

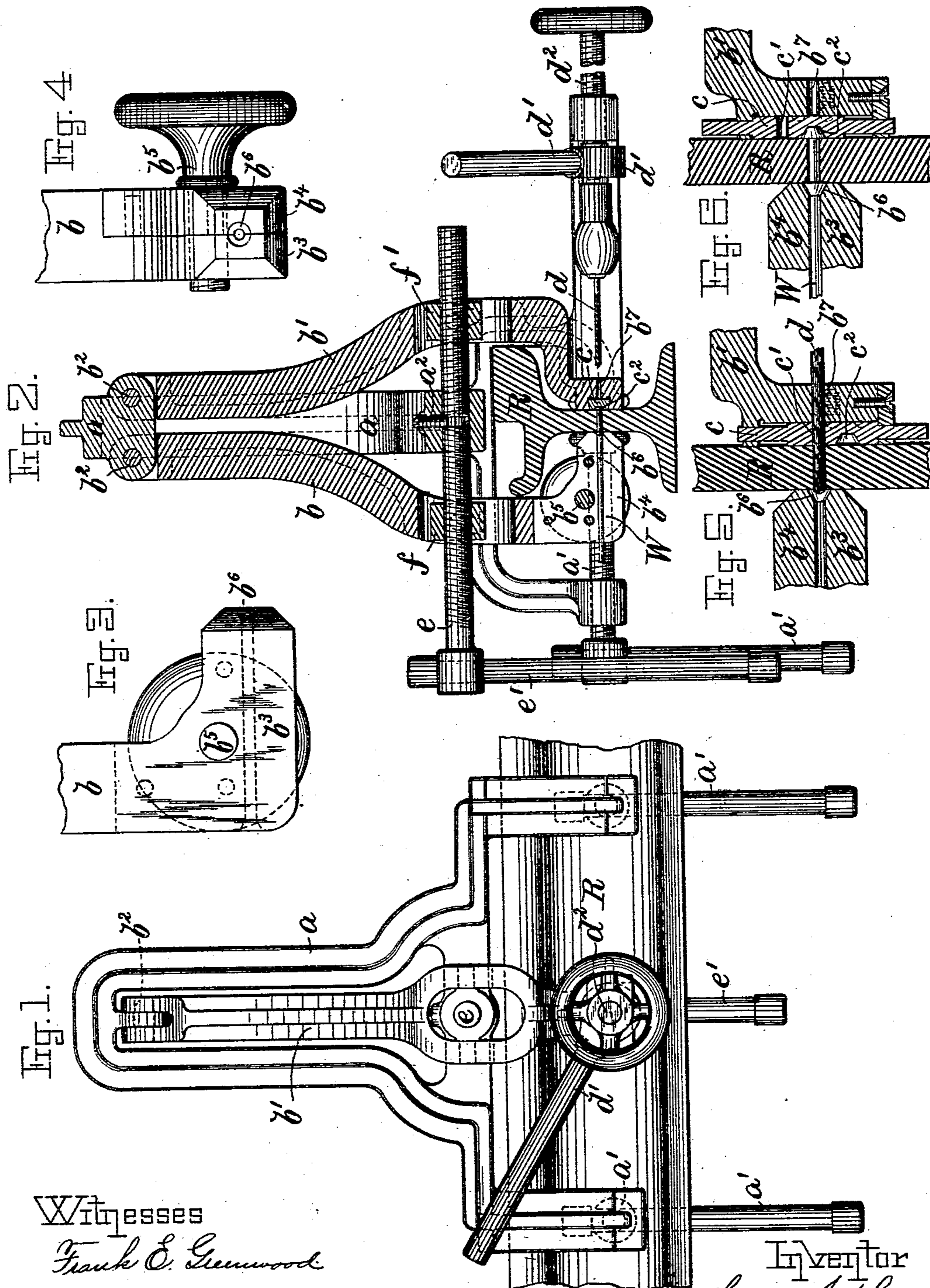
(No Model.)

H. J. SAVORY.

MACHINE FOR CONNECTING ELECTRIC CONDUCTORS.

No. 555,403.

Patented Feb. 25, 1896.



Witnesses

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MACHINE FOR CONNECTING ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 555,403, dated February 25, 1896.

Application filed April 17, 1893. Serial No. 470,751. (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 for connecting the wire to the rails of an electric-railway system.

20 It consists in providing a single organized machine having means for perforating the rail for clamping and holding the wire and for upsetting the wire within the perforation in the rail to form a close and perfect contact between the wire and rail, so that the wire will be in perfect alignment with the perforation in the rail, and also in minor details of construction, as will be fully set forth hereinafter.

30 The invention is carried out as follows, reference being had to the accompanying drawings, whereon—

Figure 1 represents a front elevation of my improved machine mounted upon a rail of a railway-track in position for connecting a wire thereto. Fig. 2 represents a central vertical cross-section of the same, showing a wire connected to the rail. Figs. 3 and 4 represent, respectively, a side and end view of the clamping device for holding the wire while it is being upset within the rail. Fig. 5 represents a detailed view showing the operation of perforating the rail. Fig. 6 represents a detailed view showing the operation of upsetting the wire within the perforation.

45 Similar letters refer to similar parts on the different parts of the drawings.

50 The standard or supporting-frame a is provided with means for clamping it firmly upon the rail R —as, for instance, with the screws and hand-levers a' a' or by other well-known and equivalent means. To the upper end of

the standard a are pivoted the upsetting-levers b b' by means of the pivots or bolts b^2 b^2 .

The lower end of the lever b is provided with the clamping-jaws b^3 b^4 , between which the wire w is clamped by means of the screw b^5 , as shown. The precise manner of clamping the wire is not essential, as any of the well-known devices may be used, it only being necessary that the wire should be held firmly and prevented from slipping while it is being upset, as set forth hereinafter.

The lower end of the lever b' is provided with a perforation b^7 and a sliding block c , which block may be provided with a perforation c' , through which a drill d is inserted, as shown in Fig. 5, but, if so desired, the block may be adapted to be moved entirely to one side, out of the path of the drill. This drill is held within a suitable chuck, being operated by means of the ratchet and handle d' , and is fed forward by means of the screw d^2 passing through an arm projecting from the side of the lever b' , or the drill may be operated by other well-known and equivalent means without departing from the invention.

A screw e is mounted within a perforation in the standard a and is held against longitudinal movement therein by means of a set-screw a^2 , which is screwed in the standard and enters an annular groove on the screw e . The screw e is provided with a right-handed screw-thread on one end and a left-handed screw-thread on the other end, and is turned in its bearing in the standard by means of a hand-lever e' or by equivalent means.

f and f' represent screw-threaded nuts mounted respectively within slotted apertures in the levers b and b' , and provided with trunnions on which they are capable of a rocking movement. These nuts receive the screw-threaded ends of the screw e and are caused to move toward or from each other thereon by a rotary movement of the screw. This movement of the nuts causes the levers b and b' to turn on their fulcra and their lower ends to move toward or from each other for a purpose to be described hereinafter.

It will be understood that the screw e may be dispensed with and any other and well-known device substituted therefor without departing from my invention, it being necessary

only that the levers $b\ b'$ should be operated so as to cause their free ends to move to and from each other for the purpose set forth.

The block c is preferably dovetailed and is capable of being moved within a correspondingly-formed groove on the lever b' in order to bring the perforation c' into position to receive the drill, as shown in Fig. 5, and after having drilled the rail to bring the recess c^2 on the block into position opposite the perforation drilled in the rail, as shown in Fig. 6, in order to form a head on the wire when it is upset in the rail, as described hereinafter, or the recess c^2 may be dispensed with, leaving the surface of the block plain when it is desired to dispense with the head on the wire.

To attach a wire to the rail of a railroad-track with my machine I proceed as follows: The machine is clamped upon the rail in its proper position by means of the screws $a' a'$ or by equivalent means. The levers $b\ b'$ are then caused to press against the rail, one on either side thereof, and the block c is adjusted so as to enable the rail to be drilled. The drill d is then fed forward and the hole drilled through the rail by means of the drill-operating mechanism used, after which the drill is withdrawn to the position shown in Fig. 2. The screw e is then turned so as to cause the lower ends of the levers $b\ b'$ to be drawn a short distance from the rail, and the block c is then adjusted to the position shown in Fig. 6. The clamping-jaws $b^3\ b^4$ are then opened and the wire inserted between them and through the perforation made in the rail sufficiently far to cause the end of the wire to come in contact with and to rest within the recess c^2 in the block c . The clamping-jaws are then caused to clamp the wire and to hold it firmly. The lower ends of the levers $b\ b'$ are then caused to move toward each other by turning the screw e , which movement will cause the wire held by the clamping-jaws to be compressed and upset within the perforation in the rail, filling it and also filling the recess c^2 in the block, thus forming a head on the side of the rail against which the block is pressed, which tends to hold the wire within the rail more firmly. In order to form a head on the wire on the opposite side of the rail from that formed by the recess c^2 , I form a countersunk recess b^6 on the face of the clamping-jaws, as shown in Figs. 5 and 6, into which the metal of the wire is pressed, as above described. The clamping-jaws are then loosened from the wire and the machine removed from the rail, leaving the wire firmly upset within the perforation in the rail and having a head on either side of the rail.

The distance that the levers $b\ b'$ are separated before the wire is introduced within the jaws $b^3\ b^4$ is such that when the wire is introduced therein and the end rests in the recess c^2 of the block c there will be enough wire projecting between the face of the

clamping-jaws and the block c to fill the perforation in the rail and to form the heads on both sides the rail.

I do not wish to confine myself to the mechanism shown for operating the drill nor to the manner shown in which the levers b and b' are attached to the standard and operated, as the same may be varied at will within the scope of mechanical skill without departing from my invention—as, for instance, the fulcrum b^2 for said levers may be dispensed with and the levers arranged to move bodily within grooves in the standard a similar to the movable jaws of any of the common and well-known bench-vises, said grooves being made at right angles, or nearly so, to the line of the rails of the railroad-track.

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, a frame, a clamping device to clamp and rigidly hold the smaller conductor and an upsetting device to upset the smaller conductor within a perforation in the larger combined with a clamping device on the frame to rigidly clamp the frame in position on the larger conductor independent of the clamping device for the smaller conductor or the upsetting device whereby the smaller conductor is caused to be upset in perfect alignment with the perforation in the larger conductor, all of said devices being mounted on said frame for the purpose set forth.

2. In a machine for connecting a small electric conductor to a larger one, a frame, a clamping device to clamp and rigidly hold the smaller conductor, an upsetting device to upset the smaller conductor within a perforation in the larger and a clamping device on the frame to rigidly clamp the frame in position on the larger conductor independent of the clamping device for the smaller conductor or the upsetting device whereby the smaller conductor is caused to be upset in perfect alignment with the perforation in the larger conductor, combined with a perforating device to perforate the larger conductor, all of said devices being mounted on the said frame for the purpose set forth.

3. In a machine for connecting a small to a larger conductor, the combination, with the frame a and the clamping-screws $a' a'$ for holding the frame firmly upon one of the conductors, of the levers $b\ b'$ pivoted to the frame, the clamping-jaws $b^3\ b^4$ on one of the levers, the recessed block c on the other lever, and the right-and-left-threaded screw e working within screw-threaded perforations in each of the levers $b\ b'$ and adapted to move the free ends of these levers to and from each other in order to upset a conductor held by the clamping-jaws within a perforation in the conductor upon which the frame is clamped, substantially as set forth.

4. In a machine for connecting two electric
conductors, the combination, with the frame
a constructed to be firmly held upon one of
the conductors, substantially as set forth, the
5 levers *b b'* pivoted to the frame, the right-and-
left-threaded screw *e* constructed to move the
free ends of these levers to and from each
other, clamping-jaws *b³ b⁴* on the levers *b* to
clamp the second conductor, the lever *b'* be-
10 ing provided with the perforation *b⁶* and the
drill *d* constructed to pass through this per-
foration for the purpose set forth, of the block
c on the lever *b'* having the perforation *c'* and
recess *c²* and constructed to be moved thereon.

so as to present the perforation *c'* to the drill 15
when operating the drill to perforate the con-
ductor on which the frame is held and to pre-
sent the recess *c²* to the conductor held by the
clamping-jaws *b³ b⁴* when the wire is pressed
through the perforation made by the drill in 20
order to upset the former within the perfora-
tion within the latter, for the purpose set forth.

In testimony whereof I have hereunto set
my hand this 23d day of July, A. D. 1892.

HARLIE J. SAVORY.

Witnesses:

HENRY CHADBOURN,
ANNA M. DOLLOFF.