Dec. 12, 1944. W. J. SCOTT 2,364,824

STOP MOTION FOR TEXTILE APPARATUS

Filed Nov. 3, 1943 2 Sheets-Sheet 1

Fig. 1.

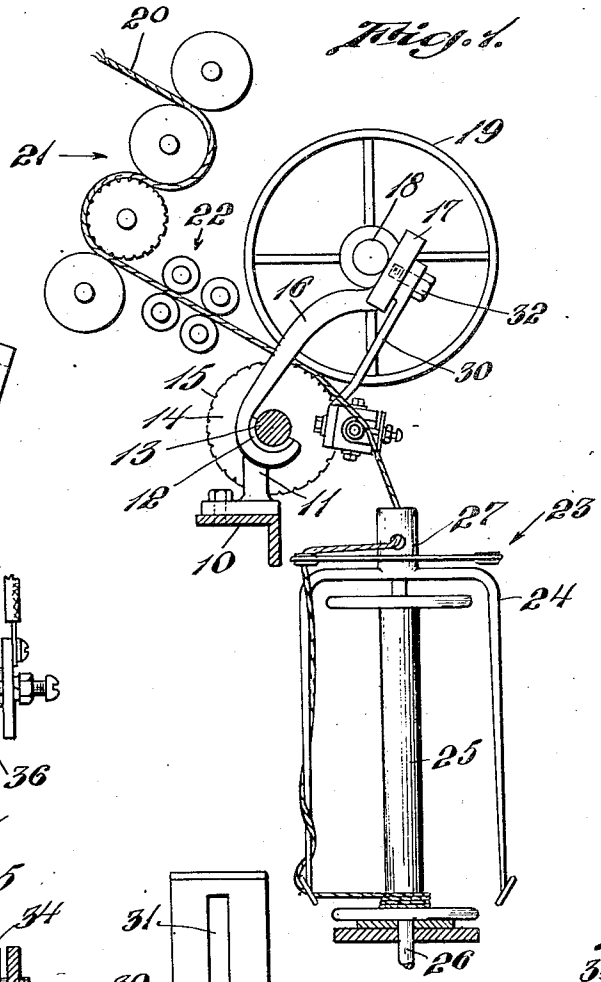


Fig. 2.

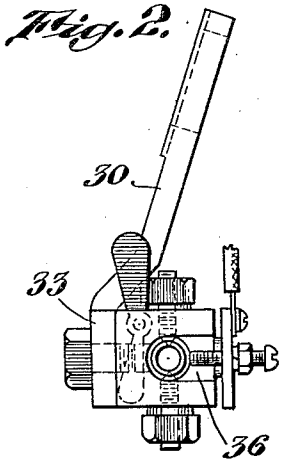


Fig. 4.

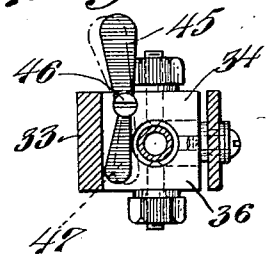


Fig. 5.

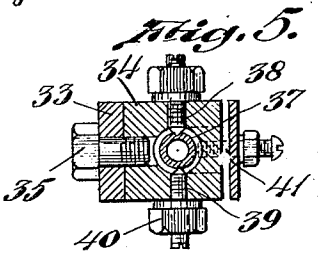


Fig. 3.

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Filed Nov. 3, 1943 2 Sheets-Sheet 2

Fig. 6.

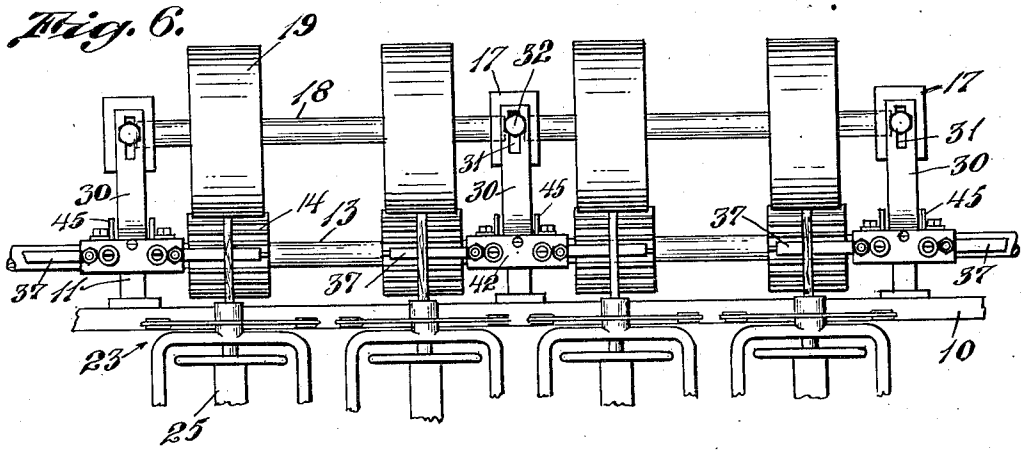


Fig. 7.

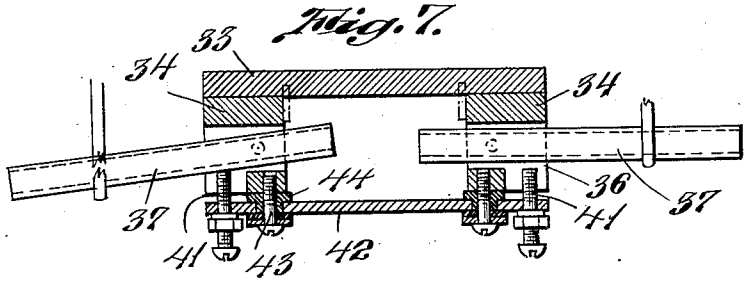
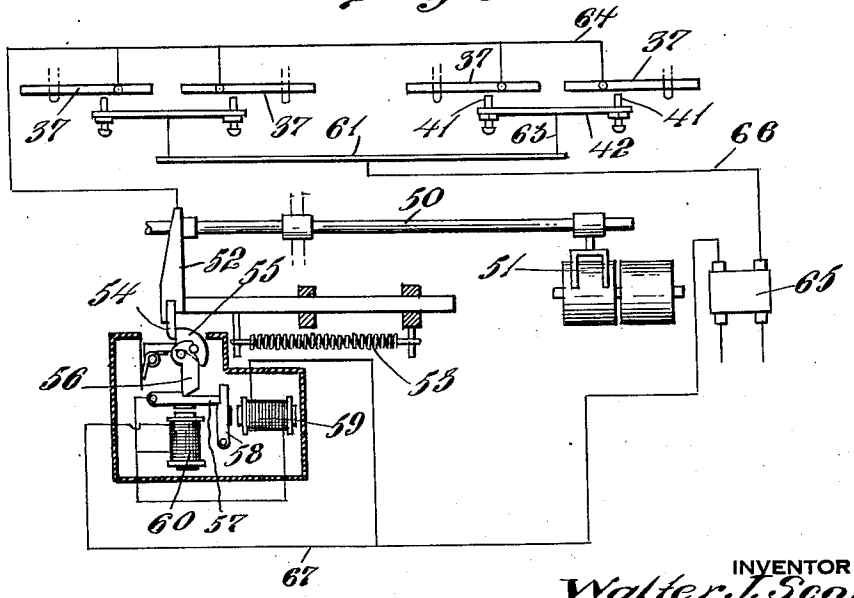


Fig. 8.



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UNITED STATES PATENT OFFICE

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STOP MOTION FOR TEXTILE APPARATUS

Walter J. Scott, Woonsocket, R. I.

Application November 3, 1943, Serial No. 508,819.

5 Claims. (Cl. 57—81)

This invention relates to a stop motion for a textile apparatus, more particularly for a drawing frame, and has certain improved features with relation to the stop motion shown in my Patent 2,086,096 granted July 6, 1937.

The stop motion illustrated in the above-mentioned patent makes necessary that all of the ends of yarn of the drawing frame be operating at one time inasmuch as should one of the yarn ends cease to function the stop motion would cause the machine to stop, and if the machine is to be operated without one yarn end it is necessary to make a temporary arrangement for the control of the stop motion associated with this inoperative yarn end. Also the arrangement shown in the above-mentioned patent requires the use of an upper bearing for the spindle of the packaging means as a support for the mounting of the stop motion device which I use and on lighter weight machines designed for lighter work no such upper bearing for the packaging means is provided.

One of the objects of this invention is to provide a stop motion device utilizing a circuit controlling means which may optionally be made non-operative by a manual control in order that the frame may continue to operate with one end down.

Another object of this invention is to make the controls for each yarn end completely independent that any one or more may be selected at will.

Another object of this invention is to provide such a control which will be simple of operation and inexpensive to manufacture.

Another object of the invention is to arrange a mounting for the device from a part of the frame which will be existent whether the frame be for drawing heavy or light work.

A more specific object of the invention is to provide a bracket which may be secured to the bearing for the upper delivery roll and which will suspend a control device in a position where it may be operable for the yarn ends at either side thereof.

Another object of the invention is to provide a simple mounting and one inexpensive to manufacture.

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 diagrammatic view looking at the end of the draft rolls and showing the travel of the yarn from the drawing roll to the packaging device and illustrating the relative position of the stop motion device;

Fig. 2 is an end elevation of the stop motion device alone;

Fig. 3 is a front elevation of the stop motion device alone;

Fig. 4 is a sectional view on substantially line 4—4 of Fig. 3;

Fig. 5 is a sectional view on line 5—5 of Fig. 3;

Fig. 6 is a fragmental view looking from the front of the frame toward the packaging means and draft rolls and illustrating a plurality of ends being drafted and the relationship of the stop motion devices with reference to the plurality of ends;

Fig. 7 is a sectional view on line 7—7 of Fig. 3;

Fig. 8 is a wiring diagram illustrating the circuit means and the shipper lever for the control of the drafting frame.

In proceeding with this invention I provide a bracket which may attach to the bearing for the upper delivery rolls and which may support an electrical circuit closing device so that arms which project oppositely may be engaged by adjacent yarn ends. I provide arms which are to be engaged by the yarn ends which will be so positioned as to gravitate to close an electric circuit to stop the drawing frame. I also arrange a means for blocking the movement of each arm by gravity so that it cannot close the circuit. Thus, if one yarn end runs out or breaks rather than piece this up immediately I may permit the machine to operate by merely manually throwing this blocking lever that the other yarn ends may continue and the drawing frame function.

With reference to the drawings 10 designates a suitable support upon which standards 11 are mounted to provide bearings 12 for the shafts 13 which extend along the drawing frame and is provided at suitable intervals with enlarged portions 14 serving as lower delivery rolls each having fluted surfaces 15. This shaft 13 is driven in a usual manner from one end of the frame.

In alternate spaces between the lower delivery rolls 14 brackets 16 are provided for supporting bearings 17 with inclined surfaces to be engaged by end portions of tandem shafts 18 upon each of which there are mounted a pair of upper delivery rolls 19. The upper delivery rolls 19 are arranged in pairs upon the shaft 18 to all be removed as a unit.

The yarn 20 which is to be drafted extends from a supply package and passes through the group of feed rolls 21 and conveyor rolls 22 to the delivery rolls 14 and 19 and thence to the packaging means

designated generally 23 and consisting of a flyer 24 and spool 25, mounted on a spindle 26 the upper end of which mounts a hollow hub 27 of the flyer into which the yarn extends to be packaged on the spool. The stop motion device comprises a bracket arm 30 provided with a slot 31 which may be bolted as at 32 to the bearings 17 for the upper delivery draft rolls. At the opposite end of the arm 30 the bracket extends laterally providing portions 33 upon which blocks 34 are mounted by means of the cap screws 35. Each of the blocks are provided with openings 36 therethrough for the rockable mounting of a yarn-engaging arm 37. This arm 37 is pivotally mounted by pointed threaded studs 38 and 39 (see Fig. 5) which may be adjusted and held in adjusted position by the locking nuts 40. The pointed ends of these members engage similarly conical recesses in the arms 37 for the provision of an easily rockable bearing. The inclination of the pivot 38 and 39 when the device is in set position is such that the arm 37 will tend to move toward a contact post 41 (see Figs. 5 and 7) into engagement with the same. This contact post 41 is adjustably mounted in a bar 42 which is secured to the blocks 34 by the bolt 43 passing through the insulating bushing 44 so that the bar 42 and contact 41 carried thereby are insulated from the block which pivotally mounts the arm 37. This bar 42 will be the live side of the circuit while the device itself will be the ground or other side of the circuit.

The arm 37 will be so positioned that when the yarn 20 extends over and in contact with this arm as shown in Fig. 1 or in Fig. 7 the yarn will hold this arm away from contact post 41 and thus the circuit will be open. However, should the yarn break as shown at the left of Fig. 7 then the arm 37 will move into engagement with the contact post 41 and complete the circuit. The device is so hung that the movement of the arm will be by gravity.

If it is desired to prevent the arm from movement into engagement with the contact post, a lever 45 (see Figs. 2 and 4) which is pivotally mounted by means of a screw 46 on the inner edge of each of the blocks 34 and which has a lower portion 47 may be swung about its pivot so as to engage the inner end portion of the arm 37 and block movement of this arm so that it cannot move into engagement with the contact post to complete the circuit.

In the wiring arrangement for this stop motion device the shipper bar is designated 50 (see Fig. 8) which controls a belt fork 51, a shipper lever 52 is urged by spring 53 in one direction to stop the machine. It has a portion 54 which engages a latch 55 to hold it in operating position. The latch is controlled by other latch mechanism 56, 57 and 58 through solenoids 59 and 60 which are energized when the circuit closes. The contact posts 41 and arms 37 are shown as several in this diagram and as shown in Fig. 6. If one of the arms is moved into engagement with contact post 41 the circuit would be closed. A bus bar 61 extends the length of the machine and the individual bars 42 are connected to the bus bar through a plurality of wires 63. The live side of the circuit is connected to the power supply 65 by lead 66. The side of the circuit or ground from the arms 37 is designated by the lead line 64 to the shipper lever 52 and through the latch which may become disconnected to the solenoids 59 and 60 and thence by lead 67 to the other side of the power supply 65.

I claim:

1. In a drawing frame, delivery draft rolls, packaging means for each end of the yarn, means including an electric circuit for stopping the frame upon energizing the circuit, a plurality of circuit controlling devices one positioned to be controlled by the travel of each yarn from its draft rolls to its packaging means, said devices each including a support carrying a plurality of movable arms spaced from each other, one extending on one side of said support in the path of movement of an adjacent yarn end, and another on the opposite side of said support and in the path of an adjacent yarn end, a contact for each of said arms, a means for connecting said contacts and a common means for connecting said arms in said circuit, means for movably mounting each arm to move into engagement with its contact, said devices each being so positioned that the yarn engages said arms and holds the arm spaced from said contact whereby upon breaking the yarn said arm moves to engage said contact and closes said circuit, and independently operable means to block movement of each arm into circuit closing position whereby the frame may operate after one of a plurality of yarns breaks.

2. In a drawing frame lower delivery draft rolls having fluted surfaces at intervals for a plurality of yarn ends, bearings between fluted surfaces for a pair of upper delivery draft rolls, a pair of upper delivery draft rolls having a shaft the end portions of which engage said bearings, means including an electric circuit for stopping the frame upon energizing the circuit, a device operable by the yarn ends for controlling said circuit, and means for mounting said device from one of said bearings for the upper delivery draft rolls.

3. In a drawing frame, lower delivery draft rolls having fluted surfaces at intervals for a plurality of yarn ends, bearings for a pair of upper delivery draft rolls, in alternate spaces between the fluted surfaces a unit including a pair of upper delivery draft rolls and a shaft the end portions of which engage two of said bearings, means including an electric circuit for stopping the frame upon energizing the circuit, a device for controlling said circuit, including a pair of arms, with the arms extending in opposite direction from each other and in the path of movement of an adjacent yarn end to be engaged thereby and a bracket secured to one of said bearings for the upper delivery draft rolls for mounting said device in position.

4. In a drawing frame, lower delivery draft rolls having fluted surfaces at intervals for a plurality of yarn ends, bearings for a pair of upper delivery draft rolls in spaces between alternate fluted surfaces, a unit including a pair of upper delivery draft rolls and a shaft the end portions of which engage two of said bearings, means including an electric circuit for stopping the frame upon energizing the circuit, a device for controlling said circuit including a pair of arms, with the arms extending in opposite direction from each other and in the path of movement of an adjacent yarn end to be engaged thereby and a bracket secured to said bearing for the upper delivery draft rolls and depending therefrom for mounting said device in position.

5. In a drawing frame lower delivery draft rolls having fluted surfaces at intervals for a plurality

of yarn ends, bearings in alternate spaces between the fluted surfaces for a pair of upper delivery draft rolls, a pair of upper delivery draft rolls having a shaft the end portions of which engage said bearings, means including an electric circuit for stopping the frame upon energizing the circuit, a device for controlling said circuit including a pair of arms, with the arms extending in opposite directions to be engaged by adjacent yarn ends, and means for mounting said device from one of said bearings for the upper delivery draft rolls.

WALTER J. SCOTT.