

(No Model.)

3 Sheets—Sheet 1.

E. E. ANGELL.
ELECTRIC FORGE.

No. 466,133.

Patented Dec. 29, 1891.

FIG - 8 -

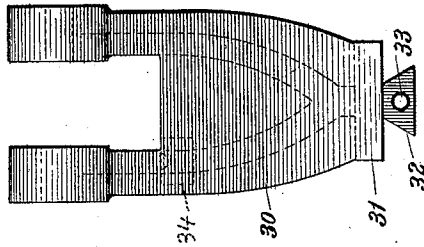


FIG - 7

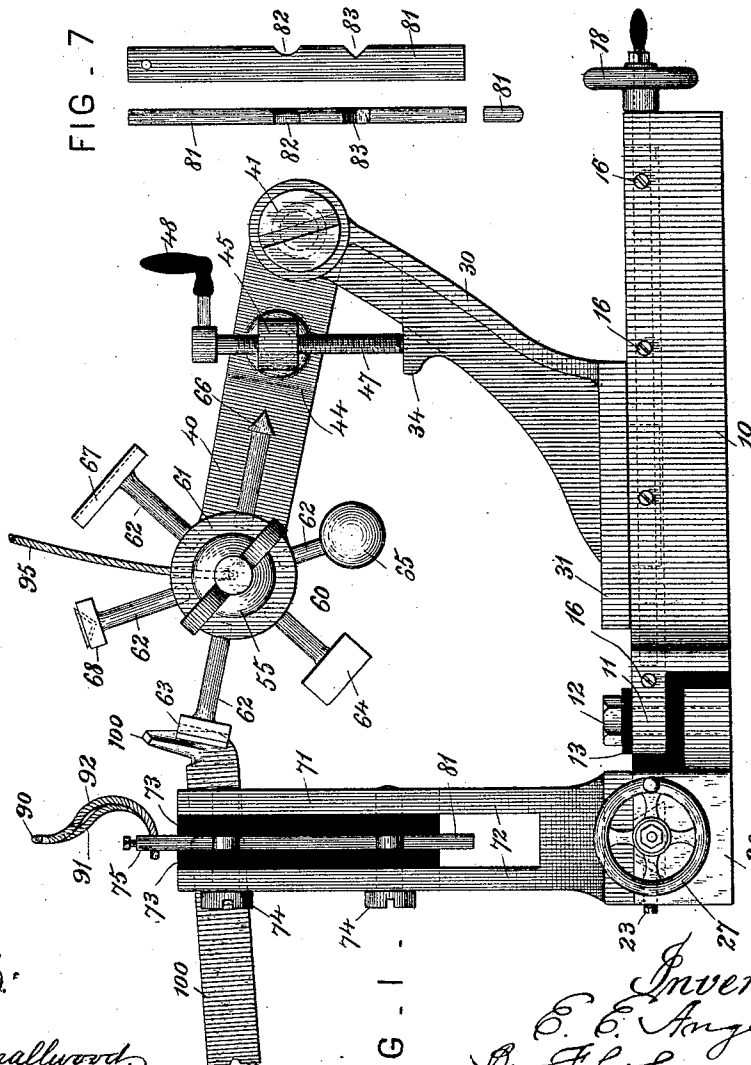


FIG - 1 -

Attest:
Geo. T. Smallwood,
C. G. Reed

Inventor:
E. E. Angell
By F. C. Jones,
Attorney.

(No Model.)

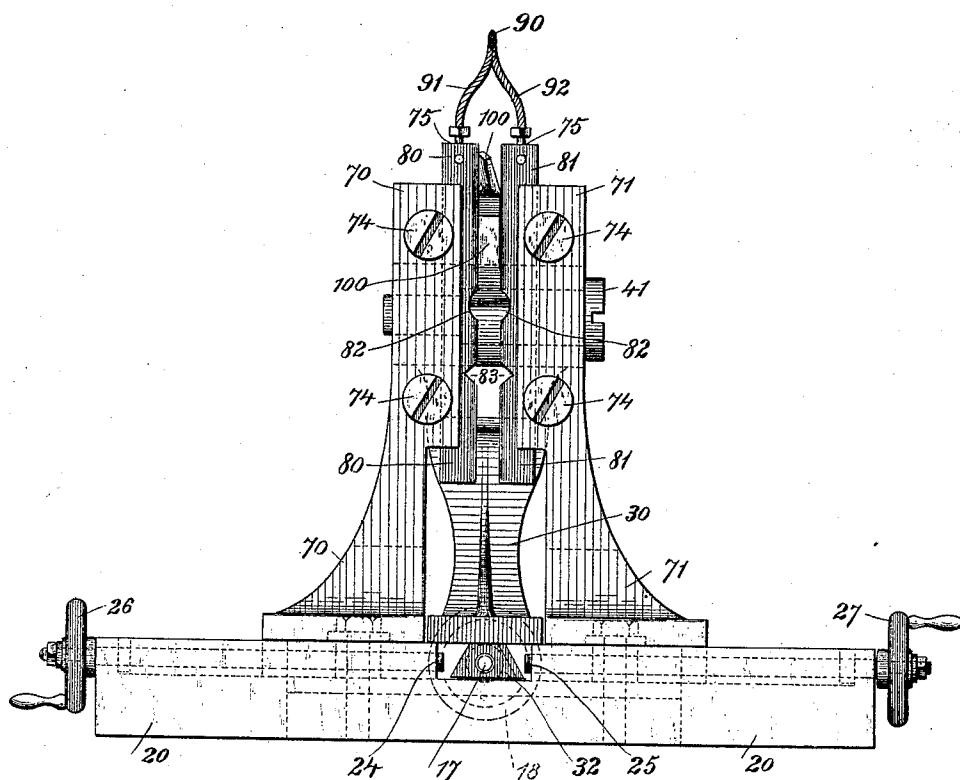
3 Sheets—Sheet 2.

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FIG. 2.



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(No Model.)

3 Sheets—Sheet 3.

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FIG. 4.

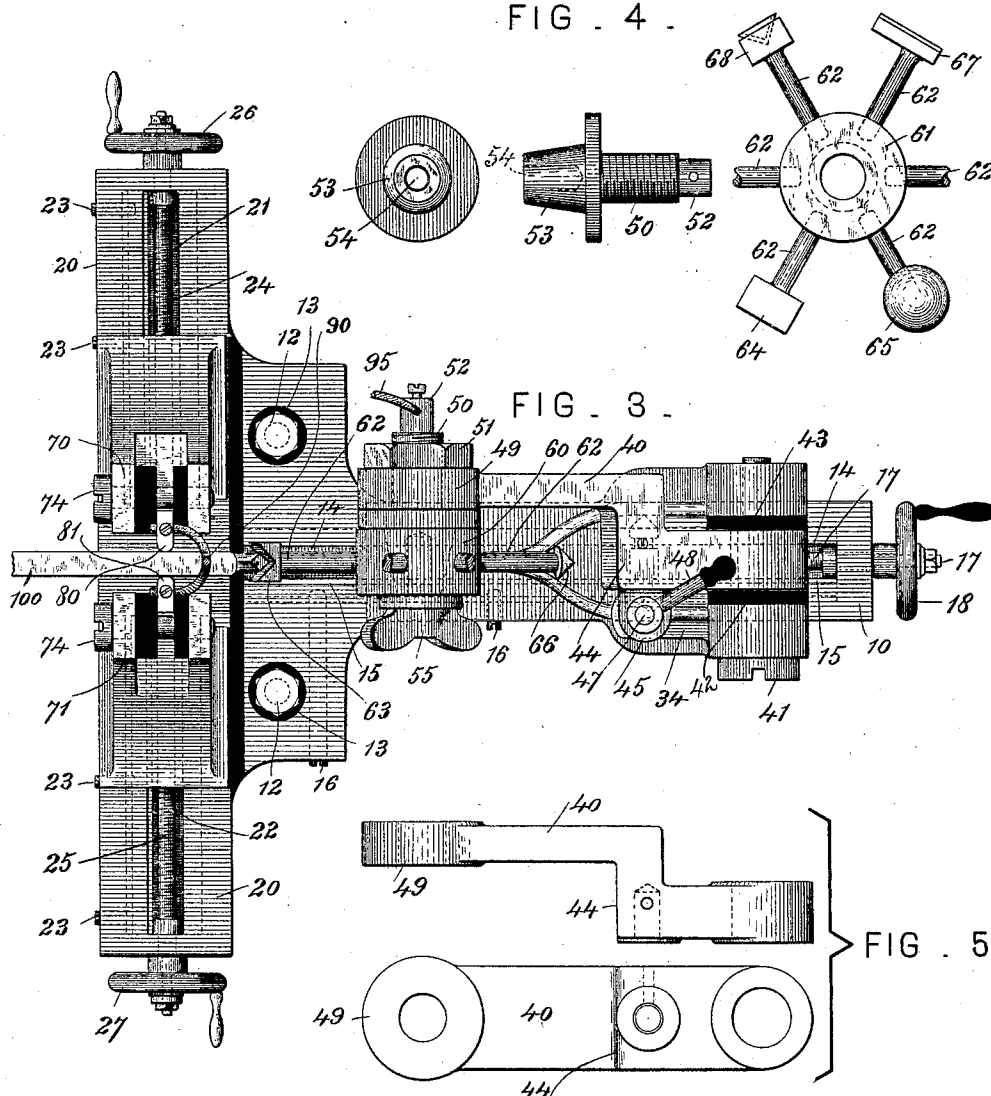
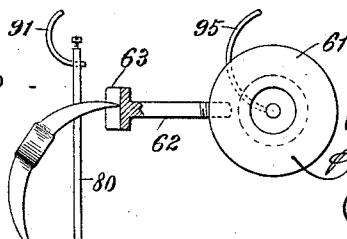


FIG. 6.



Attest:
Geo. T. Smallwood,
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Inventor:
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UNITED STATES PATENT OFFICE.

EDWIN E. ANGELL, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO THE
ELECTRICAL FORGING COMPANY, OF MAINE.

ELECTRIC FORGE.

SPECIFICATION forming part of Letters Patent No. 466,133, dated December 29, 1891.

Application filed March 23, 1891. Serial No. 386,065. (No model.)

To all whom it may concern:

Be it known that I, EDWIN E. ANGELL, a citizen of the United States of America, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Electric Forges, of which the following is a specification.

The object of this invention is to provide an electric forge adapted for heating machine lathe-tools, pick-axes, and various implements of irregular shapes for the purpose of hardening, forging, or drawing the temper.

Figure 1 of the accompanying drawings represents a side elevation of this improved electric forge. Fig. 2 represents an elevation of the front end thereof. Fig. 3 represents a plan thereof, two of the electrodes of the electrode-wheels being shown as broken off for convenience of illustration. Fig. 4 represents details of the electrode-wheel and its supporting-stud. Fig. 5 represents a plan and a side elevation of the adjustable arm carrying the electrode-wheel. Fig. 6 represents a pick-ax with one of its points in position for being heated. Fig. 7 represents a front and side view of the positive electrodes. Fig. 8 represents a rear elevation of the inclined adjustable standard.

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

The cruciform base of this apparatus comprises a longitudinal bed 10 and a transverse bed 20 disposed at one end thereof. These beds are connected together by an insulated rabbit-joint 11, fastened by bolts 12, the latter being insulated from the bed 10 by insulating flanged bushings 13. The longitudinal bed 10 is provided with a longitudinal dovetail guide-slot 14, having a gib 15, adjustable by means of gib-screws 16, which extend through the sides of the bed into contact with the gib. A screw-shaft 17, provided with a hand-wheel 18, is journaled in the bed 10 at opposite ends thereof, and extends through the guide-slot 14. The transverse bed 20 is provided with similar guide-slots 21 and 22, which extend longitudinally of said bed from points on opposite sides of the center to near the ends thereof. Similar gibs are disposed

in these guide-slots and rendered adjustable by the gib-screws 23. Two screw-shafts 24 and 25, provided with hand-wheels 26 and 27, are journaled in the transverse bed and extend longitudinally through the guide-slots thereof. An inclined adjustable standard 30, having an elongated foot 31, is disposed on the longitudinal bed 10. The foot 31 is provided with a dovetail tongue 32, which engages the dovetail guide-slot 14, and said tongue is provided with a screw-threaded hole 33, which engages the screw-shaft 17, whereby the standard is adjusted longitudinally of its bed. This standard is forked at its upper end and provided with a ledge 34. An arm 40 is pivoted at its rear end in the forked end of the standard 30 and insulated therefrom, and from the pivot-screw 41 by a flanged bushing 42 and a ring 43 of insulating material. The outer portion of this arm is preferably set off somewhat laterally by a bend 44. A swivel-stud 45 is loosely disposed in a socket in the arm. An adjusting-screw 47, having a handle 48 at its upper end, passes through said stud and engages at its lower end the ledge 34 of the standard 30, whereby the free outer end of the arm 40 may be raised or lowered. The outer end of the arm 40 is provided with an eye 49. A flanged screw-threaded stud 50 is secured to the eye 49 of the arm 40 by means of a nut 51. This flanged stud is provided at one end with a binding-post 52, for the connection of an electric conductor and at its opposite end with a boss 53, preferably tapering in form, and provided with a screw-threaded socket 54 in its outer end. An electrode-wheel 60 is secured on the boss 53, by means of a clamping-screw 55, which enters the screw-socket 54 of the boss. This wheel comprises a hub 61 and radial arms 62, composed of highly-conductive material. The outer ends of these arms are severally provided with contact-heads 63, 64, 65, 66, 67, and 68 of different shapes for contact with tools of different characters.

Two upright standards 70 and 71, having feet and tongues similar to those of the standard 30, are disposed on the transverse bed 20. The tongues engage the slots of the bed and are engaged, respectively, by the screw-shafts

24 and 25, whereby the standards are adjustable toward or from each other. Each of these standards is provided with a vertical slot extending downward from its upper end, forming clamping-jaws 72, which are provided on their inner faces with insulating-strips 73. Screws 74 extend transversely through the jaws and serve to tighten or close them. These split standards serve as holders for the positive electrodes 80 and 81, the electrode 80 being held in the jaws of the standard 70 and the electrode 81 in the jaws of the standard 71. The upper ends of these electrodes are provided with binding-posts 75. These electrodes are so disposed in the standards that their inner edges project toward each other beyond the inner edges of the jaws. These projecting edges serve as holding-faces for clamping the work between them, being adjustable toward or from each other for this purpose by the adjustment of the standards 70 and 71 by means of the screw-shafts 24 and 25. The clamping-faces of the electrodes may be provided with notches of different shapes, as 82 and 83 for engaging tools of various shapes.

A conductor 90, connected with one pole of an alternating-current dynamo or with a transformer, has branches 91 and 92 connected with the electrodes 80 and 81, and a conductor 95, connected with the other pole of the electric source, is connected with the stud 50, which is in connection with the electrode-wheel 60.

In the use of this electric forge a lathe-tool, as 100, is held in the space between the electrodes 80 and 81, and then the hand-wheels 26 and 27 turned so as to cause the standards 70 and 71 to move toward each other until the work is clamped between the electrodes 80 and 81 thereof, the standards thus serving as work-holders. The inclined standard 30 is then adjusted by the hand-wheel 18 at a proper distance from the work, and the arm 40 is adjusted to the proper height by the adjusting-screw 47. The electrode-wheel is then rotated so as to bring the electrode-arm having the contact-head adapted to fit the particular tool to be heated into contact with said tool. This closes the circuit through said tool, which is then heated instantly. The tool is then removed and another put in its place and the operation repeated.

I claim as my invention—

1. In an electric forge, the combination of a work-holder having clamping-electrodes connected with one pole and provided with notches of different shapes for different tools,

and an adjustable electrode connected with the other pole.

2. In an electric forge, the combination of two standards provided with insulated jaws, electrodes disposed in said jaws and connected with one pole, mechanism for adjusting said standards toward each other for clamping the work between them, and an adjustable arm provided with an electrode connected with the other pole and adapted for contact with the work held between said standards.

3. In an electric forge, the combination of a work-holder, a conductor connected with one pole, an adjustable arm, and an electrode journaled in said arm and connected with the other pole.

4. In an electric forge, the combination of a work-holder, a conductor connected with one pole, an adjustable arm, an adjustable support for said arm, and an electrode journaled in said arm and connected with the other pole.

5. In an electric forge, the combination of a work-holder; a conductor connected with one pole, and a movable electrode connected with the other pole and provided with a plurality of contact-heads.

6. In an electric forge, the combination of a work-holder having electrodes connected with one pole and an electrode-wheel connected with the other pole.

7. In an electric forge, an electrode work-holder connected with one electric pole, a standard provided with a ledge, an arm hinged to said standard, a swivel-stud on said arm, an adjusting-screw passing through said stud and engaging said ledge for adjusting said arm, an electrode secured to said arm and connected with the other electric pole.

8. In an electric forge, the combination of a work-holder having electrodes connected with one pole, and an electrode-wheel connected with the other pole, said wheel being provided with a variety of contact-heads.

9. In an electric forge, the combination of two beds insulated from each other and disposed at right angles, two standards adjustable on the transverse bed, electrodes disposed in said standards and adapted to clamp the work, a standard adjustable in the longitudinal bed, an arm pivoted to the latter standard, and an electrode carried by said arm.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

EDWIN E. ANGELL.

Witnesses:

GEO. D. BENTON,
CHESTER MARR.