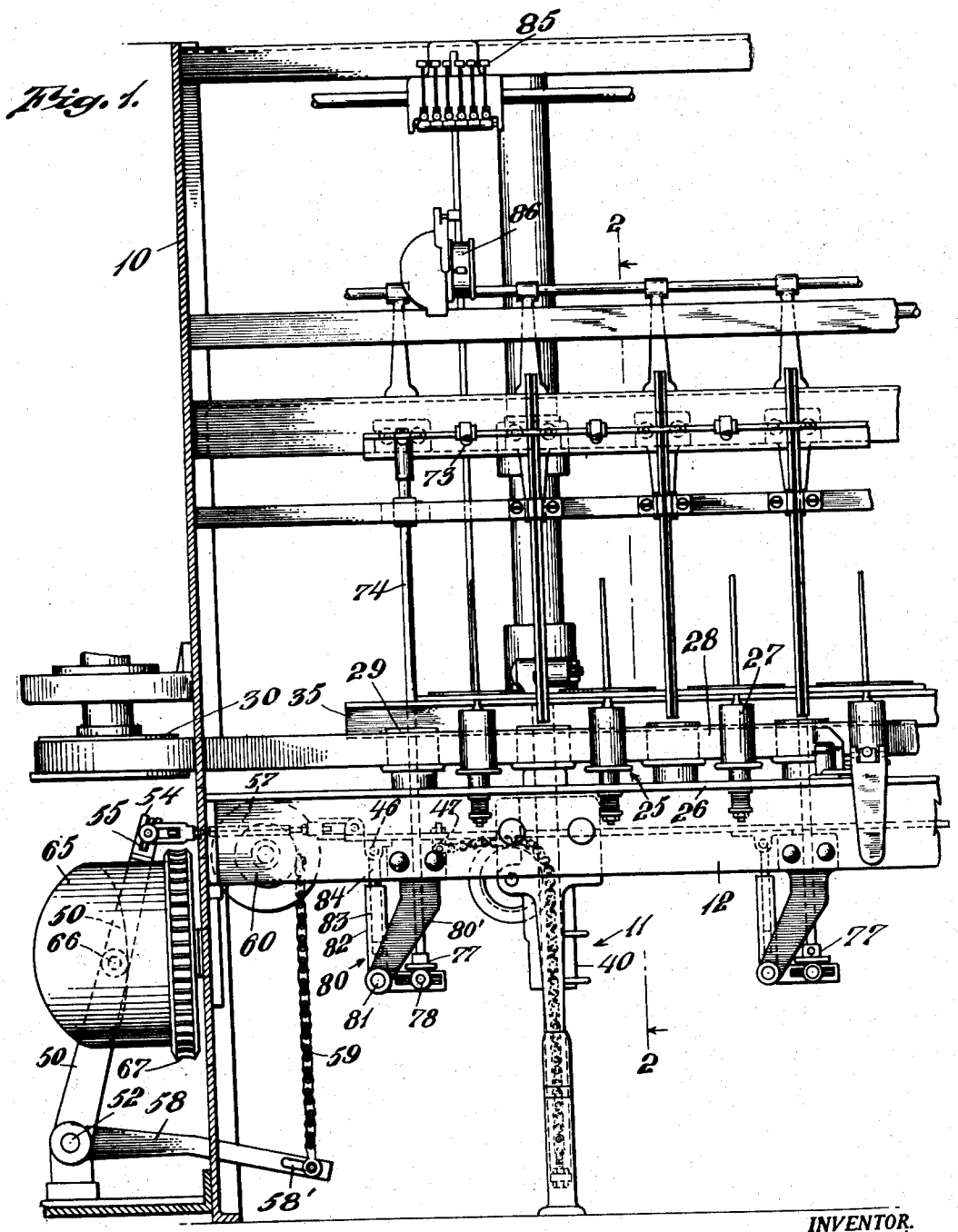
June 9, 1942. A. E. WINSLOW 2,285,879

SPINNING AND TWISTING FRAME

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Fig. 1.



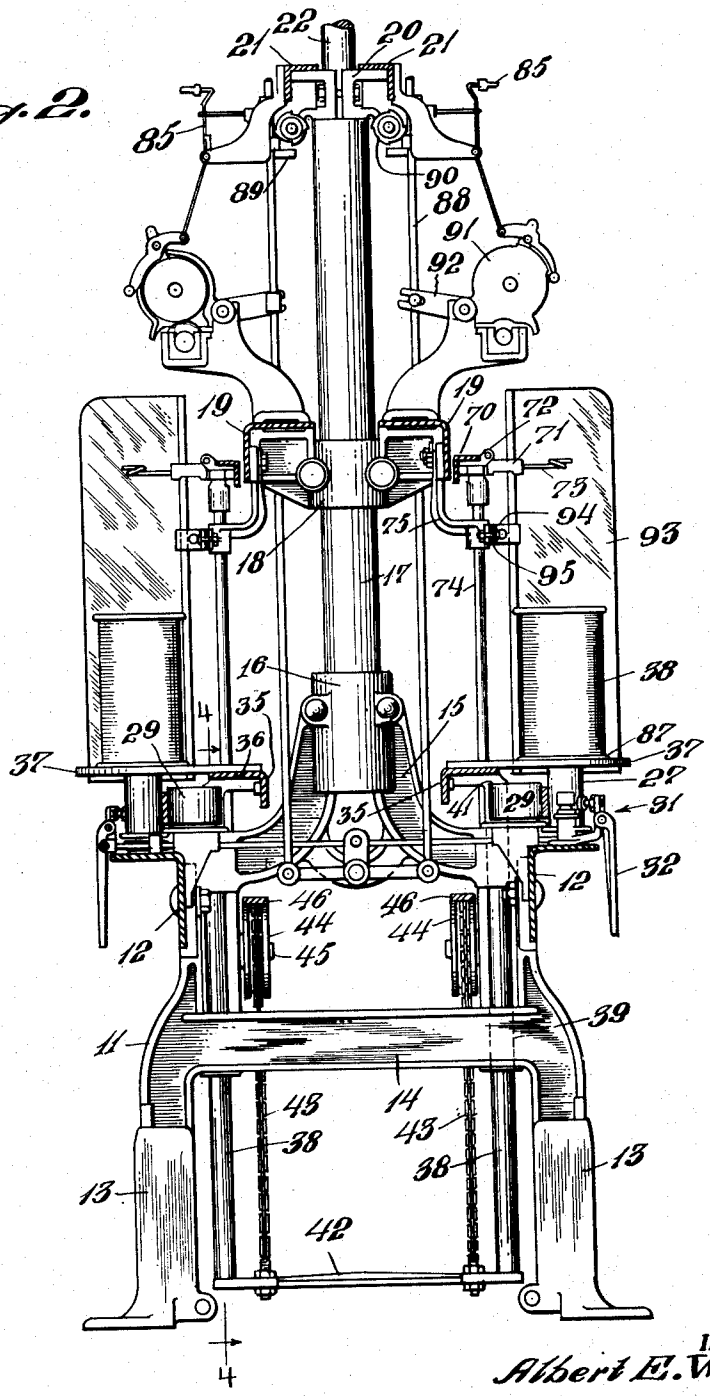
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Fig. 2.



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Fig. 3.

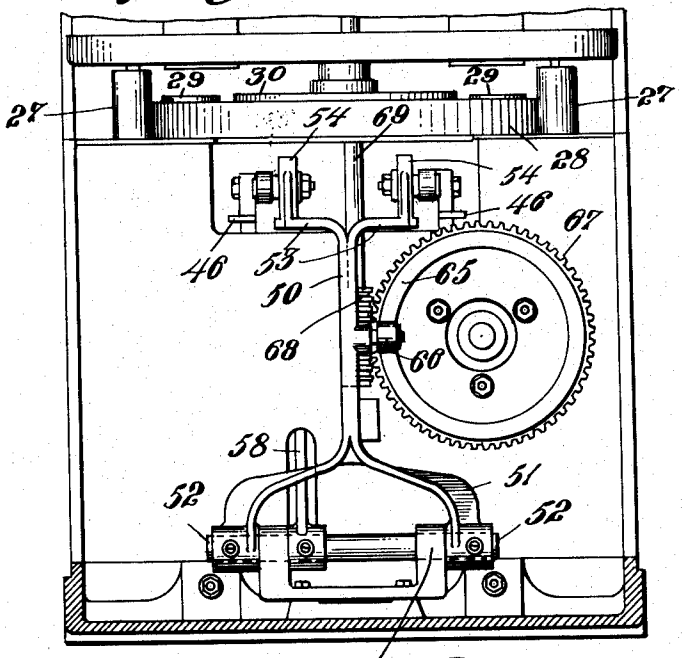


Fig. 5.

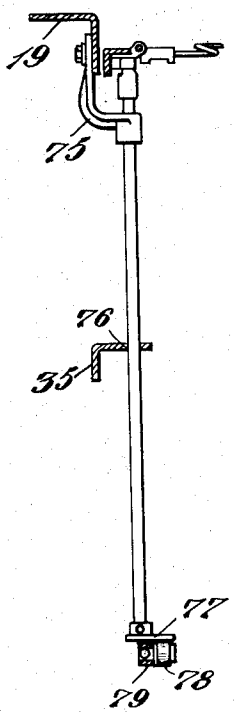


Fig. 4

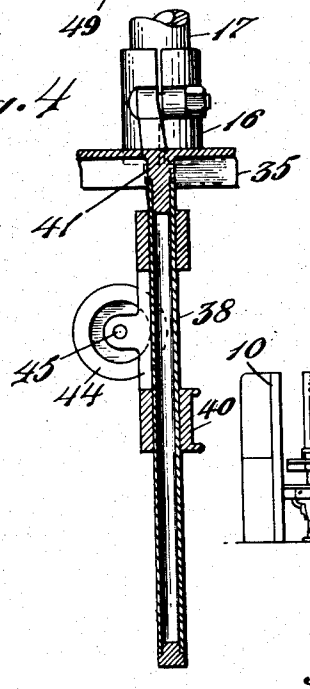
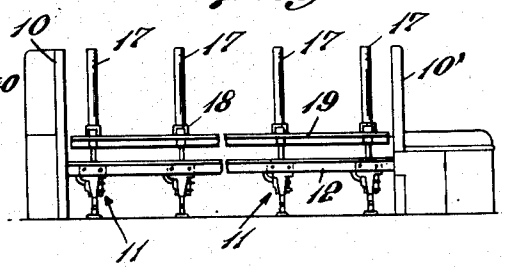


Fig. 6.



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UNITED STATES PATENT OFFICE

2,285,879

SPINNING AND TWISTING FRAME

Albert E. Winslow, New London, Conn., assignor to Atwood Machine Company, a corporation of Connecticut

Application November 22, 1940, Serial No. 366,671

7 Claims. (Cl. 57—75)

This invention relates to textile machines, more particularly a spinning or twisting frame, and has for one of its objects to provide a more rigid mounting for the ring rail of the ring type of frame whereby better packages of work may be provided.

Another object of the invention is to utilize the midstand for the machine as a guide for the lift rod for the ring rail that a more rigid and steady guide may be provided.

Another object of the invention is to lift the ring rail rod through this rigid guide in the midstand that the application of power may be had at this firmly-supported point. Thus, the ring rail in its operation is not subjected to the vibrations which might otherwise be transmitted to it with the support less rigid.

Another object of the invention is to provide a more uniform lift and fall of the ring rail so that the motion of the ring rail does not act through any leverage to vary its motion but rather has a uniform movement responsive to the movement of an operating bar at all times.

Another object of the invention is to so balance the ring rail load that an easy action by means of a cam may effect its motion.

Another object of the invention is to improve the reciprocating motion imparted to the thread board of the frame.

Another object of the invention is to provide full-length separators fixed on the frame and located between the spindles or the packages thereon so that should one yarn end break, it will not by whipping cause other ends to break, which might be caused, should a yarn end break when separators carried by the ring rail were in a raised or elevated position of travel.

Another object of the invention is by use of the separators to break up the air currents and to maintain a cleaner frame by reason of less fly being caused by circulation of the air.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

Fig. 1 is a side elevation, partly in section, of a portion of a twisting frame, illustrating my invention;

Fig. 2 is a sectional view adjacent the midstand and on substantially line 2—2 of Fig. 1;

Fig. 3 is an end view showing the mechanism for reciprocating the drive bar of the frame;

Fig. 4 is a detailed sectional view of the lift rod;

Fig. 5 is a detailed fragmental sectional view showing the lift rod for the thread board;

Fig. 6 is an elevation of the skeleton structure of the frame showing the end standards and midstands.

Certain vibrations are present in spinning and twisting frames which I have found I can reduce to a substantial extent by better supporting the lift rod for the ring rail and lifting the same through the better support thereof. Also, I have so arranged the ring rail that it is substantially balanced by a counterbalance so that the application of power for moving the same may be easily applied with little friction to overcome the weight of these usually heavy parts and from this mechanism improve the lifting of the thread board. Also, I have broken up certain air currents which exist about the packages and through these improvements provided a better package; and the following is a more detailed description of the present embodiment of this invention, illustrating the preferred means by which these advantageous results may be accomplished:

With reference to the drawings, I have illustrated in Fig. 1 the end standard 10, there being a complemental end standard 10' at the other end of the machine as shown in Fig. 6, and there being provided a plurality of mid stands 11 between the end standards of the frame positioned about every eight feet apart along the length of the frame. Spindle rails 12, shown in the shape of L-shaped angle irons, are attached to the end standards and mid stands and extend throughout the length of the frame, tying these mid stands and end standards together in the structure.

Each mid stand 11 is generally of an A shape structure having legs 13, 13 with the tying cross bar 14. These legs curve inwardly as at 15 and are joined together by a support socket 16 for the upstanding post 17. Brackets 18 are supported on each of the posts 17 and these brackets are tied together by L-shaped angle irons 19, 19 which extend substantially the length of the frame. An upper bracket 20 is also supported on the post 17 and these upper brackets have secured to them L-shaped angle irons 21, 21 also extending lengthwise of the frame. Support posts 22 extend upwardly beyond the posts 17 of the frame for the mounting of the supply packages which, not being a part of this invention, are not illustrated herein. This frame arrangement provides for back-to-back operation of two lines of a plurality of spindles for packaging yarns

which in the illustration here shown are doubled together.

Spindles, designated generally 25, are mounted upon the portion 26 of the spindle rail 12, each of a usual construction with its whirl 27 positioned to be engaged by the belt 28 driven by a suitable source of power not shown and traveling horizontally and in one direction on one side of the frame and over a suitable pulley 30, and then back on the other side of the frame in a different direction, and tensioned by the intermediate pulleys 29.

The ring rail 35 is shown of L-shaped angle iron structure and on its horizontal portion 36 there is supported a plurality of rings 37 each of which projects forwardly beyond the rail and which encircles the package 38 mounted upon each of the spindles. Each ring rail is mounted at the upper ends of the rods 38 on one side of the frame which rods are guided in the bores 39 of the rigid enlargements 40 of the mid stands so as to receive a good support therein, there being brackets 41 secured to the ring rail and each having a reduced stud extending into the end of the tubular rod 38 to provide a connection between the ring rail and the lift rod. The two lift rods in each mid stand one for one ring rail and one for the ring rail on the other side of the frame are connected together by a plate 42 that these may operate in unison.

Flexible members such as chains 43 extend upwardly from the plate 42 and are trained about pulleys 44 supported on the trunnion 45 fixed to the non-movable portion of the frame. Bars 46 extend the entire length of the frame in parallel relation, there being one for each side of the frame, which are supported by pulleys 44 and chain 43 and which are connected to the chain as at 47 allowing flexibility of the chain in its movement about the pulley. Thus, each of the lift rods on one side is connected to the next one by a bar so that endwise movement of the bar longitudinally of the frame will cause uniform movement of the chains 43 and lift rods and consequently the ring rails.

An opposite fork member 50 of a bell crank lever has its bifurcated ends 51 (see Fig. 3) fixed on the shaft 52 which is rockably mounted in bearings 49, while its opposite bifurcated end 53 provides arms 54 which are slotted as at 55 (see Fig. 1). These arms are connected to the end of the bars 46 by means of an adjustable connection such as a turn buckle 57. Thus, the bars 46 through the member 50 are connected together so as to move in unison. The member 50, by being fixed upon the shaft 52, causes the shaft to move with it, and upon this shaft there is the other member 58 of the bell crank lever. A sprocket chain 59 is adjustably connected to this member through the slot 58' and to a spiral spring 60 tending to exert a pull upon the member 59 and which is adjustable by a ratchet or the like as to tension so that through the bell crank lever 50 the weight or gravitational pull of the ring rail, lift rods, and mechanism attached thereto is substantially supported by this counter balancing spring, the tensioning being adjusted by reason of the spring tension and slot 58' which will adjust for difference between the ratchet teeth such that the gravitational pull will just overbalance the spring pull. By this arrangement, the application of power or operation of the lift rail can be accomplished through very little effort.

The power for moving the lift rail is provided by a face cam 65 which engages a cam follower 66 carried by the member 50 of the bell crank lever. This cam is driven by worm gear 67 engaged by worm 68 on shaft 69 which is driven from some suitable source of power not shown.

The thread board 70 has a plurality of guide mountings 71 hingedly supported thereon as at 72 and from which the pig tail guides 73 extend for receiving the doubled yarn to be packaged. This thread board is supported at the upper end of a plurality of rods 74 which are guided at their upper ends in the brackets 75 supported on the angle irons 19. The rods 74 extend downwardly through an opening 76 in the ring rail 35 (see Fig. 5) and are provided each with a foot 77 which rests upon anti-friction roll 78 in the arm 79 of a bell crank lever designated generally 80 (see Fig. 1) and pivoted as at 81 on the hanger 80', the arm 82 of the bell crank lever being provided with a bore 83 loosely receiving the connection 84 fixed to the bar 46 so that as this bar 46 is moved endwise, the bell crank lever 80 will be rocked about its pivot 81 to also lift or lower the thread board and its guides in time with and proportional to the stroke of the ring rail which causes the traverse of the yarn on the package.

A plurality of yarns are led from the creel or package supply through the different guide fingers 85 and thence brought together and wrapped about the drum 86 and then extend downwardly through the pig tail guide 73 (see Fig. 2), thence through the traveler on the ring 87 on the ring rail 37 and are twisted and packaged as at 38. The rod 88 is reciprocated in a known manner and should any one of the yarns traveling through the guide 85 break, the movement of the guide arm would swing the lip 89 on the rod 88 into engagement with the star wheel 90 to cause movement of the rod so as to lift the casing 91 through the lever 92 to arrest feeding of this yarn in a known manner.

Full length separators 93 are provided to extend between the packages 38 and between the individual outwardly-projecting ring supports 37 and are between the packages at all times in the traverse of the ring rail so that should breakage of any one yarn occur, its whipping would not break others and thus bring down all of the ends of the machine. These full length separators are supported by mounting clamps 94 which are secured by means of bolts 95 to the bracket 75 which serve as a guide for the thread board rods 74, and thus cause these separators to be stationary.

I claim:

1. In a ring spinning or twisting frame, a ring rail, a bar extending lengthwise of the frame, lift rods attached to the ring rail, flexible means attaching the bar to the lift rods whereby the weight of the ring rail acts through said bar, a bell crank lever having one arm attached to said bar and the other arm attached to a counterbalance whereby the weight of said ring rail and lift rods is substantially supported.

2. In a ring spinning or twisting frame, a ring rail, a bar extending lengthwise of the frame, lift rods attached to the ring rail, flexible means attaching the bar to the lift rods whereby the weight of the ring rail acts through said bar, a bell crank lever having one arm attached to said bar and the other arm attached to a counterbalance whereby the weight of said ring rail and lift rods is substantially supported, and cam means to actuate said lever.

3. In a ring spinning or twisting frame, end standards, mid stands between said end stand-

ards, means for connecting said standards and mid stands together, a ring rail, lifting rods for the ring rail, a bar having straight-line motion, flexible means connecting said rods to said bar for transmitting lifting motion to said rods, a thread board, and means actuated by said bar for lifting said thread board in time with said ring rail.

4. In a ring spinning or twisting frame, end standards, mid stands between said end standards, means for connecting said standards and mid stands together, a ring rail, lifting rods for the ring rail, a bar having straight-line motion, flexible means connecting said rod to said bar for transmitting lifting motion to said rods, a thread board, a bell crank lever pivoted on a fixed part of the frame, means connecting said lever to said bar to rock the lever in time with said bar, and a rod through which motion is transmitted from said lever to said thread board whereby said ring rail and thread board reciprocate in time with each other.

5. In a ring spinning or twisting frame, end standards, mid stands between said end standards provided with guide bearings thereon, means for connecting said standards and mid stands together, a ring rail, lifting rods for the ring rail extending through and guided in said bearings, means for applying power to said rods, means for counterbalancing the weight of said ring rail and parts movable therewith comprising a rotatable drum operatively connected to said ring rail to be rotated in one direction by the weight of said rail, a spiral spring within said drum arranged to rotate said drum in the opposite direction, and means for transmitting motion to said ring rail.

6. In a ring spinning or twisting frame, end standards, a midstand between said standards provided with a bearing therein, a guide roll mounted on said midstand, means for connecting said midstand to said end standards, a ring rail, a lifting rod fixed to said ring rail and journaled in said bearing, a bar having a straight line motion and engaging and supported on said rotatable guide and a flexible connector secured at one end to said rod and at the other end to said bar and passing over said guide for transmitting lifting motion to said rods.

7. In a ring spinning or twisting frame, end standards, a midstand between said standards provided with a bearing therein, a guide roll having a groove therein pivotally mounted on said midstand, means for connecting said midstand to said end standards, a ring rail, a lifting rod fixed to said ring rail and journaled in said bearing, a bar having a straight line motion and engaging and supported on said rotatable guide and a flexible connector secured at one end to said rod and at the other end to said bar and trained in the groove of said guide roll for transmitting lifting motion to said rods.

ALBERT E. WINSLOW.