No. 677,399. Patented July 2, 1901.

A. J. CONLIN.

ELECTRIC VULCANIZER.

(Application filed Sept. 10, 1900.)

(No Model.) 2 Sheets—Sheet 1.

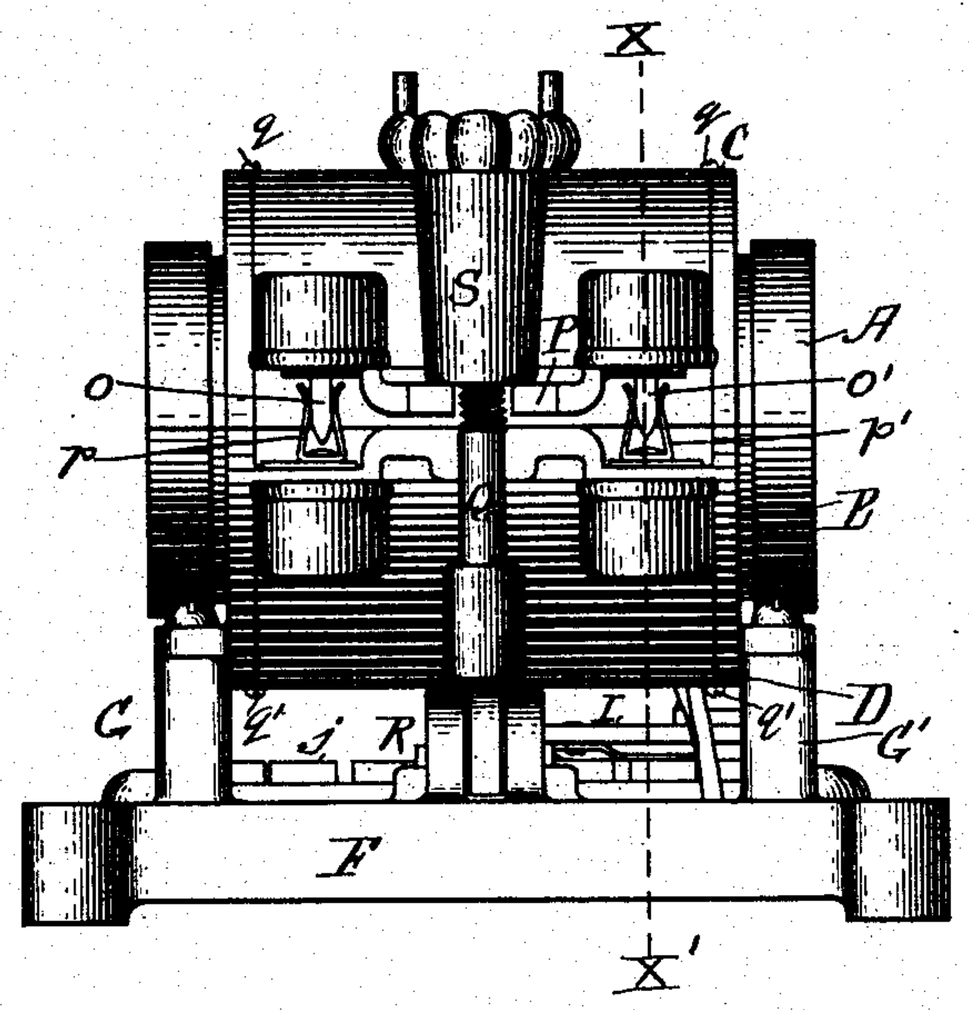

Fig. 1.

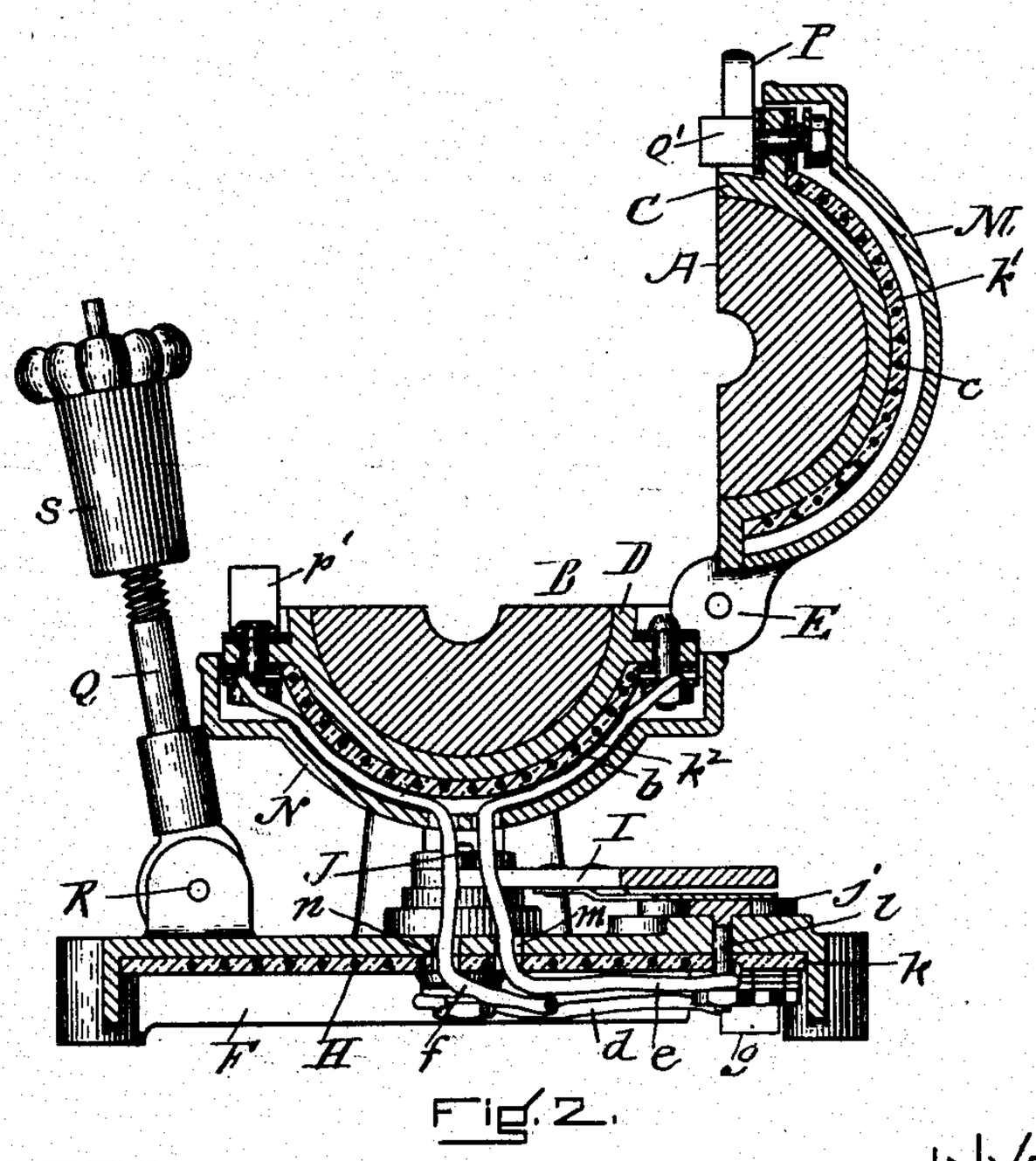

Fig. 2.

WITNESSES:

E. Folwell
T. S. Hartnett.

INVENTOR:

Andrew J. Conlin
by Roberts & Cushman,
Attys.

No. 677,399. Patented July 2, 1901.

A. J. CONLIN.

ELECTRIC VULCANIZER.

(Application filed Sept. 10, 1900.)

(No Model.) 2 Sheets—Sheet 2.

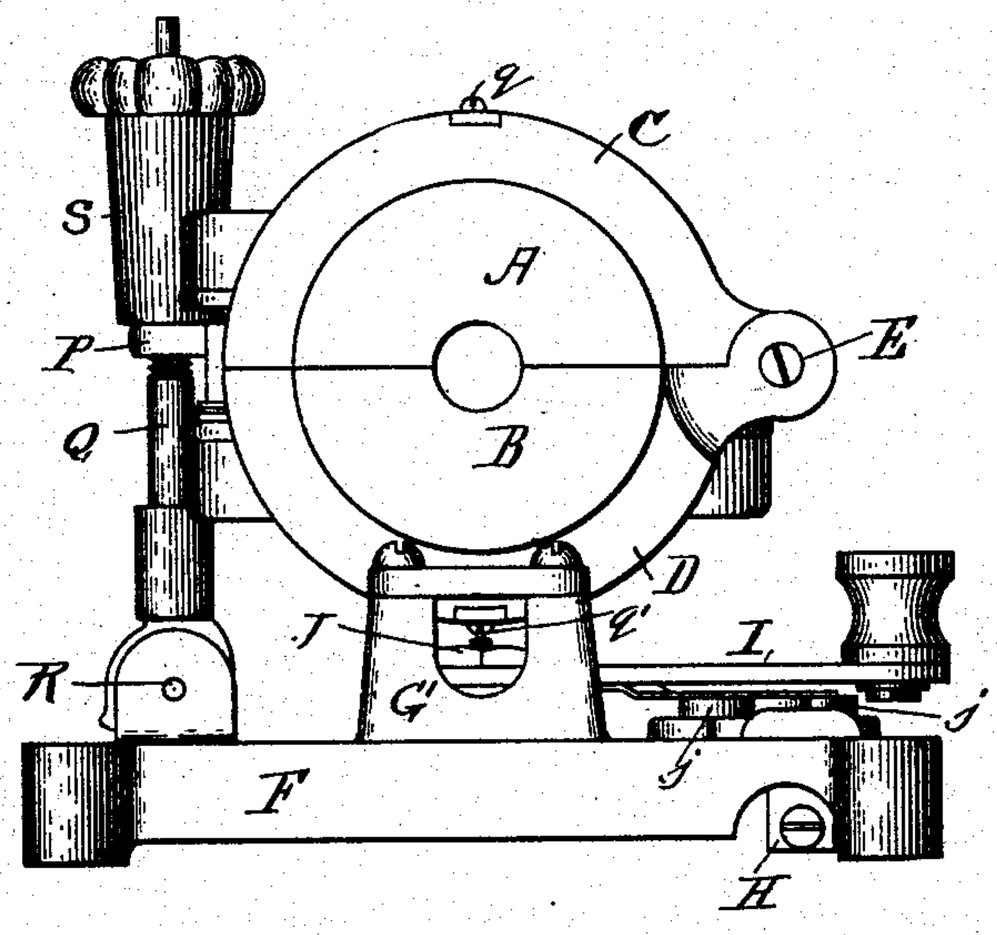

Fig. 3.

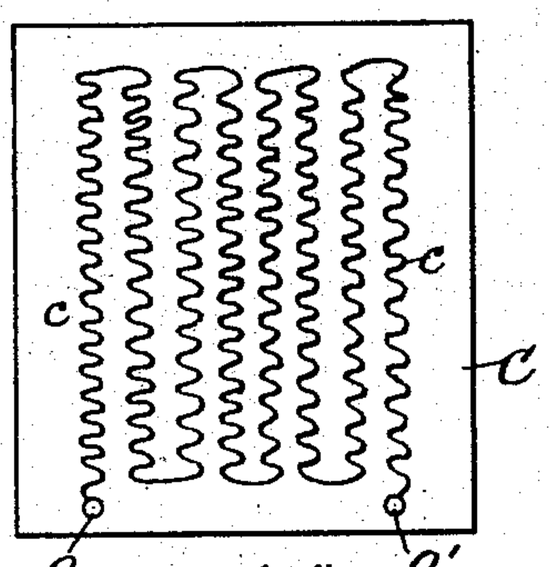

Fig. 4.

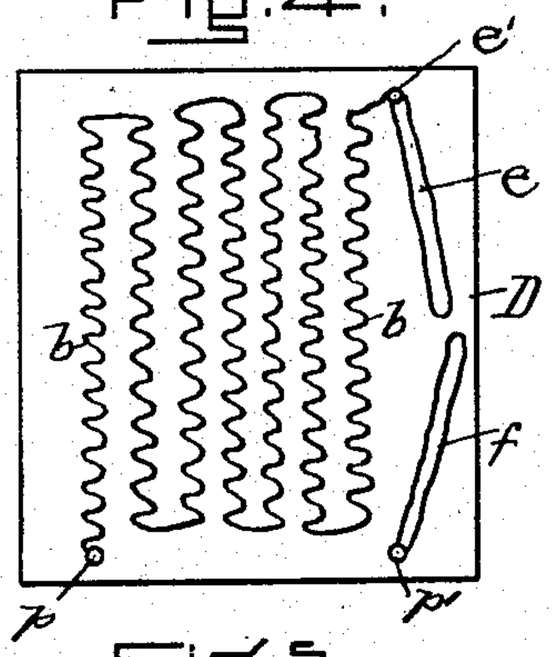

Fig. 5.

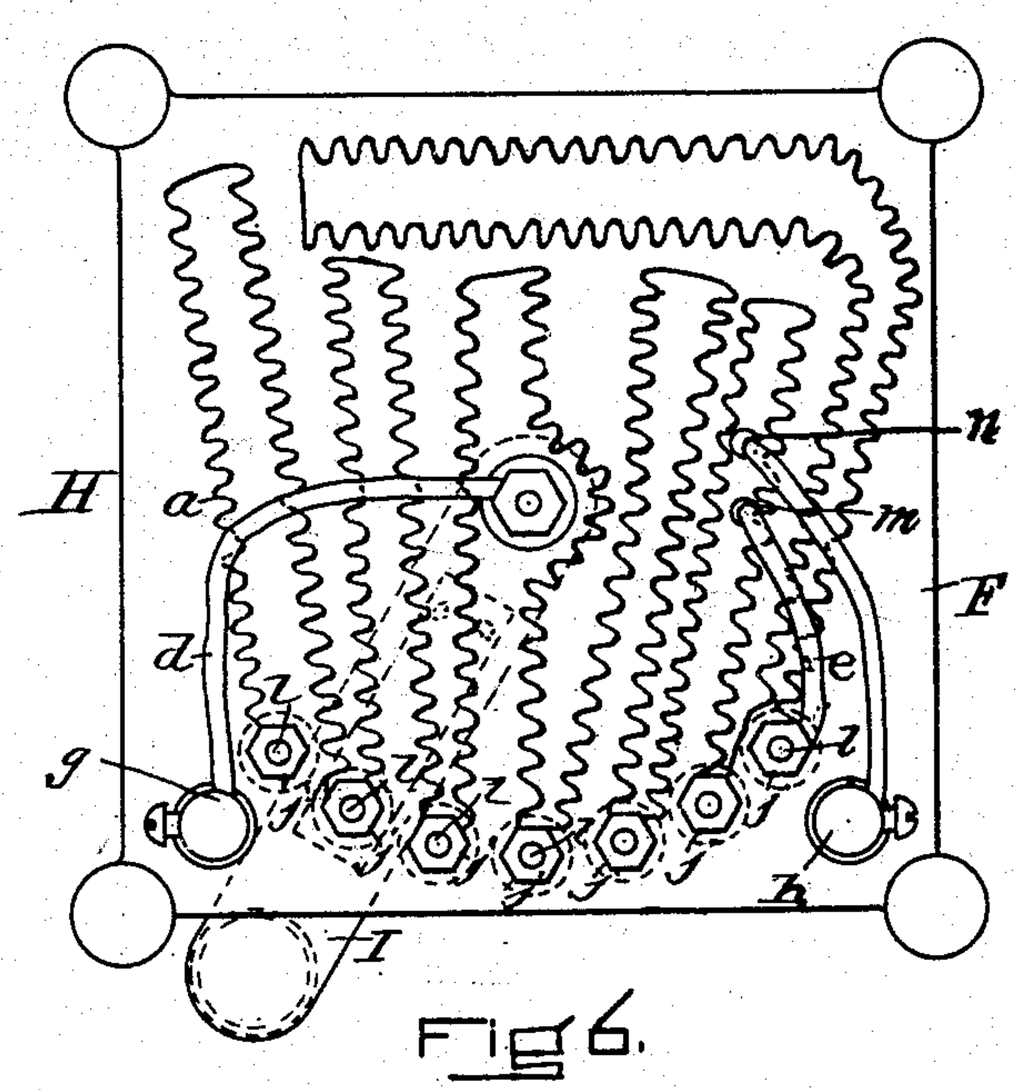

Fig. 6.

WITNESSES:
E. Ivkroll
F. L. Hartnett

INVENTOR:
Andrew J. Conlin,
by Roberts & Cushman,
Attys.

UNITED STATES PATENT OFFICE.

ANDREW J. CONLIN, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO THE SIMPLEX ELECTRICAL COMPANY, OF BOSTON, MASSACHUSETTS.

ELECTRIC VULCANIZER.

SPECIFICATION forming part of Letters Patent No. 677,399, dated July 2, 1901.

Application filed September 10, 1900. Serial No. 29,543. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. CONLIN, a citizen of the United States of America, and a resident of Cambridge, county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Electric Vulcanizers, of which the following is a specification.

This invention relates to the vulcanization of rubber insulation for electric wire by means of heat generated by electricity. Its object is to provide an apparatus whereby a perfect insulation may be made at the junction of the ends of two wires by the union of new and old materials under the influence of heat generated by electricity. A uniform temperature, which is essential to good vulcanizing and difficult to attain by means of steam-vulcanizers and other old forms of vulcanizers, is obtained by the use of my invention, as well as a device more convenient and simple in operation than those now in use, portable, and adapted for use out of doors and in places difficult of access, such as trenches.

My vulcanizer consists of an electrically-heated tubular mold having an upper and a lower clamping member adapted to receive an insulated wire.

An embodiment of my invention is shown in the accompanying drawings, in which—

Figure 1 is a front elevation of my electric vulcanizer. Fig. 2 is a vertical cross-section of my electric vulcanizer through the line X X′ in Fig. 1, showing the upper clamping member in elevated position. Fig. 3 is an end elevation of my electric vulcanizer. Fig. 4 is a diagram of the electrical heater-coil in the upper clamping member of the vulcanizer viewed from above. Fig. 5 is a diagram of the electrical heater-coil in the lower clamping member of the vulcanizer viewed from above; and Fig. 6 is a diagram of the rheostat in the base of the machine, which controls the amount of heat in the heating-coils, viewed from underneath.

Like parts are indicated by like letters in all the figures.

A and B are the upper and lower members, respectively, of a tubular mold adapted to receive insulated wire. Said members A and B are filling-blocks removably fitted into the two members C and D, respectively, of the clamp. Instead of using filling-blocks it is obvious that said members C and D may be so formed on their inner faces as to serve as the mold; but it is preferable to use filling-blocks, so that molds may be used having different-sized bores adapted to receive different-sized wires. The members C and D of the clamp are journaled together at E, and the lower member D is mounted on a base F by means of the supports or brackets G and G′. The upper clamping member C is provided at its front edge with the notched lug P, whose notch is adapted to receive the pin Q, which is pivoted to the base F at R. On the upper end of the pin Q is a screw-thread and the turn-screw S, which may be set down upon the lug P when the clamping members C and D are closed and will bind them firmly together. Within the base F is an enamel rheostat H, having the switch or lever I pivoted at J and adapted to sweep over the contact-plates or segments *j j*. The lever I is connected at J by the wire *d* with the binding-post *g*.

a is a heater-coil embedded in the enamel *k* of the rheostat within the base F.

The contact-plates *j j* are provided with stems *l l*, which pass through the base F and the enamel *k* and are connected by the loops of the coil *a*, as shown in Fig. 6.

The clamping members C and D are provided, respectively, with the spring contact members *o o′* and *p p′*, which complete the circuit around the mold, as hereinafter described, when the clamping members C and D are closed and break the circuit when it is opened. On the convex side of said clamping members is a coating of enamel *k′* and *k²*, in which are embedded the heater-coils *c* and *b*, respectively. Lids or covers M′ and N, secured to the clamping members by small screws *q q*, protect the enamel *k′* and *k²* and also serve to retain the heat. The air-space between said lids and the clamping members to which they are attached materially aids in their function of retaining the heat. Each clamping member and its lid, as above described, forms a clamping part having an inner and an outer shell with an air-space between.

The circuit is as follows: Electrical connection is made from the binding-post *g* through the wire *d*, thence through the lever I, one of the contact-plates or segments *j*, and coil *a*. From the stem or post *l* of the end segment *j* leads the wire *e*, which passes upward through the hole *m* in the base F and terminates at the post *e'*, Fig. 5. From *e'* connection is made through the heater-coil *b*, contacts *p* and *o*, heater-coil *c*, contacts *o'* and *p'*, wire *f*, which passes from contact *p'* downward through the hole *n* in the base F to binding-post *h*. The binding-posts *h* and *g* are provided with the usual holes for receiving the line-wires and screws for binding the wires in place.

The operation of my vulcanizer is as follows: The ends of the rubber-insulated wires which it is desired to unite are scraped bare of their insulation a sufficient length to enable them to be twisted or otherwise joined together. The operator winds a thin strip of uncured or unvulcanized rubber spirally around the union or point so made, overlapping the edge slightly, covering the entire portion of the wire from which the insulation has been removed. To vulcanize this uncured insulation, the upper clamping member C is raised, as shown in Fig. 2, and the wire is put between the members A and B of the mold. The clamp is then closed, the pin Q is swung into the notch in the lug P, and the screw S set firmly down upon lug P. By the closing of the clamp the contacts *o* and *p* and *o'* and *p'*, respectively, are closed, and thereby the heating-coil circuit is closed. The amount of heat required to properly vulcanize the rubber can be ascertained by experiment and controlled by the lever I of the rheostat in the base F. The vulcanizer may be built for a current of any standard number of volts, and if any other voltage is used a transformer may be employed.

The object in mounting the clamp upon and in close proximity to the rheostat in the base is not only to provide a convenient and compact means for controlling the current in the heater-coils *b* and *c*, but the rheostat being itself a heater its heat is not wasted, but materially aids in warming the mold and maintaining it at an even temperature.

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

1. In an electric vulcanizer a tubular mold having an upper and a lower clamping member, the lower member being mounted upon a base and in close proximity thereto, a rheostat within said base, an electric heating-coil substantially surrounding said mold, and electrical connections between the heating-coil and the rheostat.

2. In an electric vulcanizer a tubular mold having two clamping members, one of said members being mounted upon a base and in close proximity thereto, a rheostat within said base, an electric heating-coil substantially surrounding said members, electric contacts borne by said clamping members, and adapted to close the heating-circuit simultaneously with the mechanical closing of the mold, electrical connections between the heating-coil and the rheostat.

3. In an electric vulcanizer a tubular mold having an upper and a lower clamping member, the latter being mounted upon a base and in close proximity thereto, a rheostat within said base, an enamel heating-coil on the outer side of each of said members, covers adapted to protect said enamel heating-coils, automatic spring-contacts borne by said members adapted to close the heating-circuit simultaneously with the closing of the mold, and electrical connections between the rheostat and the heating-coil.

4. In an electric vulcanizer a clamp consisting of two parts journaled together and means for clamping said parts together, electrical heating resistances on the outer side of each of said clamping parts, a tubular mold open at either end consisting of filling-blocks removably fitted within said clamping parts, spring-contact members borne by said clamping parts and adapted to close the heating-coil circuit simultaneously with the closing together of the clamps, and a rheostat in close proximity to said clamping parts and controlling the amount of heat in the heating resistances.

5. In an electric vulcanizer, a clamp consisting of two parts journaled together and means for clamping said parts together, each of said clamping parts consisting of an inner and an outer shell with an air-space between, electrical heating resistances on the outer side of the inner shells, and a tubular mold within said clamp.

6. In an electric vulcanizer, a clamp consisting of two parts journaled together and means for clamping said parts together, each of said clamping parts consisting of an inner and an outer shell with an air-space between, electrical heating resistances on the outer side of the inner shells, a tubular mold within said clamp, and a rheostat in close proximity to said clamping parts, and controlling the amount of heat in the heating resistances.

Signed by me at Boston, Massachusetts, this 23d day of August, 1900.

ANDREW J. CONLIN.

Witnesses:
FRANK S. HARTNETT,
ROBERT CUSHMAN.