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TEXTILE SPINDLE

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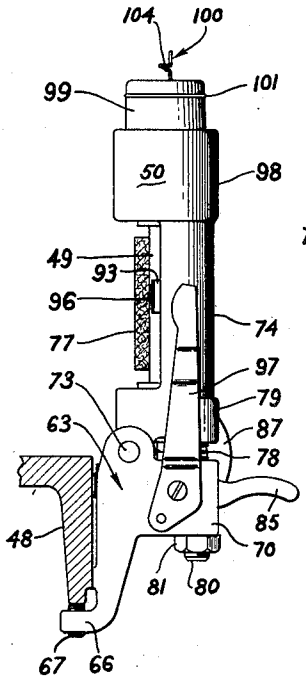


Fig. 2

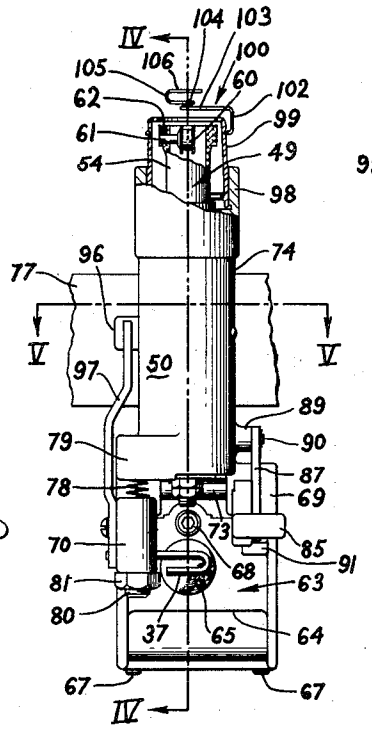


Fig. 1

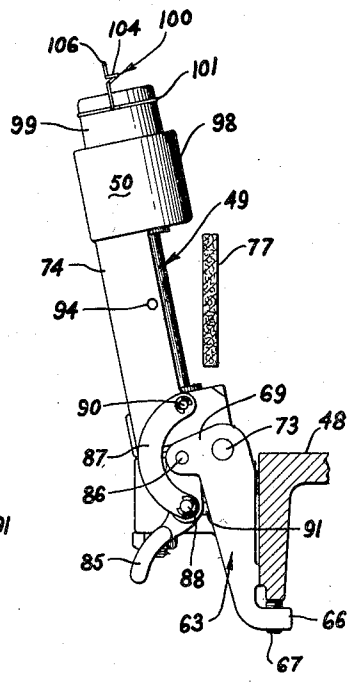


Fig. 3

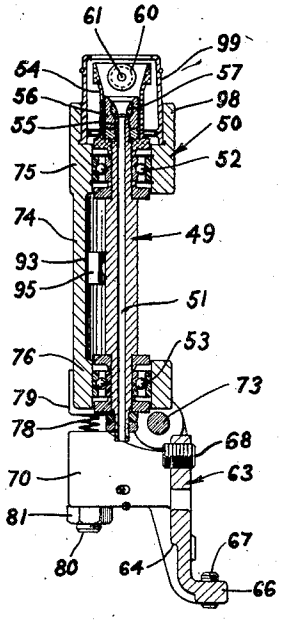


Fig. 4

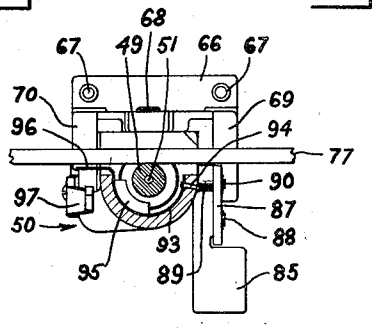


Fig. 5

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TEXTILE SPINDLE

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6 Claims. (Cl. 57—77.45)

The present invention relates to a textile spindle and a mounting therefor and more particularly relates to a false twist spindle and its mounting.

It is desirable in some textile operations to pass a strand or yarn through a false twist spindle to temporarily impart twist thereto. Inasmuch as a strand of yarn passing through a false twist spindle passes along, or closely adjacent, the axis of the spindle, the spindle does not cause said strands to balloon to an appreciable extent. It is, therefore, possible to place a plurality of spindles closely adjacent each other when it is desired to simultaneously impart false twist to a plurality of strands. However, all of the prior art spindles have been large and their mountings have been so constructed that they could not be mounted as close together as the absence of a balloon would permit.

One object of the present invention is to provide a false twist spindle and a mounting therefor capable of operating in a limited space.

Another object of the present invention is to provide a mounting for a textile spindle capable of selectively shifting a spindle carried thereby from operative to inoperative position and which will operate in close proximity to other similar spindle mountings.

Another object of the present invention is to provide a textile spindle and a mounting therefor capable of selectively swinging said spindle from operative to inoperative position about a substantially horizontal axis.

Another object of the present invention is to provide a spindle and mounting therefor that is inexpensive to manufacture and which is durable and economical in use.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the apparatus possessing the construction, combination of elements and arrangement of parts, which are exemplified in the following detailed disclosure, and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings wherein:

Fig. 1 is a front elevation, with parts broken away, of the false twist spindle of the present invention;

Fig. 2 is an elevation of the left hand side of the spindle and mounting of Fig. 3;

Fig. 3 is an elevation of the right hand side of the spindle and mounting of Fig. 3 but showing said spindle pivoted away from its driving belt;

Fig. 4 is a sectional view taken along the line IV—IV of Fig. 1; and

Fig. 5 is a sectional view taken along the line V—V of Fig. 1.

The false twist spindle and mounting of the present invention are so constructed that a plurality of spindles can operate closely adjacent each other and can be individually disengaged from or engaged with a single spindle driving belt. The spindle mounting is constructed to pivot in a vertical plane, about a substantially horizontal axis, towards and away from the spindle driving belt. The spindle is journaled in its mounting by means of a pair of bearings located on opposite sides of the spindle whorl and the spindle mounting includes a brake mechanism adapted to automatically engage the spindle whorl when said whorl is pivoted away from its driving belt.

Referring now to the drawing wherein a preferred embodiment of the false twist spindle and mounting therefor is disclosed. The false twist spindle comprises a hollow spindle blade 49 rotatably journaled in a pivoted mounting 50. Spindle blade 49 is a hollow tube-like member having a bore 51 extending throughout its length. A pair of anti-friction bearings 52, 53 are located on said tubular member adjacent each end thereof to rotatably journal said tube in a manner which will become more apparent hereinafter. A cylindrical head 54 is secured to the upper end of blade 49 adjacent bearing 52 by any convenient means as, for example, a press fit. Head 54 is provided with an axial bore which flares outwardly adjacent its upper end to provide a funnel shaped opening of elliptical cross section. The uppermost end of blade 49 is threaded as shown at 55, Fig. 4, and extends upwardly into the bore of head 54. Sleeve 56, carrying a wear resistant bushing 57, is threaded on the upper end of blade 49 within the cylindrical head 54. A flanged wheel or sheave 60 is rotatably mounted adjacent the upper end of cylindrical head 54 and in the funnel shaped portion thereof. Sheave 60 is mounted in head 54 by means of a stud 61 that is secured in the wall of said head by means of set screws 62.

Spindle mounting 50 comprises a fixed bracket member 63 including a vertical mounting plate 64 adapted to be secured to spindle mounting bed 48 by means of a bolt 65. The lowermost edge of mounting plate 64 is provided with a rearwardly turned flange 66 that threadably carries two adjusting screws 67 that cooperate with adjusting screw 68, threadedly carried by plate 64, to adjust the position of bracket 63 on bed 48. The uppermost end of mounting plate 64 is provided adjacent each edge thereof, with a pair of forwardly extending ears or lugs 69, 70. Horizontal hinge pin 73 is fixed in aligned openings formed in ears 69 and 70 and pivotally supports the spindle blade carrying section 74. Section 74 is provided adjacent each end thereof with bearing housings 75, 76 that receive bearings 52 and 53 respectively. The portion of blade carrying section 74 connecting the two bearing housings is open at its rear side and is trough-like in cross section to expose the mid-portion of spindle blade 49 which functions as a whorl and to make it possible for said whorl to be engaged by a spindle driving belt 77. Spindle driving belt 77 is an endless belt that runs around the machine in which the spindles are employed adjacent the spindles in a manner common in twisting machines and which rotates the spindles when their whorls are pressed thereagainst. A U-shaped yarn guide 37 is secured to lug 70 in alignment with bore 51 of spindle blade 49. A helical compression spring 78 is seated in an opening formed in the forward end of lug 70 and engages the lower surface of a lug 79 formed on the lower end of the spindle blade carrying section 74. Spring 78 functions to pivot the spindle blade carrying section 74 in a counterclockwise direction, as viewed in Fig. 2 to press the spindle whorl against the spindle driving belt. The opening in lug 70 which receives spring 78 extends through said lug 70 from top to bottom thereof. An adjusting screw 80 is threadedly received in the bottom of the spring receiving opening and operates to increase or decrease the pressure which said spring 78 exerts on section 74 upon being screwed in or out of said opening. A lock nut 81 is carried by adjusting screw 80.

An over center linkage is provided for moving the spindle blade carrying section to and from its belt engaging position. This linkage comprises a lever 85 pivoted at one end at 86 adjacent the end of forwardly extending lug 69. An arcuate link 87 is pivoted at one end to the pin 88 intermediate the ends of lever 85. The other end of link 87 is pivoted to a boss 89 formed adjacent the lowermost end of blade carrying section 74, and in a plane in front of hinge pin 73, by means of pin 90. The proportions of lever 85 and link 87 are such that when the free end of lever 85 is depressed it draws link 87 downwardly to swing section 74 away from belt 77. Continued downward movement of lever 85 swings pivot pin 88 to the rear so that a line drawn between pins 88 and 90 will fall to the rear of the pivot point 86 of lever 85 to thereby give an overcenter position to the linkage that holds section 74 in its spindle disengaged position against the action of spring 78. A boss 91 projects forwardly from plate 64 in a position to be engaged by lever 85 and to serve as a stop therefor when said lever is in its depressed position. When it is desired to engage the spindle driving whorl with belt 77, it is only necessary to move lever 85 upwardly a short distance to move pin 88 forward of the pivot point 86 whereupon spring 78 will pivot the section 74 rearwardly to engage said whorl and belt.

An arcuate leaf spring 93 is secured adjacent one of its ends to the inside of the mid-section of section 74 by means of rivet 94 and carries a brake block 95, made of any suitable friction material, between said section 74 and the spindle whorl. The free end of spring 93 extends outwardly past section 74 and terminates in a substantially straight length 96. Upstanding finger 97 is fixed to the side of lug 70 so that its uppermost end is positioned in front of the straight length 96 of spring 93. When section 74 and spindle blade 49 are pivoted away from driving belt 77 the straight length 96 of spring 93 engages the uppermost end of finger 97 whereupon continued movement of section 74 away from the driving belt causes said section 74 to move away from spring 93 and brake block 95 and to press the spindle whorl against said brake block 95 to stop the rotation thereof.

An upstanding flange 98 extends upwardly from upper bearing housing 75 and surrounds the lower portion of spindle head 54. An open ended cylindrical cap 99 fits inside of flange 98 to enclose the sides of spindle head 54. A thread guide 100, formed from a length of wire, is carried by said cap to guide a strand of yarn emerging from sheave 60 and the spindle. Guide 100 comprises a substantially circular or ring-like portion 101 that encircles and grips cap 99, adjacent the top thereof, and is engaged in a groove formed therein. An upstanding length 102 extends from portion 101 and is bent inwardly across the cap and spindle in a length 103 and a pigtail guide eye 104 is formed in the length 103 in alignment with sheave 60. The length 103 continues past pigtail 104 and is reversely bent at 105 to provide a straight horizontal length 106 above pigtail 104 that will engage a strand of yarn passing through said pigtail to prevent substantially all ballooning or vibration of said strand above said length 106.

The spindle of the present invention operates in the following manner. When it is desired to thread the spindle, lever 85 is depressed to swing the pivoted portion 50 and blade 49 away from driving belt 77. A suitable threading needle is passed through the bore 51 of the spindle and the strand of yarn to be threaded is drawn through guide 37 and said bore. Again using a suitable threading needle, the strand of yarn is wrapped around sheave 60 and drawn through guide eye 104 and the strand is attached to any suitable winding mechanism. Lever 85 is then lifted to swing link 87 past its overcenter position whereupon spring 78 pivots blade 49 and pivoted section 50 to engage said blade with spindle driving belt 77.

Since certain changes may be made in the above apparatus without departing from the scope of the invention herein involved, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A textile spindle and mounting therefor comprising a bracket member adapted to be fixed to a textile machine, an upstanding spindle carrying section having spaced bearings therein mounted on said bracket for pivotal movement around a substantially horizontal axis, a spindle having a whorl mounted in said bearings, a brake carried by said section and movable relative thereto to engage and release said whorl, operable means to pivot said section about said axis to selectively engage and disengage said whorl with a spindle driving belt, and a fixed abutment carried by said bracket for moving said brake into engagement with said whorl when said section is pivoted to disengage said whorl from said driving belt.

2. A textile spindle and mounting therefor comprising a bracket member adapted to be fixed to a textile machine, an upstanding spindle carrying section having spaced bearings therein mounted on said bracket for pivotal movement around a substantially horizontal axis, a spindle having a whorl mounted in said bearings, resilient means urging said section in a direction to press said whorl against a spindle driving belt, and operable means including a lever pivoted to said bracket for swinging movement in a vertical plane to pivot said section about said axis against the action of said resilient means to disengage said whorl from said driving belt and to hold said section with the whorl thus disengaged.

3. A textile spindle and mounting therefor comprising a bracket member adapted to be fixed to a textile machine, an upstanding spindle carrying section having spaced bearings therein, pivot means mounting said section on said bracket for pivotal movement around a substantially horizontal axis, a spindle having a whorl mounted in said bearings, resilient means urging said section to pivot in a direction to press said whorl against a spindle driving belt, and operable means including a lever pivoted to said bracket for swinging movement in a vertical plane and a link pivotally connected to said lever and said section to pivot said section about said axis against the action of said resilient means, the pivot points of said link being so related to the pivot point of said lever that said link and lever assume an overcenter relationship when said lever is depressed past a predetermined point.

4. A textile spindle and mounting therefor comprising a bracket member adapted to be fixed to a textile machine, an upstanding spindle carrying section having spaced bearings therein, pivot means mounting said section on said bracket for pivotal movement around a substantially horizontal axis, a spindle having a whorl mounted in said bearings, resilient means interposed between said bracket and said section and located forward of said pivot urging said section to pivot rearwardly to press said whorl against a spindle driving belt, a lever pivoted to said bracket for swinging movement in a vertical plane, a link pivotally connected adjacent one of its ends to said section forward of said pivot and pivotally connected adjacent its other end to said lever, said link being so proportioned and its pivotal connection on said lever being so located that a line connecting said pivotal connections will pass forwardly of said pivot when said whorl is in engagement with said belt and will pass in back of said pivot when said lever is swung downwardly past a predetermined point, and a stop limiting the downward movement of said lever after it has passed said point.

5. A textile spindle and mounting therefor comprising a bracket member adapted to be fixed to a textile machine, an upstanding spindle carrying section having

spaced bearings therein mounted on said bracket for pivotal movement around a substantially horizontal axis, a spindle having a whorl mounted in said bearings, a brake carried by said section adjacent said whorl and movable relative thereto, operable means to pivot said section towards and away from a spindle driving belt, and an abutment fixed to said bracket and positioned to be engaged by said brake when said section is pivoted away from said driving belt to press said brake against said whorl.

6. A textile spindle and mounting therefor comprising a bracket member adapted to be fixed to a textile machine, an upstanding spindle carrying section having spaced bearings therein mounted on said bracket for pivotal movement around a substantially horizontal axis, a whorl on said spindle and located between said bearings, a brake carried by said section adjacent said whorl

and movable relative thereto, operable means to pivot said section towards and away from a spindle driving belt, and an abutment fixed to said bracket and positioned to be engaged by said brake when said section is pivoted away from said driving belt to press said brake against said whorl.

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