Nov. 14, 1939. J. J. JONES 2,179,661

WELDING TRANSFORMER

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Fig. 3.

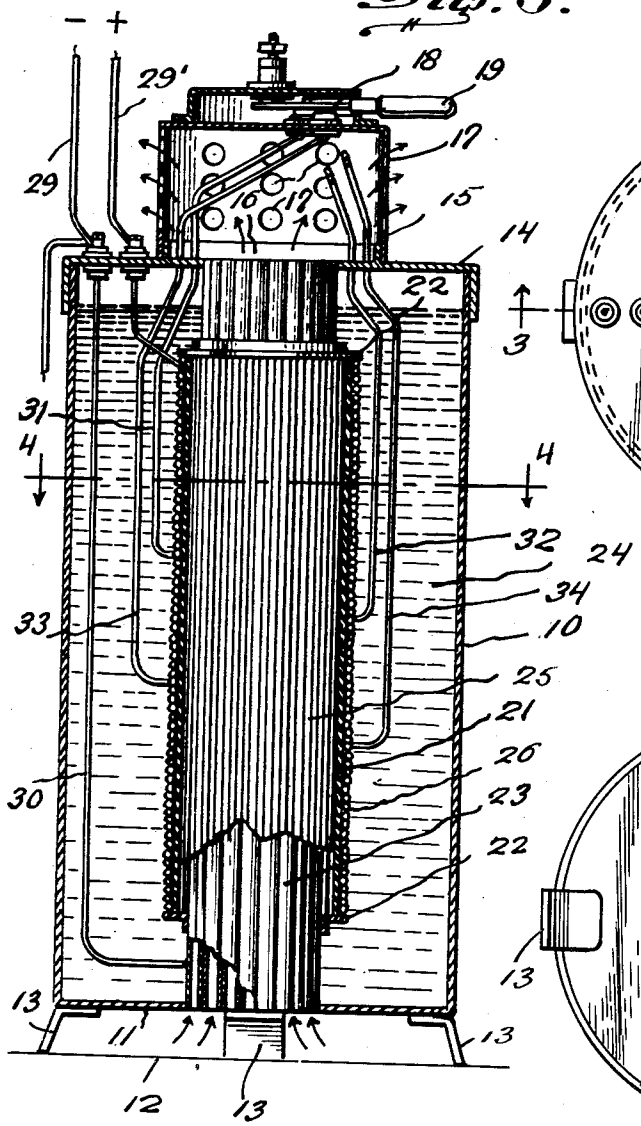


Fig. 1.

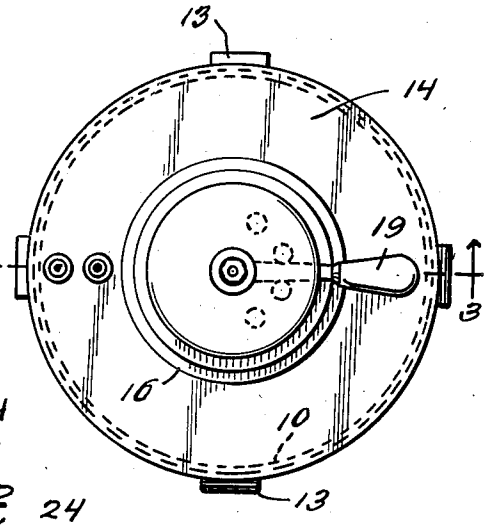
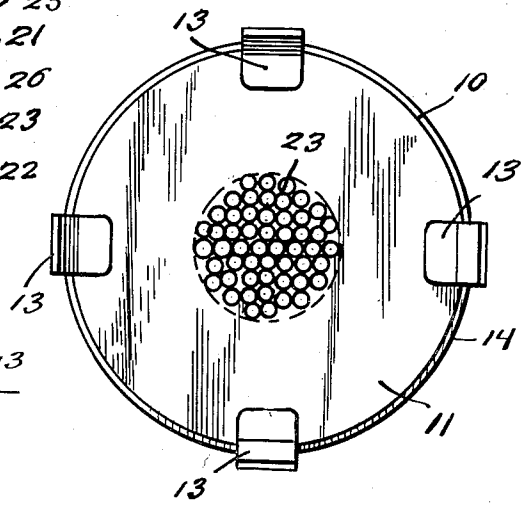


Fig. 2.



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Fig. 4.

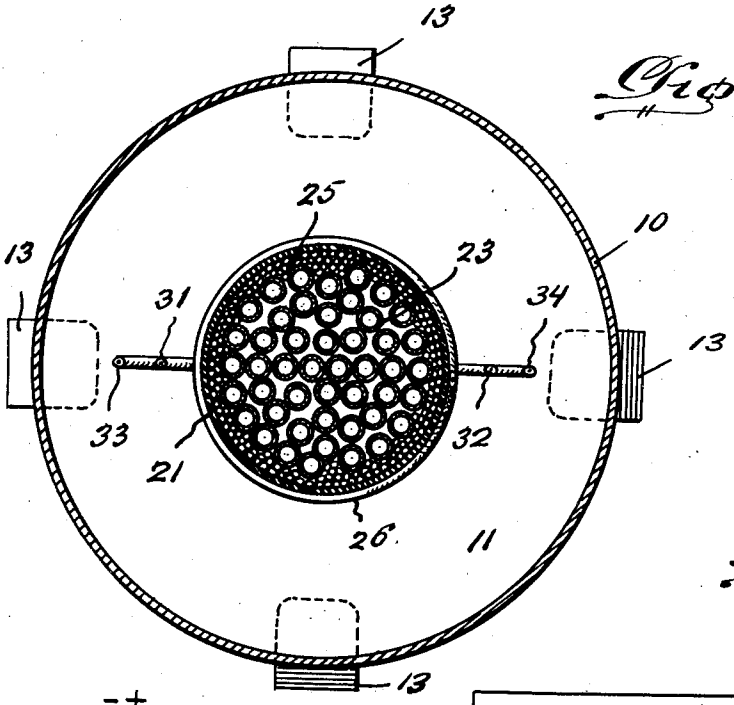
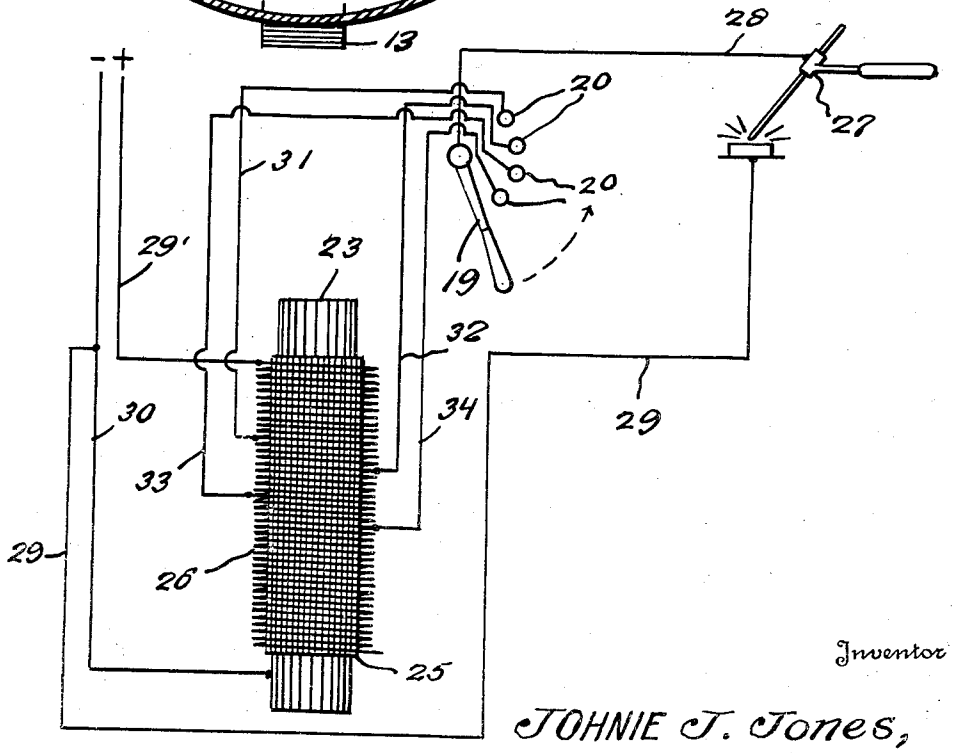


Fig. 5.



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Patented Nov. 14, 1939 2,179,661

UNITED STATES PATENT OFFICE

2,179,661

WELDING TRANSFORMER

Johnie J. Jones, Roswell, N. Mex., assignor, by direct and mesne assignments, to Roswell Welding Company, Inc., Roswell, N. Mex., a corporation

Application December 17, 1937, Serial No. 180,442

4 Claims. (Cl. 171—119)

This invention relates to an electric welder, and comprehends the provision of an apparatus of novel construction, whereby the intensity of the heat conveyed to the torch can be quickly and conveniently varied depending upon the degree of heat required for the particular character of work to be performed.

In carrying out the invention, I aim to provide an apparatus of the character mentioned, which is simple in construction, having its component parts arranged in a novel assembly to produce a compact unit of maximum efficiency for the purpose intended.

An important object of the invention resides in the novel construction of the core of the apparatus, the manner in which it is associated therewith, whereby the core is effectively cooled by both air and liquid.

The nature and advantages of the invention will be better understood when the following detail description is read in connection with the accompanying drawings, the invention residing in the construction, combination and arrangement of parts as claimed.

In the drawings forming part of this application like numerals of reference indicate similar parts in the several views and wherein:

Figure 1 is a top plan view of the apparatus.

Figure 2 is a bottom plan view.

Figure 3 is a vertical sectional view through the apparatus, taken on line 3—3 of Figure 1.

Figure 4 is a sectional view on line 4—4 of Figure 3.

Figure 5 is a diagrammatic view.

The apparatus forming the subject matter of the present invention embodies a casing 10 which can vary in size and contour, and whose bottom 11 is spaced from the ground or supporting surface 12 by suitable legs 13. Obviously, the legs 13 are comparatively short and can vary in number, but are primarily employed to provide for a complete circulation of air beneath the apparatus to cool the core thereof in a manner to be hereinafter set forth. The casing 10 is provided with a flanged top or cover 14, which together with the bottom have aligned central openings of proper dimensions to accommodate the adjacent ends of the core as illustrated in Figure 3. Supported on the cover 14 and surrounding the opening thereof is a perforated neck-like portion 15. This neck portion preferably surrounds a flange 16 rising from the edge of the central opening of the cover, but may of course be associated with the latter in any suitable manner. The wall of the neck portion 15 is provided with a plurality of perforations 17 for the escape of air which is utilized to cool the core in the manner to be presently described. Supported upon the closed end of the neck portion 15 is a cap in which is housed a multiple point switch indicated generally at 18 in Figure 3, while the control lever 19 thereof operates in a suitable slot in said cap as shown. The various points of the switch are indicated at 20 in the diagrammatic view Figure 5.

The core preferably embodies a hollow cylindrical body of insulating material indicated at 21, and provided with flanges adjacent the top and bottom thereof as at 22. Extending through the body of the core is a group of closely related soft iron air conducting tubes 23, which extend beyond the ends of the body and utilized to support the core in its entirety vertically within the casing 10. These soft iron tubes 23 are received by the aligned central openings in the top and bottom of the casing 10, and provide for the circulation of air through the core. For this purpose the casing 10 also contains a suitable cooling agent 24 which completely surrounds the core. Wholly disposed within the body of the core, and surrounding the soft iron tubes 23 is an annular series of closely related soft iron wire rods 25 which are coextensive with the body of the core and supported between the flanges 22 thereof.

The core also includes a winding 26 of predetermined length arranged about the body thereof, and this may be a single winding, or a double winding depending of course upon the desired length of the core in its entirety. Varying heat conducting wires lead from definitely spaced points along the length of the core to their respective points of the multiple switch as clearly illustrated in Figure 5. The wire leading from the switch to the torch 27 is indicated at 28, while the ground wire from the torch is shown at 29 and connected with the ground wire 30 leading from the lower end of the core. The heat conducting wire 31 leading from the uppermost part of the winding 26 conveys heat of maximum intensity and is employed for cutting or where an intense heat is required for a particular character of work to be performed. The other heat conducting wires are indicated at 32, 33 and 34 and convey heat of gradual less intensity in the order in which they lead from the winding along the length of the core. Consequently, the wire 34 leading from the lowermost point in the core conveys heat of the least intensity. It will be noted that the general organization and assembly of the component parts serve to produce a comparatively small compact unit which may be effi-

ciently operated or controlled by the switch in a highly efficient manner for the purpose specified.

While it is believed that from the foregoing description the nature and advantages of the invention will be readily understood, I desire to have it known that I do not limit myself to what is herein illustrated or described and that such changes may be resorted to when desired as fall within the scope of what is claimed.

What is claimed is:

1. A welding apparatus including a multiple point switch, a casing, a core supported centrally therein, a cooling agent contained in the casing and surrounding the core, said core embodying air conducting tubes extending therethrough and through both ends of the casing for the circulation of air through the core, a winding of predetermined length, and a plurality of wires leading fom said winding at definite spaced points along the length of the core to the points of said switch for conducting relatively different degrees of heat from said winding.

2. A welding apparatus comprising a casing having aligned central openings in the top and bottom thereof, a perforated neck portion surrounding the opening in the top, and a cap supported on said neck, a multiple point switch located within the cap, a core supported within the openings of the casing and embodying a group of air conducting tubes received by said openings for the circulation of air through the core and said neck, a winding of predetermined length, and varying heat conducting wires leading from said winding at definite spaced points along the length of the core and terminally connected with the respective points of the switch.

3. A welding apparatus comprising a casing having aligned central openings in the top and bottom thereof, a multiple point switch supported above the casing, a core located within the casing, a cooling agent contained in the casing and surrounding said core, said core including a hollow cylindrical body of insulated material, a group of air conducting tubes snugly arranged within said body and extending longitudinally therethrough for the circulation of air through the core, the opposed ends of said tubes projecting an appreciable distance beyond the ends of said core and adapted to be tightly fitted in said openings of the casing to support the core centrally within the latter, a winding of predetermined length, and a plurality of wires leading from said winding at definite spaced points along the length of the core to the points of said switch.

4. A welding apparatus comprising in combination with a fluid containing casing having enlarged aligned central openings in the opposed ends thereof, and a multiple point switch, of a core including a hollow body of insulated material, a group of air conducting tubes snugly fitted within the body and extending longitudinally thereof for the circulation of air through the core, an annular series of closely related wire rods surrounding said tubes and wholly disposed within the body of the core coextensive in length therewith, the opposed ends of said tubes projecting an appreciable distance beyond the ends of said core and tightly fitted in said openings of the casing to support the core centrally within the latter, a winding of predetermined length, and a plurality of wires leading from said winding at definite spaced points along the length of the core to the points of said switch.

JOHNIE J. JONES.