T. E. MURRAY.

ELECTRICAL WELDING.

APPLICATION FILED DEC. 10, 1915.

1,172,302.

Patented Feb. 22, 1916.

4 SHEETS—SHEET 1.

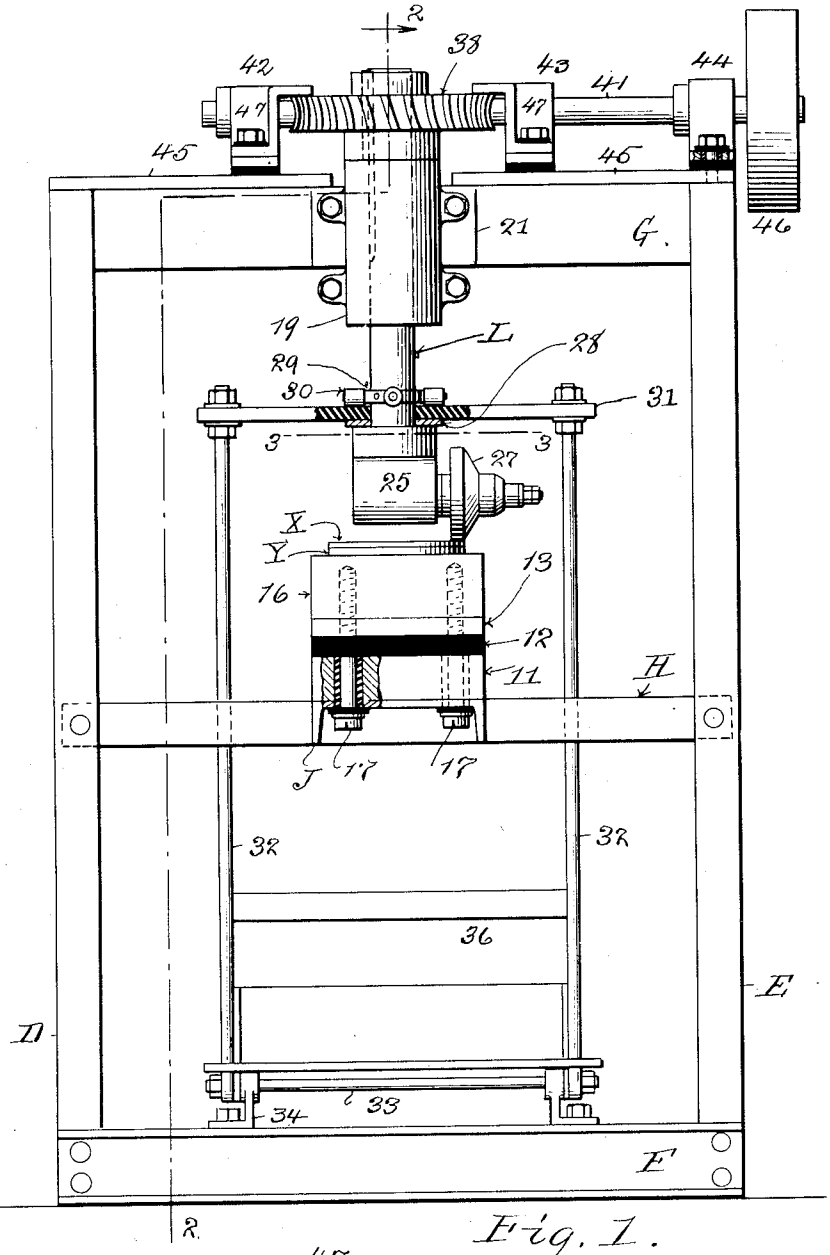
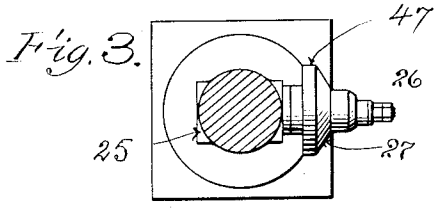


Fig. 1.

Fig. 3.



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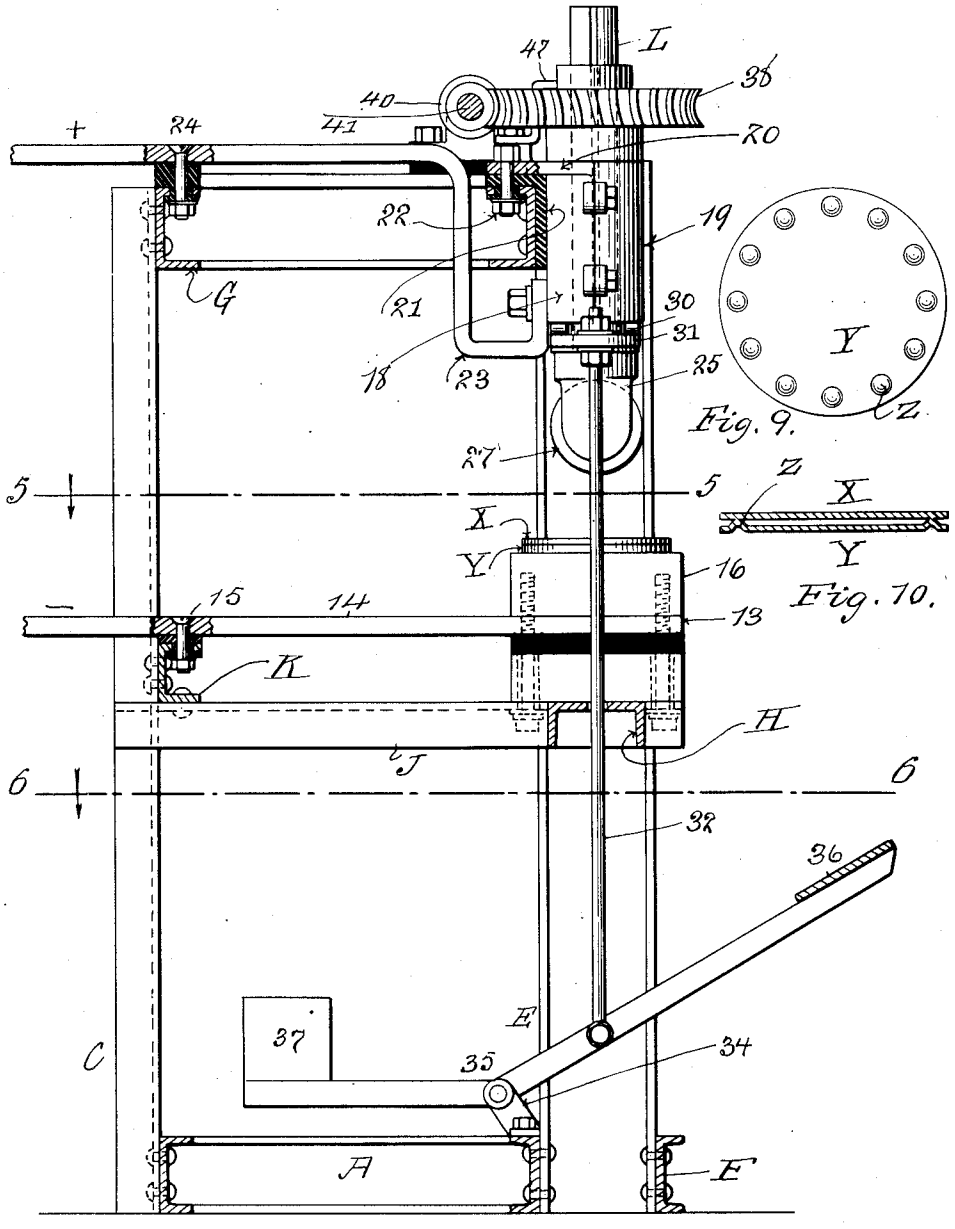


Fig. 9.

Fig. 10.

Fig. 2.

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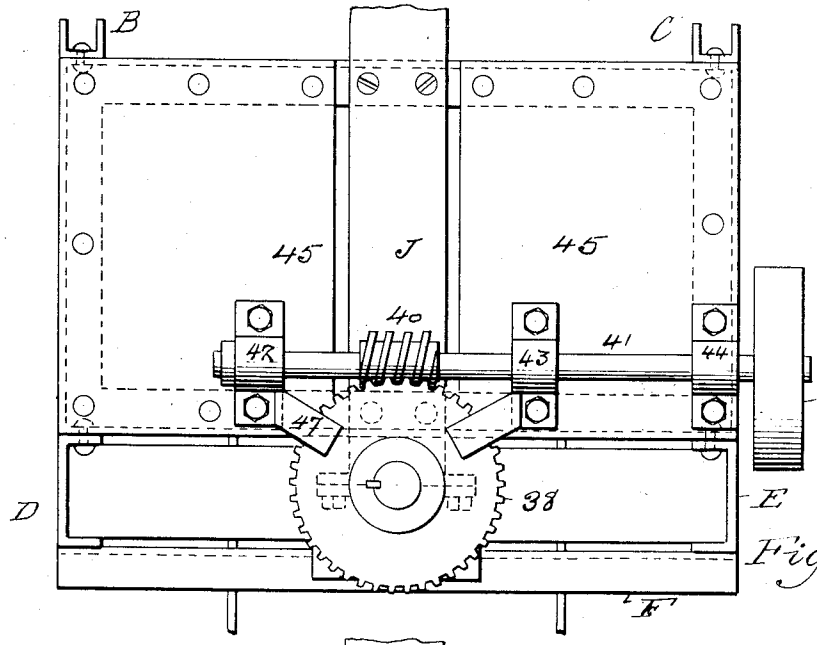


Fig. 4.

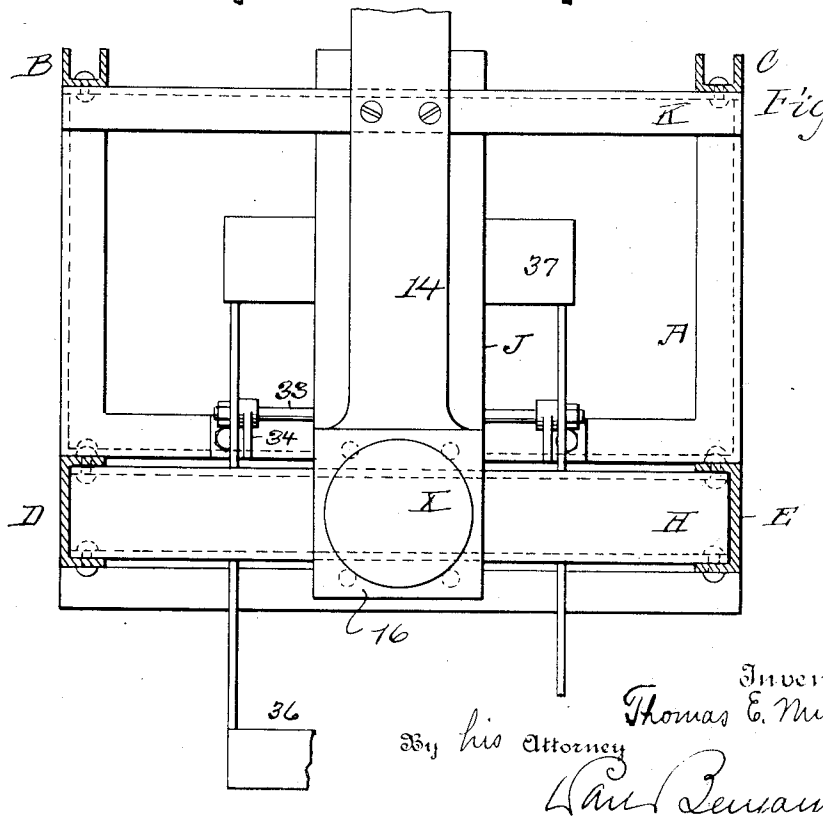


Fig. 5

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4 SHEETS—SHEET 4.

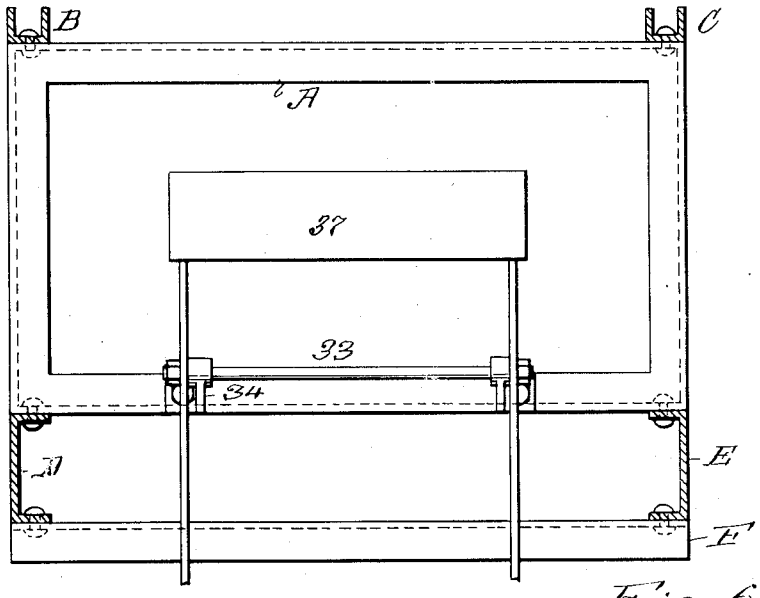


Fig. 6

Fig. 7.

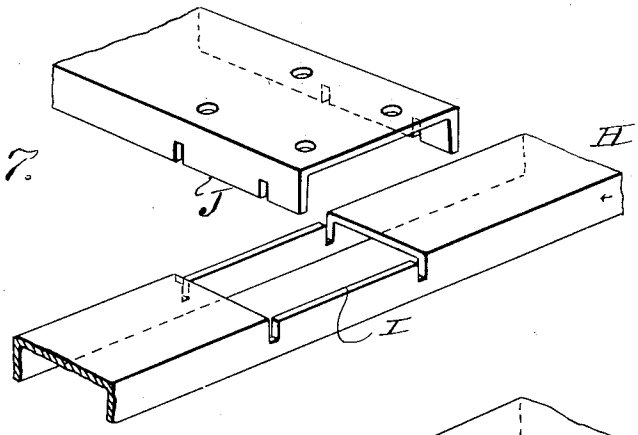
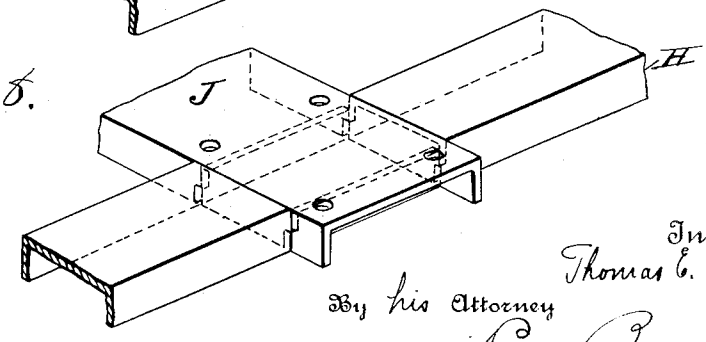


Fig. 8.



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UNITED STATES PATENT OFFICE.

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ELECTRICAL WELDING.

1,172,302. Specification of Letters Patent. Patented Feb. 22, 1916.

Application filed December 10, 1915. Serial No. 66,063.

To all whom it may concern:

Be it known that I, THOMAS E. MURRAY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Electrical Welding, of which the following is a specification.

The invention relates to electrical welding, and consists in the construction of the machine, hereinafter set forth. The objects to be welded are placed between electrodes, one of which is a roller carried by an arm on a rotary and longitudinally movable shaft. Means are provided for moving said shaft downwardly to cause said roller to press upon the objects, while at the same time said shaft is rotated to cause the roller to move in a circular path upon the surface of the upper of the two objects. The welding is then performed incrementally as the roller moves over its path, or at successive spots if one of the objects be provided with projections on which the other object bears, thus localizing the said spots.

In the accompanying drawings Figure 1 is a front elevation of my welding machine. Fig. 2 is a vertical section on line 2, 2 of Fig. 1. Fig. 3 is a section on the line 3, 3 of Fig. 1. Fig. 4 is a top view. Fig. 5 is a section on the line 5, 5 of Fig. 2. Fig. 6 is a section on the line 6, 6 of Fig. 2. Figs. 7 and 8 are perspective views, showing the mode of connecting the frame members, and Fig. 9 is a plan and Fig. 10 a cross section of two circular plates to be welded together, showing the projections on one of said plates.

Similar letters and numbers of reference indicate like parts.

The frame of the machine is constructed as follows: A is a rectangular base frame, which rests on the floor. Two uprights B and C are bolted to the rear, and two uprights D, E to the front of said frame. The front uprights D, E are also connected at their lower ends by a cross girder F. At their tops, the uprights B, C, D, E are bolted to a rectangular frame G, similar to frame A. A second girder H also extends between uprights D, E, and is bolted thereto. The said girder is recessed and notched, as shown at I, Fig. 7, to receive the notched flanges of a girder J which is secured to a cross girder K, Fig. 2, bolted to rear uprights B, C. In Fig. 7, the girders H and J are shown separated at their joint, and in Fig. 8 they are shown put together. Upon the girder J above the joint is placed a block 11 of metal, and above said block is a plate 12 of insulating material. On said plate rests a plate 13 of metal which is integral with a bus-bar 14 which extends rearwardly and is secured by an insulated bolt 15, Fig. 2, to the cross girder K. Above plate 13 is a circular block 16 of metal. Screw bolts 17 pass through girder J, plate 11, from which they are insulated by the usual insulating bushings shown in Fig. 1, plate 12, plate 13 and block 16, thus securing said parts together. Block 16 is the lower welding electrode.

L is a vertical shaft received in a journal box formed in two parts 18, 19, bolted together. The part 18 of said box at its upper portion has a plate 20 cast integral with it, which plate extends over the front member of frame G. An angle plate 21 of insulating material rests on said frame and extends under plate 19 and between the front member of said frame and the part 18 of the journal box. The front member of rectangular frame G, insulating angle plate 21 and plate 20 are secured together by bolt 22, insulated from said member. The lower portion of part 18 of the journal box is bolted to the upwardly bent end of a bus-bar 23 which is bolted to said rectangular frame G and insulated therefrom, as shown at 24, Fig. 2.

The shaft L extends downwardly through the journal box and carries at its lower end a block 25, from which extends a radial shaft 26, on which shaft is mounted the roller 27. Above the block 25 said shaft passes through a spacing plate 28, and above said plate has fast to it a ring 29, Fig. 1, which carries rollers 30 which rest on the top of a bar 31, to which are fastened vertical rods 32. A rock shaft 33 pivoted in lugs 34 bolted to the rectangular frame F carries bell crank levers 35. The rods 32 are connected to the front arms of said levers, and said arms carry a foot treadle 36. The rear arms of said levers carry a counterweight 37.

On the upper part of shaft L is a pinion 38, the hub of which is splined to said shaft L and rests upon the top of bearing 18, 19. Said pinion is rotated by a worm 40 carried on shaft 41, supported in brackets 42, 43, 44, Fig. 1, on two covers 45, Fig. 1, which rest

upon the top rectangular frame G. Said shaft 41 also carries a driving pulley 46. Two fingers 47 extend from the brackets 42, 43 and terminate above pinion 38 to prevent upward displacement thereof.

The operation of the machine is as follows: The objects to be welded, here two plates X, Y, are placed one above the other on the lower electrode 16. One of said plates may have projections Z upon it, as shown in Figs. 9 and 10, the other plate then resting upon said projections. The foot treadle 36 is then pushed down, and in this way the roller electrode 27 is mechanically pressed upon said plates—while at the same time the welding current passes from one bus-bar, as 23, to the roller electrode 27, so through the plates X, Y, to bus-bar 14. By reason of the rotation of the shaft L the roller electrode 27 is caused to move in a circular path upon the upper plate X, so that the current passes through successive increments of the plates, if the projections be not present, or through said projections Z successively, if they be present. In the one case, a continuous circular weld is made, having a width determined by the width of the circumferential periphery 47, Fig. 3, of roller 27. In the other case, spot welds are formed at each projection Z.

I claim:

1. A welding machine, comprising two electrodes, one of said electrodes being a roller, means for moving said roller electrode in a closed curvilinear path, and means for varying the distance between said electrodes.

2. A welding machine, comprising two electrodes, one of said electrodes being a roller, a rotary shaft, an arm fast on said shaft carrying said roller and moving the same in a closed curvilinear path on the surface of one of the bodies to be welded, and means for moving one of said electrodes with relation to the other.

3. A welding machine, comprising two electrodes, one of said electrodes being a roller, a longitudinally slidable rotary shaft, an arm on said shaft carrying said roller, and means for sliding said shaft to move said roller with relation to the other electrode.

4. A welding machine, comprising a frame, two electrodes, one of said electrodes being a roller, a rotary slidable shaft, a shaft bearing mounted on said frame, a pinion on said shaft, a worm engaging said pinion, an arm on said shaft carrying said roller, and means for sliding said shaft in its bearing to move said roller with relation to the other electrode.

5. A welding machine, comprising two electrodes, one of said electrodes being a roller, a rotary shaft carrying said roller, a cross bar receiving said shaft and bearing upon a shoulder thereon above said roller, a fixed ring on said shaft above said cross bar, rollers in said ring bearing upon said bar, and treadle mechanism connected to said cross bar for raising and lowering said shaft.

In testimony whereof I have affixed my signature in presence of two witnesses.

THOMAS E. MURRAY.

Witnesses:
GERTRUDE T. PORTER,
MAY T. MCGARRY.