

No. 692,925.

Patented Feb. 11, 1902.

H. W. SMITH.
ELECTRIC CIRCUIT CLOSER FOR LOOMS.

(Application filed Jan. 27, 1899.)

(No Model.)

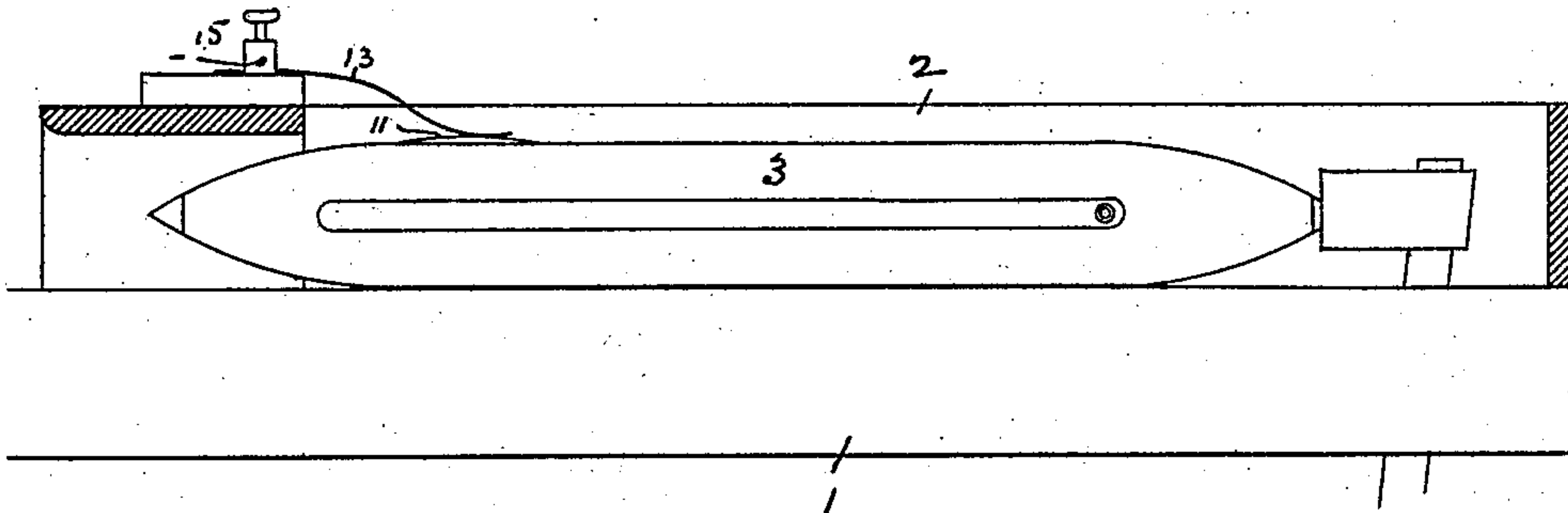


FIG. 1.

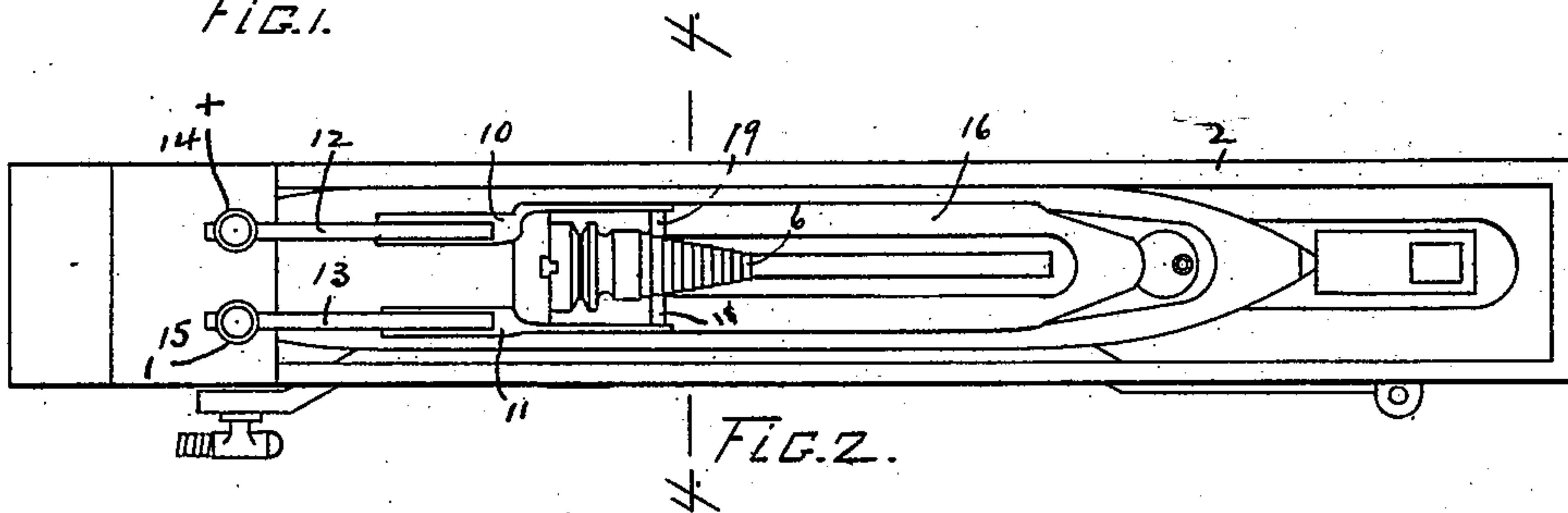


FIG. 2.

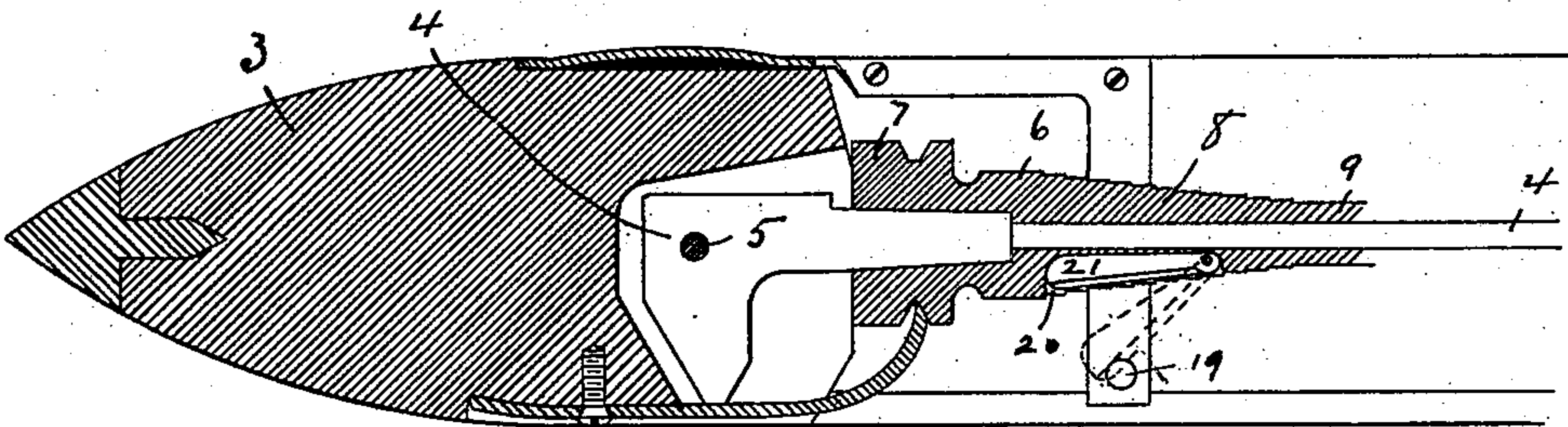


FIG. 3.

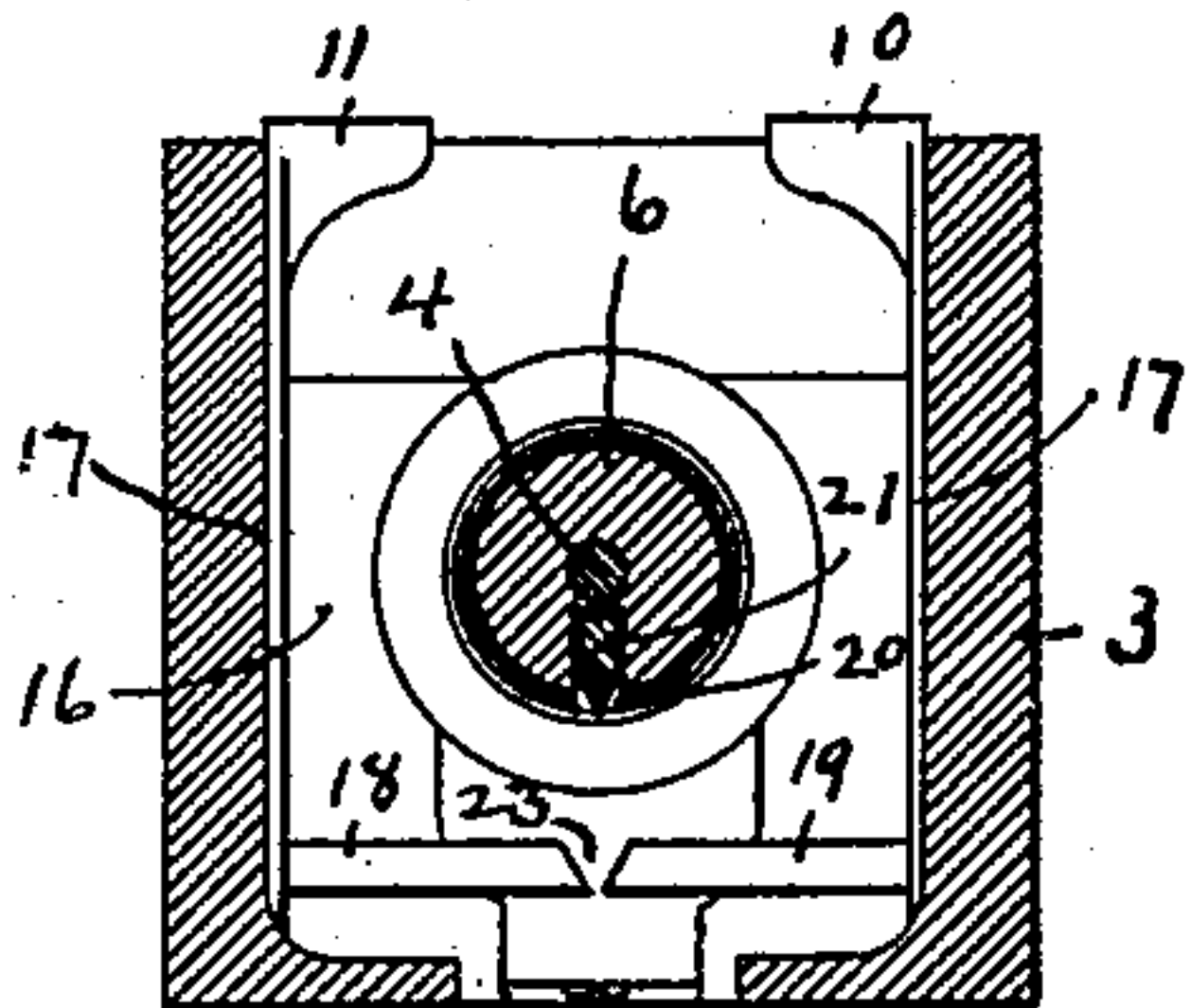


FIG. 4.

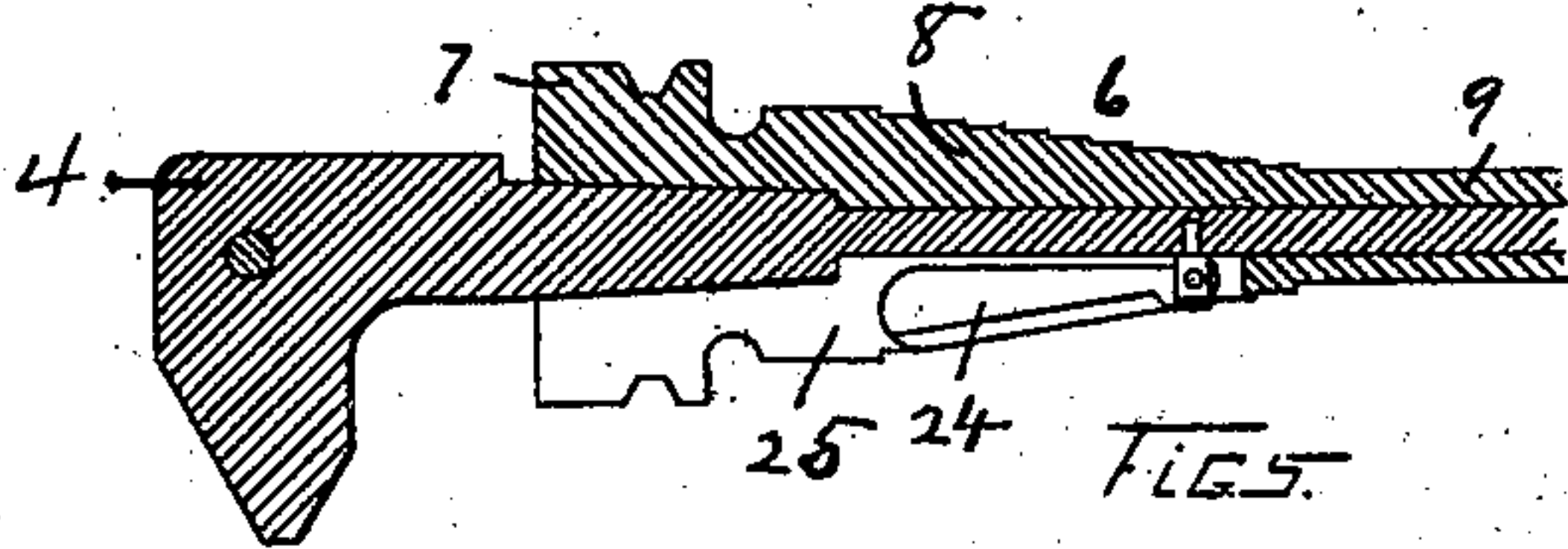


FIG. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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ELECTRIC-CIRCUIT CLOSER FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 692,925, dated February 11, 1902.

Application filed January 27, 1899. Serial No. 703,541. (No model.)

To all whom it may concern:

Be it known that I, HARRY W. SMITH, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Electric-Circuit Closers for Looms, of which the following is a specification, accompanied by drawings forming a part of the same, and in which—

Figure 1 represents a portion of the lathe and shuttle-box mounted thereon with the front of the shuttle-box and binder removed to disclose the shuttle contained in the box. Fig. 2 is a top view of the shuttle-box and shuttle contained therein. Fig. 3 is a central longitudinal sectional view of a portion of a shuttle and bobbin. Fig. 4 is a transverse sectional view of the shuttle and bobbin on line 4 4, Fig. 2; and Fig. 5 represents a portion of the hinged spindle or bobbin-support and bobbin held thereon shown in central sectional view, showing a modified form of construction, in which the hinged lever by which the circuit is closed is pivoted on the spindle instead of the bobbin.

Similar numerals refer to similar parts in the different figures.

My present invention relates to that class of looms in which auxiliary mechanism is controlled by the energizing of an electromagnet forming part of an electric circuit, and particularly to the circuit-closing devices, by which the closing of the electric circuit is determined by the withdrawal of the weft from the shuttle; and it consists in the construction and arrangement of parts, as hereinafter described, and set forth in the annexed claims.

Auxiliary mechanism for stopping the loom to enable the weaver to supply new weft to the shuttle and auxiliary mechanism for supplying weft to the shuttle automatically are both in use and will be well understood by those conversant with the art of weaving, and it is by means of an electromagnet which is energized by an electric current at a predetermined period in the operation of weaving by the closing of an electric circuit. My present invention relates only to the device by which the electric circuit is closed.

Referring to the accompanying drawings, 1 denotes a portion of the lathe of a loom, 2 a shuttle-box mounted thereon, and 3 a shut-

tle in position in the box. The shuttle 3 is provided with a bobbin-support, consisting in the present instance of a hinged spindle 4, pivoted at 5 to the body of the shuttle and adapted to support a wooden bobbin 6 of the usual form, upon which the weft is wound. As shown in the drawings, the bobbin 6 comprises a head 7, conical base 8, and cylindrical body 9.

The shuttle 3 is provided, preferably on its upper side, with two electrical contact-strips 10 and 11, and in the path of the contact-strips 10 and 11 are two fixed brushes 12 and 13, connected by wires 14 and 15 with the opposite poles of a battery and supported in the present instance upon the shuttle-box. The contact-strips 10 and 11 are extended into the bobbin-chamber 16 and pass downwardly between the side walls 17 of the bobbin-chamber and the bobbin 6. The lower ends of the contact-strips are provided with contact-pins 18 and 19, which project horizontally from the ends of the contact-strips beneath the bobbin with the inner ends of the pins nearly in contact.

The conical base of the bobbin 6 is provided with a recess 20 to receive the rocking lever 21, which is pivoted at the end 22 nearest the tip of the bobbin. When the bobbin is placed in a vertical position and supported on its head 7, the lever 21 will hang by its pivoted end and be inclosed within the recess 20, and as the bobbin is wound with weft the recess 20 will be covered with the weft-thread, which will retain the lever 21 in its normal position within the recess. The bobbin is placed upon the spindle 4 in the shuttle with the recess 20 upon its lowest side, causing the weight of the lever 21 to rest upon the weft-thread. As soon as the weft-thread is removed from the bobbin sufficiently to uncover the recess 20 the lever 21 falls by its own weight against the ends of the pins 18 and 19. In order to insure the contact of the lever 21 with both of the pins 18 and 19, I bring the ends of the pins nearly together and bevel their tips, so as to form a V-shaped opening 23 between them, and the lower edge of the lever 21 is correspondingly beveled, so that as it falls into the V-shaped opening 23 and owing to its loose pivotal connection with the bobbin it will be carried against the tips of both pins

18 and 19. Whenever the lever 21 falls into contact with the pins 18 and 19, the two contact-strips 10 and 11 become electrically connected, causing the circuit to be closed whenever the contact-strips 10 and 11 are brought into contact with the brushes 12 and 13, and the closing of the circuit is determined by the withdrawal of the weft from over the recess 20.

10 Instead of hinging the lever 21 in the bobbin a lever 24 can be hinged to the underside of the spindle 4, and the bobbin in that case is provided with an open slot 25 in its end to receive the lever as the bobbin is placed upon the spindle and allow the lever to rest upon the weft covering the slot 25. As the weft is withdrawn from the bobbin and the slot 25 uncovered the lever 24 will fall into contact with the pins 18 and 19.

20 What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an electric-circuit closer for looms, the combination with a loom-shuttle body and a bobbin carried therein, of a rocking lever pivoted on said bobbin and arranged to be covered by the weft as the bobbin is wound, whereby said lever is held in its normal position, a pair of contact-strips arranged in the path of said rocking lever as it is released by the unwinding of the weft from the bobbin and means for bringing said contact-strips into an electric circuit, substantially as described.

2. In an electric-circuit closer for looms, the combination with a shuttle-body and a bobbin carried therein, and having a recess, of a rocking lever pivoted in said recess and arranged to be held in said recess by the weft wound upon said bobbin and be released when the weft is unwound, and a contact-strip extending into the path of said lever as it is released, means for connecting said contact-strip and said lever with the poles of a battery, whereby the electric circuit becomes closed by the rocking of said lever, substantially as described.

3. In an electric-circuit closer for looms, the combination with a shuttle-body and a contact-strip thereon extending into the bobbin-chamber, of a bobbin provided with a recess, a movable member held in said bobbin-re-

cess by the weft wound on the bobbin and covering said recess, said movable member being arranged to fall by gravity as the weft is removed therefrom, and into contact with said contact-strip, and means for electrically connecting said contact-strip and said movable member with the poles of an electric battery or other source of an electric current, substantially as described.

4. In an electric-circuit closer, the combination with a shuttle-body having a hinged spindle and a bobbin carried thereon and provided with a recess, of a lever inclosed in said bobbin-recess, said lever being arranged to be supported against gravity by the weft wound on said bobbin, and to fall when the weft has been removed, contact-strips on said shuttle-body and forming part of an electric circuit, extending beneath and into the path of said hinged lever as it falls, whereby said strips are electrically connected, substantially as described.

5. In an electric-circuit closer for looms, the combination with a shuttle-body and a bobbin carried therein, said bobbin having a recess, of a lever pivoted in said recess and arranged to be held therein by the weft wound over said recess and to be released when the weft is unwound therefrom, a contact-strip in the path of said lever as it is released by the unwinding of the weft, said strip and said lever forming part of an electric circuit, substantially as described.

6. In a circuit-closer for looms, the combination of a shuttle-body, a spindle supported therein and adapted to carry a bobbin, said bobbin being provided with a recess, a lever movable in said recess and arranged to be held therein by the weft wound over the recess and to project from said recess when released by the unwinding of the weft, and a contact-strip carried by the shuttle-body and in the path of said lever as it is released by the unwinding of the weft, the said contact-strip and lever forming parts of an electric circuit.

Dated this 25th day of January, 1899.

HARRY W. SMITH.

Witnesses:

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