July 13, 1954 J. NOGUERA 2,683,290

FIBER CONDENSING MEANS FOR USE IN PREPARATORY AND SPINNING MACHINES

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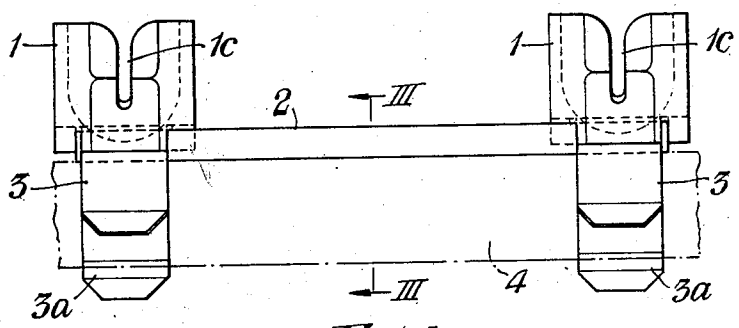



FIG. 1

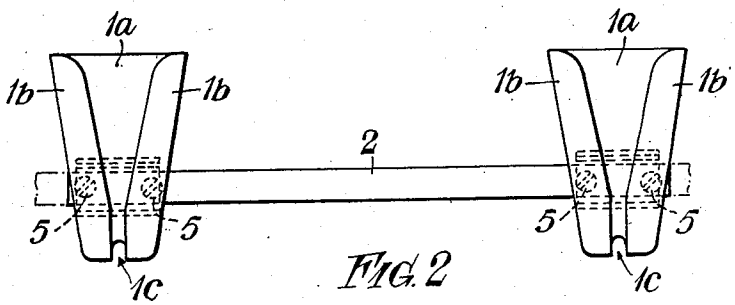



FIG. 2

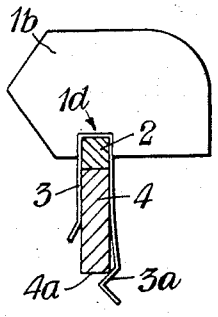



FIG. 3

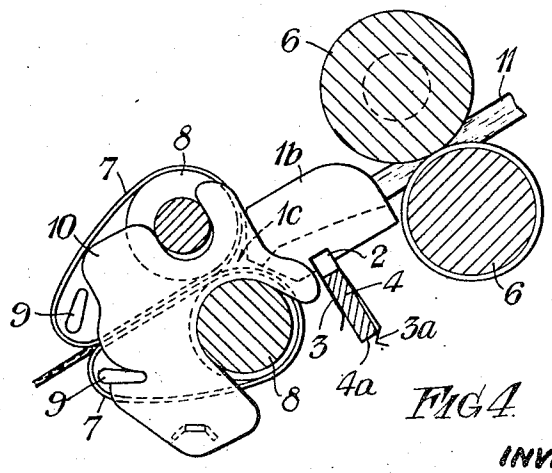



FIG 4

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## FIBER CONDENSING MEANS FOR USE IN PREPARATORY AND SPINNING MACHINES

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7 Claims. (Cl. 19—131)

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This invention relates to fibre condensing means for use in preparatory and spinning machines and is concerned mainly with condensing means which can be used at a point or position in the machine where the fibre-strands are being drafted over a distance which is greater than the length of the fibres, that is to say where the travelling fibres are free to move longitudinally in relation to each other between widely separated holding and drawing nips and where, in consequence, the strands to be condensed are in a particularly open state.

Under such operating conditions, it is desirable to mount the condensing means so that each condenser outlet is very close to the following drawing nip with which the condenser is associated and also to mount the condensing means in such manner that a positive traverse motion is imparted thereby to the fibre-strands being drawn even when the latter are of considerable bulk. The fulfilment of these desirable conditions has however, up to the present, presented some difficulty. As is well known, the drawing nips which follow the condensing means are normally formed, in the well known Casablancas high draft system, between pairs of co-operating endless bands, the bands of each drawing nip being guided by lateral side walls which are coupled together to form a cradle. It is thus necessary that the outlet end of each condenser be located between cradle walls if the aforesaid outlet end is to lie very close to its associated drawing nip. If, however, the condensers are so positioned and at the same time are rigidly secured to a traverse bar of the machine, their exact setting becomes a matter of extreme difficulty in view of the fact that the component parts of the drawing apparatus such as the cradles, the belt-supporting rollers and roller supports all have a substantial amount of play or clearance when they are fitted together and this, added to any slight inaccuracies in the relative spacing of other parts of the machine, results, in practice, in the cradles being frequently in positions which are somewhat different from those which they should occupy in theory. Furthermore, due to the large clearances which are required, the positions of the cradles may change slightly during the operation of a machine.

If, on the other hand, condensers are loosely mounted on the traverse bar, the need for accurate setting is avoided but such condensers are not always able to control and secure uniform traverse movement of the fibre-strands particularly when these are somewhat bulky. Thus on

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speed frames for example, where the material being drafted is always in very thick form, the force exerted by the material passing through a condenser is so great that the traverse action of the traverse bar upon the condenser becomes utterly insignificant by comparison and is therefore completely nullified.

A main object of the present invention is to provide generally improved condensing means which are sufficiently free on the traverse bar to obviate the necessity for exact setting whilst at the same time are capable of imparting the desired traverse motion to fibre-strands even when the latter are of considerable bulk.

According to the present invention, there is provided fibre condensing means for use in preparatory and spinning machines wherein two condensers are rigidly coupled together in spaced relationship for co-operation one with each of adjacent pairs of drawing members of the machine, and wherein said coupled condensers are provided with gripping means for attachment to a driven traverse bar of the machine, the arrangement being such that the said condensers can be mounted on the traverse bar each with its outlet end very close to the nip of a following pair of drawing members, the grip exerted on the traverse bar by said gripping means being sufficient to ensure that the condensers traverse with said bar, and thereby impart the required motion to the fibre-strands passing therethrough, whilst at the same time permitting the condensers to slide along, and relatively to, the said bar if the occasion arises.

In order that the invention may be clearly understood and readily carried into effect one embodiment thereof will now be described in detail with reference to the accompanying drawings wherein:

Figure 1 is a front elevation showing condensing means constructed in accordance with the invention and mounted on a driven traverse bar, the latter being in chain-dotted lines and partially broken away,

Fig. 2 is a plan view of the condensing means shown in Figure 1,

Figure 3 is a section on the line III—III of Figure 1, and

Figure 4 is a sectional side elevation, to a reduced scale, showing the condensing means according to the invention mounted in an operative position on a driven traverse bar between a pair of rear drawing rollers and a pair of endless belts.

Referring now to the drawings, two similar condensers 1, each in the form of a channel-like

member open at each end and having a flat bottom 1a and side walls 1b which converge slightly towards the forward or outlet end 1c, are mounted one near each end of a short coupling bar 2 of rectangular cross-section. The coupling bar 2 is arranged to enter a groove 1d in the bottom of each condenser so that, in the assembled position, the lower edge of the bar projects slightly below the bottom surfaces of the condensers. The length of the bar and lateral spacing of the condensers therein is such that the condensers can be positioned one immediately behind each of two adjacent pairs of drawing members on a preparatory or spinning machine.

Dependent from the coupling bar 2 are two pairs of spring gripping fingers 3, the fingers of each pair being shaped partially to embrace a driven traverse bar 4 of the machine. The coupling bar 2 and the condensers 1 carried thereby are clipped onto the top of the traverse bar 4 by means of the spring fingers 3, these fingers also serving frictionally to resist relative longitudinal movement between the traverse bar 4 and the coupling bar 2 under normal operating conditions. Each pair of gripping fingers 3 is conveniently in the form of a substantially U-shaped member having one arm slightly longer than the other, and each is placed over the coupling bar 2 in an inverted position as shown and then secured, with the bar 2, in the groove 1d in the base of the appropriate condenser 1, by screws 5 or other convenient means. As can be seen from Figures 1, 3 and 4, the longer arm of each U-member 3 extends over the whole width of the traverse bar 4 and grips the under edge 4a of the latter by its suitably bent end portion 3a.

In Figure 4 the condensing means according to the invention is shown in an operative position on a driven traverse bar 4 of a machine in which position each condenser 1 is located between a pair of rear drawing rollers 6 and following drawing members in the form of a pair of endless belt loops 7 as shown. The belt loops 7 are supported in the normal manner at their rear ends by a pair of co-operating rollers 8 and at their forward ends by means of tensor members 9 carried by a cradle 10, the lateral side walls of which cradle serve to guide the belt loops 7.

In use, the condensing means can be mounted so that each condenser 1 has its outlet end 1c very close to the nip between the following drawing members of the preparatory or spinning machine, and between the cradle walls associated with said members, without requiring accurate setting on the traverse bar. When so mounted, the condensers 1 will each transmit a positive traverse motion to the fibre-strands 11 passing therethrough irrespective of any contrary force exerted by the strands, due to the frictional grip which is exerted by the gripping fingers 3 on the traverse bar 4. If, however, the outlet end 1c of either condenser contacts, during operation, a fixed part of the machine such as a cradle wall, the condensers 1 can then slide, as required, along, and relatively to, the traverse bar 4 without interrupting the operation of the machine. In this way, as will be understood, the condensing means according to the invention combines the advantages of a free condenser, in the sense that it is not fixed to the traverse bar in any definite position and therefore does not require particular setting, and also of a condenser which is fixed to the traverse bar since the frictional connection is sufficient to ensure that the required traverse motion is imparted even to fibre-strands of considerable bulk as aforesaid.

The condensing means according to the invention requires at least two condensers coupled together to provide sufficient overall base length in contact with the traverse bar to obviate any tendency for a condenser to swing or tilt in relation to the traverse bar if its outlet end contacts a relatively fixed part as aforesaid.

I claim:

1. In a drafting mechanism including a plurality of pairs of drawing members arranged side by side and a driven traverse bar located behind said drawing members, fibre condensing means comprising two condensers serving respectively two adjacent pairs of said drawing members, a coupling bar shaped to seat on the upper edge of said traverse bar and having said two condensers fixedly secured thereon and at least two pairs of gripping fingers secured to said coupling bar so as to depend therefrom and grip the said traverse bar, the grip exerted by said fingers being of sufficient strength to ensure that said coupling bar and condensers move with said traverse bar under normal operating conditions, and impart the required motion to fibre strands passing through said condensers, whilst at the same time permitting said coupling bar and condensers to slip longitudinally along said traverse bar if the former meet an obstruction during their traversing movement.

2. Fibre condensing means as claimed in claim 1 in which the bottom of each said condenser is formed with a transverse groove to receive the said coupling bar.

3. Fibre condensing means as claimed in claim 2 in which each said pair of gripping fingers is in the form of a substantially U-shaped member and is placed in an inverted position over the said coupling bar so that said gripping fingers, constituted by the side walls of the U-member, depend below said coupling bar for embracing said traverse bar, and is secured, with said coupling bar, in a condenser groove by screw means.

4. Fibre condensing means as claimed in claim 1 in which the fingers of each said pair of fingers grip the side faces of the traverse bar therebetween, one finger of each said pair being of sufficient length also to grip the under edge of said traverse bar.

5. Fibre condensing means for use in a textile drafting mechanism having a driven traverse bar followed by at least two pairs of drafting members positioned side by side, said means comprising in combination two condensers adapted to cooperate one with each said pair of drafting members and adapted to have their outlets arranged very close to the respective nips between said members, a coupling bar adapted to be mounted on the traverse bar for longitudinal movement relative thereto and being fixedly secured to said two condensers and two pairs of gripping fingers secured to the coupling bar and depending therefrom, one pair below each said condenser, and adapted to grip the traverse bar and firmly resist relative longitudinal movement between said coupling bar together with the condensers and said traverse bar while permitting said longitudinal movement if either of said condensers meets an obstruction.

6. Fibre condensing means for use in a textile drafting mechanism having a driven traverse bar followed by at least two pairs of drafting members positioned side by side, said means comprising in combination two condensers for co-operation one

with each said pair of drafting members, a coupling bar adapted to seat on the upper edge of said traverse bar and being fixedly secured to said two condensers and two pairs of gripping fingers secured to the coupling bar and depending therefrom, one pair below each said condenser, said fingers being shaped to grip the traverse bar when said coupling bar is seated thereon and firmly to resist relative longitudinal movement between said coupling bar together with the condensers and said traverse bar while permitting said longitudinal movement if either said condenser meets an obstruction.

7. In a drafting mechanism including a plurality of pairs of drawing members arranged side by side and a driven traverse member located behind said drawing members, a pair of condenser members, a coupling bar secured to the condenser members to prevent relative movement therebetween, and resilient means carried by said coupling bar and adapted to yieldably engage the traverse member to normally compel movement of the condenser members with the traverse member but to permit stoppage of the condenser members without interference from the continued movement of the traverse member if either one of said condenser members meets an obstruction.



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