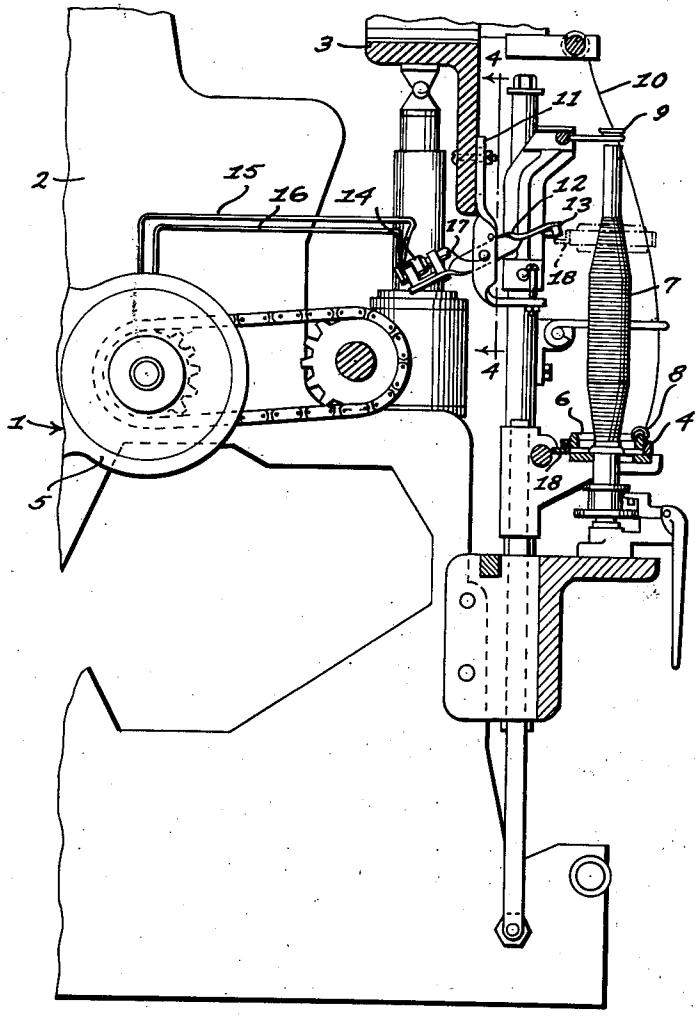
Nov. 18, 1952 J. E. SUMNER 2,618,115

STOP MOTION DEVICE FOR RING SPINNING FRAMES

Filed Sept. 18, 1951 2 SHEETS—SHEET 1

Fig. 1



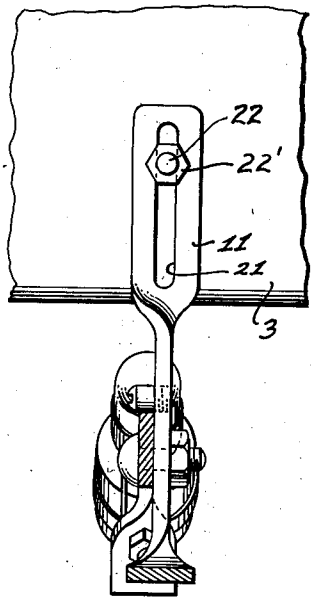


Fig. 4

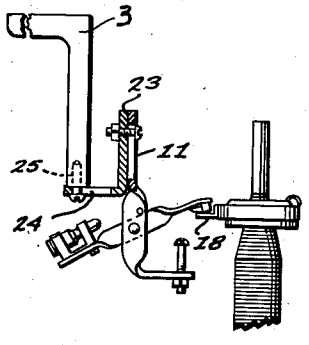


Fig. 5

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Filed Sept. 18, 1951 2 SHEETS—SHEET 2

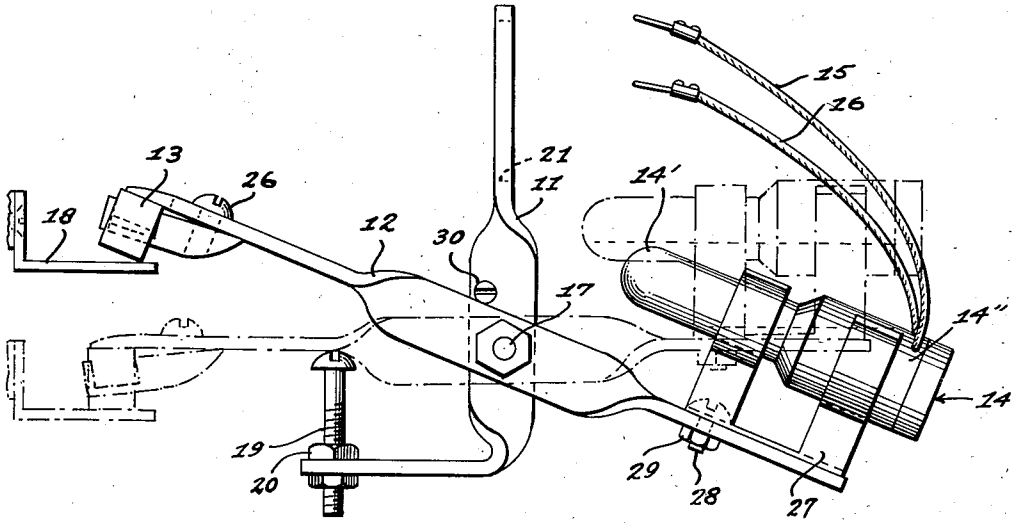
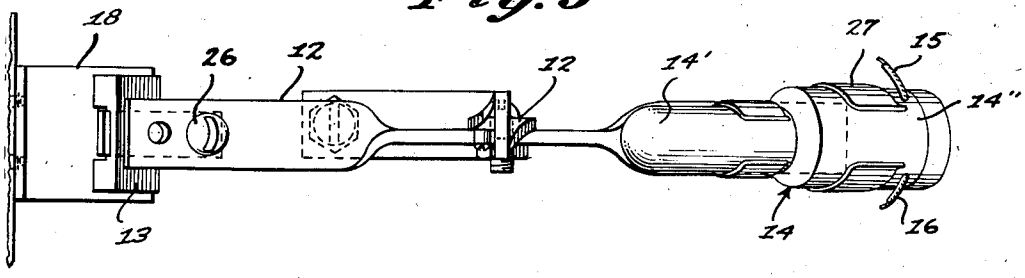


Fig. 2

Fig. 3



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STOP MOTION DEVICE FOR RING SPINNING FRAMES

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Application September 18, 1951, Serial No. 247,174

5 Claims. (Cl. 57—79)

1

This invention relates to a stop motion device for spinning frames having a vertically reciprocating ring rail actuated for so-called filling or combination builds, and more particularly to an improved means for stopping the ring rail automatically when the bobbins are full and when the ring rail reaches a predetermined point on its downward traverse.

A stop motion device arranged according to the present invention has the important advantage of simplified construction as compared with stop motion devices proposed heretofore for use with spinning frames, which advantage provides much more dependable service and results in substantial economy both in its initial installation and in maintenance and replacement costs.

Briefly described, the stop motion device of the present invention comprises an elongated arm having a magnet disposed on one end and a mercury bulb switch on the other end, with the switch being connected in circuit with the coil of a magnetic switch of the motor of the frame, the elongated arm being pivotally arranged on the body structure of the frame so that the magnet will contact the ring rail when the bobbins are full, and the elongated arm will be pivoted or tilted by the downward traverse of the ring rail whereby the circuit will be broken and the magnetic switch will be actuated to stop the motor of the spinning frame, with the ring rail stopping at a predetermined point on its downward traverse, and an adjustable set screw is provided for separating the magnet from the ring rail so that the elongated arm will return to its original position and the circuit will be restored.

A problem constantly facing the operator of the ring spinning frame is how the frame can be doffed following the building of the bobbins without breaking any of the threads. It is known that a great number of threads will be broken if the ring rail stops at its highest point of traverse, and it is thus highly desirable that the ring rail be stopped at a point at least an inch down from its highest point of traverse following the building of the bobbins. The present invention is designed to stop the ring rail at this desirable point, namely, an inch down from the point of its highest traverse, so that the ring rail can be run to the bottom of the bobbins without breaking the threads and then the frame doffed. Such positive control with the simple device of the present invention constitutes a distinct improvement over complicated prior art mechanisms.

2

The present invention is described in further detail in connection with the accompanying drawings, in which:

Figure 1 is a fragmentary end elevation of a ring spinning frame with adequate operating parts being indicated to illustrate a stop motion device arranged on the frame in accordance with the present invention;

Figure 2 is an enlarged side elevation of the stop motion device shown in Figure 1;

Figure 3 is a plan view corresponding substantially with Figure 2;

Figure 4 is a section taken on the line 4—4 of Figure 1; and

Figure 5 is an enlarged fragmentary view showing a modified mounting arrangement of the stop motion device.

Referring at first to Figure 1 of the drawing, the disposition and arrangement of a stop motion device of the present invention is shown in relation to a usual type of ring spinning frame using a filling or combination wind, indicated generally by the reference numeral 1 in which body structure 2, draft rail 3, ring rail 4, motor 5, ring 6, spindle 7, ring traveler 8, thread guide 9 and roving 10 are shown.

The stop motion device of the present invention comprises a mounting member 11 arranged on the draft rail 3, an elongated arm 12 pivotally arranged on the mounting member 11, and having a magnet 13 disposed on one end and a mercury bulb switch 14 arranged on the other end. The mercury bulb switch 14 comprises a bulb 14' and a housing 14'' enclosing a switch (not shown) which is connected in circuit with a coil of the magnetic switch (not shown) of the motor 5 by terminals 15 and 16.

The arm 12 is pivotally mounted on a pin 17 of the mounting member 11 so that the magnet 13 will be disposed for contacting relation with a bracket 18 which is fixedly arranged on the ring rail 4.

As shown in Figure 2, an adjustable stop screw 19 is arranged on the base of mounting member 11, with lock nut 20 being provided to set the stop screw 19 in the proper position for separating the magnet 13 from the bracket 18 when the ring rail 4 is stopped as hereinafter described.

As shown in Figure 4, the mounting member 11 is provided with a slot 21 for receiving the bolt 22 and lock nut 22' so that the mounting member 11 may be adjusted vertically on the draft rail 3. Figure 5 illustrates a modification in arranging the mounting member 11 in that a mounting bracket 23 is provided for use when

the member 11 requires horizontal adjustment. Bracket 23 has a slot 24 adapted to receive screw 25 so that such horizontal adjustment may be effected as desired. It will be understood that the need for such adjustment may be minimized or eliminated by varying the size of bracket 18.

The form and arrangement of the stop motion device are illustrated more in detail in Figures 2 and 3 of the drawing. As shown, the magnet 13 is detachably arranged on the arm 12 by the screw 26, and the mercury bulb switch 14 is similarly arranged on the other end of the arm 12 by the clipholder 27 and bolt and lock nut 28 and 29. The rest 30 disposed on the mounting member 11 retains the arm 12 in a normally oblique position when the stop motion device is inactive.

In the operation of the ring spinning frame 1, the roving 10 passes through thread guides 9, through ring travelers 8 and then is wound on rotating spindles 7 with the spun yarn being built onto bobbins on the spindles 7. During this building operation the ring rail 4 traverses vertically up and down, starting at the bottom and having each stroke of the vertically reciprocating movement slightly higher on the bobbins being built than the previous stroke. Every fourth stroke is slightly longer and higher than the three previous strokes.

As the ring rail 4 approaches the top of the bobbins being formed there is a definite height of this ring rail 4 at which the bobbins will be full. When this point is reached, and on the fourth stroke, as described above, the bracket 18 of the ring rail 4 comes in contact with the magnet 13 (as shown in dotted lines in Figure 1), and as the downward stroke of the ring rail 4 is started, the magnet 13 follows the bracket 18, pivoting the arm 12 on the pin 17 (see Figure 2). This pivoting or tilting action causes the mercury in the mercury bulb switch 14 to flow from the housing 14'' to the bulb 14', and break the circuit leading through the terminals 15 and 16 to the coil in the magnetic switch (not shown) of the motor 5, which causes the magnetic switch to trip and stop the motor 5.

As the operation of the spinning frame 1 ceases, and the ring rail 4 coasts to a stop, the arm 12 comes in contact with the adjustable stop screw 19, which parts the magnet 13 from the bracket 18, with the result that the contact being broken, the arm 12 falls back into its original position against the rest 30, and the mercury flows back to its original disposition in the mercury bulb switch 14. The return of the mercury to the switch end of the mercury bulb switch 14 restores the circuit and enables the magnet switch of the motor 5 to be actuated.

It will be understood that the exact form of the mounting member 11 or of the bracket 18 are not important so long as they provide a means for mounting the arm 12 on the body structure of the frame 1 in a position to contact the ring rail at a predetermined point as discussed above. Also, the exact form of the magnet is not pertinent since an electro-magnet could be used in lieu of the permanent magnet which is shown and described herein.

It is believed that the advantages to be obtained in using a stop motion device embodying the features of the present invention will be readily appreciated, namely, the simplicity of structure, the ease of installation and replacement of parts, and the flexibility in adjusting the various parts to effect the automatic stopping of the ring rail at a predetermined point.

The present invention has been described in detail above for purposes of illustration only, and is not intended to be limited to this description except as defined in the following claims.

I claim:

1. In a spinning frame having a motor and a vertically reciprocating ring rail actuated for so-called filling or combination builds, a stop motion device comprising an elongated arm, a magnet disposed on one end of said arm, and a mercury bulb switch arranged on the other end of said arm and connected in circuit with the motor of said frame, said arm being pivotaly arranged on said spinning frame so that said magnet will contact the ring rail when the bobbins are full, and said arm will be pivoted by the downward traverse of said ring rail whereby said circuit will be broken to stop the motor of said frame.

2. In a spinning frame having a motor and a vertically reciprocating ring rail actuated for so-called filling or combination builds, a stop motion device comprising mounting means, an elongated arm, a magnet disposed on one end of said arm, and a mercury bulb switch arranged on the other end of said arm and connected in circuit with the motor of said frame, said arm being pivotally arranged on said mounting means so that said magnet will contact the ring rail when the bobbins are full, and said arm will be pivoted by the downward traverse of said ring rail whereby said circuit will be broken to stop the motor of said frame, and adjustable means arranged on said mounting means for separating said magnet and said ring rail upon the stopping of said ring rail so that said arm returns to its original position and said circuit is restored.

3. In a spinning frame having a motor and a vertically reciprocating ring rail actuated for so-called filling or combination builds, the combination with means for building spun yarn onto bobbins, of a stop motion device comprising a bracket fixedly attached to said ring rail, mounting means adjustably arranged on the body structure of said frame, an elongated arm pivotally arranged on said mounting means, a magnet disposed on one end of said arm and positioned to contact said bracket when the bobbins are full, a mercury bulb switch arranged on the other end of said arm, said switch being connected in circuit with the motor of said frame and adapted for breaking said circuit whereby the traverse of the ring rail is stopped at a predetermined point.

4. In a spinning frame having a motor and a vertically reciprocating ring rail actuated for so-called filling or combination builds, the combination with means for building spun yarn onto bobbins, of a stop motion device comprising a bracket fixedly attached to said ring rail, mounting means adjustably arranged on the body structure of said frame, an elongated arm pivotally arranged on said mounting means, a magnet disposed on one end of said arm and positioned to contact said bracket when the bobbins are full, a mercury bulb switch arranged on the other end of said arm, said switch being connected in circuit with the motor of said frame and adapted for breaking said circuit whereby the downward traverse of the ring rail is stopped approximately one inch down from its highest point of traverse.

5. In a spinning frame having a motor and a vertically reciprocating ring rail actuated for so-called filling or combination builds, the combination with means for building spun yarn onto

bobbins, of a stop motion device comprising a bracket fixedly attached to said ring rail, mounting means adjustably arranged on the body structure of said frame, an elongated arm pivotally arranged on said mounting means, a magnet disposed on one end of said arm and positioned to contact said bracket when the bobbins are full, a mercury bulb switch arranged on the other end of said arm, said switch being connected in circuit with the motor of said frame and adapted for breaking said circuit whereby the downward traverse of the ring rail is stopped approximately one inch down from its highest point of traverse, and adjustable means for separating said magnet

and said bracket upon the stopping of the ring rail so that said arm returns to its original position and said circuit is restored.

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