Nov. 11, 1947. E. C. GWALTNEY ET AL 2,430,611

DRAWING MECHANISM FOR SPINNING AND ROVING FRAMES

Filed March 17, 1945

Fig. 1.

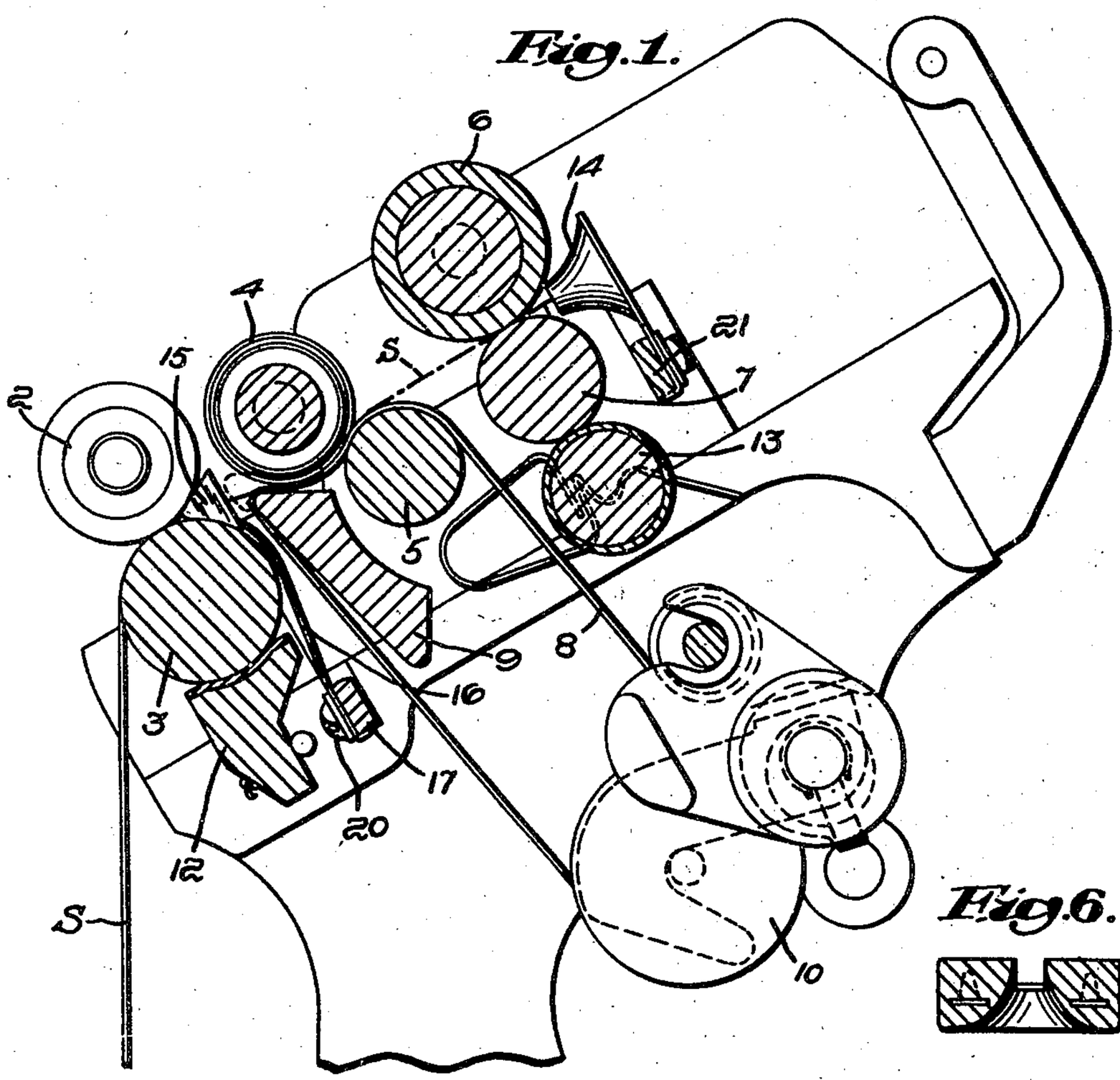


Fig. 6.

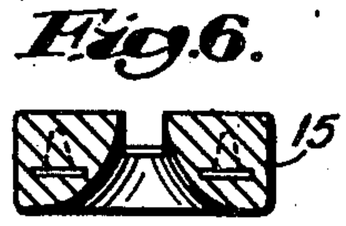


Fig. 2.

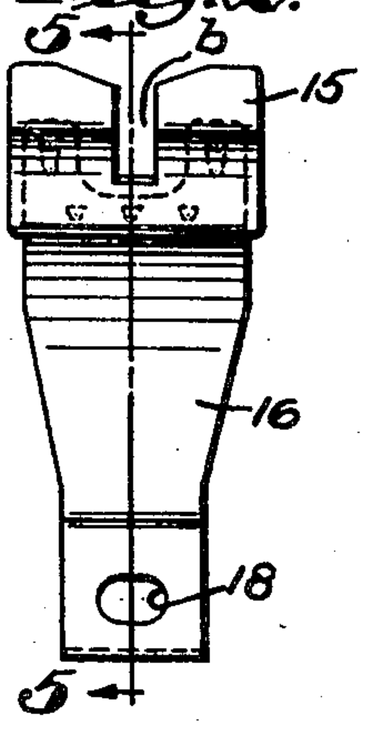


Fig. 3.

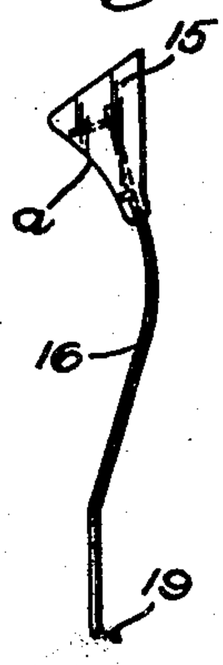


Fig. 4.

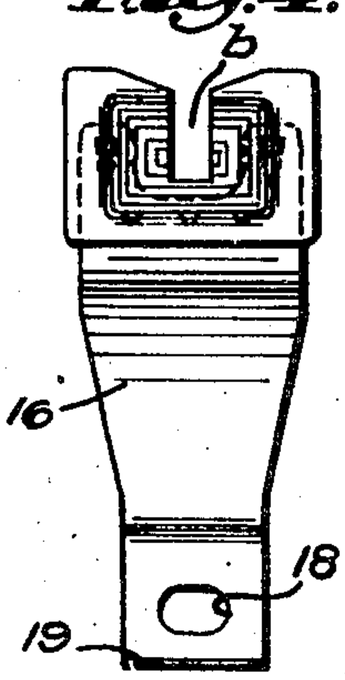
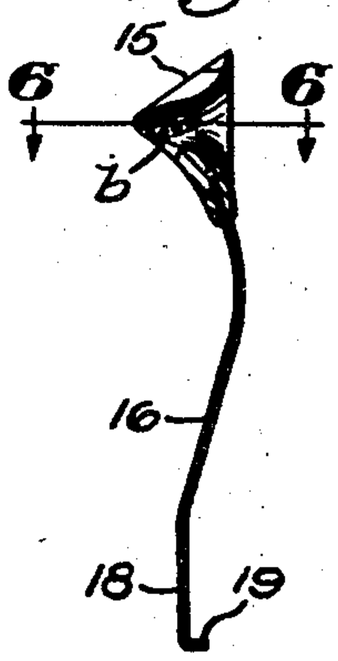


Fig. 5.



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2,430,611

DRAWING MECHANISM FOR SPINNING AND ROVING FRAMES

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2 Claims. (Cl. 19—130)

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This invention relates to drawing mechanisms of the type used in spinning and roving frames. While it will be herein disclosed in connection with a drawing mechanism designed more especially for use in handling cotton slivers or rovings, it will be understood that the invention is equally applicable to operation on stranded materials of this type composed of other fibers.

In the drafting of cotton slivers or rovings (hereinafter referred to generically as "slivers") it is important to be able to control the stray fibers which splay out from the edges of the strand being drafted. This action is particularly troublesome in the region of the main draft. It is a phenomenon which has long been recognized, and it has been proposed many years ago to mount a condenser or trumpet at the forward end of the zone in which the main draft occurs where it will gather in these fibers just as they are about to pass into the bite of the front rolls. Desirable as such a device is at this point, the constructions of this nature heretofore provided have never given sufficient satisfaction to warrant their general adoption. While the condensers or trumpets themselves have performed the functions for which they were intended, the means for supporting them, or the manner in which they have been supported, has caused so much trouble as to make their use more bother than it is worth. For example, in some of these prior constructions the trumpets have been supported loosely so that they could be traversed by the motion of the sliver itself. However, during the piecing-up operation, or in clearing out a lap-up, the trumpets so supported usually fall out of place. Also, when they are returned to their operative positions, unless unusual care is taken, they will not re-thread automatically. Moreover, the operation of these loosely mounted trumpets is likely to be seriously interfered with, or even interrupted, by lint or a little rust. In general, these installations have been found so much of a nuisance as to make their use impractical.

To devise a thoroughly satisfactory and practical solution for the problem presented by the foregoing conditions forms the chief object of this invention.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

In the drawings,

Fig. 1 is a view, partly in side elevation and partly in vertical section, illustrating a mechanism constructed in accordance with this invention;

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Figs. 2, 3 and 4 are front, side and rear elevations, respectively, of the trumpet shown in Fig. 1;

Fig. 5 is a vertical, sectional view on the line 5—5, Fig. 2; and

Fig. 6 is a horizontal, sectional view through the trumpet taken substantially on the line 6—6, Fig. 5.

Referring first to Fig. 1, the mechanism there shown comprises three sets of drawing devices arranged to act successively on a cotton sliver. In this particular construction these devices include a front pair of upper and lower drawing rolls, indicated at 2 and 3, respectively, an intermediate pair 4 and 5, and a rear pair 6 and 7. Interposed between the two middle rolls is a belt or apron 8 driven by the lower roll 5, and running over a guide bar or apron bar 9 located between the bottom rolls 3 and 5. A pulley or idle roll 10 has sufficient mass to apply the tension to the apron 8 necessary to hold it taut.

Suitable clearers, such as those shown at 12 and 13, are associated with the front and rear bottom rolls 3 and 7, respectively, in the customary manner, and a trumpet 14 is positioned to guide the sliver or roving into the bite of the rear rolls 6 and 7. From this point it travels forward along the path *s* between the upper middle roll 4 and the apron 8 where the latter is stretched between the roll 5 and the bar 9, and then passes between the front rolls 2 and 3 to the flier, traveller, or other instrumentality which introduces the twist.

So far as the features above described are concerned, the construction is like that shown and described in the Shaw Patent No. 2,329,655, dated September 14, 1943, and reference may be had to that patent for a more detailed description of this organization.

In the normal operation of this mechanism the successive pairs of rolls are driven at progressively increased peripheral speeds such that only a slight draft or break draft is produced between the rear and middle rolls, while a much greater or main draft occurs between the front and middle rolls. It is in the latter region particularly that the splaying of the fibers above referred to is especially troublesome. In order to control them a trumpet 15 is mounted substantially in the bite of the front rolls and is provided with a passage extending through it from back to front which is tapered both laterally and vertically, so that as the sliver slides through it the

converging walls of the trumpet wipe the stray fibers back against the main body of the sliver. The passage terminates at its front face in a slot *b*, open at the top. Preferably this trumpet is made of a molded plastic material, such as Bakelite, Lucite, or any other suitable substance of this nature. As best shown in Fig. 1, it has a thin, approximately V-shaped nose extending between the converging surfaces of the two rolls, and the lower front face of this body, as indicated at *a* in Fig. 3, is given a concave shape, approximately complemental to that of the adjacent surface of the roll 3, so that it may rest against the latter surface. The support of a trumpet in this position in such a manner that it will not cause the troubles above described is a difficult matter because of the small space between the two front rolls and the middle rolls, particularly when an apron bar is also positioned between the front and middle bottom rolls.

According to this invention supporting means for the trumpet 15 consists of a leaf spring 16, rigidly fastened to the trumpet, extending downwardly immediately behind and close to the front bottom roll 3 and secured to a traverse bar 17 at a point below this roll. When the trumpet body is a molded piece, the spring 16 preferably is secured to it during the molding operation, the upper end of this spring being punched and flanged, as shown in Figs. 2, 3 and 4, to facilitate the flow of the molded material through and around portions of this end of the spring and thus to produce a rigid and secure union of the two parts to each other. At its lower end this spring is slotted, as shown at 18, and preferably flanged, as indicated at 19. The flange bears against the lower edge of the bar 17 where it cooperates with a screw 20, Fig. 1, passing through the slot 18 to fasten the spring securely but releasably to the bar. This spring should be sufficiently stiff to hold the trumpet normally in the bite of the rolls while still having enough resilience to yield backwardly out of position when the sliver laps up on either roll.

An operating mechanism, such as that shown, for example, in the Blake Patent No. 2,252,546 may be employed to drive both traverse bars 17 and 21 in unison, thus continuously holding the trumpets 14 and 15 substantially in line with each other. These two traverse bars can be connected to the mechanism for producing the traversing motion by connection them both by links to the bar 14 of the Blake mechanism.

It should be observed that the traverse bar 17 is located a considerable distance below the lower front roll 3 so that when the clearer 12 is slipped out of the clips that support it, the line of screws 20 which secure several trumpets to the bar are exposed. They are conveniently located for a mechanic to operate on them, either in installing, removing or adjusting the trumpets.

Thus the invention provides a construction in which the trumpets are supported with ample security in their operative positions and still are free to yield backwardly when a lap-up occurs and while it is being cleared. The trumpets are always maintained in proper relationship to their cooperating parts to thread up correctly, they do not interfere with the piecing-up operation, and they are so supported as to facilitate adjustment. In actual mill operation this construction has proved entirely satisfactory.

While we have herein shown and described a preferred embodiment of our invention, it will be evident that the invention is not limited to embodiment in the precise form disclosed.

Having thus described our invention, what we desire to claim as new is:

1. In a drawing mechanism for spinning and roving frames, the combination with a plurality of pairs of drawing rolls, each pair including a bottom roll and a cooperating top roll, and the pairs being arranged, one behind another, to feed and draft a sliver, of a trumpet, the forward end of which is positioned in the bite of the front pair of said rolls where it guides said sliver in to the nip of the latter rolls, a leaf spring to the upper end of which said trumpet is rigidly secured, said spring extending downwardly close behind the bottom roll of said front pair, a horizontal bar mounted below the level of said bottom front roll, and means adjustably securing said spring to said bar, said spring having sufficient rigidity to support said trumpet in its operative position but also having the resiliency necessary to permit yielding rearward movement of the trumpet in the event of a lap-up on either of said front rolls.

2. In a drawing mechanism for spinning and roving frames of the type including a plurality of pairs of drawing rolls, each pair including a bottom roll and a cooperating top roll, said pairs of rolls being arranged, one behind another, to feed and draft a sliver, an apron bar between the front and second bottom rolls of said pairs and an apron running over said bar and said second bottom roll, in combination with a molded plastic trumpet, the forward end of which is positioned in the bite of the front top and bottom rolls where it guides said sliver is it passes from said apron into the nip of said front top and bottom rolls, a leaf spring, the upper end of which is embedded in the material of said trumpet, said spring extending downwardly close behind said bottom front roll through the narrow space between it and said apron bar, a bar mounted below the level of said bottom front roll and having a traversing motion parallel to said rolls, and means securing said spring adjustably to said traverse bar.

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