No. 837,249. PATENTED NOV. 27, 1906.

J. C. PERRY.

APPARATUS FOR MAKING WELDS.

APPLICATION FILED JULY 16, 1904.

Fig. 3.

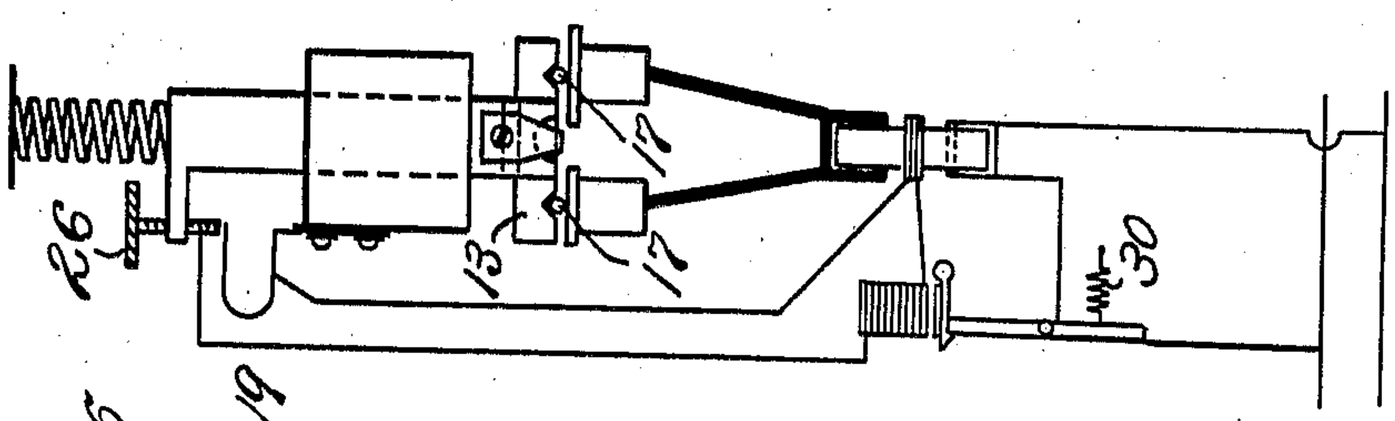


Fig. 2.

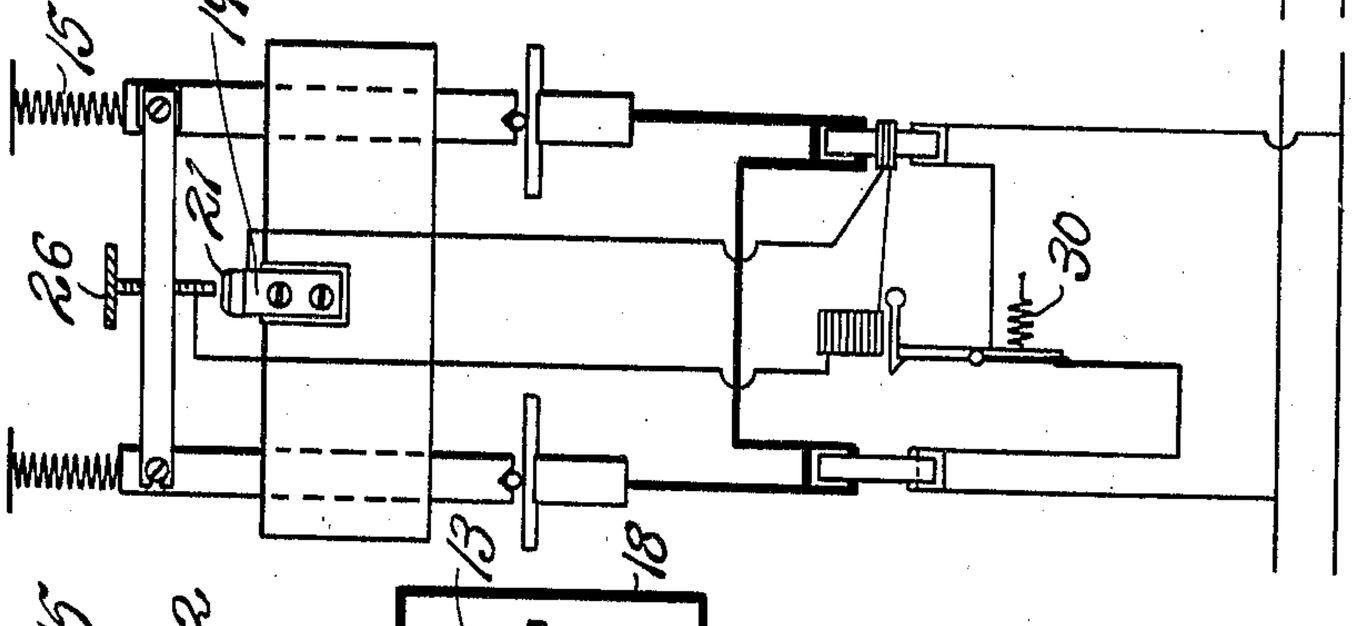


Fig. 1.

Fig. 4.

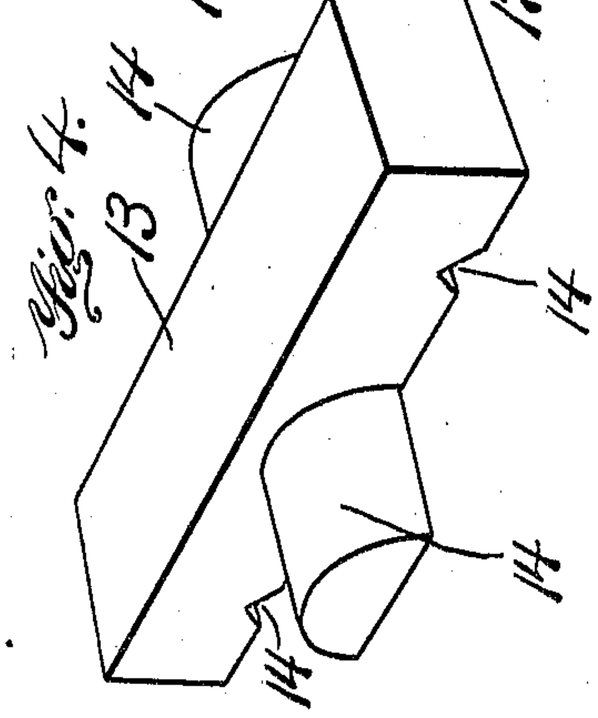
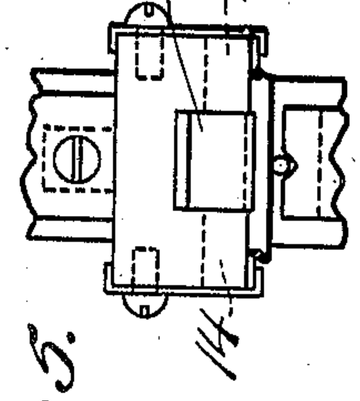


Fig. 5.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING WELDS.

No. 837,249. Specification of Letters Patent. Patented Nov. 27, 1906.

Original application filed March 23, 1901, Serial No. 52,518. Divided and this application filed July 16, 1904. Serial No. 216,807.

To all whom it may concern:

Be it known that I, JOHN C. PERRY, of La Junta, in the county of Otero and State of Colorado, have invented certain new and useful Improvements in Apparatus for Making Welds, of which the following is a specification.

This invention relates to an apparatus for making a plurality of welds simultaneously.

Figure 1 in front elevation shows diagrammatically an apparatus constructed in accordance with my invention, the arrangement of parts being such that the current passes in parallel through all of the joints, the outside plungers being disconnected from the circuit-breaking circuit. Fig. 2 is a like view of an apparatus constructed in accordance with my invention, the welding-current being arranged to pass in series through the points to be welded instead of in parallel, as in Fig. 1. Fig. 3 is a diagrammatic view similar to Fig. 2, showing the arrangement of the parts, the welding-current, however, as in Fig. 2, being arranged to pass in series through the points to be welded. Fig. 4 is a detail perspective view of one of the electrodes or pressure members. Fig. 5 is a detail view showing the manner of connecting the adjustable welding-jaw to its plunger.

The same characters indicate the same parts in all of the figures.

The form of framework shown in my application Serial No. 52,518 (of which this is a division) or any suitable framework may be employed, none being illustrated, as it forms no part of my present invention.

Referring to Fig. 1, 1 represents a transformer adapted for welding-currents, suitably supported and insulated. One of the wires 2 from the source of power is connected to one end of the primary coil of the transformer, the wire from the other end of the primary coil running to an insulated pivoted arm 4 or binding-post of a circuit-breaker 5. The other wire 6 from the source of power leads to the point where the primary circuit may be closed or broken by the arm 4 of the circuit-breaker 5. 7 represents a stationary electrode, which should be suitably supported and insulated. One branch 8 of the secondary circuit is connected to said electrode. This electrode is shown as provided with a series of projections or welding-jaws 9, suitably grooved to receive a rod, bar, or wire 10. A girth 11 is arranged above the electrode 7 and suitably insulated. In this girth 11 are arranged a series of four plungers 12, each of which at its lower end carries a double pivoted electrode 13, having a groove 14 at each end to receive a rod, bar, or wire 17, the grooves 14 being arranged directly above the welding-jaws 9 and at right angles to the groove in said jaws. A spring 15 is arranged upon each plunger 12 to yieldingly force the electrodes 13 toward the welding-jaws 9, and thus force the wires 17 and 10 together during the welding operation. The plungers 12 may be raised by any suitable means either manually or mechanically operated. The plungers 12 are insulated from the girth 11 and from the other parts of the machine. A branch 18 of the secondary circuit extends from the transformer to each electrode 13 either direct or by way of its plunger, in any desired or preferred way. 19 represents a block carried by the girth 11 near its center, suitably insulated from said girth. 20 represents a wire, a few turns of which are taken about the secondary coil of the transformer. One end of this wire is connected to a contact-spring 21, secured on the top of the block 19. The other end of this wire 22 runs to an electromagnet 24. 25 represents a wire running from the contact-screw 26 to the electromagnet 24. 27 represents a bar pivoted at one end to one of the plungers 12. The other end of this bar is slotted to receive a headed pin 24^a, carried by another bar to provide for the unequal motion of the plungers, the contact-screw 26 being carried by the bar 27 and insulated therefrom. In the form here shown the armature 28 of the electromagnet is pivoted and acts as a dog or keeper to hold the pivoted arm 4 against the tension of the spring 30 in contact with the terminal of the wire 6. When, however, the circuit is closed through the electromagnet by way of contact through the end of the screw 26 and spring 21, the magnet is vitalized, its armature 28 attracted, thus releasing the arm 4, permitting the spring 30 to draw it away from the wire 6, and thus break the primary circuit.

In operation the wires or bars or rods 10 and 17 are placed in their respective welding-jaws. The electrodes 13 press the wires 17 against the wires 10 under the influence of the spring 15. The circuit is then closed

through the primary circuit, and as the metal softens the springs 15 press their respective plungers downward until the combined motion or average motion of the plungers carrying the bar 27 makes a contact between the screw 26 and the spring 21. Such contact breaks the primary circuit and stops the welding operation.

In Figs. 2 and 3 a secondary circuit from the transformer passes through the two joints to be welded in series, while in Fig. 1 the current passes through the joints to be welded in multiple arc or parallel.

In Fig. 1 the multiple-electrode construction shown combines the rocking or self-adjusting motion of the electrode 13 with the means for producing an average amount of upset, the electrode 13 having semicircular ears 14 adapted to fit the complemental recesses in the ends of the plungers 12, which permits the proper gripping by the electrode of the two wires. In Fig. 1 four plungers are arranged, each being provided with the double-jawed adjustable electrode 13, formed with the semicircular ears 14. The two central plungers are connected by the pivoted insulated contact-screw-carrying bar 27. The welding-current is applied simultaneously to all the electrodes. The action of the welding-current on the two outside electrodes and the amount of upset there secured will not affect the breaking of the welding-current, but each of said electrodes will automatically adapt itself to the wires engaged by it. In the construction shown in Fig. 1 the action of the welding-current is stopped by the average amount of upset obtained by the electrodes 13 of the two middle plungers 12, that are connected by the bar 27.

I have found in practice that in making welded fabric of close mesh this construction is entirely satisfactory, since the welding-jaws of the electrodes are automatically adjustable and the amount of upset which controls the breaking of the welding-current is controlled by an average amount of upset of a plurality of welds. When electrodes are self-adjusting and the breaking of the welding-current depends upon the average upset of a plurality of welds, the result should be sufficiently uniform and satisfactory if all the welding-jaws or electrodes are not connected up to the mechanism for breaking the welding-current.

Having thus explained the nature of my invention and described a way of making and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, what I claim, and desire to secure by Letters Patent, is—

1. In combination with the coöperative elements of a machine of the class described, a plurality of self-adjusting electrodes combined with means for equalizing the upsetting pressure applied simultaneously through said electrodes.

2. In an electric welding apparatus in combination, a plurality of plungers carrying movable welding-jaws, a bar pivotally connected at one end to one of said plungers and loosely connected at its other end with another of said plungers, circuit-breaking means carried by said bar whereby the movement of said bar to break the welding-circuit is controlled by the average amount of the movement of the two plungers.

3. In an electric welding apparatus, a welding-jaw comprising a jaw member formed with grooves, a contact plate or jaw provided with work-engaging recesses and also provided with trunnions to be arranged in said grooves, and means for retaining the trunnions in place.

4. In combination with the coöperative elements of a machine of the class described, a single transformer, and a plurality of pairs of electrodes or welding-jaws arranged in the welding or secondary circuit of said transformer, and automatic acting means controlled by the average upset of two or more pairs of jaws arranged to stop automatically the welding action of all said pairs of jaws as a gang.

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

JOHN C. PERRY.

Witnesses:
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