

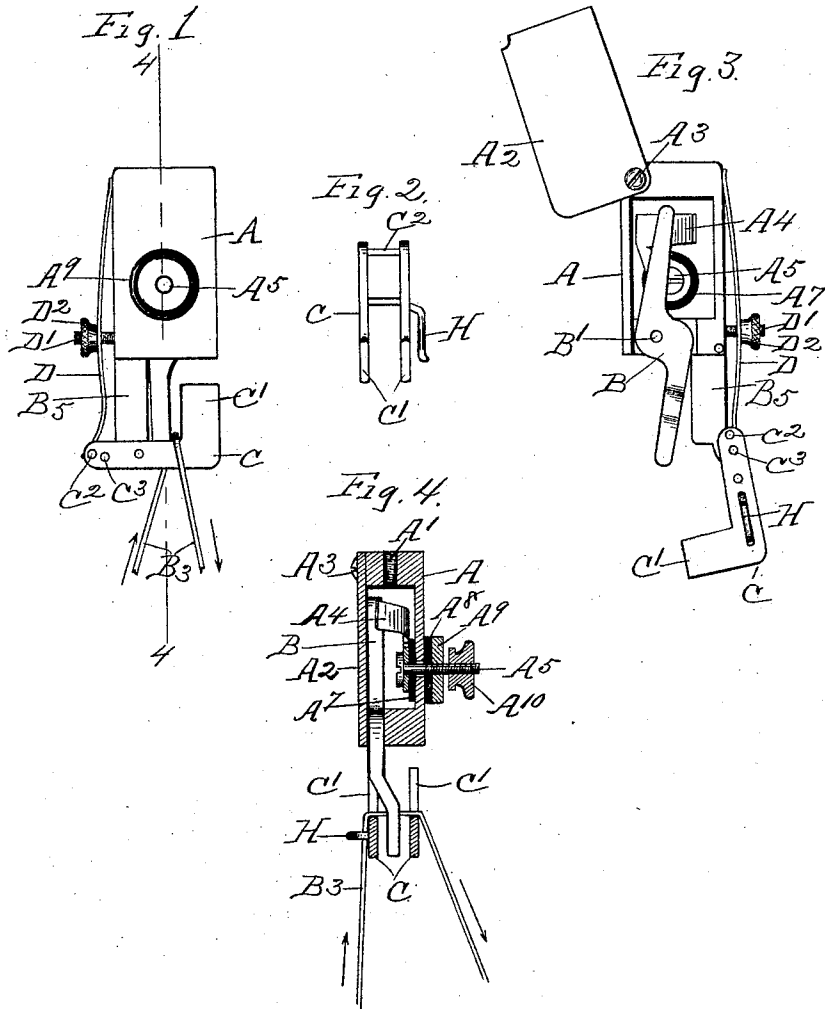
(No Model.)

R. C. HOLT.

THREAD GUIDE FOR ELECTRICAL STOP MOTIONS.

No. 543,686.

Patented July 30, 1895.



Witnesses:
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UNITED STATES PATENT OFFICE.

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THREAD-GUIDE FOR ELECTRICAL STOP-MOTIONS.

SPECIFICATION forming part of Letters Patent No. 543,686, dated July 30, 1895.

Application filed October 29, 1894. Serial No. 527,187. (No model.)

To all whom it may concern:

Be it known that I, ROBERT C. HOLT, a citizen of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Thread-Guides for Electric Stop-Motions, of which the following is a specification.

The invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings and the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a view in side elevation of my improved thread-guide with the thread-supporting latch closed and supporting a thread in position to separate the electrical contacts. Fig. 2 is a top plan view of the latch shown in Fig. 1 detached. Fig. 3 is an elevation of the device shown in Fig. 1, viewed from the side opposite that shown in Fig. 1, having the case-cover partly removed to show the relative arrangement of the fixed and movable contacts, also showing the thread-latch released from its spring-keeper and the thread-controlled gravity-actuated contact in engagement with the fixed contact to close the electric circuit. Fig. 4 is a vertical section taken on the broken line 4-4 in Fig. 1.

My invention relates to that class of thread-guides which operate to close the circuit of an electrically-controlled stop-motion used in connection with a knitting-machine to automatically stop the machine, substantially as shown and described in United States Letters Patent No. 515,965, dated March 6, 1894, to which patent reference may be had in connection with this specification.

The objects of my invention are to prevent the guide from being rendered inoperative by the accumulation of fibers stripped from the thread, and to prevent the entanglement of the incoming thread with the latch-hinge or keeper, as hereinafter fully explained.

Referring to the drawings, A is a metallic case provided in its upper end with a screw-

threaded aperture A', adapted to receive a similarly-threaded stud or bolt, (not shown,) whereby the case can be mechanically and electrically connected with such frame.

A² is a removable cover secured to the case by screw A³, and shown swung open in Fig. 3. Within the case is the fixed metallic contact A⁴, secured to the case-wall by the metallic screw A⁵, projecting through an opening in the wall. The opening is of sufficient size to prevent contact between the screw and the walls of the opening. A washer A⁷ of insulating material between the contact-piece and the case-wall and a similar washer A⁸ between the case-wall and the locking nut or washer A⁹ insulates the contact-piece and screw from the case.

The thumb-nut A¹⁰ serves to clamp a circuit-wire upon the screw between the thumb-nut and the locking-nut A⁹, thereby providing a binding-post for the circuit-wire, (not shown,) which is thereby connected electrically with the fixed contact and insulated from the case.

The metallic lever B is pivotally secured to and electrically connected with the case by means of the pivot B'. The lever is a movable contact, and is so weighted with reference to the axial line of its pivot that it will swing by gravity into engagement with the fixed contact, unless controlled by some superior force. The upper end of the lever is the contact end, and is shown in engagement with the fixed contact in Fig. 3. The lower end is the controlling end, and is shown under control of the thread B³ in Figs. 1 and 4.

The case is provided with the depending lug B⁵, upon the lower end of which is pivoted the thread-supporting latch C. The latch is provided at one end with upwardly-projecting fingers C', adapted to guide the thread and prevent its escape from the latch when in use, in the position shown in Figs. 1 and 4. The other end of the latch is provided with a cross-bar C², adapted to be engaged by a spring-keeper D. The latch-pivot C³ is located intermediately of the guide-fingers and cross-bar, preferably nearer the latter. The keeper is shown made of a sheet-metal spring secured intermediately of its ends to the case by means of the threaded stud D' and thumb-nut D². The upper end of the spring bears

upon the case and the lower end upon the cross-rod, to maintain the latch in its closed position. (Shown in Figs. 1 and 4.) The tension of the spring can be varied at will by manipulation of the thumb-nut. After the latch is closed the thread between the supply-bobbin and knitting mechanism is slipped over the guide-fingers of the latch to the guideways on the body of the latch between the fingers and the contact-lever, where shown in Fig. 1. When the movable contact is uncontrolled by the thread, the normal position of its lower end is between the fingers of the latch, and when the thread is inserted to the position shown in Fig. 1 the tension of the thread is sufficient to force such end toward the latch-pivot and out from between the fingers, as shown in Fig. 1.

The principal function of thread-guides of this class is to stop the knitting mechanism in cases of undue tension before the tension becomes sufficient to break the thread. The tension of the spring-keeper is therefore so adjusted that the latch will be thrown open by a tension upon the thread less than the breaking tension, but greater than the ordinary working tension.

As heretofore constructed, the guide-fingers for the thread were pendent from and fixed to the case, and the accumulation of fibers stripped from the thread in passing such fingers frequently so filled the pathway of the movable contact between the fingers as to prevent the full movement of the movable contact, thereby preventing the contact end from engaging the fixed contact to close the circuit and stop the knitting mechanism. In such forms of construction it is also impossible to insert an unbroken thread after the latch has been closed by the operator.

In my improved thread-guide the guide-fingers are secured to the latch itself and move with it, so that when the latch is opened by excessive tension upon the thread the guide-fingers, with their accumulation of thread-fibers, fall down away from the movable contact and wholly beyond its reach, as shown in Fig. 3, insuring thereby prompt closing of the circuit and stopping of the knitting mechanism. The thread slips off the fingers of the open latch and before the slack given the thread thereby can be knitted into the fabric the knitting mechanism is stopped, leaving the thread unbroken. When the knitting mechanism stops, it is only necessary for the operator to close the latch, remove the

cause of excessive tension, slip the thread over the guide-fingers onto the latch, and start the knitting mechanism again.

As the thread unwinds from the supply-bobbin to pass through the thread-guide, it acquires a gyrating movement between the bobbin and guide, or such a movement that in the guides heretofore in use it would sometimes catch in the latch-hinge or spring-keeper and break the thread or prevent the operation of the latch. I have removed such difficulty by providing the latch with an auxiliary guideway, which may be comprised in a simple open hook H, having the opening on the side farthest removed from the hinge. The incoming thread passes through the hook which holds the thread away from the hinge and keeper.

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

1. In a thread-guide for an electric stop-motion, the combination with the supporting case provided with a single depending lug, a movable contact-piece, and an insulated contact located with one end in the path of the movable contact, of a yielding latch pivotally mounted on the depending lug, guide-fingers on the body of the latch located on opposite sides of the path of the movable contact-piece, which latch and fingers together with said contact-piece form the sole support and opposing guides for the thread, for the purpose of affording free movement to the movable contact when released from the control of the thread, substantially as described.

2. In a thread-guide for an electric stop-motion, the combination with the supporting case provided with a single depending lug, and fixed and movable contacts, of a yielding thread-supporting latch pivoted at one end upon the depending lug, guide-fingers projecting approximately at right angles from the other end of the latch on opposite sides of the path of the movable contact-piece and terminating a short distance from the case, whereby a thread-inlet passage is formed solely between the fingers and case leading into the closed latch, substantially as described.

In testimony whereof I have hereunto set my hand this 6th day of October, 1894.

ROBT. C. HOLT.

Witnesses:

FRANK C. CURTIS,
GEO. A. MOSHER.