

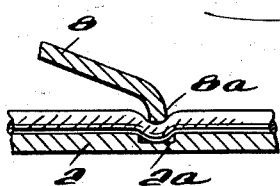
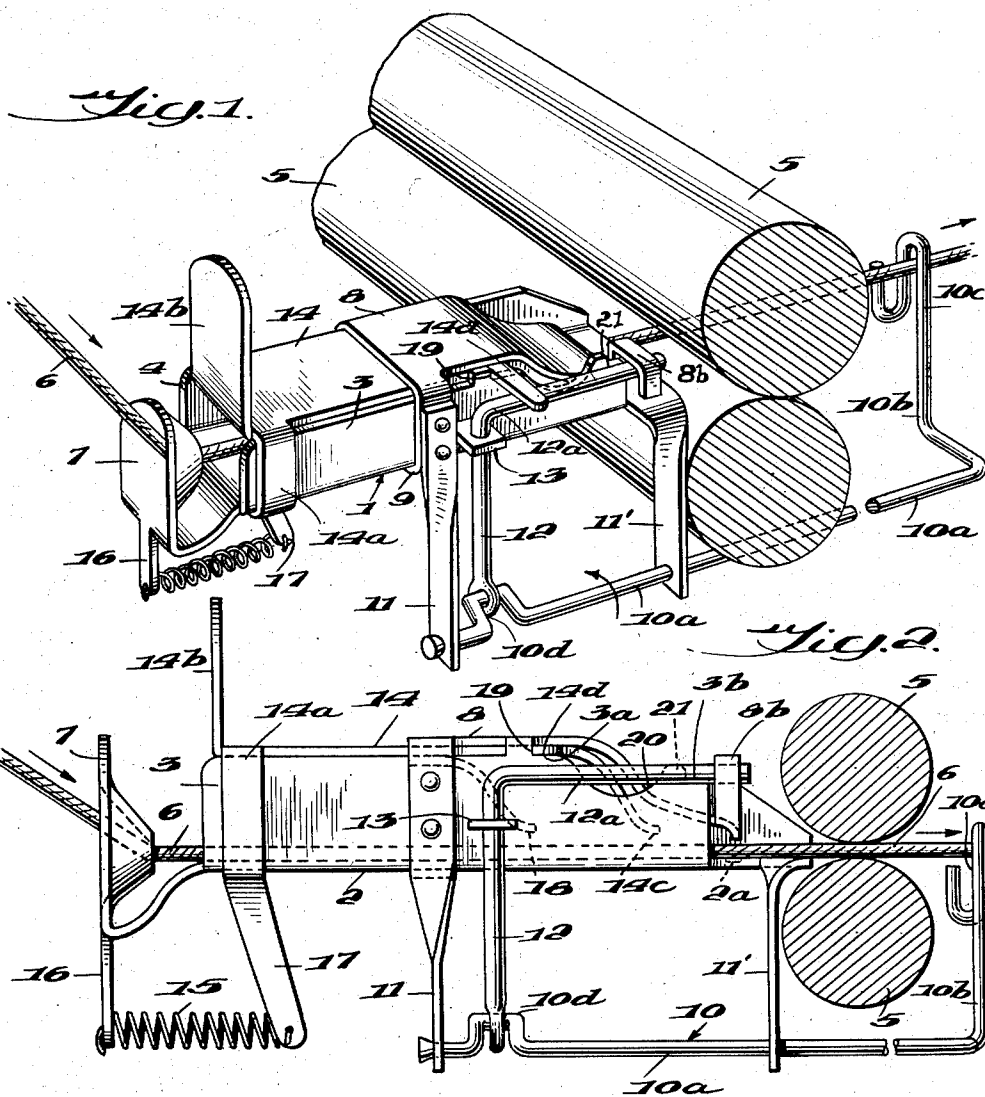
May 19, 1959

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COMBINED ROVING BREAK-BACK AND FEED MECHANISM
FOR TEXTILE PROCESSING MACHINES

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Filed June 11, 1957

2 Sheets-Sheet 1



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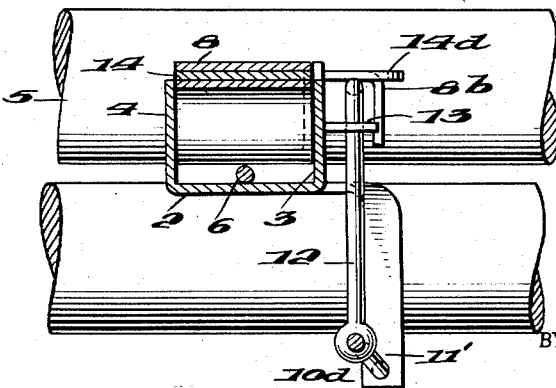
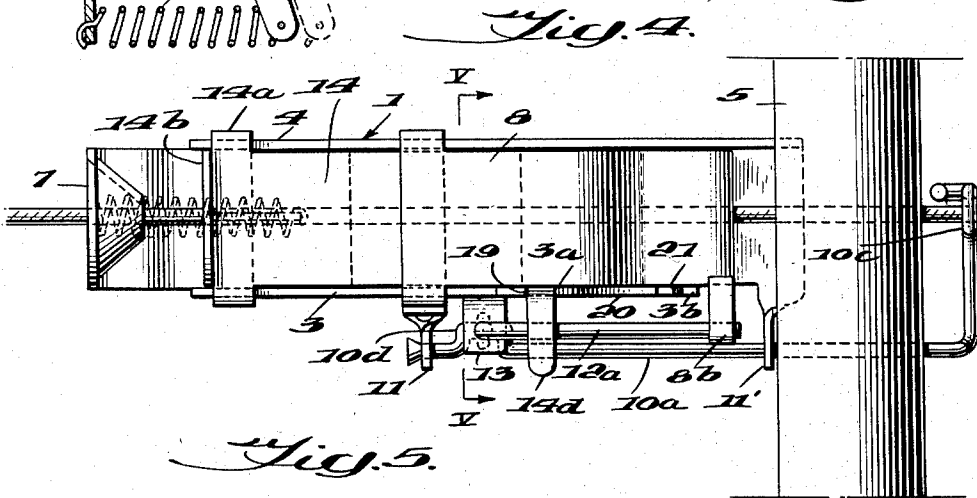
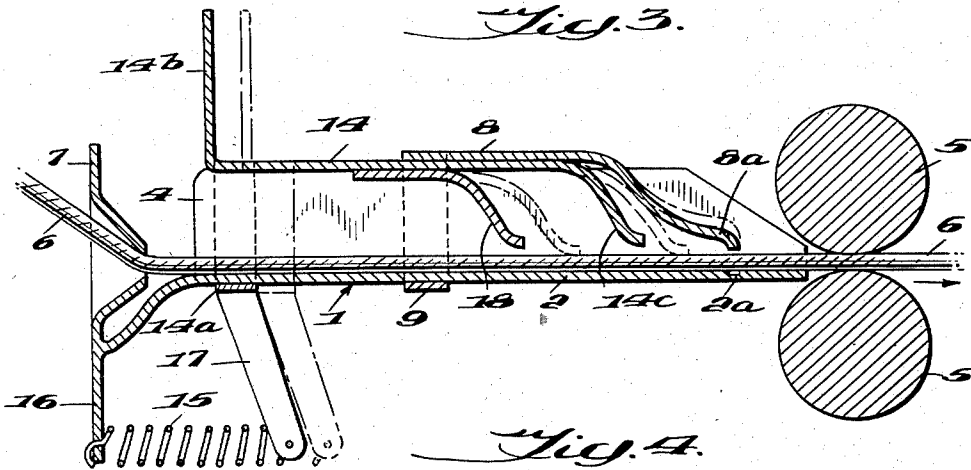
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COMBINED ROVING BREAK-BACK AND FEED MECHANISM FOR TEXTILE PROCESSING MACHINES

Agnew H. Bahnson, Jr., Winston-Salem, N.C.

Application June 11, 1957, Serial No. 664,999

6 Claims. (Cl. 57—87)

This invention relates to an attachment for textile machines such as spinning and drawing frames and the like and more particularly to an improved mechanism for breaking back the strand or roving at a point prior to entry of the roving into the drafting rolls in the event that a break occurs in the roving on the exit side of these rolls, in order to prevent the broken roving from being continuously pulled through the rolls, and which further includes an additional mechanism by which the spinner can, after he or she has come along and seen the broken roving, feed that particular roving back into and through the rolls once again thus to facilitate putting up the end.

The idea of breaking back the roving when the end comes down at the leaving side of the rolls is not new and was suggested as early as the beginning of this century. However, it was not known to be successful since it took the spinner too long a time to thread the roving back through the break-back mechanism into the rolls and to get the frames cleaned up from all the lint that had accumulated on the scavenger rolls while the frames were being run unattended. The original thought, none too practical, was to permit a mill to run two extra hours a night with no spinners to attend the frame.

In the past it was conventional to provide scavenger rolls adjacent the drawing rolls the function of which was to wind thereon the end of any roving which happened to break. In view of the labor involved in periodically clearing the scavenger rolls from accumulated roving and other considerations, the current trend has been to provide the frames with vacuum collection equipment including intake ports positioned adjacent the rovings and which serve to suck in and carry away to a point of collection the end of any broken roving as it emerges from the drafting rolls. While vacuum collection solved the problem of clearing the scavenger roll, a new problem was created in that the end of the roving continued to feed into the vacuum collection system until the spinner puts up the end of the broken strand thus wasting the roving to the extent that it must be taken from the collection point back to the picker or opening room and must be re-processed into new roving along with new cotton. In view of the increased costs in processing the roving, particularly in combed yarns it is thus advantageous to provide the frames which have vacuum collection systems with automatically operating roving break-back mechanisms. The mechanism for breaking back the roving also advantageously incorporates a mechanism enabling the spinner to quickly feed the end of the roving which has been broken back into the drafting rolls thus avoiding the disadvantages of the originally designed structures. The improved feed mechanism also enables the spinner to quickly start the roving of a new package through the rolls.

More particularly, the present invention includes a break-back mechanism comprising a carrier member supported at the rear of the drafting rolls, and through which the roving passes on its way to the rolls, a resilient blade having an edge adapted to be released by the feeler or

2

detector which operates at the front or exit side of the rolls, such edge when so released pressing firmly against the roving and causing it to be broken back as the portion of the roving in front of the blade is drawn through the rolls, and a feed mechanism comprising a resilient finger attached to a slide which is adapted to press against and feed the roving forward into the rolls and also raise the blade of the break-back mechanism free of the roving when the slide is pulled forwardly. The slide is spring-loaded to its rearmost position, and means are provided for maintaining the feed finger or fingers out of contact with the roving when the slide moves backward to its initial position after the end has been put up and the spinner restores the feeler to its detecting position on the roving which automatically causes the slide to be released for backward movement and also holds the break-back blade out of contact with the roving.

In accordance with a further feature of the invention, the resilient fingers of the feed mechanism for the roving are caused to bear against the underside of a downwardly sloping forward portion of the break-back blade as the slide is shifted forwardly thus causing the fingers to move downwardly and enhance the combined pressing and feeding effect of the fingers on the roving.

The above and additional features and advantages of the invention will become more apparent from the following specification describing a preferred embodiment and from the associated drawings in which:

Fig. 1 is a view in perspective of the combined break-back and feed mechanism;

Fig. 2 is a view of the mechanism in side elevation;

Fig. 3 is a vertical longitudinal sectional view;

Fig. 4 is a top plan view;

Fig. 5 is a transverse vertical section on line V—V of Fig. 4; and

Fig. 6 is a fragmentary view showing a detail.

With reference now to the drawings, the combined break-back and feed-through mechanism is seen to be comprised of a rigid metallic carrier member 1 having the configuration of an upwardly opening U-shaped channel having a bottom web or plate 2 and upstanding side flanges 3, 4. The carrier member 1 is arranged in a generally horizontal attitude transverse to the axis of the rolls 5 and is thus parallel with the direction of feed of the roving 6 through the rolls at a level generally coinciding with the upper side of the web 2 of the carrier member and which is supported in any suitable manner, not illustrated, upon the frame of the textile machine. It will be understood that such machine may have as many as a hundred or more different rovings being drawn through the rolls simultaneously and that a combined break-back and feed-through mechanism will be provided for each roving.

A trumpet 7 is formed at the rear of the carrier member 1 to serve as a guide for the roving which passes through the carrier member to the rolls 5. In the interest of simplifying the drawings, only the rearmost set of rolls 5 has been illustrated in the drawing. However, in actual practice, the textile machine such as a drawing frame will have several sets of rolls through which the roving is drawn in sequence.

In order to automatically break off any roving prior to its entrance into the rolls should a break occur in the roving at the leaving side of the rolls, the invention includes a break-back mechanism comprising an elongated plate or blade 8 extending longitudinally and horizontally of the carrier member 1 at the top of the flanges 3, 4 and secured to the carrier member 1 by means of a transverse strap 9 integral with the blade 8 and which is applied around the carrier member 1. The width of blade 8 is slightly less than the distance between flanges 3, 4, and the forward portion of the blade is curved

downwardly to present at its leading end a vertically operating knife edge 8a which bears downwardly and cooperates with a transverse notch 2a in web 2 to press the roving 6 firmly against the web and hold the roving against movement through the rolls 5 when the feeler mechanism now to be described is actuated by a break in the roving at the exit side of the rolls. This causes the roving to be pulled apart at the edge 8a and the short length of roving still then in the rolls will be collected by a scavenger roll at the exit side of the rolls or preferably collected and carried to a storage box or other location by means of a vacuum collection system adjacent the exit side of the rolls.

The feeler or break detector mechanism comprises a wire rod 10 having a horizontal portion 10a extending parallel with the carrier member 1 and mounted for rotation about its axis at a level below the carrier member 1 in apertures in two axially spaced vertical supports 11, 11' depending from and integrated into the structure of the carrier member 1. The forward portion of the wire rod 10 at the exit side of the rolls 5 is bent vertically upward at 10b and includes at its upper end a downwardly opening U-shaped portion 10c adapted to be hooked over the roving 6 so as to normally hold rod 10 in the position shown in Fig. 1. Between the bearing supports 11, 11' the rod 10 is provided with a crank portion 10d to which is coupled a vertically slidable rod 12 which is guided for movement in an apertured plate 13 extending outwardly from flange 3 of the carrier member 1. The upper end of rod 12 is bent 90° so as to establish a horizontal portion 12a extending parallel with the side flange 3 and which is adapted to engage the underside of a laterally extending arm 8b at the front end of the break-back blade 3. In the position shown in Fig. 1 of the drawing, the feeler rod 10 occupies its detecting position and hence rod 12 occupies its raised position and the horizontal portion 12a holds the arm 8b and hence also the cutting edge 8a above the roving 6 so as to permit the latter to be drawn freely through the rolls 5. However, should the roving break on the exit side of the rolls, thus releasing the hooked end 10c of the feeler rod 10, the latter will be caused to rotate approximately 90° or more in the direction indicated by the arrow in Fig. 1 as a result of the inherent downward spring characteristic of the forward portion of the break-back blade 3 acting through the arm 8b and rod 12. This permits arm 8b and hence the edge 8a of the break-back blade to lower and press the roving tightly against the web 2 at notch 2a whereupon the part of the roving in the rolls will be pulled apart at the edge 8a.

In accordance with the present invention, means are also provided which enable the spinner to restart the feed of a broken roving strand through the rolls when he or she comes along the machine, notices the break and is required to put up the end, i.e. extend the thread on the spindle back to the roving as it emerges from the front rolls. The feed mechanism for the roving comprises a slide 14 mounted upon the carrier member 1 by means of band portion 14a for longitudinal sliding movement along and between the flanges 3, 4 of the carrier 1 and beneath the break-back blade 3. The slide 14 includes an upstanding handle portion 14b at the rear thereof so that the operator may pull the slide forward in the direction of the rolls 5, and the slide 14 is loaded or biased to its rearmost position by a helical spring 15. One end of spring 15 is anchored to an arm 16 depending from the trumpet 7 and the other end of spring 15 is secured to an arm 17 depending from the lower portion of the band 14a.

The forward portion of slide 14 which slides beneath the break-back blade 3, and which like the latter is made from spring steel, terminates in a downwardly sloping finger 14c adapted to press against the roving 6 and push it forward. Preferably, a second, downwardly sloping finger 18 is secured to the underside of slide 14 in

rearwardly spaced relation from the finger 14c so as to also press against the roving 6 and effect a supplementary forward pushing action. The slide 14 also includes a laterally projecting arm 14d which in the rearmost position of slide 14 as indicated in Fig. 1 rests upon the rear flange 3 of the carrier member 1 against a stop shoulder 19 formed on this flange. The height of the flange 3 at this point is so chosen as to hold the feed fingers 14c and 18 upwardly at a sufficient distance to clear the roving 6 and thus permit the latter to travel through the carrier member into the rolls. However, after a break in the roving has occurred and the feeler rod 10 rotated so as to lower rod 12, the laterally projecting arm 14d of the slide, when the latter is pulled forward by the spinner, will soon ride off the short horizontal portion 3a at the top of flange 3 in front of stop shoulder 19 and follow downwardly into an arcuate shaped recess 20 in the flange. This permits the fingers 14c and 18 to lower and press downwardly against the roving 6 due to the inherent downwardly acting spring action in the forward portion of the slide and thus feed the roving 6 forwardly through the carrier member 1 into the back rolls 5. The feeding action is also made more positive due to the fact that the upper side of the finger 14c bears against the underside of the downwardly sloping portion of the break-back blade 3 as the slide 14 is pulled forward thus increasing the feed pressure of the finger 14c on the roving and simultaneously raising the cutting edge 8a so as to enable the leading end of the roving to pass freely beneath the same on its way into the back rolls 5.

As the slide 14 reaches its foremost position, the roving now having entered the rolls, the laterally projecting arm 14d rises out of the recessed portion 20 in flange 3 and passes forwardly of a second stop shoulder 21 on flange 3, the arm 14d then dropping down behind shoulder 21 to thus latch the slide 14 in its foremost position and at a height 3b on flange 3 sufficient to raise the feed fingers 14c and 18 to clear the roving 6 and permit the latter to travel freely through the rolls.

After the spinner has put up the end, the feeler rod 10 is rotated to the position shown in Fig. 1 and the end 10c hooked over the now taut roving. As feeler rod 10 is rotated it causes the arm 12 to raise the arm 14d above the stop shoulder 21 thus releasing slide 14 for backward movement due to the restoring force in the stretched spring 15. It will be noted that during backward movement of the slide 14, the arm 14d rides along the now raised rod portion 12a which is at a level substantially even with the horizontal portion 3a, 3b of flange 3 adjacent the stop shoulders 19 and 21. The arm 14d thus is prevented from following down the arcuate recess 20 during the backward movement of the slide and hence effectively maintains the feed fingers 14c and 18 out of contact with the roving. Also, when the feeler rod 10 is rotated to its detecting position, the rod portion 12a will engage the underside of arm 8b and hence hold the edge 8a also out of contact with the roving passing beneath the same.

In conclusion, it is to be understood that while one practical embodiment of the invention has been described in detail and illustrated, various changes may be made in the construction and arrangement of the operating components without, however, departing from the spirit and scope of the inventive concept as defined in the appended claims which in general resides in a mechanism for feeding the roving in such manner that the spinner is not delayed in putting up the end because of the action of the break-back mechanism.

I claim:

1. In a combined roving break-back and feed for textile machines such as spinning frames and the like including sets of rolls through which the roving is drawn, the combination comprising a support member adapted to be mounted on the machine at the entrance side of the rolls

5

and arranged such that the roving passes longitudinally of the same on the way to the rolls, a roving break-back device mounted on said support member, a roving break detector mechanism arranged at the exit side of the rolls and adapted to be actuated upon a break in the roving at the exit side, means coupling said break-back device to said detector mechanism and effecting movement of said break-back device into the path of the roving upon actuation of said detector mechanism, and a feed device mounted on said support member, said feed device being movable longitudinally of said support member in contact with the roving so as to feed the same into the entrance side of the rolls and simultaneously move said break-back device to a position out of the longitudinal path of the roving.

2. In a combined roving break-back and feed for textile machines such as spinning frames and the like including sets of rolls through which the roving is drawn, the combination comprising a channelled support member adapted to be mounted on the machine at the entrance side of the rolls, a roving break-back device mounted on said support member, said break-back device comprising a blade mounted transversely of the channel in said support member and adapted upon release thereof to press into the roving which passes through the channel, a roving break detector mechanism arranged at the exit side of the rolls and adapted to be actuated upon a break in the roving at the exit side, means coupling said detector mechanism to said blade for effecting release thereof upon actuation of said detector mechanism, and a roving feed device movable longitudinally of said channel by a spinner for feeding the roving into the entrance side of the rolls, said roving feed device including means effective upon longitudinal movement thereof in the feed direction for moving said break-back blade in a direction away from the roving.

3. In a combined roving break-back and feed for textile machines such as spinning frames and the like including sets of rolls through which the roving is drawn, the combination comprising a channelled support member adapted to be mounted on the machine at the entrance side of the rolls, a roving break-back device mounted on said support member, said break-back device comprising a resilient blade mounted transversely of the channel in

6

said support member and adapted upon release thereof to press into the roving which passes through the channel, a roving break detector mechanism arranged at the exit side of the rolls and adapted to be actuated upon a break in the roving at the exit side, means coupling said detector mechanism to said resilient blade for effecting release thereof upon actuation of said detector mechanism, and a roving feed device comprising a slide on said support arranged for longitudinal movement therealong, said slide including a resilient finger which upon longitudinal forward movement of said slide in the direction of the rolls engages and moves the roving forwardly into the rolls.

4. A combined roving break-back and feed as defined in claim 3 wherein said resilient finger on said slide is arranged upon forward movement thereof to engage and be pressed downwardly in the direction of the roving by the underside of said resilient blade and to simultaneously raise the latter out of the path of the roving.

5. A combined roving break-back and feed as defined in claim 3 wherein said coupling means between said detector mechanism and resilient blade is operable upon restoration of said detector mechanism to its original detecting position to effect reverse movement of said feed slide to its original position out of contact with the roving and to also restore said resilient blade to its original position.

6. A combined roving break-back and feed as defined in claim 3 wherein said feed slide includes means spring loading the same to its rearward position and said support includes means cooperable with means on said feed slide for holding the same in the forward position, and wherein said coupling means between said detector mechanism and resilient blade is operable upon restoration of said detector mechanism to its original detecting position to effect a release of said holding means for said feed slide for reverse movement thereof by said spring loading means out of contact with the roving and to also restore said resilient blade to its original position.

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