

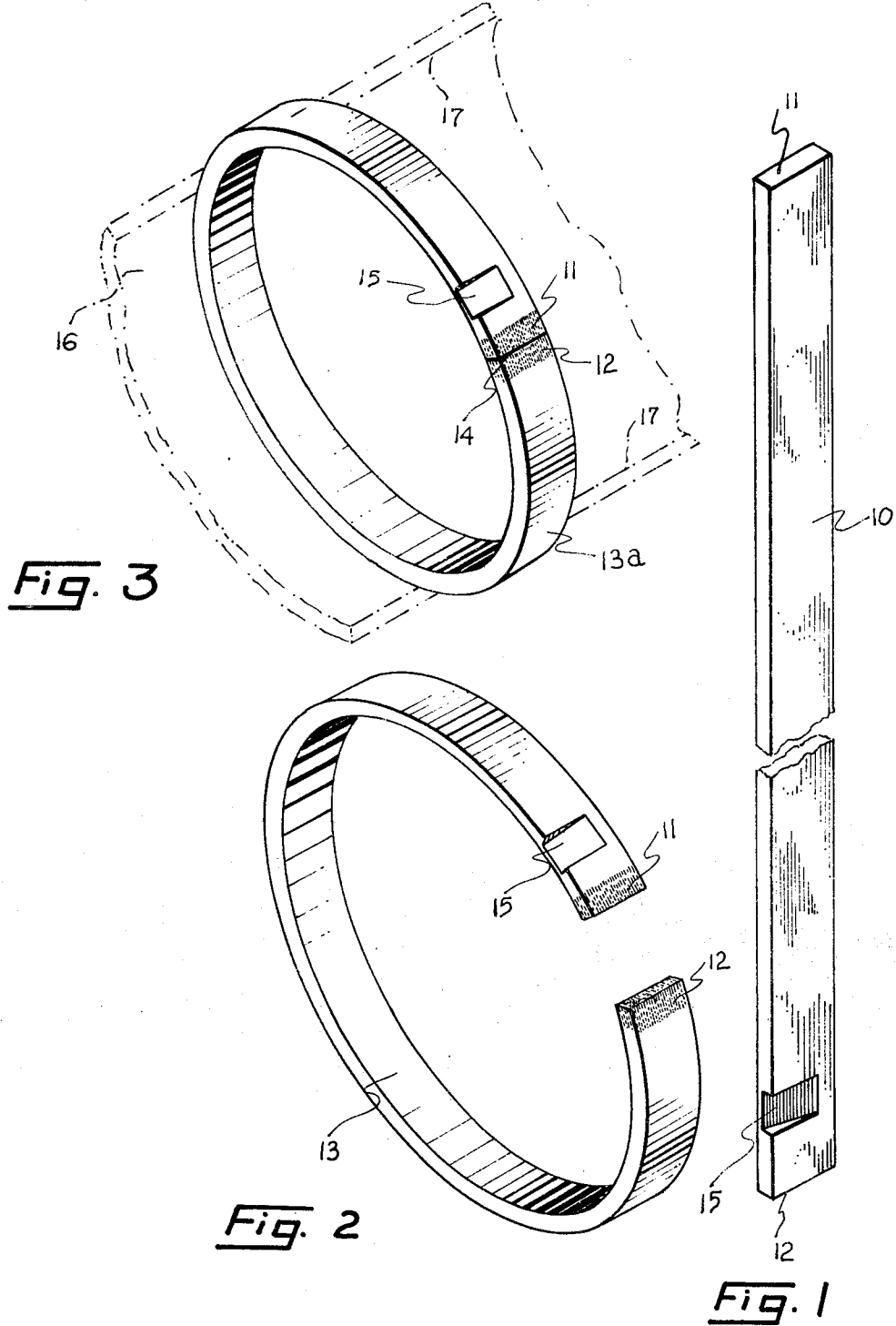
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METHOD OF MAKING INDUCTION HEATER RING

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**METHOD OF MAKING INDUCTION HEATER RING**

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2 Claims

**ABSTRACT OF THE DISCLOSURE**

A strip of chrome copper, or similar metal, formed into a circular shaped, partial ring with the ends of the strip separated and abutting each other, the ends of the strip also being plated with silver, or other precious metal, whereby force exerted across the perimeter of the device closes the ring bringing the ends of the strip into intimate electrical contact so that the completed ring may be used as a supplemental heating, internal short-circuited secondary, in an induction heater roll.

**BACKGROUND OF THE INVENTION**

This invention is related to A.S.N. 731,952 filed May 24, 1968, now abandoned and is assigned to the same assignee.

In this earlier application there is disclosed and claimed a roll type, induction heater essentially comprising a hollow cylinder having concentric rings in mutual contact with the inside of the cylinder at preselected locations along the length of the cylinder for supplementing by induced eddy currents the heating of the cylinder to provide predetermined heating profiles according to the positions of the internal rings. The rings referred to in the aforesaid earlier application are made from solid, hollow cylindrical stock, requiring considerable machining time and expense. It has been found that rings formed from strips having their ends joined as taught in the present invention are equally effective and cheaper to manufacture.

**SUMMARY OF THE INVENTION**

This invention relates to a ring formed from a linear strip of conductive metal of uniform cross section, the length of the strip being substantially equal to the desired circumference of the ring. The strip is first formed partially into circular shape with the ends of the strip separated and abutting, the ends thereafter being plated, or otherwise covered with a layer of precious metal, so that when they are forced together to complete formation of the ring reliable electrical continuity is obtained throughout the circumference of the ring.

**BRIEF DESCRIPTION OF THE DRAWING**

FIG. 1 is a perspective view of a strip of conductive metal from which a circular ring is to be formed according to the invention.

FIG. 2 is a perspective view of a partially formed ring derived from the strip shown in FIG. 1.

FIG. 3 is a perspective view of the completed ring that is shown partially formed in FIG. 2.

**DESCRIPTION OF THE PREFERRED EMBODIMENT**

With reference to FIGS. 1 and 2 a strip 10 composed of a conductive metal such as copper, brass—preferably chrome copper—is formed into a circular shape 13 (see FIG. 2) having its ends 11 and 12 adjacent each other.

For example, with a four inch diameter ring the gap between the ends 11 and 12 may be approximately one inch. The ends of the strip are thereafter plated with a precious metal such as silver. If the ring is not immediately installed into an induction heater roll, as described in the earlier application referred to above, the ends are thereafter dipped in wax to preserve the precious metal from deterioration.

In applying the utility of the present invention to an induction heater roll, as previously explained briefly, the circular shaped, open ended ring 13 of FIG. 2 is contracted by applying force across its perimeter to complete a closed ring 13a as shown in FIG. 3, the ends 11 and 12 meeting at a common position 14. The ring 13a is thereafter forced into a hollow cylindrical heater roll 16 having an inside diameter 17 slightly less than the perimeter of the ring 13a. It is to be noted that a notch 15 is cut into the strip 10 prior to its being formed, this notch being useful in removing a ring 13a from a heater roll 16 when the ring is to be changed or replaced. Before completing the formation of the ring, if the ends of the strip have been coated with wax, this should be removed by a suitable solvent.

It is to be noted that in the formation of rings as described above it is necessary that the plating of the ends of the strip be accomplished after the strip is formed into a circular shape. Otherwise it has been found that the forming rolls may damage the precious metal layers on these ends.

It has been found that rings constructed according to the above after being used in heater rolls to provide auxiliary induction heating of the roll are affected in a manner whereby the pressure of the ends in contact at the time of fitting into the heater roll, together with the heating incidental to use as a short-circuited secondary winding of the induction heater and the eddy currents induced therein, produce a bonding of the silver plated ends similar to, but stronger than, a cold weld.

While the invention has been explained and described with the aid of particular embodiments thereof, it will be understood that the invention is not limited thereby and that many modifications retaining and utilizing the spirit thereof without departing essentially therefrom will occur to those skilled in the art in applying the invention to specific operating environments and conditions. It is therefore contemplated by the appended claims to cover all such modifications as fall within the scope and spirit of the invention.

I claim:

1. The method of forming a conductive ring comprising cutting a strip of conductive metal substantially equal in length to the circumference of the desired ring, forming the said strip into a partial ring with the ends adjacent one another, placing a layer of precious metal upon each said end, and applying force across the perimeter of said ring to close the ends into intimate contact with each other.

2. The method set forth in claim 1 wherein the precious metal layer is plated upon the said ends.

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