No. 880,014. PATENTED FEB. 25, 1908.

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DOFFING MEANS FOR RING SPINNING MACHINES.

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Fig. 1.

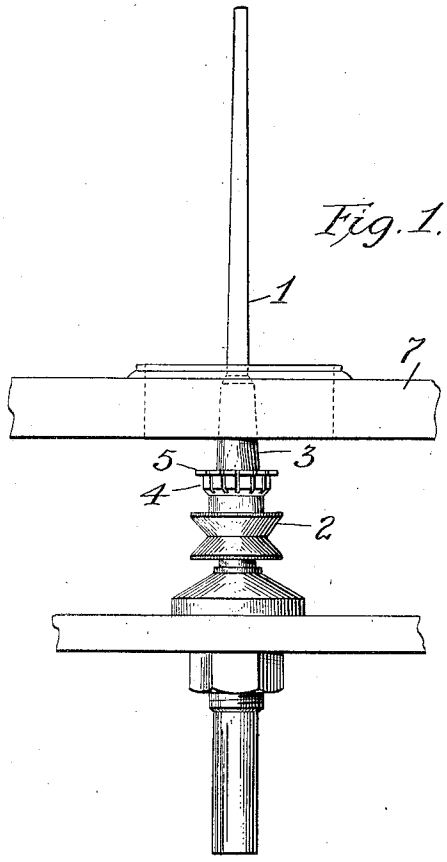
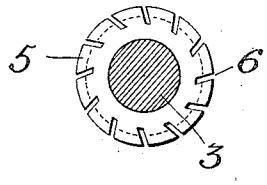


Fig. 2.



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DOFFING MEANS FOR RING-SPINNING MACHINES.

No. 880,014. Specification of Letters Patent. Patented Feb. 25, 1908.

Application filed November 7, 1906. Serial No. 342,401.

To all whom it may concern:

Be it known that I, ROBERT L. CUMNOCK, a citizen of the United States, residing at Anderson, South Carolina, have invented certain new and useful Improvements in Doffing Means for Ring-Spinning Machines, of which the following is a specification.

My invention relates to the art of ring spinning and twisting, and particularly to means whereby the operation of doffing may be expeditiously and accurately performed.

Heretofore in doffing the bobbin or quill it has been customary to perform what is known as stick doffing, in which the attendant takes off the bobbin and winds the thread or sliver around the spindle and then breaks the thread leaving the spindle with the thread attached thereto by winding ready to receive another bobbin, which having been placed on the spindle receives the thread thereon when the spindle is set in rotation. This operation of doffing is objectionable for many reasons. Skilled operators are required, but threads are often imperfectly attached and are broken down as a result of carelessness leaving the new bobbin without an end to begin twisting and winding. This method of doffing by winding on to the spindle in order to attach the thread thereto for winding on to a new bobbin is also objectionable because of the accumulation of waste on the spindle. This will collect at the lower portion of the spindle and will prevent the new bobbin from going fully to its place thereon. This accumulation will also prevent the bobbin from being properly seated and the bobbin will therefore slip in relation to the spindle, resulting in imperfectly wound bobbins and consequently in imperfect work in the weaving. Further, by the old method of doffing, the end of the thread left on the bobbin is some times short and some times long, and it is often necessary for the operator to unwind the bobbin to a certain extent in order to place it in proper condition for weaving. Again, under the old method, waste thread will accumulate within the hollow quill of the bobbin and this must be cleared out by the operator before the bobbin is placed in the shuttle. With my invention the thread is not wound upon the spindle at all, and in doffing the thread is broken at precisely the same point in relation to the bobbin, that is, at the base thereof at each operation; and when the doffing is performed, the bobbin is in proper condition for placing in the loom without further attention on the part of the operator.

The invention consists in the features, combination and arrangement of parts hereinafter described and particularly pointed out in the claims.

In the accompanying drawings,—Figure 1 represents a spindle of a spinning and twisting machine with a ring rail in proper relation thereto and with my improvements attached. Fig. 2 is a plan view showing the spindle in section and my improvement in place.

In these drawings, 1, indicates a spindle of a ring spinning machine having thereon the pulley 2 by which the spindle is driven. This spindle is of substantially ordinary form, having the portion 3 upon which the base of the quill or bobbin engages to be revolved with the said spindle.

In carrying out my invention I place on the spindle just below the portion 3 and between it and the whirl or pulley 2, a collar 4 having a flange 5 at its upper edge which lies close below the base of the bobbin. This flange extends entirely around the collar and it is provided with a series of serrations or notches 6 which extend inwardly at a slight angle to the radii of the collar or flange. These notches incline forwardly from their inner to the outer ends in the direction of rotation.

The ring rail is shown at 7 and is of substantially ordinary form having any suitable form of traveler through which the thread passes before passing to the spindle or bobbin. This ring rail is to be operated in any suitable manner. Now when the doffing action is to be performed, the ring rail is given an excess movement downwardly so that the thread or sliver instead of being directed to the bobbin will be carried downwardly across the notched flange of the doffing collar above mentioned so that in the continued revolution the spindle the said thread or sliver will be wound a number of times around this collar just below the flange. In being carried across the said flange the thread or sliver is engaged by the forwardly directed edge of the notch and it is thus prevented from slipping and its winding on the collar is thus insured. When the thread has been thus wound around the collar, the operator by a

quick upward pull on the bobbin removes the same from the spindle and the sliver or thread is broken by contact with the edge of the flange or with the edge of the notch in said flange and this breaking takes place at or near the base of the bobbin, so that the bobbin is ready for use in the loom without further attention on the part of the operator. The breaking is done with certainty and the broken end always occurs at substantially the same point, thus relieving the attendant of the necessity of unwinding the thread in order to place the bobbin in proper condition for further use, and preventing the occurrence of long loose ends which interfere with proper weaving.

It will be seen from the above that the waste or wrappings necessarily resulting in the doffing operation, do not attach themselves to the spindle, and said spindle is thus left entirely free for receiving a fresh bobbin which will readily seat itself in proper position thereon and in substantially the same position as all the other bobbins on the other spindles, so that a uniform result is attained in the winding and twisting operations. As in ordinary practice, the waste may be removed periodically by simply cutting it from the doffing collar.

I may increase the height of the spindle so as to bring the doffing collar higher in relation to the ring rail so that the said ring rail, with the movement which it has in ordinary practice, will carry the thread below the flange when the doffing action is to take place.

I do not limit myself to the particular form of spindle shown nor to the particular arrangement of devices associated therewith.

I claim as my invention:—

In ring spinning machinery and in combination, a spindle, and a flange on said spindle below the bobbin projecting horizontally and having notches extending from its edge at an angle to the radii presenting forwardly directed openings to receive the yarn, substantially as described.

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

ROBERT L. CUMNOCK.

Witnesses:
J. R. RICE,
C. J. BROCKE.