(No Model.) 2 Sheets—Sheet 1.

C. ZIPERNOWSKY.

APPARATUS FOR HEATING BY ELECTRICITY.

No. 452,056. Patented May 12, 1891.

Fig: 1.

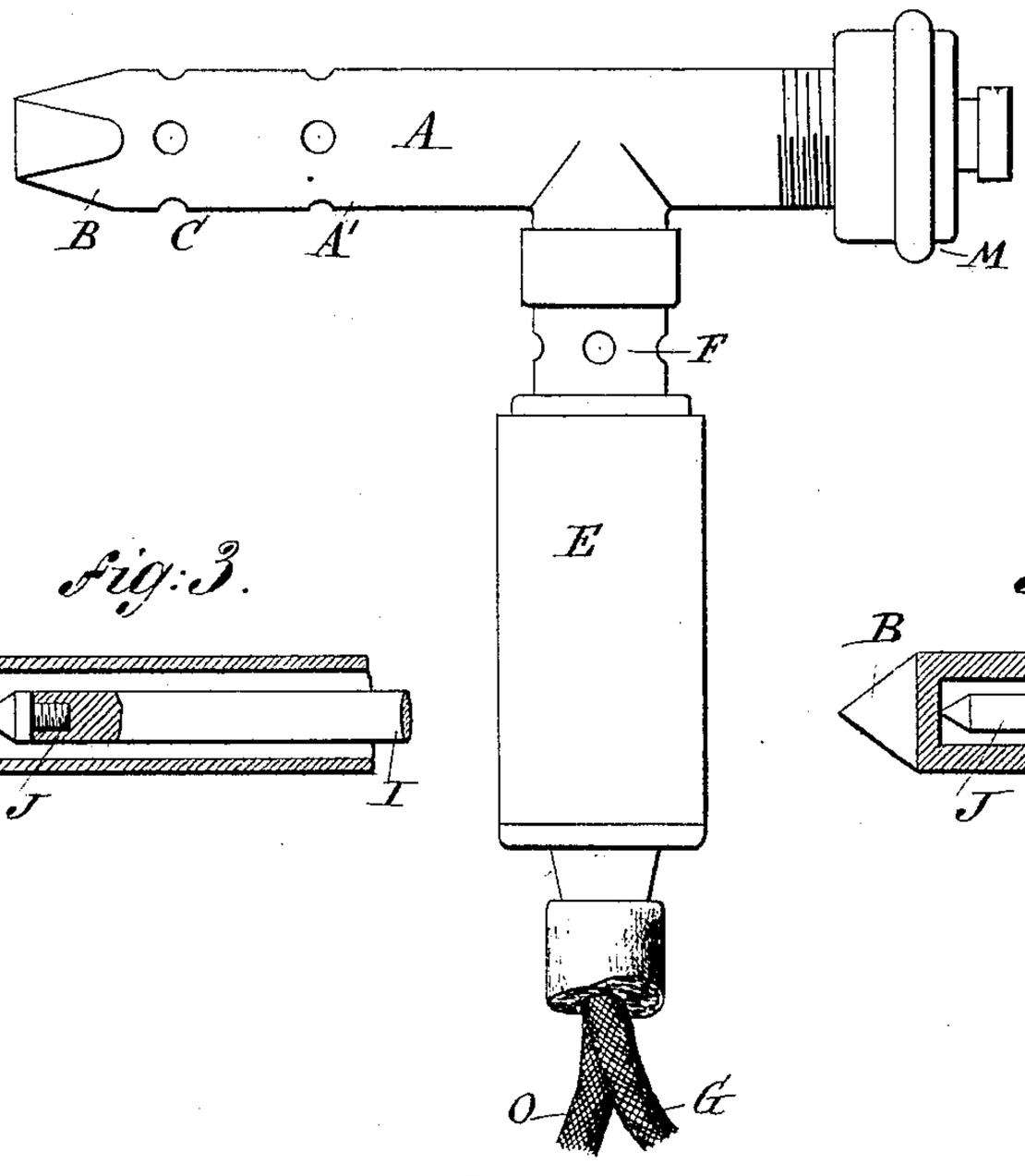


Fig: 3.

Fig: 4.

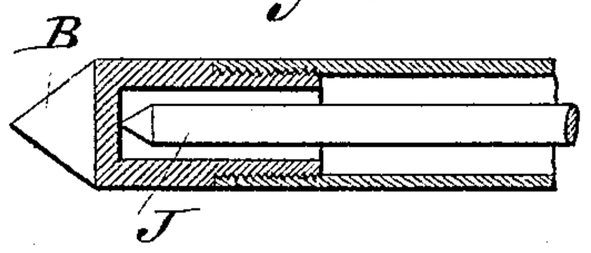
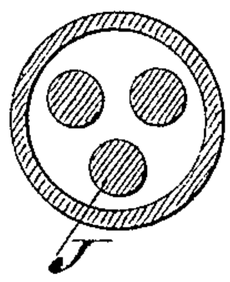


Fig: 2.

Fig: 5.

Fig: 6.



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INVENTOR:
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ATTORNEYS

(No Model.) 2 Sheets—Sheet 2.

C. ZIPERNOWSKY.

APPARATUS FOR HEATING BY ELECTRICITY.

No. 452,056. Patented May 12, 1891.

Fig: 7.

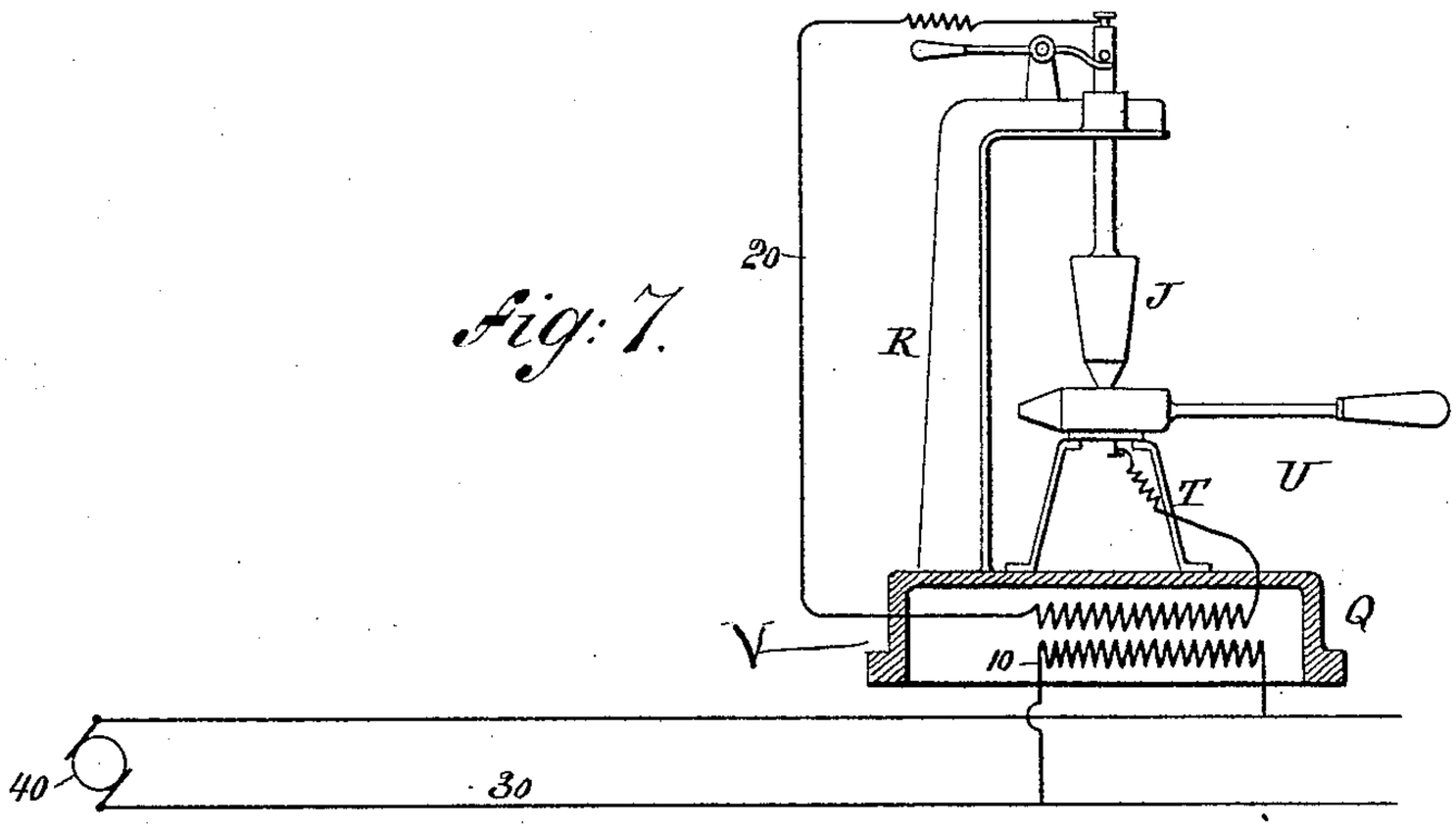


Fig: 8.

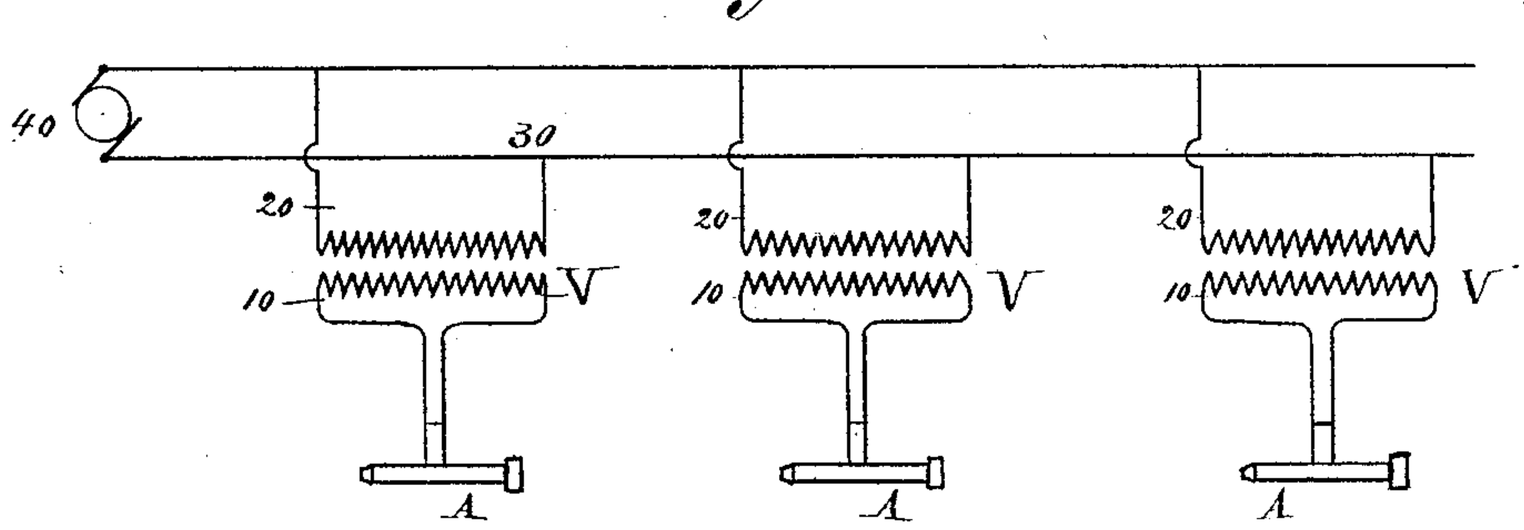
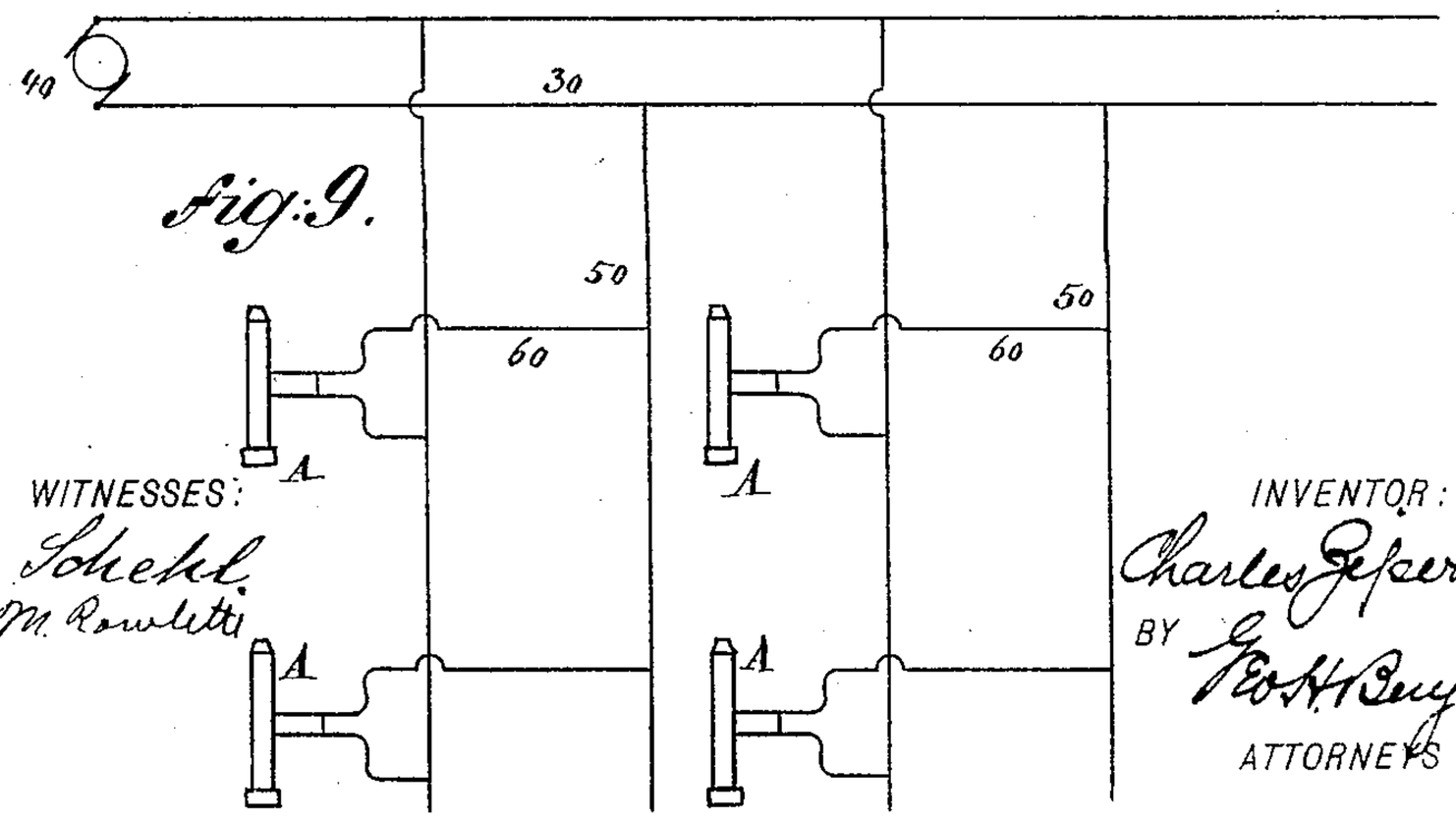


Fig: 9.



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UNITED STATES PATENT OFFICE.

CHARLES ZIPERNOWSKY, OF BUDA-PESTH, AUSTRIA-HUNGARY.

APPARATUS FOR HEATING BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 452,056, dated May 12, 1891.

Application filed September 16, 1890. Serial No. 365,196. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ZIPERNOWSKY, a subject of the King of Hungary, residing at Buda-Pesth, Austria-Hungary, have invented an Improved Method and Device for Heating by Means of Electric Currents, of which the following is a specification.

My invention relates to heating by means of an imperfect contact purposely introduced into an electric circuit and the regulation of the heat by means of the degree of contact obtained.

Heretofore, so far as I am aware, heating by electricity has been obtained in two ways. The first by the electric arc, the second by means of a body introduced into an electric circuit, which presents a relatively greater resistance to the passage of the current transmitted than the balance of the circuit within which it is included. In the case of the electric arc there is total separation between the electrodes. In the second method there is absolute contact or continuity between the body presenting high resistance and the balance of the circuit. My improved method may be said to stand midway between the two, and I have found by experiment that a large degree of heat may be obtained by means of an imperfect contact and that the heat may be regulated by determining the degree of contact.

In order to more fully explain my invention, I have applied the principle to an apparatus for soldering, which I will now proceed to describe.

In the accompanying drawings, which illustrate my invention, similar letters of reference indicate like parts.

Figure 1 is a view in elevation of a soldering apparatus such as may be used for sealing cans, &c. At the bottom of the design the leading-in wires are shown. Fig. 2 is a view of the apparatus in vertical section. Fig. 3 is a vertical section of the soldering end of the apparatus and shows a removable contact-point. Fig. 4 is a similar section showing the soldering-point removable. Fig. 5 is a similar section showing the soldering-point made in circular form and provided with three contact-points arranged concentrically. Fig. 6 is a transverse section through Fig. 5. Fig. 7 is a vertical elevation and section of a stove for heating a soldering-iron, and is shown connected in the secondary circuit of a transformer, which is connected to an alternating-current device. Figs. 8 and 9 are diagrams, respectively, showing heating devices located in the secondary circuit of transforming devices arranged in multiple of main conductors conveying an alternating current and heating devices arranged in multiple of main conductors conveying a direct current.

In the drawings, A is a tubular metallic body provided with a solid soldering-point B. This tubular body is provided with perforations C, for a purpose which will be hereinafter described. At one side of this tubular body is attached a similar tubular portion, which forms the handle D, having a wooden envelope E and perforated at F.

The soldering portion A and handle D are connected to one of the leading-in wires G by means of a metallic connector H. Located within the tubular portion A is a tubular portion I of smaller diameter than A and attached to or forming a part of its outer end and near to the soldering portion B is a contact-point J, which may be made of the same material from which the tube I is made—that is to say, iron or any other conducting material, but preferably of any metal, such as hard steel, which is not easily fusible by heat. Near the right-hand end of the tube I is a collar K, over which and around the tube I is placed a helical spring L, which bears at one end upon the collar K and the other end upon the insulating-cap M, which is secured on the tube A, so that by rotating the cap M the degree of contact between the contact-point J and soldering portion B may be determined. The tube I has a sliding contact with the tube N, located in the tube D, and which is connected to the second leading-in wire O.

The tubes A and D are insulated from each other by means of the insulating-rings P, which may be made of any insulating material, such as asbestus, which will resist heat.

In Fig. 3 I have shown the contact-point J as removable for the purpose of allowing its replacement or removal when destroyed in the course of time.

In Fig. 4 I have shown the soldering end B of the tube A removable, so that different sizes of soldering-point or character of soldering-point may be changed at will.

In Fig. 5 I have shown a circular soldering portion B and three contact portions J, so that a greater degree of heat may be obtained than is possible where a single contact-point is used.

In Fig. 7 I have shown what may be called an "electrical stove," which consists of the base Q, standard R, gravitally-acting adjustable contact-point J, and support for the soldering-iron T. U is the soldering-iron, and V a secondary transformer, having the primary and secondary circuits 10 and 20 included in the base of the stove and connected with the main circuit 30 of the dynamo 40. It will be observed that the secondary circuit 20 has one terminal connected to the contact-point J and the other terminal to the support for the soldering-iron T, and that the stove itself is arranged in multiple of the main circuit.

In Fig. 8 I have shown three transforming devices in multiple of the main circuit 30. In Fig. 9 I have shown two circuits 50 in multiple of the main circuit 30, and two circuits 60 in multiple of each of said circuits 50, in which are located heating devices A. In practice any number of heating devices may be arranged as shown in Figs. 8 and 9.

As I have previously stated, the heat obtained is due entirely to the resistance of the imperfect contact obtained. It will readily be understood that where the tubes of conducting material and the contact-point J are forced into contact with the part B no heat will result when the quantity of current transmitted is within the conducting capacity of the point J, and, further, that if the point J be brought into imperfect contact without increasing the quantity of current transmitted considerable heat will be evolved and that the degree of heat evolved will be in proportion to the resistance of the imperfect contact.

The perforations C, F, and F′ are provided for keeping the tubes A and D cool by allowing the egress of the heated air between the tubes A and I and E and N.

One great advantage of the construction shown in Figs. 1 to 6, inclusive, is due to the fact that the heat is evolved within the apparatus itself, and that very little heat is lost by radiation.

I do not limit myself in any wise to the construction shown and described in the drawings, as my improved method of heating may be applied in many different ways and to all classes of apparatus where a considerable degree of temperature is required.

I have mentioned in this specification that in the case of the stove the imperfect contact occurred in the secondary circuit of the converter, whose primary was connected to a source of electric energy.

I do not limit myself to the employment of an alternating current, as it will be evident to any one skilled in the art to which this invention belongs that the heating results will be obtained irrespective of the class of current employed, provided of course that the requisite amount of current be used.

Having thus described my invention, I claim—

1. An apparatus for heating by electricity, comprising two conducting bodies so arranged relatively to each other that an imperfect contact of high resistance shall exist between them and said bodies included in the circuit of an electrical conductor.

2. An apparatus for heating by electricity, comprising two or more conducting bodies so arranged relatively to each other that two or more imperfect contacts of high resistance shall exist between them and said bodies included in the circuit of an electrical conductor.

3. An apparatus for heating by electricity, comprising two conducting bodies so arranged relatively to each other that an imperfect contact of high resistance shall exist between them, means for regulating the degree of contact between said bodies, and means for connecting said bodies in the circuit of an electrical conductor.

4. An apparatus for heating by electricity, comprising two conducting bodies so arranged relatively to each other that an imperfect contact of high resistance shall exist between them, an inclosing casing for said bodies, means for regulating the degree of contact between said bodies, and means for connecting said bodies in the circuit of an electrical conductor.

5. An electrical soldering device comprising a body portion, a soldering portion connected to one terminal of an electrical conductor, a tube or rod provided with a contact-point included within said body portion, but insulated therefrom, and connected to the other terminal of the electric circuit.

6. An electrical soldering device comprising a body portion, a soldering end connected to one terminal of an electric circuit, a tube provided with a contact-point included within said body portion, but insulated therefrom, and connected to the other terminal of the source of electricity, and means for effecting the adjustment of the contact-point relatively to the soldering end.

7. An electrical soldering device comprising two concentric tubes, one within the other, the outer of which is provided with a soldering end and handle and the inner of which is provided with a removable contact-point, and means for effecting the adjustment of the contact-point, and said two conductors respectively connected to the terminals of a source of electricity.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES ZIPERNOWSKY.

Witnesses:
GEO. H. BENJAMIN.
OTTO T. BLÁTHY.