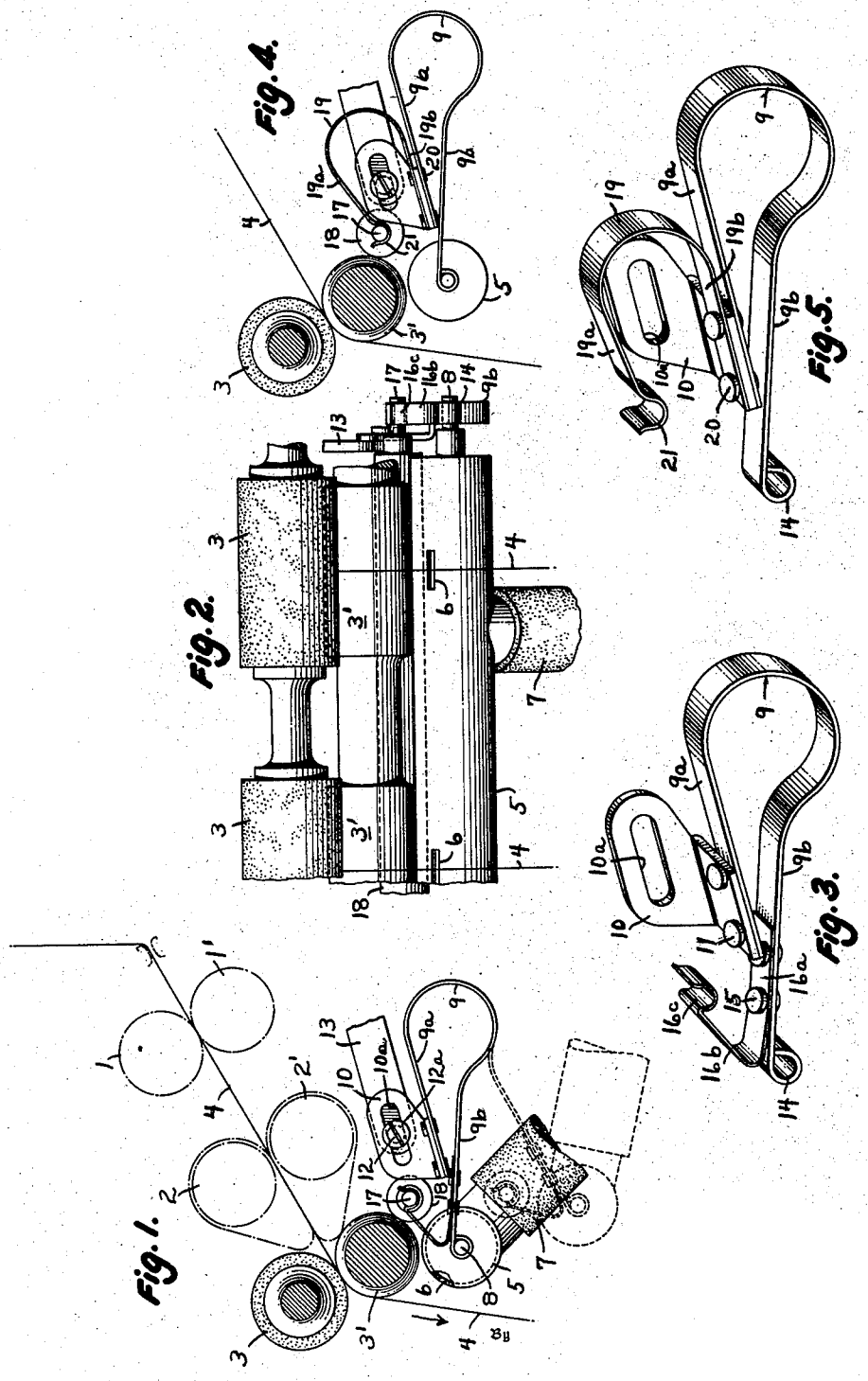
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SCAVENGER ROLL AND FLUTE HOLDER

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Fig. 6.

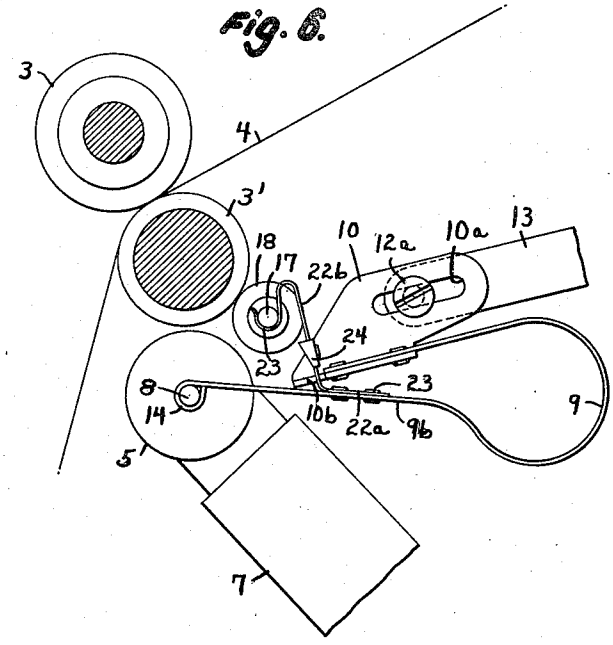


Fig. 7.

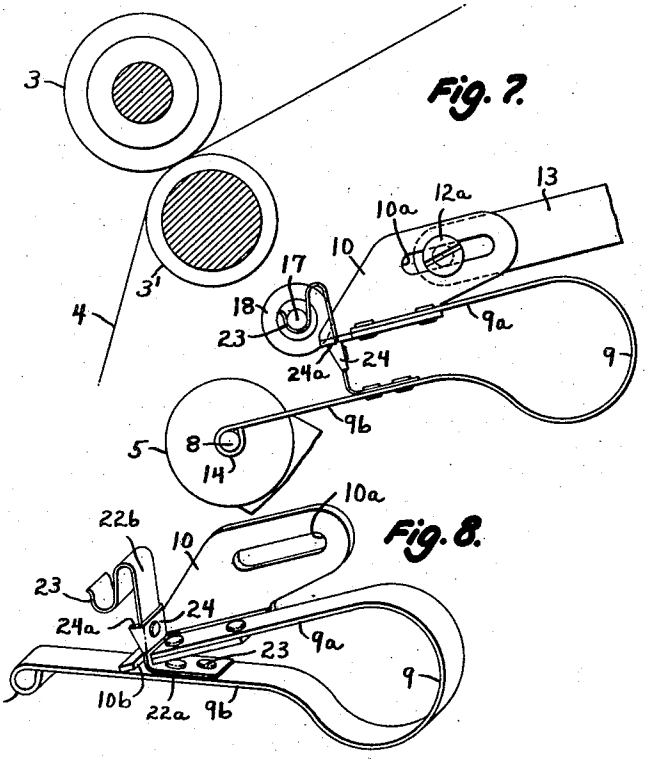


Fig. 8.

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SCAVENGER ROLL AND FLUTE HOLDER

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3 Claims. (Cl. 57—34.5)

This invention relates to textile processing machines such as spinning frames, drawing frames and the like including sets of drawing rolls through which the textile strands are drawn and which are provided with suction collection flutes having apertures adjacent each strand at the leaving side of the drawing rolls for the purpose of sucking in the end of any strand which may break thereby to prevent the loose end from lapping up on the drawing rolls. The strand end continues to be sucked into the flute and carried away to a central collecting point until the break is noticed by an operator who then ties the broken ends of the strand together so that the processing thereof can continue.

More particularly, the present invention relates to an improved arrangement for supporting the suction flutes in such manner as to permit ready adjustment of the same relative to the drawing rolls and the textile strands.

Another object of the invention is to provide a supporting means for each end of the suction collection flutes, each such supporting means being in the form of a bow made from leaf spring material which normally holds the flute in operating position adjacent the strands and drawing rolls, and each such bow being provided with latching means whereby the flute when pulled downwardly away from its normal operating position may be latched in the downward position until released, thereby to permit access by the operator to the roll area for any servicing that may be required, such as removal of the scavenger roll to clear off the lint which has accumulated on the same.

Yet another object is to provide a novel type of supporting means for the suction collector flutes which also includes means for supporting a scavenger roll the function of which is to keep the bottom steel roll element of the drawing roll assembly free from lint accumulation. This is particularly advantageous since the suction maintained at the orifices in the flutes which draws air into the roll area tends to cause a more rapid accumulation of lint on the bottom roll. The construction also permits quick removal of the scavenger roll for clearing off the lint which is accumulates.

Yet another object of the invention is to provide a combined supporting means for the flute and scavenger roll which permits the scavenger roll to move away from the bottom steel roll on which it rides as the scavenger roll accumulates lint without disturbing the position of the flute.

The foregoing as well as other objects and advantages inherent in the invention will become more apparent from the following detailed description of exemplary embodiments and the accompanying drawings in illustration thereof. In the drawings,

Fig. 1 is a transverse view showing a typical roll assembly in section and an end view of one embodiment of the combined suction flute and scavenger roll holder in accordance with the invention;

Fig. 2 is a front view showing in front elevation a fragmentary longitudinal portion of the roll assembly and

the novel suction flute and scavenger roll holder at one end of the flute.

Fig. 3 is a view in perspective of the flute and scavenger roll holder shown in Figs. 1 and 2;

Fig. 4 is a view similar to Fig. 1 illustrating a modified construction for the flute and scavenger roll holder;

Fig. 5 is a perspective view of the flute and scavenger roll holder depicted in Fig. 4;

Figs. 6 and 7 are also views similar to Fig. 1 showing a further embodiment of flute and scavenger roll holder, this embodiment being provided with a latching device by which the flute and scavenger roll can be held in a downward position spaced from the roll assembly on the machine to permit an easier access to the roll area for removing, clearing and replacing the scavenger roll, Fig. 6 showing the flute and scavenger roll in the normal positions adjacent the roll assembly and Fig. 7 showing the parts when latched in the downward position away from the roll assembly; and

Fig. 8 is a perspective view of the holder depicted in Figs. 6 and 7.

With reference now to the drawings and in particular to Figs. 1–3, a conventional drawing roll assembly is shown by the three sets of upper and lower rolls 1—1′, 2—2′ and 3—3′ between which a strand 4 is drawn. If the roll assembly is part of a spinning machine, the strand 4 after leaving the roll set 3—3′ passes to spindles (not shown) where it is spun and wound.

It is conventional to provide spinning machines and the like with vacuum type lint and broken end collection systems which carry away from the machine any loose lint and broken ends in the vicinity of the rolls. The suction inlets or orifices for the lint and broken ends are located adjacent each strand being drawn by the rolls and purposely so in order that the leading end of any broken strand after leaving the roll set 3—3′ will be sucked into the orifice and thereby prevented from lapping up on the rolls until an operator notices the break and ties the broken ends of the strand so that processing thereof may continue.

The vacuum collection system for a spinning machine includes a plurality of tubular flutes 5 arranged generally in end-to-end relation along the length of the machine. These flutes 5 are preferably made of light weight metal such as aluminum and are positioned below the lower rolls 3′ and behind the strands 4 at the leaving side of the roll sets 3—3′, and are provided with a plurality of longitudinally spaced, somewhat elongated, orifices or inlets 6, there being an orifice in line with each strand 4. In view of the great number of strands being processed simultaneously on the machine, it is impractical to utilize one continuous flute extending for the full length of the machine. Consequently, the flutes 5 are made up in comparatively short lengths and each flute is provided with about five or six longitudinally spaced orifices 6 which will take care of the same number of roll sets and strands. Each flute 5 is closed at its ends and to each flute is connected a suction tube 7 preferably made of flexible material, the tubes 7 being manifolded into a central and larger collection duct (not shown) that extends for the full length of the machine. A suction fan located at the end of the central duct is used for bringing all of the lint laden air from the orifices 6 through the duct work into a common filter where the lint can be collected and removed at periodic intervals. A more complete disclosure of a vacuum collection system of the kind described can be found in a co-pending patent application, Serial No. 502,979 filed April 21, 1955, and assigned to the same assignee as is the present application.

Each of the suction collection flutes 5 is supported in operating position adjacent the rolls 3′ and strands 4 by means which are about to be described and which con-

stitute the novel subject matter of this application as hereinafter defined. Each of the flutes **5** is seen to be of cylindrical configuration and each flute is provided at each end with an axially extending stub shaft or pin **8**. The supporting means for the right end of the flute **5**, as shown in Figs. 1–3, is comprised of a length of metallic leaf spring material of rectangular configuration in transverse section bent into a bow **9**. A bracket **10** secured to the outer end of the upper arm **9***a* of the spring bow by means of rivets **11** or the like, is provided with an elongated slot **10***a*. A threaded bolt **12**, the shank of which passes through slot **10***a* into a threaded hole in the frame **13** of the spinning machine, is provided with a slotted head **12***a* which bears against the side edges of that part of the bracket forming the slot **10***a* as the bolt is screwed in thus fastening the spring bow **9** securely in place.

The lower arm **9***b* of the spring bow **9** is turned back upon itself at its outer end to form a sleeve **14** for receiving the pin **8** at the right end of the flute **5**. Also near the outer or front end of the bow arm **9***a* and to the upper face thereof is secured, such as by rivets **15**, one arm **16***a* of a second leaf spring component, the other arm **16***b* of this spring extending upwardly and rearwardly from a point adjacent the sleeve **14** and terminating in an open saddle **16***c* which receives an axially projecting pin **17** on the end of a scavenger roll **18** that engages and rolls with the bottom rolls **3'** thus to take off any lint that might otherwise accumulate on the rolls **3'**.

A supporting spring bow similar to the bow **9** but made as a "left hand" unit is provided for supporting the left ends of the flutes **5** and scavenger rolls **18**. However, the "left hand" unit has not been illustrated because of its structural similarity to the bow **9** and the desire not to unduly complicate the drawings.

Fig. 1 shows the supporting means for the flute **5** and scavenger roll in the normal operating position. In that view it will be seen that the spring force inherent in the bow **9** causes the flute **5** to take the position indicated under and close to but not touching the lower roll **3'** and with the orifices **6** located close enough to the strands **4** as to cause the latter, if broken, to be sucked into the flute. The scavenger roll **18** is also caused by the inherent spring action in the bow **9** and/or the leaf spring **16***a*, **16***b* to bear against the back side of rolls **3'** so as to remove any lint that may collect upon the latter.

Should it be necessary to clear accumulated lint from the scavenger roll **18**, it is only necessary to press the flute **5** downwardly against the inherent spring action in the lower arm **9***b* of bow **9** until the scavenger roll **18** is below the lower rolls **3'**. The scavenger roll **18** can then be removed for clearing by lifting the end pins **17** out of the saddles **16***c*.

The slot **10***a* and bolt **12** arrangement by which the bracket **10** and hence also the bow **9** are secured in place on the spinning frame makes it possible to effect an adjustment of the position and angle of bow **9** and hence also the position of the flute **5** and scavenger roll **18** with respect to the strands **4** and rolls **3'** respectively, a change in adjustment being effected simply by loosening the bolt **12** and then sliding the bracket **10** along the shank of the bolt and/or turning the bracket about the axis of the bolt until the new position is reached whereupon the bolt is then retightened to hold the bow and the parts it supports in their new position.

The construction shown in Figs. 4 and 5 is similar to that shown in Figs. 1–3, but the supporting means for the scavenger roll **18** is so arranged that it can move automatically away from the rolls **3'** as the lint collects on roll **18** without disturbing the position of the flute **5**. With reference now to Figs. 4 and 5, those parts of the spring bow which are identical to the structure shown in Figs. 1–3 have been assigned the same reference numerals. The supporting means for the scavenger roll **18** is comprised of another spring bow **19** the lower arm **19***b* of which is secured to the upper arm **9***a* of bow **9** by rivets **20**. The upper arm **19***a* extends forward and terminates in a saddle **21** which receives the pin **17** on the end of scavenger roll **18**. With this arrangement, it will be evident that should an appreciable amount of lint accumulate on scavenger roll **18** and thus, in effect, increase its diameter, the axis of roll **18** will automatically move away from the axis of rolls **3'** by a corresponding amount by bending of the spring arm **19***a* and without affecting the position of the flute **5**.

The modified construction illustrated in Figs. 6–8 is likewise similar to that shown in Figs. 1–3 but the spring bow structure is so arranged as to latch the flute and the scavenger roll in the down, non-operating position, when it is desired to remove the scavenger roll for clearing. The arrangement also is such as to effect an automatic release of the latch upon movement of the flute after the scavenger roll has been cleared and replaced. With reference now to Figs. 6–8, those parts of the spring bow which are identical to structure shown in Figs. 1–3 have been given the same reference numerals. The supporting means for the scavenger roll **18** is comprised of a substantially L-shaped member made from flat spring material, the foot portion **22***a* thereof being secured as by riveting **23** to an intermediate portion of the lower arm **9***b* of bow **9**, and the stem portion **22***b* extending upwardly through a slot **10***b* at the lower forward end of bracket **10**. The upper end of the stem portion **22***b* is bent backward upon itself to establish an open saddle **23** which receives the pin **17** at the end of the scavenger roll **18**. Attached to the stem portion **22***b* is a latch member **24**, and it will be seen from Fig. 6 that this latch member **24** is situated above the slot **10***b* in bracket **10** when the flute **5** and scavenger roll **18** are in their operating positions. When it is desired to remove the scavenger roll **18** for clearing, the operator exerts a downward force upon the flute **5** thus moving the bow arm **9***b* downwardly and hence also the stem portion **22***b* and latch member **24** until the parts reach the positions shown in Fig. 7 from which it will be seen that the upper edge or toe **24***a* of the latch member has passed through the slot **10***b* and moved forward so as to engage the forward edge of that slot thus maintaining the component parts in the downward position. The operator then removes the scavenger roll **18** by lifting the ends of the same out of the saddles **23**, clears it of the accumulated lint and returns it to the saddles. The operator then pushes the flute **5** backward, thus moving the bow arm **9***b* and hence stem **22***b* and latch **24** backward until the toe **24***a* of the latch clears the front edge of slot **10***b* whereupon the inherent upward spring force in the bow arm **9***b* will automatically move the flute **5** and scavenger roll **18** upward to the operating positions shown in Fig. 6.

In conclusion, it is to be understood that the embodiments which have been illustrated and described are to be considered typical rather than limitative and hence various changes may be made in the construction and arrangement of parts without, however, departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. The combination with a textile processing machine having a plurality of longitudinally spaced sets of drawing rolls through which a plurality of textile strands are drawn respectively, of a suction flute having a plurality of longitudinally spaced orifices, spring means supporting said flute at each end thereof with the orifices located respectively behind the strands at the leaving side of said drawing rolls, each said supporting means comprising an arm of spring material attached at one end to an end portion of said flute, means attaching the opposite end of said arm to a fixed part of said machine, a scavenger roll generally coextensive in length with said flute and adapted to roll in contact with the drawing rolls, means supporting each end of said scavenger roll on the arm supporting the corresponding end of said flute, said spring arms biasing said suction flute upwardly to its operating

position, and cooperative latching means carried by said spring arms and said fixed part of said machine respectively for holding said arms and flute in a downward position to permit ready removal of said said scavenger roll from its supporting means.

2. The combination with a textile processing machine having a plurality of longitudinally spaced sets of drawing rolls through which a plurality of textile strands are drawn respectively, of a suction flute having a plurality of longitudinally spaced orifices, spring means supporting said flute at each end thereof with the orifices located respectively behind the strands at the leaving side of said drawing rolls, each said supporting means comprising a bow of spring material arranged in a generally vertical plane, means securing the upper arm of said bow to a fixed part of said machine, means attaching the forward end of the lower arm of said bow to an end portion of said flute, a scavenger roll generally coextensive in length with said flute, means supporting said scavenger roll to roll in contact with the drawing rolls, said lower arms of said spring bows biasing said suction flute upwardly to its operating position, and latching means cooperative with said lower arms of said bows for holding said lower arms and flute in a downward position to permit ready removal of said scavenger roll from its supporting means.

3. The combination with a textile processing machine having a plurality of longitudinally spaced sets of drawing rolls through which a plurality of textile strands are drawn respectively, of a suction flute having a plurality of longitudinally spaced orifices, spring means supporting said flute at each end thereof with the orifices located respectively behind the strands at the leaving side of said drawing rolls, each said supporting means comprising a bow of spring material arranged in a generally vertical plane, a bracket secured to the upper arm of said bow, means securing said bracket and hence also said bow to a fixed part of said machine, means attaching the forward end of the lower arm of said bow to an end portion of said flute, a scavenger roll generally coextensive in length with said flute and adapted to roll in contact with the drawing rolls, and means supporting each end of said scavenger roll on the bow supporting the corresponding end of said flute, each said scavenger roll supporting means comprising a generally upright arm of said spring material secured to the lower arm of the corresponding bow, said lower arms of said bows biasing said flute and scavenger rolls upwardly to their operating positions, and latch means secured to each said upright arm cooperative with the edge of a slot in the corresponding bracket for holding said upright arms and hence also said lower arms of said bow and said flute in a downward inoperative position to permit ready removal of said scavenger roll from its supporting means.

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