

(No Model.)

H. J. SAVORY.

MACHINE FOR CONNECTING ELECTRIC CONDUCTORS.

No. 554,541.

Patented Feb. 11, 1896.

Fig. 1.

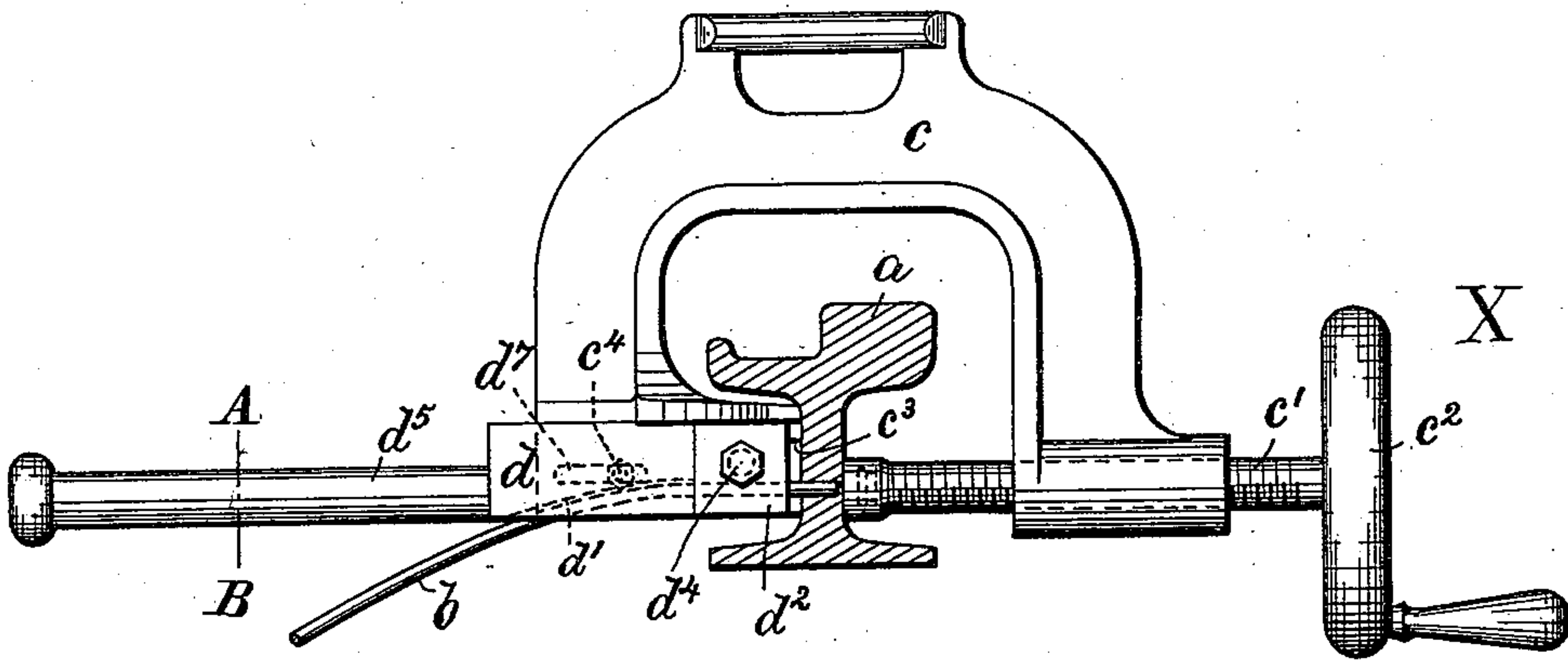


Fig. 2.

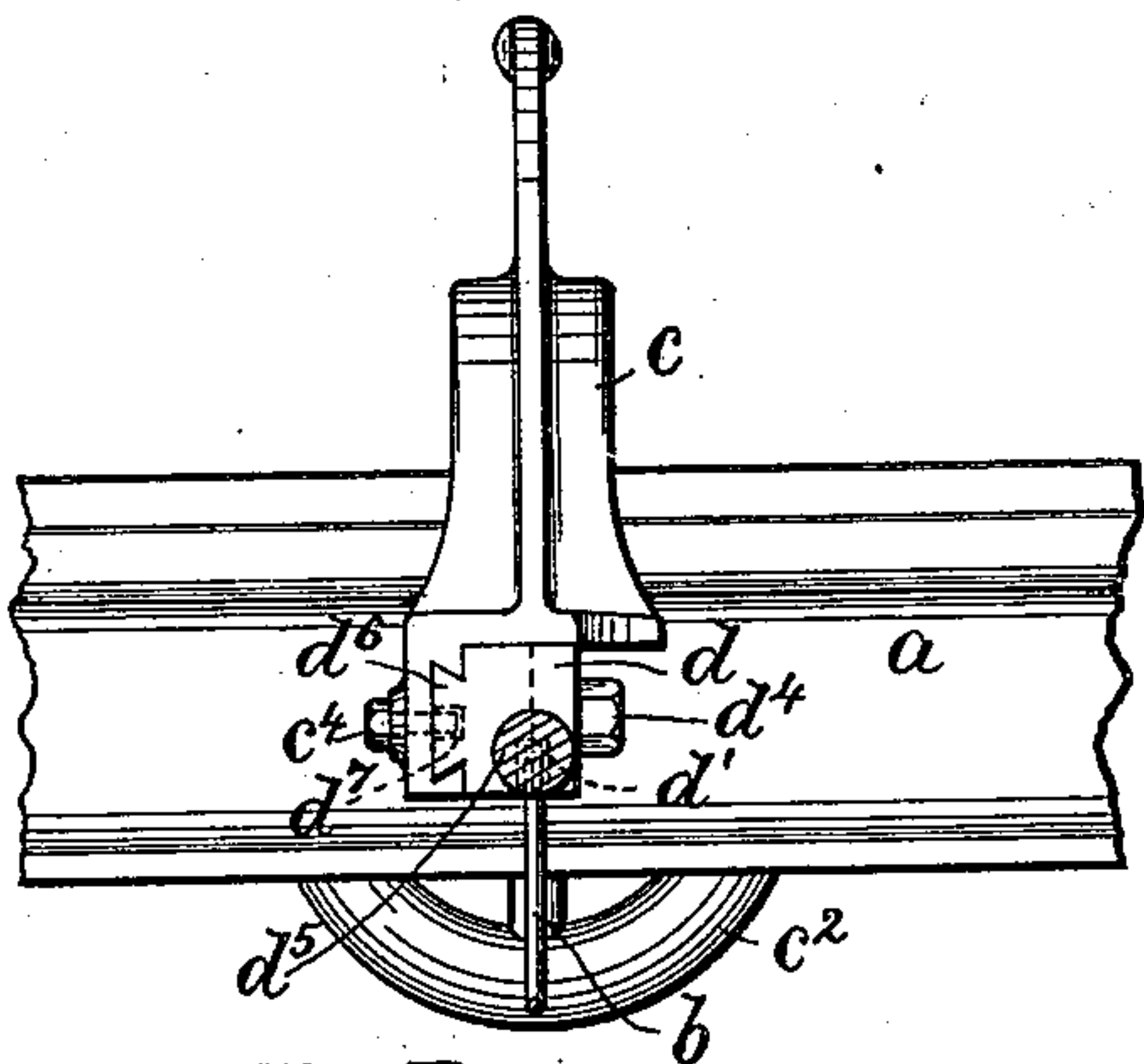


Fig. 3.

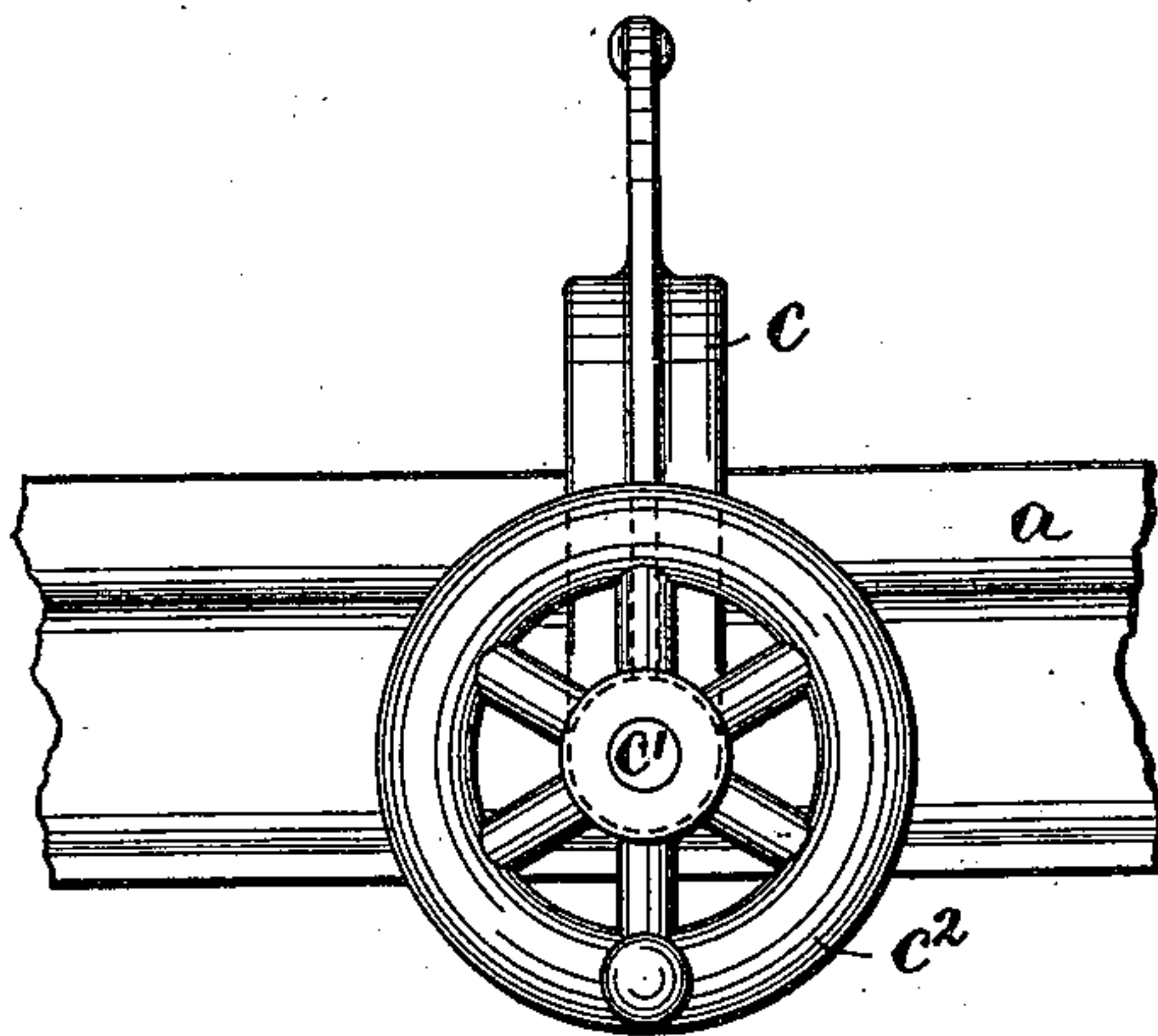


Fig. 6.

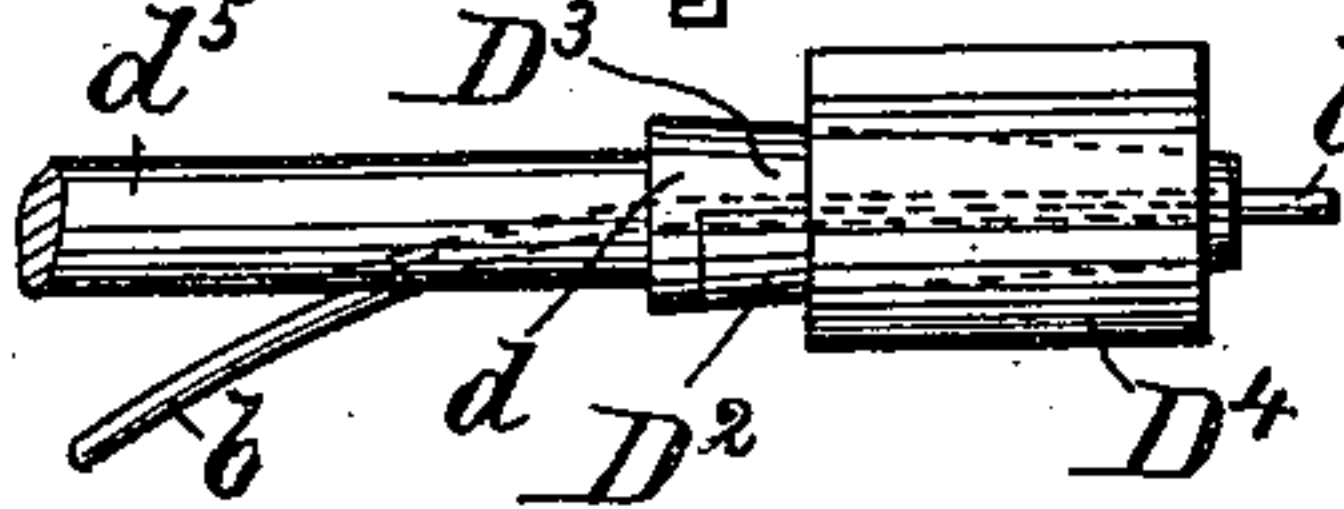


Fig. 4.

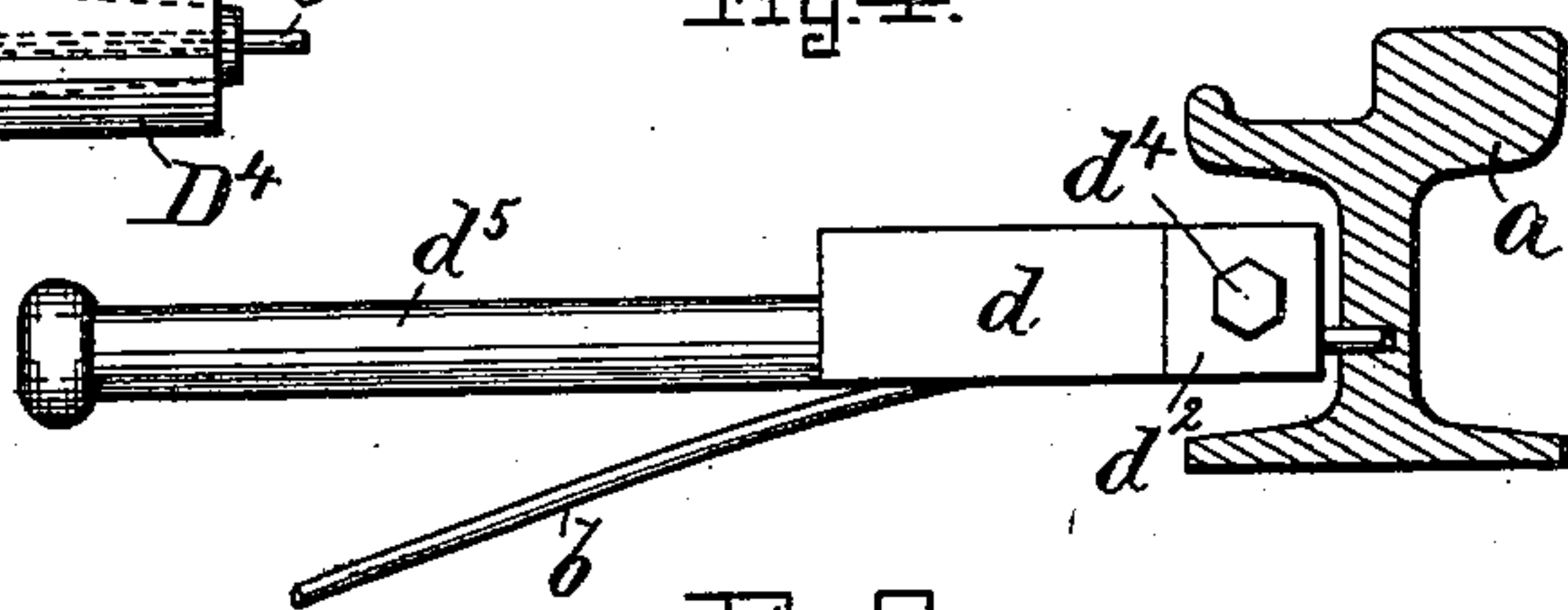


Fig. 7.

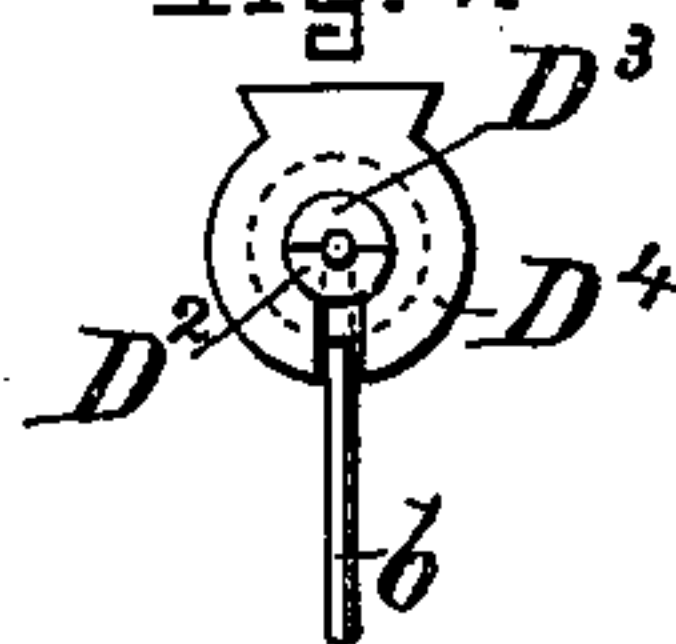
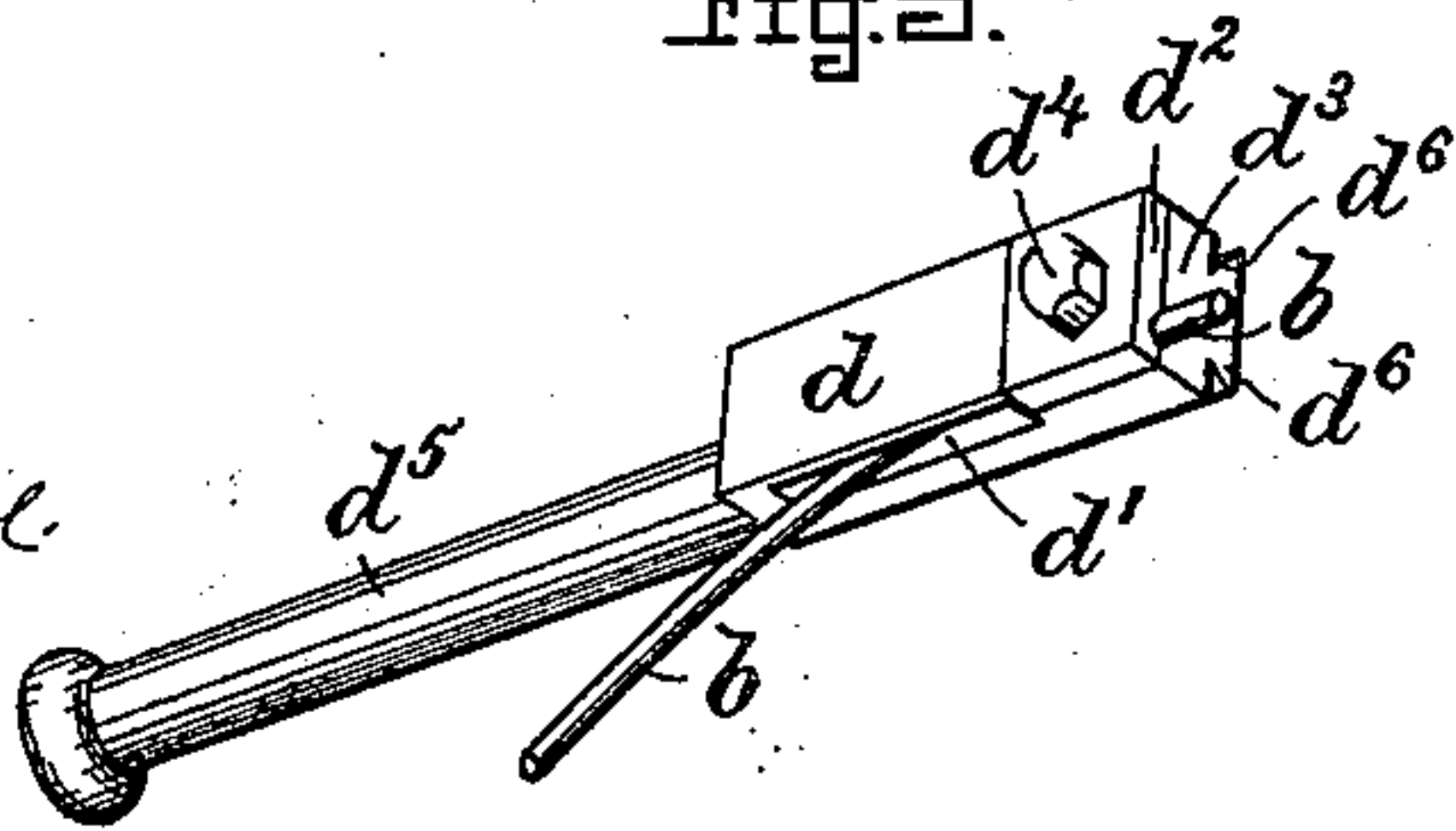


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

HARLIE J. SAVORY, OF SOMERVILLE, MASSACHUSETTS.

MACHINE FOR CONNECTING ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 554,541, dated February 11, 1896.

Application filed April 17, 1893. Serial No. 470,753. (No model.)

To all whom it may concern:

Be it known that I, HARLIE J. SAVORY, a citizen of the United States, residing at Somerville, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Machines for Connecting Electric Conductors; 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, forming a part of this specification.

15 This invention relates to improvements in machines for connecting a small electric conductor to a larger one, and more especially an electric wire to the rail of a railway-track in an electric-railway system.

20 The connection between the conductors to be made by my machine is accomplished by upsetting the smaller conductor within the larger one; and the object of my present invention is to produce a machine having a frame clamped to the larger conductor provided with a support against which the smaller conductor is forced in order to upset it; to provide a clamping and holding device for the smaller conductor detachable from said frame, which may be used with or without the frame above mentioned; to provide the frame with guides within which the detachable clamping device may be guided when making the connection to insure a perfect connection.

35 The invention is carried out substantially as follows, reference being had to the accompanying drawings, wherein—

Figure 1 represents a side elevation of my improved machine placed upon the rail of an electric-railway track in position to connect the wire to the rail. Fig. 2 represents a cross-section of the machine on the line A B, shown in Fig. 1. Fig. 3 represents an end view of the machine, seen from X in Fig. 1. Fig. 4 represents a side elevation of the clamping device for the small conductor, showing the same in position to make the connection without the use of the guide-frame. Fig. 5 represents a perspective view of the clamp-

ing device for the smaller conductor and showing the wire firmly held thereby. Figs. 6 and 7 represent respectively a side and end elevation of a modified form of the clamping device for the smaller conductor.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

The larger conductor *a*, represented upon the drawings as a rail of a railway-track, is provided with a perforation, as shown in Fig. 1, or with a recess, as shown in Fig. 4, within which the smaller conductor *b*, represented on the drawings as a wire, is to be upset in order to connect the two conductors together. To this larger conductor the frame *c* is clamped by means of the screw *c'* and hand-wheel *c''*. This screw is so arranged as to entirely cover the perforation in the larger conductor when the frame is clamped to the rail, and it forms a support against which the smaller conductor is pressed when upsetting it within the perforation in the larger conductor, as set forth hereinafter.

d represents a block provided with a groove *d'* to receive the smaller conductor, as shown in Fig. 5, also with a cut-away portion, which, in combination with the independent clamping-jaw, forms the clamping-jaws *d'' d'''*, which are screwed together by means of the screw *d'''*, to firmly hold the smaller conductor while it is being upset within the perforation in the larger conductor by means of blows from a hammer or other instrument being applied to the block *d* or a projection *d''* thereon.

The block *d* is dovetailed, as shown at *d''*, which dovetailed portion fits within a correspondingly-shaped groove *c''* in the frame *c* and properly guides the block while the smaller conductor is being upset, thus preventing the liability of having the block *d* move to one side and make an imperfect connection. By the use of the guide for the block the same is held in such a position that the small conductor is held in a line with the perforation in the larger conductor during the time that the small conductor is being upset, and thus makes a perfectly uniform and true connection. This allows of the employment of cheaper labor in

forming the connection than when the connection is made by the block independent of the guides on the frame.

If it is desired to prevent the block d from being withdrawn from the frame but still to give it sufficient play within the guides to allow it to upset the small conductor I provide said block with the groove d^7 , (shown by dotted lines in Figs. 1 and 2,) and I also provide the frame c with a set-screw c^4 , as shown, which is screwed through the frame c and enters the groove on the block d forming a stop therefor.

The block d , the clamping-jaws d^2 d^3 and projection d^5 form a hand-set in which the small conductor is clamped. This hand-set is very convenient to be used in forming a connection with an extra large conductor, such as the frog of a railway-switch. It also allows the smaller conductor to be connected in a recess on a blank wall, if so desired, or in many other places where it is impossible to attach the guide-frame.

The frame c may, if so desired, simply form a support against which the smaller conductor is pressed in making the connection, and the guide-groove c^3 may be dispensed with.

I do not wish to confine myself to any particular manner of constructing the clamping device for the small conductor, nor to the particular style of frame used, as either may be changed within the scope of mechanical skill without departing from the spirit of my invention, which consists broadly in the use of a hand-set in which the small conductor is clamped while it is being upset within the larger conductor, which hand-set may be used with or without a guide-frame, also, in combination with said set, the employment of a frame having a support against which the small conductor is upset and a guide within which the hand-set is guided to form a perfect connection between the conductors.

In Figs. 6 and 7 I have shown a modified form of the hand-set, in which the small conductor is clamped between the clamping-jaws D^2 D^3 by means of the tapering sleeve or ring D^4 driven on the outer tapering surface of said jaws. The sleeve D^4 is split so as to allow it to be removed from the smaller conductor after the connection has been made.

If it is desired to form a head or shoulder on the small conductor on either side of the larger one, it is only necessary to countersink the clamping-jaws d^2 d^3 or the end of the supporting-screw c' to the desired form and cause the small conductor when upset to fill said countersinks.

The operation of my improved machine is as follows: The small conductor is clamped within the clamping device on the hand-set in such a manner as to leave enough of the conductor projecting beyond the clamping-jaws to entirely fill the perforation or recess in the large conductor and the countersink

for forming a head on the smaller conductor, if it is desired to have such. The frame c , with the hand-set attached thereto, is then firmly secured to the large conductor in such a manner as to have the projecting end of the smaller conductor enter the perforation or recess within the large conductor; the smaller is then driven or forced and upset within the perforation or recess by means of blows or pressure upon the hand-set, or by any other and well-known means to force the small conductor into the perforation in the larger conductor. The clamping-jaws on the hand-set are then released and the frame removed from the larger conductor, leaving the small conductor firmly attached to the large conductor.

The connection formed by my improved machine is a very close one and excludes all moisture from the meeting surfaces of the conductors, thus preventing the corrosion of such surfaces and rapid destruction of the connection.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. In a machine for connecting a small electric conductor to a larger one, by upsetting one within the other, a hand-set having clamping device rigidly attached to the hand-set to clamp the small conductor and adapted to upset the same, combined with a frame clamped firmly to the larger conductor provided with a support against which the smaller conductor is forced to upset the same, and with a guide to properly guide the hand-set to insure a perfect connection being made, substantially as set forth.

2. In a machine for connecting a small electric conductor to a larger one, by upsetting one within the other, a hand-set having clamping device rigidly attached to the hand-set to clamp the small conductor, and adapted to upset the same, combined with a frame clamped firmly to the larger conductor provided with a support against which the smaller conductor is forced to upset the same, substantially as set forth.

3. In a machine for connecting a small electric conductor to a larger one by upsetting one within the other, a hand-set provided with a clamping device rigidly attached to the hand-set, for the purpose set forth.

4. In a machine for connecting a smaller electric conductor to a larger one, by upsetting one within the other, a hand-set, having clamping device rigidly attached to the hand-set to clamp the small conductor and adapted to upset the same, a frame clamped firmly to the large conductor provided with a guide to properly guide the hand-set to insure a perfect connection being made, combined with a screw screwed through the frame and entering a groove in the hand-set to prevent the disconnection of the hand-set and frame, for the purpose set forth.

5. In a machine for connecting a small electric conductor to a larger one by upsetting one within the other, a hand-set having clamping device rigidly attached to the hand-set to
5 clamp the small conductor and adapted to upset the same, a frame clamped firmly to the larger conductor provided with a guide to properly guide the hand-set to insure a per-

fect connection being made, for the purpose set forth.

In testimony whereof I have hereunto set
my hand this 26th day of July, A. D. 1892.

HARLIE J. SAVORY.

In presence of—

HENRY CHADBOURN,

ANNA M. DOLLOFF.