

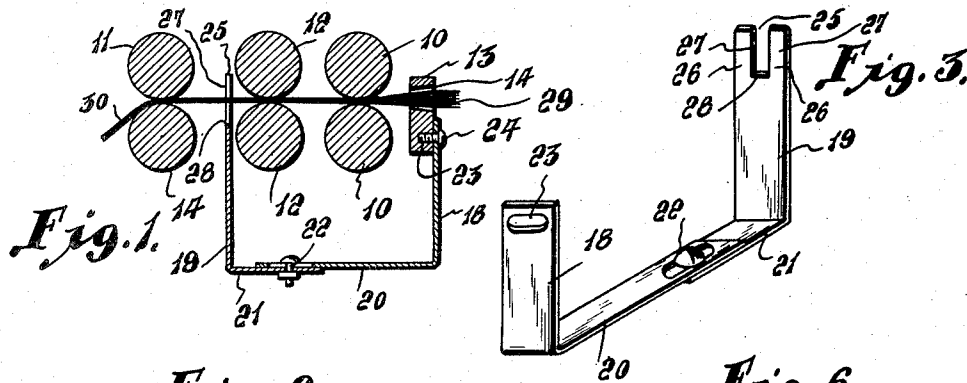
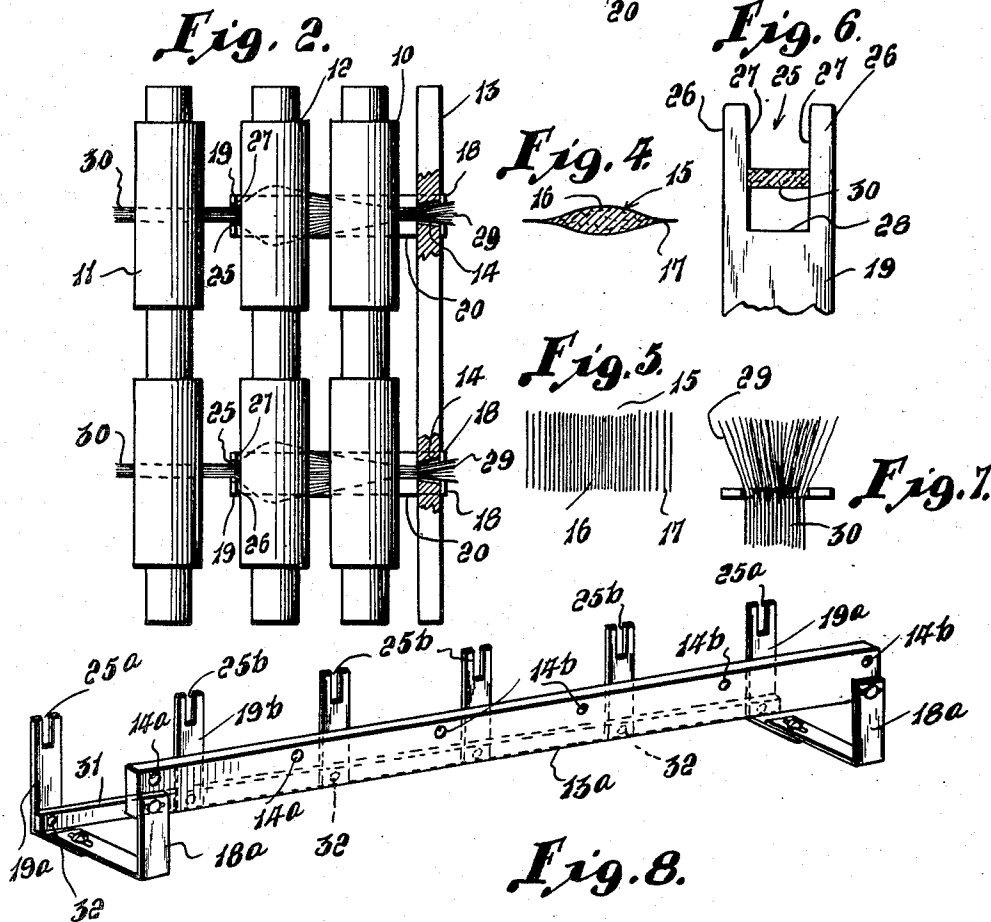
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HIGH DRAFT MECHANISM FOR COTTON FLIER AND SPINNING FRAMES

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HIGH DRAFT MECHANISM FOR COTTON
FLIER AND SPINNING FRAMES

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1 Claim. (Cl. 19—133)

This invention relates to high draft mechanism for cotton flier and spinning frames.

The primary object of the invention is to provide high draft mechanism for cotton flier and spinning frames wherein a sliver passing through the frame has the fibers constituting the embryo formation thereof gathered into a uniform sliver formation substantially rectangular in cross-section whereby the sliver has an even pressure exerted thereon by the front rollers of the drawing frame to cause all of the fibers composing the sliver to travel at exactly the same speed to produce a sliver issuing from the drawing frame in a substantially smooth and close condition, thereby eliminating all free running fibers and a consequent rough surface.

In high draft flier and spinning frames, the sliver when unguided in its movements through the front or delivery draft rollers of a frame has fibers constituting the sliver bunched or closely gathered at the central longitudinal line thereof with the body of the sliver tapering off towards opposite sides so that when the sliver in such condition passes between the front or delivery draft rollers of the drawing frame, pressure is exerted on the sliver at the central longitudinal line thereof with very little, if any, pressure exerted on the side marginal edges of the sliver with the result that the passage of a sliver in such form through the front rollers the draft on the sliver at the central longitudinal axis causes the fibers at such point to move with greater speed than the speed of movement imparted to the side marginal edges of the sliver, and said fibers at the marginal edges being frictionally moved through the front rollers by their contact with the fibers at the center of the sliver. The present invention overcomes the foregoing objections and provides an even draft of all of the fibers constituting the sliver by the provision of a sliver former that gathers the fibers of the embryo sliver formation immediately after its passage through the intermediate rollers of the frame for drawing the fibers into closer relationship with the closely related fibers constituting the sliver of uniform formation substantially rectangular in cross-section with such uniform formation of sliver passing through the front rollers which exert an even pressure thereon for imparting an even draft to all of the fibers of the uniform formation, resulting in a smooth sliver.

More specifically, the high draft mechanism for cotton flier and spinning frames includes a sliver former that is attached to the reciprocating

bar of the frame through which the rovings are fed with one end of the former constituting an upright leg slotted at its upper end with parallel side walls for the slot that gather the free running fibers at the opposite side edges of the sliver into the adjacent rectangular formation for the application of even draft to all of the fibers of the slivers.

It is a further object of the invention to provide a sliver former attachment for drawing frames of the foregoing character in the form of a pair of adjustably connected angle members having corresponding ends thereof attached to opposite ends of the reciprocating sliver guide bar of a drawing frame with a bar connecting the other corresponding ends of the formers and from which bar a series of sliver formers rise.

A still further and important object of this invention is to provide a sliver former attachment for cotton flier and spinning frames, wherein the embryo formation of a sliver is gathered into a uniform sliver formation without in any manner condensing the sliver as by reduction in the normal cross-sectional area thereof.

With the above and other objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawing, and claimed.

In the drawing:

Figure 1 is a cross-sectional view of the cotton flier or spinning frame showing the sliver former of sectional formation attached at one end to the reciprocating bar of the frame and with the sliver shaping end of the former positioned between the intermediate and front rollers and in proximity of the intermediate rollers.

Figure 2 is a fragmentary top plan view showing a pair of sliver formers attached to a reciprocating bar.

Figure 3 is a perspective view of the sliver former.

Figures 4 and 5 are cross-sectional and fragmentary plan views respectively of the loose formation of a sliver produced without the use of a sliver former.

Figure 6 is an enlarged fragmentary elevational view of the fiber gathering end of the sliver former showing the loose fibers of the sliver moved into a rectangular formation in cross-section without condensing or compacting the fibers.

Figure 7 is a top plan view of the sliver forming end of the sliver former, and

Figure 8 is a perspective view of a battery of sliver formers.

Referring more in detail to the accompanying drawing, the high draft mechanism for the cotton filer and spinning frame, as illustrated in Figures 1 and 2, comprises a pair of entry rollers 10 and a pair of front rollers 11 that constitute the delivery rollers of the frame and also for imparting draft to the sliver, a pair of intermediate rollers 12 being positioned between the entry and front rollers 10 and 11, respectively, the intermediate rollers 12 imparting a preliminary draft to a sliver passing therebetween. The high draft frame is equipped with the usual reciprocating bar 13 having openings 14 therein for the passage of the roving in its embryo sliver formation for directing the roving between the several rollers of the frame.

In the absence of a sliver former as part of the high draft mechanism, the sliver passes between the rollers with the fibers thereof in a somewhat disassociated condition as indicated by the reference character 15 in Figures 4 and 5, the fibers at the central longitudinal line of the sliver 15 being in close relationship as shown at 16 while the fibers 17 at the marginal edge of the sliver are in a somewhat rough condition, with the result that when such a sliver passes through the contact line of the front rollers 11, draft is imparted to the centrally positioned fibers 16 and practically the only draft imparted to the edge fibers 17 results from the frictional contact of such fibers 17 with the other fibers 16. The passage through the high draft frame of a sliver of such formation results in a rough and uneven surfaced sliver by increase of draft at the central line of the sliver while the edge fibers 17 are free to run at will and remain unguided in their travel through the frame.

The present invention relates to a sliver forming attachment for a high draft frame, and as shown in Figure 3 this sliver former attachment comprises a pair of angle straps, each having a vertical leg 18 and 19, respectively, and a right angle base leg 20 and 21, respectively that are overlapped and adjustably connected together by a pin and slot combination 22. The upper end of the leg 18 is provided with a transversely extending slotted opening 23 for the passage of a screw or other fastening device 24 for adjustably connecting the sliver former to the reciprocating bar 13, the upstanding leg 19 of the sliver former projecting upwardly between the intermediate rollers 12 and the front rollers 11 with the upper end of said leg 19 in closer relationship to the intermediate rollers 12. As shown more clearly in Figures 3 and 6, the upper end of the leg 19 is provided with a longitudinally extending upper end opening slot 25 forming a pair of side arms 26 with the inner sides 27 of said arms 26 being arranged in parallelism, the lower end wall 28 of the slot 25 extending at right angles to the walls 27.

The roving 29 enters the high draft frame through the opening 14 in the reciprocating bar 13 and is fed through the high draft frame by the entry rollers 10, the intermediate rollers 12 rotating at a slightly increased speed relative to the entry roller 10 imparting a preliminary draft to the roving 29. The roving then passes through the slot 25 in the upper end of the sliver former leg 19 and the fibers of the roving are gathered together and moved into relatively close parallel relationship in the absence of any condensing activities or reduction in volume to produce a sliver

30 that is substantially rectangular in cross-section as shown in Figure 6 and the sliver in this formation with free running fibers eliminated is delivered to the front or delivery draft rollers with increased draft imparted thereto relative to the intermediate preliminary draft rollers 12. The sliver forming upper end of the leg 19 is in relatively close proximity to the intermediate rollers 12 so that when the forward ends of the fibers constituting the sliver have reached the contact line between the front rollers 11, the rear ends of said fibers have passed beyond the arms 26 of the sliver former, with the result that retardation or feeding of sliver by frictional contact of the fibers thereof with the sliver former is eliminated, the distance between the upper end of the sliver former leg and the contact line between the front rollers being slightly greater than the staple of the material. By the adjustment 22 between the two sections of the sliver former, the leg 19 may be variably positioned between the intermediate and front rollers to take care of sliver staple of different lengths.

In known cotton spinning frames it has heretofore been possible to obtain a draft of only 1 to 6 from the entry to the front rollers to produce a satisfactory roving, but by the provision of a sliver former of the type disclosed herein it is possible to increase the draft by at least 1 to 11 or 1 to 12, so that the roving with such draft imparted thereto may be lengthened to a greater degree than has heretofore been possible with the result that by the use of this invention in the cotton spinning industry it is possible to eliminate one of the filer frames and still obtain the desired draft and lengthening of the roving.

In the form of invention shown in Figures 1 to 3 and 6-7 the sliver former is designed as a unit for association with a single passage opening of the reciprocating bar 13, but it is intended, as shown in Figure 8, to provide a battery of sliver formers, six of which are illustrated. The reciprocating bar 13^a has attached to opposite ends thereof a vertical leg 18^a of a sliver former as shown in Figure 3, while a longitudinal extending rod 31 connects the lower ends of the upright legs 19^a. The ends of the reciprocating bar 13^a are provided with roving passage openings 14^a that register with the sliver forming openings 25^a at the upper ends of the legs 19^a. A series of legs 19^b is attached at the lower ends as at 32 to the rod 31 and the upper end of each leg 19^b is slotted as at 25^b, similar to the slot 25 in the leg 19 and each slot 25^b registers with a roving passage opening 14^b in the reciprocating bar 13^a. With such an arrangement it is possible to greatly simplify the sliver former construction.

While there is herein shown and described the preferred embodiment of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

I claim:

In high draft mechanism for cotton filer and spinning frames, pairs of entry and front rollers, intermediate preliminary draft rollers, a reciprocating bar for guiding slivers through the frame and between the rollers, a pair of sliver formers carried by and movable with the reciprocating bar and each comprising a pair of angle members having base portions adjustably connected together, an upright leg carried by the base portion of one member extending upwardly between the intermediate and front rollers and in closer

proximity to the intermediate rollers, the upper end of said leg having an end opening slot therein with parallel side walls for gathering the fibers of the embryo formation into uniform sliver formation rectangular in cross section, the positioning of the upper sliver forming end of said leg in proximity of the intermediate rollers being such that the rear ends of the fibers that have traveled beyond said reciprocating guide bar at the time the front ends of the slivers are gripped in the contact line between the front rollers frictional influence on the side edges of the sliver is eliminated at the time of draft, an upright leg

carried by the other base portion of each sliver former and connected at its upper end to said reciprocating bar, below the sliver guiding portions thereof, a longitudinally extending bar connected at its ends to the lower ends of the slotted legs of said pair of sliver formers and a plurality of additional sliver formers carried by the longitudinally extending bar in spaced relation and each comprising an upright leg rigidly connected at its lower end to said longitudinally extending bar and having sliver forming openings in the upper ends thereof.

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