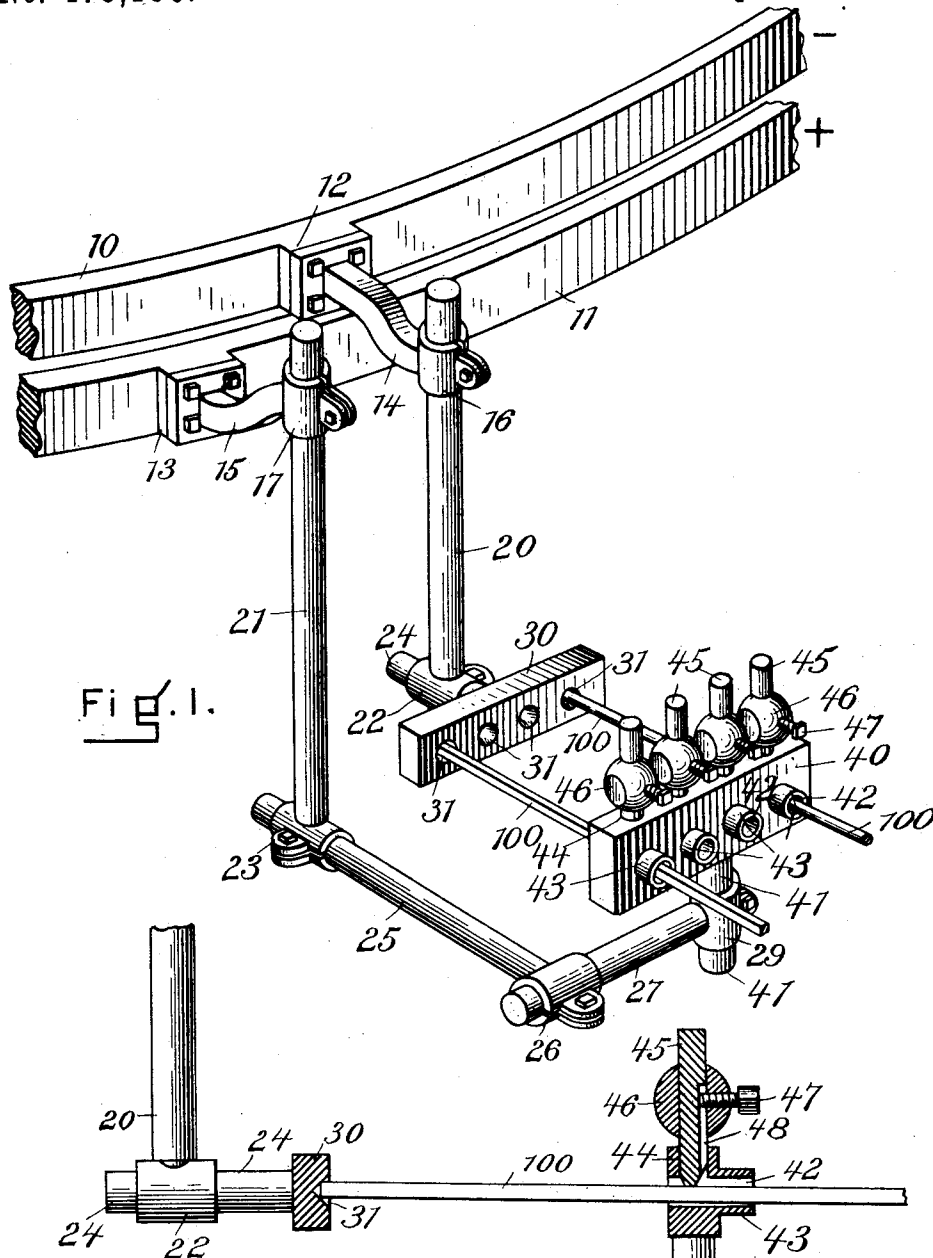


(No Model.)

G. D. BURTON & E. E. ANGELL.
AUTOMATIC ELECTRIC FORGE.

No. 475,196.

Patented May 17, 1892.



WITNESSES
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Fig. 2
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UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF BOSTON, AND EDWIN E. ANGELL, OF SOMERVILLE,
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OF MAINE.

AUTOMATIC ELECTRIC FORGE.

SPECIFICATION forming part of Letters Patent No. 475,196, dated May 17, 1892.

Application filed September 16, 1891. Serial No. 405,858. (No model.)

To all whom it may concern:

Be it known that we, GEORGE DEXTER BURTON, of Boston, in the county of Suffolk, and EDWIN ELLIOTT ANGELL, of Somerville, in the county of Middlesex, State of Massachusetts, citizens of the United States of America, have invented certain new and useful Improvements in Automatic Electric Forges, of which the following is a specification,

This invention relates to an electric forge for heating and softening bars of metal for forging or other purposes.

The object of this invention is to provide an electric forge which will grasp and release the bars automatically and in which, if desired, a number of bars may be heated at the same time and withdrawn in succession without breaking the circuit and without the necessity of clamping the metal by hand or power.

Figure 1 of the accompanying drawings represents a perspective view of this improved forge attached to an electric-current converter. Fig. 2 represents a longitudinal section thereof.

Similar numerals of reference indicate corresponding parts in both figures.

The rings 10 and 11, whereof segments only are represented in the drawings, constitute the secondary elements of an electric-current converter for transforming a current of small volume and high voltage into a current of low voltage and large volume. The ring 10 is provided with a boss 12 and the ring 11 with a boss 13, which bosses constitute the positive and negative poles of the converter. The construction of this converter does not constitute a part of this invention, and therefore need not be herein shown and described. Any suitable current-converter or source of electric-heating currents may be used in connection with this improved forge. A short bracket 14, provided with a clamp 16, is attached to and projects downward from the ring 10, and a short bracket 15, provided with a clamp 17, is attached to the ring 11 and projects upward and outward therefrom, preferably terminating in the same horizontal plane as the bracket 14. These brackets are composed of copper or other suitable conductive

material or composition for conveying an electric current of large volume for metal-working purposes. A vertical bar 20 is supported at its upper end in the clamp 16 of the bracket 14, being vertically adjustable therein, and a vertical bar 21 is supported in the clamp 17 of the bracket 15, being vertically adjustable therein. These bars are provided, respectively, at their lower ends with clamps 22 and 23. A short horizontal arm 24 is adjusted at its inner end in the clamp 22 of the vertical bar 20, and a long horizontal arm 25 is adjusted at its inner end in the clamp 23 of the vertical bar 21. The horizontal arm 25 is provided at its outer end with a clamp 26, and a short horizontal arm 27 is adjustable in said clamp and extends laterally from the arm 25 to a point in front of the arm 24. The arm 27 is provided at its outer end with a clamp 29. A head 30, which constitutes one of the electrodes of the forge, is disposed at the outer end of the arm 24 and is provided on its outer face with one or more sockets 31 for receiving the ends of bars to be heated. A head 40, which constitutes the other electrode of the apparatus, is provided with a supporting-stud 41, which is vertically adjustable in the clamp 29 of the arm 27. This electrode-head 40 is provided with one or more eyes or openings 42, disposed opposite the sockets 31 of the electrode-head 30, with collars 43 surrounding the eyes and with vertical slots 44 extending downward from the top of the head and intersecting with the eyes 42. A number of sliding contact-pins are disposed in the vertical slots 44. These have beveled points and are provided with weights 46, which may be clamped to the pins by means of set-screws 47, passing through holes in the weights and engaging vertical grooves 48 of the pins.

The parts above described are composed of copper or other material adapted to convey a heating-current of electricity. Any suitable supports or conductors may be used in connection with the electrodes.

In the use of this improved electric forge one or more bars, as 100, are passed through the eyes of the electrode 40 and into contact with the electrode 30, their inner ends resting in the sockets 31, and their outer ends resting

in and projecting beyond the eyes 42. As a bar is thrust through an eye it comes in contact with the beveled lower end of a contact-pin 45 and lifts said pin, enabling the bar to pass. The bar spans the space between the two electrodes and closes the circuit, the contact-pin being in contact with the bar upon one side and the inner surface of the eye on the other side. The current passes from the positive ring 11, through the bracket 15, thence through the rod 21, thence through the arm 25, thence through the arm 27, thence through stud 41, thence through the electrode 40, its contact-pin, and its eye to the bar to be heated, thence through the bar to the electrode 30, thence through the arm 24, thence through the rod 20, thence through the bracket 14 to the negative ring 10, or the poles may be reversed and the current passed in the opposite direction. The bar being of a higher electrical resistance than the parts of the apparatus, heat is developed in those portions thereof which span the space between the electrodes, and the length of the portion of the bar to be heated may be increased or reduced by adjustment of the arms 24 and 25. When the bar is heated to the required temperature or plasticity, it may be removed and another inserted in its place. Two or more bars may be heated at the same time, and in that case they are preferably inserted and removed one after the other, and thereby breakage of the circuit and waste of current is avoided, the current which would otherwise go into the rheostat being utilized.

In the use of the socketed electrode 30 the bars are heated to their extremities at their inner ends. The bar or bars are heated in a few seconds or moments, according to their size, to a forging temperature, and on being withdrawn are subjected to the desired forging or shaping operation.

This apparatus is especially useful in heating bars for roll-forging balls and other articles from the ends thereof, and as it acts automatically to hold the work and to pass the current therethrough the work may be performed with great rapidity.

We claim as our invention—

1. In an electric forge, the combination of a positive electrode for contact with a bar to be heated, a negative electrode also for con-

tact with said bar, one of said electrodes being provided with an opening and with a latching contact-pin, and electric conductors connected with said electrodes for conveying a heating-current of electricity.

2. In an electric forge, the combination of an electrode provided with a socket for receiving the end of a bar to be heated, an electrode provided with an opening for receiving said bar, and with a latching contact-pin, and conductors connected with said electrodes for conveying a heating-current.

3. In an electric forge, the combination of a positive electrode for contact with a bar to be heated, a negative electrode also for contact with said bar, one of said electrodes being provided with an automatic latching contact-pin having a weight, and electric conductors connected with said electrodes for conveying a heating-current of electricity.

4. In an electric forge, the combination of an electrode provided with a number of sockets for receiving the ends of the bars to be heated, an electrode provided with a number of eyes for receiving the other portions of said bars and with latching contact-pins for contact therewith, and conductors connected with said electrodes for conveying a heating-current.

5. In an electric forge, the combination of an electrode for contact with a bar to be heated, and an electrode provided with an opening for receiving said bar, with a slot opening into said eye, and with a beveled contact-pin adapted to slide in said slot and extend into said eye, and conductors connected with said electrodes for conveying a heating electric current.

6. In an electric forge, the combination of a positive electrode for contact with a bar to be heated, a negative electrode also for contact with said bar, one of said electrodes being provided with an eye and with a latching contact-pin and one of said electrodes being adjustable in relation to the other, and conductors connected with said electrodes for conveying a heating-current of electricity.

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