July 14, 1925. 1,545,692

V. S. PHANEUF

THREAD DETECTING MECHANISM FOR TEXTILE MACHINERY

Filed June 12, 1923

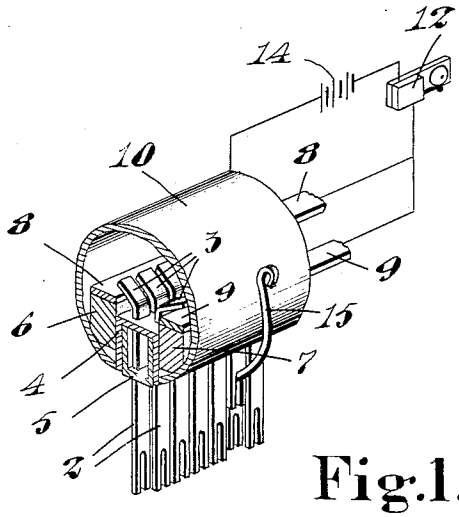


Fig.1.

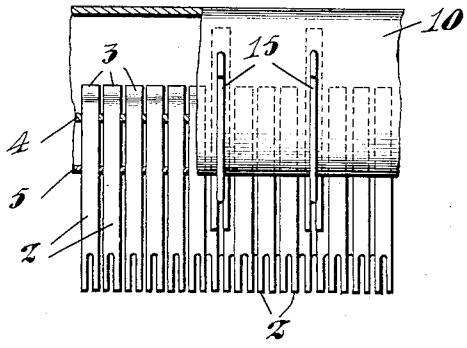


Fig.2.

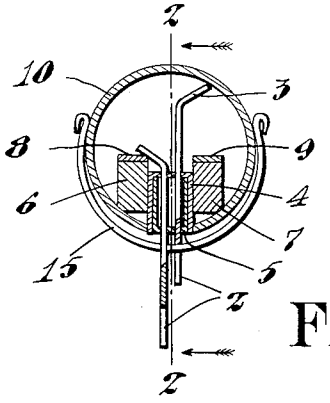


Fig.3.

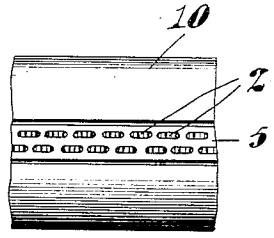


Fig.4.

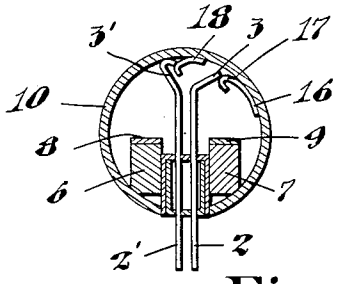


Fig.5.

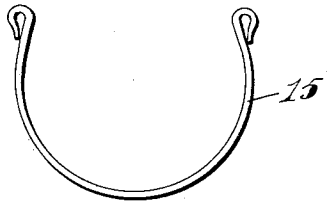


Fig.6.

INVENTOR
Victor S. Phaneuf.
By his attorney,
J. H. McCurdy.

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UNITED STATES PATENT OFFICE.

VICTOR S. PHANEUF, OF NASHUA, NEW HAMPSHIRE, ASSIGNOR TO SACO-LOWELL SHOPS, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

THREAD-DETECTING MECHANISM FOR TEXTILE MACHINERY.

Application filed June 12, 1923. Serial No. 644,840.

To all whom it may concern:

Be it known that I, VICTOR S. PHANEUF, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Thread-Detecting Mechanisms for Textile Machinery, of which the following is a specification.

This invention relates to mechanisms of the general type used in textile machinery to detect the presence of a broken thread or "end." The invention is especially, but not exclusively, concerned with a detecting mechanism of the type disclosed in Patent No. 1,454,111 granted May 8, 1923, and the invention has for its general object to improve mechanisms of this type with a view to making their use more convenient and economical under the varying conditions encountered in actual practice. The invention aims especially to devise means whereby any of the detecting elements which are not to be used can be put out of action quickly and conveniently, or brought into action easily when it is desired to use them again.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

Referring now to the drawings,

Figure 1 is a perspective view of a portion of a detecting mechanism of the general type shown in the patent above designated but modified in accordance with the present invention;

Fig. 2 is a view, partly in side elevation and partly in central vertical cross-section, of the mechanism shown in Fig. 1;

Fig. 3 is a transverse, vertical, cross-sectional view of the mechanism shown in Figs. 1 and 2;

Fig. 4 is a bottom view of the mechanism shown in Fig. 1, the attachment provided by this invention, however, being omitted;

Fig. 5 is a view similar to Fig. 3 showing a modified construction; and Fig. 6 is a view of one of the detector clips.

Referring first to Figs. 1 to 4 inclusive, the detecting mechanism there shown is designed especially for use in twisting machines where several strands of thread or yarn, commonly called "ends", are designed to be drawn from supply spools and twisted together to form a new end or thread of coarser gage. The general nature of the mechanism and the manner in which it is used in a twisting machine will be best understood by a reading of the patent above designated.

For the purposes of the present application it may be stated that the mechanism comprises a series of detectors 2 arranged in two parallel rows and each having a lower forked end to straddle a thread. These detectors consist of metal bars having inclined upper ends 3 and they are operatively supported in a retainer comprising two bars 4 and 5 of channel section. The bar 5 is slightly narrower than the bar 4 so that it fits in the latter bar, and the two parts are secured in this relationship forming, in effect, a square tubular retainer, as clearly shown in the drawings. The detectors are guided in slots formed in the top and bottom walls of this retainer, these slots being arranged in two parallel rows and staggered with reference to each other, as best shown in Fig. 4.

Secured to the opposite sides of the retainer 4—5 are pieces 6 and 7, of wood or other electric insulating material, having metal strips or bars 8 and 9, respectively, fastened to their upper edges. All of these parts are enclosed in a tubular housing or casing 10 which also is made of metal.

This apparatus is designed to control the operation of a signal of some kind or of an automatic stopping mechanism for the machine, so that when a thread or end breaks the signal will be set or sounded, as the case may be, or the machine will be stopped, in case a stopping mechanism is used. In the construction shown the signal consists of an electric bell 12, one terminal of which is connected by suitable conductors with the bars 8 and 9, while the other terminal is connected with the housing 10 through a battery or other source of current 14.

In using this detecting mechanism the entire series of threads usually is guided on the outer surface of the housing 10, each thread partly encircling the housing and being led through the fork in one of the detectors 2. The tension on each thread thus enables it to support its detector in an elevated position. If any thread, however,

should break, the detector for that thread would immediately drop into contact with one or the other of the bars 8 and 9, thus completing the electric signal circuit and ringing the bell 12. At other times, however, the detectors are held out of signaling position by the threads, as just described, and the signal circuit thus is kept open. It will be understood that the lowermost position of the detectors, where they close the signal circuit, is referred to as the "signalling position" simply as a matter of convenience, and is intended to designate the circuit closing or actuating position regardless of the character of the apparatus which is controlled or operated by the detecting mechanism.

The mechanism so far described is like that disclosed in the patent above designated except that the ends 3 of the detectors are inclined in the present arrangement whereas in the construction shown in the patent these end portions project at right angles to the shanks of the detectors.

The number of threads or ends which are to be twisted together to form a single new strand varies on a given machine, and in changing the machine to accommodate a different number, it has been necessary heretofore to withdraw the retainer 4—5 from the housing 10 and then to remove the detectors which are not to be used. This operation takes considerable time, particularly since it is almost impossible to get exactly the right arrangement of detectors at the first trial. It is obvious that any detector which is not to be used, if left in the retainer, would remain in its circuit closing or signalling position and thus would operate the signal continuously and render the detecting mechanism useless. All the detectors which are not to be used, therefore, must be removed from the retainer. The present invention deals with the problem presented by these conditions, and it provides a convenient means for keeping any detector, or any desired combination of detectors, out of action when it is desired not to use them.

Referring to Figs. 1, 2 and 3, it will be seen that a U-shaped spring clip 15 is arranged to engage the fork in the lower end of any detector and to embrace the housing 10 and thus hold the detector out of signalling position. This spring clip, as shown, consists simply of a piece of spring wire with its opposite ends bent over, as clearly illustrated, and it is of such dimensions that it can conveniently be snapped into the position shown in Fig. 1, 2 and 3, or removed therefrom. Any desired number of these clips may be used, each clip releasably holding one detector out of action.

With the aid of these clips it is not necessary to remove the retainer 4—5 or the housing 10 from the machine in adjusting the mechanism to accommodate a different number of ends, the clips being placed on the housing as shown in the drawings, or removed therefrom while the parts remain in their usual positions. This invention thus effects a substantial saving in time required by the operative or machine tender whenever any change is to be made in the number of detectors in operation.

In the construction shown in Fig. 5, the means for holding the detectors out of action is arranged within the housing 10. Referring to this figure it will be seen that a plate 16 is riveted, or otherwise secured, within the holder and has a curved lip 17 designed to engage the upper extremity of the end 3 of the detector 2. These dectectors have an appreciable resiliency, and when any one of the detectors 2 is pushed upwardly to the upper limit of its movement, its end snaps past the lip 17 and the lip thereafter retains the detector in an elevated position where it is out of action. The detector may, however, be readily pulled down past the lip 17 into its operative position again. The other detector 2′ shown in this figure has a hook-shaped upper end 3′ designed to engage a lip on the edge of a plate 18 in the same manner that the part 3 engages the lip 17. In either arrangement shown in this figure the detectors are moved out of action simply by pushing them upwardly beyond their normal range of movement.

While I have herein shown and described the best embodiments of my invention which I have so far devised, it will be appreciated that the invention may be embodied in other forms without departing from its spirit or scope.

Having thus described my invention, what I desire to claim as new is:

1. In a detecting mechanism of the character described, the combination of a series of detectors movable independently of each other to perform their detecting function, means for operatively supporting said detectors, and means for holding out of action any of said detectors which are not to be used while still retaining them in operative relationship to said supporting means.

2. In a detecting mechanism of the character described, the combination of a series of detectors movable independently of each other into and out of signalling position, means for operatively supporting said detectors, and a retainer holding any of said detectors which are not to be used out of signalling position while they remain in operative relationship to said retainer.

3. In a detecting mechanism of the character described, the combination of a series of detectors movable independently of each other into and out of signalling position, each of said detectors being adapted to be

engaged and sustained by a thread, a housing in which said detectors are operatively supported for movement by gravity to perform their detecting function, and means associated with said housing for releasably holding any of said detectors which are not to be used out of signalling position.

4. In a detecting mechanism of the character described, the combination of a series of detectors movable independently of each other into and out of signalling position, means for operatively supporting said detectors for movement by gravity to perform their detecting function, each of said detectors having a thread engaging portion and being arranged to be sustained by a thread in a raised position but to drop by gravity into signalling position when the thread breaks, and means for holding in an elevated position any of said detectors which are not to be used.

5. In a detecting mechanism of the character described, the combination of a series of detectors movable independently of each other into and out of signalling position, a support in which said detectors are mounted for movement by gravity to perform their detecting function, and means for holding any selected detector out of action but in operative relation to said support.

6. In a detecting mechanism of the character described, the combination of a series of detectors movable independently of each other into and out of signalling position, means for operatively supporting said detectors for movement by gravity to perform their detecting function, each of said detectors having a thread engaging portion and being arranged to be sustained by a thread in a raised position but to drop by gravity into signalling position when the thread breaks, a housing for said supporting means, and retaining means within said housing for engaging any of said detectors which are not to be used and holding them out of signalling position.

7. In a detecting mechanism of the character described, the combination of a series of detectors movable independently of each other into and out of signalling position, means for operatively supporting said detectors for movement by gravity to perform their detecting function, each of said detectors having a thread engaging portion and being arranged to be sustained by a thread in a raised position but to drop by gravity into signalling position when the thread breaks, and means for engaging any detector when raised above its normal range of movement and releasably holding it out of signalling position.

8. In a detecting mechanism of the character described, the combination of a series of detectors movable independently of each other into and out of signalling position, means for operatively supporting said detectors for movement by gravity to perform their detecting function, each of said detectors having a thread engaging portion and being arranged to be sustained by a thread in a raised position but to drop by gravity into signalling position when the thread breaks, a housing for said supporting means, and a spring clip for releasably connecting any one of said detectors with said housing and retaining the detector out of signalling position.

9. In a detecting mechanism of the character described, the combination of a series of detectors movable independently of each other into and out of signalling position, means for operatively supporting said detectors for movement by gravity to perform their detecting function, each of said detectors having a thread engaging portion and being arranged to be sustained by a thread in a raised position but to drop by gravity into signalling position when the thread breaks, a tubular housing for said supporting means and detectors, each of said detectors having a forked end to engage the thread, and a spring clip adapted to engage said end and to embrace said housing to hold any one of said detectors out of signalling position.

VICTOR S. PHANEUF.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,545,692, granted July 14, 1925, upon the application of Victor S. Phaneuf, of Nashua, New Hampshire, for an improvement in "Thread-Detecting Mechanisms for Textile Machinery," errors appear in the printed specification requiring correction as follows: Page 2, line 121, claim 2, for the word "means" read *a retainer*, and line 122, for the words "a retainer" read *means for;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of August, A. D. 1925.

[SEAL.]

KARL FENNING,
Acting Commissioner of Patents.