May 25, 1954 W. J. SCOTT 2,679,073

STOP MOTION DEVICE FOR YARN PROCESSING MACHINES

Filed June 28, 1952

Fig. 1.

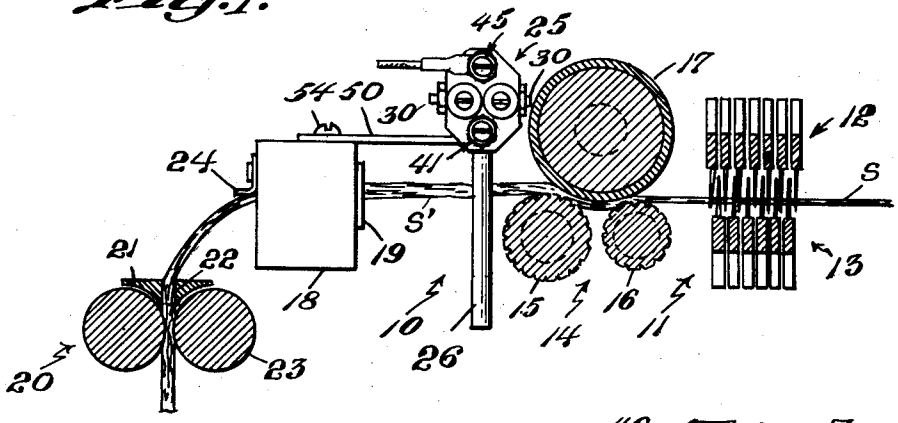


Fig. 2.

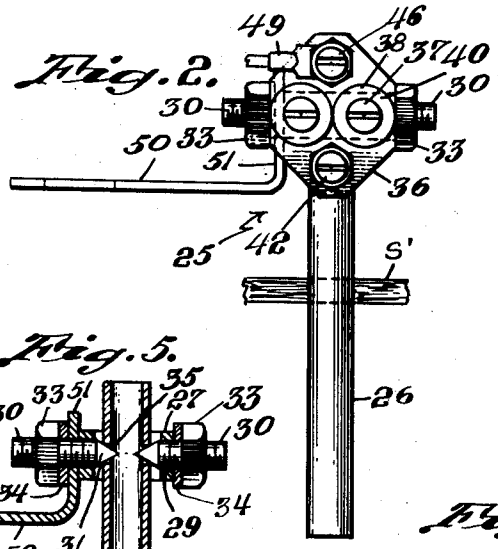


Fig. 3.

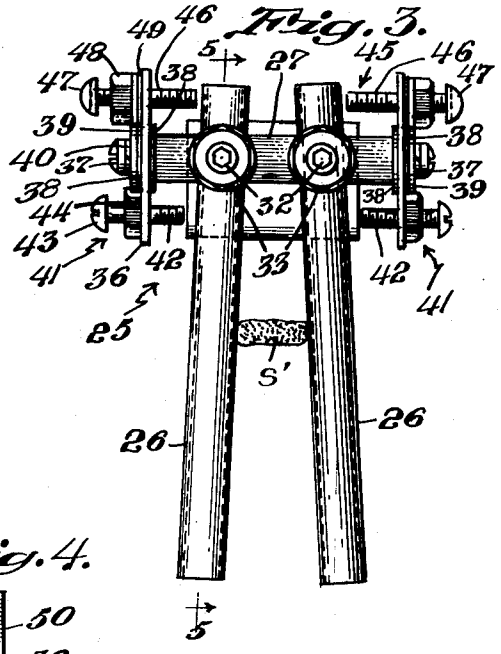


Fig. 5.

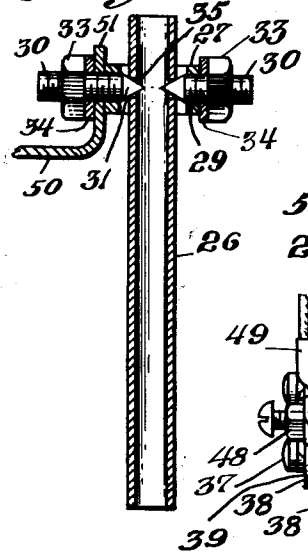
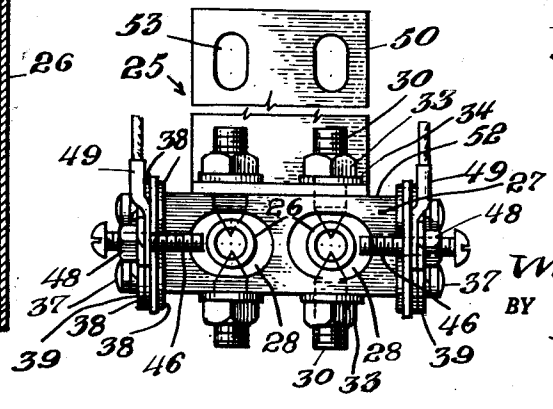


Fig. 4.



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STOP MOTION DEVICE FOR YARN PROCESSING MACHINES

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4 Claims. (Cl. 19—165)

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The invention relates to improvements in a stop motion device for a sliver processing machine.

An object of the invention is to provide a stop motion device constructed so as to be operable for detecting a predetermined variation in size of a sliver from the normal size thereof for stopping the machine.

Another object of the invention is to provide a stop motion device having a single pair of feeler members for straddling and engaging the opposite sides of a sliver and movable to circuit closing position thereof upon a predetermined variation in size of said sliver from the normal size thereof.

Another object of the invention is to provide a stop motion device having a pair of feeler members suspended for swinging movement from individual spaced bearings.

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:

Figure 1 is a side elevation partly in section of a fragmental portion of an apparatus adapted for processing a wool sliver and the like;

Figure 2 is an edge view of the stop motion device shown in Figure 1 on an enlarged scale;

Figure 3 is a front elevational view of the device shown in Figure 2;

Figure 4 is a top plan view thereof; and

Figure 5 is a sectional view taken substantially along line 5—5 of Figure 3.

In carrying out my invention, I provide a pair of feeler members and suspend these from a suitable support to straddle and engage opposite sides of a sliver as delivered from the front draft rollers of the machine. I mount these feeler members for free swinging movement so as to be moved by gravity toward each other to follow any reduction in the size of the sliver from the normal size and to be moved in the opposite direction by an increase in size of said sliver from the normal size thereof. In most sliver processing machines the same are usually operated by motor, the circuit of which is opened by appropriate electrical devices to bring the motor and machine to rest. In the present instance each feeler member may be placed in the electrical circuit of the motor which is operative to effect stoppage of the machine. I mount adjustable pairs of electrical contacts which are positioned in the said electrical circuit and arrange for these contacts to be engaged by said feeler members upon a

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predetermined amount of movement thereof in either direction so as to close said electrical circuit at said contacts to stop the machine. Thus, I provide a stop motion device which is operable to stop the machine upon a sliver increasing or decreasing in size from the normal size thereof so that the machine may come to rest to permit the attendant to repair or otherwise make such adjustment for correcting the said faulty drafting of the sliver.

Referring to the drawings for a more detailed description of the invention, 10 designates generally a so-called pin drafting machine particularly adapted for processing a wool stock sliver or the like prior to the formation of roving. The machine is illustrated more or less diagrammatically as by way of example and only so much of the machine is shown as is necessary for a clear understanding of the present invention. The machine comprises a plurality of pin bars 11 which are arranged in upper and lower sets 12, 13 with the pins of the set of pin bars 12 projecting toward the pins of the set of pin bars 13. The pins of one set of pin bars overlap the pins of the other set of pin bars. These bars traverse the machine lengthwise thereof in a usual manner by usual mechanism not shown but well known in the art. A plurality of individual slivers S are fed side by side to the pin bars to be combined, blended, combed, and advanced in parallelism through the machine, all in a usual and well-known manner. The combined sliver S emerges from the pin bars in a web-like form and is drawn from the pin bars by a set of draft rolls 14 comprising lower or bottom fluted rollers 15 and 16 and an upper or top roller 17, the top roller with the rollers 15, 16 providing a bite on the sliver as passed through the draft rollers, this being a usual arrangement of draft rollers. The bottom rollers 15, 16 are driven by means not shown, and the speed thereof relative to the speed of travel of the said pin bars through the machine determines the draft on the slivers.

The portion of the sliver S' at the delivery side of the draft rollers 14 is led therefrom so as to pass through a stop motion device 18 which is illustrated very generally and having a guide eye 19 through which the sliver passes to emerge on the opposite side of the device from which it is led to a take-up device 20 which may assume various forms, that herein shown having a guide plate 21 provided with a guide opening 22 through which the sliver S' passes to be engaged by a pair of driven rollers 23.

The stop motion device 18 has a feeler mem-

ber 24 which is pivotally mounted and extends into engagement with the sliver on the side of the device 18 opposite to the guide eye 19. Upon a predetermined fault in the sliver S', the feeler 24 will operate to effect stoppage of the machine. However, due to the increased draft and speed of pin drafters over that of the old type gill, there is a tendency at times for the top roller 17 of the draft rollers 14 to rise or ride on the sliver passing between the draft rolls, which results in a faulty draft and causes a bunching of the sliver S' at the eye 19, and the stop motion device 18 is ineffective to effect stoppage of the machine under such abnormal condition of operation of the machine. Upon the self-correction of the draft rollers to operate in the proper manner, the rollers 23 will eventually draw the stretch of faulty draft sliver through the eye 19, but the sliver will have this faulty stretch therein, which is, of course, undesirable.

In order to stop the machine upon both the improper drafting of slivers as above stated and when said sliver may decrease in size from normal, I provide a second stop motion device designated generally 25. This device 25 comprises essentially a pair of feeler members 26, each similar to the other and made of metal tubular material. These feelers are mounted on a generally horizontal extending bar 27 having openings 28 therethrough in line with each other longitudinally of the bar and elongated in the said longitudinal direction. In opposite longitudinal walls of each opening and centrally thereof there is provided a threaded opening 29 in which is received a threaded member 30 having a pointed or conical inner end 31 extending partially in the openings 28 in line with each other. Each member 30 is provided at the other end with a hexagonal shaped socket 32 in which is received an appropriate tool for turning the member 30 to adjust the length thereof projecting in the said opening 28. The member 30 is locked in adjusted position by means of a lock nut 33 and a lock washer 34 positioned between the inner face of the nut 33 and the side of the bar 27. Each feeler 26 is received in one of said openings 28 to have the upper portion thereof projecting above said bar 27 and is provided with an opening 35 extending through opposite walls thereof. The tapered end 31 of the member 30 engages the edges of the opening 35 whereby to suspend the feeler 26 from the bar 27 as best seen in Figure 5. These bars extend in a generally vertical direction and are freely swingable about the member 30.

At each end of the bar 27 there is provided a flange in the form of a metal plate 36 which is secured to the bar 27 as by means of cap screws 37 and electrically insulated from the bar by means of insulated washers or like members 38, one of which is positioned between the end of the bar and the said plate 36 and the other on the opposite side thereof between the plate and head of the cap screws 37. A metal washer 39 and a lock washer 40 may be positioned as shown between the head of the screw 37 and the insulation 38. At the lower end of each plate 36 there is mounted an electrical contact 41 which is shown in the form of a screw 42 having a slotted head 43 for receiving an appropriate tool for adjusting the position of the contact and is locked in adjusted position by means of a lock nut 44. At the upper end of the plate 36 there is mounted a similar electrical contact 45 which is likewise in a form of a metal screw 46 having a slotted head 47 for receiving an appropriate tool for adjusting the position thereof and is locked in adjusted position by means of a lock nut 48. These upper contacts 45 which are in electrical contact through the plate 36 with the contact 41 are placed in an electrical circuit of the machine, not shown, and which may be the motor circuit, by means of electrical conductors 49 which may be positioned beneath the head of the lock nut 48 to secure the same in firm position. It is here also stated that each feeler 26 is also placed in the said electrical circuit.

In order to mount the stop motion 25 at a proper position on the machine 10, a bracket or the like 50 is provided. This bracket has a right angularly extending portion 51 which mounts in position the bar 11 by the nuts 33 as shown. The bracket 50 is also provided with elongated openings 53 to receive screws 54 to secure the device 25 at the desired position in the space between the draft rollers and the said device 18 for the feeler members 26 to be at a position to straddle the sliver portion S'.

Referring to Figure 3, it will now be apparent that an increase in width of the sliver portion S' will swing the portion of the feelers 26 below the pivot 30 away from each other to engage against the contacts 41 and thereby close the said electrical circuit at contacts 41. As previously stated, the contacts may be positioned in the motor circuit of the machine which is opened by appropriate electrical devices to bring the motor and machine to rest. The contact feelers 26 and contacts 41 may be placed in such portion of the electric circuit which upon closing of said contacts will be set into operation to open the motor circuit. It will also be apparent that at any decrease in size of the sliver portion S', the members 26 which are sufficiently weighted will swing through gravity action toward each other so as to engage the upper contacts 45. Thus, it will be apparent that the stop motion device 25 will be operative to stop the machine either upon an increase or decrease in the size of the sliver portion S' from the normal size thereof. It will also be apparent that the feeler members may be adjusted to provide for any predetermined chosen limitations of tolerance in the size of the sliver.

I claim:

1. In a machine for processing a sliver having an electric circuit operable for effecting stoppage of the machine, a set of draft rollers to act on the sliver and a take-up device for the sliver as delivered from the draft rollers, a stop motion device having a generally horizontal extending bar adapted to be positioned above said sliver at a location between said draft rollers and said take-up device, a pair of feeler members in said electric circuit and pivotally suspended intermediate the ends thereof from said bar to straddle the sliver, a plurality of pairs of electrical contacts carried by said bar and electrically insulated therefrom, said contacts being in the said electric circuit and one pair of said contacts being positioned on one side of the pivot of said feeler members to be engaged by said feeler members when swung in one direction and the other pair of said contacts being positioned on the other side of said pivot to be engaged by said feeler members when swung in the other direction, said feeler members being engaged by said sliver to be swung thereby in one direction upon an increase in the size thereof from a normal size and swung in the other direction by gravity upon said sliver decreasing in size from the said normal size,

whereby said electric circuit will be closed at the said contacts upon a predetermined increase or decrease in the size of the sliver from the normal size thereof.

2. A stop motion device for a sliver processing machine having an electric circuit effective for stoppage of the machine comprising a generally horizontally extending bar, a pair of feeler members in said electric circuit and pivotally suspended intermediate the ends thereof from said bar to straddle the sliver and movable by gravity into engagement with the sliver and movable in the other direction upon an increase in size of the sliver from the normal size thereof, a plurality of pairs of electrical contacts carried by said bar and electrically insulated therefrom, said contacts being in the said electric circuit and one pair of said contacts being positioned on one side of the pivot of said feeler members to be engaged by said feeler members when swung in one direction and the other pair of said contacts being positioned on the other side of said pivot

to be engaged by said feeler members when swung in the other direction, whereby said electric circuit will be closed at the said contacts upon a predetermined increase or decrease in the size of the sliver from the normal size thereof.

3. A stop motion device as set forth in claim 2 wherein said feeler members are individually suspended from conical bearings.

4. A stop motion device as set forth in claim 2 wherein all of said contacts are in the same branch of the electric circuit.

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