April 5, 1960 J. NOGUERA 2,931,074

DRAFTING APPARATUS FOR TEXTILE FIBRES

Filed May 1, 1956 2 Sheets-Sheet 1

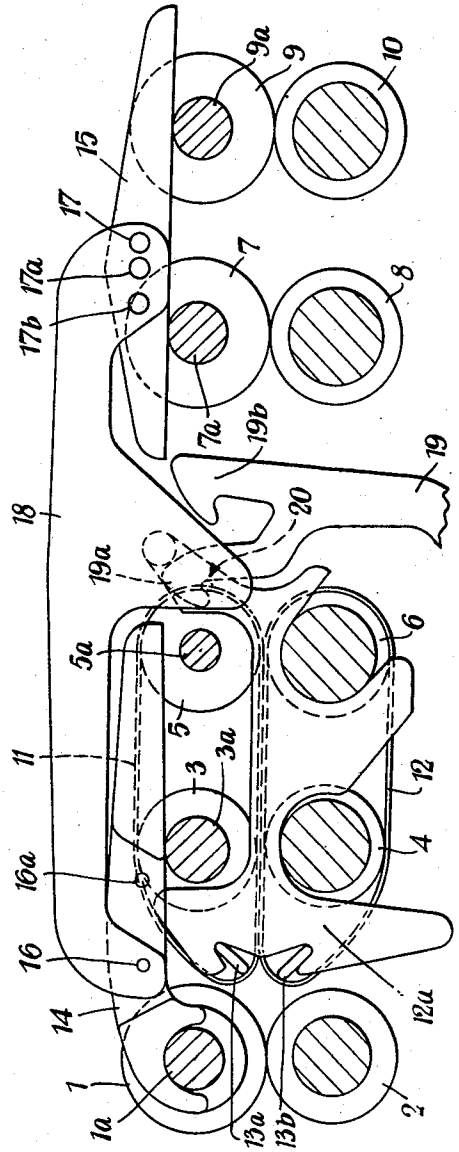


FIG. 1.

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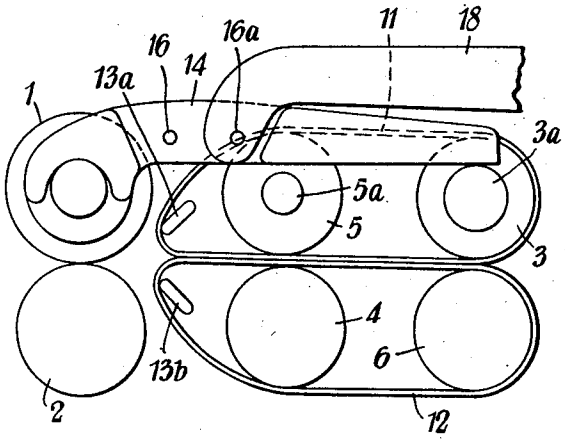


FIG. 2.

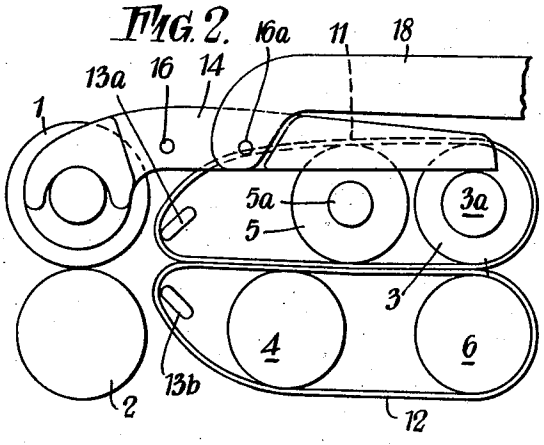


FIG. 3.

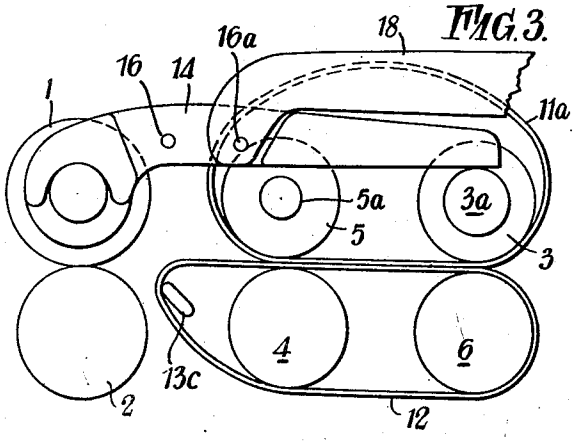


FIG 4.

United States Patent Office

2,931,074

Patented Apr. 5, 1960

2,931,074

DRAFTING APPARATUS FOR TEXTILE FIBRES

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Application May 1, 1956, Serial No. 581,890

Claims priority, application Great Britain May 11, 1955

5 Claims. (Cl. 19—137)

This invention relates to drafting apparatus for textile fibres, the apparatus being of the kind employing superposed endless aprons having co-operating runs between which the fibres are guided during drafting.

The employment of such apparatus for the alternative drafting of long fibres up to 3 inches or longer and short fibres such as cotton, necessitates the use of extra long fibre controlling apron runs in order to accommodate the longer fibres. Such extra long runs, however, have a disadvantageous tendency to deform or become unsteady in use. Furthermore, extra long apron runs are not altogether satisfactory for controlling the shorter fibres since the distance separating the nip between the usual front drawing rollers and the nip between the usual apron driving rollers, where the fibres are held in a substantially non-yielding grip, greatly exceeds the fibre length.

A main object of the invention is to enable a drafting apparatus employing endless aprons to be readily accommodated, in a simple and expeditious manner, for the efficient alternative drafting of short or long fibres.

Accordingly the invention provides a drafting apparatus of the kind specified having extra long cooperating apron runs, wherein the aprons are arranged to pass respectively around the upper and lower rollers of two pairs of belt supporting rollers, the top rollers of said roller pairs being adapted to receive weighting pressure alternatively to accommodate the apparatus to the drafting of different fibre lengths.

According to a further more limited aspect of the invention, said apron runs are arranged to pass respectively around the upper and lower rollers of two pairs of supporting rollers and are guided at their delivery ends by tensor means, the lower rollers of said two roller pairs being arranged to receive a drive and the upper rollers of said two roller pairs being adapted to receive top weighting pressure alternatively to vary the distance of the nip, formed between the weighted top roller and the corresponding bottom roller, from the delivery ends of the apron runs.

In order that the invention may be clearly understood and readily carried into effect, embodiments thereof will now be described in detail with reference to the accompanying diagrammatic drawings in which:

Figure 1 is a part-sectional side elevation showing one form of drafting apparatus constructed in accordance with the invention, parts of the apparatus which are of known construction being omitted for the sake of clarity,

Figures 2 and 3 are fragmentary detail views showing the front part of the apparatus according to Figure 1 in two further alternative positions of adjustment, and

Figure 4 is a view similar to Figure 2 but illustrates the employment of a modified form of front tensor and top apron.

Referring now to the drawings, the drafting apparatus illustrated is provided with five consecutive roller pairs **1, 2, 3, 4, 5, 6, 7, 8** and **9, 10**, the top rollers of the roller pairs being of the dual boss type and having an intermediate neck part **1***a*, **3***a*, **5***a*, **7***a* and **9***a*. Two extra long endless superposed aprons **11** and **12**, guided by a cradle **12***a*, are also provided on the apparatus. The term "extra long" as used in the specification and claims is intended to mean of sufficient length to permit the efficient handling of the longest fibres with which such an apparatus is required to deal. The top apron **11** is arranged to run around the top rollers **5** and **3** of the third and second roller pairs from the front or delivery end of the apparatus, and around the upper arm **13***a* of a two-armed front tensor member, whilst the bottom apron **12** is arranged to run around the bottom rollers **6** and **4** of the same pairs and around the bottom arm **13***b* of the front tensor member. With such an arrangement, the second roller pair **3, 4** which is additional to the usual roller pairs employed, serves to support the co-operating runs at an intermediate position along the length of the runs.

All the bottom rollers **2, 4, 6, 8** and **10** of the five roller pairs are driven in any known manner and supported in the usual way by roller stands, whilst the top rollers **1, 3, 5, 7** and **9** are supported in the nebs of cap bars again in well known manner. A saddle assembly is arranged to apply weighting pressure to the top rollers. This assembly includes a front saddle **14** which weights the top roller **1** of the front roller pair, and the top roller **3**, in the embodiment shown in Figure 1, of the second roller pair, and a rear saddle **15** which weights simultaneously the top rollers **7** and **9** of the fourth and fifth roller pairs. The front and rear saddles **14** and **15** are arranged, in known manner, in tandem, and are pivotally connected at **16** and **17** intermediate their lengths to opposite ends of a bridging member **18**. This bridging member **18** is arranged for attachment to a weighting hook **19** which extends upwardly through the drafting rollers between the third roller pair **5, 6** and the fourth roller pair **7, 8**. For a purpose which will later become clear, the weighting hook **19** is provided with two heads **19***a*, **19***b* and, in Figure 1, is shown with the front head **19***a* attached to a transverse pin **20** on the bridging member **18**.

The front and rear saddles **14** and **15** are arranged, in the normal manner, to bear on the intermediate roller necks and, in order that weighting pressure from the front saddle **14** may be applied only to one of the two top rollers **3** and **5**, the neck **5***a* of the roller **5** in the embodiment of Figure 1 is of considerably smaller diameter than the neck **3***a* of roller **3**. In this way only the neck **3***a* is contacted by the saddle **14**, whilst the neck **5***a* is positioned well beneath this saddle. The front saddle **14**, is of course, sufficiently long to span the top rollers of the first three roller pairs, and by simply interchanging the second and third top rollers **3** and **5**, as shown in Figures 2 to 4, it is possible to apply weighting pressure selectively to one or the other of these top rollers. Alternatively, the transference of weighting pressure could be effected by exchanging the second and third top rollers **3** and **5** in the one case for a roller having a smaller diameter neck and, in the other case, for a roller having a larger diameter neck.

In order that the pivotal connection between the front saddle **14** and the bridging member **18** shall be roughly at the correct position between the top rollers to which weighting pressure is applied, the front saddle is provided with an alternative pivotal connecting position **16***a* which is arranged behind the pivotal connection **16** shown in Figure 1. In the alternative arrangements illustrated in Figures 2 to 4, it is the alternative connecting position **16***a* which is employed.

The distance between the fourth roller pair **7, 8** and the front roller pair **1, 2** is normally fixed, but the fifth

roller pair 9, 10 is arranged to move backwards or forwards to vary the distance between this fifth roller pair and the fourth roller pair 7, 8. To this end the rear saddle 15 is elongated so that it can continue to bear on the top rollers of both the fourth and fifth roller pairs in any position of adjustment up to maximum spacing. Again preferably two further alternative positions of pivotal connection 17*a*, 17*b* are provided between the rear saddle 15 and the bridging member 18 to allow for the varying positions of adjustment between the fourth and fifth roller pairs.

Since the front roller pair 1, 2 will normally be in a fixed position in relation to the apparatus, it will be appreciated that connection of the bridging member 18 to the rear point of connection 16*a* on the front saddle, as shown in Figures 2, 3 and 4 will of necessity have the effect of moving the bridging member 18 rearwardly. This, in turn, will move the pin 20 on the bridging member rearwardly by a corresponding amount. To allow for this rearward movement of the bridging member, the weighting hook 19 is, as aforesaid, provided with two heads 19*a*, 19*b* so that these heads can be used alternatively according to the position of the bridging member 18.

With the arrangement as described it becomes a relatively simple matter to accommodate the apparatus for the drafting of short or long fibres. In Figure 1 the apparatus is shown in adjustment for handling short fibres, the fourth and fifth roller pairs 7, 8 and 9, 10 being appropriately spaced and the saddle 15 being pivoted in the rearmost position 17 to the bridging member 18. Similarly the bridging member 18 is pivoted to the front saddle 14 at the front pivotal position 16 and the transverse pin 20 on the bridging member engages the front hook 19*a* of the weighting hook 19. The top rollers 3 and 5 of the second and third roller pairs are, as aforesaid, arranged so that the top roller 3 receives weighting pressure from the saddle 14 whilst the top roller 5 is unweighted. Thus the pressure of the front saddle 14 is applied only to the top rollers 1 and 3 of the first and second roller pairs, and the distance between the non-yielding nips on each side of the tensor members 13*a*, 13*b* is reduced to the distance between the first and second roller pairs.

To accommodate the apparatus to the drafting of long fibres, the distance between the fourth and fifth roller pairs 7, 8 and 9, 10 is appropriately increased and the rear saddle 15 is connected to the bridging member 18 at one or the other of the pivotal positions 17*a*, 17*b* according to the selected roller spacing. The top rollers 3 and 5 of the second and third roller pairs also are interchanged, as shown in Figurs 2, 3 and 4, so that the front saddle 14 bears only on the top rollers of the first and third roller pairs. For handling longer fibres, the rear hook 19*b* of the weighting hook 19 will be engaged with the pin 20 of the bridging member 18 and this bridging member will be connected to the front saddle 14 at the rear pivotal position 16*a*.

With such an arrangement, the top roller of the second roller pair acts merely as an idler turning under its own weight and will exert only a yielding grip on the fibres passing between the apron runs. The bottom roller of the second roller pair will continue to be driven at a speed at least as great as the bottom roller of the third roller pair and preferably a little greater to an extent of about 1%. The maximum distance between non-yielding nips on each side of the tensor members at the delivery end of the aprons will then be provided as between the third roller pair and the front roller pair.

The only difference between the arrangements shown in Figures 2 and 3 is that, in the latter case, the top idler roll of the second roller pair has been moved back somewhat in relation to the bottom roll and towards the top roller of the third roller pair. This adjustment is readily effected merely by sliding the nebs which support the second top roller along the associated cap bars. The result is that the control exercised on the fibres passing between the aprons 11 and 12 is rather more remote in the rearward direction from the tensor members 13*a*, 13*b* to enable still longer fibres to be handled.

The arrangement shown in Figure 4 is intended for certain kinds of work more especially when the bulk of fibre is very large and it is advantageous to reduce as much as possible the fibre control which is exercised at the delivery nip of the bands. This is normally achieved by using wider tensors, that is to say, tensors having a wider gap between the two prongs. In some cases, however, even the widest tensor may give too much fibre control and the arrangement of Figure 4 can then be usefully employed in that it gives no control at all at the position which was formerly the delivery point of the apparatus. To this end Figure 4 employs a single arm tensor 13*c* for the bottom apron and a modified form of top apron 11*a* which runs only around the second and third top rollers.

I claim:

1. In a textile fibre drafting apparatus having front and rearward pairs of upper and lower drafting rollers, intermediate upper and lower co-operating endless aprons and a top roller saddle weighting mechanism, the combination of two succeeding pairs of upper and lower apron supporting rollers, said aprons being extra long and supported by said apron supporting rollers, the upper rollers of said pairs of apron supporting rollers, having different diameter necks, and a saddle weighting member adapted to span and bear on the neck of said front upper roller and the neck of the upper apron supporting roller which has the larger diameter whereby the other said upper apron supporting roller is left unweighted.

2. The combination as claimed in claim 1 in which the said upper apron supporting rollers are exchangeable to transfer the saddle weight from one said supporting roller pair to the other and thereby vary the distance between the weighted supporting roller pair which drives the aprons and the said front roller pair, to accommodate the apparatus for drafting different fibre lengths.

3. The combination as claimed in claim 1 further including tensor means guiding the forward end of at least one of said aprons.

4. A textile fibre drafting mechanism which is adjustable for drafting short and long fibres and comprises a front pair of upper and lower drafting rollers, two consecutive rearward pairs of upper and lower drafting rollers which are relatively adjustable in the fore and aft direction of the drafting field, two consecutive pairs of upper and lower apron supporting rollers disposed between said front and rearward rollers and having interchangeable upper rollers with different diameter necks, upper and lower endless aprons extending respectively around the upper and lower apron supporting rollers, tensor means supporting the forward end of at least one of said aprons and an adjustable saddle weighting mechanism adapted to apply weighting pressure to the upper rollers of all said roller pairs other than the upper apron supporting roller having the smaller diameter neck, said saddle mechanism being adjustable to conform with the spacing of the said weighted rollers.

5. A textile fibre drafting mechanism as claimed in claim 4 in which saddle weighting is applied to the rearmost pair of apron supporting rollers and the rollers of the other said apron supporting pair are individually adjustable in the fore and aft direction of the drafting field to vary the fibre control exercised thereby.

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