(No Model.)

G. J. MANDERFIELD.

ELECTRICAL STOP MOTION FOR KNITTING MACHINES.

No. 496,060. Patented Apr. 25, 1893.

Fig. 1.

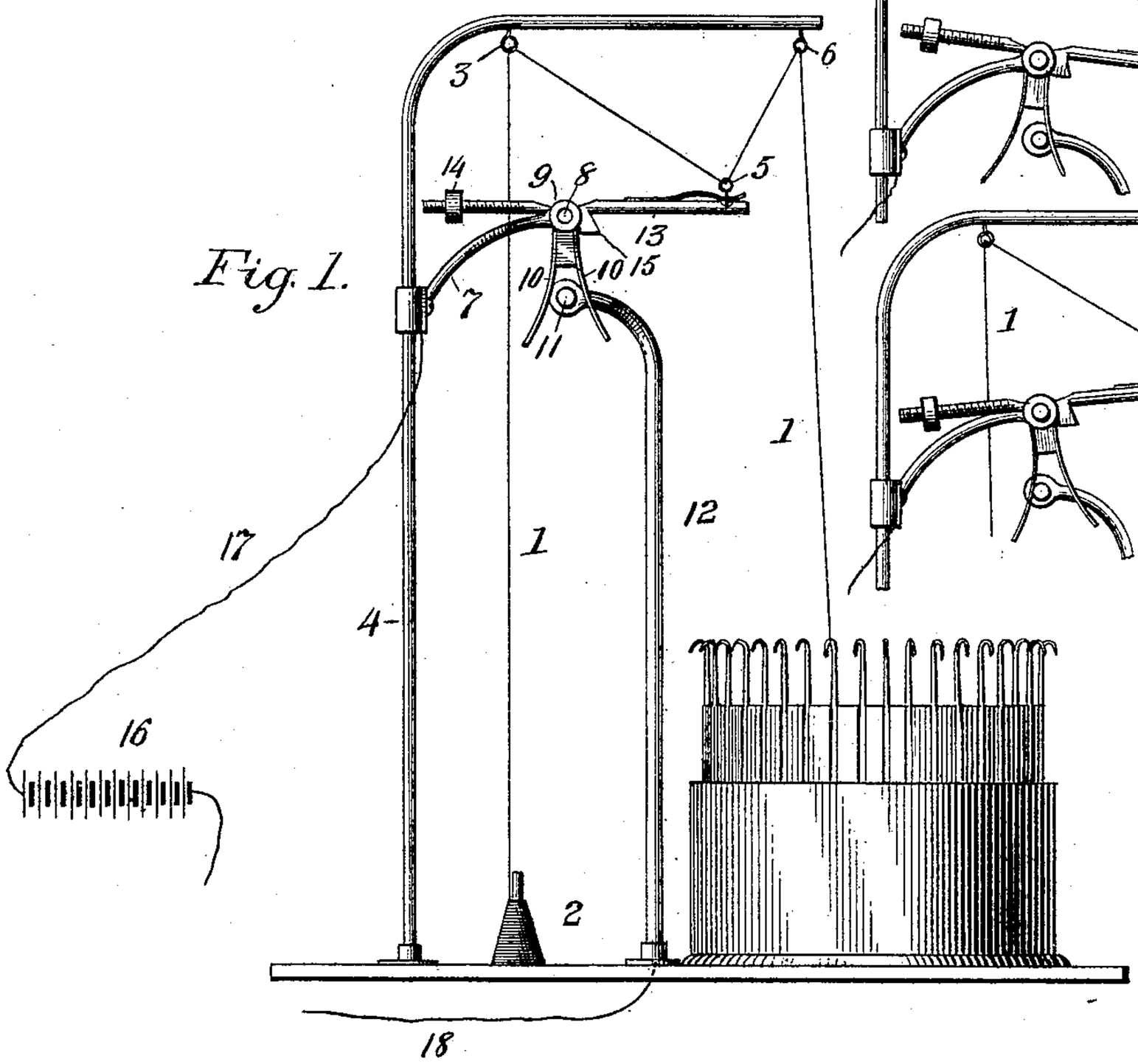


Fig. 2.

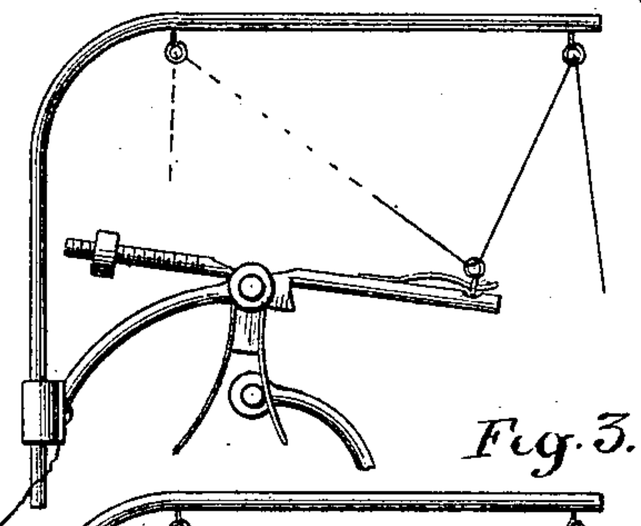


Fig. 3.

Fig. 4.

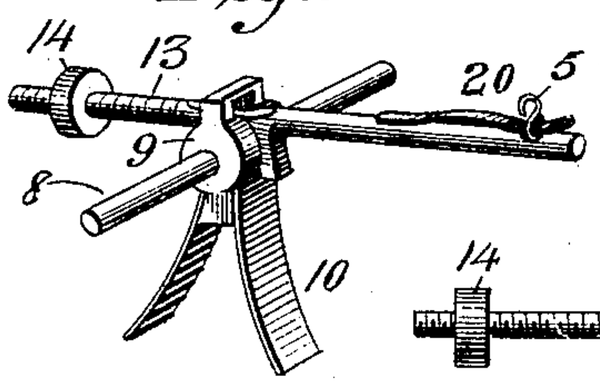


Fig. 5.

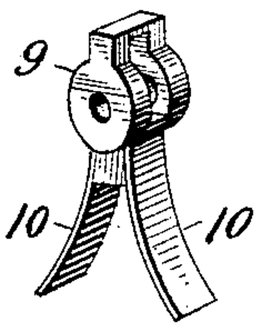
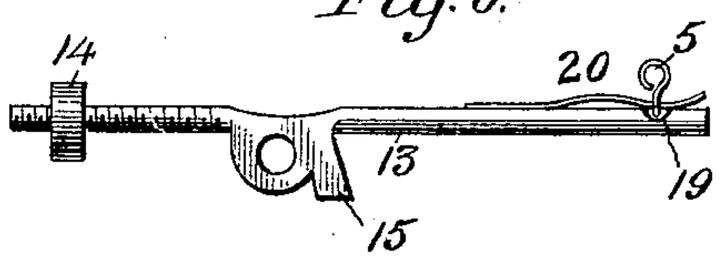


Fig. 6.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE JAMES MANDERFIELD, OF ROYERSFORD, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO J. M. LEWIN, SAMUEL LEWIN, U. S. G. FINKBINER, AND A. R. SAYLOR, OF SAME PLACE.

ELECTRICAL STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 496,060, dated April 25, 1893.

Application filed November 25, 1892. Serial No. 453,066. (No model.)

To all whom it may concern:

Be it known that I, GEORGE JAMES MANDERFIELD, a citizen of the United States, residing at Royersford, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Electrical Stop-Motions for Knitting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to stopping mechanism for knitting and other machines, and more particularly to that class of such devices wherein the stoppage of the machine is accomplished instantly upon the breaking or running out of the yarn or thread or the knotting or kinking of the same.

In a patent granted to me July 26, 1892, numbered 479,763, I have described a clutch mechanism wherein the breaking or running out of the yarn or thread closes an electric circuit and instantly, through intermediate mechanism, throws said clutch out of operation. It is to the circuit closing device for controlling such a clutch mechanism that this improvement is directed, and I have herein shown and will now proceed to describe such improvement.

Reference being had to the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of a common form of circular knitting machine embodying my improvement. Fig. 2 is a detail side elevation showing the circuit closing device operating because of the breaking of the yarn or thread. Fig. 3 is a similar detail view showing the circuit closing device operating because of the knotting of the yarn and thread. Fig. 4 is a detail perspective of the circuit closing arms and operating lever pivoted upon their supporting bar. Fig. 5 is a perspective of the circuit closing arms detached; and Fig. 6 is a detail side elevation of the operating lever.

Similar figures of reference indicate corresponding parts in the several views.

Referring to Fig. 1 the yarn or thread 1 runs from the spool or bobbin 2 up through an eye 3 on the horizontal portion of the main supporting bar 4, thence downward through a detachable eye 5, hereinafter described, and thence up again through an eye 6 on said bar 4, and from there downward to the needles of the machine. Attached to the vertical portion of the supporting bar 4 is a curved arm 7 carrying at its outer end a horizontal bar 8. Pivoted upon this bar is a collar 9 having attached thereto and projecting downward the curved arms 10, straddling a horizontal bar 11 mounted on a support 12 rising from the base of the machine. A lever 13 passes through an aperture in the collar 9 and is also pivoted upon the bar 8. At approximately one end of said bar 13 is mounted the eye 5, while the other end carries an adjustable counter weight 14. A lug 15 projects downwardly from the said bar 13 just forward of its pivotal point and on the same side with the eye 5.

Located at any convenient point in proximity to the machine is a battery or other source of electrical energy, as 16. One of the poles of this battery is connected by a wire 17, with the arm 7, while the other pole is in connection with the support 12 through wire 18. It will be understood that the parts hereinbefore described are of some suitable conductor of electricity, and that either the bar 4 or the support 12 is insulated from the base in any suitable manner. Interposed in this electric circuit is a suitable electro-magnet (not shown) by which the mechanism controlling the clutching devices is released, as fully described in my former patent hereinbefore referred to.

Referring to the eyelet 5, it will be noticed that at the point where it is in contact with the bar 13 the latter is notched, as at 19. This eyelet is retained in place against any normal tension by the spring 20 which passes through one portion thereof and holds it in the notch 19.

The operation of the device is as follows:—So long as the yarn runs freely, the bar 13 will remain in practically the position shown in Fig. 1, though there may be some slight vibration or rocking due to the rapid running of the machine. If, however, the yarn run out or break, the position of the weight being so regulated that the other end of the bar is the heavier, that end will drop, as shown in

Fig. 2, and the lug 15 will rock the collar thus causing one of the curved arms 10 to contact with the bar 11, thus closing the circuit and releasing the clutch mechanism. On the other hand, if the yarn should become knotted, the resistance offered when it goes to pass through eyelet 5 will rock the bar 13 as shown in Fig. 3, thus rocking the collar in the opposite direction, and also closing the circuit as shown.

As will sometimes occur, especially with rapid running machines, the yarn will stick on the bobbin and will offer so much resistance as not only to draw up the arm 13, but under ordinary circumstances, to break the yarn. To overcome this difficulty is the object of attaching the eyelet 5 in the manner described. It will be readily understood that any unusual tension on the yarn after the bar 13 has assumed the position shown in Fig. 3, will overcome the resistance of the spring 20 and release the eyelet 5, thereby affording ample slack to permit the machine to stop without breaking the yarn.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a stop-motion for knitting machines the combination of a rocking lever pivoted at a point intermediate of its ends and retained in its normal position by the yarn, pivoted contact arms loosely connected thereto, and an electric conductor arranged between said contact arms, whereby any abnormal vibration of said lever will cause one or the other of said contact arms to close an electric circuit, for the purpose specified.

2. The combination with a contact bar, contact arms straddling the same, a collar carrying said arms, and a cross bar upon which the collar is pivoted, of a lever passing through a slot in said collar and pivoted to the same cross bar so that it has a limited rocking play independent of said collar, but adapted to communicate any unusual rocking to said collar, substantially as described.

3. The combination with the bar 8, the pivoted collar 9, contact arms 10, mounted thereon, and the lever 13 passing through a slot in the collar 9 and pivoted on the bar 8, of the lug 15 on said lever adapted to come into contact with the collar 9 and to communicate any rocking movement of the lever thereto, substantially as described.

4. The combination with the circuit closing arms and the lever for operating the same, of the eyelet 5 engaging a recess in said lever, and a spring 20 for retaining said eyelet in place but adapted to yield to any unusual tension on the yarn and release the eyelet, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE JAMES MANDERFIELD.

Witnesses:
M. W. BOWMAN,
DAVID SPRINGER.