E. B. SPENCER.

ELECTRIC HEATING DEVICE.

APPLICATION FILED APR. 30, 1914.

1,128,731.

Patented Feb. 16, 1915.

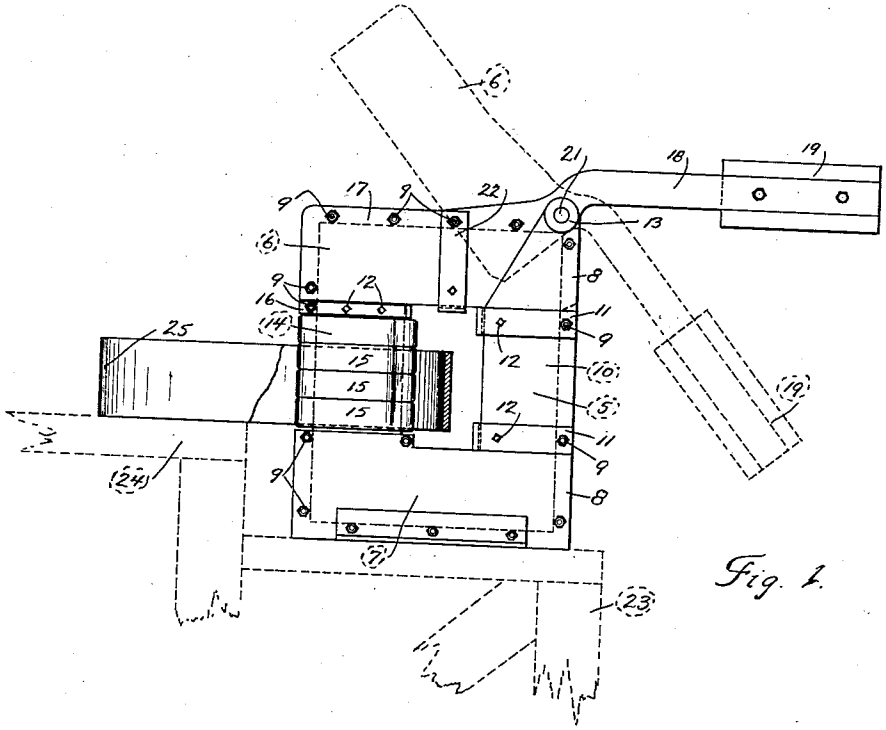


Fig. 1.

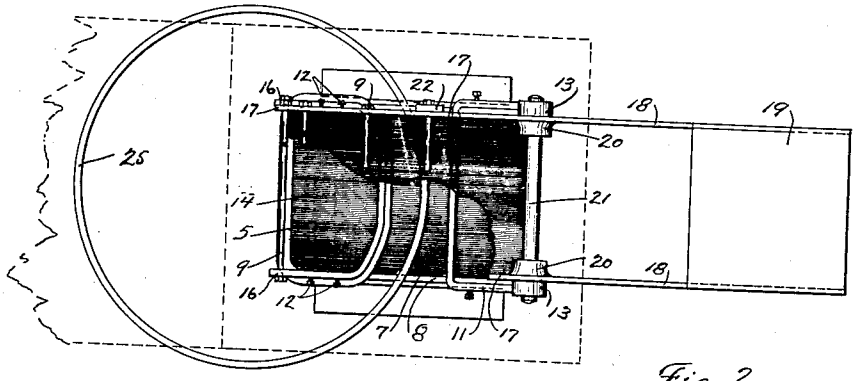


Fig. 2.

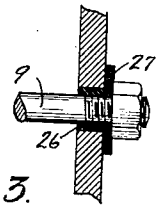


Fig. 3.

WITNESSES:

Walter H. Kelley.

Clara Bowers

INVENTOR

Earl B. Spencer

BY

J. W. M. Ellis

ATTORNEY.

UNITED STATES PATENT OFFICE.

EARL B. SPENCER, OF KENMORE, NEW YORK.

ELECTRIC HEATING DEVICE.

1,128,731. Specification of Letters Patent. Patented Feb. 16, 1915.

Application filed April 30, 1914. Serial No. 835,459.

To all whom it may concern:

Be it known that I, EARL B. SPENCER, a citizen of the United States of America, and a resident of the village of Kenmore, county of Erie, and State of New York, have invented certain new and useful Improvements in Electric Heating Devices, of which the following is a full, clear, and exact description.

My invention relates generally to devices for heating rings by induced electric currents, and more particularly to a device for heating and expanding automobile rims, locomotive and wagon tires, bands, etc.

As is well known to those skilled in the art, the present method of heating rims and tires of the above mentioned class is by placing them in a furnace heated by coal or gas. These furnaces require considerable floor space and are inconvenient and uncleanly to operate.

The principal object of my invention has been to provide a device in which the ring or rim being heated shall form the secondary circuit of the device, whereby the same shall be easily and quickly heated to the required degree.

Another object has been to provide a device which shall be cheap to manufacture and economic to operate. Moreover, my heating device is so arranged that the core may be quickly and easily opened and closed when handling the work piece or ring.

The above objects and advantages have been accomplished by the device shown in the accompanying drawings, forming a part of this specification, in which like characters of reference indicate like parts throughout the several views.

In the drawings: Figure 1 is a side elevation of my device with a portion of the ring being shown in section. Fig. 2 is a plan view of the same with a portion of the armature broken away. Fig. 3 is an enlarged fragmentary sectional view taken on the center line of one of the fastening bolts and shows the insulating thereof.

My device comprises a core 5 of the usual laminated construction, comprising a horse shoe magnet and an armature 6 also constructed of laminations. Disposed at each side of the yoke 7 and vertical part 10 of the core is a plate 8. These plates overlap the outer edges of the laminated core on all sides, and a plurality of bolts 9 extend across and pass through the plates, thereby securely holding the laminations of the core together. As shown in Fig. 3, each of these bolts is insulated from the metal parts of the heater by an insulating bushing 26 passing through the plates and bands, and an insulating washer 27 beneath the nut of the bolt. The vertical part 10 of the core is also provided with two U-shaped bands or clamps 11, one disposed at the upper end of the portion and the other immediately above the yoke 7. These bands are wrapped around the laminations of the core and the plates 8, and the ends thereof extend to the edge of said plates. Each has a bolt 9 passing through its ends and the plates 8, thereby connecting the bands and plates together and thus securely clamping the laminations. Each of these clamps is provided near the inner edge of the laminations with a set screw 12, whereby the same may be tightly compressed together. The upper ends of the plates extend above the upper clamp 11 and are provided near their upper ends with armature bearing bosses 13. The vertical part 14 of the core has a plurality of primary coils 15 disposed thereon, and the laminations in this part of the core are securely clamped together at their upper ends by means of a U-shaped clamp 16, which is held in place by means of a bolt 9 and set screws 12.

Disposed at each side of the armature is a plate 17, which extends beyond the top and two side edges of the laminations of the armature and is securely held in place by means of a plurality of bolts 9. The plates 17 are provided with integral rearwardly extending arms 18, at the outer end of which is carried a counterweight 19. Each plate at the junction of the arm 18 is provided with a bearing boss 20. A shaft 21 is passed through the bearing bosses 20 on the plates 17 and the bearing bosses 13 on the plates 8, whereby the armature is pivotally mounted. A U-shaped clamping member 22 is preferably provided near the center of the armature, whereby the laminations and plates 17 are more securely held in close contact with each other.

The device is supported and carried by a suitable work table 23, shown in dotted lines. This work table is provided near the front of the device with an elevated portion 24, which is arranged to support the ring 25 being heated. As shown in the drawing, the work piece or ring 25 is placed within

the path of the magnetic lines of force so that one portion thereof lies within the open space of the core and is arranged preferably about the primary coil 15.

It will be clearly seen that when the ring or work piece 25 is to be placed into or removed from the position shown in the drawing, the armature 6 is raised to substantially the position shown by the dotted lines in Fig. 1. It is clear that when an alternating current is applied to the primary coils 15, that the magnetic circuit will be energized and the lines of force will set up an induced secondary current in the work piece or ring 25. This work piece may be heated so that it will have the desired amount of expansion. When the rim has been heated sufficiently, the current of the primary coil is shut off and the armature 6 swung upon its pivot, whereby the core is opened and the work piece removed from the device and placed in position upon the wheel on which it is to be shrunk. If desired, a casing (not shown) may be provided about the work piece to prevent undue radiation of the heat.

Obviously, some modifications of the details herein shown and described may be made without departing from the spirit of my invention or the scope of the appended claims.

Having thus described my invention, what I claim is:

1. An electric heating device comprising a laminated core formed by a horse shoe magnet and a pivotally mounted laminated armature, side plates at each side of the yoke of said magnet and one vertical portion thereof, bearing bosses at the upper ends of said plates for pivotally mounting said armature, in combination with a work piece which is insertible within the open space of said core, and which thereby forms a secondary circuit.

2. An electric heating device comprising a laminated core formed by a horse shoe magnet and a pivotally mounted laminated armature, plates disposed at each side of said armature, means for pivotally supporting said plates, means for clamping said plates, rearwardly extending arms provided on said plates, and a counterweight carried by said arms, in combination with a work piece which is insertible within the open space of said core, and which thereby forms a secondary circuit.

3. An electric heating device comprising a laminated core formed by a horse shoe magnet and a pivotally mounted laminated armature, side plates for said core, said side plates overlapping said core at the outer edges and fastening means insulated from said core and passing through the overlapping portions of said plates, in combination with a work piece which is insertible within the open space of said core, and which thereby forms a secondary circuit.

4. An electric heating device comprising a laminated core formed by a horse shoe magnet and a pivotally mounted laminated armature, U-shaped clamping bands disposed about the laminations of said horse shoe magnet and said armature, means insulated from said core for fastening the free ends of said clamping bands and screw-threaded means carried by said bands for compressing the laminations together, in combination with a work piece which is insertible within the open space of said core, and which thereby forms a secondary circuit.

5. An electric heating device comprising a laminated core formed by a horse shoe magnet and a pivotally mounted laminated armature, plates disposed at each side of said core, U-shaped clamping bands extending around said core and said plates, bolts passing through said plates and said clamps, insulated bushings disposed about said bolts where they pass through said clamps and said plates, and an insulated washer beneath the nut of each bolt, in combination with a work piece which is insertible within the open space of said core, and which thereby forms a secondary circuit.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

EARL B. SPENCER.

Witnesses:
J. Wm. Ellis,
Walter H. Kelley.