No. 834,609. PATENTED OCT. 30, 1906.

T. H. FAIRCHILD.

SPINNING MACHINE.

APPLICATION FILED AUG. 19, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

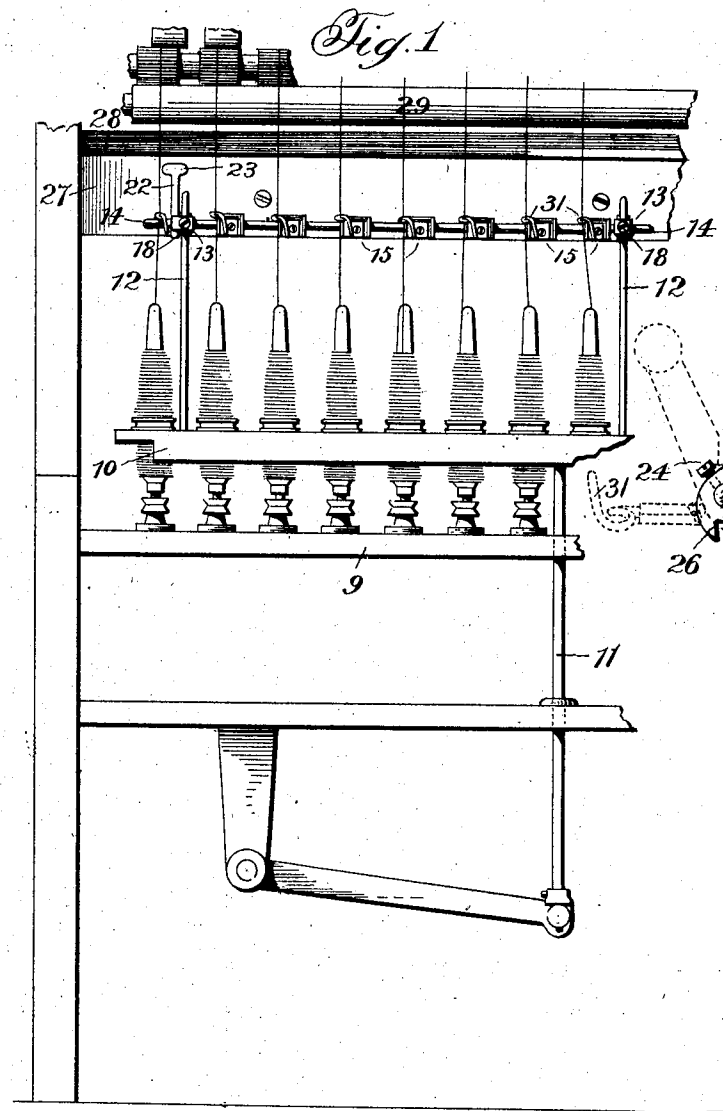
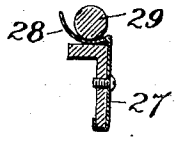


Fig. 1a.



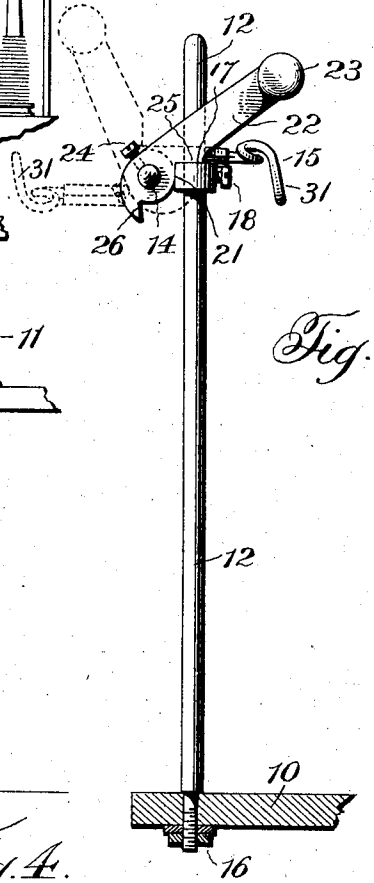


Fig. 2.

Fig. 3.

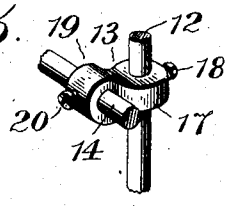
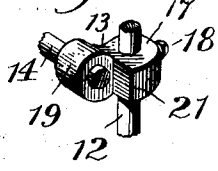


Fig. 4.



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No. 834,609. PATENTED OCT. 30, 1906.

T. H. FAIRCHILD.

SPINNING MACHINE.

APPLICATION FILED AUG. 18, 1904.

2 SHEETS—SHEET 2.

Fig. 5.

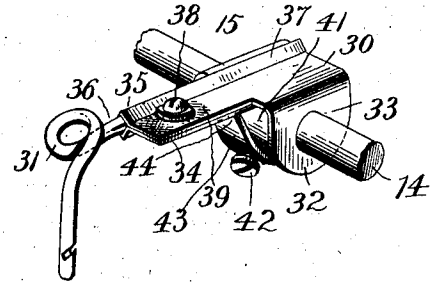


Fig. 6.

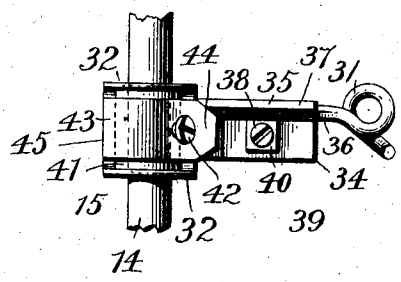


Fig. 7.

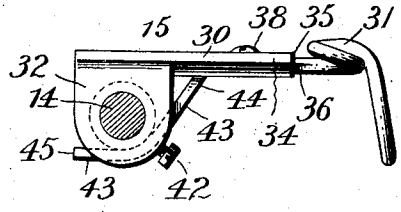
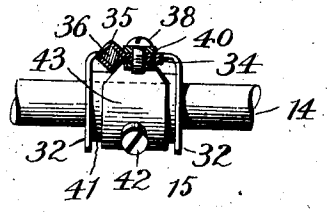


Fig. 8.



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UNITED STATES PATENT OFFICE.

THOMAS H. FAIRCHILD, OF SELMA, ALABAMA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO LEWIS T. HOUGHTON, OF WORCESTER, MASSACHUSETTS.

SPINNING-MACHINE.

No. 834,609. Specification of Letters Patent. Patented Oct. 30, 1906.

Application filed August 19, 1904. Serial No. 221,395.

To all whom it may concern:

Be it known that I, THOMAS H. FAIRCHILD, a citizen of the United States, residing at Selma, in the county of Dallas and State of Alabama, have invented certain new and useful Improvements in Spinning-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to spinning-machines and other textile machinery, and especially to the provision of a novel form of thread-guide, thread-guide support, and a shield, means being provided whereby an even tension is kept on the thread and danger of ballooning, breakage, fouling by flyings, and other undesirable contingencies is greatly diminished.

Heretofore the thread-board which supports the thread-guides has usually been secured in a stationary manner to the roller-beam of the machine. The traverse of the ring-rail of a spinning-machine is considerable, and accordingly the distance between the travelers or winding-points and the thread-guides varies greatly with the movement of the ring-rail, thereby making the swing of the thread so variable that anything like an even or uniform tension on the thread is not secured. When the ring-rail is at or near the bottom of its traverse, the tension on the thread is comparatively loose and there is too great a length of uncontrolled thread, which often results in ballooning and fouling and breakage of the thread, and when the ring-rail is at or near the top limit of movement the short distance between the winding-points and thread-guides results in an excess of tension and makes the thread liable to breakage. These undesirable features in the usual methods of spinning and winding besides interfering materially with the continuity of movement of thread also prevent the attainment of the high speed which can be obtained by a machine wherein this invention is embodied.

One method which has been used in the attempt to regulate and keep constant the tension of the thread during the travel of the ring-rail or its equivalent part is to provide a traveler of such weight as would best suit the conditions under which the frame is running; but this system has proved inadequate for the purpose designed.

In the effort to provide means for preventing the adjacent threads from ballooning or whipping together and the consequent breakage of one or both threads separators have also been placed between the spindles; but many disadvantages are attendant upon the use of such devices, and they often accentuate the defects which they are intended to prevent.

This invention is designed to avoid the difficulties described above and other disadvantageous features of spinning-machines and machines of similar character.

The invention provides a novel mounting for the thread-guides whereby the same are supported by the ring-rail in such manner that they have the same traverse as the ring-rail, thereby keeping constant the distance between the winding and guiding points for the threads. Means are also provided whereby the vertical distance between the thread-guides and the winding-points can readily be increased or decreased, and means are further provided whereby the thread-guides can be moved horizontally with respect to the winding-points. Further, the invention provides means whereby the distance between the guide-rail and thread-eyes of the guides can easily be altered.

The invention also contemplates the provision of a novel form of thread-guide which can be individually turned and held out of the way when necessary for the removal of a cop from a spindle, and means are also provided whereby an entire group of guides can simultaneously be turned back for the removal of a number of cops. The parts are so formed and assembled that the various adjustments can be made without interference with other parts and without breakage of the material operated upon by the machine.

By the construction employed in this invention the usual continuous board which carries the thread-guides and which fills out the space from the roller-beam of the machine to the point of engagement of the guide-wires and upon which collects quantities of lint, flyings, &c., which are easily fanned or blown on the yarn, is eliminated,

and a shield is attached to the beam, which prevents the lint, flyings, and the like from being blown on the yarn from the creel-boards and which also serves as a guide in placing the under clearer-roller into or out of position.

An embodiment of the invention as applied to a spinning-machine is disclosed for purposes of illustration in the accompanying drawings, forming part hereof, and wherein the details of construction and novel features will be apparent.

It is to be understood, however, that the invention is susceptible of other adaptations, such as for use on twisting-machines and on winding-machines and the like, and that it is not restricted to the precise forms shown in the drawings, as numerous changes can be made in the construction and arrangement of the various parts disclosed herein without altering the character of the invention or departing from its nature and spirit.

In the drawings like reference characters refer to corresponding parts in the several views, of which—

Figure 1 is a view showing my invention as applied to a spinning-machine, only so much of the machine being shown as is necessary for a proper understanding of the invention. Fig. 1ª is a sectional view of the roller-beam and the shield attached thereto. Fig. 2 is an end view of the guide-supporting means. Fig. 3 is a view of the clamp for joining the guide-rail to the upright rods. Fig. 4 is a view of a modified form of clamp. Fig. 5 is a perspective view of the thread-guide. Fig. 6 is a bottom view of the thread-guide. Fig. 7 is a side view of the thread-guide, and Fig. 8 is a sectional view of the thread-guide on the line *z z*, Fig. 6.

Having more particular reference to the drawings, 9 designates the spindle-rail, and 10 the ring-rail, supported by vertically-reciprocating lifting-rods 11, all of any usual or preferred construction. The ring-rail 10, preferably behind the line of spindles, is provided with upright supporting-rods 12, which carry clamp members 13, which hold a horizontal rod or guide-rail 14, upon which are mounted thread-guides 15. By this construction the thread-guides are supported on the ring-rail and follow the traverse thereof. The upright supporting-rods 12 are turned to a smaller diameter and screw-threaded at their lower ends. These lower ends are passed through apertures which can readily be made in any usual form of ring-rail and are held securely thereto by nuts 16.

Each clamp member 13 comprises a collar 17, through which passes a supporting-rod 12, and a set-screw 18, which impinges said rod, and a collar 19, which encircles the guide-rail 14. Collar 19 is provided with a set-screw 20, which impinges the guide-rail. By these means the guide-rail is held adjustably in position, and the usual thread or guide board whereon collects lint and flyings is dispensed with.

The distance of the thread-guides 15 from the winding-points on the ring-rail is varied by loosening set-screws 18 and moving members 13 vertically on rods 12, this movement carrying guide-rail 14 and the guides farther from or nearer to the ring-rail. The thread-guides are adjusted horizontally with respect to the winding-points by loosening set-screws 20 and moving the guide-rail longitudinally in clamp members 13.

In order that the thread-guides can be simultaneously turned upwardly and backwardly out of the way for the removal of cops from the spindles, set-screws 20 may be dispensed with. When this is done, the clamp member 13 on each supporting-rod 12 at the ends of the ring-rail is provided with a laterally-projecting shoulder 21, which is formed on collar 17.

A handle or arm 22, having at its free end an integrally-formed weight 23, is attached to the guide-rail at or near each end thereof and adjacent to and outside of collars 19, the guide-rail passing through an aperture in each handle and a set-screw 24 being provided on each for securing the handles to the guide-rail. By contact of the handles with collars 19 longitudinal movement of the guide-rail is normally prevented; but longitudinal adjustment thereof is made by loosening set-screws 24. Each handle 22 is provided with a notch 25, forming a shoulder which engages the top of shoulder 21 when the handle is swung in one direction, and with a notch 26, forming a shoulder which engages the bottom of shoulder 21 when the handle is swung in the other direction.

When the handle 22 is swung in either direction, the guide-rail turns with it, revolutive movement thereby being given to the thread-guides, as hereinafter to be more fully described, and the movement of the handle being limited by its engagement with shoulder 21. The weight 23 serves to hold the handle against shoulder 21 at the end of its movement in either direction. The thread-guides are in operative position when the handle is in its forward position, as shown in the full lines, Fig. 2, and in inoperative position for the easy removal of the cops when the handle is in its rearward position, as shown in the dotted lines, Fig. 2.

A sheet-metal shield 27 is attached to the beam which usually supports the thread-board. This shield operates to intercept from the spindles lint, flyings, &c., which may be blown from the creel-boards. The shield is formed at its top with a depressed curved portion 28, constituting a guideway in which may be rested the clearer-roller 29

prior to being placed in its bearings or subsequent to being removed therefrom.

Each thread-guide 15 comprises a finger-head 30 and a guide-finger 31. The finger-head 30 is formed of a single piece of sheet metal. The metal is bent to form downwardly-disposed parallel ears 32, oppositely-apertured to provide journals 33, through which passes the guide-rail 14. The metal is also bent upon itself to form a shank 34, between the double layers of which and at the place where the metal is bent is made a socket 35, angular in cross-section and extending the entire length of the finger-head and in which is held the correspondingly-angular shank 36 of guide-finger 31. In the formation of the socket 35 a ridge 37 is formed, which constitutes a stiffening-rib extending longitudinally of shank 34. The metal layers of shank 34 are held closely together and tightly against shank 36 by a screw 38, which passes through the flat portion 39 of shank 34 contiguous to rib 37, a nut 40 being threaded onto the end of screw 38. Nut 40 being contiguous to rib 37 by engagement therewith, it is not capable of turning when screw 38 is turned for tightening or loosening purposes. As can readily be seen, guide-finger 31 is extended or retracted with reference to finger-head 30 by loosening screw 34, and it is held against rotative movement by the angular formation of socket 35 and shank 36.

On guide-rail 14 and between the depending ears 32 of each thread-guide 15 is disposed a collar 41, provided with a set-screw 42, whereby it is adjustably secured on said rail. Attached to collar 41 is a double tongue or finger 43, projecting laterally beyond each side of guide-rail 14. This tongue is arranged to engage finger-head 30 in its movement in either direction around guide-rail 14, and thereby limit the revolutive movement of the thread-guide 15. The end 44 of tongue 43 serves to hold the thread-guide in its normal position, and the journals 33 permit the guide to be turned upwardly and backwardly against the end 45 of the tongue when it is desired to have said guide out of the way for removal of a cop or for any other purpose. By loosening set-screw 42 and rotative adjustment of collar 41 on guide-rail 14 the position of tongue 43 with respect to the finger-head 30 can be regulated as desired, and the thread-guide can also be moved along the guide-rail by the longitudinal movement of the collar thereon, so as to alter the position of the guide with respect to the traveler.

As is readily seen, when, as has been previously described, rotative movement is given guide-rail 14 by movement of handle 22 revolutive movement will be given the thread-guides 15 by engagement of tongues 43 with the guides to put them into or out of operative position, as the case may be.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a spinning-machine, the combination with the ring-rail, of upright rods attached thereto, clamp members adjustably mounted on said rods, a guide-rail carried by said clamp members, and thread-guides on said guide-rail.

2. In a spinning-machine, the combination with the ring-rail, of upright rods attached thereto, clamp members adjustably mounted on said rods, a guide-rail carried by said clamp members and capable of longitudinal and rotative adjustment, and thread-guides on said guide-rail.

3. In a spinning-machine, the combination with the ring-rail, of upright rods attached thereto, a guide-rail carrying thread-guides, and clamp members joining said rods and guide-rail, each clamp member comprising a collar and a set-screw thereon whereby an upright rod is encircled and impinged and another collar and set-screw thereon whereby the guide-rail is also encircled and impinged.

4. In combination with suitable supporting means in a spinning-machine, a shield formed with a depressed curved portion constituting a guideway for a clearer-roller when detached from its bearings.

5. In a spinning-machine, a shield attached to the roller-beam and interposed between the creel-boards and the winding devices, said shield being formed with a depressed curved portion constituting a guideway for a clearer-roller.

6. In a spinning-machine, a sheet-metal shield attached to the roller-beam and interposed between the creel-boards and the winding devices, said shield being bent at the top to form a depressed curved portion extending from end to end thereof and constituting a guideway for the clearer-roller.

7. In a spinning-machine, the combination with the ring-rail, means attached thereto whereby the thread-guides are adjustably mounted to traverse with the ring-rail, and a shield attached to suitable supports and interposed between the creel-boards and the ring-rail and thread-guides whereby the latter are protected from matter thrown off from the creel-boards.

8. In a spinning-machine, the combination with a thread-guide comprising a finger-head made of metal bent to form a shank with a socket therein, and a guide-finger in said socket, of means whereby said thread-guide is mounted to traverse with the ring-rail, said means comprising upright rods attached to the ring-rail, a guide-rail carrying said thread-guide, and vertically-adjustable means on said rods and supporting said guide-rail.

9. In a spinning-machine, the combination of a thread-guide comprising a finger-head

formed of metal bent to form a stiffening-rib extending longitudinally thereof, a guide-finger held between the layers of said finger-head, and means attached to the ring-rail whereby said thread-guide is mounted to traverse with said ring-rail, said means comprising upright rods attached to the ring-rail, a guide-rail carrying said thread-guide, and clamp members adjustably connecting said upright rods and said guide-rail.

10. In a spinning-machine, upright rods attached to the ring-rail, clamp members adjustably mounted on said rods, and a guide-rail carried by said clamp members, in combination with a thread-guide comprising a finger-head having projecting ears arranged for the passage of said guide-rail therethrough, and a guide-finger carried by said finger-head.

11. In a spinning-machine, upright rods attached to the ring-rail, clamp members adjustably mounted on said rods, and a guide-rail carried by said clamp members, in combination with a thread-guide comprising a finger-head having projecting ears formed with journals for the passage of said guide-rail, a collar on said guide-rail and between said ears and having thereon a tongue whereby revolutive movement of said finger-head is limited, and a guide-finger carried by said finger-head.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS H. FAIRCHILD.

Witnesses:

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R. D. WALKER.