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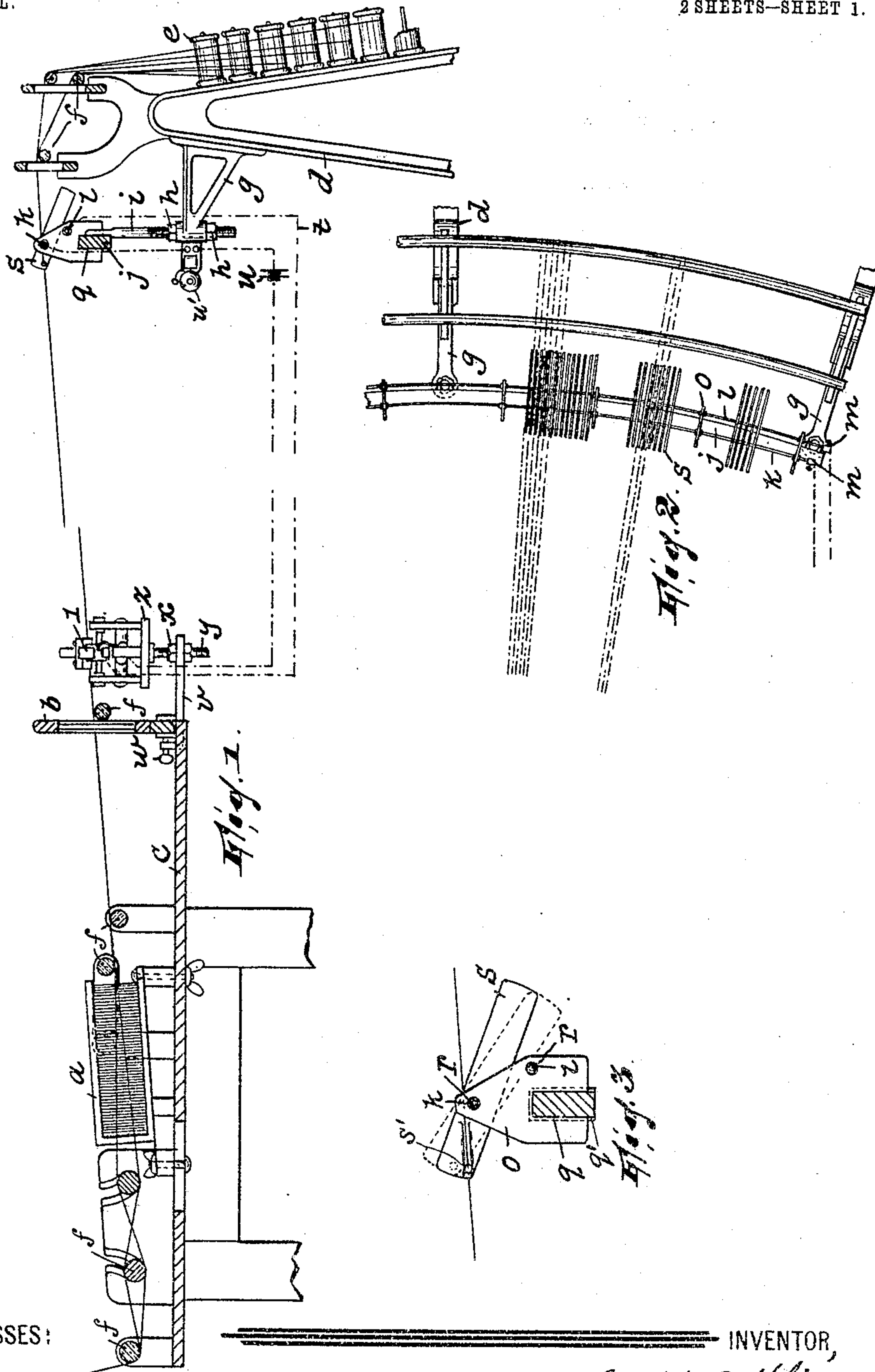
J. B. WHITNEY.

ELECTRICAL STOP MOTION MECHANISM FOR TEXTILE MACHINERY.

APPLICATION FILED OCT. 21, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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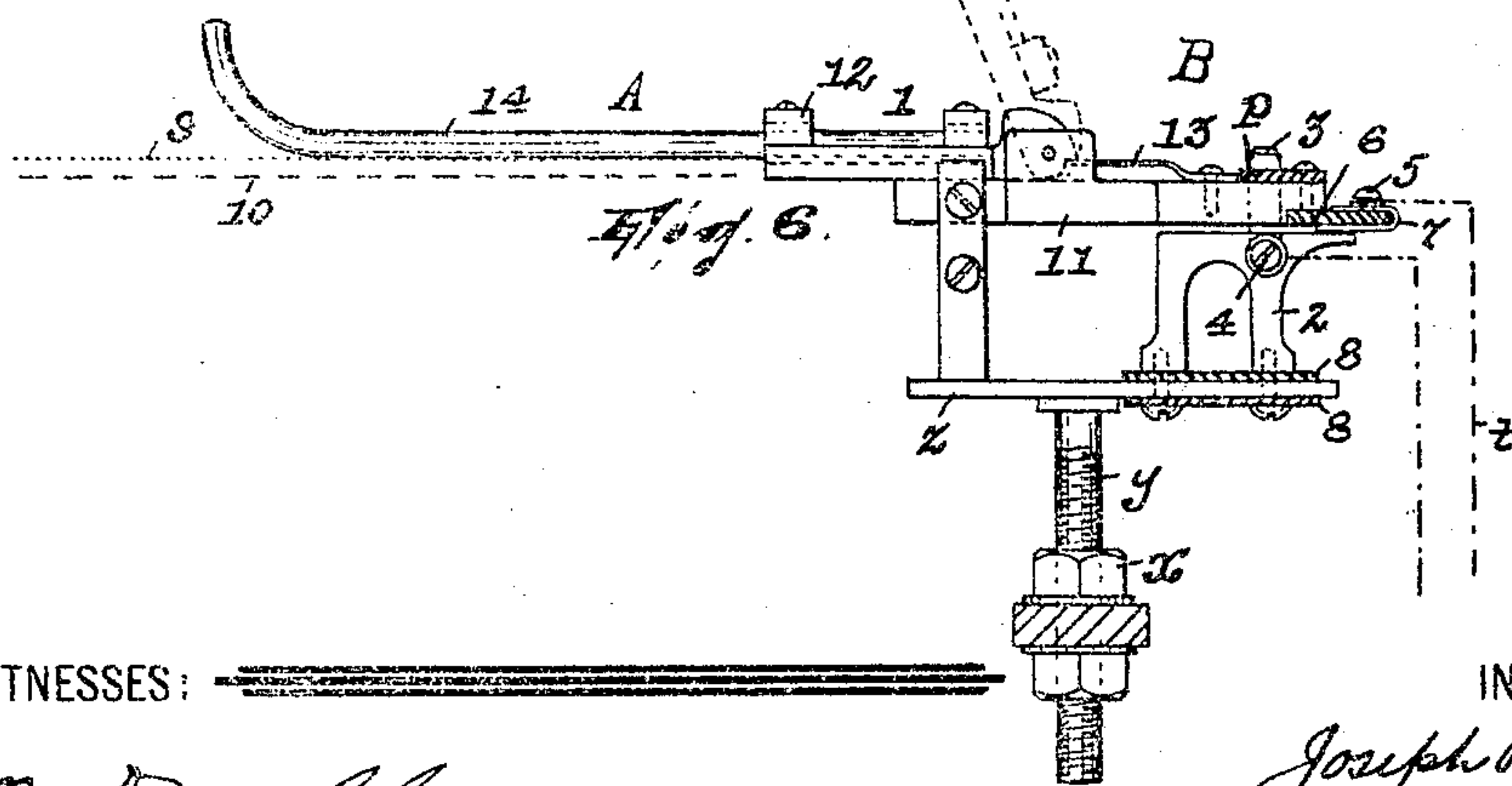
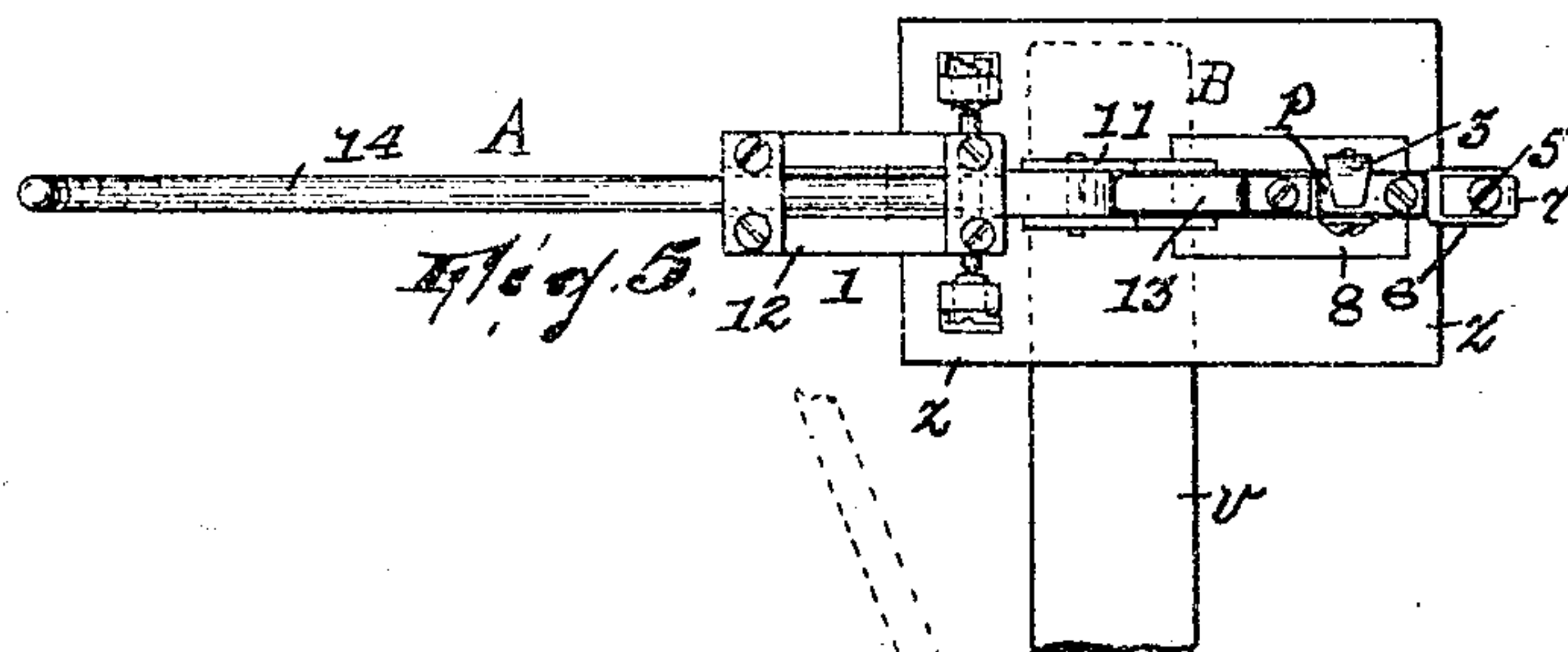
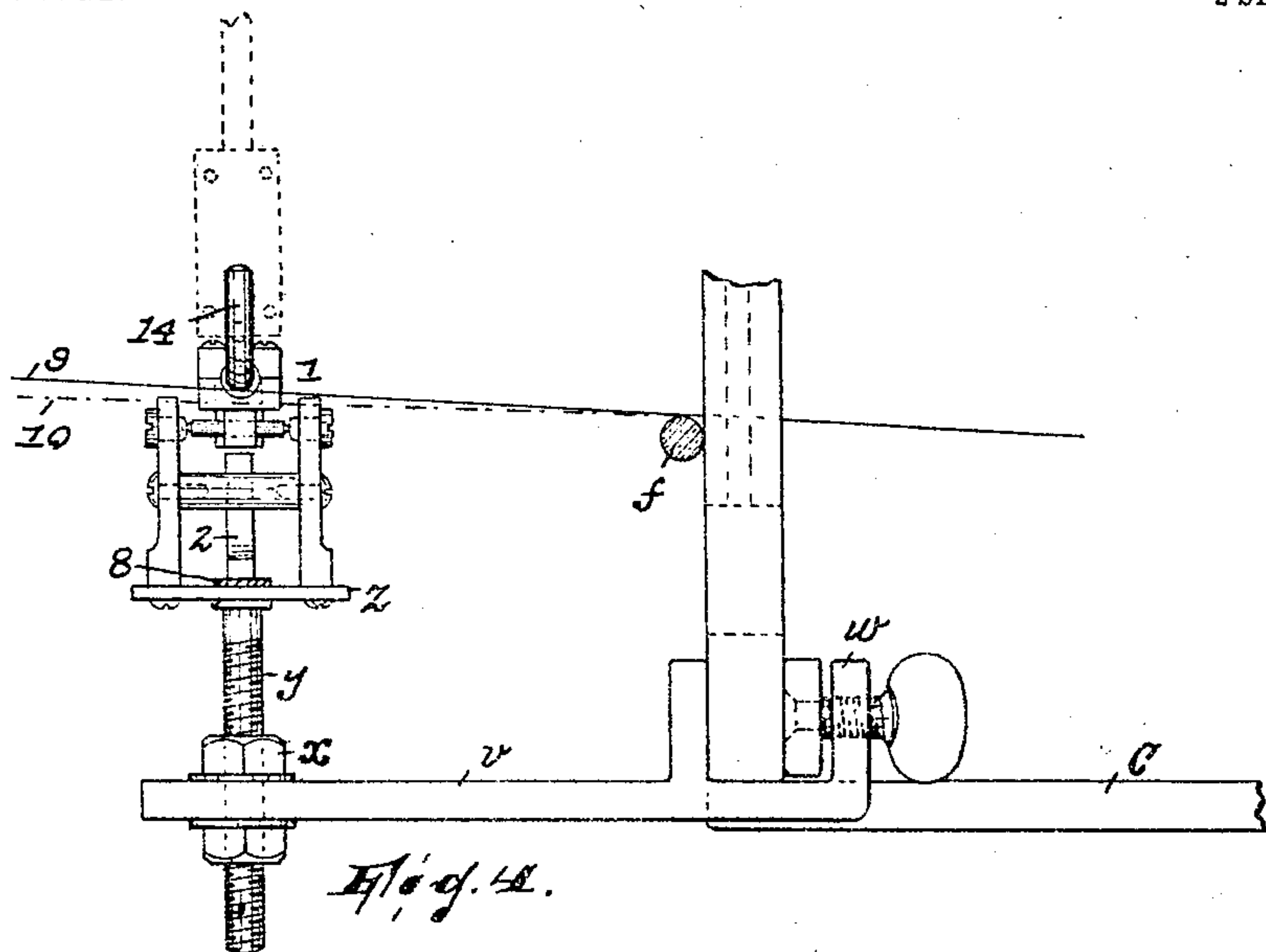
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ELECTRICAL STOP MOTION MECHANISM FOR TEXTILE MACHINERY.

APPLICATION FILED OCT. 21, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES:

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ELECTRICAL STOP-MOTION MECHANISM FOR TEXTILE MACHINERY.

SPECIFICATION forming part of Letters Patent No. 774,012, dated November 1, 1904.

Application filed October 21, 1903. Serial No. 177,839. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH B. WHITNEY, a citizen of the United States, residing in the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Electrical Stop - Motion Mechanisms for Textile Machinery; 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, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention relates to electromagnetic means for detecting in warping, spinning, weaving, and other similar textile operations involving the drawing of threads or other filaments longitudinally breaks or other irregularities in the action of individual threads. In such mechanisms each thread is commonly under the control of a detector, which when the irregularity occurs is moved to close an electric circuit, and so either actuate an indicator, brake the machinery, or throw off the power, &c.

The present invention relates more particularly to such textile operations of the general class above referred to to which is incidental a more or less appreciable change in the degree of pull on the threads as between when the machine is running and when it is not running—as, for instance, in warping.

When a machine of the kind last indicated stops, the relaxation in the pull on the threads and consequent movement of their detectors into the circuit-closing position results in a drain on the source of electrical energy to no purpose unless the trouble is taken to turn off the current—a matter of some moment in warping, for instance, where the necessity for stopping the machine is frequently recurring. The present invention has principally in view, therefore, to provide means whereby should the machine be stopped from any cause, whether automatically upon the breaking of a thread or by the operator in the regular course of the operation of the machine, the electrical energy which would otherwise waste

upon the closing of the circuit by the detectors will be saved by the automatic opening of the circuit, and it contemplates accomplishing this by causing the relaxation in the tension of an appreciable number of the threads to actuate means for keeping the circuit open.

In the accompanying drawings, where the invention is shown as adapted to the operation of warping, Figure 1 is a view, partly in vertical section and partly in side elevation, of the improved apparatus. Fig. 2 is a fragmentary plan view of the creel, showing how the detectors are preferably sustained. Fig. 3 is a side view of one of the detectors and a part of the supporting means therefor; and Figs. 4, 5, and 6 are respectively a side, top plan, and front view of a feeler mechanism whereby the circuit is automatically opened when the machine stops.

In the drawings, *a* is the condensing-reed, *b* the cross-reed, said reeds being supported on a suitable frame *c*, and *d* the creel carrying the spools *e*, from which the supply of thread to be run onto the warping-mill is taken.

f designates glass rods or the like suitably disposed at such points on the frame and creel as to properly direct the warp.

The creel *d* carries brackets *g*, in which by means of nuts *h*, are adjustably clamped threaded uprights *i*, which carry a horizontal bar *j*.

k l are wires disposed above bar *j* and held stretched in clips *m* on the ends of the bar. These wires are sustained at the required distance between their ends by braces *o*, preferably in the form of plates cut out, as at *q*, to straddle the bar and fit slots *q'* therein and having porcelain eyelets *r* for the sake of insulation, through which the wires *k l* pass. Wire *k* stands higher and out of the vertical plane in which wire *l* stands. On wire *k* are pivoted the detectors *s*, each being engaged by a thread by having the latter extended through an eye *s'* therein and being normally disposed—i. e., while the operation is proceeding and the warp held taut—in the position shown in full lines in Fig. 3, where it is held by the corresponding thread out of contact with wire *l*. If a thread breaks or slack-

ens, the corresponding detector falls and is sustained by wire *l*, as illustrated in dotted lines in Fig. 3.

The detectors *s* form closers of a circuit which comprises the wires *k* *l*, wiring *t*, a battery *u* or other source of electrical energy, an indicator in the form of an electromagnetic bell-annunciator *u'*, (which latter, it should be understood, is cited as an instance of means broadly for making manifest the occurrence of an irregularity in the action of an individual thread,) and a certain feeler mechanism now to be described. This feeler mechanism comprises as an essential element a movable part which engages the warp, or so much thereof as is sufficient to indicate the action of the warp as a whole, and which part normally while the operation is proceeding regularly and the warp is held taut keeps the circuit closed, but acts to open the circuit when, for any cause, material relaxation in the pull on the warp occurs. In that embodiment of the mechanism referred to *v* is a bracket which is secured to a part of frame *c* by a clamp *w* and to which is adjustably clamped by nuts *x* the threaded stem *y* of another bracket *z*. In bracket *z* is fulcrumed a lever 1, which is limited in movement by a portion 2 of bracket *z* and a stop 3, carried by said bracket. One arm, A, of this lever bears against the warp or a material portion thereof. A break is formed in the wiring *t*, as above intimated, and one end of the wiring at this point is electrically connected to the bracket *z*, while its other end is electrically connected to the other arm, B, of lever 1. In the adaptation shown these connections are made by a binding-screw 4 on the bracket *z* and a binding-screw 5 carried by an insulating-piece 6 on the lever, said binding-screw 5 being in electrical contact with a metallic piece 7, extending between the insulating-piece and the bracket, where the former would otherwise directly engage the bracket. The portion 2 of the bracket *z*, being the part which carries binding-screw 4 and is engaged by metallic piece 7, is insulated from the bracket proper, as at 8. At 9 in Figs. 4 and 6 is shown the line of the warp when held taut. 10 in the same figures indicates the line of the warp when relaxed. When taut, the warp holds lever 1 in the position shown in the drawings, where (see Fig. 6) the circuit is unbroken at the feeler mechanism. When relaxed, since the arm of the lever engaged by the warp is the heavier arm, the warp permits gravity to move the lever, so that the arm where the making and breaking of the circuit is effected is raised, thus opening the circuit and preventing an undue loss of the electrical energy. Inasmuch as in this position the arm engages stop 3, an insulation-piece *p* is provided on the arm for impact with said stop. For the purpose of moving the arm of the lever engaged by the warp out of the way when nec-

essary lever one comprises two members 11 and 12. Member 11 is the part which is directly fulcrumed in bracket *z*, while member 12 is pivoted on member 11 and is adapted to be held either in the extended position shown in Fig. 6 or in the dotted-line position in said figure by a plate-spring 13, engaging the free end of said member 12 and carried by the member 11. By preference the part of member 12 which engages the warp is a glass bar 14, having its free end upturned.

When hereinafter in the claims I use the term "indicator," I wish it to be understood that, as already intimated, I am not limited to the employment of what is commonly termed an "indicator." For instance, I regard a mechanism which is electrically controlled from detectors to stop or brake machinery of the kind herein referred to when any irregularity occurs in the action of individual threads as being, broadly, an indicator, and hence within the legitimate scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In textile machinery having to do with the drawing of threads longitudinally, the combination, with the means for giving direction to the threads, of an electric circuit, an indicator included in the circuit, circuit-closers controlled by individual threads and normally held thereby out of the circuit-closing position, and a circuit-breaking means controlled by an appreciable number of threads and normally held by them out of the circuit-breaking position, substantially as described.

2. In textile machinery having to do with the drawing of threads longitudinally, the combination, with the means for giving direction to the threads, of an electric circuit, an indicator included in the circuit, circuit-closers controlled by individual threads and normally held thereby out of the circuit-closing position, and a circuit-breaking means consisting of a movable part engaging an appreciable number of threads and normally held by them out of the circuit-breaking position, substantially as described.

3. In textile machinery having to do with the drawing of threads longitudinally, the combination, with the means for giving direction to the threads, of an electric circuit, an indicator included in the circuit, circuit-closers controlled by individual threads and normally held thereby out of the circuit-closing position, and a circuit-breaking means consisting of a pivoted part engaging an appreciable number of threads and normally held by them out of the circuit-breaking position, substantially as described.

4. In textile machinery having to do with the drawing of threads longitudinally, the combination, with the means for giving direction to the threads, of an electric circuit, an indicator included in the circuit, circuit-closers con-

trolled by individual threads and normally held thereby out of the circuit-closing position, and a circuit-breaking means consisting of a movable part engaging an appreciable number of threads and normally held by them out of the circuit-breaking position, said part having its thread-engaging portion movably arranged thereon, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of 10 October, 1903.

JOSEPH B. WHITNEY.

Witnesses:

JOHN W. STEWARD,
ROBERT J. POLLITT.