

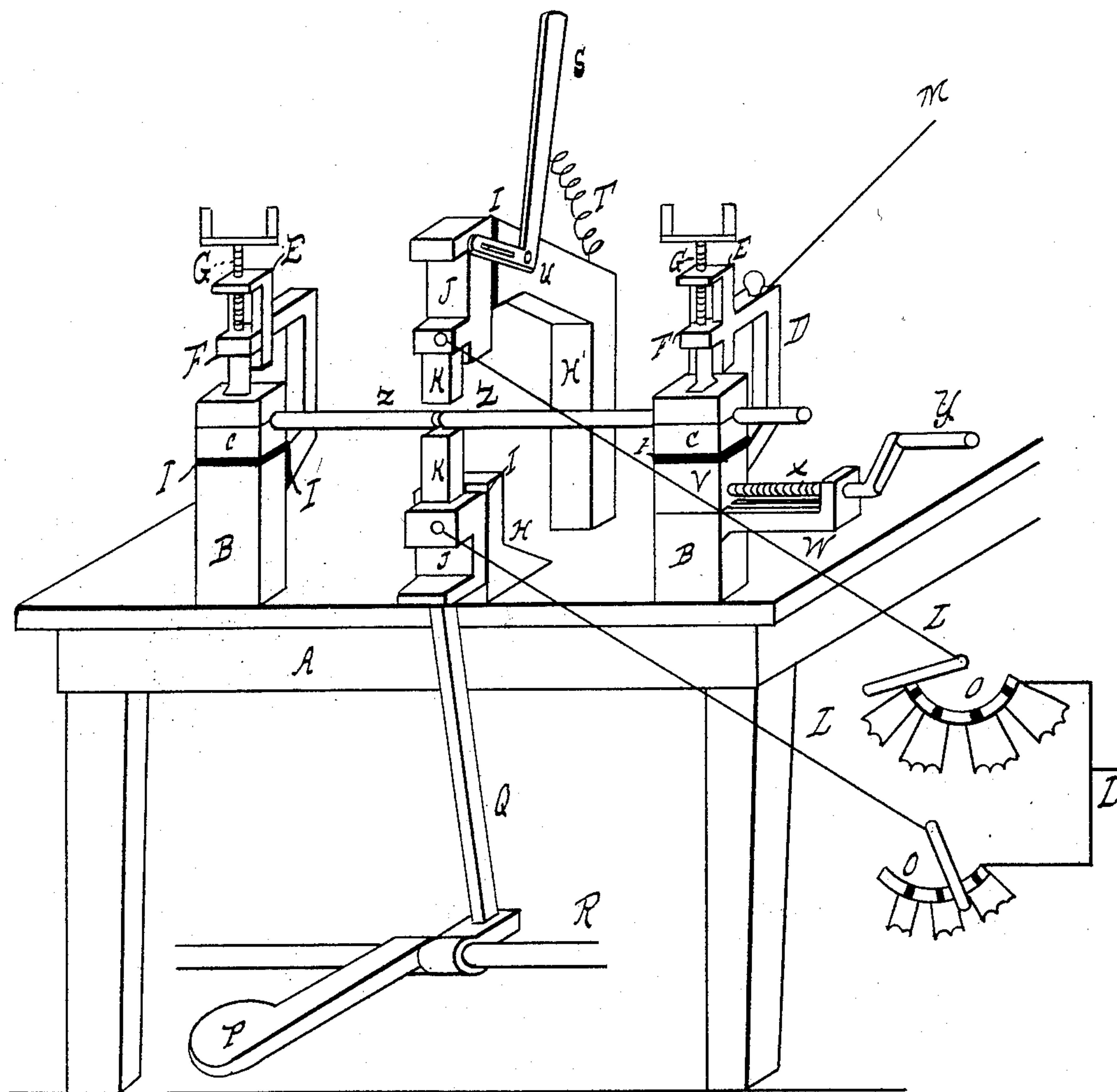
(No Model.)

C. L. COFFIN.

METHOD OF AND APPARATUS FOR WELDING BY ELECTRICITY.

No. 435,283.

Patented Aug. 26, 1890.



Witnesses

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CHARLES L. COFFIN, OF DETROIT, MICHIGAN.

METHOD OF AND APPARATUS FOR WELDING BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 435,283, dated August 26, 1890.

Application filed December 12, 1889. Serial No. 333,506. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. COFFIN, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in the Method of and Apparatus for Welding by Electricity, of which the following is a specification.

My invention consists in a mode of and apparatus for working metals electrically, hereinafter fully described and claimed.

The drawing is a perspective of a complete machine.

The principle of my invention consists in bringing the edges or ends of two articles which are to be welded in contact, or nearly so, clasping the edges to be welded between conductors, connecting one of the articles to be welded with one pole of a generator of electricity, connecting the clasp which embraces the edges to be welded with the other pole of a generator, and passing a heating current through the circuit thus formed.

A represents a bench or table supported on suitable legs. B B represent two standards secured to said table, on the top of each of which is fastened a clamp C, insulated from the standard by the insulating material I.

D represents an arm insulated from and rising from the standard B, projecting over the clamp C and provided with a head E, through which is tapped a screw-shaft G, the lower end of which is swiveled into the upper plate of clamp C.

F represents a sliding block in head E, in which the shaft G may be swiveled, and said head then connected with the upper plate of clamp C, instead of carrying the screw-shaft G down to the plate.

H represents a standard secured to the table A between standards B B and carrying thereon a sliding head J, insulated from the standard by the insulating material I, and K represents a conductor (usually a bar of metal) attached to and moving with the sliding head J.

P represents a foot-lever pivoted on shaft R and connected with sliding head J by a pitman Q, by means of which the head J may be raised or lowered.

H' represents a standard rising from the table back of a line connecting standards B B and projecting forward over standard H.

J represents a sliding head on the end of

but insulated from standard H', and K represents a conductor secured to and moving with head J.

S represents a bent lever pivoted at U to standard H', by which the head J can be raised and lowered, and provided with a spring T, (if desired,) by which the head J is kept normally raised.

Z Z represent two metal rods, which are to be welded together, clamped in the clamps C C. For the purpose of forcing the rods Z together the upper part of one of the standards B (represented at V) is made to slide on the standard, and a screw-shaft X, provided with a crank Y, is swiveled through the end of the projecting arm W on standard B and tapped into the movable part V of said standard, whereby the part V, carrying with it the clamp C and rod Z, may be moved.

M represents an electrical conductor, by which one of the clamps C is connected with one pole of a generator of electricity.

L represents an electrical conductor, by which the two sliding heads J or conductors K are connected with the other pole of said generator, the conductor L being divided into two branches which lead to each of said heads J or conductors K.

For the purpose of equalizing the flow of the current through the two branches of conductor L, I insert in one or both of said branches a resistance-coil O, of any known construction, by which the resistance of said branches of conductor L may be equalized, so that each will get an equal amount of current.

The operation of my invention is as follows: The rods Z being clamped in the clamp C, their ends are brought in contact, or practically so, and then the two heads J are moved by the levers P and S so as to bring the conductors K K in contact with the ends of said rods Z. The current is now turned on, and, supposing the conductor M to be connected with the positive pole of the generator, the current passes through said conductor and clamp C, through one rod Z, then divides, passing out through the two conductors K and off through the branches of conductor L. This generates heat at the point of contact of the rods Z with conductors K, bringing the ends of rods Z to a welding heat,

when they are pressed together by means of a screw-shaft X to form the weld. It is evident that the sliding heads J, with their conductors K, may be used one as an anvil and 5 the other as a hammer to hammer the ends of said rods Z while being welded, and the said conductors K may be pressed tightly against said rods, and thus wholly or partially prevent the formation of a burr on the 10 ends of said rods while being welded. The weld may be finished in any known way.

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

1. The herein-described method of working 15 ing metals electrically, consisting in bringing the edges to be welded in proximity to each other, embracing said edges between conductors connected with one pole of a generator of electricity, connecting one of the articles 20 to be welded to the other pole of said generator, and passing a heating-current of electricity through said articles and the embracing-conductor.

2. An apparatus for the electrical working 25 of metals, consisting of two clamps mounted on suitable supports and insulated therefrom, conductors adapted to clasp the adjacent edges of the articles to be welded, a connec-

tion from one pole of a generator of electricity to one of the articles to be welded, and a 30 connection from the other pole of said generator to the inclosing-clasp, substantially as shown and described.

3. In an apparatus for electrically working metals, the combination, with the rods Z, held 35 in suitable supports, of the two movable conductors K, connected with one pole of a generator of electricity, means for moving said conductors, and a connection from the other pole of said generator to one of the rods Z, 40 substantially as shown and described.

4. In an apparatus for electrically working metals, the combination, with the rods Z, held 45 in suitable supports, and one of them connected with one pole of a generator of electricity, of the movable insulated heads J, each carrying conductor K, both being connected with the other pole of said generator, means for actuating said heads J, and a resistance- 50 coil in one of the connections from said movable heads J to the generator, substantially as shown and described.

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Witnesses:

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