

(No Model.)

3 Sheets—Sheet 1.

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

No. 486,029.

Patented Nov. 8, 1892.

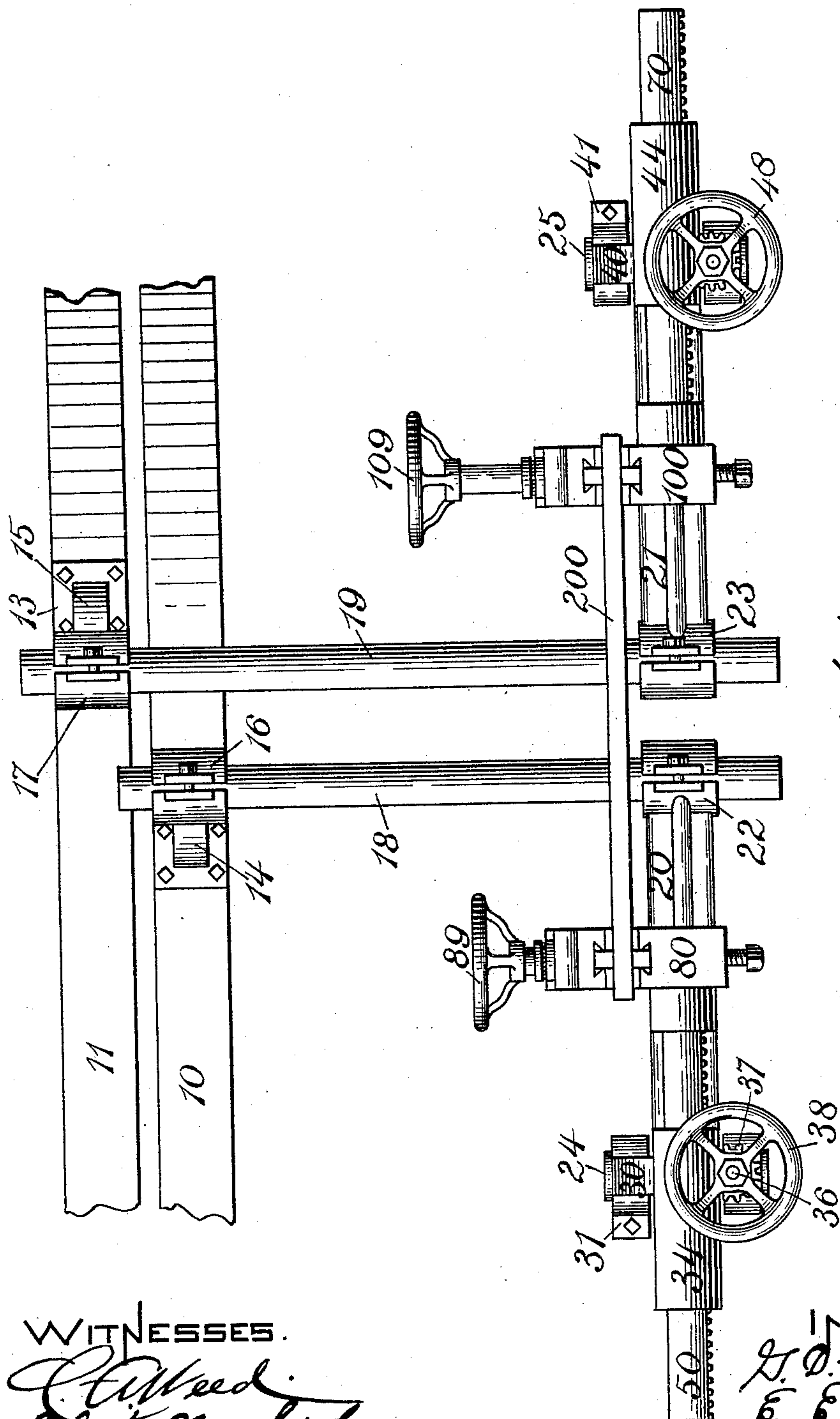


Fig. 1.

WITNESSES.

C. A. Weed
W. H. Mahony

INVENTORS:
G. D. Burton
E. E. Angell
By *J. C. Sommes*
Attorney

(No Model.)

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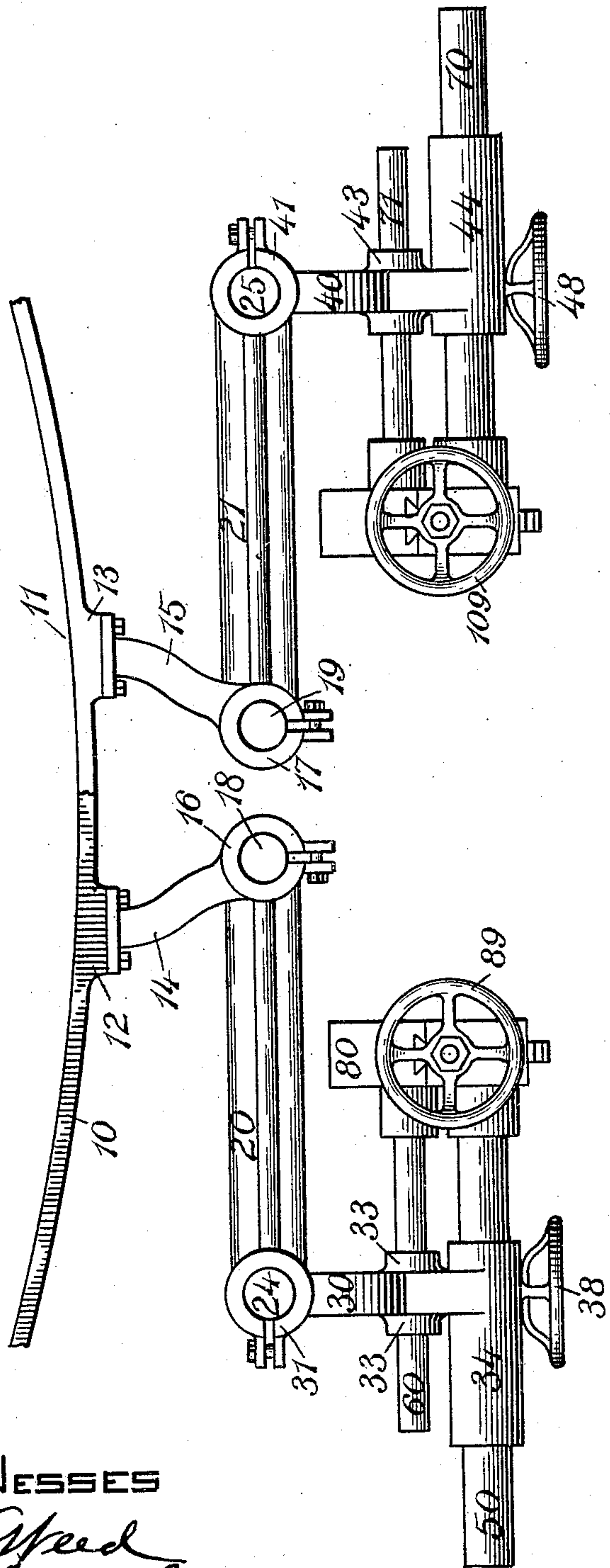


FIG. 2.

WITNESSES

C. Speed
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INVENTORS:

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By *J. C. Jones, Attorney*

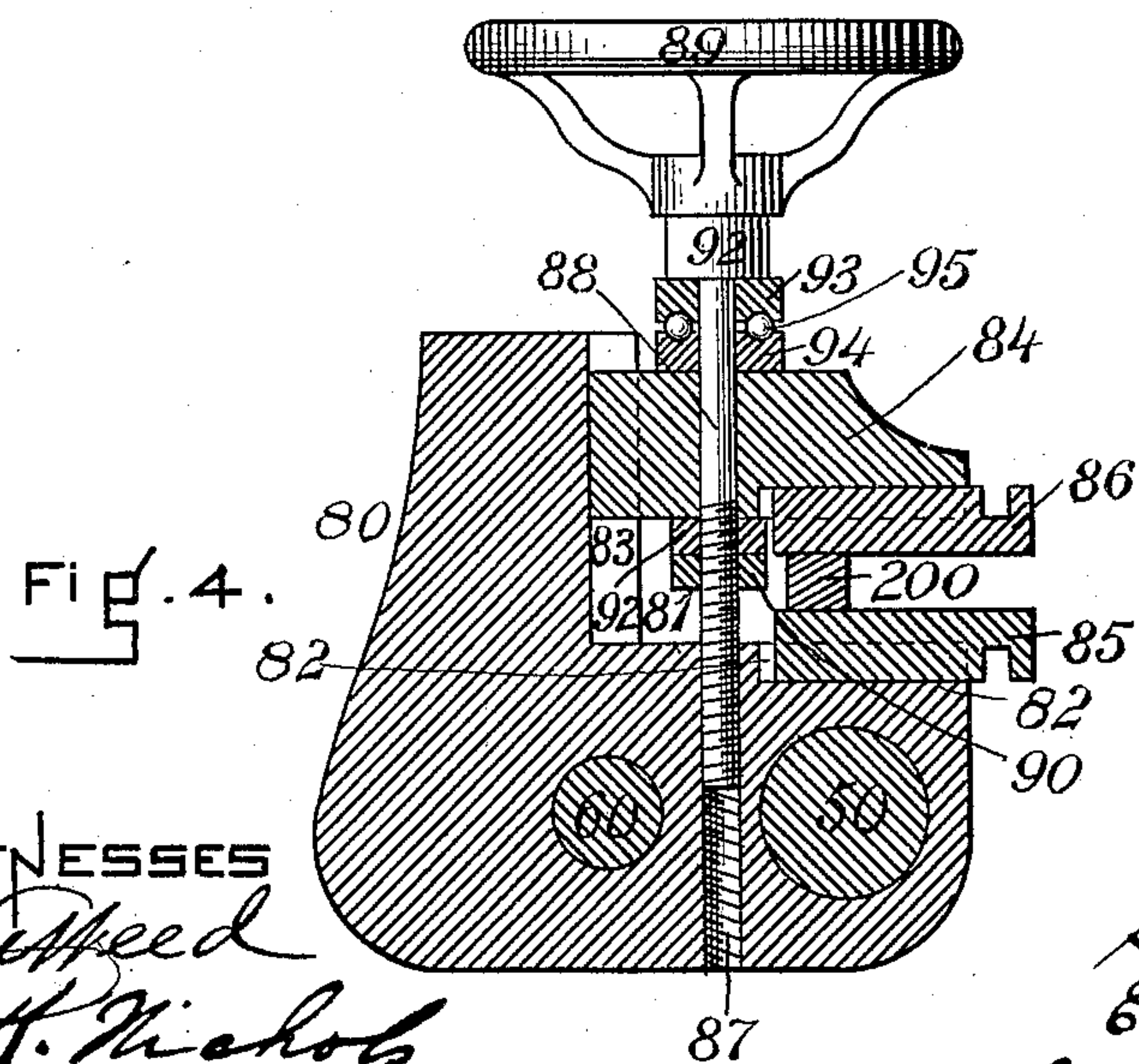
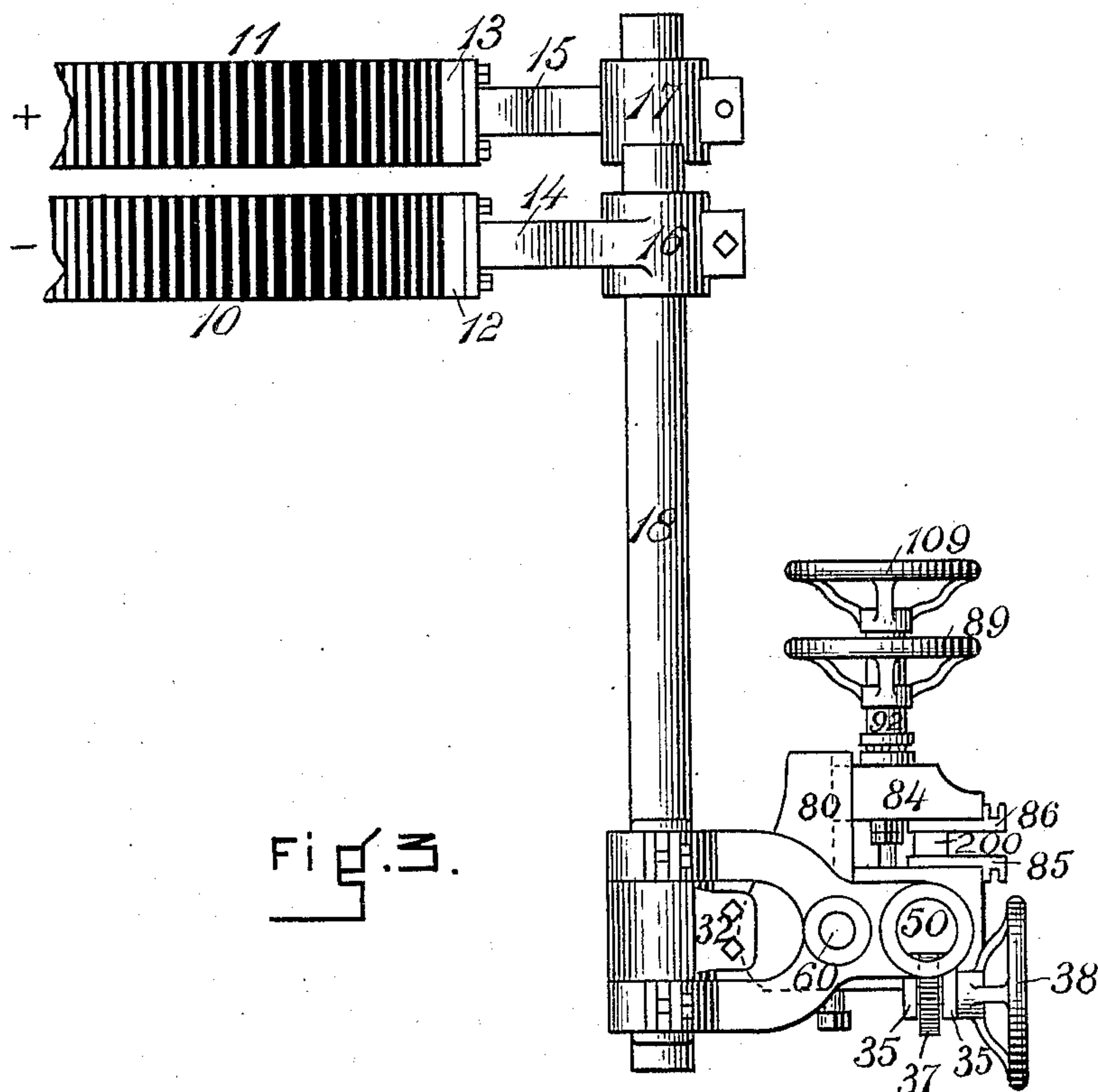
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WITNESSES

C. A. Speed
W. H. Nichols

INVENTORS

G. D. Burton
E. E. Angell
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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. 486,029, dated November 8, 1892.

Application filed December 22, 1891. Serial No. 415,835. (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 of America, have invented certain new and useful Improvements in Electric Forges, of which the following is a specification.

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

The object of the invention is to provide an electric forge, the electrodes of which for supporting the bars to be heated may be adjusted with facility to receive bars of different lengths and the jaws thereof readily opened and closed for grasping and releasing the bars.

Figure 1 of the accompanying drawings represents a front elevation of this improved electric forge. Fig. 2 represents a plan view thereof. Fig. 3 represents an end elevation thereof, and Fig. 4 represents a transverse section through one of the electrodes.

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 the positive and negative poles of an electric-current converter, which need not be fully illustrated or described 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. A bracket 14, composed of copper or other suitable conductive material, is attached at its inner end to the boss of the ring 10 and provided at its outer end with a clamp 16. A similar bracket 15, also composed of copper or other suitable conductive material, is attached at its inner end to the boss or terminals 13 of the converter-ring 11 and provided at its outer end with a clamp 17. A vertical conductive rod 18 is adjustable in the clamp 16, and a vertical conductive rod 19 is adjustable in the clamp 17. Horizontal conductive arms 20 and 21 extend in opposite directions from the lower ends of the rods 18 and 19, being provided with clamps 22 and 23 at their inner ends, whereby said arms are adjustable on said rods. These arms

are also provided with standards 24 and 25 at their outer ends.

Brackets 30 and 40, composed of copper or other suitable material, are supported on said standards, respectively, being provided with clamps 31 and 41, which engage said standards. These clamps render the brackets adjustable, so that they may be swung to different angles. These brackets are preferably forked at their inner ends to impart a stiff support. A clamping-collar, as 32, may be disposed on each of the standards between the forked arms. The bracket 30 is provided with a transverse sleeve 33 near its outer end and with a transverse sleeve 34 at its outer end, and the bracket 40 is provided with similar sleeves 43 and 44. The bracket 30 is also provided with dependent lugs 35, in which a stub-shaft 36 is journaled. A pinion 37 is attached to said shaft between said lugs and turns in a slot which opens into the sleeve 34. A hand-wheel 38 is attached to the outer end of said stub-shaft for actuating it. The bracket 40 is also provided with similar lugs and with a similar stub-shaft, having a pinion and an actuating-wheel 48. A conductive arm 50, provided with a rack, is adjustable in the eye or sleeve 34 and is engaged by the pinion 37 for effecting the adjustment thereof. An arm 60 is adjustable in the eye 33, parallel with the arm 50. Similar arms 70 and 71 are adjustable in the eyes 43 and 44 at the opposite side of the forge, substantially in line with the arms 50 and 60.

An electrode 80 is attached to the inner ends of the arms 50 and 60, the arm 50 serving as the main support and the arm 60 serving as a guide and brace-rod. This electrode consists of a block of conductive metal having a recess 81 on its front side, a horizontal portion of the recess serving as a fixed jaw 82, and the vertical face thereof being provided with a guideway 83, in which a movable jaw 84 is adjustable. These jaws are provided with sliding contact-faces 85 and 86, dovetailed to the bodies of the jaws. This electrode is provided with a vertical screw-threaded socket 87, in which a screw-spindle 88 plays. This spindle is provided at its upper end with a hand-wheel 89 and passes

down through the movable jaw 84 into the screw-socket 87. Check-nuts 90 and 91 are disposed on said spindle below the upper movable jaw. The spindle 88 is provided near its upper end with a boss 92, and collars 93 and 94, having annular grooves on their adjacent faces, are interposed between said boss and the upper face of the movable jaw, said collars being separated by antifriction ball-bearings 95. The check-nuts on the spindle below the movable jaw serve to clamp and hold the same. The clamping-faces 85 and 86 of the fixed and movable jaws may be composed of copper or other suitable conductive material set in recesses thereof. The electrode 100 at the opposite side of the apparatus is preferably of a similar construction to that just described.

In the use of this improved electric forge the electrodes are adjusted to the proper distance to suit the length of the bars to be heated by turning the hand-wheels 38 and 48, whereby the pinions which engage the sliding arms 50 and 70 actuate said arms and increase or diminish the distance between the electrodes. The horizontal hand-wheels 89 and 109 are then actuated to open the jaws sufficiently to receive a bar. The bar, as 200, is then placed with one end between the jaws 82 and 84 and with the other end between similar jaws of the electrode 100. The electric current being turned on passes from the positive ring 10 through the bracket 14, rod 18, arm 20, bracket 30, arms 50 and 60 and electrode 80 to the left-hand end of the bar to be heated, and entering said bar it passes therethrough to the electrode 100, thence through the arms 70 and 71, through the bracket 40, through the standard 25, through the arm 21, through the rod 19, and through the bracket 15 to negative ring 11 of the converter, or vice versa. The bar to be heated, being of much greater electric resistance than the electrodes and conductors, becomes heated in a few seconds to the required temperature and is released by turning the hand-wheels 89 and 109 and removed from the forge. Two or more bars may be placed between the jaws of the electrodes and heated simultaneously. As thus constructed the forge is strongly braced and the electrodes and their jaws are easily adjusted to suit bars of different lengths. The ball-bearings at the

top of the spindle for actuating the clamping-jaws reduce friction and enable them to be operated with facility. 55

We claim—

1. In an electric forge, the combination of two electrodes connected with opposite electric poles, one of said electrodes being supported by two horizontal arms, and a bracket provided with eyes, in which said arms are adjustable. 60

2. In an electric forge, the combination of two horizontal conductive arms connected with opposite electric poles, two brackets hinged to said arms provided with two sets of eyes, arms adjustable in one set of said eyes, electrodes attached to the inner ends of said arms, and guide-arms supported in the other set of eyes and connected with said electrodes. 70

3. In an electric forge, the combination of two horizontal conductive arms connected with opposite electric poles, two brackets hinged to said arms provided with two sets of eyes, arms adjustable in one set of said eyes, electrodes attached to the inner ends of said arms, and guide-arms supported in the other set of eyes and connected with said electrodes. 80

4. An electrode for an electric forge, consisting of a recessed block provided with a fixed jaw on the horizontal face of said recess and with a guideway on the vertical face thereof, a spindle adjustable in a screw-threaded socket of said electrode, a movable jaw on said spindle and sliding at its inner end in said guideway, a boss on said spindle, grooved collars between said bars and movable jaw, ball-bearings between said collars, and means for turning said spindle. 90

5. In an electrode for an electric forge, the combination of a bracket provided with a sleeve or eye, an arm adjustable in said eye and provided with a rack, a pinion engaging said rack, and means for actuating said pinion. 95

In testimony that we claim the invention above set forth we affix our signatures in presence of two witnesses. 100

GEO. D. BURTON.

EDWIN E. ANGELL.

Witnesses:

CHAS. F. ADAMS,
CHESTER MARR.