(No Model.)

G. J. MANDERFIELD.

STOP MOTION FOR KNITTING MACHINES.

No. 494,258. Patented Mar. 28, 1893.

Fig. 1.

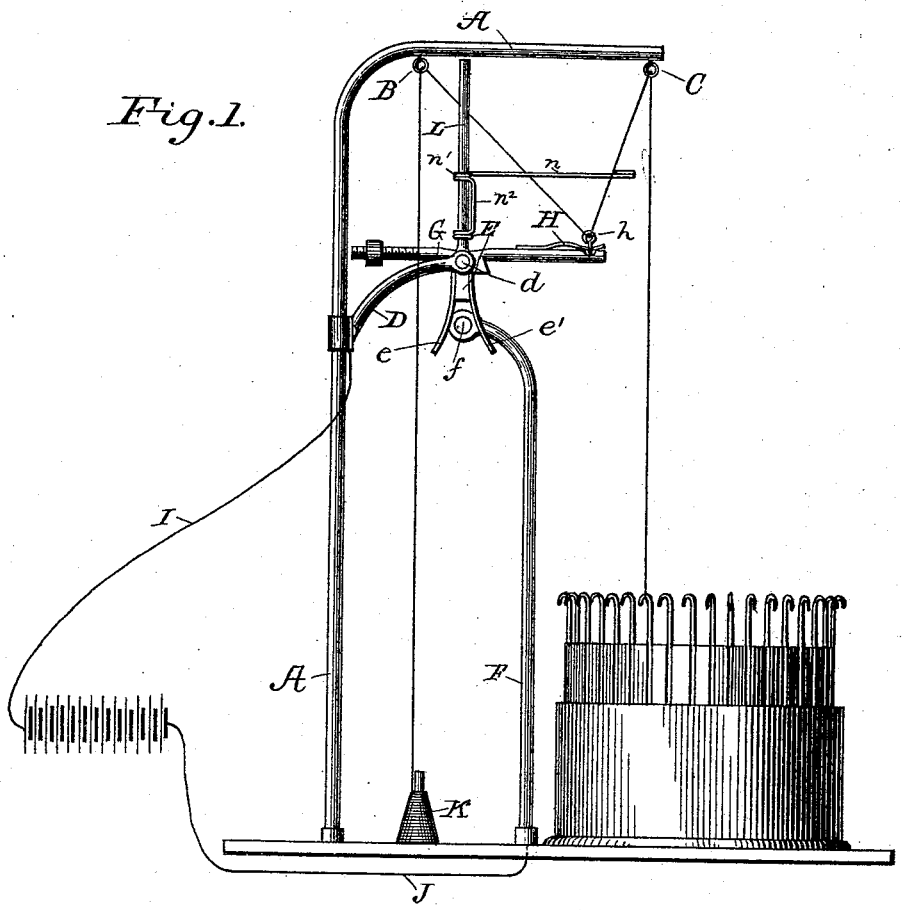
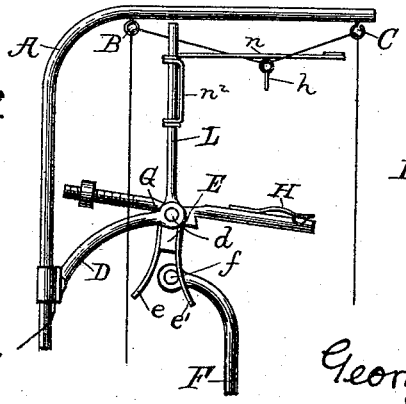


Fig. 2.



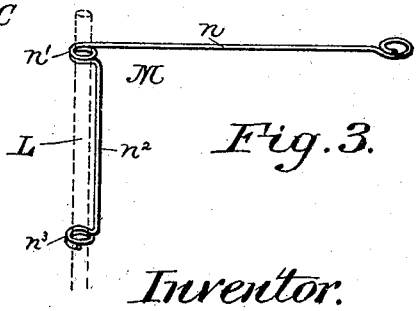


Fig. 3.

Witnesses:
Vinton Coombs
E. B. Clark

Inventor.
George J. Manderfield
by
Pennie & Goldsborough assoc. attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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

STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 494,252, dated March 28, 1893.

Application filed January 10, 1893. Serial No. 457,972. (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 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.

My 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, and is in the nature of an improvement upon a device of this nature for which I filed an application for patent on the 25th day of November, 1892, Serial No. 453,066. In said application is shown and described a circuit closing device for controlling a clutch mechanism which operates to throw the knitting machine out of action upon the yarn or thread breaking, running out, or becoming kinked or knotted, and it is the object of the present invention to provide means for preventing the yarn from being broken after the circuit has been closed and before the machine has come to a complete stop, and this improvement I will now proceed to describe, due reference being had to the accompanying drawings forming a part of this specification, wherein—

Figure 1 is a side elevation of a common form of knitting machine with my improvement applied thereto; Fig. 2 a detail side elevation showing the circuit closed and the yarn released owing to an abnormal tension exerted upon the yarn, and Fig. 3 a detail enlarged view of the means employed for preventing the breaking of the yarn.

As shown and described in my said former application the invention consists in a supporting bar A, bent horizontally at its upper end and carrying guide eyes B and C, and having secured to its vertical portion a curved arm D provided at its outer end with a horizontal bar *d*.

Upon the bar D is pivoted a collar E having attached thereto and projecting downward curved arms *e*, *e'*, straddling a horizontal bar *f* mounted on a support F. A lever G passes through an aperture in the collar E and is also pivoted upon the bar *d*, and near one end of said lever is mounted a spring H which at its free end engages an eyelet *h* and holds the same in position upon the lever G near the end of the latter, said lever being provided with a notch in which the eyelet rests. One of the poles of a battery, or other suitable source of electrical energy, is connected by a wire I with the arm D, while the other pole is in connection with the support F through wire J. The parts described are constructed of any suitable material that is a conductor of electricity. Interposed in the circuit is an electro-magnet (not shown) by which the clutch mechanism is controlled. The yarn passes from a bobbin K up through the eye B, thence downward through the detachable eyelet *h*, thence up again through the eye C, and from thence downward to the needles of the machine. As thus constructed the operation of the device is as follows. So long as the yarn runs freely the bar D will remain in the position shown in Fig. 1. If, however, the yarn breaks or runs out, the end of the bar carrying the eyelet *h* will drop and rock the collar E so as to cause the arm *e'* to contact with the bar *f* mounted on the support F, thus closing the circuit and releasing the clutch mechanism. Should the yarn become knotted the resistance offered as it passes through the eyelet *h*, rocks the bar D and collar E in the reverse direction to that above described, and closes the circuit through the arm *e*. Should the yarn stick upon the bobbin, or from any other cause, offer so much resistance as not only to draw up the lever G, but tend to break the yarn, the resistance of the spring H will be overcome and release the eyelet *h*, thereby affording slack to permit the machine to stop without breaking the yarn.

As above constructed I have found that the eyelet *h* is sometimes pulled so violently from under the spring H as to twist and tangle itself with the yarn, thereby taking up a portion of the length of the yarn between the

bobbin and the needles of the machine and rendering the yarn liable to be broken before the machine comes to a rest, and I will now proceed to describe the means I have invented for obviating this objection.

L indicates a vertical rod secured in a vertical position above the bar *d* in any suitable manner. As a convenient method of securing the rod L in position I have shown the same connected at its lower end to the bar *d*.

M indicates a traveller consisting of a horizontal arm *n* coiled as at *n'* and thence extending downward vertically as at n^2, and at its lower end again coiled as at n^3, the coils *n'* and n^3 encircling the rod L and serving as guides for the arm *n*, as it rises and falls thereon, as hereinafter described. The free end of the arm *n* projects horizontally through the V-shaped loop formed by the yarn in its passage through the eyes B, *h*, and C, in such manner that when, for any cause, an abnormal strain is exerted upon the yarn and the eyelet *h* is released from the spring H the projecting arm *n* catches the said eyelet and loop as the yarn is drawn up and ascends with it, but exerts a sufficient weight or tension thereon to keep the yarn perfectly straight and free from kinks, tangles or twists, thereby affording an ample length of free yarn to feed the machine before the same comes to a state of rest, thus preventing all liability of the yarn being broken.

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

1. In a stop motion for knitting machines, the combination with the fixed eyes B and C and the detachable eyelet *h*, said eyes and eyelet being arranged in different planes, of a vertically movable arm resting over said eyelet and the yarn passing therethrough, and adapted to rise with the yarn and exert a tension thereon when the eyelet is detached, substantially as described and for the purpose specified.

2. In a stop motion for knitting machines, the combination with a pivoted lever carrying a detachable eyelet and retained in its normal position by the yarn, and mechanism connected with said lever for closing an electric circuit upon an abnormal vibration of said lever, of a vertically movable arm adapted to be raised by the yarn and exert a tension thereon by gravity to prevent the yarn from kinking or twisting, substantially as described.

3. In a stop motion for kniting machines, the combination with a pivoted lever carrying a detachable eyelet and retained in its normal position by the yarn passing through said eyelet, and mechanism connected with said lever for closing an electric circuit upon an abnormal vibration of said lever, of a vertically movable arm loosely mounted upon a support and projecting over the yarn and eyelet, said arm being adapted to be raised by the yarn when the eyelet is detached and exert a tension by gravity thereon to prevent the yarn from kinking or twisting, substantially as described.

4. In a stop motion for knitting machines, the combination with a pivoted lever carrying a detachable eyelet and retained in its normal position by the yarn passing through said eyelet, and mechanism connected with said lever for closing an electric circuit upon an abnormal vibration of said lever, of the tension device consisting of the horizontal arm *n* bent to form loops *n'* and n^3 which loosely encircle a vertical rod L, said arm projecting over the yarn and said eyelet and adapted to rise with the yarn and exert a tension thereon when the eyelet is detached, substantially as described and for the purpose specified.

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

GEORGE JAMES MANDERFIELD.

Witnesses:

J. M. SCHELLINGER,

DAVID SPRINGER.