

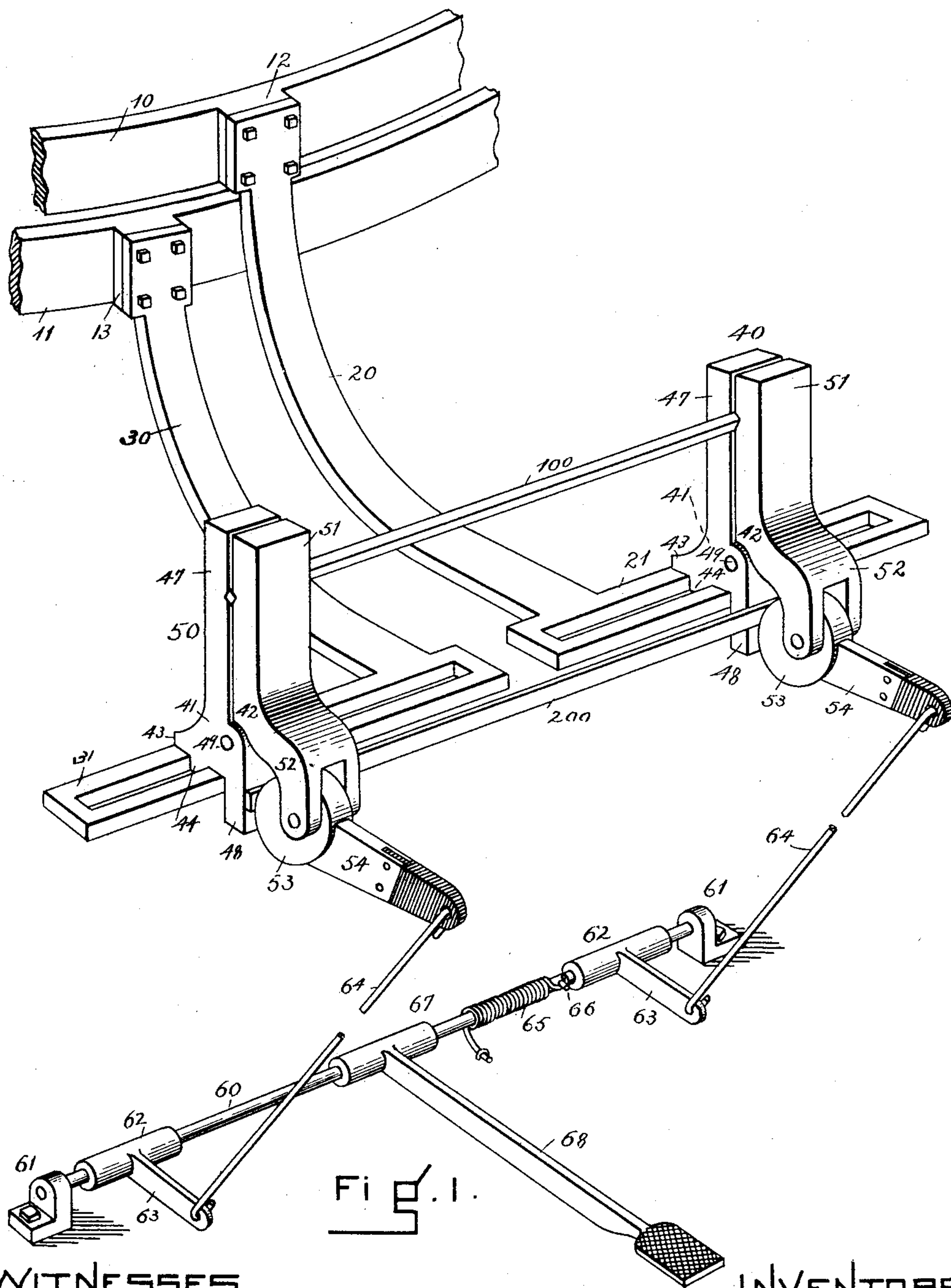
(No Model.)

3 Sheets—Sheet 1.

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

No. 475,186.

Patented May 17, 1892.



WITNESSES

Chester Mann
R. W. Galt

INVENTORS

G. D. Burton
E. E. Angell
By *J. C. Somes*
Attorney

(No Model.)

3 Sheets—Sheet 2.

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

No. 475,186.

Patented May 17, 1892.

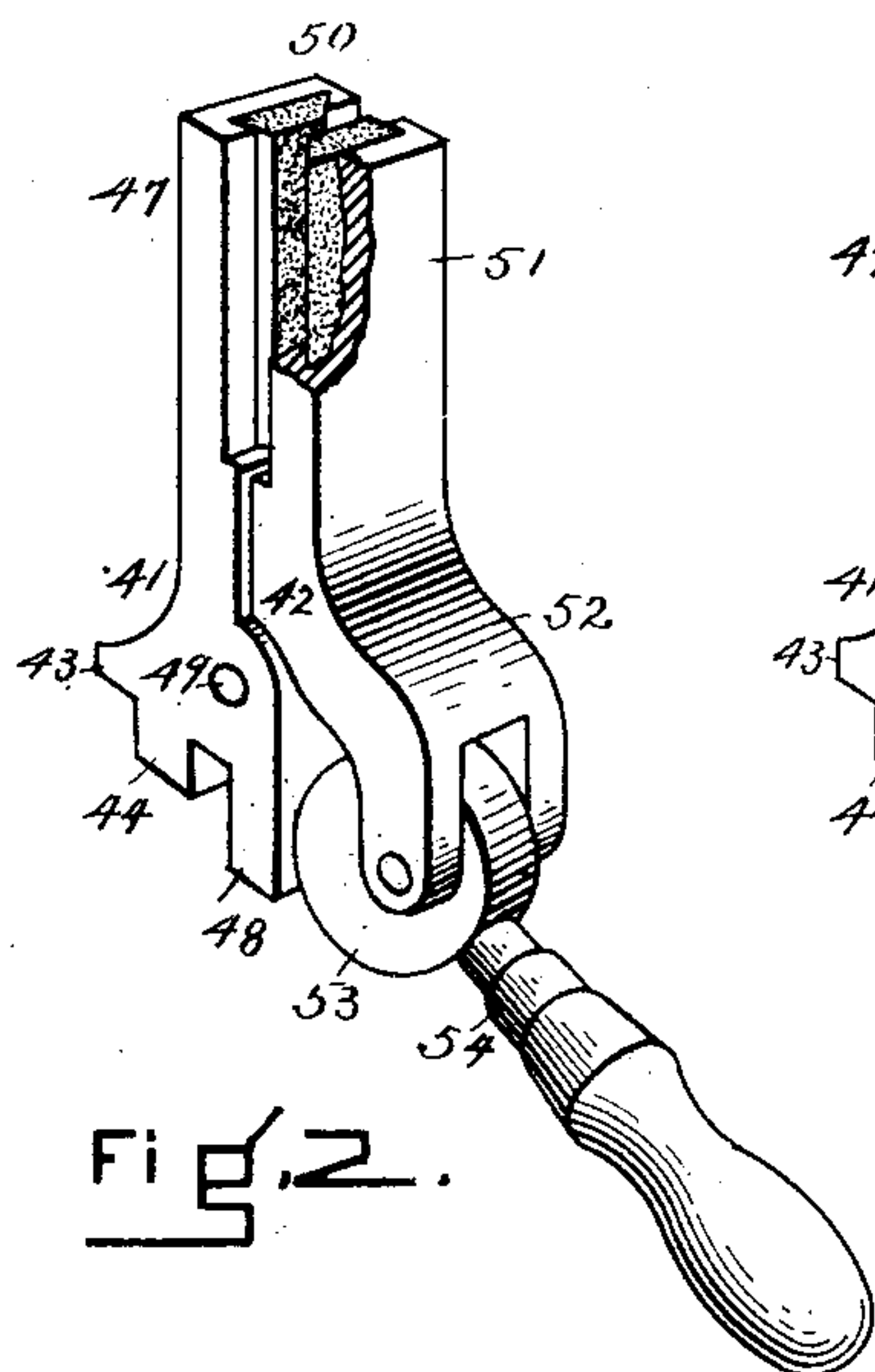


Fig. 2.

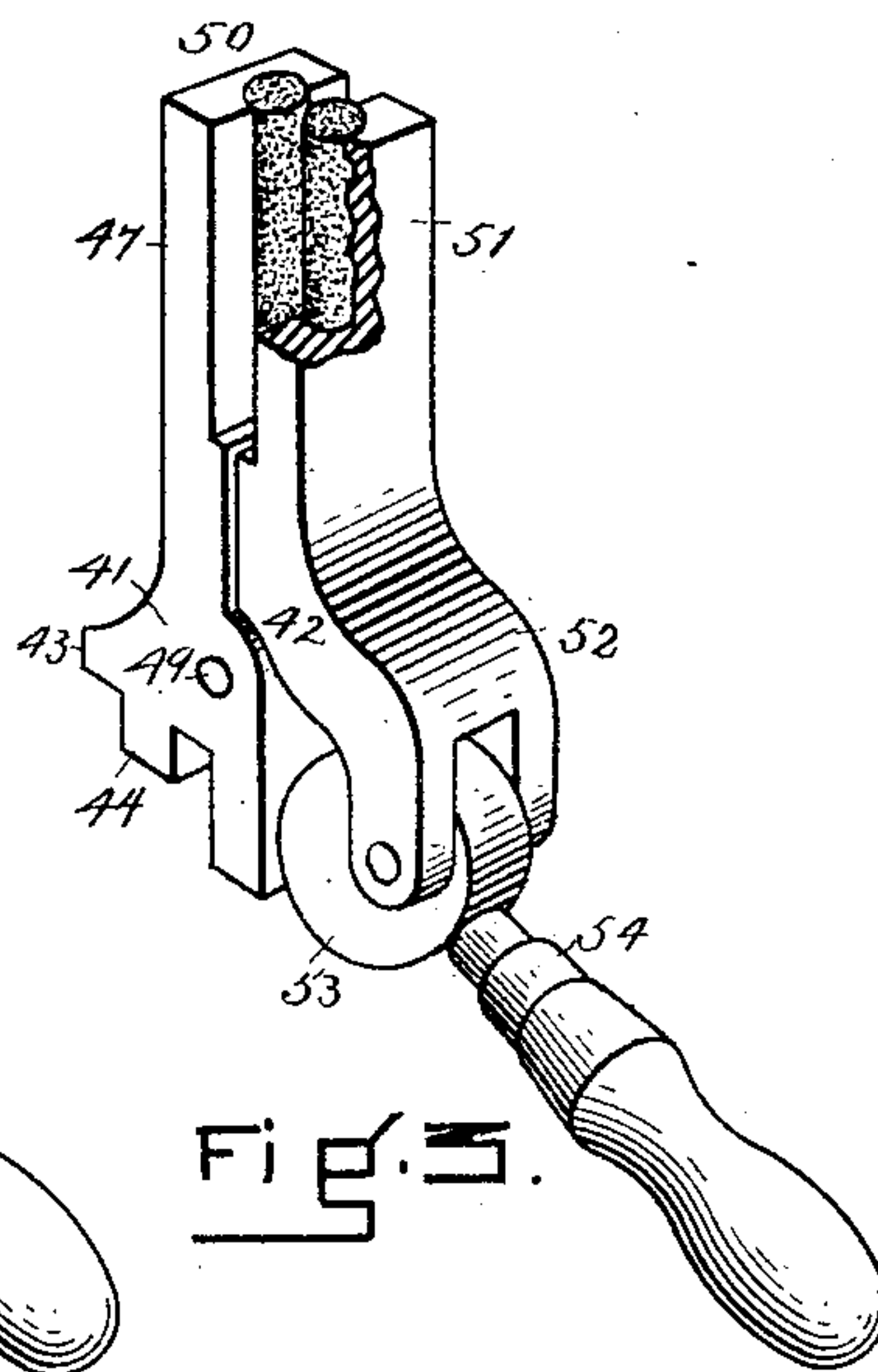


Fig. 3.

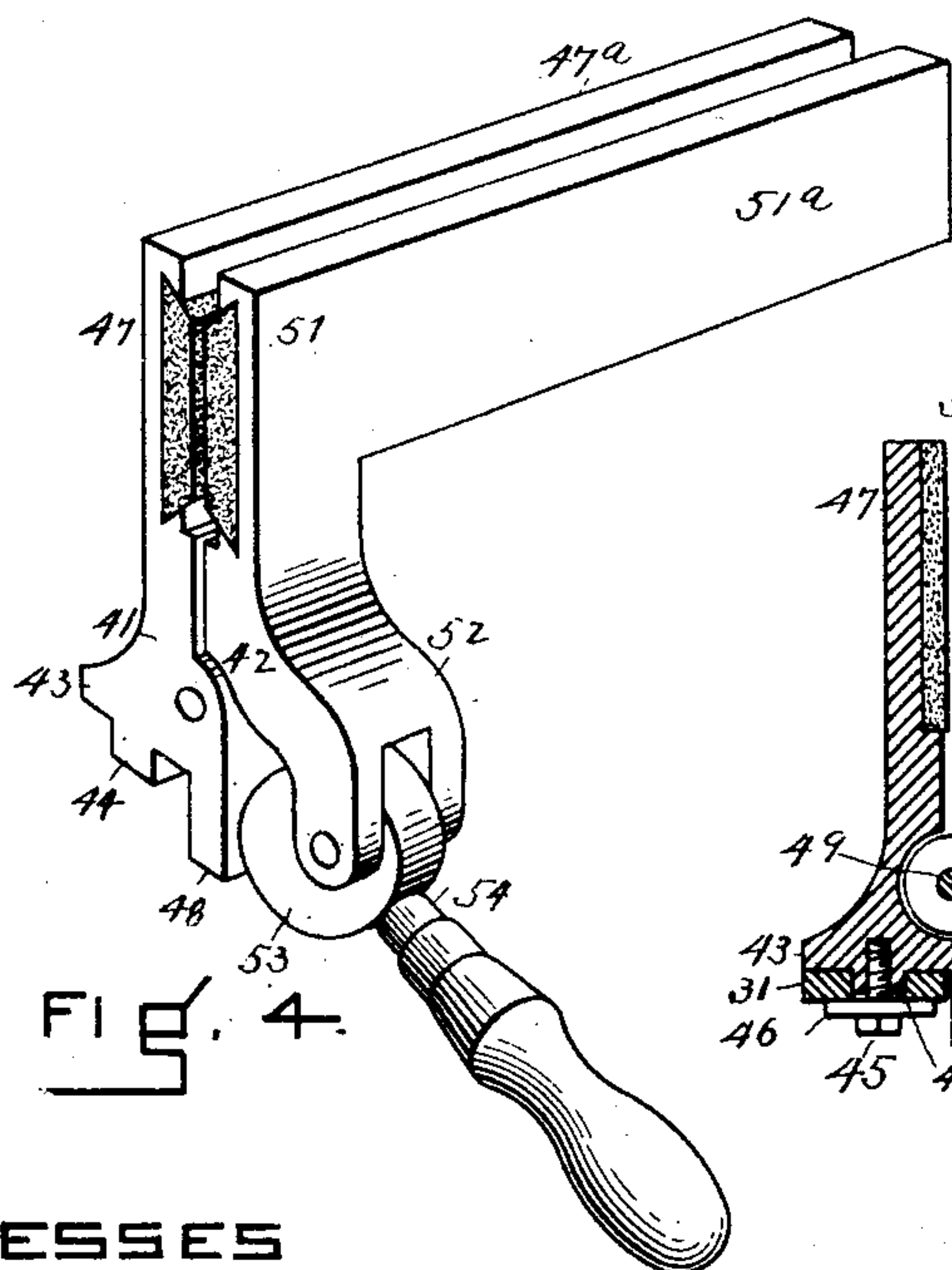


Fig. 4.

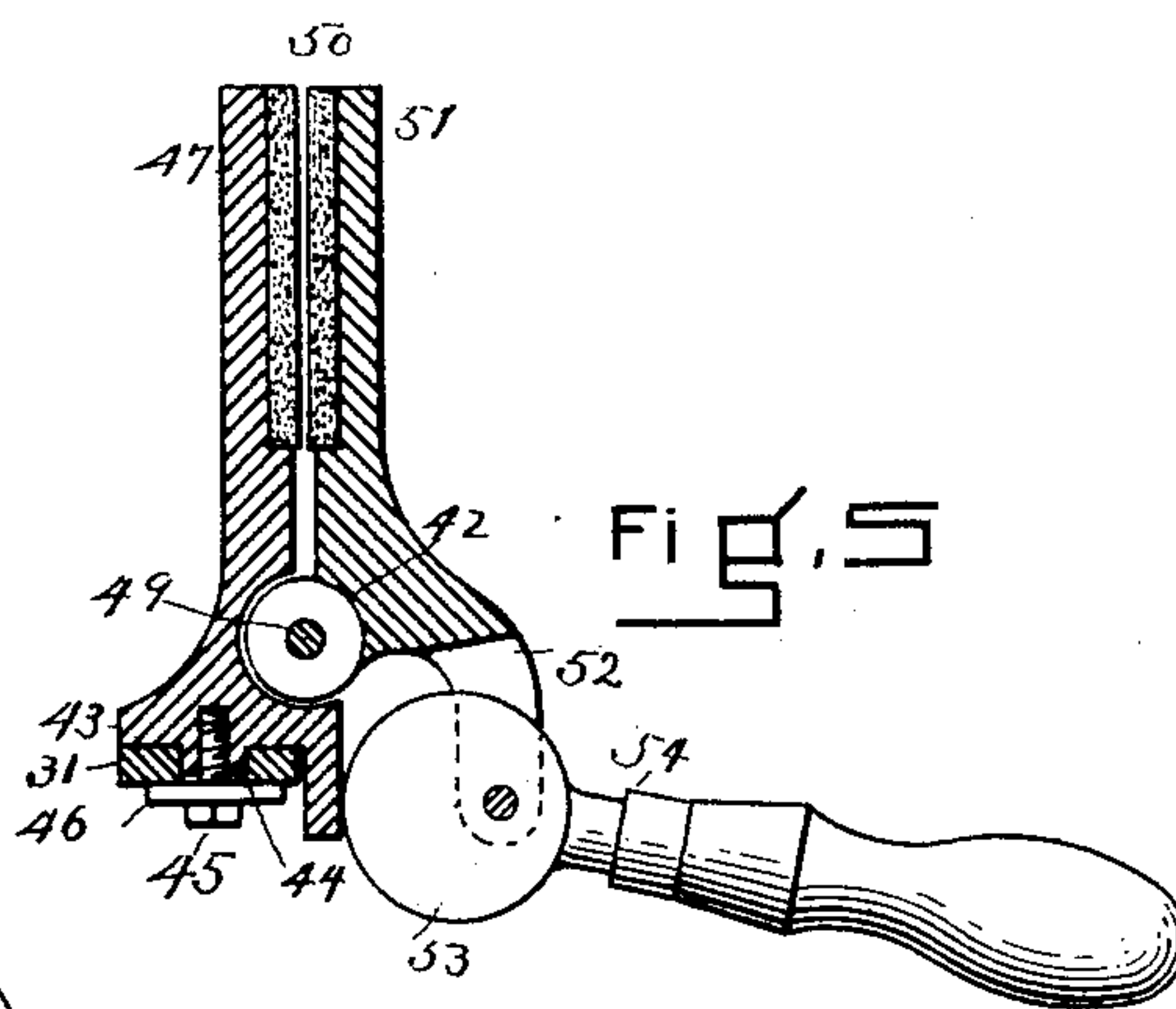


Fig. 5.

WITNESSES
Chester Harr
R. W. Gallup

INVENTORS:
G. D. Burton
E. E. Angell
By *F. C. Jones*
Attorney

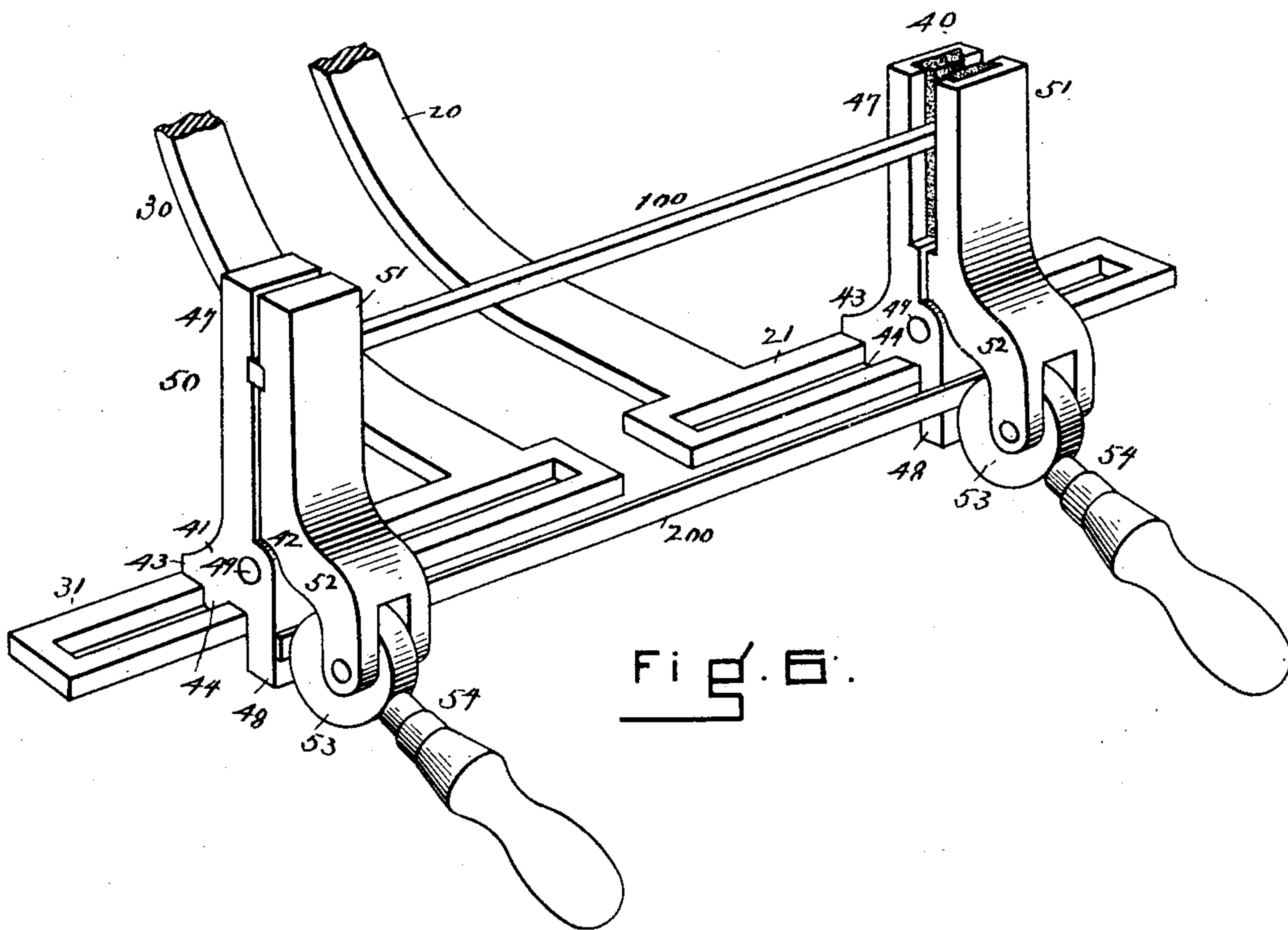
(No Model.)

3 Sheets—Sheet 3.

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

No. 475,186.

Patented May 17, 1892.



WITNESSES

Chester Morr
J. W. Gallupe

INVENTORS:

G. D. Burton
E. E. Angell
By F. C. Jones,
Attorney

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. 475,186, dated May 17, 1892.

Application filed May 25, 1891. Serial No. 393,962. (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
5 county of Middlesex, State of Massachusetts, have invented certain new and useful Improvements in Electric Forges, of which the following is a specification.

This invention relates to an electric forge
10 for heating bars of metal to be forged, shaped, or tempered.

The object of the invention is to provide an electric forge of this character which can be readily adjusted to suit bars of different
15 lengths and easily manipulated for receiving and discharging the bars and one which is adapted to heat two or more bars at the same time.

Figure 1 of the accompanying drawings represents a perspective view of this improved electric forge attached to the poles of an electric-current converter. Fig. 2 represents one of the clamps constituting a part of this electric forge, the jaws of said clamp being provided with flat carbon faces. Fig. 3 represents a similar view of one of said clamps provided with rounded carbon faces. Fig. 4 represents a perspective view of one of said clamps provided with elongated jaws having carbon faces. Fig. 5 represents a transverse section of one of the clamps provided with carbon faces. Fig. 6 represents a perspective view of this improved electric forge, in which the holder or clamp for one end of
35 the bar to be heated is provided with metallic contact-faces and the holder or clamp for the other end of the bar with carbon contact-faces.

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.
45 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. A

bracket 20, composed of copper or other suitable conductive material, is attached at one end to the boss of the ring 10 and depends therefrom when arranged as shown in the drawings. A similar bracket 30, also composed of copper or other suitable material, is attached to the boss or terminal 13 of the converter-ring 11 and depends therefrom. 55 The outer ends of these brackets are provided with arms 21 and 31, respectively, which are preferably slotted and adjusted in endwise relation to each other, or in line with each other in the same horizontal plane. The brackets and arms may be composed wholly or in part of iron or other material or composition of lower conductivity than copper, provided they be sufficiently large in proportion to the bars to be heated to carry a current adapted to heat such bars to a forging temperature without becoming overheated themselves. Two similar clamps 40 and 50, composed of copper, iron, or other suitable conductive material, are adjustable on the slotted arms 21 and 31. Each of these clamps is composed of two members 41 and 42. The member 42 is pivoted to the member 41, and the latter is provided with a foot 43, having a rib 44, which engages the slot of the arm. 75 A set-screw 45 passes through a washer 46, (see Fig. 5,) which rests against the under side of one of said arms and enters a screw-threaded socket in said foot, serving to fix this jaw of the clamp in any position on the arm to which it may be adjusted. The member 41 is provided with an upper jaw 47 and a lower fixed jaw 48 on opposite sides of the pintle 49, on which the oscillating member 42 is hinged. The member 42 is provided with an upper jaw 51 and a lower jaw 52. The lower jaw 52 is provided with a cam 53, which serves as the jaw proper. The cams 53 are provided with arms 54, the outer ends of which are composed of insulating material. 90

A treadle-rod 60 is journaled in brackets 61, attached to the floor below the clamps. Sleeves 62, provided with lateral arms 63, are disposed on said rod near opposite ends thereof, and

rods 64 connect the outer ends of said arms with the insulated ends of the cam-arms 54. A spring 65 is disposed on the rod 60 and acts torsionally to turn said rod in the direction which will cause the jaws of the clamps to open, one end of said spring engaging a pin 66 on said rod and the other end being attached at any suitable fixed point. A sleeve 67 is also disposed on the treadle-rod 60 and provided with a foot-lever 68, the depression of which causes the jaws of the clamps to close. The sleeves are keyed, pinned, or otherwise fastened to the rod.

In the use of this improved electric forge a bar, as 100, of metal to be heated is disposed between the upper jaws of the clamps 40 and 50, and a second bar, as 200, may be clamped at its opposite ends between the lower jaws of said clamps. The electric current then passes from the positive ring 10 through the bracket 20 and arm 21 to the clamp 40, thence through the bars 100 and 200 to be heated to the clamp 50, thence through said clamp to the arm 31, thence through the bracket 30 to the negative ring 11 of the current-converter or other suitable source of electricity. If both the clamps have metal faces, as shown in Fig. 1, the bars will be heated throughout those portions of their lengths which extend between the clamps 40 and 50. In case the faces of the jaws are composed of carbon, those portions of the bars between the jaws of each pair of clamps are heated. In case the faces of the jaws of one of the clamps are composed of metal—such as copper—and the faces of the jaws of the other clamp are composed of carbon, those portions of the bar between the carbon jaws will be heated and the other portions will remain metallurgically cool.

The arms attached to the cams of the lower jaws may be actuated by hand, if desired, in which case they are preferably provided with insulated handles, as shown in the second sheet of drawings.

The clamp shown in Fig. 4 is especially adapted for heating knife-blanks or other similar articles and is to be used in connection with the clamp 50 or other suitable holder. In this case that portion of the blank between the elongated carbon jaws will be heated to the desired temperature, and that portion between the two clamps will serve as a conductor for closing the circuit, but will remain cool in the metallurgical sense of the term.

In the arrangement of clamps shown in Fig. 6 the clamp 50 is provided with jaws having carbon faces and the clamp 51 has metal-faced jaws. This arrangement of clamps is adapted for heating one end of the bar or bars when an article is to be turned or forged therefrom, the end of the bar between the carbon faces being heated to the required temperature and

the remaining portion serving as a conductor for closing the circuit to the other clamp.

We claim as our invention—

1. In an electric forge, the combination of two conductive arms connected with opposite electric poles and clamps disposed on said arms, each of said clamps being composed of a fixed member and an oscillating member pivoted thereto, said members having clamping-jaws above and below the pivot and one jaw of each clamp having a cam, and means for actuating the cams.

2. In an electric forge, the combination of two conductive arms connected with opposite electric poles and clamps disposed on said arms, each of said clamps being composed of a fixed member and an oscillating member pivoted thereto, said members having clamping-jaws above and below the pivot and one jaw of each clamp having a cam, and insulated arms attached to said cams.

3. In an electric forge, the combination of two conductive arms connected with opposite electric poles and clamps disposed on said arms, each of said clamps being composed of a fixed member and an oscillating member pivoted thereto, said members having clamping-jaws above and below the pivot and one jaw of each clamp having a cam, insulated arms attached to said cams, and a treadle mechanism connected with said arms for oscillating said cams.

4. In an electric forge, the combination of two duplex clamps connected with opposite electric poles, each clamp comprising a stationary member and an oscillating member pivoted thereto, said members being provided with two sets of clamping-jaws disposed on opposite sides of the pivot, one jaw of each set being in the form of a cam provided with an actuating arm or handle.

5. In an electric heater, the combination of two converter-rings constituting opposite electric poles, two conductive brackets attached, respectively, to said rings and provided with horizontal arms, and two clamps or holders adjustable on said arms and adapted to receive a bar to be heated.

6. In an electric forge, the combination of two conductive downwardly-projecting bracket-arms provided with horizontally-slotted arms, composed of conductive material and disposed apart from and in endwise relation to each other and at right angles to said downwardly-projecting arms, and two holders for holding the bar to be heated disposed on said slotted arms.

7. In an electric forge, the combination of two downwardly-projecting bracket-arms adapted for attachment to an electric converter and provided with horizontally-slotted arms disposed apart from and in endwise relation to each other and at right angles to

said downwardly-projecting arms, and two holders adjustable on said arms toward and from each other for holding the bar to be heated.

5 8. In an electric forge, the combination of two downwardly-projecting bracket-arms and two horizontally-slotted arms disposed apart from and in endwise relation to each other and at right angles to said downwardly-projecting arms, and two clamps on said slotted
10 arms, each of said clamps being provided

with two sets of jaws for grasping the end of the bars to be heated.

GEO. D. BURTON.
EDWIN E. ANGELL.

Witnesses to signature of Burton:

F. C. SOMES,
CHAS. F. ADAMS.

Witnesses to signature of E. E. Angell:

GEO. B. FESSENDEN,
G. W. WISWELL.