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J. C. WALL & M. E. SCHEDLBAUER, JR.

THREAD PROTECTOR FOR RING SPINNING FRAMES.

(Application filed Dec. 21, 1899.)

(No Model.)

Fig. 1.

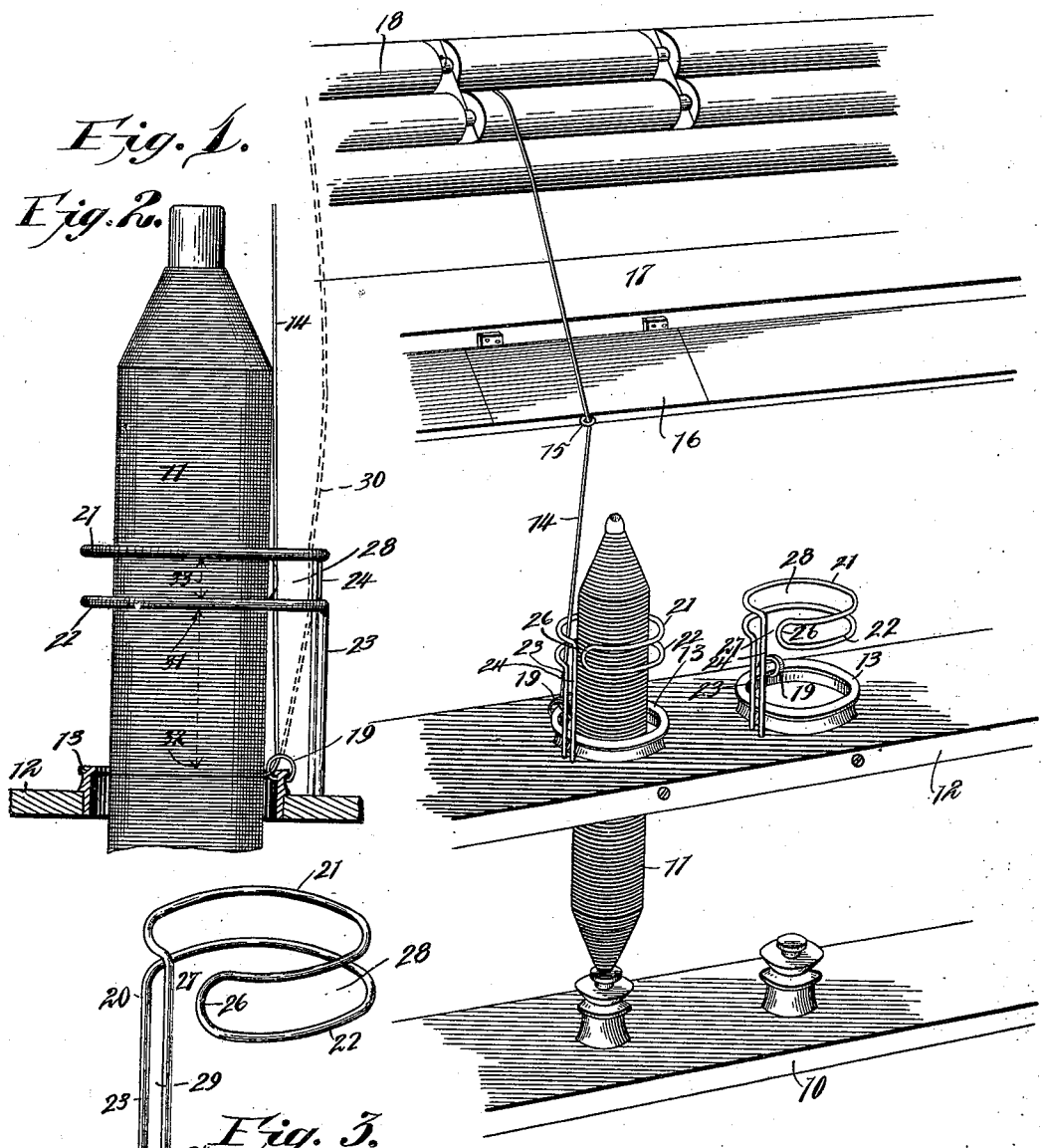

Fig. 2.

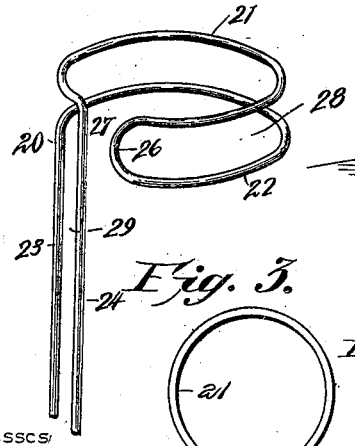

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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THREAD-PROTECTOR FOR RING-SPINNING FRAMES.

SPECIFICATION forming part of Letters Patent No. 649,186, dated May 8, 1900.

Application filed December 21, 1899. Serial No. 741,160. (No model.)

To all whom it may concern:

Be it known that we, JOHN C. WALL and MICHAEL E. SCHEDLBAUER, Jr., citizens of the United States, residing at Amsterdam, in the county of Montgomery and State of New York, have invented a new and useful Thread-Protector Attachment for Filling and Warp Ring-Spinning Frames, of which the following is a specification.

Our invention relates to a thread-protector for filling and warp ring-spinning frames of the class disclosed in United States Letters Patent No. 628,875, issued to us on July 11, 1899. In devices of this character it is common to employ an annular guard arranged above and concentric with the traveler-ring to prevent the thread which is undergoing the operation of coiling on the bobbin or quill from being thrown out by centrifugal force beyond a certain position and whipping against similar threads from other bobbins or quills of the spinning-frame.

The object of our invention is to provide a thread-controller which is distinguished from prior devices in the art in at least two essential particulars, while also gaining other advantages of a minor but no less important particular from a practical standpoint, and these main features reside, first, in the ability to control a thread at practically all points in the traverse on both the upward and downward course of the ring-rail, so as to take the balloon out of the thread and wind the same more uniformly and tightly on the bobbin or quill, and, secondly, in so controlling the thread as to keep the ring-traveler always in an upright or perpendicular condition, whereby said traveler is prevented from oscillating or wabbling on the traveler-ring, friction on said traveler is reduced, and the life or service of the traveler is correspondingly prolonged, with a consequent reduction in the expense of renewing the travelers.

With these ends in view our invention consists of a thread-protector provided with a series of annular guards arranged parallel to each other above and in concentric relation to a traveler-ring and adapted to act independently and jointly upon the thread in a peculiar manner during the upward and downward traverse of a ring-rail, all as will hereinafter more fully appear.

The invention further consists of a thread-protector embodying novel features in the construction and arrangement of its parts, which will be hereinafter more fully described and claimed.

In the drawings, Figure 1 is a perspective view of a portion of a spinning-frame with our thread protector or controller applied to the ring-rail. Fig. 2 is a sectional elevation of the ring-rail, the traveler-ring, the traveler, and the thread-controller, illustrating two positions of the thread by full and dotted lines, respectively. Fig. 3 is a detail perspective view of the thread controller or protector on an enlarged scale and detached from the ring-rail. Fig. 4 is a top plan view of the thread controller or protector, showing the inward extension of the extremity of the loop.

The same numerals of reference are used to indicate like and corresponding parts in each of the several figures of the drawings.

In order that others skilled in the art may understand the application and utility of our improvements, we have illustrated by Fig. 1 of the drawings a portion of a spinning-frame of an ordinary construction, in which the numeral 10 designates the spindle-rail; 11, an ordinary bobbin or quill which is fitted on a spindle that is carried by the spindle-rail; 12, the ring-rail, and 13 the ordinary traveler-ring, which loosely circumscribes the bobbin or quill of the spinning-frame. The thread 14 is led to the bobbin or quill by an ordinary guide-eye 15, which is attached to the hinge-block 16 on the guide-board 17, the latter being arranged below the sets of drawing-rolls 18. All of these parts are of the usual or any preferred construction, and we do not consider it necessary to more fully or particularly describe the same. The traveler 19 fits loosely to the traveler-ring 13, and this traveler is engaged with the thread which is controlled by our guide attachment in a peculiar manner, so as to always maintain the traveler in a perpendicular position relative to the traveler-ring, whereby friction on the traveler is materially reduced and the service

thereof is prolonged. It is well known to those skilled in the art that in the practical operation of spinning machines or frames it becomes necessary to frequently renew the ring-travelers by reason of the wear to which they are subjected, and in some types of travelers it is necessary to renew the same at least every two weeks, thus involving considerable expense and delay in the operation in the aggregate. The controller which we have invented operates on the thread in such a manner as to always maintain the same in a taut condition during both the upward and downward travel of the ring-rail, and hence the thread restricts the oscillation or wabble of the traveler on the traveler-ring, in consequence of which the traveler is kept in its perpendicular position, with a resulting reduction in the friction and wear on the traveler and prolongation in the life or service thereof.

The yarn-controller of our invention is indicated in its entirety by the numeral 20, and this thread-controller comprises, essentially, a series of parallel annular guards, together with means for supporting the controller in a fixed position on the ring-rail, to the end that the parallel guards will lie in positions above and concentric with the traveler-ring.

In the drawings, which represent the preferred embodiment of the invention, the thread-controller is represented as bent from a single piece of strong wire, and it consists of the upper annular guard 21, the lower annular guard 22, and the parallel shanks 23 24. (See Fig. 3.) In bending the wire for the production of the thread-protector we first proceed to form one of the guards by bending the same in a plane at right angles to its shank, and this guard forms nearly a complete circle, inasmuch as it is carried in a circular direction from the shank around toward the latter; but instead of joining the first guard to the shank we bend the wire to form a loop 26, after which the other guard is bent in a circular direction, and finally the other shank or stem is formed so as to lie parallel with the first formed shank or stem. The upper and lower annular guards lie parallel to and concentric with each other, and said guards are preferably uniform in diameter, so that they occupy essentially the same circular plane. The shanks 23 24 are also parallel to each other, with an intermediate space between the same, and these shanks or stems provide the means for supporting the attachment at a suitable elevation above the traveler-ring and for securing the controller firmly to the ring-rail in a very simple and inexpensive way. The loop 26 joins the free ends of the annular guards, and this loop is extended inwardly a slight distance, so as to occupy an eccentric relation to the vertical imaginary axes of the annular guards, whereby the loop prevents whipping of the thread out of the yarn-controller through the throat or space 27, which exists between the loop and the stem 24 of the controller. This throat or space has a tendency in the operation of winding the thread on the bobbin or quill to destroy the effect of the centrifugal force on the thread, and the loop furthermore provides for withdrawal of the traveler-ring from the controller attachment without disturbing the position of the latter on the ring-rail, as is sometimes desirable or necessary in the operation of spinning-frames. We have heretofore described that the annular guards are parallel to each other, and this arrangement provides a space 28 between the two guards, as indicated by Figs. 2 and 3. The space between the shanks is indicated by the numeral 29, and we desire to remark that the controller will be constructed of different sizes, so as to vary the space 29 to suit different applications.

In applying our thread-controller to the ordinary ring-rail of the spinning-frame it is only necessary to produce in any suitable way two holes in the rail adjacent to the traveler-ring, said holes being spaced apart a distance equivalent to the space between the stems or shanks of the controller, and the device is then adjusted for its stems or shanks to enter the holes, whereby the controller is securely held in place by very simple means. The guards of the controller lie over and above the traveler-ring in parallel relation to each other and in like concentric relation to the traveler-ring, and these guards are thus arranged and supported to loosely circumscribe the bobbin or quill on the spindle of the ring-rail. In the operation of the spinning-frame the thread is drawn through the eye, passed through the traveler 19, and is coiled on the bobbin or quill by the rotation of the latter with the spindle, and the ring-rail, with the appurtenances thereon, rises and falls in the ordinary way, so as to traverse the bobbin or quill. During this traverse of the elements described the thread-controller operates in a peculiar way and with an advantageous effect on the thread with a view to winding the thread uniformly and tightly on the bobbin or quill and to maintaining the traveler always in a perpendicular position to the plane of the traveler-ring for the purposes hereinbefore set forth. On the ascent or upward course of the ring-rail the thread by centrifugal action assumes the position indicated by the dotted line 30 in Fig. 2 of the drawings, and at this period the series of annular guards act conjointly on the throat at the beginning of the upward course between the points indicated by the numerals 31 32. As the ring-rail continues to ascend the thread is permitted by centrifugal force to get out at the space 28 between the two annular guards, and at this period the yarn-controller occupies a position about midway of the length of the bobbin, as indicated by the numeral 33 in Fig. 2, whereby the guards act on the thread in its dotted position 30 to take up the slack therein and insure winding of said

thread tightly on the bobbin. The controller is also arranged to act on the thread at the highest point in the upward travel of the ring-rail, so as to take the balloon out of the yarn and insure the desirable tight winding thereof. During the downward movement or course of the ring-rail the lower guard 22 acts independently on the thread until the center of the quill or bobbin is passed, when the two annular guards act conjointly on the thread. Upon the ascendency of the ring-rail the upper and lower guards simultaneously act upon the arm and cause a close winding of the latter upon the quill or bobbin. During the downward movement of the ring-rail the lower guard acts preliminarily to straighten up the thread, and by the several operations set forth the thread is held taut during all movements of the ring-rail. This is the most important feature of our invention and, we believe, has never been heretofore obtained successfully in the art. The operation of maintaining the thread in a taut condition at all periods in the traverse of the ring-rail is most essential in spinning-frames for the dual purpose hereinbefore recited—namely, to wind the thread uniformly and tightly on the bobbin or quill at all periods in the traverse of the ring-rail and to maintain the traveler in an upright or vertical position perpendicular to the plane of the traveler-ring, whereby a better effect in the operation of winding the thread is obtained and the life or service of the traveler is prolonged, because the traveler is not exposed to an excessive amount of friction by engagement with the traveler-ring. Hence the cost of replacement of the traveler is minimized.

Practical experience has shown that travelers used in connection with our invention will last for a period of six weeks or more, whereas in ordinary spinning-frames the traveler must be replaced at intervals of every two weeks.

Our device is simple in construction, cheap of manufacture, and easily applied to ordinary ring-rails. The controller may be used in connection with all kinds of woolen filling-frames which are employed for making costly yarns, because said controller keeps the thread from whipping against other threads and winds the yarn more evenly and uniformly on the filling-bobbins. The improvements may also be used in connection with other styles of spinning-frames which are employed for winding woolen, silk, linen, or jute threads on quills or bobbins, and we desire to remark that the controller may be used to good advantage on all kinds of yarns, either coarse or fine, and, in fact, said controller may be applied to all styles of ring-spinning frames at a very low cost.

Having thus described the invention, what we claim is—

1. A thread-controller for ring-spinning frames comprising parallel annular guards joined or connected at one end by a loop and terminating at their other ends in attaching-stems, substantially as described.

2. A thread-controller for ring-spinning frames comprising a pair of parallel annular guards joined at one end by a loop which is extended inwardly in eccentric relation to the imaginary axes of the guards, substantially as described.

3. A thread-controller for ring-spinning frames comprising a pair of parallel members joined at one end by a loop and terminating at their other ends in parallel stems which lie at right angles to the planes of the members, said loop being spaced with relation to one of the stems to form an intermediate throat, the whole being bent from a single piece of wire, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JOHN C. WALL.
MICHAEL E. SCHEDLBAUER, Jr.

Witnesses:
EDGAR B. SMITH,
EMIL JANSEN.