(No Model.)

C. L. COFFIN.

METHOD OF WELDING OR WORKING METALS ELECTRICALLY.

No. 462,207. Patented Oct. 27, 1891.

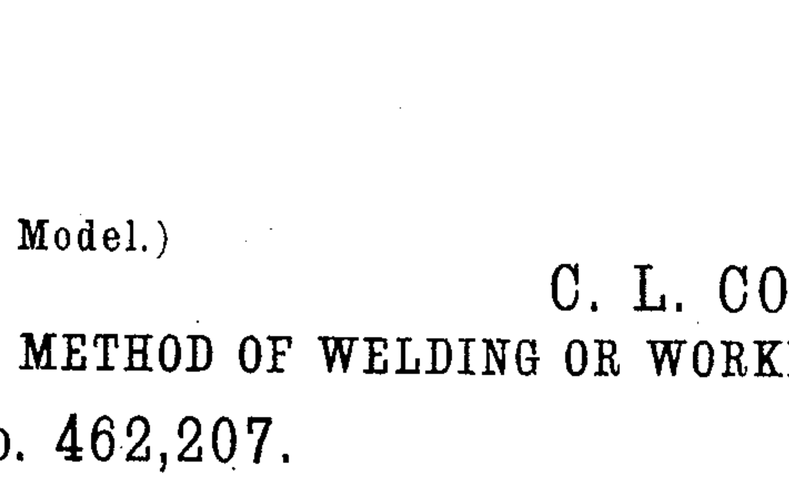

Fig. 5

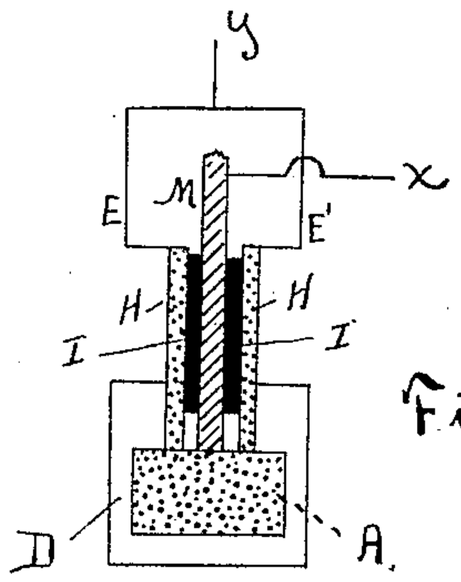

Fig. 4.

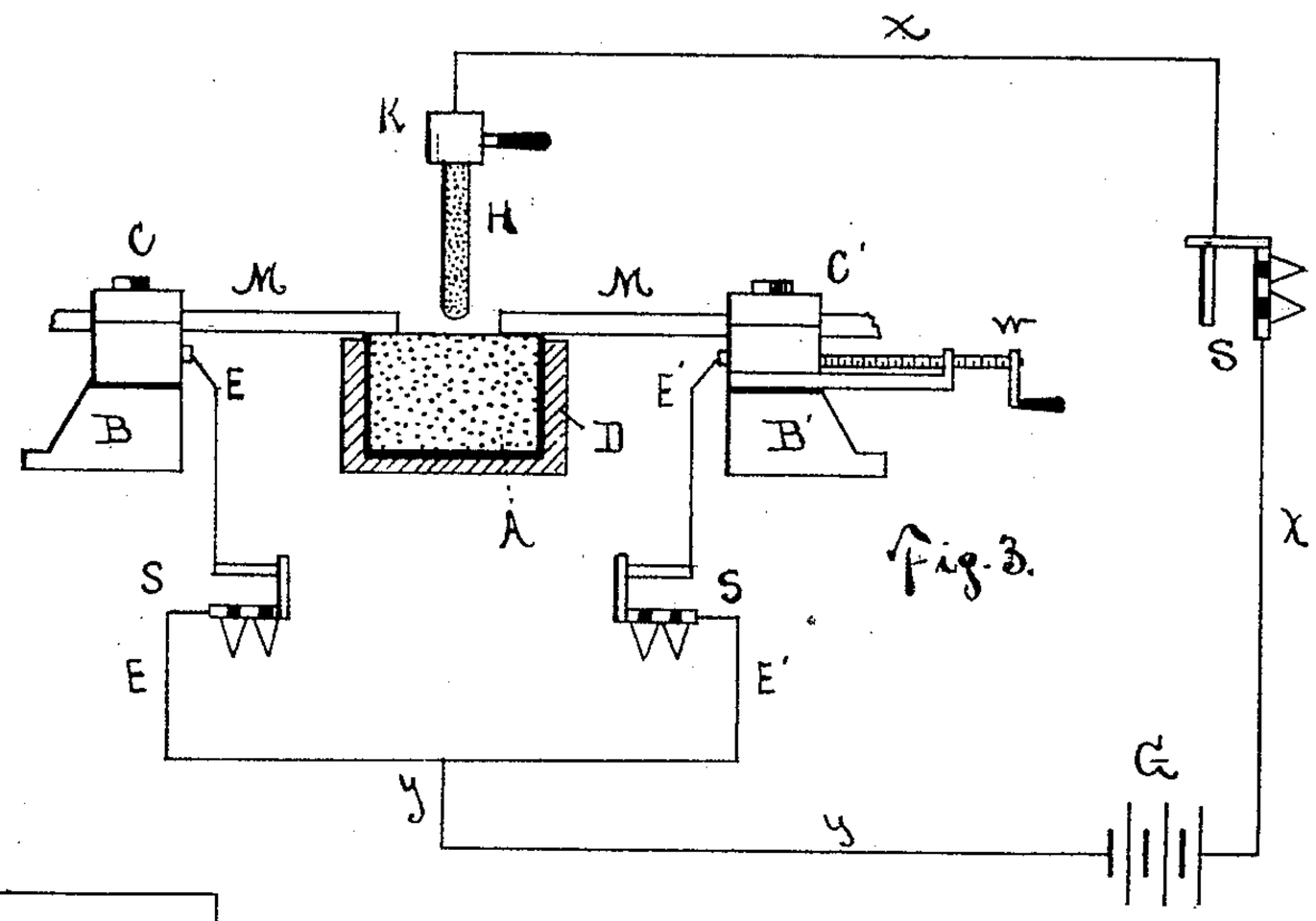

Fig. 3.

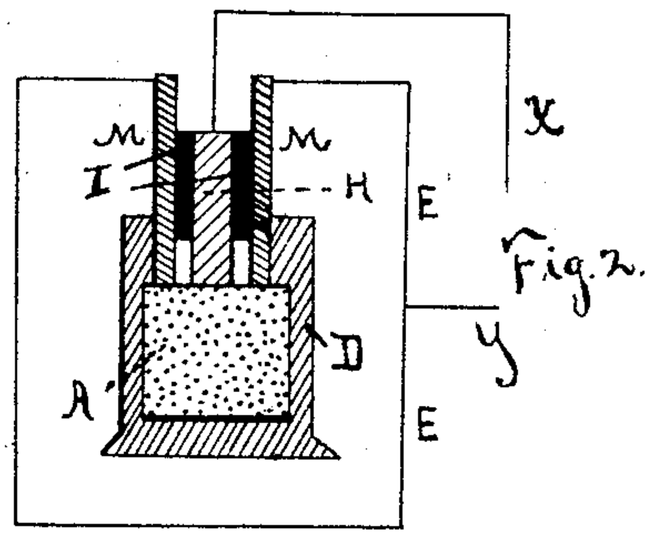

Fig. 2.

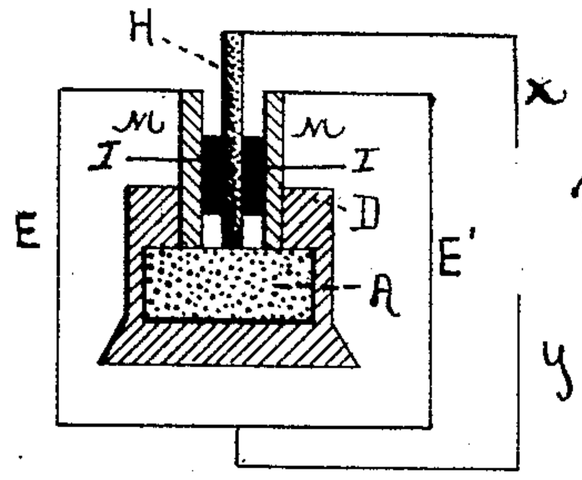

Fig 1.

Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES L. COFFIN, OF DETROIT, MICHIGAN.

METHOD OF WELDING OR WORKING METALS ELECTRICALLY.

SPECIFICATION forming part of Letters Patent No. 462,207, dated October 27, 1891.

Application filed December 22, 1890. Serial No. 375,517. (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 Methods of Welding or Working Metals Electrically, of which the following is a specification.

My invention consists in an improved method of welding or working metals electrically, hereinafter fully described and claimed.

In the drawings, Figure 1 is a detail sectional view of an apparatus adapted for carrying my invention into practice. Fig. 2 is a similar view showing a modified arrangement of parts. Fig. 3 is a diagram showing another modification. Fig. 4 is a detail sectional view of another modified construction of apparatus, and Fig. 5 is a similar view of another modified arrangement.

X and Y indicate two electrical conductors, which are connected with the poles of a suitable generator of electricity, as the battery G. (Shown in Fig. 3.)

M represents the article or articles to be welded or worked in all the figures.

A represents a conductor, preferably of refractory material, such as carbon, contained in an insulated box D, which may be closed over the top, as shown at D′ in Fig. 5. The article M or articles M M to be worked or welded is or are brought in contact with the conductor A and connected with one pole of the generator.

In Figs. 1, 2, and 3 I have shown two metal rods M M, which are both connected with the conductor Y by means of a split circuit, designated by E and E′.

H represents a conductor, which may be of metal or refractory material, such as carbon, which is connected with the conductor X and is brought in contact with the conductor A.

I represents insulation in all cases.

Assuming the current to enter through conductor Y in Figs. 1, 2, and 3, it traverses the articles M M, causing heat at their point of contact with conductor A, thence traverses conductor A to conductor H, causing additional heat at the point of contact of these two conductors, thus raising the ends of articles M M to the desired heat, when they may be worked in any desired manner or welded together by pressure, hammering, or any other known manner.

In Fig. 3 I have provided for pressing the articles M M together for welding by holding them in clamps B C and B′ C′, the clamps B′ C′ being provided with a winch W, by which the articles M M may be pressed together. In this arrangement the conductor H is preferably provided with insulated handle K, by which it may be readily removed to permit the articles M M to come together. S represents resistance-switches, which may be used in any of the apparatus designed to practice my invention.

In Fig. 4 the arrangements of Figs. 1 and 2 are reversed, there being only one article M to be heated and two conductors H, in which case I prefer to make the contact between M and A between the points of contact of A with H H. In this case the split circuit Y and E E′ is connected with the two conductors H H.

In Fig. 5 the split circuit E E′ is omitted and the conductor Y is connected directly with one of the articles M, the end of the other article being heated by radiation from the heated conductors A and H.

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

1. The herein-described process of electrically heating metal for working or welding, consisting in connecting the material to be heated with one pole of a generator, placing it in contact with a conductor in proximity to the point of contact between such conductor and a second conductor, which is connected with the other pole of a generator, and passing a heating current through said material and said conductors, whereby said material is heated directly by the action of the current and also by the heat developed at the point of contact between the two conductors.

2. The herein-described process of welding metal electrically, consisting in connecting the material to be welded with one pole of a

generator, placing it in contact with a conductor in proximity to the point of contact between said conductor and a second conductor, which is connected with the other pole of a generator, and passing a heating-current through said material and said conductors, whereby said material is heated directly by the action of the current and also by the heat developed at the point of contact between the two conductors, and completing the weld by pressure.

CHARLES L. COFFIN.

Witnesses:
HENRY B. LOTHROP,
GERTRUDE H. ANDERSON.