

M. UNGER.
INDUCTION HEATER.
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1,431,997.

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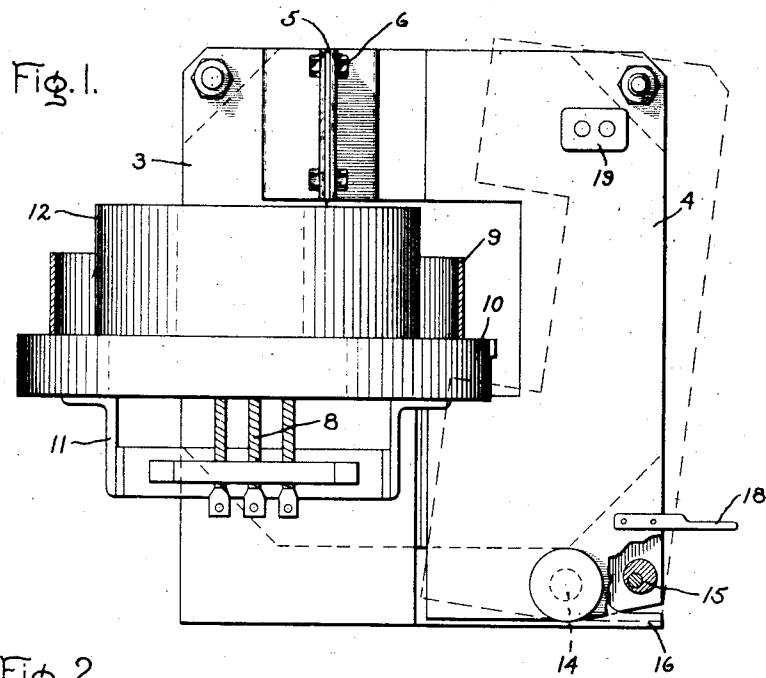
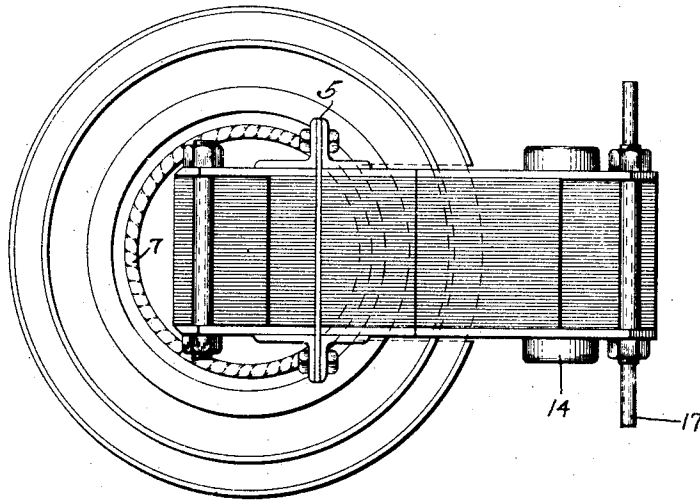


Fig. 2.



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UNITED STATES PATENT OFFICE.

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INDUCTION HEATER.

Application filed November 1, 1921. Serial No. 512,134.

To all whom it may concern:

Be it known that I, MAGNUS UNGER, a citizen of the United States, residing at Pittsfield, in the county of Berkshire, State of Massachusetts, have invented certain new and useful Improvements in Induction Heaters, of which the following is a specification.

The present invention comprises an improved device for heating by electric induction ring-shaped articles such, for example, as metallic tires or rims.

Induction heaters heretofore provided for this purpose have been provided with a core having a horizontal yoke or armature which was either lifted off bodily or tilted upwardly to permit placing articles to be heated in position to constitute the secondary of the heater. Either hoisting apparatus or counter-weights were required to handle the heavy armature.

In accordance with my invention, I have provided a simplified induction apparatus adapted for operation without auxiliary lifting devices and having a more compact structure than former devices of this type. My improved device is constructed to permit disengagement of a vertical instead of a horizontal core member, that is, the joints or breaks in the core are placed in a horizontal leg of the core. In order to open the magnetic core preliminary to inserting in the heater an article to be heated, a vertical core member is slightly tilted.

This construction makes use of a counter-weight unnecessary. The small angle of motion of the vertical core member necessary to admit or remove the work renders the operation of the device easy and safe without special auxiliary devices.

In the accompanying drawing, Fig. 1 is a side elevation of an apparatus embodying my invention, and Fig. 2 is a plan view.

The magnetic core of the heater is constituted by two U-shaped members 3, 4, consisting of laminae of magnetic material suitably clamped together, and supported in a vertical position so that the legs extend horizontally into butt contact as shown by the full lines. The member 3 consists of two parts separated by layer 5 of non-magnetic material and united by bolts 6. The primary winding 7 upon the vertical yoke of the

magnet 3 is provided with suitable heat resisting insulation. Several taps 8 from this winding are provided to enable the primary ampere turns to be varied for different desired rates of heat input. The work 9, which may be a metal ring, is supported upon a platform 10 encircling the primary winding 7, and the core. This platform is attached to the core by brackets 11. A shield 12 located upon the platform 10 prevents direct radiation of heat from the work to the primary winding.

The core member 4 is pivotally supported near its base upon a pivot 14. The outer part of the lower edge of this core member extends at an obtuse angle to the vertical face, so that the core member may be swung from the position indicated in full lines to the position indicated by dotted lines, that is, outwardly from a substantially vertical position while in abutment with the core member so as to carry the center of gravity past a vertical axis. The outward swing of the vertical core member is stopped at a desired point by an eccentric rod 15 which bears against a projection 16 of the support for the pivot 14.

The opening of the gap for insertion of the work is very simple. The operator either grasps the lever 17 at the top of the core member 4 or presses upon the foot treadle 18, or does both, thereby swinging the core member outwardly on a horizontal axis. The non-magnetic joint 5 prevents residual magnetism from holding the butt joints together. When the work is in position to be heated, the core member is returned to the original position and the primary circuit is closed in any suitable way, a push button switch 19 being indicated on the drawing. After the work has reached a desired temperature the primary circuit is opened, the core member 4 is again tilted and the work is removed.

In the operating position, part of the weight of the core member 4, after having been moved past a vertical axis, passing through the center of gravity, exerts pressure upon the closed joints in the magnetic circuit. In the non-operative position, part of the weight of the member 4 is exerted to maintain the member 4 in the open position

on the opposite side of the vertical axis of equilibrium. By means of the eccentric 15 the amount of gap may be regulated.

What I claim as new and desire to secure 5 by Letters Patent of the United States, is:—

1. An induction heater comprising cooperating members constituting a magnetic core adapted to be supported in a vertical position, one of the vertical members of said 10 core being movable in and out of contact with the other member, a primary transformer winding on one of said members, and means for supporting a ring-shaped article to be heated in a position encircling one of 15 said core members.

2. An electric heating device comprising a magnetic core member, a primary winding thereon, a support for holding a ring-shaped article to be heated in a position surrounding said core member, a U-shaped armature 20 adapted to constitute with said core member a closed magnetic circuit, a pivot for said armature located to permit rocking said armature into closed relation with said core 25 member, from a substantially vertical position outwardly away from said core member to carry the center of gravity past a vertical axis, and means for limiting the outward swing of said armature.

3. An induction heater comprising the 30 combination of a core constituted by U-shaped members adapted to be supported in a vertical position, a layer of non-magnetic material included in said core, a pivot 35 whereupon one of said members may be

rocked about a horizontal axis in and out of abutment with the other member, and means for supporting an article to be heated in inductive relation to said core.

4. An induction heater comprising the 40 combination of two U-shaped magnets having legs adapted to be moved into abutting contact, a pivotal support for one of said members located to bring said pivoted member into abutment with the cooperating 45 member when inclined from a vertical axis passing through the centre of gravity toward said cooperating member, means for limiting the outward swing of said pivoted member in an outward direction, a primary 50 winding for said core, and means for supporting an article to be heated in inductive relation to said core.

5. An induction heater comprising the 55 combination of a closed magnetic core adapted to be supported in a vertical position and being separable into paired U-shaped members, a primary winding on one of said members, a pivotal mounting for one of said 60 members whereon said member may be tilted away from the cooperating member, a stop for limiting the motion of said member, means for supporting an article to be heated in inductive relation to said core, and means 65 for shielding the primary winding from heat radiations emitted by the heated article.

In witness whereof, I have hereunto set my hand this 28th day of October, 1921.

MAGNUS UNGER.