

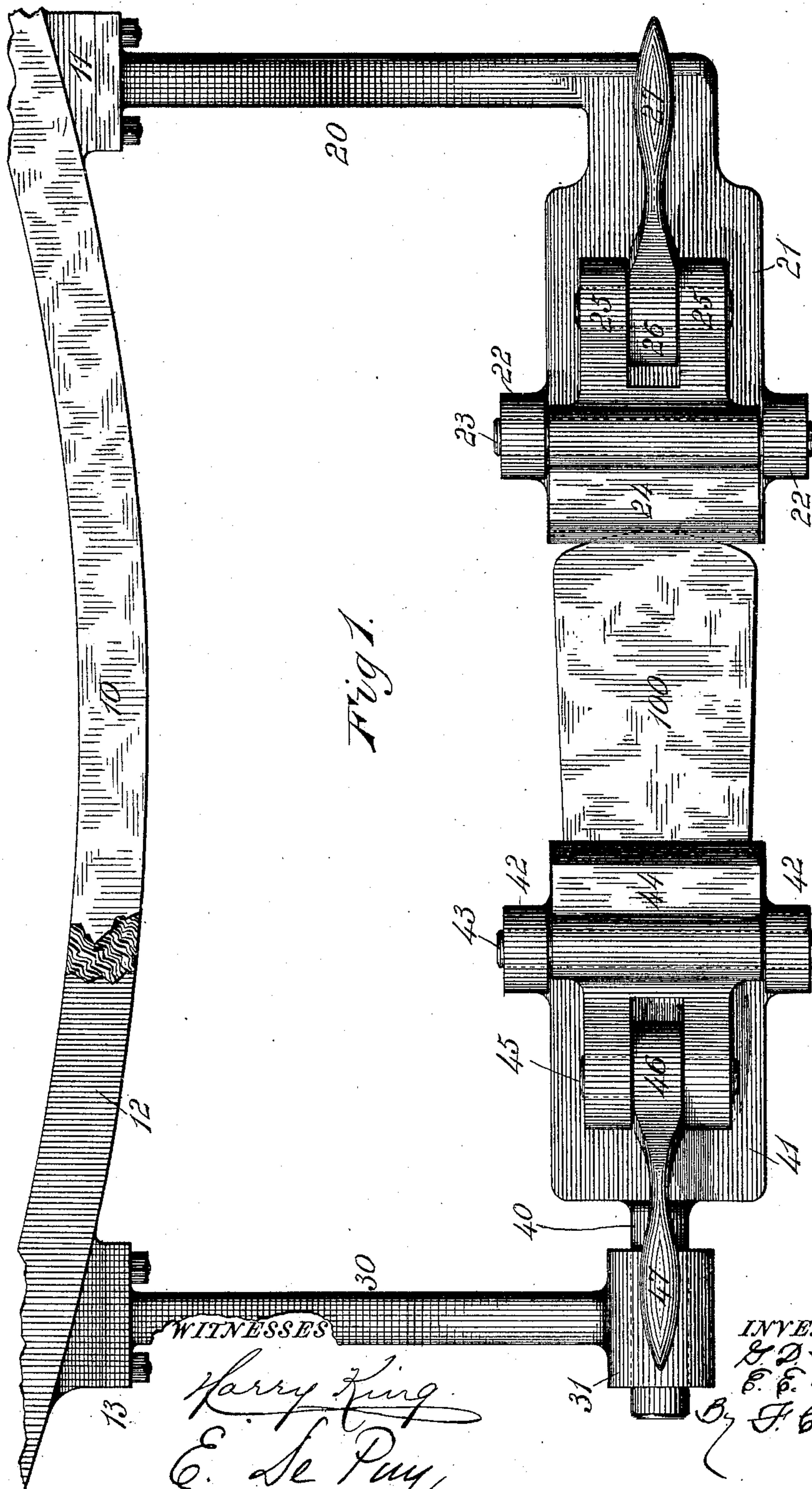
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3 Sheets—Sheet 1.

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

No. 486,627.

Patented Nov. 22, 1892.



WITNESSES

Harry King
E. Le Pay

INVENTORS:

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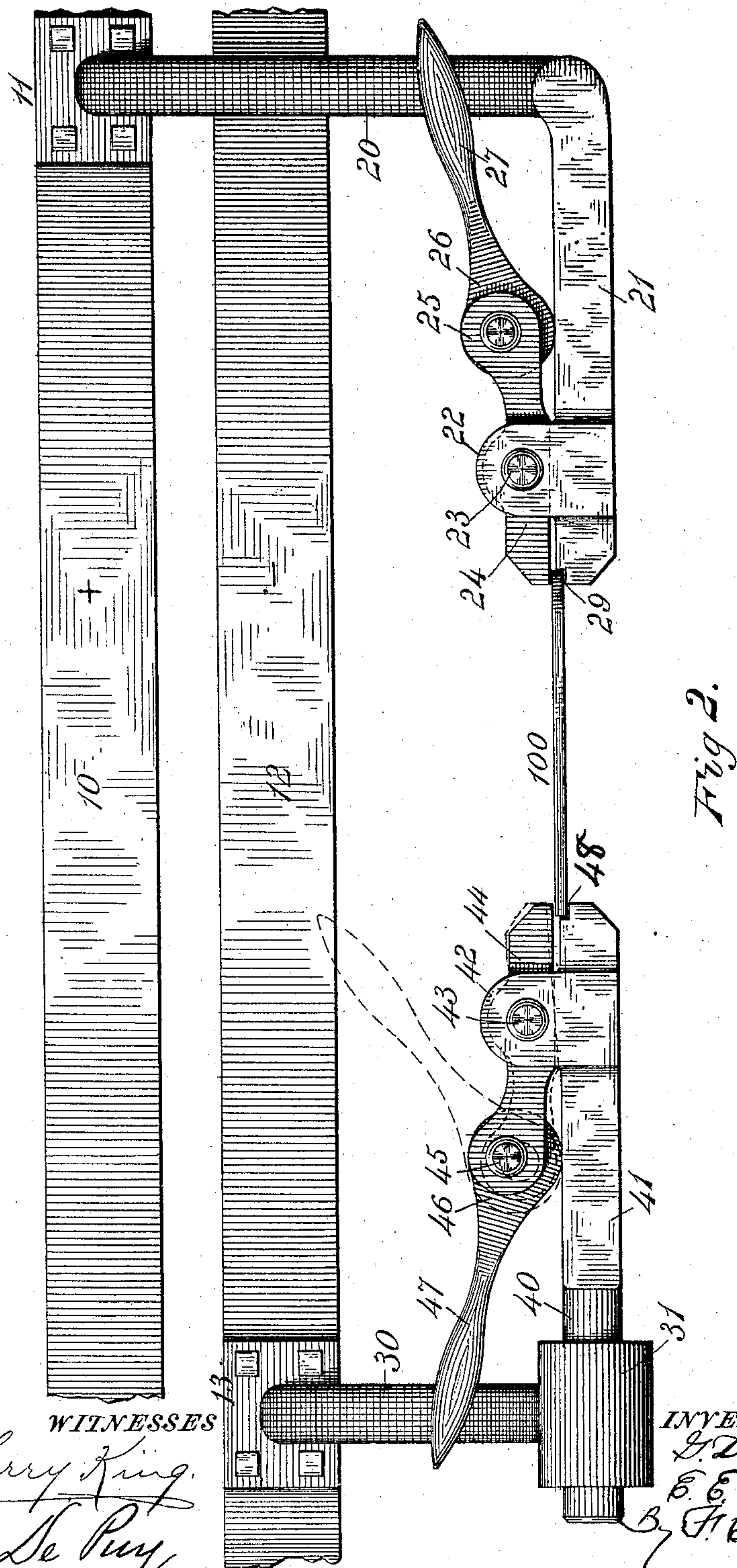
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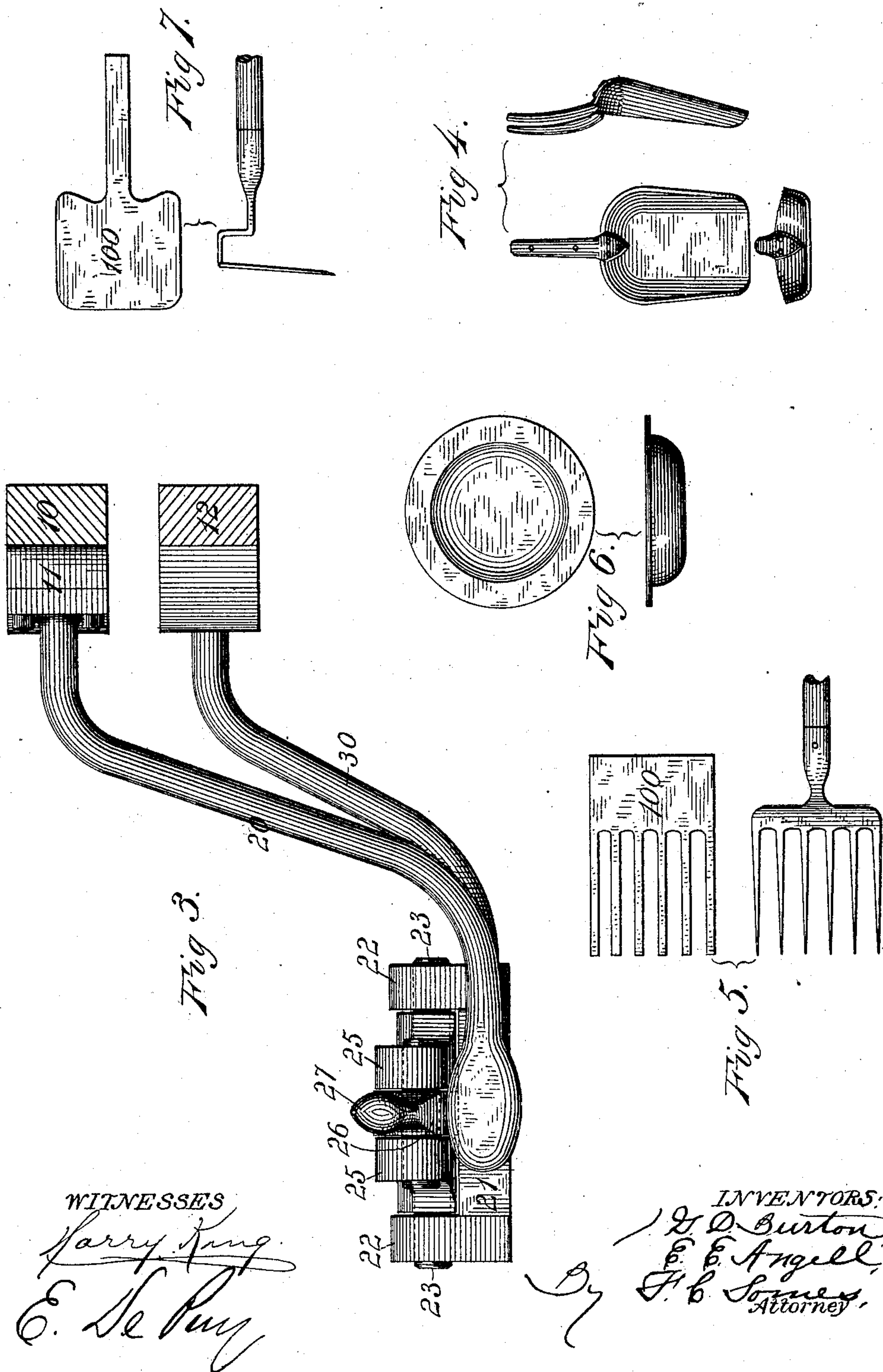
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UNITED STATES PATENT OFFICE.

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

ELECTRIC FORGE.

SPECIFICATION forming part of Letters Patent No. 486,627, dated November 22, 1892.

Application filed January 13, 1892. Serial No. 417,953. (No model.)

To all whom it may concern:

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

10 The object of this invention is to provide an electric forge for heating sheets of metal from which rakes, hoes, plates, shovels, and the like may be forged or stamped.

Figure 1 represents a plan of this improved electric forge attached to the terminals of an electric converter. Fig. 2 represents a front elevation thereof. Fig. 3 represents an end elevation thereof, the segments of the converter-ring being in transverse section. Fig. 4 represents front, side, and end views of a shovel forged under the electric heat of this improved electric forge. Fig. 5 represents a rake-blank and a rake formed therefrom under electric heat. Fig. 6 represents a plan and side elevation of a metallic dished plate formed under the electric heat of this improved forge. Fig. 7 represents a hoe-blank and a hoe formed therefrom under the electric heat of this improved forge.

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

A current-converter for transforming an electric current of small volume, measured in amperes, and of high tension, measured in 35 volts, into a current of low tension or voltage and large amprage or volume is employed in connection with this electric forge to furnish the heating-current therefor. The converter which we have used for this purpose comprises an annular core, preferably composed of different lengths of uninsulated or partially-insulated heavy wire disposed side by side and arranged to break 40 joints; primary coils composed of comparatively-fine wire disposed at intervals around the annulus of the core and insulated therefrom; secondary coils composed of plates or sheets of copper disposed around said annulus between the primary coils and insulated 50 therefrom and from the core, and two exte-

rior heavy copper rings surrounding the structure. The primary coils are arranged in pairs, the coils of each pair being connected in series with each other and in parallel with every other pair and to the terminals of the primary circuit by binding-posts mounted on a central support. The secondary coils are composed of copper plates, and all the positive terminals thereof are connected with one of the exterior rings and all the negative terminals with the other exterior ring, said rings thus constituting the positive and negative terminals of the converter.

An illustration of the construction of the converter, which is the subject of other applications for patents, is deemed unnecessary for the purpose of this case.

Any converter capable of furnishing the required current may be used in connection with this improved forge.

In the drawings segments of the exterior converter-rings are represented.

The upper converter-ring 10 may be considered as the positive terminal of the converter and the lower converter-ring 12 may be considered as the negative terminal thereof. The upper ring 10 is provided with a boss 11 and the lower ring 12 with a boss 13, said bosses being disposed at considerable distances apart on the circumference of the converter. A bracket 20 is attached to and depends from the boss of the upper ring 10, and a bracket 30 is attached to and depends from the boss of the ring 12, terminating in the same horizontal plane with the bracket 20. These brackets are composed of copper or other highly-conductive material. The bracket 20 is provided with an arm 21 at its lower end, which extends substantially at right angles to the body of the bracket. The bracket 30 is provided at its lower end with a sleeve 31. An arm 40 is adjustable in the sleeve 31 at an angle to the bracket. The arm 21 consists of a broad flat plate provided with upwardly-projecting lugs 22 at its opposite sides near its outer end. A rod 23 extends between the lugs 22, and a lever 24 is pivoted on said lugs. This lever is provided at its inner end with ears 25, between which is pivoted a cam 26, having a handle 27. The outer 100

end of the broad arm 21 and the lever 24 constitute a clamp, the arm serving as the fixed jaw and the lever as the movable jaw thereof, said fixed jaw being provided with a recess 29. The adjustable arm 40 is provided with a broad platform 41, having lugs 42 at its opposite sides near its outer end. A rod 43 spans the space between these lugs, and a lever 44 is pivoted on said rod, the inner end of said lever being recessed and provided with a pivot-pin 45, on which a cam 46 is journaled, said cam having an actuating-handle 47. The outer ends of the arm 40 and the lever 44 constitute clamping-jaws, the lower jaw being provided with a rabbet 48 at its outer end. These arms and their clamps are composed of copper or other highly-conductive material, and, having broad clamping-faces, they are adapted to receive the ends of the sheets or plates of metal to be heated.

In the use of this improved electric forge the arm 40 is adjusted in the sleeve 31 of the bracket 30 a distance from the arm 21 of the bracket 20 corresponding with the length of the sheet-metal blank to be heated. The jaws are opened by swinging the handles 27 and 47 into the positions indicated by dotted lines in Fig. 2, the cams 26 and 46 serving to lift the outer ends of the movable jaws. A plate or blank 100 to be heated is then laid upon the ends of the fixed jaws, its opposite ends resting in the rabbets 29 and 48, formed in said jaws. The handles of the cams are then swung outward, whereby the upper jaws are closed upon and bite the ends of the blank. An electric heating-current is then passed through the blank spanning the

space between the clamps and heats said blank to a forging temperature. The blank is then removed from the forge and subjected to a metal forging, stamping, or shaping apparatus, whereby the desired article is rapidly and economically produced.

We claim as our invention—

1. The combination of an electric converter provided with exterior rings constituting opposite electric poles, conductive brackets attached to said rings, arms connected with said brackets, and clamps carried by said arms and having laterally-extending jaws, substantially as set forth.

2. In an electric forge, the combination of a current-converter provided with exterior conductive rings constituting opposite electric poles, conductive brackets attached to said rings, one of said brackets being provided with a sleeve and the other being provided with a horizontally-extending arm provided with a broadened platform having ears at its sides, a lever pivoted between said ears, a cam pivoted to said lever and bearing against said platform, the outer ends of said arm and lever serving as clamping-jaws, an adjustable arm in said sleeve, and a cam-operated clamp carried by said arm and provided with laterally-extending clamping-jaws.

In testimony that we claim the invention above set forth we affix our signatures in presence of two witnesses.

GEO. D. BURTON.
EDWIN E. ANGELL.

Witnesses:

CHAS. F. ADAMS,
CHESTER MARR.