

No. 692,931.

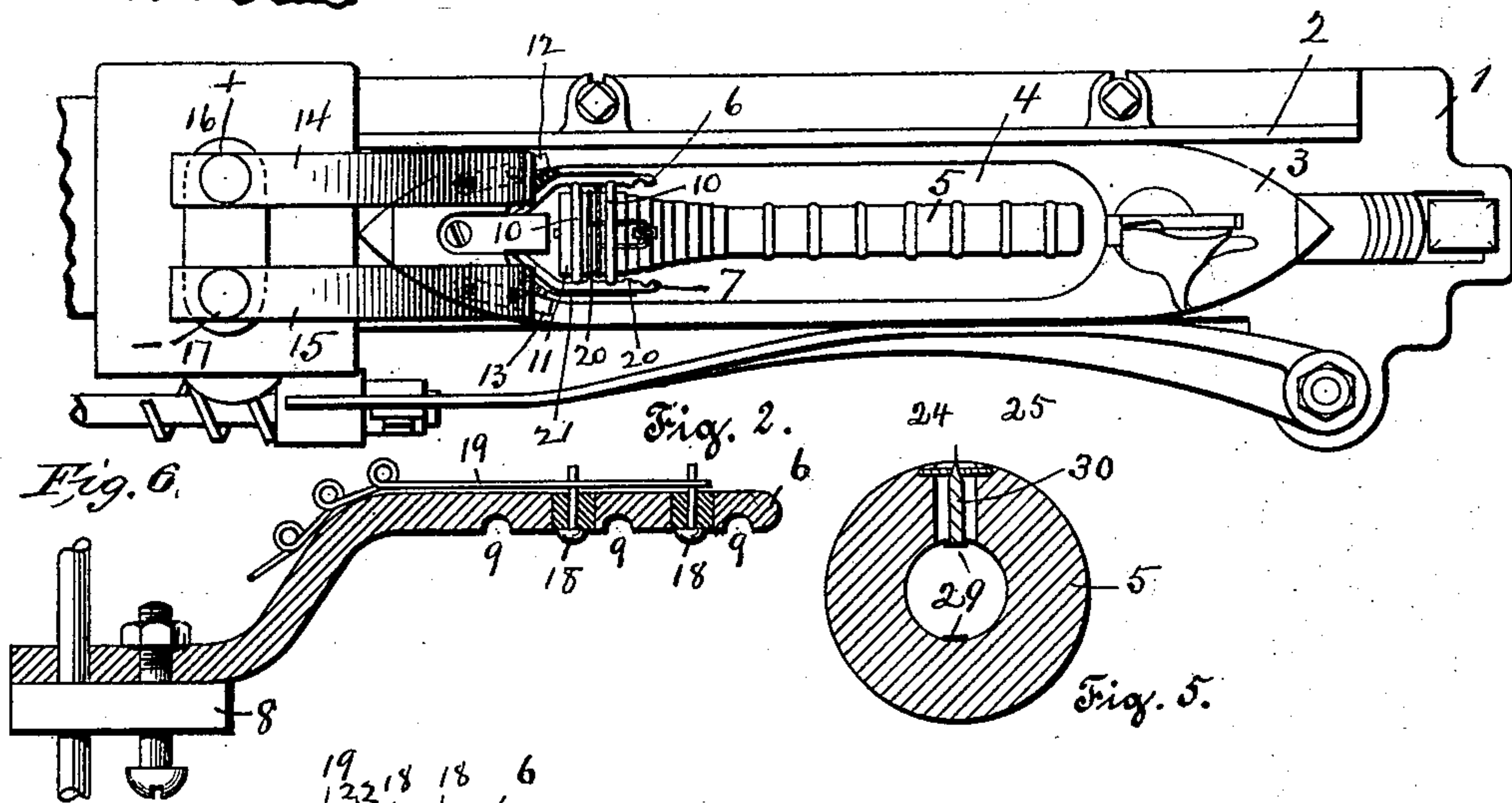
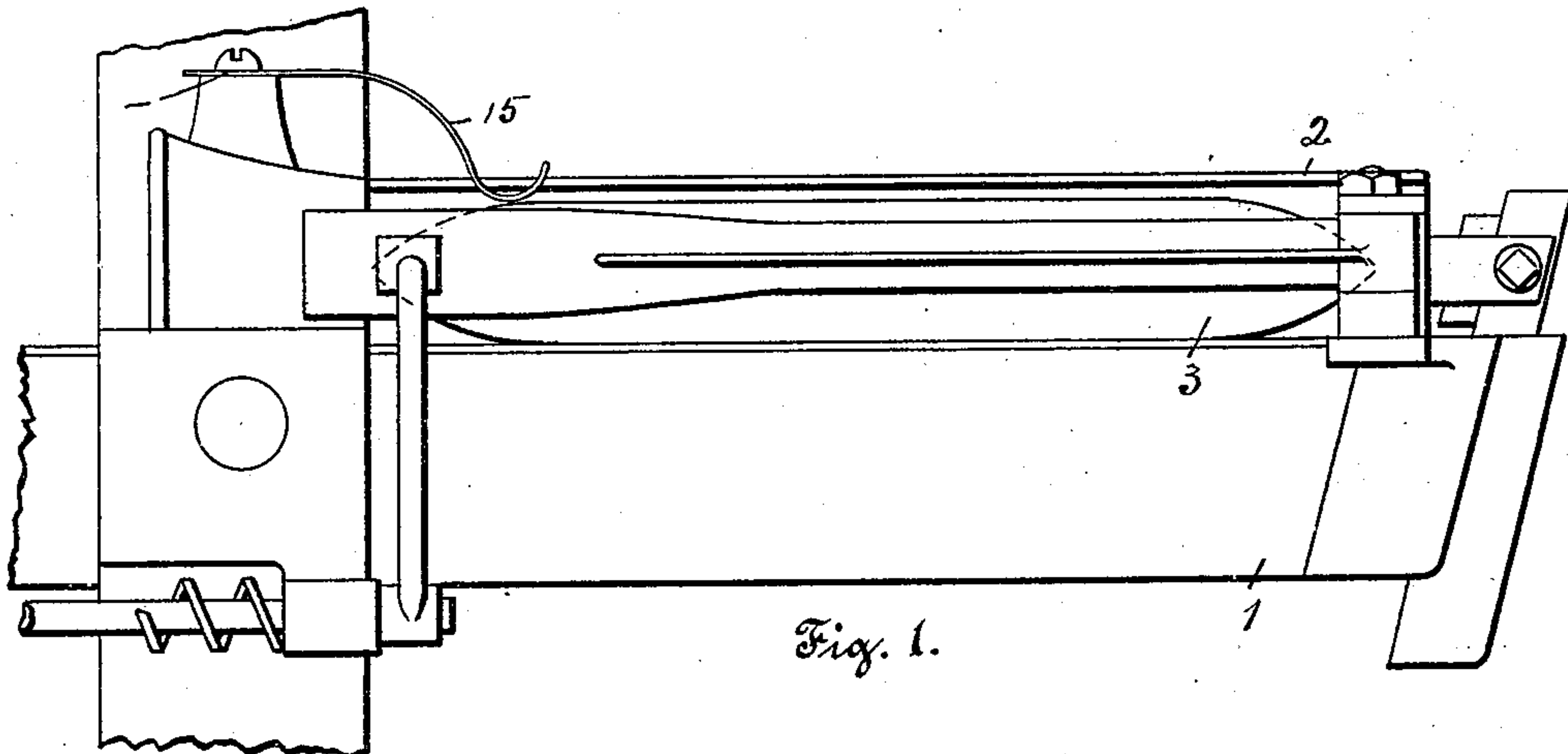
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H. W. SMITH.

ELECTRIC CIRCUIT CLOSER FOR LOOMS.

(Application filed Mar. 3, 1900.)

(No Model.)



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. 692,931, dated February 11, 1902.

Application filed March 3, 1900. Serial No. 7,168. (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, in which—

Figure 1 represents a portion of a loom-lathe with a shuttle-box and shuttle contained therein. Fig. 2 is a top view of the same. Fig. 3 is a top view of the shuttle with a portion shown in sectional view. Fig. 4 is a central longitudinal sectional view of a portion of the bobbin. Fig. 5 is a transverse sectional view of the bobbin on line 3 3, Fig. 4; and Fig. 6 is a partly-sectional view of one of the elastic jaws by which the bobbin is held in the shuttle.

Similar reference-figures refer to similar parts in the different views.

The object of my present invention is to provide means for closing an electric circuit controlled by the withdrawal of the weft from the bobbin, by which at a certain period in the withdrawal of the weft an electric circuit is closed and an electromagnet, forming a part of the circuit, is energized for the purpose of putting in operation an auxiliary mechanism—such, for example, as mechanism for stopping the loom or changing the filling-carrier; and my invention consists in the construction and arrangement of parts, as hereinafter described, and set forth in the annexed claims.

Referring to the drawings, 1 denotes one end of a loom-lathe, 2 a shuttle-box mounted thereon, and 3 a shuttle contained in the shuttle-box and having a bobbin-chamber 4 containing a bobbin 5, which is supported in the bobbin-chamber by means of a pair of elastic jaws 6 and 7, securely held in the shuttle-body and projecting into the bobbin-chamber. The jaws 6 and 7 are electrically insulated from each other by means of an insulating-block 8 of rubber or other material and are provided on their inner faces with a series of notches 9, adapted to engage the peripheries of the metallic rings 10 10 on the head 11 of the bobbin. As the bobbin is in-

serted in the shuttle the elastic jaws 6 and 7 are slightly separated, so as to exert sufficient pressure to maintain the bobbin in its proper position in the bobbin-chamber.

Mounted upon the top of the shuttle-body are a pair of contact-plates 12 and 13, and held by the lathe are a pair of electrical brushes 14 and 15, with their free ends extending over the shuttle-box and into the path of the contact-plates 12 and 13. The brushes 14 and 15 are electrically connected by wires 16 and 17 with the opposite poles of a battery or other source of an electric current.

The elastic jaw 6 is provided between its notches with contact-points 18, which are held in the jaw 6, but insulated therefrom and are connected by a wire 19 with the contact-plate 12. Similarly the elastic jaw 7 is provided with contact-points 20, insulated from the jaw and connected with the contact-plate 13 by a wire 21. The head of the bobbin is provided between the metallic rings 10 10 with the circumferential metallic bands 22 and 23, band 22 being arranged, when the bobbin is held in position between the jaws, to come into contact with one of the contact-points 18 held in the jaw 6, and the band is arranged to come into contact with one of the contact-points 20 held in the jaw 7. Electrically connected with the bands 22 and 23 are wires 24 and 25, preferably contained in a recess 26 in the body of the bobbin. The ends of the wires 24 and 25 are bent at right angles and project toward each other over a mortise 27 in the body of the bobbin and communicating with an interior chamber 26, containing a curved blade-spring 29, to which is attached a wedge-shaped blade 30, projecting into the mortise 27. The tension of the spring 29 serves to hold the wedge-shaped end of the blade 30 in its normal position slightly above the weft-supporting surface of the bobbin and in contact with the opposing ends of the wires 24 and 25. When the weft is wound upon the bobbin, the plate 30 is pressed down by the weft out of contact with the wires 24 and 25, holding the spring 29 in a state of compression. The insertion in the bobbin-chamber of a bobbin filled with weft, with the head of the bobbin engaged by the elas-



tic jaws 6 and 7, causes the wires 24 and 25 to become electrically connected with the contact-plates 12 and 13, and as the shuttle enters the shuttle-box and brings the contact-plates 12 and 13 into contact with the brushes 14 and 15 the wires 24 and 25 become the terminals of an electric circuit. As the weft is removed from the bobbin and the wedge-shaped end of the plate 30 is uncovered it is lifted by the action of the spring 29 into contact with the ends of the wires 24 and 25, thereby electrically uniting the ends of the wires 24 and 25 and completing the circuit and causing an electromagnet placed in the circuit to become energized. I have not deemed it necessary to show an electromagnet or an auxiliary mechanism controlled thereby, as such use of an electromagnet will be well understood by those conversant with electrical auxiliary mechanism now in use in connection with weaving-loom.

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 shuttle-body provided with a pair of bobbin-holding jaws, of electric contact-points held by said jaws, and a bobbin provided with means controlled by the weft for electrically uniting said contact-points, substantially as described.

2. In an electric-circuit closer for looms, the combination with a bobbin provided with metallic circumferential bands, a shuttle-body, means carried by the shuttle-body for bringing said bands into an electric circuit, wires electrically connected with said bands and forming the terminals of the circuit, and means controlled by the weft for electrically uniting said terminals, substantially as described.

3. In an electric-circuit closer for looms the combination of a shuttle-body provided with bobbin-holding jaws, and a bobbin held therein, of metallic contact-points held by said jaws, contact-strips on the outside of the shuttle-body electrically connected with said contact-points, means for bringing said contact-strips into an electric circuit, metallic surfaces on said bobbin held in contact with the contact-points of said bobbin-holding jaws and means controlled by the weft, whereby said metallic surfaces, on the bobbin, and said

points are electrically united, substantially as described.

4. In an electric-circuit closer for looms the circuit-closing bobbin, having two metallic contact-surfaces arranged to be brought into an electric circuit, in the operation of weaving, whereby said metallic surfaces are made the terminals of an electric circuit, an intervening blade arranged to electrically unite said terminals and a spring by which said blade is held normally in contact with said terminals said blade projecting into the path of the weft as it is wound on the bobbin, whereby the blade is crowded out of contact with said terminals by the pressure of the weft thereon, substantially as described.

5. In an electric-circuit closer for looms, the circuit-closer bobbin having two opposing metallic surfaces arranged to be brought into, and form the terminals of an electric circuit, a recess in said bobbin, a spring-actuated blade held in said recess with its end normally in contact with said terminals and projecting into the path of the weft as it is wound upon the bobbin, whereby the winding of the weft will serve to crowd said blade into said recess and out of contact with said terminals.

6. The combination with a shuttle-body provided with bobbin-holding jaws adapted to engage a bobbin, said jaws being insulated from each other, and means for electrically joining said jaws in electric circuit on the practical exhaustion of the weft carried by the bobbin.

7. The combination of a shuttle-body having a pair of notched bobbin-holding jaws, metallic contact-points held by said jaws, means for bringing said contact-points into an electric circuit, a bobbin having metallic bands on its periphery, said bobbin having a projecting ring adapted to engage the notches on said jaws and hold said metallic bands in contact with the contact-points on said jaws, substantially as described.

In testimony whereof I have signed my name to this specification, in presence of two subscribing witnesses, this the 24th day of January, 1900.

HARRY W. SMITH.

Witnesses:

RUFUS B. FOWLER,  
AVA T. MURPHY.