

UNITED STATES PATENT OFFICE.

CLAYTON DENN, JOHN COCKER, AND CHARLES DENN, OF PHILADELPHIA,
PENNSYLVANIA.

ELECTRIC STOP-MOTION FOR WARPING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 539,358, dated May 14, 1895.

Application filed January 11, 1895. Serial No. 534,584. (No model.)

To all whom it may concern:

Be it known that we, CLAYTON DENN, JOHN COCKER, and CHARLES DENN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Electric Stop-Motion for Warping-Machines, of which the following is a full, clear, and exact description.

The invention relates to electric stop motions for warping machines, such as shown and described in the Letters Patent of the United States, No. 512,013, granted to us on January 2, 1894.

The object of the present invention is to provide certain new and useful improvements in electric stop motions for warping machines, whereby a positive action of the circuit closer is insured at all times, and the thread guides permit slack in the threads without closing the circuit and stopping the machine, as is so frequently the case in stop motions of this class as heretofore constructed.

The invention consists of a conducting strip forming one terminal of the electric circuit, and on which the thread guides are pivoted, the pivoted ends of the guides having a sliding connection with the strip, and a contacting strip forming the other terminal of the circuit, and provided with an inclined contact surface adapted to be engaged by the lower bent ends of the guides.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional elevation showing the general arrangement of the circuit-closer and the stop mechanism. Fig. 2 is an enlarged front elevation of a portion of one of the guide-rails. Fig. 3 is a side elevation of the same. Fig. 4 is a sectional plan view of the same on the line 4 4 of Fig. 3; and Fig. 5 is a similar view of the same on the line 5 5 in Fig. 3, with the thread-guide in a lowermost or contact position.

The spool frame A carries the spools B in the usual manner, and in front of each vertical

row of spools is arranged a rail C, in front of which pass the threads B' from the spools B through the eyes D' and E, of which the latter are rigidly secured in the rail C, while the eyes D' are each formed on the free end of a thread guide D, having its pivot end D² formed with an elongated slot engaging the pivot H, passing through or secured to a conducting strip I, secured to the rail C, as is plainly illustrated in the drawings, the said conducting strip I forming part of an electric circuit by being connected by a wire J, with a battery F or other source of electricity; the other wire J' of the electric circuit connecting with a contact strip K, likewise secured on the rail C, as is plainly shown in Figs. 4 and 5. This contact strip K is in the path of the pivoted thread guide D.

On each contact strip K are formed or secured, inclined surfaces K', see Fig. 3, each adapted to be engaged by the bent lower end D³ of the next adjacent thread guide D, so as to close the circuit, the electric connection being then made between the strips K and I by the thread guide D and pivot H, together with the wires J and J' and the battery F. The threads B', after leaving the spools B, pass through the eyes D' and E to the gatherer G, which holds the thread guides D in an uppermost position, as is plainly shown in Fig. 1 and the upper portion of Figs. 2 and 3, so that the lower bent end D³ of each thread guide is a considerable distance away from the surface K' and strip K, whereby the circuit remains open. Now when a slack occurs in one of the threads, then the thread guide D by its own weight can swing downward to take up the slack, without making contact between the bent end D³ and the spring K. (See middle portion of Figs. 2 and 3.) When, however, one of the threads B' breaks, then the support for holding the corresponding thread guide in an uppermost position is removed, and consequently, the thread guide swings downward and moves, with its bent end D³, in contact with the inclined surface K', to close the circuit as previously explained, and to cause a stopping of the machine in the usual manner. Now it will be seen that when the thread guide D swings downward and its bent end D³ moves in contact with the inclined

surface K', then the force of the downward swinging of the thread guide D causes a sliding of the bent end D³ in an oblique direction, it being understood that the elongated slot in the pivot end D² of the thread guide, permits such motion. The bent end D³ does not contact only at one point of the strip K, but comes in contact with a considerable surface of the strip, owing to the sliding connection, so that a closing of the circuit positively takes place, as the contact parts do not oxidize to such an extent as to interfere with the closing of the circuit, owing to the rubbing of the bent end D³ on the inclined surface K'.

15 The connection between the electro-magnet L in the circuit wires J, J' and the shaft N of the warping machine, may be of any approved construction, so that further description of same is not deemed necessary, it being understood that the connection shown and described between the magnet L and the shaft N is the same as the one shown and described in the patent above referred to.

25 Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. An electric stop motion for warping machines, comprising a conducting strip forming one terminal of an electric circuit, a thread guide having a pivotal and sliding connection with the said conducting strip, and a contact strip forming the other terminal of the

circuit and provided with an inclined contact surface adapted to be engaged by the lower bent end of the said guide, substantially as shown and described.

2. In an electric stop motion for warping machines, the combination with a rail, a conducting strip formed with an inclined surface a contact strip, both strips being the terminals of an electric circuit, and a thread guide having a pivotal sliding connection with the said conducting strip, the lower end of the thread guide being formed with a bend to make a sliding contact with the inclined surface on the said contact strip, substantially as shown and described.

3. In an electric stop motion for warping machines and the like, a conducting support and a contact strip, both included in an electric circuit, and a thread guide pivotally connected to the conducting support and provided with an elongated slot engaging the pivot, whereby the thread guide is enabled to slide longitudinally on its pivot, said thread guide being arranged to swing into engagement with the contact strip to close the circuit, substantially as described.

CLAYTON DENN.
JOHN COCKER.
CHARLES DENN.

Witnesses:

GEORGE B. COCKER,
JOSEPH LEE.