July 12, 1955

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2,712,676

STRAND CONTROLLED MECHANISM

Filed July 2, 1952

2 Sheets-Sheet 1

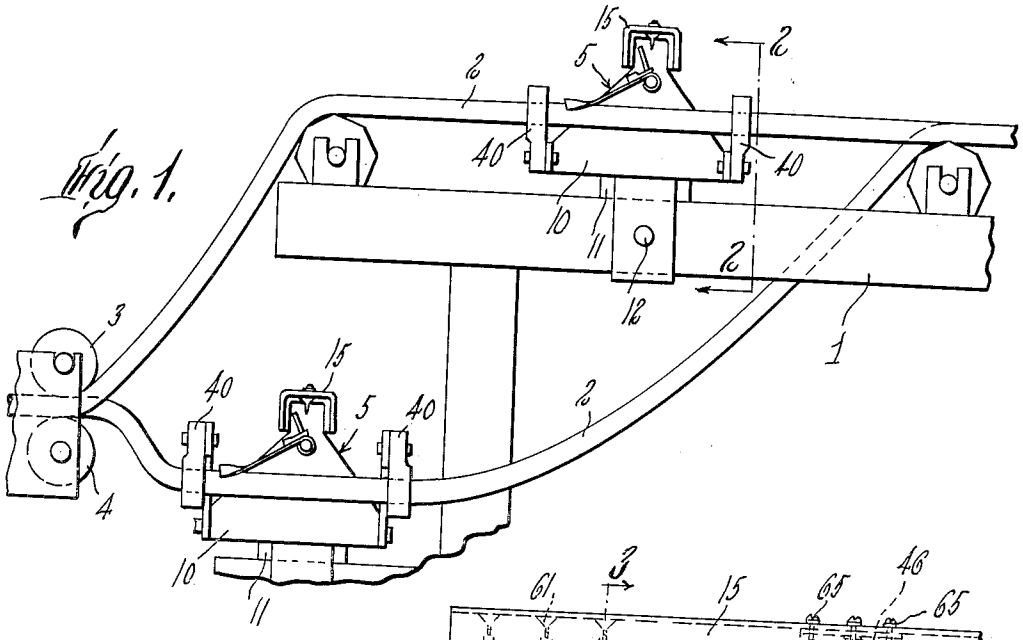

Fig. 1.

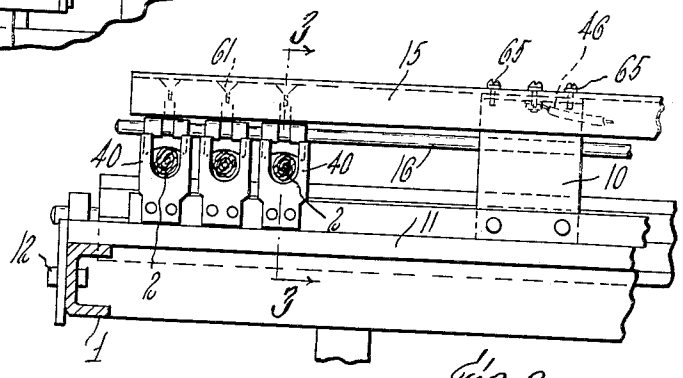

Fig. 2.

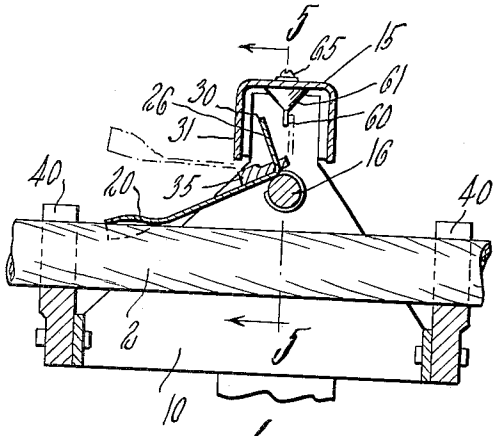

Fig. 3.

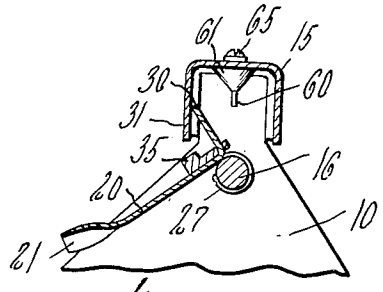

Fig. 4.

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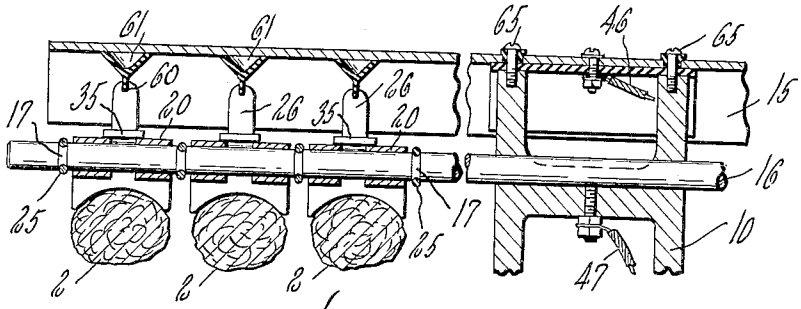

Fig. 5.

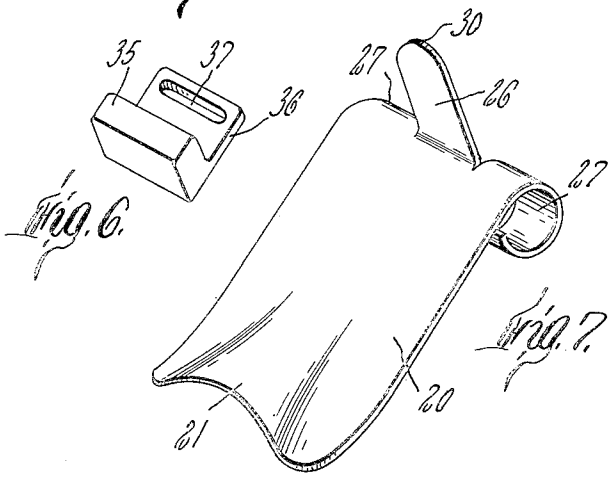

Fig. 6.

Fig. 7.

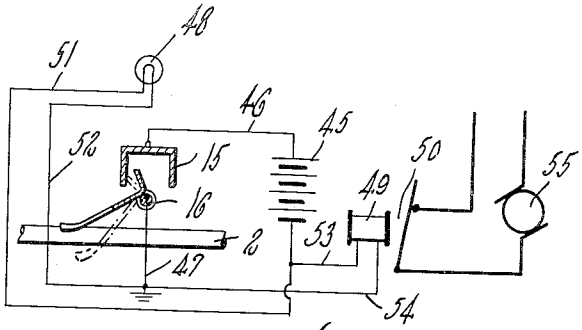

Fig. 8.

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STRAND CONTROLLED MECHANISM

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4 Claims. (Cl. 19—165)

This invention relates to mechanism arranged for association with a textile machine and responsive to the presence or absence of a strand. Such mechanisms are commonly, though not always, employed in connection with stop motions for stopping the operation of a textile machine when a strand breaks.

The present invention is shown in the drawings as embodied in such a mechanism, particularly designed for use in connection with carding machines and spinning frames where the strands operated upon are slivers.

One object of the present invention is to provide a mechanism responsive to the presence or absence of a sliver and effective to close a low voltage electric circuit should a sliver break and thus become absent from its controlling position.

A further object is to provide for the closing of such a circuit where the closing switch mechanism is in a position not liable to be affected by lint or dirt.

A further object is to provide switch contacts of long life and to provide adjustment for bringing new surfaces into active position to make the contact when desired.

Still another object is to provide for automatic variation in the contact areas so as to spread wear.

Still another object is to provide an improved sliver-engaging element easily adjustable to suit different conditions.

For a complete understanding of this invention reference may be had to the accompanying drawings in which:

Figure 1 is a fragmentary end elevation of a drawing frame embodying the invention.

Figure 2 is a detail sectional view on line 2—2 of Figure 1.

Figure 3 is a detail sectional view on line 3—3 of Figure 2.

Figure 4 is a view similar to a portion of Figure 3 but showing the parts in contact-making relation.

Figure 5 is a detail sectional view on line 5—5 of Figure 3.

Figure 6 is a perspective view of a counterweight.

Figure 7 is a perspective view of a flipper.

Figure 8 is a diagrammatic view of the mechanism arranged in a stop motion circuit.

Referring first to Figures 1 and 2, at 1 is shown the support of a drawing frame, two slivers 2 being shown, which are delivered from the previous mechanism and which come together between a pair of rolls 3 and 4. Each of these strands or slivers 2 is arranged to have acting thereon a strand-contacting mechanism constructed in accordance with this invention and indicated generally at 5. It should be understood, however, that such a mechanism can be arranged on other types of textile machines as desired, there being such a mechanism for each of the strands or slivers either delivered to or from the machine to which the mechanism is applied.

The mechanism itself is shown more particularly in Figures 2 to 7. It comprises upstanding supports 10 which are secured to a base 11 mounted on the frame 1

and fixed thereto by any suitable means such as the pins 12. The supports 10 have fixed thereto at their upper ends an inverted metallic channel-shaped element 15, preferably nickel plated on the inner face, beneath which is arranged in parallel relation thereto a horizontal rod 16. This rod 16, as shown best in Figure 5, may have a series of peripheral grooves at 17 spaced therealong which define lengthwise portions each of a length slightly greater than the width of a flipper 20 shown detached in Figure 7. Each flipper 20 is provided with an end portion 21 preferably somewhat channel-shaped or laterally concaved so as to engage partly around the strand and which may be nickel plated so as to present a smooth surface and which may rest upon the top face of the strand such as the sliver 2. This shaping of the end portion 21 provides an automatic guiding action by the strand as it passes therebeneath and which may cause the flipper 20 to slide back and forth along its pivot rod 16 between the limits imposed by split spring rings 25 which may be snapped onto the rod 16 between the several flippers 20.

As shown each of the flippers 20 at its end opposite to the portion 21 is provided intermediate its sides with a tail 26 partly severed therefrom. This may be bent from the general plane of the flipper at about right angles thereto as is shown in Figures 3, 4 and 7. On either side of the tail 26 the material of the flipper is coiled to form a partial loop 27 of a size to receive the rod 16 freely so that each flipper is independently rockable on the rod 16 and may have a small amplitude of motion lengthwise of the rod. The tail 26, as shown in Figure 7, is preferably rounded at its end at 30 and when no strand is in position the weight of the flipper brings the end 30 of the tail into contact with the inner surface of one of the legs 31 of the channel 15. Under normal operation of the machine the strand or sliver 2 holds the end portion 21 of the flipper elevated somewhat so that its tail 26 is out of contact with the channel element 15.

The flipper, being of sheet metal and preferably of stainless steel, may be quite readily bent to conform to the size of the sliver and to position the tail 26 as desired so that it contacts with the channel 15 when the end portion 21 is at the desired height with respect to the pivot rod 16, and the pressure with which the flipper engages the strand may be increased as desired by placing over the tail 26 a counterweight of the desired size such as shown at 35 and in detail in Figure 6. This counterweight may have a supporting plate portion 36 provided with a slot 37 of a size to receive the tail 26 therethrough as shown in Figures 3 and 4. Counterweights of various sizes may be employed and selected in order to insure the desired pressure of the flipper on the strand.

Before and after the engagementt of the flipper on the strand, the strand preferably passes through guide members 40 which prevent undue lateral motion of the strand. Such guide portions may be formed of ceramic material or they may be enameled or otherwise surface-treated to present a smooth guiding surface to the strand.

The flipper and the channel 15 form two elements of an electric switch. As shown in Figure 8, one terminal of a low voltage electric source at 45 is electrically connected to the channel 15 and the other side is electrically connected to the pivot 16 through conductor 46 and ground 47, respectively, in a manner best shown in Figure 5. Thus when the tail 26 of a flipper engages the inner face of the channel 15 when no strand is present, the circuit is closed between the flipper and the channel and this circuit so closed may be used to actuate a signal such as a lamp 48 shown in Figure 8, or to energize the coil 49 of a relay 50, or both.

The terminals of lamp 48 are connected through leads 51 and 52, the lead 51 leading to one side of the source

of power 45 and the lead 52 leading to one terminal of the switch mechanism herein shown as the rod 16. The relay coil 49 is similarly connected through the leads 53 and 54. Energization of the solenoid 49 opens the switch 50 in the circuit to the machine drive motor 55 so that the machine stops when any of the flippers closes its circuit.

It may some times be necessary to hold one or more of the flippers inoperative, as where it is not desired to run a strand therebeneath. To this end the inside face of the channel 15 may have attached thereto resilient pins 60 of rubber or the like. These may well be provided with suction cups 61 which may be secured either by their suction or additionally by cement, if desired, to the inner face of the top wall of the channel as shown in Figures 3, 4, and 5, the portion 60 lying in the swinging path of the tail 20, so that when the tail is pushed past the member 60 into the dotted line position shown in Figure 3, the weight of the flipper holds it in contact therewith out of position to engage a strand of the textile material and also out of position to close electrical contact with the channel 15. Whenever desired, however, the flipper may be returned to operative position by merely exerting sufficient downward pressure on its outer end to cause it to snap by the element 60. By rounding the end portion of the tail at 30, the contact is somwhat localized, thus tending to prevent burning when contact is made, and the provision for limited axial motion of each flipper between its spring ring 17 provides for automatic extension of the area of contact of each flipper with the channel 15. Moreover, the channel member 15 may be removed by removal of its attaching screw 65 and reversed so as to present the opposite side or leg of the channel into position to be contacted by the flipper tails, whenever one leg of the channel has become burned or worn to an undesirable degree. It will also be noted that the electrical circuit is of low voltage and that the contact is made above the level of the strand and where it is protected by the inverted channel from access by lint, dust, and dirt.

From the foregoing description of an embodiment of this invention it should be evident to those skilled in the art that various changes and modifications may be made without departing from its spirit or scope.

I claim:

1. A device of the class described, comprising a flipper pivotally mounted and having an end portion shaped to ride on a strand and having a tail, an inverted channel element arranged above and parallel to said flipper pivot and arranged to be contacted at times by said tail, and a weight having means for support on said tail in a direction to press said end portion against said strand.

2. A device of the class described, comprising a pivot rod, a flipper journaled on said rod, and having an end portion shaped to ride on a strand, said flipper having a tail, an inverted channel-shaped element supported above and parallel to said rod and adapted to be contacted by said tail when a strand is not present and said end portion drops below its strand-engaging position, and yielding means within said channel-shaped element adapted to support said flipper out of contact with said strand and said tail out of contact with said element.

3. A device of the class described, comprising a pivot rod, a flipper journaled on said rod and slidable axially thereof for a limited distance, and having an end portion shaped to ride on a strand, said flipper having a tail, an inverted channel-shaped element supported above and parallel to said rod and adapted to be contacted by said tail when a strand is not present and said end portion drops below its strand-engaging position, and a yieldable post carried by said channel-shaped element between its sides in position to be engaged by said tail and releasably hold said flipper out of strand-engaging position and out of element-engaging position.

4. A device of the class described, comprising a pivot rod having peripheral grooves spaced therealong, flippers each of less width than the spaces between said grooves pivotally supported by said rod and having a channel-shaped end portion adapted to ride on a strand, spring rings engaging in said grooves and limiting the motions of said flippers lengthwise of said rod, each of said flippers having a tail extending therefrom, and a contact member above and parallel to said rod and against which said tails are adapted to contact when no strand is in position to be engaged by the respective flipper, and an electric circuit of which said contact member and any of said flipper tails form a controlling switch device.

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