

Oct. 13, 1931.

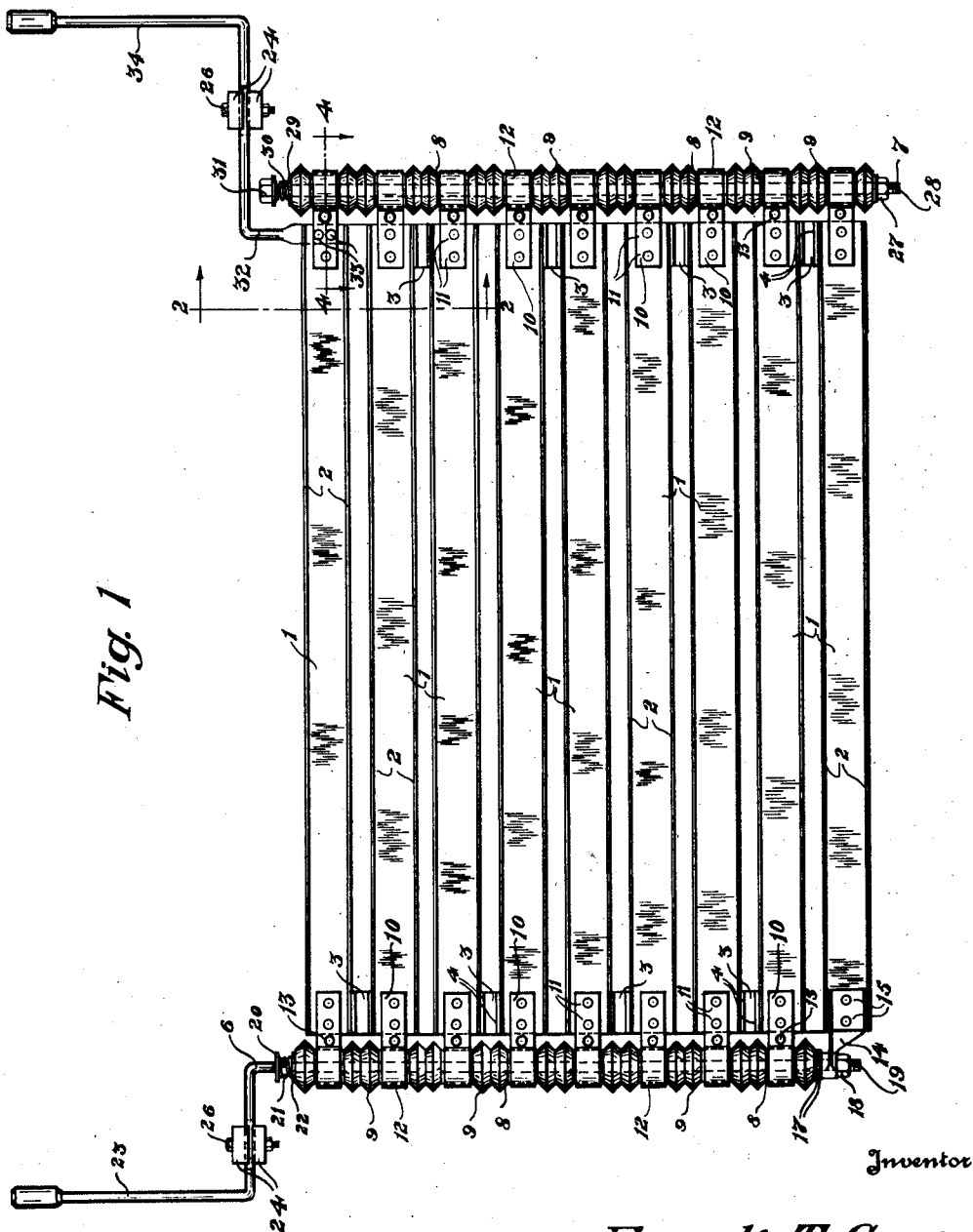
F. T. COPE

1,827,508

METALLIC RESISTOR

Filed July 26, 1927

2 Sheets-Sheet 1



Inventor

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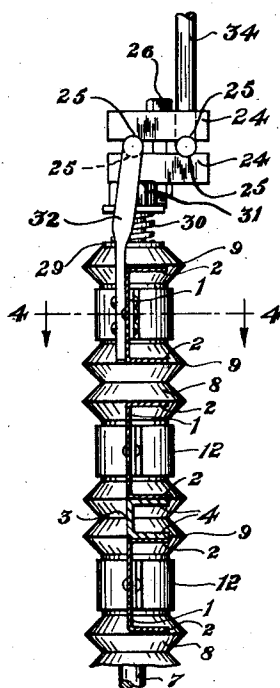


Fig. 2

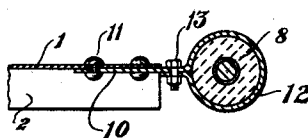


Fig. 4

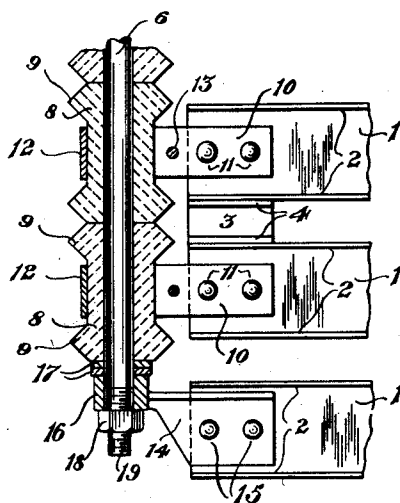


Fig. 3

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UNITED STATES PATENT OFFICE

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METALLIC RESISTOR

Application filed July 26, 1927. Serial No. 208,501.

The invention relates to resistance elements for electric furnaces and more particularly to a rigid metallic resistor especially adapted for use in low temperature or moderate temperature furnaces and ovens.

The object of the improvement is to provide a metallic resistor which is rugged and efficient and at the same time of simple and comparatively cheap construction and which can be readily and easily assembled or dis-

mounted and easily torn apart for repairs. The above and other objects may be attained by forming the resistor of a plurality of strips of heavy sheet or light plate bent into channel cross section and connected at alternate ends by channel shaped connectors preferably of heavier gauge material, separable eyes being formed at opposite ends of the strips for detachably mounting the resistor upon porcelain spools strung upon rods, one rod in each resistor being adapted to carry current.

An embodiment of the invention is illustrated in the accompanying drawings, in which

Figure 1 is a front elevation of the improved metallic resistor;

Fig. 2, an enlarged section on the line 2—2, Fig. 1;

Fig. 3, an enlarged fragmentary elevation partly in section of one corner portion of the resistor, and

Fig. 4, a section on the line 4—4, Figs. 1 and 2.

Similar numerals refer to similar parts throughout the drawings.

Each straight resistor bar 1 of the resistor is formed of a sheet or light plate of steel or heat resisting alloy, depending upon the temperatures at which the resistor is to be operated.

Each of these strips is bent into substantially channel form by providing the integral flanges 2 at its longitudinal side edges.

As illustrated in Fig. 1, the resistor is formed by locating a plurality of these channel strips in spaced parallel relation and connecting them together at alternate ends as by the channel connectors 3, thus forming a continuous resistor through which current is

adapted to be passed in opposite directions through alternate bars.

The connectors 3 are preferably of channel shape and may be formed of heavier sheets or plates than the bars 1, the flanges 4 thereof being welded or otherwise connected to the flanges 2 of the strips as illustrated in Figs. 1, 2 and 3.

For the purpose of supporting the resistor, rods 6 and 7 are located at right angles to the bars 1 and near opposite ends thereof.

A plurality of porcelain spools 8 corresponding in number to the straight bars 1, is located upon each of the rods 6 and 7. Each of these spools has the annular rib 9 at each end, preferably in the form of a double truncated cone of considerably larger diameter than the central portion of the spool.

The reason for this enlarged annular rib is to hold the resistor away from contact with the furnace wall, thus preventing short circuiting of the resistor.

A strap 10 of sheet metal, is riveted or otherwise connected independent of the channel connectors 3 to each end of each of the channel strips 1 as indicated at 11 and provided with the split ring clamping portion 12 adapted to fit around the central reduced portion of the adjacent spool 8, being detachably connected as by a bolt 13, thus permitting for quick and easy removal of the resistor from the supports and attachment thereto.

The lowermost channel strip 1 is connected directly to the lower end portion of the rod 6 by means of a connector 14 riveted or otherwise connected to the strip 1 as at 15 and provided with an eye 16 to receive the rod 6.

One or more washers 17 may be provided between the eye 16 and the lowermost spool 8 upon the rod 6 and a nut 18 is provided upon the lower threaded end portion 19 of the rod and clamps the eye 16 against the washers 17 which are in turn held tightly against the lowermost spool 8.

A collar 20 is provided at the upper end of the rod 6 and a spring 21 and washer 22 are interposed between said collar and the uppermost spool 8, thus holding the spools together

upon the rod but permitting for expansion and contraction of the rod within the spools.

As will be seen from an inspection of Fig. 1, the rod 6 is designed to carry current and may be connected to the terminal 23 as by a clamp comprising two spaced members 24 each having spaced grooves 25 to receive the end portions of the rod 6 and terminal 23, a bolt 26 being provided for clamping the members 24 together upon the rod and terminal.

The spools are mounted upon the rod 7 in the same manner as illustrated and described upon the rod 6, a nut 27 being located upon the lower screw threaded end 28 of the rod for engagement with the lowermost spool while a washer 29 is held against the uppermost spool as by the coil spring 30 interposed between said washer and the nut 31, thus providing means for holding the spools together and at the same time permitting expansion and contraction of the rod 7 under varying temperature conditions.

A conductor bar 32 is fixed to the free end of the uppermost channel bar 1 as by the rivets 33 and is arranged to be connected to the terminal 34 by a clamp 24—24, similar in every respect to the one above described.

From the above it will be obvious that a rigid and durable metal resistor is provided which may be easily and simply constructed at a low cost and which permits of quick and easy assembling or tearing down for the purpose of replacements or repairs and in which the resistor is entirely insulated from the supports and from the furnace wall.

I claim:

A metallic resistor including a plurality of straight resistor bars of channel cross-section throughout their lengths and connected at alternate ends, the flange of said channel resistor bars being located at a right angle to the normal plane of the resistor and extending outward therefrom, a supporting rod at each end of the resistor, insulator spools upon each supporting rod and clamping means at each end of each straight bar for detachable connection to one of the spools, each of said spools having an enlarged rib, and terminal connections for the resistor.

In testimony that I claim the above, I have hereunto subscribed my name.

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