Jan. 7, 1969 J. FERRI 3,420,048

METHOD AND APPARATUS FOR MONITORING THE TRAVEL OF A FIBER STRAND AT FLY FRAMES OR THE LIKE

Filed Aug. 3, 1967 Sheet 1 of 2

Fig. 1

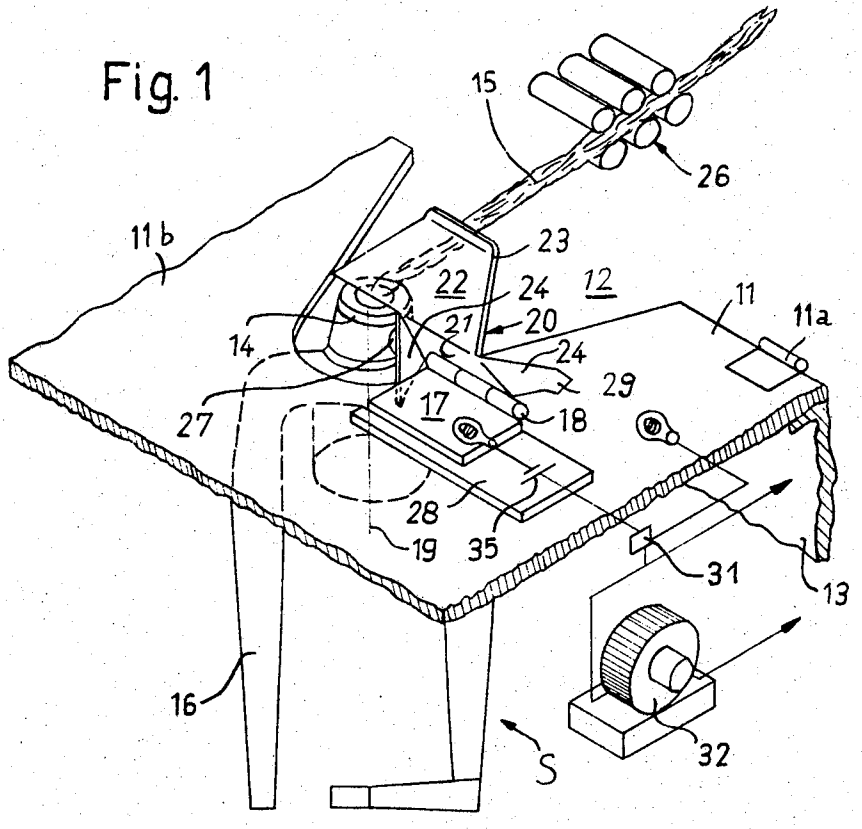

Fig. 2

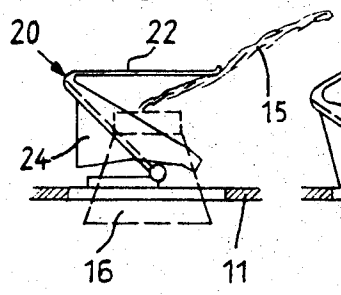

Fig. 3

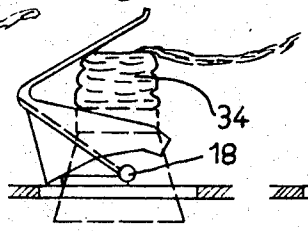

Fig. 4

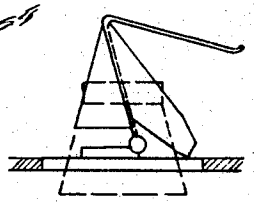

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Fig. 5

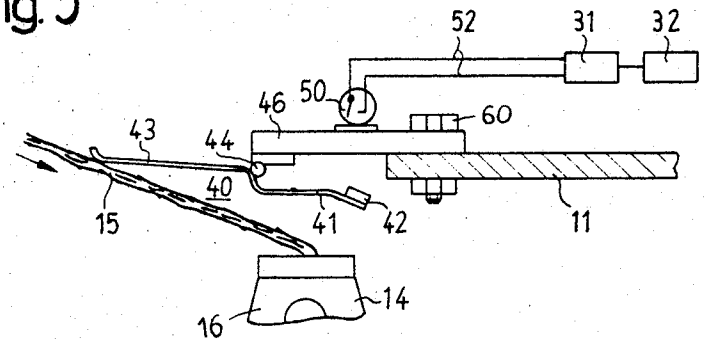


Fig. 6

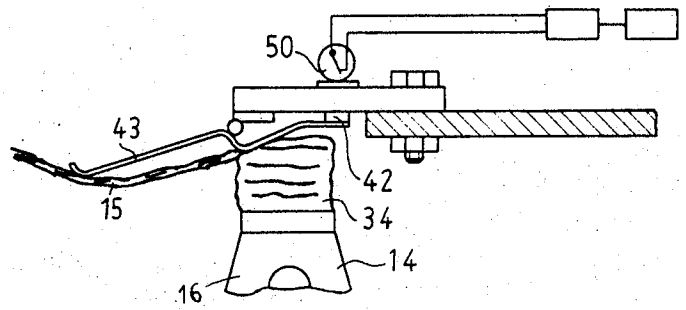
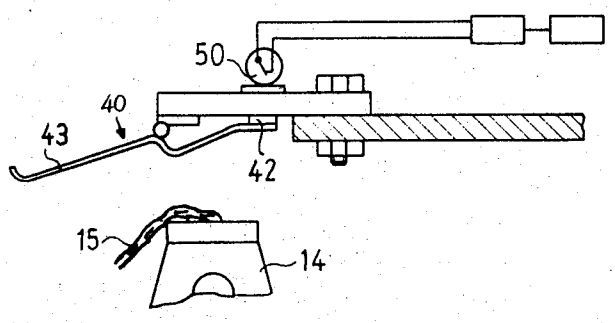


Fig. 7



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3,420,048

METHOD AND APPARATUS FOR MONITORING THE TRAVEL OF A FIBER STRAND AT FLY FRAMES OR THE LIKE

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Int. Cl. D01h 13/16

ABSTRACT OF THE DISCLOSURE

A method of monitoring the travel of a fiber strand at fly frames, the traveling fiber strand being scanned at a location between the drafting arrangement and its entry into the flyer head and upon absence of the the fiber strand in its normal path of travel a signal is triggered. The inventive method contemplates simultaneously further scanning the fiber strand in the direct neighborhood of the flyer head for a further disturbance, and upon the appearance of the latter producing an error signal independently of the condition of the traveling fiber strand.

Background of the invention

The present invention pertains to an improved method of, and apparatus for, supervising or monitoring the travel of a fiber strand at a textile machine, particularly a fly frame, roving frame or flyer spinning frame.

A number of different methods and apparatuses have already become known to the art for monitoring the travel of a fiber strand at a flyer spinning frame. All of the known methods serve to determine certain disturbances arising during the travel of the fiber strand, particularly its rupture or absence and, if desired, to automatically shut down the machine when such a disturbance is indicated.

The fiber strand which is to be monitored can be a slubbing, or roving a yarn or the like, and accordingly, the term "fly frame" as employed herein is intended to encompass both a roving frame as well as also a fine spinning frame provided with flyers, in other words, any type of spinning machine equipped with flyers.

According to a known technique of this type for monitoring a slubbing, there is tested the tension of the slubbing by means of a feeler arranged between the drafting arrangement and the flyer head. This feeler produces a signal whenever there is a certain relaxation of the slubbing tension, for instance upon rupture of the slubbing, and this signal serves to stop the machine. However, this monitoring technique only serves to determine disturbances in the travel of the slubbing occurring between the drafting arrangement and the flyer head. However, practical experience has shown that at times disturbances can also subsequently occur during passage of the slubbing through the flyer, even though the slubbing retains its normal path of travel.

Summary of the invention

Accordingly, it is a primary object of the present invention to provide an improved method of, and apparatus for, monitoring the further travel of the slubbing or the like in order to detect disturbances, in particular to determine disturbances at the region of the flyer.

Still a further significant object of this invention relates to an improved method of, and apparatus for, monitoring the condition of the traveling fiber strand or the like directly at the region of the flyer in order to determine the possible existence of loop formations, piling up of the strand, or other irregularities in the travel of the fiber

strand which might occur at the neighborhood of the flyer.

Still a further significant object of the present invention relates to an improved apparatus for positively determining in a very efficient, quick and reliable manner the existence of irregularities in the processing of a fiber strand at the region of the flyer, so that complete supervision of the fiber strand is guaranteed not only for the time that it is moving from the associated drafting arrangement towards the flyer head, but also at such time as it enters the flyer head for processing by the associated flyer.

Another extremely important object of the present invention relates to a monitoring technique and apparatus for the performance thereof, wherein it is possible at a single location to not only determine interruptions or other irregularities in the transit of the fiber strand between the drafting arrangement and the flyer head, but further to simultaneously also quickly and positively determine strand interruptions or other irregularities at the region of the flyer head itself, whereby it is possible to discover such irregularities or disturbances immediately and before such could cause rupture of the fiber strand.

Now, in order to achieve these and still further objects of the present invention the inventive method contemplates monitoring the travel of a fiber strand at a fly frame, wherein the traveling fiber strand is scanned at a location between the drawing frame or drafting arrangement and its entry into the flyer head and upon the absence of the fiber strand in its normal path of travel a signal is triggered. Further, the inventive monitoring technique relies upon the concept of simultaneously further scanning the fiber strand in the direct neighborhood of the flyer head for a further disturbance during the aforementioned fiber strand-scanning operation, and upon the appearance of such further disturbance producing an error signal independently of the condition of the traveling fiber strand.

Due to the simultaneous monitoring of the flyer head, it is possible to determine at a single location, in addition to interruptions of the strand in its path of travel between the drafting arrangement and the flyer head, also rupture of the strand at the flyer itself, and in many instances to uncover the existence of disturbing conditions before such result in the rupture of the fiber strand.

The inventive monitoring apparatus for a traveling fiber strand of a textile machine, particularly a fly frame provided with a flyer, comprises feeler means for contacting the traveling fiber strand, and means for mounting the aforesaid feeler means for pivotal movement between a normal position and a first signaling position corresponding to the absence of the fiber strand or an untensioned state of said fiber strand. According to one aspect of the invention, the mounting means also serves to mount the feeler means for pivotal movement between the aforesaid normal position and a second signaling position which is opposite the aforementioned first signaling position with respect to the aforesaid normal position. According to a still further aspect of the invention, the feeler means is constructed in the form of a double-arm lever member, one lever arm of which is disposed at the region of the flyer head in spaced relation therefrom, the other lever arm extending to the fiber strand entering the flyer head, and wherein such other lever arm bears against the fiber strand in the normal position of the feeler means owing to a pivoting moment which acts upon the double-arm lever member.

Brief description of the drawings

The invention will be better understood, and objects other than those set forth above, will become apparent, when consideration is given to the following detailed description thereof. Such description makes reference to

two embodiments of inventive apparatus for carrying out the inventive method, with like reference numerals being substantially employed throughout to denote the same or analogous elements, and wherein:

FIGURE 1 is a perspective view of a flyer arranged at a roving frame equipped with an associated feeler in accordance with a first embodiment of inventive monitoring apparatus;

FIGURES 2 to 4 schematically depict different positions of the feeler of the monitoring apparatus depicted in FIGURE 1, and specifically,

(a) FIGURE 2 shows the feeler member in the position it assumes when the fiber strand properly travels to and into the associated flyer head;

(b) FIGURE 3 shows the position of the feeler when the fiber strand has piled up at the flyer head to form the undesirable caps or domes;

(c) FIGURE 4 depicts the position of the feeler upon the absence of the fiber strand due to a disturbance such as rupture or depletion of the fiber strand; and

FIGURES 5 to 7 depict a further embodiment of inventive monitoring apparatus, and specifically,

(a) FIGURE 5 depicts the feeler in its normal position assumed during proper travel of the fiber strand;

(b) FIGURE 6 depicts the position of the feeler member in the case of a disturbance in the form of piling up of fiber material at the associated flyer head to form the fiber domes or caps; and

(c) FIGURE 7 depicts the position of the feeler member in the case of a further disturbance such as rupture of the fiber strand or slubbing prior to entry into the flyer or because of the absence or depletion of such fiber strand or slubbing.

Description of the preferred embodiments

Describing now the drawings, in FIGURE 1 reference numeral **11** designates a cover plate formed of sheet metal for instance. This cover plate **11** covers the region above the flyers **16** (only one of which is conveniently shown in FIGURE 1) of a fly frame, generally designated by reference numeral S. This cover member **11** is advantageously detachably or pivotably connected at the side or wall **13** of the machine frame confronting the spindles, and in this instance this cover plate **11** is hingedly connected by the hinge means **11***a* with the wall **13**. Further, it will be recognized that the sheet metal cover plate **11** possesses a substantially U-shaped recess or cutout **12** at the region of the flyer head **14** of the associated flyer **16**, so that when upwardly tilting this cover plate **11** it does not tear or otherwise damage the fiber strand, here shown as a slubbing **15**. The flyer heads **14** protrude past the upper surface **11***b* of the cover plate **11**. Continuing, it will be seen that a support or base plate **17** is secured to the cover plate **11** above each flyer **16**. A hinged rider or detecting member **20**, which provides a feeler means for the slubbing **15**, is articulated by means of a suitable hinge connection **18** to the support or base plate **17**. The axis of this hinge connection **18** advantageously extends in the lengthwise direction of the fly frame S, in other words transverse to the direction of travel of the slubbing **15**. The axis of the hinge connection **18** and the axis of rotation of the flyer **16** advantageously intersect at right angles to one another.

The feeler means **20** is formed from thin, flexed sheet metal stock and possesses a number of distinct surfaces or portions, namely, a back or ridge portion **21**, a feeler surface or cover portion **22**, a rounded portion **23**, and the lug or tab portions **24**. The back or ridge portion **21** of the feeler means **20**, and which defines a support portion, interconnects the movable portion of the hinge connection **18** with the feeler surface or cover portion **22**. In the normal position of the feeler member **20** represented in FIGURE 2, this feeler surface or cover portion **22** extends approximately horizontally, as shown, and further, extends rearwardly towards the drafting arrangement **26** from the back or ridge portion **21** which extends forwardly and upwardly in the aforementioned normal position of the feeler means **20**. The feeler surface **20** is upwardly flexed to provide the rounded portion **23** at the end thereof neighboring or confronting the drafting arrangement **26**. Further, this feeler surface or cover portion **22** extends laterally to such an extent that it covers the crown or head **14** of the associated flyer **16**. Also, this feeler surface **22** extends in depth, that is to say towards the drafting arrangement **26**, to such an extent that the rounded portion **23** bears against the slubbing **15** in the normal position of the feeler means **20**, and the weight distribution at the feeler means **20** is chosen such that only a small portion of the weight of the feeler means loads the slubbing **15**. Consequently, the slubbing **15** is practically not deflected at all out of its original path of travel between the drafting arrangement **26** and the flyer head **14**. Furthermore, this feeler means **20** can be tilted out of its normal position shown in FIGURE 2, either forwardly into the position shown in FIGURE 3 or rearwardly into the position shown in FIGURE 4, the traveling slubbing **15** serving to retain such feeler means **20** in the aforementioned normal position of FIGURE 2. The spacing of the feeler surface **22** from the upper edge of the flyer head **14** is selected such that the tilting feeler means **20** will not be contacted by the flyer head **14**.

If during the operation of the fly frame S a disturbance occurs, for instance rupture of the slubbing **15** between the drafting arrangment **26** and and the associated flyer **16**, then the feeler means **20** will pivotably drop in rearward direction towards the drafting arrangment **26** under the action of the force of gravity, due to improper support of such feeler means **20** by the now ruptured slubbing **15**. A second type of disturbance can occur through the formation of obstructions in the form of so-called domes or caps **34** building above the head **14** of the flyer **16**. As soon as the height of such dome or cap **34** is greater than the free spacing between the feeler surface **22** and the feeler head **14**, then this feeler surface **22** is raised by the accumulating fiber material until the feeler means **20** has exceeded its unstable equilibrium position and tilts forwardly into the position of FIGURE 3 owing to the action of the force of gravity. Furthermore, a third type of disturbance can occur if the strand tension gives so that loops or curls occur which, upon departure of the slubbing **15** out of the aperture or hole **27** provided at the flyer head **14**, are twirled around together with the rotating flyer **16**. Such loops impact against the back or ridge portion **21**, defiining an impact surface, of the feeler member or means **20** and cause the latter to tilt forwardly. The same effect can be realized when loops are formed at the flyer head **14**. These loops and caps are, in many instances, a sign that the slubbing **15** is about to rupture.

The sensitivity or speed of response of the feeler means **20** to the formation of caps or domes **34** can be varied by appropriate dimensioning of the spacing between the feeler surface **22** and the flyer head **14**. A smaller spacing results in a shorter response time.

The signaling of a disturbance is preferably undertaken electrically. To this end, an electrically insulated intermediate layer **28** is applied between the base or support plate **17** and the cover member **11**. Furthermore, the feeler means **20** posseses two lugs or tab members **24** laterally of the back or ridge portion **21** and which are flexed out of the plane of such back portion in opposite directions, as shown, and therefore serve to limit the tilting motion of the feeler means **20** towards the front and the rear. These lug portions **24** terminate in tips **29** which are capable of penetrating through any fiber layer or oil film which might be present upon the sheet metal cover member **11**, to thereby provide a conducting connection between the base plate **17** and the cover member **11**. The downward extent of the lug portions **24**

narrows their spacing from the base plate **17** and thus likewise determines the sensitivity of the apparatus. If it is desired it would be possible, for instance, to signal as a disturbance the mere throughhang of a slubbing **15** between the drafting arrangement **26** and the flyer **16** by providing an appropriately long tip **29** at the rear lug portion **24** which limits the angle of tilt. The base plate **17** is connected with one pole of a suitable current source **35**, the cover plate or cover member **11** being electrically connected with the other pole of such current source **35**. A suitable signaling mechanism, for instance a signal lamp or a relay **31** is arranged in this current circuit, and when the current circuit is closed so that current can flow therein this relay **31** responds, to thereby stop the drive motor **32** of the spinning machine.

It can be advantageous to combine the arrangement of this feeler means **20** with an apparatus for sucking up the ruptured slubbing and for pneumatically cleaning the fly frame S. In such case, the cover member **11**, which carries the previously considered monitoring devices for a number of spinning locations, simultaneously forms a component of a hood-shaped covering which covers a number of adjacently disposed flyers, in order to guide in a predetermined manner a penumatic cleaning air stream intended to wipe or contact the individual spinning locations. Furthermore, in such instance it is advantageous to automatically open, simultaneous with the signaling of a disturbance, the forward sheet metal covering member extending over the sections between the stamped metal parts as well as the corresponding cover member **11**, in order to be able to immediately recognize in which section of the machine the disturbance has occurred. A particular advantage of the combination with the pneumatic cleaning device resides in the fact that, upon opening and subsequently closing the cover member all of the feeler mmebers or means **20** are automatically again brought into the proper position at the associated slubbing **15**, so that a return or repositioning of the feeler means is not necessary.

Of course, the feeler means **20** can be secured in any other different manner at the region of the associated flyer head **14**, for instance upon individual supports near the flyers **16** which are secured to be tiltable about a horizontal axis at the side of the machine frame confronting the spindles in a manner that they are not disturbing during exchange of the spools or bobbins.

A further possibility of determining a disturbance by means of the pivotable feeler means **20** resides in having an additional lug portion of the pivotable feeler means, when assuming a disturbing position, interrupt a bundle of light rays directed along the machine onto a photocell, whereby the machine can be stopped by a photoelectric control, as is known in the art. In so doing, in order to be able to get along with a single light ray for each row of spindles, it is possible to provide for instance a further lug or tab portion at the feeler means in such a manner that, when the feeler means pivots or tilts towards the rear, this lug member or portion arrives in the path of a cam provided at the rotating flyer and which serves to forwardly tilt the feler means. As a result, the ligth ray or bundle of light is interrupted and the machine is stopped. The lugs or tab members for carrying out the optical control can be also constructed in such a manner that they bracket or straddle the bundle of light rays and the one or the other lug member interrupts the bundle of light rays when the feeler member tilts.

Furthermore, the limiting of the tilting movement of the pivotal feeler means **20** can also be achieved by using, for instance, needles which are arranged substantially transverse to the back portion **21**, instead of the previously considered lug members **24**. Also, if it is found desirable, it would be possible to indicate or signal in different ways both of the disturbance positions which the feeler means can assume.

Furthermore, it is also readily possible that the pivot axis of the pivotal feeler means can extend at an acute angle with respect to the longitudinal axis of the machine. Additionally, instead of constructing the feeler means to be tiltable or pivotable about a physical axis, it would also be possible to provide the feeler means with a substantially arc-shaped foot which can roll upon a surface.

The feeler means **20** of the previously considered embodiment described in connection with FIGURES 1 to 4 is mounted in such a manner at the hinge means or connection **18** that the normal position and the one equilibrium position is located at the one side of the unstable equilibrium position and the other signaling position is located at the other side of the unstable equilibrium position. In so doing, and with the view of having a small mechanical loading of the slubbing **15** by the pivotable feeler means **20**, it is possible to obtain a weak bearing force of the feeler means in that the normal position is selected to be only slightly deviating from the unstable equilibrium position.

A further embodiment of the inventive monitoring apparatus is shown in FIGURES 5 to 7 in three different situations or positions, and specifically as viewed from the side, that is to say, in a direction transverse to the course of travel of the slubbing **15** or the like. Those components of the apparatus which have already previously been considered with regard to the embodiment of FIGURES 1 to 4 have conveniently been designated with the same reference numerals. During the normal operation of the roving frame the slubbing **15** departs from the drafting arrangement (conveniently omitted in FIGURES 5 to 7, but similar to the drafting arrangement **26** of FIGURE 1) at a downward inclination and enters from the top into the associated flyer head **14**. The inventive monitoring apparatus associated with the spinning location is secured to a suitable machine part or component, preferably once again to the cover plate or cover member **11**. More precisely, it will be recognized that an apparatus support or carrier **46** is connected with the cover plate **11**, for instance by means of the threading **60** or equivalent fastening expedients. In this embodiment a double-arm lever member **40** serves as the feeler means for the monitoring apparatus. This double-arm lever member **40** can be provided in the form of a strip of material. Feeler means **40** is pivotally connected by means of a hinge joint or hinge connection **44** with the free end of the carrier or support **46**. Further, this feeler means **40** is arranged with regard to the associated flyer **16** and the course of travel of the slubbing **15** in such a manner that the one lever arm **41** is disposed at a spacing above the flyer head **14** and the other lever arm **43** extends to the slubbing **15** moving into the aforementioned flyer head **14**. Furthermore, this double-arm lever member **40** is under the action or influence of a pivotal or rotational moment about the axis of rotation **44**. This moment acts in the counterclockwise direction, viewed in the drawings, and preferably is brought about by providing the lever arm **43** with a slight overweight with respect to the other lever arm **41**. When the slubbing **15** is moving properly, such as in the arrangement shown in FIGURE 5, then the free end of the lever arm **43**, due to the aforementioned pivoting moment, bears against the slubbing **15** entering into the associated flyer head **14**.

Similar to the embodiment of FIGURES 1 to 4, the embodiment of monitoring apparatus of FIGURES 5 to 7 also responds to two different disturbances which occur during the course of travel of the slubbing **15**. The one disturbance situation is represented in FIGURE 6. Such happens when the strand of slubbing delivered from the associated drafting arrangement no longer is properly pulled into the associated flyer, and therefore, tends to collect or wind-up at the flyer head **14**. As a result, a slubbing coil **34** builds up at the flyer head **14** and this coil **34** partakes the form of a so-called cap or nest. As the height of the slubbing coil **34** increases the latter bears against the lever arm **41** and displaces such upwardly,

whereby the feeler means 40 assumes the depicted disturbance or signaling position of FIGURE 6. As already explained, the determination of this disturbance situation is of importance because the formation of a slubbing coil 34 at the flyer head 14 occurs during a faulty drafting of the slubbing between the inlet to the flyer and the winding location (presser finger), and which as a general rule results in rupture of the slubbing in a very short time. At the same time, the slubbing section between the drafting arrangement and the flyer also becomes loose, so that during rocking or pivoting of the feeler means 40 into the disturbance position the lever arm 43 thereof experiences practically no resistance from this slubbing section.

The second mentioned disturbance situation occurs when the slubbing ruptures between the drafting arrangement and the flyer head 14 or when the slubbing is absent or depleted, and such is represented in FIGURE 7. Owing to the rupture of the slubbing 15, the lever arm 43 of the pivotal feeler means 40 is freed from below, and owing to the aforementioned pivotal or rotational moment this feeler means 40 assumes the same disturbance position as shown in FIGURE 6.

Now, in order to signal the disturbance position of a feeler means 40 for the purpose of controlling the machine, there are available a number of different possibilities. For instance, the feeler means 40 when in the disturbance position, as in the previous described embodiment, can bring about a direct closing of contacts in a control current circuit, or else it is possible to provide at the feeler means 40 a lug or a flap member which interrupts a bundle of light rays of a photoelectric light barrier when assuming the aforementioned disturbance position. However, a magnetic control of a protective contact tube or switch 50, such as a dry reed switch, as a function of the feeler position has been found to be particularly advantageous, as such is shown in the present exemplary embodiment. Therefore, it will be recognized that the dry reed switch 50 is arranged for this purpose at the carrier 46, and at the free end of the lever arm member 41 there is secured a small permanent magnet 42. This permanent magnet 42 simultaneously serves as a counterweight for balancing the feeler means 40.

In the normal position of the feeler means 40 depicted in FIGURE 5, the permanent magnet 42 is located at a relatively large spacing from the contact or dry reed switch 50, the latter therefore being open. On the other hand, in the disturbance position of the feeler means 40, as shown in FIGURES 6 and 7, the permanent magnet 42 has now approached the switch 50 to such an extent that the latter is closed. Naturally, with the illustrated arrangement the carrier or support 46 must be of course produced from a non-magnetic material. The switch 50 is located in the excitation current circuit 52 of a relay 31 which controls the machine drive motor 32 and/or an appropriate signaling device.

With the described construction of the feeler means 40 in the form of a double-arm lever member the latter does not have any unstable equilibrium position. In the event that the lever arm 43 experiences slight impacts owing to oscillations or through-passing of thickened portions of the slubbing 15, then the feeler means 40 at most is moved out of the normal position, that is to say in clockwise direction, against the pivoting moment acting upon such, so that a false disturbance signal or indicating does not however occur. Moreover, it is possible to choose the bearing force of the feeler means to be practically optionally small, so that there is insured for the positive rocking or pivoting of the feeler means into the disturbance position in the case of rupture of the slubbing or fiber strand. Naturally, it is possible to produce the pivoting moment in a different way than by overweighting the lever arm 43, for instance by means of a spring or by magnetic means.

While there is shown and described present preferred embodiments of the invention, it is to be distinctly understood that the invention is not limited thereto, but may be otherwise variously embodied and practiced within the scope of the following claims. Accordingly, what is claimed is:

1. A method of monitoring the travel of a fiber strand at fly frames, wherein the traveling fiber strand is scanned at a location between the drafting arrangement and its entry into the flyer head and upon absence of the fiber strand in its normal path of travel a signal is triggered, the improvement comprising the steps of:

(a) during the aforementioned scanning of the fiber strand simultaneously monitoring the fiber strand in the direct neighborhood of the flyer head for a further disturbance, and

(b) upon the appearance of such further disturbance producing an error signal independently of the condition of the traveling fiber strand.

2. A method of monitoring the travel of a fiber strand as defined in claim 1, wherein said monitoring of the fiber strand monitors the entry of the fiber strand into the flyer head for the formation of obstructions.

3. A method of monitoring the travel of a fiber strand as defined in claim 2, wherein said monitoring of the fiber strand simultaneously monitors the departure of the fiber strand from the flyer head for the formation of loops.

4. An apparatus for monitoring the travel of a fiber strand at a textile machine, particularly at a fly frame provided with a flyer, comprising feeler means for contacting the traveling fiber strand, means for mounting said feeler means for pivotal movement between a normal position and a first signaling position corresponding to the absence of the fiber strand or an untensioned state of said fiber strand, and for pivotal movement between said normal position and a second signaling position which is opposite said first signaling position with respect to said normal position.

5. An apparatus as defined in claim 4, wherein said feeler means includes a cover portion providing a feeler surface, said cover portion being disposed in spaced relation from the head of the flyer when said feeler means assumes said normal position, said feeler surface extending into the path of travel of the fiber strand entering into the flyer head.

6. An apparatus as defined in claim 4, said mounting means incorporating a support element and hinge means for hingedly connecting said feeler means with said support element, said hinge means having an axis which is disposed at approximately right angles to the axis of the flyer.

7. An apparatus as defined in claim 5, said feeler means further including a support portion for supporting said cover portion, said support portion extending into the path of fiber formations which form laterally of the flyer head.

8. An apparatus as defined in claim 4, wherein said feeler means further includes an impact element which neighbors the peripheral surface of the flyer head.

9. An apparatus for monitoring the travel of a fiber strand at a textile machine, particularly at a fly frame provided with a flyer, comprising feeler means for contacting the traveling fiber strand, means for mounting said feeler means for pivotal movement between a normal position and a signaling position corresponding to the absence of the fiber strand or an untensioned state of said fiber strand, said feeler means being constructed as a double-arm lever member, one lever arm of said double-arm lever member being disposed at the region of the head of the flyer at a spacing therefrom, the other lever arm of said double-arm lever member extending to the fiber strand entering the flyer head, said other lever arm bearing against said fiber strand in the normal position of said feeler means owing to a pivoting moment acting upon said double-arm lever member.

10. An apparatus as defined in claim 9, wherein said pivoting moment is provided by overweighting said other

lever arm bearing against said fiber strand with respect to said one lever arm.

11. An apparatus as defined in claim **9**, wherein said feeler means is defined by a strip member arranged between the flyer head and the drafting arrangement and extending essentially in the direction of and above the fiber strand.

12. An apparatus as defined in claim **9**, further including switch means for indicating said signaling position of said feeler means which deviates from said normal position, a permanent magnet provided at said feeler means for controlling operation of said switch means.

13. An apparatus as defined in claim **12**, wherein said switch means is a dry reed switch.

14. An apparatus as defined in claim **12**, wherein said permanent magnet is disposed at said one lever arm which is arranged in spaced relation above the flyer head, said permanent magnet providing a counterweight for said other lever arm.

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U.S. Cl. X.R.

200—61.18

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,420,048 January 7, 1969

Johann Ferri

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

In the heading to the printed specification under line 9, insert -- Claims priority, application Switzerland, Feb. 21, 1967, 2533/67 --.

Signed and sealed this 31st day of March 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents