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ELECTRIC WELDING APPARATUS

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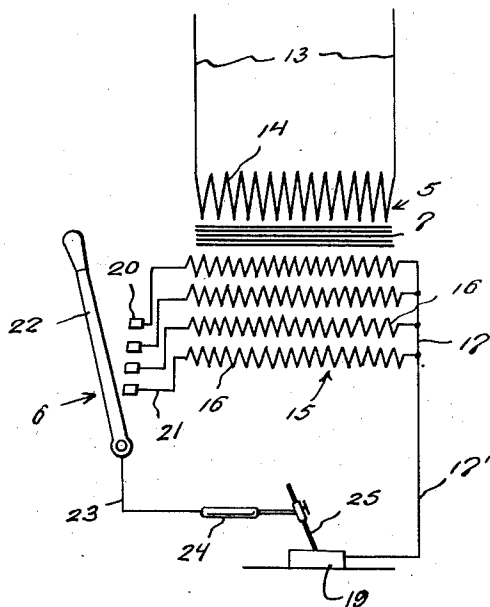


Fig. 2.

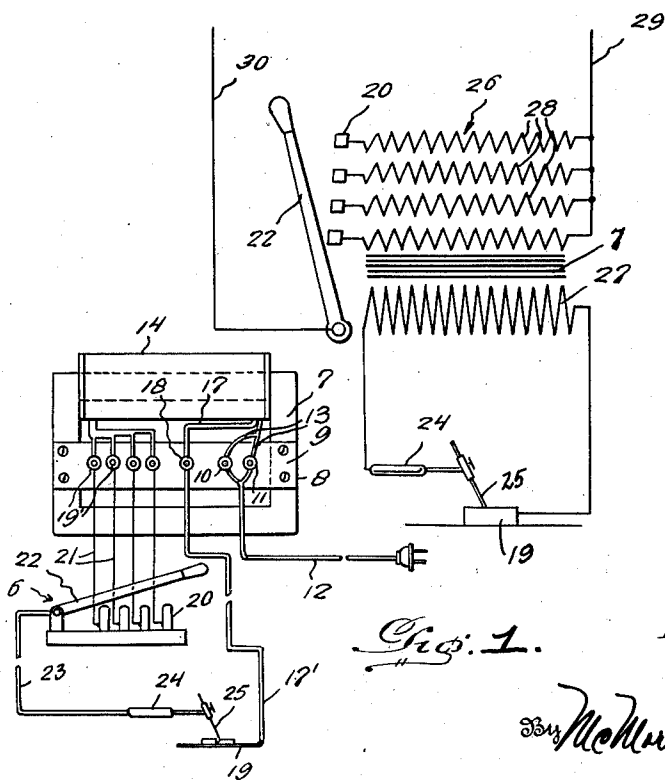


Fig. 1.

Fig. 3.

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ELECTRIC WELDING APPARATUS

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1 Claim. (Cl. 315—278)

This invention relates to electric welding and more particularly to a welding apparatus in which the electric circuit thereof has an improved transformer to permit the welder to easily change the heat at the welding pencil or stick at will without varying the arc voltage, so that different size welding sticks or pencils may be employed to permit carrying out different welding operations without damage or injury to the welding pencil or stick in use and still assure the striking of an electric arc at the work by the maintenance of the arc voltage substantially constant.

Another object of this invention is the provision of an alternating current transformer provided with an improved winding and a control switch therefor whereby a substantially constant voltage and variable amperage at the output thereof may be had, the switch permitting the amperage to be progressively stepped up or stepped down as desired.

With these and other objects in view as will become more apparent as the description proceeds, the invention consists in certain novel features of construction, combination and arrangement of parts as will be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawing, in which

Figure 1 is a side elevation illustrating a transformer forming the subject matter of the present invention and showing it connected in a circuit of a welding apparatus.

Figure 2 is a diagrammatical view showing the welding apparatus circuit with the transformer connected therein in accordance with my invention.

Figure 3 is a view similar to Figure 2 illustrating a modified form of my invention.

Referring in detail to the drawing, the numeral 5 indicates as an entirety an alternating current transformer constructed in accordance with this invention and 6 a control switch. The core of the transformer is designated by the character 7 and 8 indicates the support therefor. An insulated panel 9 is mounted on the support and carries a plurality of terminals. The terminals 10 and 11 have an electric extension cord 12 connected thereto whereby the transformer may be plugged into an ordinary electric outlet of alternating electricity. Electric leads 13 of a primary winding 14 are connected to the terminals 10 and 11. The primary winding is arranged about the core 7.

The secondary winding 15 of the transformer surrounds the primary winding 14 and consists of a selected number and size of coiled wires 16 thoroughly insulated from each other. Each wire 16 has one end electrically connected to a conductor 17 which connects to a terminal 18 on the panel 9. The terminal 18 is electrically connected to a ground plate 19 of the work to be electrically welded, by a conductor 17'. The other ends of the wires 16 are electrically connected to terminals 19' mounted on the panel 9. The terminals 19' are connected to contacts 20 of the switch 6 by conductors 21. The contacts are grouped in such way that they may be progressively engaged and disengaged by a hand operated and pivotally mounted switch lever 22.

A conductor 23 electrically connects the switch lever 22 to a holder 24 of a welding apparatus, the welding pencil or stick being indicated by the character 25.

The described secondary winding 15 of the transformer and the switch 6, will permit the welder to easily vary the amperage to the pencil or stick and consequently the welding heat with the voltage thereto remaining substantially constant in order that the welding arc may always be struck in carrying out a welding operation on the work.

The amperage output from the transformer may be progressively stepped up or down by progressively engaging and disengaging the switch lever with the contacts. Thus through the use of the described transformer and switch, in circuit with the welding apparatus, the operator may easily vary the heat of the welding pencil or stick which allows different size pencils or sticks to be employed without danger of injury thereto.

Referring to my modified form of invention, the switch 6 is employed, while the primary and secondary windings 26 and 27 are varied from that heretofore described. The same core and support therefor is employed. The primary winding consists of a plurality of coiled wires arranged about the core and each insulated from the other and may be of different size wires. Each wire, which is indicated by the character 28, has one end connected to one of the input terminals by a conductor 29. The lever 22 of the switch 6 is connected to the other input terminal by a conductor 30. The other ends of the wires are connected to the contacts 20 of the switch. Surrounding the primary winding of the modified form of the invention, is the secondary winding 27, the ends of which are electrically connected to

the ground plate for the work and the holder 24 of the welding apparatus.

Thus it will be seen that the modified form of my invention has the primary and secondary windings reverse from that described in connection with the form of transformer shown in Figure 2. The function of the modified form of transformer will be the same, that is, it will permit the welder to vary the heat at the pencil or stick with the arc voltage remaining substantially constant.

It is to be understood that the number of wires which are employed to make up either the primary or secondary winding in the different forms of my invention may be varied as to number as well as to size of the wires. This variance is provided so that the device may be employed in electric circuits of welding apparatus used for varying kinds of welding operations, that is, either large or small operations.

While I have shown and described the preferred embodiment of my invention, it will be understood that minor changes in construction,

combination and arrangement of parts may be made without departing from the spirit and scope of the invention as claimed.

Having thus described the invention, what I claim is:

Electric welding apparatus including an A. C. circuit, a work holder, a welding stick, and a transformer, said transformer comprising a magnetic core, a primary winding associated with said core and connected to said circuit, a plurality of secondary windings inductively associated with said core and said primary winding and having one of their ends commonly connected to said work holder, spaced contacts arranged in stepped relation and separately connected with the other ends of said secondary windings, and a single switch lever electrically connected with said welding stick and cooperative with said contacts to progressively connect and disconnect said secondary windings to and from the work holder and said welding stick.

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