

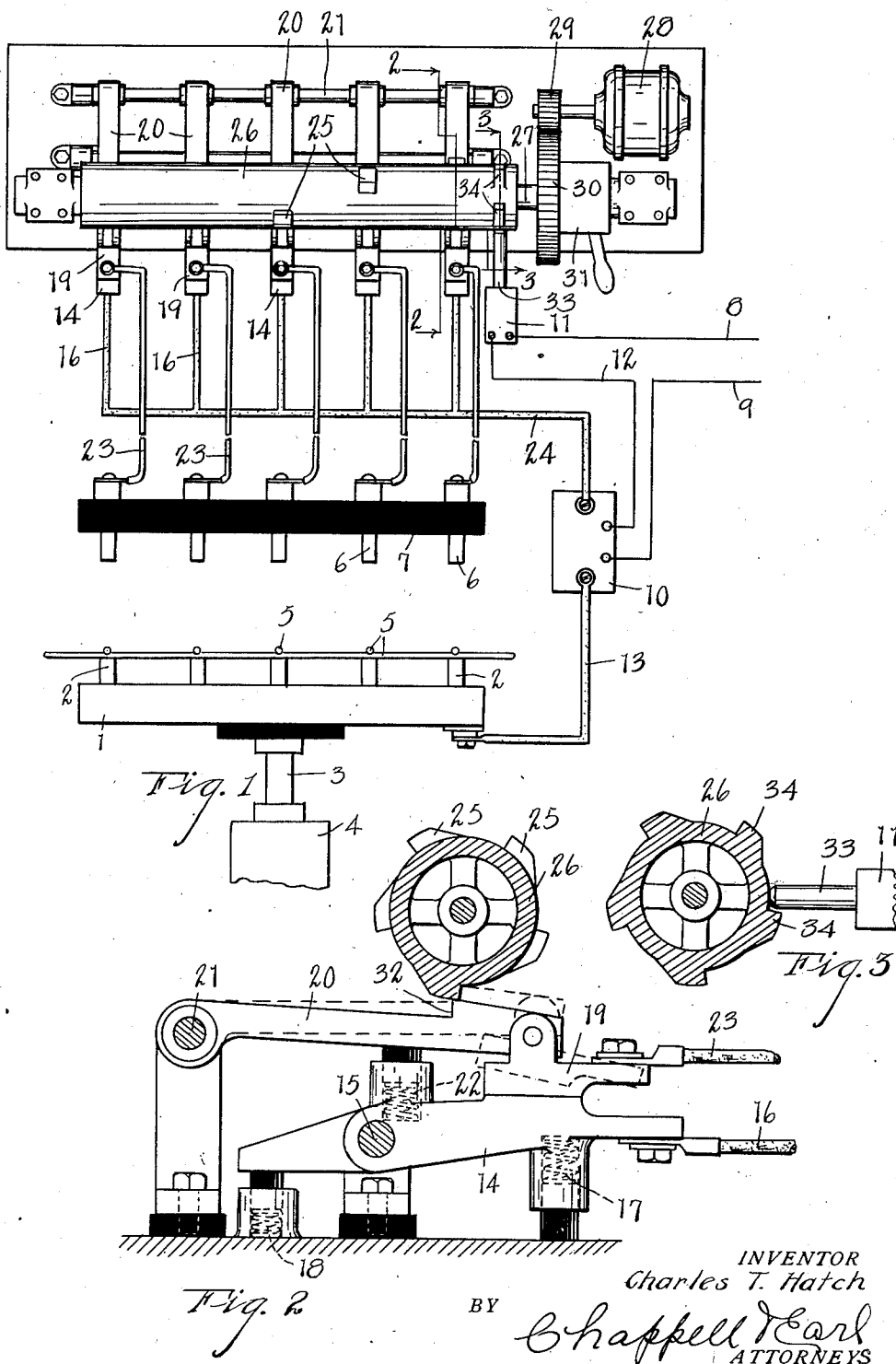
April 15, 1930.

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1,754,948

ELECTRIC WELDING MACHINE.

Filed Sept. 21, 1928



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ELECTRIC WELDING MACHINE

Application filed September 21, 1928. Serial No. 307,392.

The main objects of this invention are:

First, to provide an improved electric welding machine which is well adapted for welding grids, grills, or like work, having a plurality of joints.

Second, to provide a welding machine adapted for multiple welding in which the arcing is minimized.

Objects pertaining to details and economies of construction and operation of my invention will definitely appear from the description to follow. The invention is defined in the claims.

A structure which embodies the features of my invention is clearly illustrated in the accompanying drawing, in which:

Fig. 1 is an elevational view, partially conventionalized, of my improved electric welding machine, only such parts being illustrated as are deemed essential to illustrate a working embodiment.

Fig. 2 is a fragmentary view partially in vertical section on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary view partially in vertical section on line 3—3 of Fig. 1.

In the accompanying drawing, 1 represents an electrode bar having a plurality of electrodes 2 thereon. The bar 1 is a conductor and, in effect, the bar and the electrodes constitute an electrode provided with a plurality of points.

This bar 1 is carried by a plunger 3 operative in the air cylinder 4 for closing the electrodes.

The work illustrated consists of a plurality of crossed wires or rods 5 which it is desired to weld at their crossing points. A plurality of electrodes 6 are mounted in and insulated from the supporting bar 7 to coact with the electrodes 2.

In practice the electrodes 2 and 6 are preferably adjustable, this adjustment, however, not being illustrated.

The main circuit or current supply wires are shown at 8 and 9. The wire 9 is connected

to the transformer shown conventionally at 10. The wire 8 is connected to the interrupter or breaker switch shown conventionally at 11 which, in turn, is connected by the wire 12 to the transformer. The transformer is connected by the conductor 13 to the electrode bar 1.

I provide a switch for each coacting pair of electrodes, these switches comprising a switch or contact member 14 pivoted at 15 and connected by the wire 16 to one of the electrodes 6. This switch member is yieldingly supported on its pivot by means of the springs 17 and 18. The coacting contact or switch member 19 is carried by the arm 20 which is pivoted at 21, all of the arms 20 being mounted on a single pivot rod in this embodiment. The spring 22 acts to open and normally hold the switch in open position.

The switch contacts 14 are connected by the wires 16 to a lead or header wire 24 connected to the transformer. The electrode switches are successively closed by means of tappets 25 on the cylinder or drum 26 which is mounted on the shaft 27 driven from the motor 28. The motor is provided with a pinion 29 meshing with a gear 30 on the shaft 27. A clutch mechanism is provided for connecting the gear 30 to the shaft 27, this mechanism being shown conventionally at 31.

The tappets 25 are spirally arranged on the drum 26 to engage the shoulder portion 32 on the arms 20, the rear ends of the tappets having square shoulders so that as the tappets pass from the shoulder 32, the spring 22 quickly opens the switch. The tappets are preferably cammed so that they engage the arms with a minimum of shock.

To prevent arcing of the electrodes and also of the switches the breaker switch is operated in synchronism with the electrode switches. The breaker switch comprises a plunger 33 which is positioned to be engaged by the cam-like tappets 34 on the drum 26. These tappets 34 are positioned so that the breaker

switch is operated to close and open the main circuit while the electrode switches are closed, or, reversely stated, the electrode switches are opened and closed while the main circuit interrupter switch is open. This effectively prevents arcing.

I have illustrated my improved welding machine in an embodiment especially designed by me for the forming of grids, wire shelves and the like. While the welds are successively formed, the machine is of large capacity. This successive forming of the welds assures the effective welding of each joint.

Where the current is supplied simultaneously to a plurality of pairs of electrodes in work of this character, it is quite impossible to secure uniformity and partially defective work is very likely to result.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In an electric welding machine, the combination of a plurality of coacting pairs of electrodes, a transformer having a main circuit connected thereto, an electrode switch for each coacting pair of electrodes having one of its contacts connected to one of a pair of electrodes and the other to said transformer, electric connections for the other electrode of the pairs to said transformer, a circuit breaker switch interposed in said main circuit in advance of said transformer, and a drum provided with a plurality of spirally disposed tappets for successively closing said electrode switches as the drum is rotated and with a plurality of tappets coacting with said circuit breaker switch and acting to close said circuit breaker switch after the closing of one of the electrode switches and open it prior to the opening of the electrode switch.

2. In an electric welding machine, the combination of a plurality of coacting pairs of electrodes, a transformer having a main circuit connected thereto, an electrode switch for each coacting pair of electrodes having one of its contacts connected to one of the pair of electrodes and the other to said transformer, electric connections for the other electrode of the pairs to said transformer, a circuit breaker switch interposed in said main circuit in advance of said transformer, means for successively closing said electrode switches, and means for closing said circuit breaker switch actuated in timed relation with said electrode switch closing means and acting to close the circuit breaker switch after the closing of one of the electrode switches and open it prior to the opening thereof.

3. In a welding machine, the combination of a plurality of coacting pairs of electrodes, means for closing said electrodes simultaneously, a control switch for each pair of electrodes, means for controlling said control switches whereby they are independently and

successively closed and opened, a main circuit switch disposed in advance of said electrode switches and controlling the supply of current to each of said electrode switches, and means for opening and closing said main switch in timed relation to the closing and opening of said electrode switches and so that the main circuit switch is closed after the closing of one of the electrode switches and opened prior to the opening thereof.

In witness whereof I have hereunto set my hand.

CHARLES T. HATCH.

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