are provided in two groups, with each group being rotatable with, or with respect to, a shaft mounted parallel to the spindle. A correct positioning of the rims in relation to the peripheral grooves is ensured if each group of discs is arranged on a rotatably mounted hub.

It is also possible, according to the teachings of this invention, to obtain a minimum wear of the supporting disc bearings, which bearings preferably consist of the ball or roller type, even at the high rotating speeds necessary in twisting thread, by selecting the diameter of the rim and of the spindle at the point where it cooperates with the rim, respectively, in the ratio of at least 3 to 1. This offers the obvious advantage that upon rotation of the spindle three times, the disc will rotate not more than once. Thus, the inherent maximum speed of rotation of a member mounted in ball and/or roller bearings no longer limits the thread twisting speed.

In certain vertically mounted false-twisting devices, it is possible to counteract completely the resultant of the forces acting during normal operation thereof in the direction of the center line of the spindle and on the elastic rims of the discs. This is particularly advantageous when using that type of false twisting device which is mounted for rotation about a vertical axis and which has an encircling body or thread guide provided with a bore fixed in the upper end of the spindle, as described in said co-pending application Serial No. 628,919.

When operating the aforesaid false twisting device, with the thread passing through the twisting spindle from the bottom to the top, the thread exerts a force directed upwardly, resulting in a force transmitted to the lower flanks of the elastic rims. This force may be offset by designing the spindle so that the force of gravity exerted thereon will be of equal magnitude.

By virtue of the minimum 3 to 1 ratio of size between disc and spindle, it can be seen that twisting devices which heretofore could not be rotated over 60,000 R. P. M. now can be rotated at speeds in excess of 180,000 R. P. M. This is particularly suitable for the twisting of threads formed from thermoplastic material, for example, polyamide. This thread now can be twisted at a running velocity of at least 60 meters per minute, as compared to the maximum operating speed of 20 meters per minute heretofore available. It has been found that speeds up to 200,000 R. P. M. may be attained without appreciable wear of the bearings, which is a substantial improvement over existing twisting devices.

It is pointed out further that the spindle shape is not necessarily limited to generally cylindrical or stepped cylindrical, as shown, but may be conical or formed from a generatrix curved in the longitudinal direction, with suitable cooperating surfaces being formed on the rim of the discs.

While various modifications and alternatives have been discussed hereinabove for purpose of description and explanation, it is to be understood that the scope of this invention is limited only to the extent defined in the following claims.

What is claimed is:

1. A device for twisting thread comprising a tubular member adapted for rotation, at least one pair of supporting elements rotatable about spaced, fixed axes and forming therebetween a throat for receiving said tubular member, drive means for imparting rotation to said tubular member and for urging the same into the throat of said supporting elements, and means mounting said supporting elements for movement toward and away from said drive means.

2. A device for twisting thread comprising a tubular member mounted for rotation, at least one pair of supporting discs rotatable about spaced axes and forming therebetween a throat for receiving said tubular member, drive means for imparting rotation to said tubular mem-

ber and for urging the same into the throat of said supporting discs, and means mounting said supporting discs for pivotal movement toward and away from said drive means.

3. A device for twisting thread as set forth in claim 2 wherein the ratio between the diameters of the supporting discs and the tubular member at the point of contact therebetween is at least 3 to 1.

4. A device for twisting thread comprising a main frame, an intermediate plate pivotally mounted to said frame, at least one pair of supporting elements rotatably supported by said intermediate plate in spaced relationship and defining therebetween a throat, a tubular member mounted to be rotated, and drive means for imparting rotation to said tubular member and for urging the same into the throat of said supporting elements.

5. A device for twisting thread as set forth in claim 4 wherein means supported by said main frame limit pivotal movement of said intermediate plate between a first position wherein said tubular member contacts said drive means and a second position wherein said tubular member is spaced from said drive means.

6. A device for twisting thread comprising a plate pivotally mounted between a first operative position and a second inoperative position, at least one pair of supporting elements rotatably mounted on said plate in spaced relationship and defining therebetween a throat, a tubular member mounted for rotation, drive means for imparting rotation to said tubular member and for urging the same into contact with said supporting elements when said plate is pivoted to said first position, and a retaining means for maintaining said tubular member within the throat of said supporting elements when said plate is pivoted to said second position and for releasing said tubular member when said plate is pivoted to said first position.

7. A device for twisting thread comprising a tubular member mounted for rotation and having at least one running surface from which the same is supported, at least one pair of discs rotatable about spaced axes and having peripheral surfaces cooperating with said running surface to support said tubular member for rotation while preventing axial displacement thereof, and drive means for imparting rotation to said tubular member and for urging said running surface into contact with the peripheral surfaces of said supporting discs.

8. A device for twisting thread as set forth in claim 7 wherein said running surface comprises at least one peripheral groove in said tubular member and wherein said peripheral surface comprises an elastic rim adapted to fit within said groove.

9. A device for twisting thread as set forth in claim 8 wherein the outer profile of said rim and the profile of said groove have such a shape that the rims of the supporting discs rest only against the flanks of the groove.

10. A device for twisting thread as set forth in claim 7 wherein the running surface of said tubular member comprises at least one cylindrical portion of reduced diameter having a conical abutment contacted by the peripheral surfaces of said supporting discs.

11. A device for twisting thread as set forth in claim 10 wherein the peripheral surfaces comprise an elastic rim having a ridge constituting a transition between the peripheral face and one lateral face of said supporting discs.

12. A false twisting device comprising a tubular member having a longitudinal thread passageway mounted for rotation about a vertical axis, a thread guide mounted in the upper portion of said tubular member for receiving thread from said passageway, a drive surface formed on the lower portion of said tubular member, running surfaces disposed below and above said drive surface, a first pair of supporting discs mounted for rotation about fixed, spaced axes and having rims contacting the upper running surface, a second pair of supporting discs mounted for rotation about fixed, spaced axes and having rims contacting the lower running surface and a belt disposed in driving relation to said drive surface for imparting rotation to said tubular member and for urging the same into contact with each of said supporting discs.

13. A device for twisting thread comprising a tubular member having a longitudinal thread passageway mounted for rotation, a thread guide mounted on said tubular member for receiving thread from said passageway, at least one pair of discs rotatable about spaced axes and forming therebetween a throat for supporting said tubular member, the ratio between the diameters of the supporting discs and the tubular member at the point of contact therebetween being at least 3 to 1, and means for imparting rotation to said tubular member and for urging the same into the throats of said supporting discs.

14. A device as set forth in claim 13 and further comprising means mounting said supporting discs and said rotation imparting means for relative movement one toward and away from the other.

15. In a false twisting device having a rotatable tubular member provided with a longitudinal thread passageway, a thread guide supported by said tubular member for receiving thread from said passageway and at least one running surface formed on said tubular member from which the same is supported, the improvement comprising at least one pair of discs rotatable about spaced, fixed axes and forming therebetween a throat for receiving said tubular member, said discs cooperating with said running surface for supporting said tubular member, and means for urging said tubular member into the throat of said supporting discs.

16. In a false twisting device having an elongated tubular member mounted for rotation about a vertical axis and provided with a longitudinal thread passageway, a thread guide supported by one end of said tubular member for receiving thread from said passageway and at least one running surface formed on said tubular member from which the same is supported during rotation, the improvement comprising at least one pair of supporting discs mounted for rotation about fixed, spaced axes and having peripheral surfaces cooperating with said running surface to support said tubular member for rotation while preventing axial displacement thereof, and means for urging said running surface into contact with the peripheral surfaces of said supporting discs.

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