July 24, 1956 H. HALLEUX 2,756,296

AUTOMATIC ELECTRIC STOPPING DEVICE FOR TEXTILE MACHINES IN CASE OF BREAKING OF A ROVING

Filed Dec. 17, 1953 2 Sheets-Sheet 1

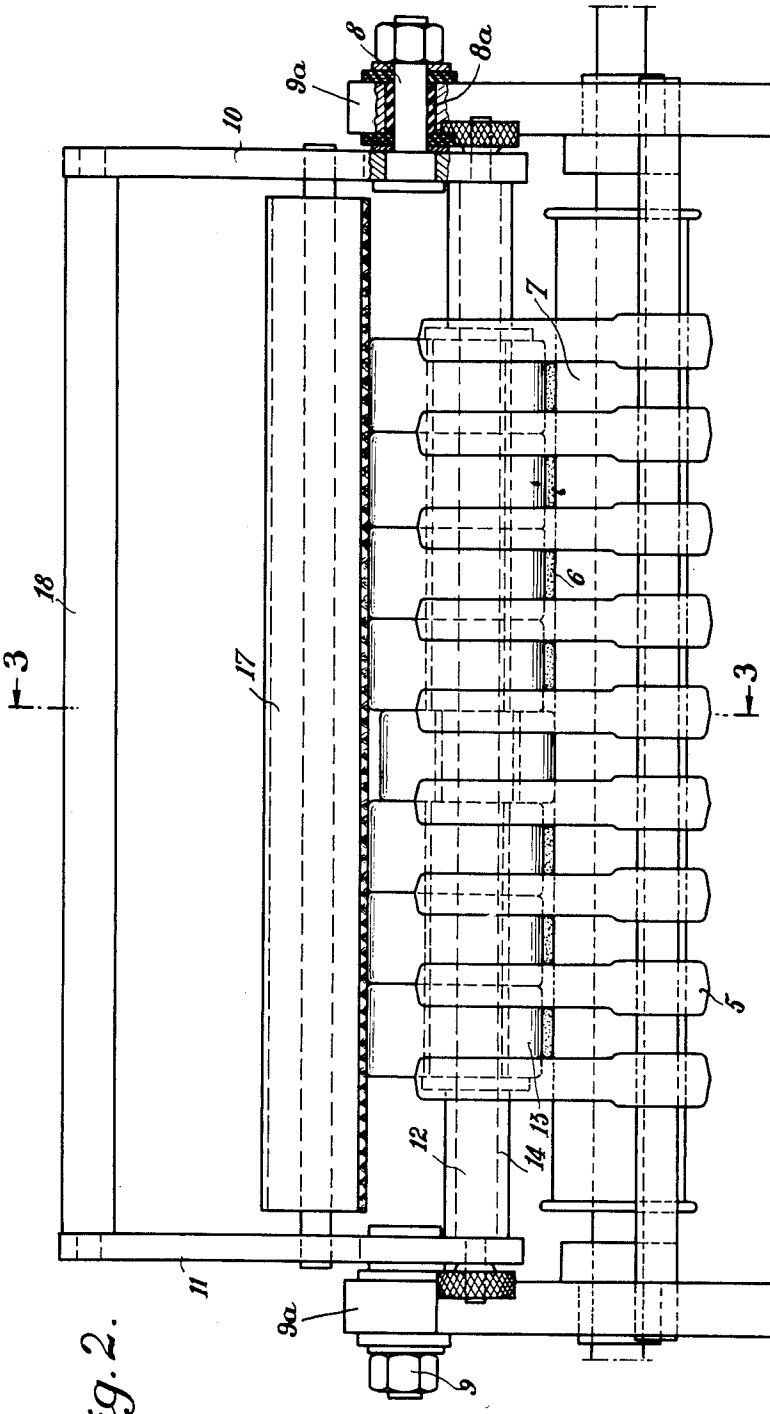


Fig. 2.

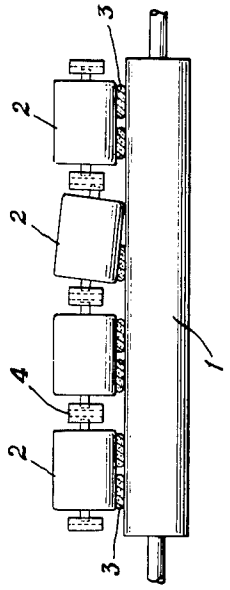


Fig. 1.

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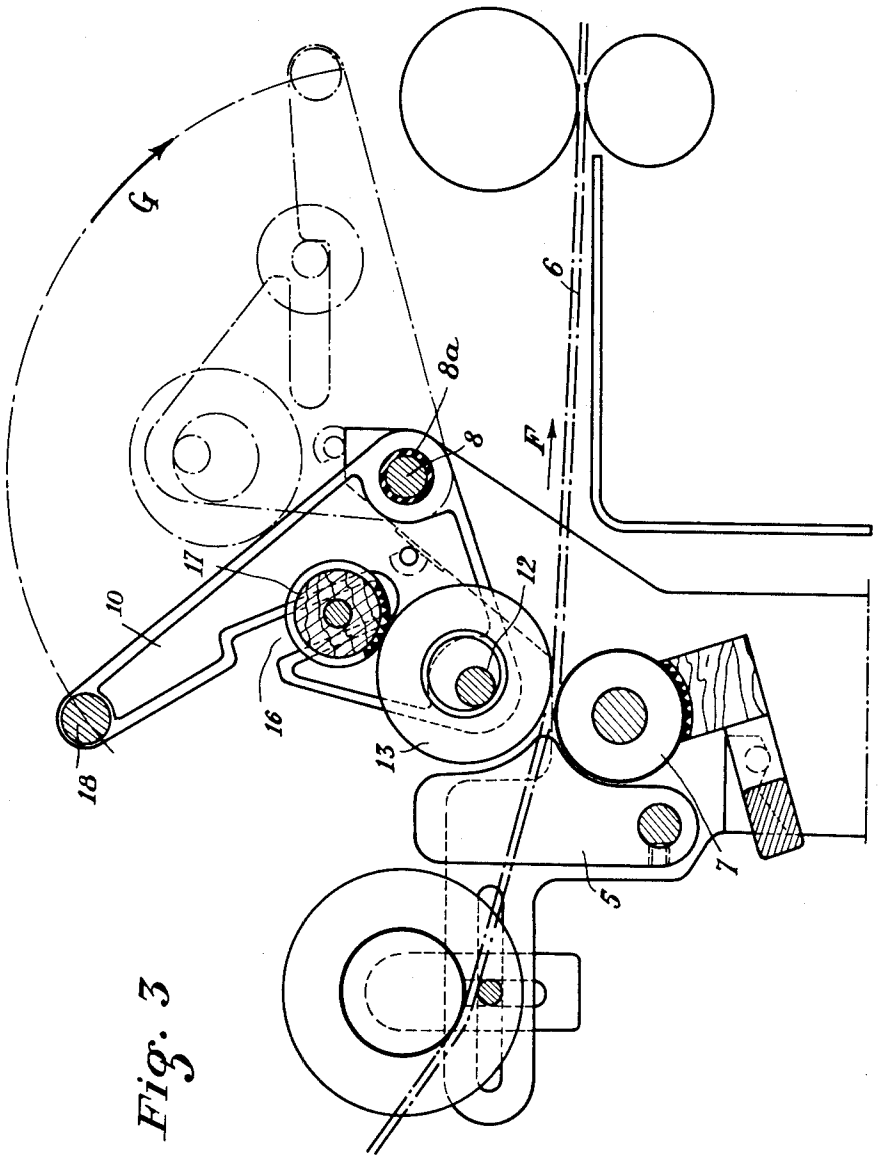


Fig. 3

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# AUTOMATIC ELECTRIC STOPPING DEVICE FOR TEXTILE MACHINES IN CASE OF BREAKING OF A ROVING

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4 Claims. (Cl. 200—61.18)

The invention relates to an automatic device which electrically breaks the contact in case the rovings or strands should snap apart, which device can be used for feeding textile machines handling more or less thick coarse roves, in particular, drawing heads.

The devices most commonly used at present are constituted by a bottom driven cylinder or roller and by an upper set of free control rollers. The roves pass between these bottom and top rollers and electrically insulate them. Each of these top rollers straddles two rovings and is guided at each end in a flexible coupling or at its middle part only. Should a roving be lacking, the corresponding control roller comes into contact with the bottom roller thus interrupting an electric circuit and causing the machine to stop.

Such devices have the following drawbacks:

When a large number of rovings are being fed through the machine its total width becomes much larger than the width of the feed head, owing to the space taken up by the intervening flexible couplings. It is therefore necessary before they enter the head, to reduce the roving fleece to the required size by means of a set of guides, thus complicating the travel of the rovings. The top rollers must furthermore be hand-operated and raised, then replaced in succession when the machine is being restored to operating condition. In short these top rollers cannot be supplied practically with a cleaning device so that the fibres adhering to their surface cannot stop the electric contact between these top and bottom rollers.

The object of the invention is to avoid these drawbacks by making an electric stopping device which automatically breaks the circuit should the roves snap apart, and which is simple, effective and practical.

This device is essentially characterized by the fact that it includes, in combination with a bottom driven roller operated in suitable manner, a set of top rollers placed loosely side by side in touching relation, these rollers each controlling one single rove and being threaded on a common spindle which passes through them with a diameter less than the internal diameter of the rollers, thus giving free displacement play, in a perpendicular plane of this spindle, relative to the top rollers.

The common spindle which passes through the top rollers, loosely juxtaposed, is fitted, at its ends, to two bell-crank levers which can pivot on two pins fixed in suitable manner to the supporting-bearings of the bottom roller, whereby said two levers which are electrically insulated, are connected to each other at their top part by a tie-bar.

The whole of the top rollers may be laterally guided by two rings fixedly connected to the aforementioned bell crank levers. It is fitted with a roller cleaner whose spindle is supported in a notch in the bell crank levers, this roller cleaner resting on the whole set of top rollers.

This device has the following advantages:

Less horizontal space is taken up, as the top rollers are all placed side by side, without inserting a guiding whorl,



and therefore the possibility, even with a considerable doubling, to eliminate any additional guide between the automatic stopping device and the opening of the head to be fed;

Possibility for the whole of the top rollers to be raised simultaneously as one unit by means of the two pivoting bell crank levers;

Provision for a cleaner device system for the whole of the rollers.

A method of embodiment of the invention is shown diagrammatically and by way of example, on the accompanying drawing, on which:

Fig. 1 is a front elevation of the arrangement of the prior art described.

Fig. 2 is a front elevation of the improved device constituting the present invention.

Fig. 3 is a vertical cross sectional view taken on the line 3—3 of Fig. 2.

A known device according to Fig. 1 includes a bottom driven roller **1**, a set of top free rollers **2**. The rovings **3** pass between rollers **1** and **2**. Each of the rollers **2** spans two rovings **3** and are guided at each end in grooved whorl **4**.

The device according to the invention, includes on the intake side a set of separating guides for directing each roving to its place. The rovings **6** pass according to arrow F above a bottom roller **7** driven in suitable manner.

Two side members in the form of bell crank levers **10** and **11** are pivotally mounted on two pins **8** and **9**, through the medium of sleeves or other insulating devices, secured to the supporting bearings **9***a* of roller **7**. These two bell-crank levers **10** and **11** are connected to a rigid shaft **12**, easily removable and about which loosely turns top rollers **13** juxtaposed side by side freely. These rollers **13** are advantageously fitted inside with sleeves of a self-lubricating conducting material. The whole set of rollers **13** is guided at the sides by two collars **14** and **15** integral with bell crank levers **10** and **11**.

In a notch **16** of levers **10** and **11** rests the shaft of a roller cleaner **17** which normally rests on the set of rollers **13**. Furthermore, the top ends of levers **10** and **11** are connected by a rod **18**, said rod allowing the raising simultaneously, in the direction of the arrow G, all the rollers **13**, without having to withdraw the roller cleaner **17**.

The common shaft **12** has a lesser diameter than the internal diameter of the rollers **13** each of which controls a single roving **6**, as shown in Figure 2; said rollers may likewise be freely displaced relatively to the shaft **12**, so that when a roving is lacking, roller **13** which controls it can descend downwardly relatively to the other rollers and come into contact with roller **7**, thus closing an electric circuit. This circuit, low-voltage fed, comprises for instance a three-pole relay which when started stops the motor of the machine, lights up a tell-tale lamp, and in addition, short-circuits the whole stopping device system. By means of said short-circuit, the operators need no longer fear the always disagreeable shocks, caused in the usual systems by the breaking of the current, when raising by hand the pressure rollers in order to mend the broken roving.

What I claim is:

1. Means for automatically stopping a textile machine, comprising, in combination, a feed roller for the strands of textile material, a frame including side members, pins insulated from and supported by the machine to pivotally mount the side members, a shaft carried by the side members, a plurality of control rollers disposed in side by side relation on the shaft for movement both rotational and radially of the shaft, said rollers normally resting on strands of textile material related thereto and impelled by said feed roller, collars carried by the side members

and fitting over opposite ends of said shaft to maintain the said rollers in juxtaposed relation to insure proper tracking on said related strips of textile material, a cleaning roll disposed above and in peripheral contact with said rollers, said roll having a spindle whose ends are mounted in the side members for up and down movement, and a rod connecting the upper ends of the side members and providing means for manually rocking said members on said pins to lift the shaft and control rollers away from the feed roller.

2. Automatic electric means for stopping textile machines in case the rovings break, comprising, in combination with a roving feed system, a bottom feed roller mounted for rotary motion to drive the rovings which are separated from each other on the surface of the roller, two pins secured by insulating devices to the supporting-bearings of the roller, two bell-crank levers adapted to pivot at each end of the device on said pins, a rigid shaft connecting the bottom portions of said levers, a set of control rollers freely mounted on the shaft in side by side relation, said rollers having a larger internal diameter than the diameter of the shaft so that they can both turn freely thereon and also to move vertically, each roller resting on a roving which it controls, two collars fast with the bell-crank levers and mounted concentric with said rigid shaft, said collars guiding all of the control rollers juxtaposed between the collars, and an electric circuit connected to the bottom roller and also to one of the aforementioned pins, whereby, the normal interposition of the rovings electrically insulates the bottom feed roller from the top rollers, and the breaking of one roving will cause the stopping of the machine by contact of the related control roller with the bottom feed roller.

3. Automatic electric means for stopping textile machines in case the rovings break, comprising, in combination with a roving feed system, a bottom feed roller mounted on pillow-blocks and driven directly in rotary motion to drive the rovings which are separated from each other on the surface of the roller, two pins secured by insulating devices to the supporting-bearings of the roller, two bell-crank levers adapted to pivot at each end of the device on said pins, a rigid shaft connecting the bottom portions of the two levers, a set of individual control rollers each freely mounted on the common rigid shaft above said feed roller, said rollers having a larger internal diameter than the diameter of the shaft so that they can both turn freely on the shaft and also move vertically relative to this shaft, each roller resting on a roving which it controls, two collars on the bell-crank levers and receiving the ends of said shaft, said collars guiding all of the rollers juxtaposed therebetween, an electric circuit connected to the bottom roller and also to one of the aforementioned pins, and thence to the assembly on the top rollers, and a tie-rod connecting the upper portions of the two bell-crank levers to permit raising the assembly of control rollers.

4. Automatic electric means for stopping textile machines in case the rovings break, comprising, in combination with a roving feed system, a bottom feed roller mounted on pillow-blocks and driven directly in rotary motion to drive the rovings which are separated from each other on the surface of the roller, two pins secured by insulating devices to the supporting-bearings of the roller, opposite spaced bell-crank levers adapted to pivot on said pins, a rigid shaft coupling the bottom portions of the two levers, a set of top control rollers freely mounted on said rigid shaft in side-by-side relation, said rollers having a larger internal diameter than the diameter of the shaft so that they can both turn freely on the shaft and also move vertically relative to this shaft, each roller resting on a roving to which it is responsive, collars fast with the bell-crank levers and non-rotatably connected with said rigid shaft, said collars guiding all of the rollers juxtaposed therebetween, an electric circuit connected to the bottom roller and also to one of the aforementioned pins, and thence to the assembly of top rollers, a tie-rod connecting the top portions of the two bell-crank levers for raising the assembly of the control rollers, and a roller cleaner whose spindle takes a bearing in a notch of the bell-crank levers and which rests on the assembly of the top rollers.

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