March 25, 1952 R. S. BLEY 2,590,372

TWIST BARRIER FOR DOUBLE TWIST SPINDLES

Filed Feb. 3, 1950 2 SHEETS—SHEET 1

FIG. 1.

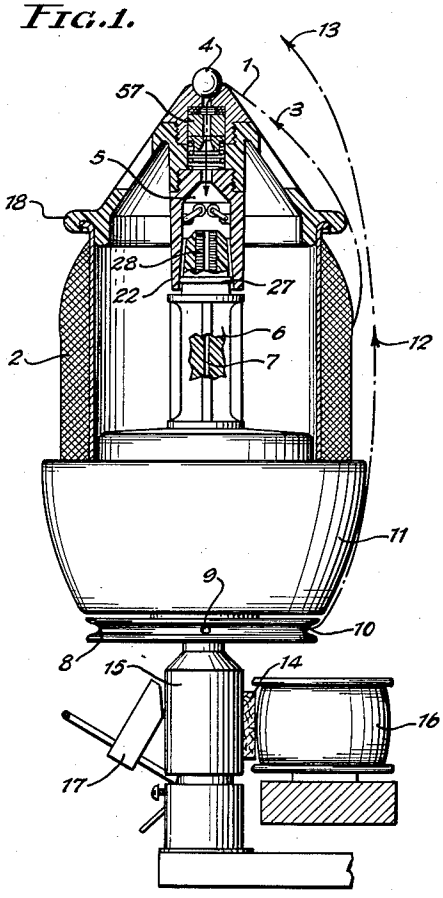


FIG. 2.

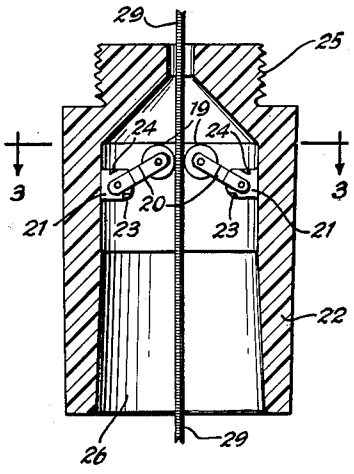


FIG. 3.

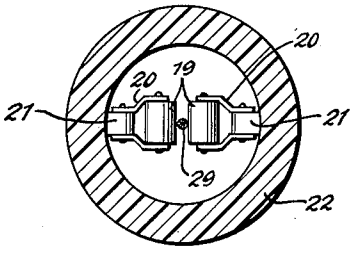


FIG. 4.

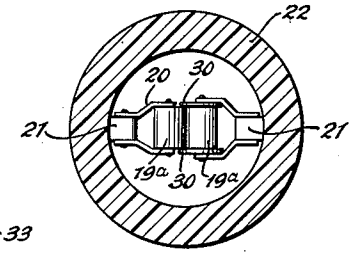
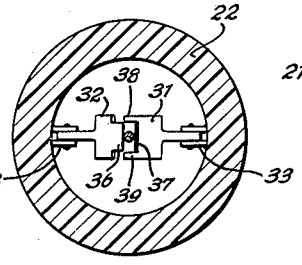


FIG. 6.



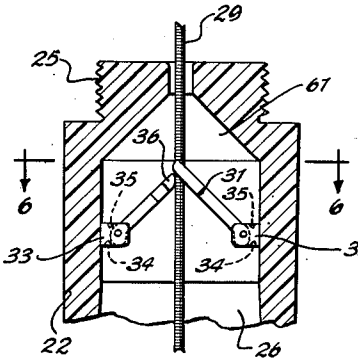


FIG. 5.

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FIG. 7.

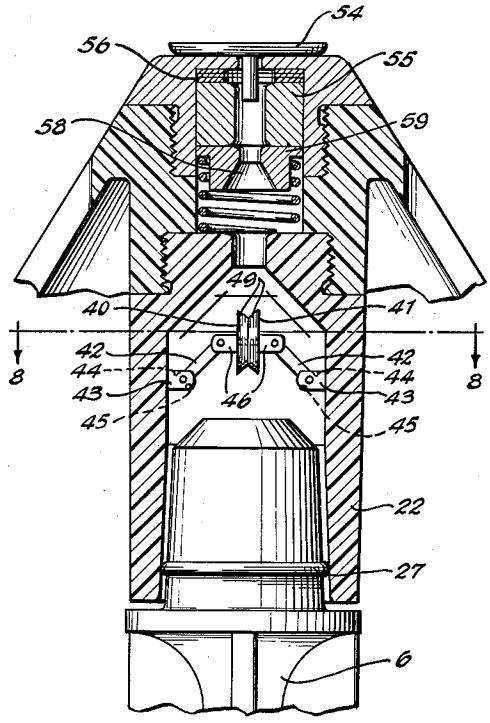


FIG. 10.

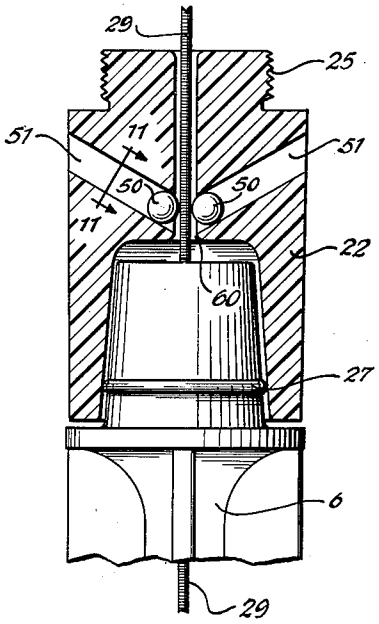
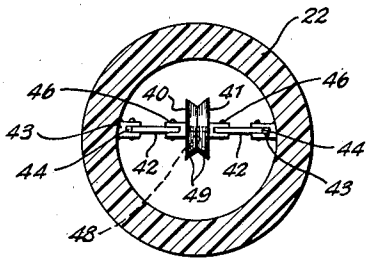


FIG. 8.



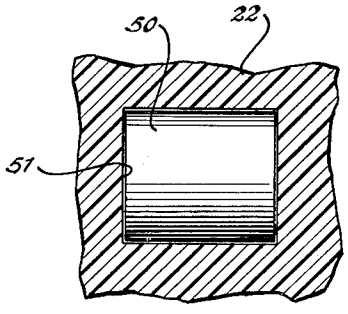


FIG. 11.

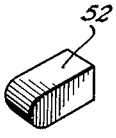
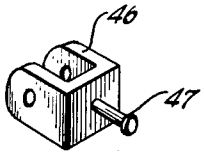


FIG. 12.

FIG. 9.



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UNITED STATES PATENT OFFICE

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TWIST BARRIER FOR DOUBLE TWIST SPINDLES

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Application February 3, 1950, Serial No. 142,133

20 Claims. (Cl. 57—58)

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This invention relates to improvements in twisting spindles and especially to twisting spindles of the so-called "double twist" type used for imparting to the yarn, thread, or cord two twists for each revolution of the spindle. The invention is particularly applicable to the twisting of cord or heavy denier yarn, or of crepe or other high twist yarn.

It is an object of the invention to provide an improved spindle structure adapted by means of novel arrangements used in combination with the tensioning means of said spindle which prevent the twist of the yarn or thread from running back to the tensioning device and permit the spindle to be threaded up in the manner customary in the art.

Another object is to provide a simple twist barrier structure which may be used in double twist spindles of conventional construction and in combination with any form of tensioning device usually employed on such spindles.

Other objects and advantages of the invention will become apparent from the following detailed description when considered in connection with the accompanying drawing.

In double twist spindles the yarn or thread is subjected to tension at its entry into the thread passage thereof, the tension being exerted as a braking action produced by means such as suitable weights bearing against the yarn or thread as the same enters the passage. In spindles of this type the yarn drawn from a supply package disposed in relatively stationary fashion with respect to the rotating portion of the spindle, passes through the tensioning device, down through the thread passage, and emerges from a port in the spindle rotor at the bottom. From this point it passes outwardly and upwardly around the spindle as a whole in the form of a so-called "free balloon" and thence to a collection device.

During twisting on a double twist spindle there is a tendency for the thread approaching the tensioning device to become misaligned, perhaps even with the formation of some loops in the filaments. Since, in such a double twist spindle, the twist tends to run back to the tensioning device, some of the filaments may be broken or the loops may be embodied in the twisted yarn or thread as twist is inserted immediately beyond the tensioning device, before the thread can be properly re-aligned. Yarn containing the defects mentioned is regarded by the trade as inferior.

In accordance with the present invention an arrangement is provided within the spindle which is adapted to keep the twist from running back

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to the tensioning device. By this means a short distance of yarn travel is provided during which the tension exerted on the yarn or thread can eliminate the loops and align the filaments so that the twist will be inserted uniformly to give commercially satisfactory yarn. This arrangement, adapted for preventing the twist from running back to the tensioning device, is hereinafter referred to as a "twist barrier."

The invention is illustrated in the accompanying drawing in the form of a number of embodiments. In the drawing:

Fig. 1 is a view partly in elevation and partly in section illustrating a twist barrier of the invention applied to a double twist spindle and also showing one form of tensioning means.

Fig. 2 is a view on an enlarged scale of a cartridge-like structure containing the embodiment of the twist barrier, illustrated in Fig. 1.

Fig. 3 is a section taken on line 3—3 of Fig. 2.

Fig. 4 shows a modification of the twist barrier shown in Figs. 1, 2 and 3.

Fig. 5 illustrates a further embodiment wherein the twist barrier is constituted as a blade-like structure.

Fig. 6 is a section on line 6—6 of Fig. 5.

Fig. 7 is an enlarged fragmentary view of a portion of a double twist spindle provided with another type of tensioning means and including a further embodiment of the twist barrier of the invention.

Fig. 8 is a section on line 8—8 of Fig. 7.

Fig. 9 is a perspective view showing a detail of an arrangement for carrying the elements of the twist barrier shown in Figs. 7 and 8.

Fig. 10 is a sectional view showing another embodiment of the twist barrier of the invention constituted in the form of removable rollers.

Fig. 11 is a sectional view taken on line 11—11 of Fig. 10.

Fig. 12 is a perspective view of another type of insert suitable for use with the structure shown in Fig. 10.

Fig. 1 shows a double twist spindle with one embodiment of the twist barrier of the invention incorporated therein. Other embodiments of the twist barrier shown in the remaining figures may be used in the double twist spindle shown in Fig. 1.

Referring in detail to the figures, the numeral 1 represents yarn or thread withdrawn from a package 2 carried by a spool and passing in the direction of arrow 3 to the tensioning device 4, here shown constituted as a ball, and then downwardly, as at 5, through aligned thread passages

and bores in the spindle. By way of example, one part of the thread passage is indicated by 6 and a bore by 7 in Fig. 1. The yarn or thread then issues from one of a number of ports 9 provided in the spindle rotor 8 as indicated at 10. It then passes upwardly around the bowl 11 in the direction of arrows 12, 13, forming the free balloon represented by the line bearing these arrows and thence to a collecting device (not shown). Spindles of this type, as is well known, may be mounted in tilting fashion and driven in the usual manner by a belt 14, drive pulley 15 and idler 16. 17 is a type of brake used on such spindles. Such spindles may also be mounted vertically and driven by individual electric motors (not shown). The upper portion of the spindle structure includes a frusto-conically shaped portion 18 adapted to aid in supporting the yarn package 2 and also serving as a housing structure for holding the twist barrier hereinafter described.

The embodiment of the twist barrier shown in Fig. 1 is illustrated in greater detail and on an enlarged scale in Figs. 2 and 3. In this embodiment the twist barrier is constituted of small rollers 19 carried by yokes 20 pivoted to lugs 21 mounted on or formed integrally with the walls of the casing 22 hereinafter described. Stops 23 and 24 on lugs 21 serve to limit the downward and upward movements respectively of the yokes 20. The rollers 19 are made of a suitable wear-resisting material. Since they are carried in pivotal fashion by the yokes 20 they are brought into contact with each other by the action of gravity. The latter action is preferably supplemented or controlled by the magnetic properties of the rollers themselves. To this end, in the preferred constitution of this embodiment the rollers 19 are made of a suitable alloy such as that known in the electrical art as "Alnico" which contains 12% aluminum, 20% nickel, 5% cobalt, 0.15% (maximum) carbon, 0.4% manganese plus silicon, and the balance iron, this being disclosed in an article by John Q. Adams entitled "Alnico, Its Properties and Possibilities," Gen. Elec. Rev., vol. 41 (1938), pages 518–22, and abstracted in Chemical Abstracts, vol. 33 (1939), pages 1644–45, and which permits the making of permanent magnets of small size and great attracting power. The rollers 19 are arranged so that opposite magnetic poles face each other, that is, so that the magnetic rollers will attract each other, or one roller may be magnetized and the other roller made of magnetically responsive material. In order that the rollers 19 may be readily rotated by the yarn, these rollers are preferably mounted on anti-friction bearings such as ball, roller, or needle bearings or self-lubricating bushings.

The twist barrier may be incorporated in the spindle structure in any suitable manner but it is preferably constituted as a cartridge-like unit which may be made of plastic or other suitable non-magnetic material and of a shape, e. g. cylindrical, adapted to permit it to be readily inserted in and removed from the spindle. As shown in Fig. 2, this cartridge-like unit is constituted of a casing portion 22 in which the parts of the twist barrier are disposed. This casing is provided with screw threads 25 for use in associating it with the parts of the top structure of the spindle. It is also provided with a slightly tapered opening 26 for associating the top assembly of the spindle with the lower portion as shown in Fig. 1, where the member 22 reposes on the part 6, a rubber gasket 27 being provided to absorb vibration. Other suitable methods for incorporating the twist barrier cartridge as a unit in the spindle structure may also be used; the parts of the twist barrier may of course also be built directly into the spindle.

As hereinabove stated, the twist barrier serves to prevent the twist from running back to the tensioning device. Referring to Fig. 1, it is apparent that in a double twist spindle of the type shown, the twist of the yarn within the thread passage, a portion of which is indicated by the numeral 7, cannot run back beyond the point of contact of the twist barrier rollers 19, 19. This makes it possible for the tension applied by the ball tensioning device 4 to properly align the elements of the yarn or thread before the twist is inserted. The device 28 shown in Fig. 1 is an entangling means or trap for catching broken threads, as disclosed in U. S. Patent No. 2,478,927 of 1949 to Ralph H. Carter.

The twist barrier is constructed and disposed so that when the spindle is being threaded up, as described for example in U. S. Patent No. 2,492,581 of 1949 to C. B. Kingsbury, the wire 29 will push the contacting elements of the twist barrier, i. e., the rollers 19, 19 apart, as shown in Figs. 2 and 3. After the yarn has been drawn through the spindle and between the rollers by the wire, the rollers will return to their operating position as described above and shown in Fig. 1.

Fig. 4 shows a modification of the embodiment of the twist barrier illustrated in Figs. 1, 2 and 3. In this case, as shown in Fig. 4, one of the rollers 19a is provided with flanges 30, 30 to prevent the yarn from escaping laterally from between the rollers and thus rendering the twist barrier ineffective.

The embodiment of the twist barrier shown in Figs. 5 and 6 comprises two blade-like members 31, 32 pivoted in bifurcated lugs 33. Stops 34 and 35 are provided to limit the downward and upward movement respectively of the blades. The blades 31, 32 may be arranged so as to be magnetically attracted as by making both of magnetic material and arranging them with opposite poles facing each other or by constituting one blade as a magnet and the other of magnetically responsive material. These blades may also be made of non-magnetic material provided with magnetized edges or with a magnetized edge 36 and a magnetically responsive edge 37 as indicated in Fig. 6. In this case also, flanges 38, 39 such as those shown in Fig. 6 are preferably provided to prevent the yarn from escaping laterally from between the blades. Such flanges may be constituted by recessing the blade per se or by attaching separate flange-like members to one of the blades.

In Figs. 7 and 8 the twist barrier is constituted as a pair of mutually facing disks 40, 41. These are carried by a pivoted link structure composed of links 42 pivoted on lugs 43 carried by the wall of the cartridge 22, the upward and downward movement of the links 42 being limited by stops 44 and 45 respectively. The links 42 serve to carry yokes 46 shown on the enlarged scale in Fig. 9. These yokes are provided with shafts 47 for rotatably supporting the disks 40, 41 through intermediary of anti-friction bearings (not shown). The disks 40, 41 are urged together magnetically as in the case of the rollers of Fig. 2 and the blades of Fig. 6. The disks are disposed in off-centered relation with respect to the cartridge as shown

in Fig. 8 and hence with respect to the thread passage of the spindle so that the passage of the thread 48, shown in the cross-sectional view, between the disks will cause their rotation. The edges of the disks are beveled as at 49 to provide a V-shaped groove to permit the threading-up wire to enter and to push the disks apart so that the thread may be drawn between them.

In the embodiment shown in Figs. 10 and 11 the twist barrier is constituted in the form of rollers 50, 50 running in rectangular chutes 51, 51. These chutes slant downwardly and are open at the outer end to permit insertion of the rollers 50. These rollers are urged together magnetically as in the case of the rollers of Fig. 2. Fig. 10 shows the threading-up wire 29 in place between the rollers, the latter having been pushed up slightly into the chutes.

Fig. 12 shows another type of twist barrier element which may be used in the chutes 51, 51 of Fig. 10 in lieu of the rollers 50, 50. This twist barrier is preferably constituted of substantially rectangular blocks 52, each preferably having a rounded edge. When housed in the chutes 51, 51 these rounded edges face each other in the thread passage bore of the spindle. The blocks 52 and the rollers 50, described above, may be urged together magnetically as in the case of the other embodiments of the twist barrier herein described.

It is obvious that the twist barrier devices shown in Figs. 1 to 6 inclusive should be so arranged that their own weight will tend to cause them to swing into contact. In the case of the arrangement shown in Fig. 10, the chutes should incline downwardly sufficiently so that the rollers or rounded blocks will tend to slide downwardly and into contact with each other.

These spindles are constructed so that the twist barriers are as close as possible to the bores through which the thread passes, first, to facilitate threading-up of the spindle and, secondly, to keep the yarn properly positioned between the elements of the twist barrier. The larger portions of the thread passage should be suitably flared as indicated for example by 58 in the guide member 59 (Fig. 7). The same applies to places in the cartridge through which the threading-up wire passes, as for example at 60 (Fig. 10) and 61 (Fig. 5), and elsewhere. These features facilitate the threading-up of the spindle.

The various metallic elements of the twist barrier, including the magnetic portions, may be covered with or embedded in a smooth, wear-resisting plastic or ceramic material to prevent corrosion or even to modify the magnetic forces.

The various embodiments of the twist barrier hereinabove described may be employed together with any suitable type of tensioning device customarily used on double twist spindles. In Fig. 7 for example the tensioning disk 54, as disclosed in greater detail in U. S. Patent No. 2,478,926 of 1949 to C. B. Kingsbury, is caused to exert its braking action on the yarn by the action of the magnet 55, the action of which on said disk is controlled by interposing non-magnetic shims 56 between the disk 54 and the magnet 55. The disk 54 may however also be operated by its own weight as shown in U. S. Patent No. 2,492,581 of 1949 to C. B. Kingsbury. Instead of being constituted as a disk the tensioning member may be formed as a ball 4 as shown in Fig. 1. The ball 4 is caused to exert a braking action on the yarn by means of the magnet 57, and shims 56 of non-magnetic material may also be used for adjusting the action of the magnet. However, the magnet 57 may be omitted and the ball 4 caused to exert its braking action solely by its own weight.

As hereinbefore mentioned, the twist barrier of the invention is of especial value for twisting heavy denier yarn or cord. In such cases it may also be advantageous to arrange the twist barrier so as to cause it to apply a certain amount of tension to the yarn or cord. This may be accomplished for example by providing two or more pairs of twist barriers in a spindle, by using fixed instead of rotatable disks in the embodiment of Fig. 7, or by constructing the twist barrier shown in Fig. 5 so that the elements make more than point contact with the thread.

Although certain preferred embodiments of the invention have been described, it will be apparent that changes and equivalents may be incorporated without departing from the scope thereof. Such changes will be readily recognized by those skilled in the art and it is desired to cover all modifications coming within the scope of the appended claims.

What is claimed is:

1. In a double twist spindle including a device for tensioning yarn or thread, comprising in combination a thread passage extending axially of said spindle, means comprising two members arranged to contact with each other and to engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn, said members constituting a barrier to prevent the twist from running back to the tensioning device, the portions of said members adjacent to each other being of magnetic material and one of said portions being magnetized so that said members are urged toward each other.

2. In a double twist spindle including a device for tensioning yarn or thread, comprising in combination a thread passage extending axially of said spindle, means comprising two members arranged to contact each other and to engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn, said members constituting a barrier to prevent the twist from running back to the tensioning device, the portions of said members adjacent to each other being of magnetic material and one of said portions being magnetized so that said members are urged toward each other, said members engaging said yarn or thread without diverting the same from a straight line of travel through the spindle.

3. In a double twist spindle including a device for tensioning yarn or thread, comprising in combination a thread passage extending axially of said spindle, means comprising two members arranged to contact with each other and to engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn, flanges on one of said members to prevent lateral escape of the yarn from between said members, said members constituting a barrier to prevent the twist from running back to the tensioning device, the portions of said members adjacent to each other being of magnetic material and one of said portions being magnetized so that said members are urged toward each other, said members engaging said yarn or thread without diverting the same from a straight line of travel through the spindle.

4. In a double twist spindle including a device

for tensioning yarn or thread, comprising in combination a thread passage extending axially of said spindle, means comprising two members arranged to make contact with each other so as to engage said yarn or thread between them in point contact fashion within said spindle after the tension has been applied to the yarn, said members constituting a barrier to prevent the twist from running back to the tensioning device, the portions of said members adjacent to each other being of magnetic material and one of said portions being magnetized so that said members are urged toward each other, said members engaging said yarn or thread without diverting the same from a straight line of travel through the spindle or exerting any substantial tension thereon.

5. In a double twist spindle including a device for tensioning yarn or thread, comprising in combination a plurality of bored portions cooperating to provide a thread passage extending axially of said spindle, one of said portions being constituted as an insertable and removable cartridge containing two members arranged to contact with each other and engage said yarn or thread between them at a point within said spindle after the tension has beeen applied to the yarn or thread, the portions of said members adjacent to each other being of magnetic material and one of said portions being magnetized so that said members are urged toward each other, said members constituting a barrier to prevent the twist from running back to the tensioning device and engaging said yarn or thread without diverting the same from a straight line of travel through said spindle.

6. In a double twist spindle comprising a device for tensioning yarn or thread, a thread passage extending axially of said spindle, two rotatable elements positioned in said spindle, pivots for said elements, said elements being arranged to contact with each other and to engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn, said rotatable elements constituting a barrier to prevent the twist from running back to the tensioning device and engaging said yarn without diverting the same from a straight line of travel through the spindle.

7. In a double twist spindle comprising a device for tensioning yarn or thread, a thread passage extending axially of said spindle, two rotatable elements positioned in said spindle, pivots for said rotatable elements, arms for supporting said pivots, said rotatable elements being arranged to contact with each other and to engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn, said rotatable elements constituting a barrier to prevent the twist from running back to the tensioning device and engaging said yarn without diverting the same from a straight line of travel through the spindle, said elements being disposed parallel to each other and making line contact with each other.

8. In a double twist spindle comprising a device for tensioning yarn or thread, a thread passage extending axially of said spindle, two rotatable disks positioned in said spindle, pivots for said rotatable disks, arms for supporting said pivots so that said disks are urged into facial contact with each other to engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn, said rotatable disks constituting a barrier to prevent the twist from running back to the tensioning

device and engaging said yarn without diverting the same from a straight line of travel through the spindle, said disks being so positioned in the spindle as to permit yarn to pass between them without passing through their centers whereby to permit rotation of said disks.

9. In a double twist spindle including a device for tensioning yarn or thread, comprising in combination a thread passage extending axially of said spindle, means comprising a pair of inclined chutes and a pair of free elements, one of said free elements being positioned in one of said chutes and the other of said elements being positioned in the other of said chutes, said elements being arranged to contact with each other and to engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn, said elements constituting a barrier to prevent the twist from running back to the tensioning device and engaging said yarn without diverting the same from a straight line of travel through the spindle, said elements being disposed parallel to each other.

10. In a double twist spindle including a device for tensioning yarn or thread, comprising in combination a thread passage extending axially of said spindle, means comprising a pair of inclined chutes and a pair of free elements, one of said free elements being positioned in one of said chutes and the other of said elements being positioned in the other of said chutes, said elements being arranged to contact with each other and to engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn, said elements constituting a barrier to prevent the twist from running back to the tensioning device and engaging said yarn without diverting the same from a straight line of travel through the spindle, said elements comprising free rollers carried in said inclined chutes, said rollers being disposed parallel to each other and making a line contact with each other.

11. In a double twist spindle including a device for tensioning yarn or thread, comprising in combination a thread passage extending axially of said spindle, means comprising a pair of inclined chutes and a pair of free elements, one of said free elements being positioned in one of said chutes and the other of said elements being positioned in the other of said chutes, said elements being arranged to contact with each other and engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn, said elements constituting a barrier to prevent the twist from running back to the tensioning device and engaging said yarn without diverting the same from a straight line of travel through the spindle, said elements comprising free blocks carried in said inclined chutes, said blocks having rounded edges facing each other.

12. In a double twist spindle of the type wherein yarn or thread supplied from a package carried by said spindle is drawn over-end from said package, passes downwardly through a thread passage extending axially through the spindle, emerges from a port in a rotor at the bottom and passes up and around outside the spindle and package, and wherein tension is applied to the yarn or thread at its entry into said thread passage by a tensioning device, the improvement comprising the provision of a barrier constituted of members made of magnetic material, portions of one of said members being magnetized so that

said members are held in contact with each other by their magnetic properties and means for supporting said members in said spindle to engage the yarn or thread at a point within the spindle after the tension has been applied to the yarn or thread to prevent the twist from running back to the tensioning device without diverting the yarn or thread from a straight line of travel through the spindle.

13. In a double twist spindle of the type wherein yarn or thread supplied from a package carried by said spindle is drawn over-end from said package, passes downwardly through a thread passage extending axially through the spindle, emerges from a port in a rotor at the bottom and passes up and around outside the spindle and package, and wherein tension is applied to the yarn or thread at its entry into said thread passage by a tensioning device, the improvement comprising an insertable and removable cartridge positioned in the thread passage of the spindle, two members arranged to contact with each other and engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn or thread, means for supporting said members in said cartridge so that the weight of said members presses them together to press the yarn or thread therebetween, said members constituting a barrier to prevent the twist from running back to the tensioning device and engaging said yarn or thread without diverting the same from a straight line of travel through said spindle.

14. In a double twist spindle of the type wherein yarn or thread supplied from a package carried by said spindle is drawn over-end from said package, passes downwardly through a thread passage extending axially through the spindle, emerges from a port in a rotor at the bottom and passes up and around outside the spindle and package, and wherein tension is applied to the yarn or thread at its entry into said thread passage by a tensioning device, the improvement comprising members positioned in said spindle to contact with each other and engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn or thread, arms for carrying said members, and pivoting means for said arms, said members constituting a barrier to prevent the twist from running back to the tensioning device and engaging said yarn or thread without diverting the same from a straight line of travel through said spindle.

15. In a double twist spindle of the type wherein yarn or thread supplied from a package carried by said spindle is drawn over-end from said package, passes downwardly through a thread passage extending axially through the spindle, emerges from a port in a rotor at the bottom and passes up and around outside the spindle and package and wherein tension is applied to the yarn or thread at its entry into said thread passage by a tensioning device, the improvement comprising the provision of free elements disposed parallel to each other and arranged to contact with each other and engage said yarn or thread between them at a point within said spindle after the tension has been applied to the yarn or thread, inclined surfaces forming chutes for said elements, said elements constituting a barrier to prevent the twist from running back to the tensioning device and engaging said yarn or thread without diverting the same from a straight line of travel through said spindle.

16. In a double twist spindle of the type wherein yarn or thread supplied from a package carried by said spindle is drawn over-end from said package, passes downwardly through a thread passage extending axially through the spindle, emerges from a port in a rotor at the bottom and passes up and around outside the spindle and package, and wherein tension is applied to the yarn or thread at its entry into said thread passage by a tensioning device, the improvement comprising a pair of elements leaning against each other at acute angles to engage the thread or yarn therebetween near the tensioning device, pivot means for supporting said elements so that said elements may be pushed away from each other when the yarn or thread is threaded therebetween, the weight of said elements and the angles at which said elements are disposed being such as to prevent the twist in the yarn or thread from running back to the tensioning device.

17. In a double twist spindle of the type wherein yarn or thread supplied from a package carried by said spindle is drawn over-end from said package, passes downwardly through a thread passage extending axially through the spindle, emerges from a port in a rotor at the bottom and passes up and around outside the spindle and package, and wherein tension is applied to the yarn or thread at its entry into said thread passage by a tensioning device, the improvement comprising a pair of elements leaning toward each other at acute angles to engage the thread or yarn therebetween near the tensioning device, a pair of rollers engaging each other on their circumferences, a pivot for supporting one of said rollers on one of said elements, a second pivot for supporting the other of said rollers on the other of said elements, pivot means for supporting said elements so that said rollers may be pushed away from each other when the yarn or thread is threaded therebetween, the weight of said elements and said rollers and the angles at which said elements are disposed being such as to prevent the twist in the yarn or thread from running back to the tensioning device.

18. In a double twist spindle of the type wherein yarn or thread supplied from a package carried by said spindle is drawn over-end from said package, passes downwardly through a thread passage extending axially through the spindle, emerges from a port in a rotor at the bottom and passes up and around outside the spindle and package, and wherein tension is applied to the yarn or thread at its entry into said thread passage by a tensioning device, the improvement comprising an insertable and removable cartridge positioned in the thread passage of the spindle, a pair of elements leaning against each other at acute angles to engage the thread or yarn therebetween near the tensioning device, pivot means positioned in said cartridge for supporting said elements so that said elements may be pushed away from each other when the yarn or thread is threaded therebetween, the weight of said elements and the angles at which said elements are disposed being such as to prevent the twist in the yarn or thread from running back to the tensioning device.

19. In a double twist spindle of the type wherein yarn or thread supplied from a package carried by said spindle is drawn over-end from said package, passes downwardly through a thread passage extending axially through the spindle, emerges from a port in a rotor at the bottom and passes up and around outside the spindle

and package, and wherein tension is applied to the yarn or thread at its entry into said thread passage by a tensioning device, the improvement comprising an insertable and removable cartridge mounted in the spindle, said cartridge having a thread passage therethrough, a pair of elements leaning against each other at acute angles to engage the thread or yarn therebetween near the tensioning device, pivot means positioned in said cartridge for supporting said elements so that said elements may be pushed away from each other when the yarn or thread is threaded therebetween, screw threads positioned on the upper end of said cartridge for engaging corresponding screw threads in the spindle, and a resilient vibration absorbing member engaging said cartridge near the bottom thereof, the weight of said elements and the angles at which said elements are disposed being such as to prevent the twist in the yarn or thread from running back to the tensioning device.

20. In a double twist spindle of the type wherein yarn or thread supplied from a package carried by said spindle is drawn over-end from said package, passes downwardly through a thread passage extending axially through the spindle, emerges from a port in a rotor at the bottom and passes up and around outside the spindle and package, and wherein tension is applied to the yarn or thread at its entry into said thread passage by a tensioning device, the improvement comprising an insertable and removable cartridge

mounted in the spindle, said cartridge having a thread passage therethrough, a pair of free elements leaning against each other at acute angles to engage the thread or yarn therebetween near the tensioning device, means positioned in said cartridge for supporting said elements so that said elements may be pushed away from each other when the yarn or thread is threaded therebetween, screw threads positioned on the upper end of said cartridge for engaging corresponding screw threads in the spindle, and a resilient vibration absorbing member engaging said cartridge near the bottom thereof, the weight of said elements and the angles at which said elements are disposed being such as to prevent the twist in the yarn or thread from running back to the tensioning device.

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