Nov. 10, 1942. F. E. BANFIELD, JR 2,301,677

DRAWING FRAME

Filed June 30, 1941 2 Sheets-Sheet 1

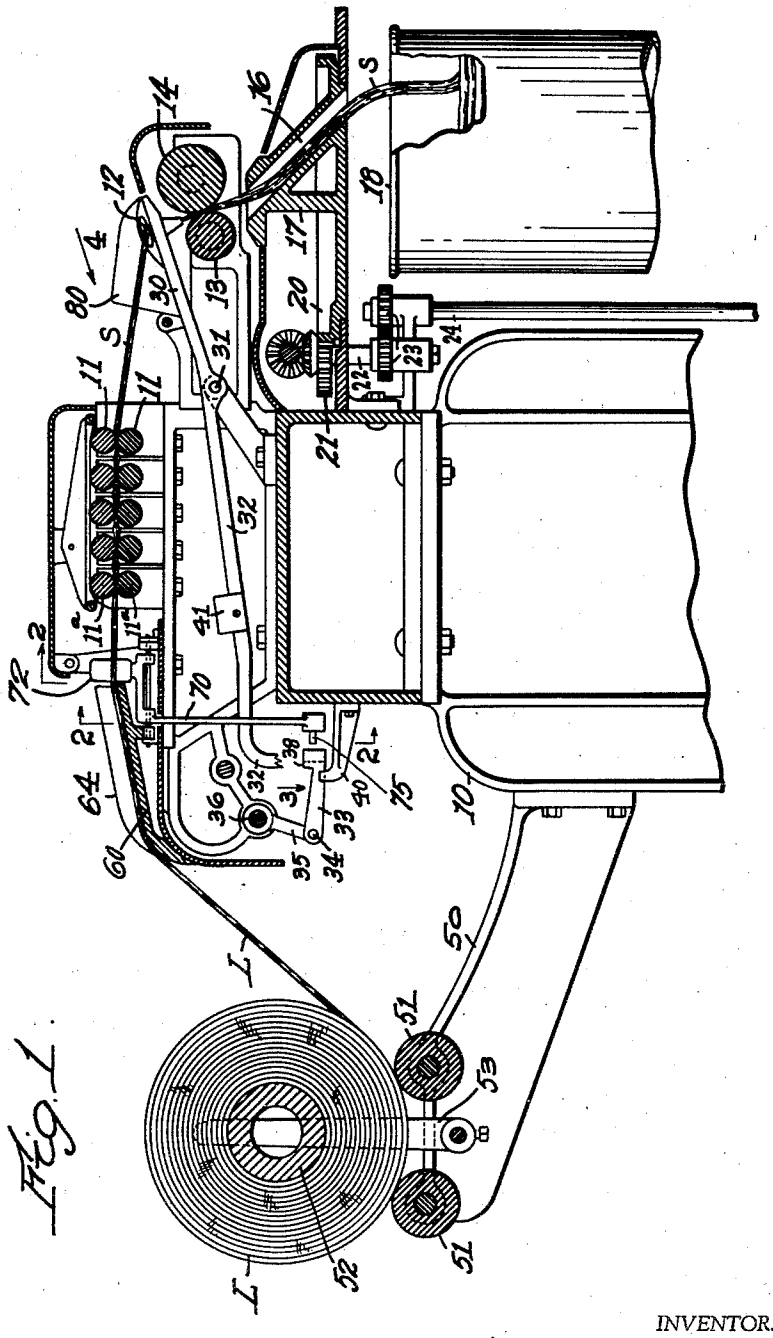


Fig. 1

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Filed June 30, 1941 2 Sheets-Sheet 2

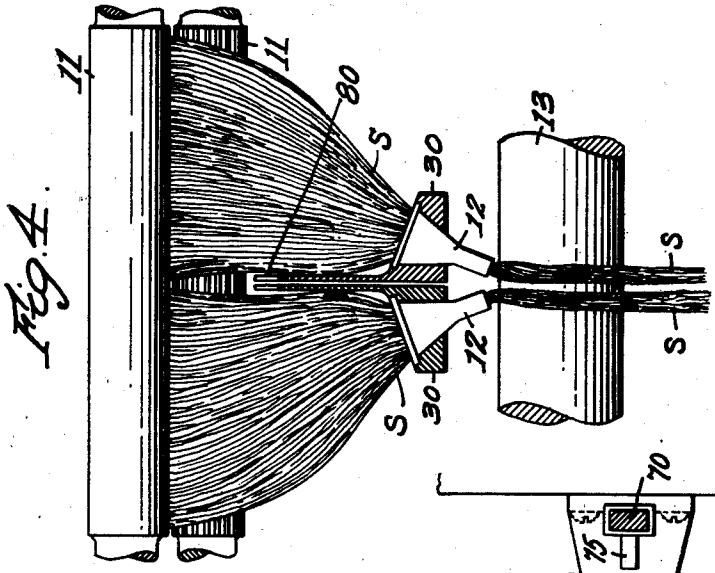


Fig. 4.

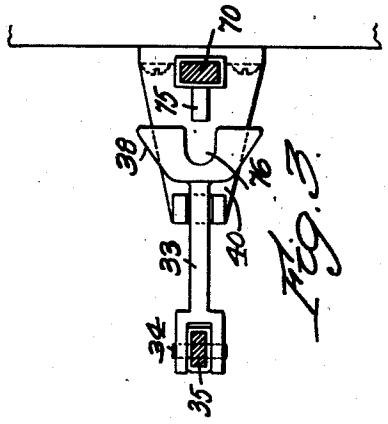


Fig. 3.

Fig. 5.

Fig. 2.

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2,301,677

DRAWING FRAME

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Application June 30, 1941, Serial No. 400,437

3 Claims. (Cl. 19—164)

This invention relates to machines for drawing textile fibers and for forming twin slivers therefrom.

One important object of my invention is to produce twin slivers in a drawing frame from a single lap roll. To the attainment of this object, I provide an improved device for dividing the lap into two separate parallel parts between the lap roll and the drawing rolls.

Another object of the invention is to provide an improved stop motion for the drawing frame which is responsive to unequal division of the lap by said dividing device.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which—

Fig. 1 is a sectional side elevation of a drawing frame embodying my improvements;

Fig. 2 is a partial sectional rear elevation, taken along the line 2—2 in Fig. 1;

Fig. 3 is a plan view, partly in section and looking in the direction of the arrow 3 in Fig. 1;

Fig. 4 is an approximate plan view, partly in section and looking in the general direction of the arrow 4 in Fig. 1; and

Fig. 5 is a detail sectional view of a modified guide plate.

Referring to the drawings, I have shown a drawing frame which is in general of a commercial type and which comprises a base 10 supporting a plurality of successive pairs of drawing rolls 11, from which twin slivers S are delivered through trumpets 12 to a pair of calendar rolls 13 and 14. The slivers S then pass through a delivery passage 16 in a coiler head 17 and are coiled in a can 18.

The coiler head 17 is provided with a ring gear 20 engaged by a pinion 21 on a short shaft 22 which is connected by gears 23—23 to an upright drive shaft 24. In order to avoid twist in the twin slivers, the can 18 may be rotated alternately in opposite directions by suitable actuating mechanism, not shown. This mechanism forms no part of my present invention and may be of the general type shown in the prior patent to Underwood, No. 1,469,740.

The trumpets 12 are mounted on separate levers 30 (Fig. 1 and 4) and these levers are pivoted at 31 and have rearwardly extending end portions 32 adapted to project into the path of a stop motion device 33. The device 33 is pivoted at 34 to an arm 35 mounted on a wag shaft 36 forming a part of a well-known drawing frame stop motion. For present purposes, it is sufficient to state that the wag shaft 36 is continuously oscillated when the machine is in operation, and that the machine stops when such oscillation is interrupted.

The free end 38 of the member 33 reciprocates on a fixed support 40. The rear portion 32 of each trumpet lever 30 is provided with a weight 41 which overbalances the front end of the lever and which causes the rear portion 32 to move into the path of the stop motion device 33 whenever an associated sliver S breaks.

All of the parts thus far described in themselves form no specific part of my present invention and may be of the usual commercial construction.

A bracket 50 is mounted at the back of the base 10 and supports a pair of driven rolls 51, which in turn support a lap L, preferably wound in a roll on a spool or core 52 and held from axial movement by upright guide arms 53. The lap L is unwound by the action of the driven rolls 51 and is drawn upward over a guide-plate 60 by the tension of the back drawing rolls 11a. The plate 60 is provided with side flanges 64 (Fig. 2).

In order to make certain that the two parts of the lap are equal and uniform, I provide the special stop motion device best shown in Fig. 2 and comprising a lever 70 pivoted at 71 and having an enlarged upper end portion 72 extending through a slot 73 in the guide-plate 60 and extending further upward between the two portion of the lap L.

At its lower end, the lever 70 is provided with a pin 75 which freely enters a recess 76 in the stop motion device 33 when the lever 70 is in its normal upright position, shown in full lines in Fig. 2. If, however, the lap is unevenly divided so that more than half of the lap passes to one side of the upper end portion 72 of the lever 70 and less than half passes to the other side, the lever 70 will be displaced as shown in dotted lines and the pin 75 will be engaged by the rear end of the stop motion device 33. This will prevent normal reciprocation of the device 33 and normal oscillation of the wag shaft 36, whereupon the machine will stop in the usual manner.

After the lap has been divided by the lever portion 72 and after each half of the lap has been drafted by the rolls 11, the resulting twin slivers S are delivered through the trumpets 12 to the calendar rolls 13 and 14 and then to the coiler head 17, all as previously described. The front ends of the levers 30 are preferably pro-

vided with upwardly extending flanges 80 by which the twin slivers are held apart as they approach the trumpets 12.

Having described the construction of my improved drawing frame and the method of operation thereof, certain advantages will be apparent. By producing twin slivers direct from a lap roll, I avoid the use of a large number of feeding cans at the back of the machine, with a corresponding saving in floor space. Also by forming the lap roll with just the correct weight of fiber to fill the can 18, I avoid piecing of the sliver and I am able to replenish the lap and to remove the filled can 18 at a single stoppage of the machine.

Dividing of the lap at the rear of the drawing rolls, rather than at the front only, is also very advantageous, as the lap is from four to six times heavier as it approaches the drawing rolls than it is at the front, and consequently there is much less chance of the lap being torn or severed as it engages the dividing lever portion 72.

If the stop motion is not used, the simple construction shown in Fig. 5 may be substituted, in which a guide plate 60a is provided, having side flanges 64a and a fixed central dividing flange 66.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In a drawing frame, a plurality of successive pairs of drawing rolls, means to present a lap of fibers thereto, means to divide said lap longitudinally into two approximately equal parts as it approaches said drawing rolls, and a device projecting between the two parts of the lap and displaceable thereby to stop the frame if the lap is unevenly divided by said dividing means.

2. In a drawing frame, a plurality of successive pairs of drawing rolls, means to present a lap of fiber thereto, means to divide said lap longitudinally into two approximately equal parts as it approaches said drawing rolls, and a pivoted stop motion lever having its upper end projecting between the two parts of said lap and angularly displaceable on its pivot to stop the frame if the lap is unevenly divided by said dividing means.

3. In a drawing frame, a plurality of successive pairs of drawing rolls, means to present a lap of fiber thereto, means to divide said lap longitudinally into two separate and approximately equal lap portions as said lap approaches said drawing rolls, a member normally centered in inoperative position between the two lap portions but displaceable transversely by unbalanced transverse pressures of unequal lap portions, and devices controlled by said member and rendered effective by displacement of said member to stop said drawing frame when the lap is unevenly divided by said dividing means.

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