

(No Model.)

2 Sheets—Sheet 1.

G. D. BURTON & E. E. ANGELL.

METAL HEATING APPARATUS.

No. 475,188.

Patented May 17, 1892.

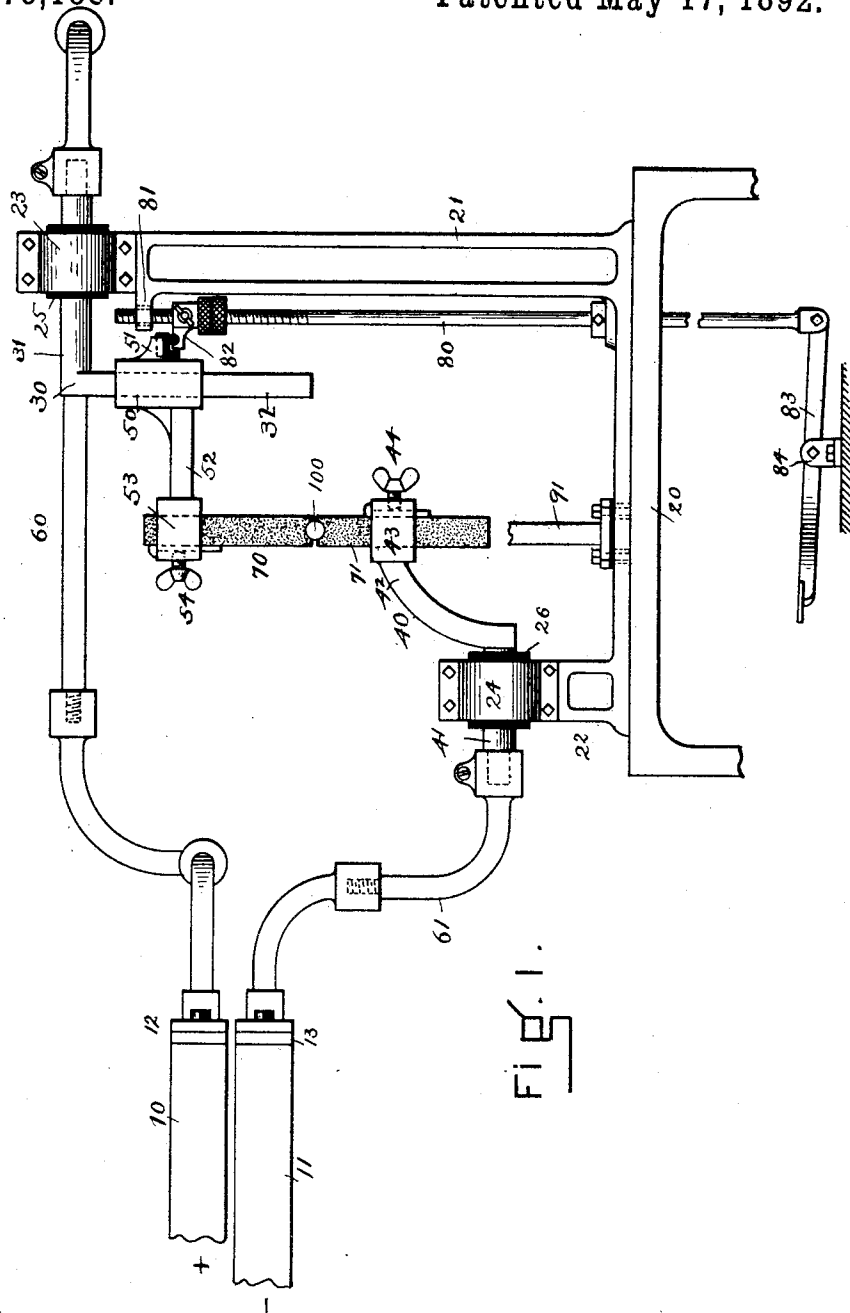


FIG. 1.

WITNESSES

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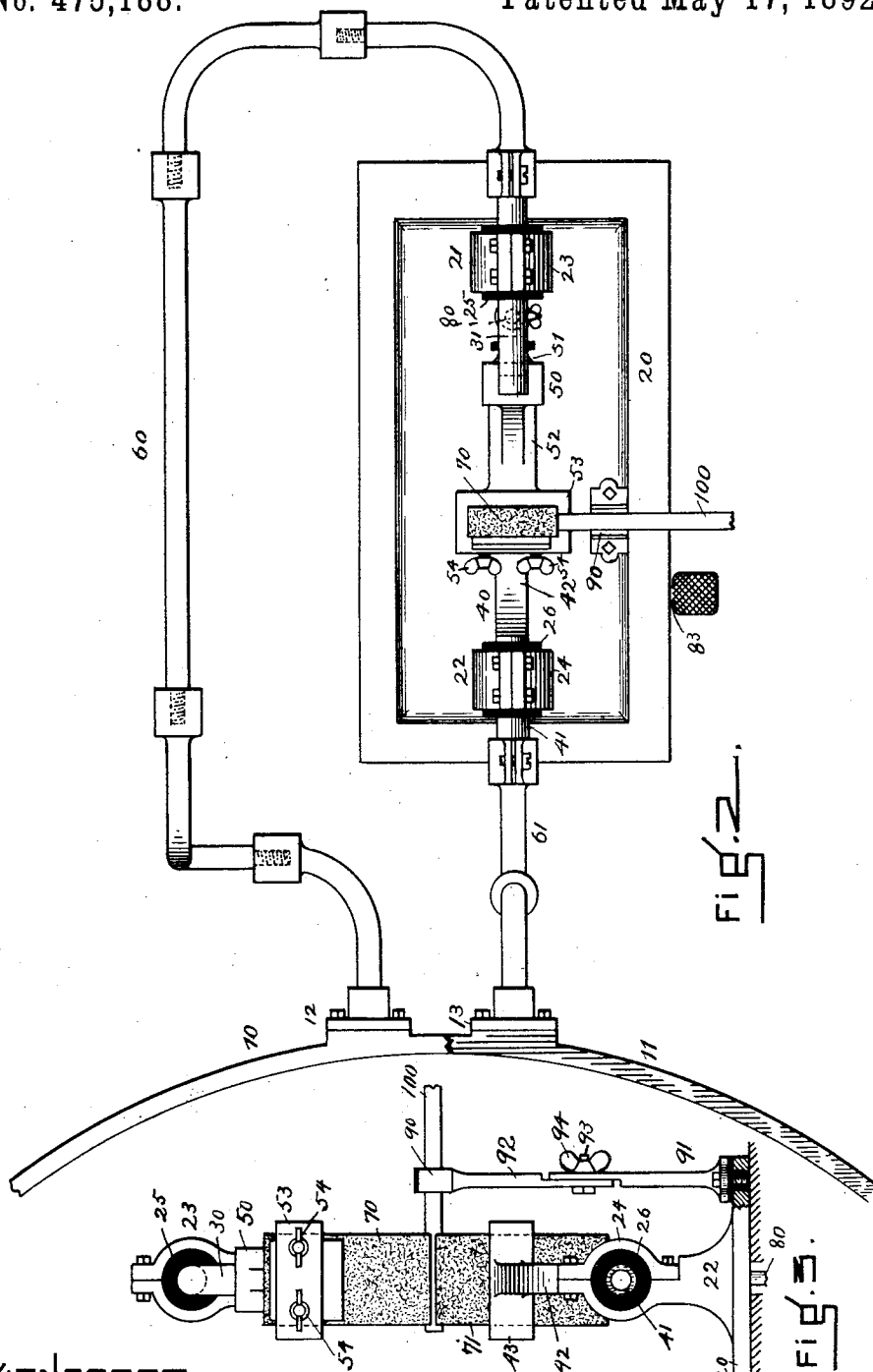
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INVENTORS:

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UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF BOSTON, AND EDWIN E. ANGELL, OF SOMERVILLE,
MASSACHUSETTS, ASSIGNORS TO THE ELECTRICAL FORGING COMPANY,
OF MAINE.

METAL-HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 475,188, dated May 17, 1892.

Application filed May 28, 1891. Serial No. 394,450. (No model.)

To all whom it may concern:

Be it known that we, GEORGE DEXTER BURTON, residing at Boston, in the county of Suffolk, and EDWIN ELLIOTT ANGELL, residing at Somerville, in the county of Middlesex, State of Massachusetts, citizens of the United States, have invented an Improvement in Electric Forges, of which the following is a specification.

The object of the invention is to provide an electric forge for quickly and economically heating short blanks or short portions of a metal bar from which the forgings are to be made.

Figure 1 of the accompanying drawings represents a side elevation of this improved electric forge connected with the rings of an electric converter. Fig. 2 represents a plan view thereof. Fig. 3 represents an end elevation thereof.

Similar numerals of reference indicate corresponding parts in the different figures.

The rings 10 and 11, whereof segments only are represented in the drawings, constitute parts of an electric-current converter, which need not be fully illustrated in this case. The ring 10 is provided with a boss 12 and the ring 11 with a boss 13, which bosses constitute the terminals of the converter.

The frame of the forge comprises a bench or table 20, a tall standard 21, mounted thereon, and a short standard 22, also mounted on said bench or bed. The tall standard 21 is provided with a tubular bearing 23 at its upper end, said bearing having an insulating-bushing 25, and the short standard 22 is provided at its upper end with a similar bearing 24, having an insulating-bushing 26.

A bracket 30, comprising a horizontal arm 31 and a vertical dependent arm 32, is supported by its horizontal arm in the insulated eye or bearing 23, and a bracket 40, comprising a horizontal arm 41 and an upwardly-curved arm 42, is supported by its horizontal arm in the insulated eye or bearing 24. These eyes or bearings 23 and 24 are each constructed in two parts bolted together, whereby they serve as clamps for tightly holding the brackets 30 and 40 in the positions to

which they may be adjusted. A sliding sleeve 50 is disposed on the dependent arm 32 of the bracket 30. This sleeve is provided on one side with a lateral lug 51, having an insulated face, and on the opposite side with a lateral arm 52. The outer end of the arm 52 is provided with a clamp 53, and the outer end of the curved arm 42 of the lower bracket 40 is provided with a clamp 43, disposed directly beneath the clamp 53.

The horizontal arm of the bracket 30 is connected by a suitable conductor 60 with the ring 10 of the electric converter, and the horizontal arm of the bracket 40 is connected with the ring 11 of said converter by a conductor 61. These conductors may be composed of copper bars constructed in sections and screwed together, as illustrated in the drawings. Any equivalent conductors may be employed.

A carbon electrode 70 is held in and depends from the upper clamp 53, and a similar carbon electrode 71 is held in and projects upward from the clamp 43 in line with the electrode 70. These electrodes are in the form of blocks, adjustable in their clamps by means of the clamp-screws 44 and 54, to bring them in proper relation to each other to receive between their inner ends the bar or blank to be heated.

A lifter for lifting the carrier of the upper electrode, so as to raise said electrode out of contact with the bar when sufficiently heated, is arranged in connection with said carrier. The lifter herein shown for this purpose comprises a lifting-rod 80, which passes through a lug 81 at the top of the standard 21 and through the bed or table 20, an adjustable lug 82 on said rod adapted to engage the lug 51 on the sleeve 50, and a treadle-lever 83, to which the lower end of said lifting-rod is pivoted. The treadle-lever is pivoted in brackets 84, attached to the floor beneath the bench 20, and is so bent as to project at one side of said bench. Any suitable actuating-lever may be used.

An adjustable bar-holder 90 is attached to the bed at one side thereof opposite the adjacent ends of the electrodes. This holder, as illustrated in the drawings, comprises a short

standard 91, fixed to the bed, and a forked standard 92, pivoted to the standard 91 by means of a bolt 93, having a clamping-screw 94.

In the use of this electric forge a bar 100 to be heated is fed at one end between the positive and negative carbon electrodes 70 and 71, the upper electrode 70 being lifted under the action of the treadle-lever 83 to permit the insertion of the bar. When the upper electrode 70 is lowered into contact with the bar resting upon the electrode 71, the circuit is closed and the current passes transversely through the bar, heating that portion thereof which is disposed in contact with the electrodes, the other portion of the bar remaining cool, so that it may be handled with the bare hands. When the end of the bar is sufficiently heated, which will occur in a few seconds, the treadle is depressed, whereby the upper electrode is raised out of contact with the bar and the circuit broken. The heated end of the bar from which a forging is to be made is then forged into the desired shape by hammering or other means.

We claim as our invention—

1. In an electric forge, the combination of two electrodes connected with opposite electric poles and consisting of carbon blocks having their adjacent ends shaped to fit a bar of metal to be clamped between them, and holders for said blocks.

2. In an electric forge, the combination of two electrodes connected with opposite electric poles and consisting of carbon blocks having their adjacent ends shaped to fit a bar of metal to be clamped between them, holders for said electrodes, and means for adjusting said blocks in said holders.

3. In an electric forge, the combination of two electrodes connected with opposite electric poles and consisting of carbon blocks having their adjacent ends shaped to fit a bar of metal to be clamped between them, and a lifter for separating the electrodes.

4. In an electric forge, the combination of two electrodes connected with opposite electric poles of the same circuit and consisting of carbon blocks having their adjacent ends shaped to fit a bar of metal to be clamped between them, and a treadle mechanism for separating one of said electrodes from the other.

5. In an electric forge, the combination of two standards, brackets supported in said standards and insulated therefrom, said brackets being connected with opposite elec-

tric poles, electrode-holders connected with said brackets, and electrodes consisting of carbon blocks adapted to receive a bar of metal to be heated between their adjacent ends.

6. In an electric forge, the combination of an angular bracket, an insulated support therefor, a sliding sleeve on a dependent arm of said bracket, provided with an insulated lug and with a lateral arm carrying an electrode-holder, a lifting-rod provided with a lug for engaging the lug of said sleeve, a lever for actuating said lifting-rod, a second bracket provided with an electrode-holder, an insulated support for said bracket, electrodes disposed in said holders in alignment with each other, and conductors connected with said brackets for conveying the electric current thereto.

7. In an electric forge, the combination of two converter-rings, two electrodes consisting of carbon blocks having their adjacent ends shaped to fit a bar of metal to be clamped between them, holders for said blocks, and conductors connecting said blocks with said rings.

8. In an electric forge, the combination of a tall standard provided with an insulated eye, a bracket comprising a dependent arm, and an arm disposed in said eye, a short standard provided with an insulated eye, a bracket comprising a horizontal arm disposed in the eye of the short standard, and an upwardly-inclined arm provided with a clamp, an arm adjustable on the dependent arm and provided with a clamp, and electrodes adjustable in said clamps, substantially as described.

9. In an electric forge, the combination of a tall standard provided with an insulated eye, a bracket comprising a dependent arm and an arm disposed in said eye, a short standard provided with an insulated eye, a bracket comprising a horizontal arm disposed in the eye of the short standard, and an upwardly-inclined arm provided with a clamp, an arm adjustable on the dependent arm and provided with a clamp, and electrodes adjustable in said clamp, substantially as described.

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