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[54] Title: A VARIABLE RESISTOR ASSEMBLY FOR ELECTRIC ARC WELDING

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[73] Assignee (s): None

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U.S. Pat. No. 4,251,710 Aguirre 2-17-81

[57] ABSTRACT see attached sheet

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'92 JAN 10 P1:49

A VARIABLE RESISTOR ASSEMBLY FOR ELECTRIC ARC WELDING

A B S T R A C T

A variable resistor assembly for electric arc welding comprising in combination with a transformer, an insulated container, an electricity conductive liquid meduim contained within said container, a first set of electricity conductive member supported within said container, a second set of electricity conductive member slidably supported within said container, means for bringing the first and second sets of electricity conductive members closer together, wherein said first set of electricity conductive member being in series with the load and said second set of electricity conductive member being in series with the primary winding of the transformer.

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SPECIFICATION '92 JAN 10 P1:49

This invention relates in general to a variable resistor assembly for electric arc welding but more particularly to the type that is water immersible.

Most variable resistors for electric arc welding consists of an electronic gadget provided with circuitry that varies the resistance of electric arc welding. The minimum is the resistance, the potential of the electrode is maximized, thus preventing "arcing" of electric current. This type of variable resistor is rather costly and the space parts thereof are not locally available.

It is therefore the primary object of the present invention to provide a novel variable resistor assembly that utilizes water and conductive members that is relatively cheaper and convenient that the conventional variable resistor.

Another object is to provide a variable resistor assembly wherein "arcing" of the electrode is eliminated or greatly minimized since the resistance is gradually reduced using water as liquid medium.

Still an object is to provide a variable resistor assembly that is as efficient as conventional variable resistor yet more economical to use.

Furthermore, an object is to provide a variable resistor assembly that can be mass produced.

These and other objects and advantages of the present invention will be fully appreciated upon reading the

following detailed description taken in conjunction with the appended drawings wherein:

FIGURE 1 is a schematic diagram of the variable resistor assembly with the assembly drawn in perspective view;

FIGURE 2 is a partly sectional, partly exploded view of the variable resistor assembly;

FIGURE 3 is a sectional view taken along line 3-3 of Fig. 1; and

FIGURE 4 is a sectional view taken along the longitudinal of Fig. 1.

Referring now to the several views of the drawings wherein like reference numerals designate same parts throughout, there is shown my invention for a variable resistor assembly for electric arc welding generally designated as 10. Said variable resistor assembly 10 generally comprises an insulated container 11 being filled with electricity conductive liquid meduim such as water, oil, alcohol, etc..

A first set of electrical conductive members 12 is supported within said container 11. The conductive members 12 are in the form of a plurality of spaced incrementing cylindrical metallic members 13 coaxially held together at their bottom portion by radial elements 14. the radial elements 14 supports an upstanding post 15 centrally provided thereon. The post 15 has an insulating element 16 at its lower portion.

A second set of electrical conductive members 17 is slidably held on said upstanding post 15 and are in the form of a plurality of spaced incrementing cylindrical metallic elements 18 coaxially held together at their top portions by radial elements 19. The radial elements 19 are supported on a insulated sleeve 20 centrally provided thereon. The sleeve 20 is slidably fitted to the upstanding post 15 so that the second set of conductive members 17 may slide up or down the upstanding post 15. The second set of conductive members 17 are held by a rope 19 attached to a winch (not shown) or may be manually pulled or released to immerse said second set of conductive members 17 to the liquid meduim filled container 11.

As shown in Fig. 1, the primary winding P of transformer T is connected to load L. The first set of the conductive member 12 is in series with the load while the second set of the conductive member 17 is in series with the primary winding P and vice-versa. One line of the secondary winding P1 of the transformer T is connected to the ground while the other line is connected to a welding electrode E, thus completing an electric arc welding.

As the second set of conductive member 17 is immersed in the container 11 and brought closer to the first set of conductive member 12, the resistance is decreasing increasing the potential of the electrode E. It should be noted that due to the incrementing sizes of the conductive elements and the insulating element 16, the conductive

members 12 and 17 would not be in contact with each other.

The liquid meduim within the container serves to conduct the conductive members 12 and 17 such that when the transformer is plugged on, conduction starts immediately.

The conductive members 12 and 17 may assume any shape, be they concentric circular plates, rectangular plates, triangular plates or whatever.

It should be understood that the foregoing detailed description has been made by way of illustration and not limitation. Accordingly, all such modifications, alterations and changes coming within the spirit and scope of the invention are herein meant to be included.

I CLAIM:

1. A variable resistor assembly for electric arc welding comprising in combination with a transformer:

an insulated container,

an electricity conductive liquid medium contained within said container,

a first set of electricity conductive member supported within said container,

a second set of electricity conductive member slidably supported within said container,

means for bringing the first and second sets of electricity conductive members closer together, wherein

said first set of electricity conductive member being in series with a load and said second set of electricity conductive member being in series with the primary winding of the transformer the secondary winding of said transformer is connected to the ground and to a welding electrode.

2. A variable resistor assembly for electric arc welding in accordance with claim 1 wherein said first and second sets of electricty conductive elements consisting of coaxially spaced cylindrical elements each being held by radial elements.

3. A variable resistor assembly in accordance with claim 1 wherein said first set of electricity conductive member having a centrally provided upstanding post and the second set of electricty conductive member having a centrally provided sleeve wherein the sleeve is slidably fitted to the upstanding post enabling the second set of

conductive member to slide up and down the first set of conductive member.

4. A variable resistor assembly in accordance with claim 1 wherein said means for bringing closer the first and second sets of conductive members including a rope attached to second set of conductive member that is released or pulled.

5. A variable resistor assembly in accordance with claim 1 wherein the liquid meduim is water.

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FIGURE 1

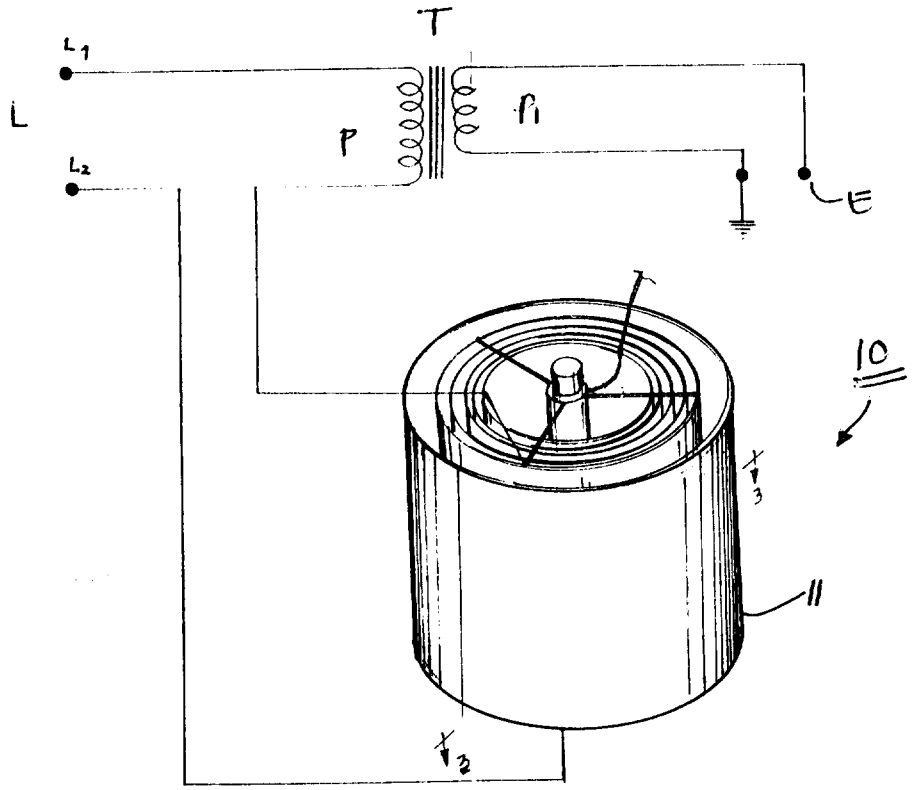

FIGURE 3

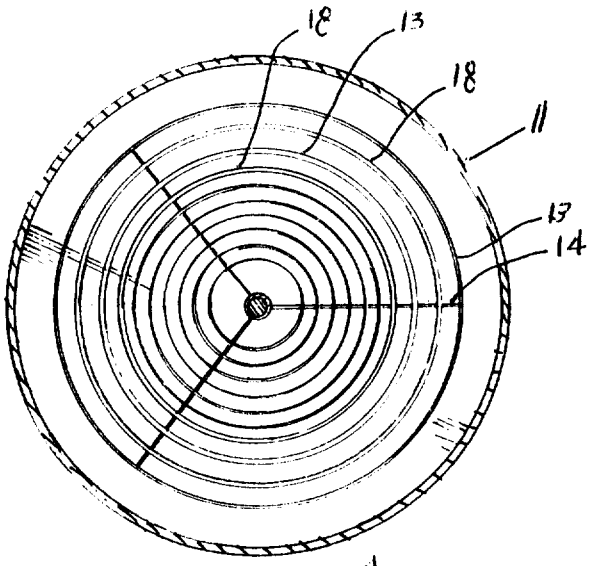

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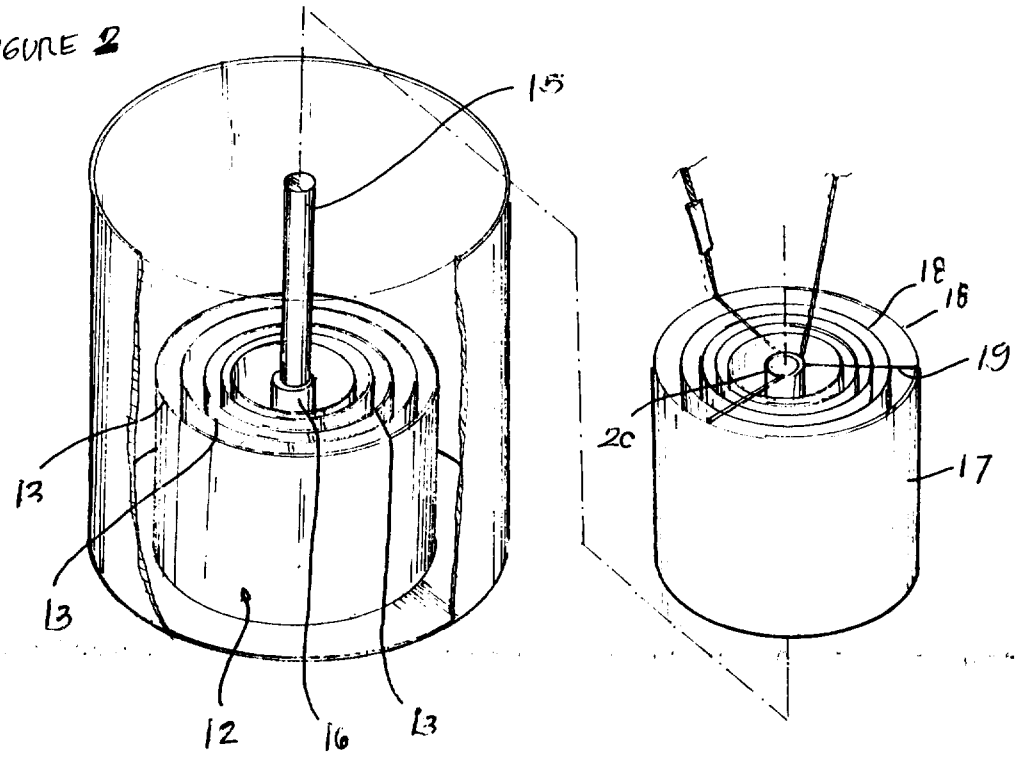
FIGURE 2



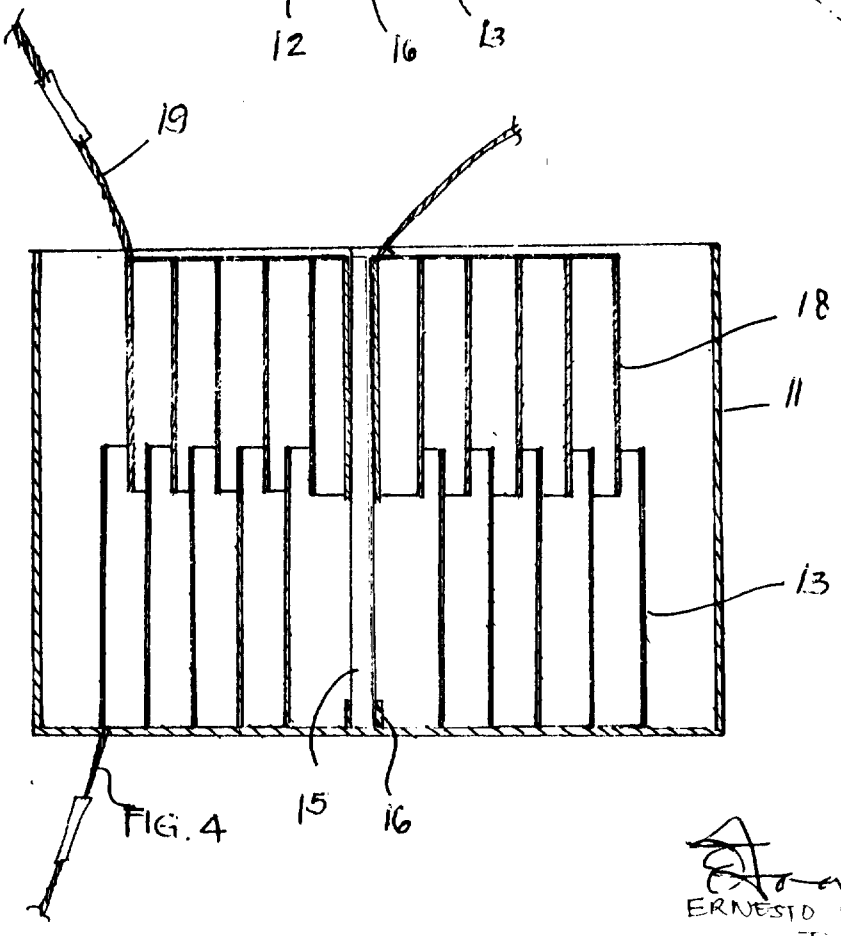


FIG. 4

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