Aug. 11, 1925.

1,549,288

S. BOROVOY

SPINNING FRAME

Filed July 19, 1922

2 Sheets-Sheet 1

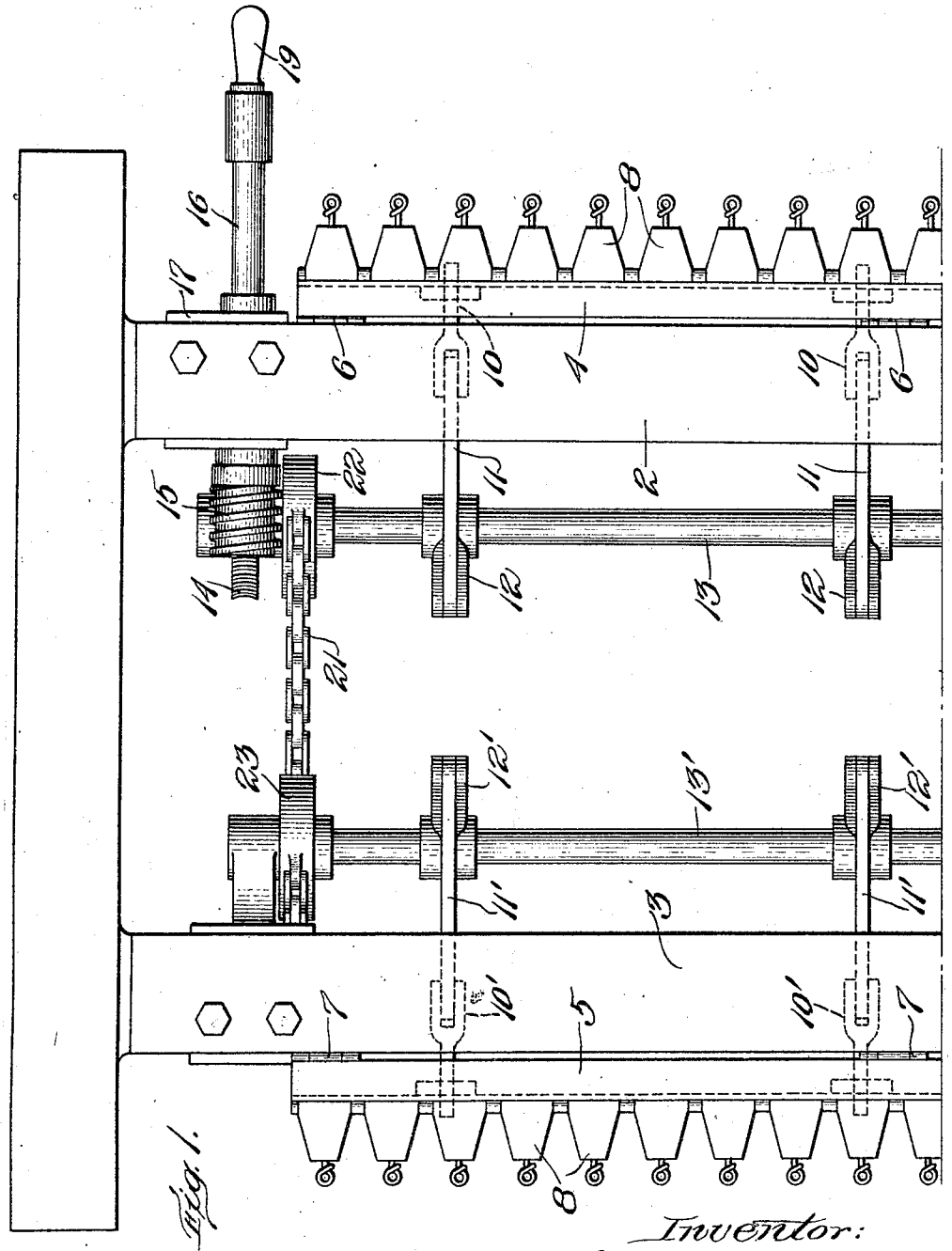


Fig. 1.

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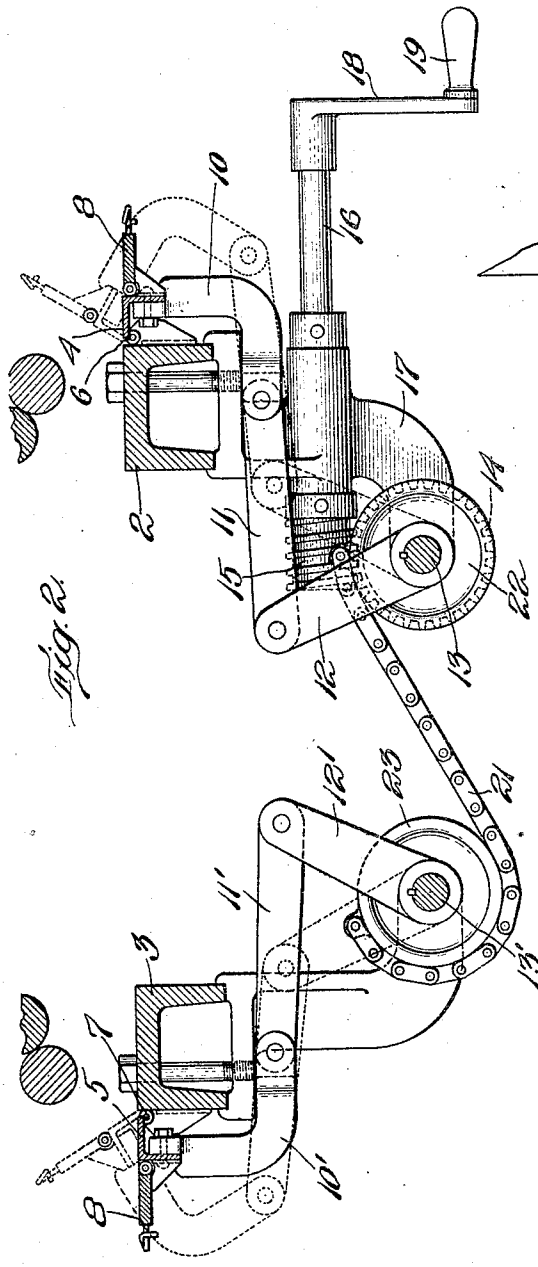


Fig. 2.

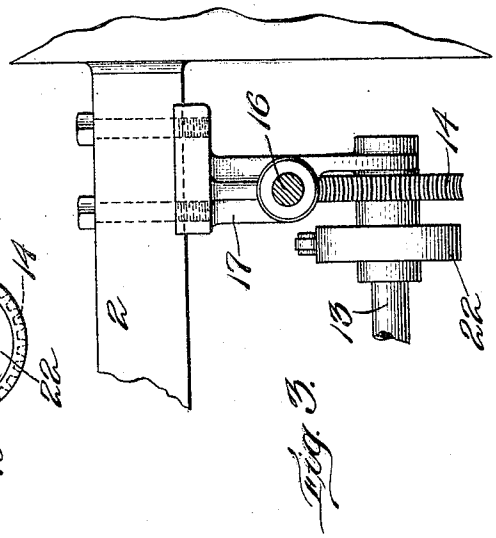


Fig. 3.

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UNITED STATES PATENT OFFICE.

SAMUEL BOROVOY, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO SACO-LOWELL SHOPS, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

SPINNING FRAME.

Application filed July 19, 1922. Serial No. 576,008.

To all whom it may concern:

Be it known that I, SAMUEL BOROVOY, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Spinning Frames, of which the following is a specification.

This invention relates to spinning frames, and more particularly to mechanisms for raising and lowering the thread boards or doffing rails of spinning frames.

As is well understood by those skilled in this art, a spinning frame usually is equipped with two hinged thread boards or doffing rails, one at each side of the frame, and each having a series of thread board lappets pivoted thereto. When the doffing operation is to be performed, the thread boards are lifted or swung into an inclined position so that the lappets will not interfere with the doffing operation. These thread boards extend the entire length of the frame, and consequently they are so heavy that it is difficult for the average girl operator to raise them in the manner just described. Furthermore, because of the great length of such a thread board there is a tendency, when it is lifted by one end, for it to twist or sag so that the other end either does not rise, or else it comes up with a snap and throws the lappets violently backward.

It is the chief object of the present invention to devise a mechanism for lifting the thread boards or doffing rails of spinning frames which will overcome the objections just mentioned. The invention is also directed to the provision of a mechanism of this character which will be simple in construction, easy to operate, can be manufactured economically, and will automatically hold the thread board or rail in any position of adjustment.

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,

Figure 1 is a plan view of a portion of a spinning frame equipped with a thread board lifting mechanism embodying the present invention;

Fig. 2 is a vertical transverse cross sectional view of the parts shown in Fig. 1; and

Fig. 3 is a view, partly in front elevation and partly in cross section, of the worm gearing and drum forming a part of this adjusting mechanism.

In the drawings 2 and 3 designate the beams at opposite sides of a spinning frame, and 4 and 5 designate, respectively, the thread boards or doffing rails hinged to the respective beams 2 and 3 at 6 and 7, respectively. The two series of thread board lappets pivoted to the outer edges of the thread boards 4 and 5 are indicated at 8. This arrangement is exactly like that used in spinning frames well known at the present time. The spinning instrumentalities are not shown since their relationship to the other parts of the machine is obvious to those skilled in this art.

Referring more particularly to the thread board 4 and to the parts immediately associated therewith, it will be seen that this board consists of a length of angle iron. Bolted to the thread board is an arm 10 having a right angle bend therein, and this arm is connected by a link 11 to another arm 12 which is keyed to a horizontal shaft 13, supported below and slightly back of the beam 2, this shaft extending practically the entire length of the machine frame. A worm wheel 14 is keyed on one end of this shaft and meshes with a worm 15 which is pinned on a shaft 16 extending above and transversely to the shaft 13. The shaft 16 is supported in a bearing bracket 17 bolted to the lower side of the beam 2, as clearly shown in Figs. 2 and 3. At its forward end the shaft 16 carries a crank 18 provided with a handle 19 which affords a convenient means for rotating the shaft.

Normally the thread board 4 and the lappets 8 are in a horizontal position, as shown in full lines in Fig. 2. When the doffing operation is to be performed, the crank 18 is turned, thus operating through the worm 15 and worm wheel 14 to rotate the worm wheel in a clockwise direction, Fig. 2. This movement is transmitted through the connections between said wheel and the thread board and swings the thread board on its hinge into an inclined position, as indicated in dotted lines in said figure. As above stated, the shaft 13 extends parallel to the

thread board for substantially the entire length of the machine; and it is connected at intervals to the thread board by means of additional arms 10 and 12 and links 11, so that all these connections operate in unison to transmit the rotative movement of the shaft 13 to the thread board, and thus to prevent any sagging or twisting of the thread board while it is being swung on its hinges. The lowering of the thread board after the doffing operation has been completed is effected by rotating the crank 18 in the opposite direction to that required to lift the thread board. Inasmuch as the worm 15 and worm wheel 14 are irreversible under the weight of the thread board, they act automatically to hold the thread board in any position of inclination to which it is moved, thus avoiding the necessity of providing an additional holding mechanism. Usually the thread board is swung into about the position shown in dotted lines in Fig. 2 so that the lappets do not tip backwardly. Consequently, when the thread board is returned again to its horizontal position all the lappets will be found in their normal positions.

At the opposite side of the machine is a horizontal shaft 13′ located in the same relationship to the thread board 5 that the shaft 13 bears to the thread board 4. A series of connections are provided between the shaft 13′ and the thread board 5 exactly like those above described between the parts 13 and 4, the elements of these connections being designated by primed numerals corresponding to those used for like parts in the construction above described. In order to enable one operating mechanism to rotate both shafts 13 and 13′ and thus to elevate both thread boards simultaneously, the two shafts are connected by a chain 21, one end of which is fastened to a drum 22 fast on the shaft 13, while the other end is secured to another drum 23 keyed on the shaft 13′. Consequently, when the crank 18 is rotated to tip the thread board 4 into its inclined position, the rotative movement of the shaft 13 will be transmitted through the connections just described and thus will swing the thread board 5 about its hinges.

It will now be appreciated that this invention provides a very simple construction whereby both thread boards may be raised or lowered simultaneously by a simple motion and with very little effort. Furthermore, this construction prevents any sagging of the thread boards, these parts being positively controlled at all times due to the spaced connections between them and their respective shafts. The use of an irreversible mechanism also results in holding the rails automatically in any position in which they are left.

While I have herein shown and described the best embodiment of the invention of which I am at present aware, it will be appreciated that the invention may be embodied in other forms differing in details of construction from the arrangement shown without departing from the spirit or scope of the invention.

Having thus described my invention, what I desire to claim as new is:

1. In a spinning frame, the combination of a hinged thread board, a shaft, a worm wheel fast on said shaft, a worm meshing with said wheel, a crank for rotating said worm wheel, an arm fast on said shaft, another arm rigid with said thread board, and a link connecting said arms, whereby the rotative movement of said worm wheel is transmitted to said thread board to swing the thread board on its hinges.

2. In a spinning frame, the combination of a hinged thread board, a shaft extending longitudinally of said frame substantially parallel to said thread board, worm gearing for rotating said shaft, and a series of connections between said shaft and said thread board spaced at intervals along the shaft and operative in unison to cause the rotative movement of the shaft to swing the thread board on its hinges.

3. In a spinning frame, the combination of two parallel thread boards mounted at opposite sides of the frame and hinged to swing up and down, two shafts extending substantially parallel with and located adjacent to the respective thread boards, a worm wheel mounted on one of said shafts, a worm for driving said wheel, a chain connection between said shafts, and connections between said shafts and their respective thread boards for causing the turning movement of each shaft to swing its respective thread board on its hinges.

4. In a spinning frame, the combination of two parallel thread boards mounted at opposite sides of the frame and hinged to swing up and down, two shafts extending substantially parallel with and located adjacent to the respective thread boards, a worm wheel mounted on one of said shafts, a worm for driving said wheel, a drum fast on each of said shafts, a chain connecting said drums to cause said shafts to turn together, and a series of connections between said shafts and their respective thread boards for causing the turning movement of each shaft to swing its respective thread board on its hinges.

SAMUEL BOROVOY.