Jan. 18, 1927. 1,615,109

J. R. COE

ELECTRIC FURNACE

Filed April 3, 1923 2 Sheets-Sheet 1

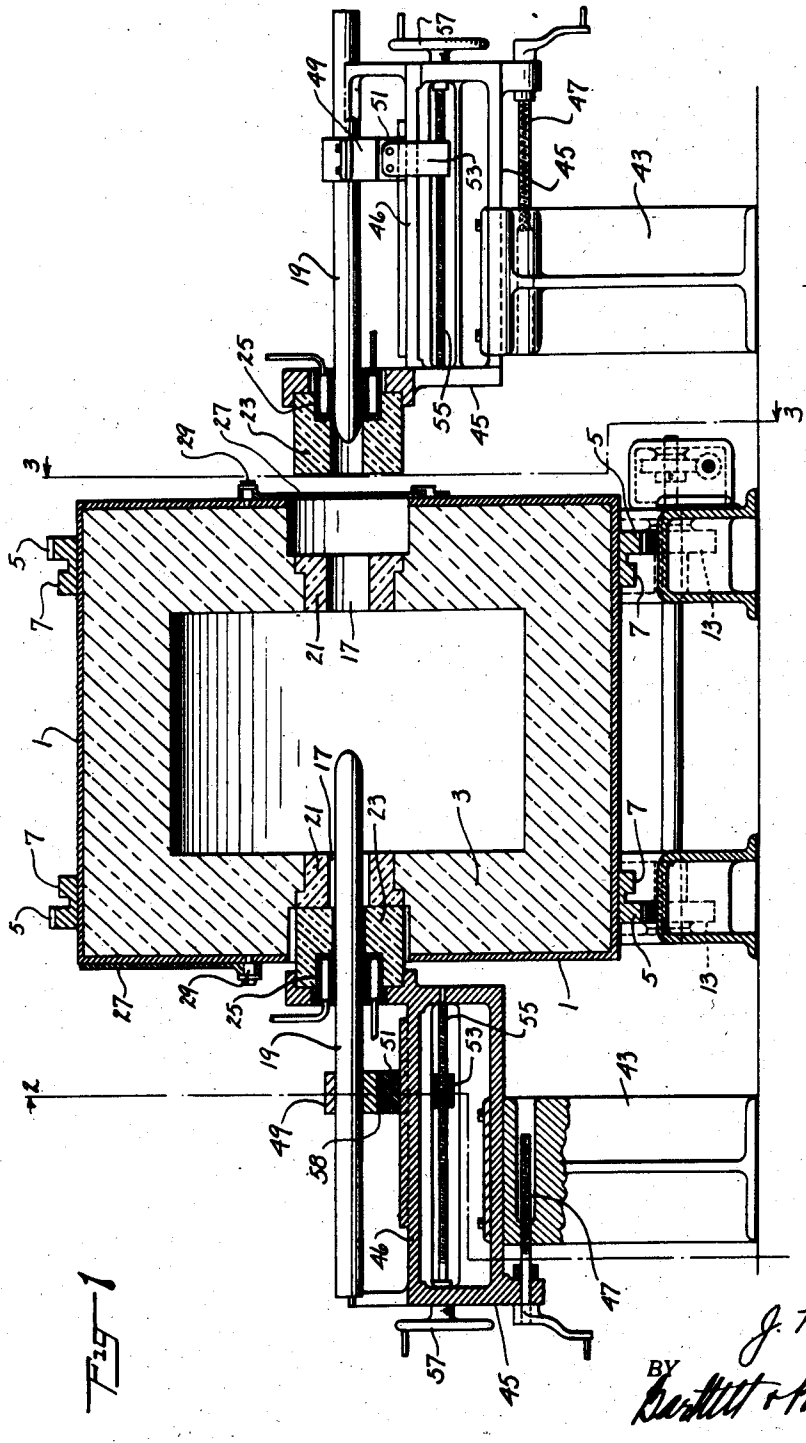


Fig. 1

INVENTOR
J. R. Coe
BY
Bartlett & Brownell
ATTORNEYS

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Fig 2

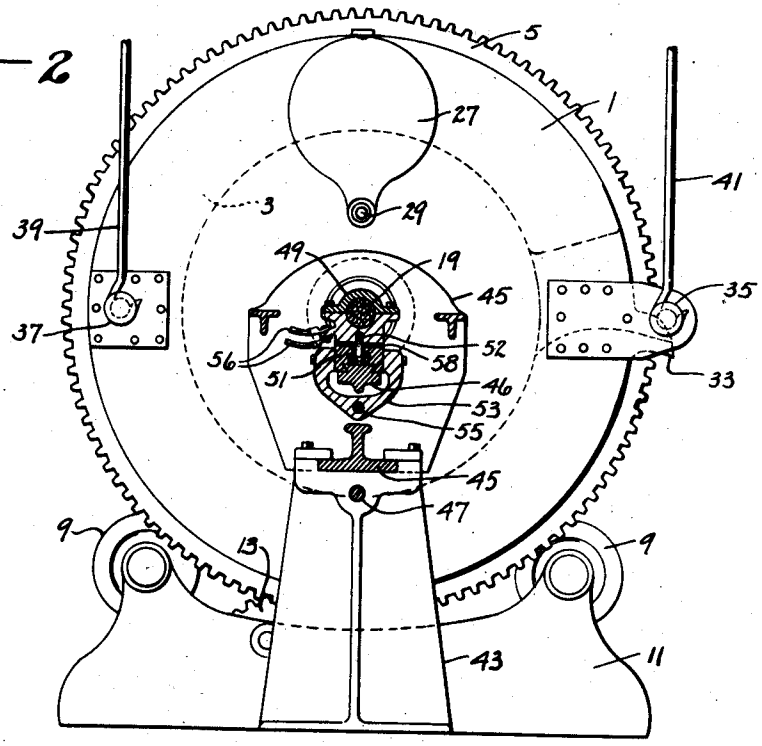
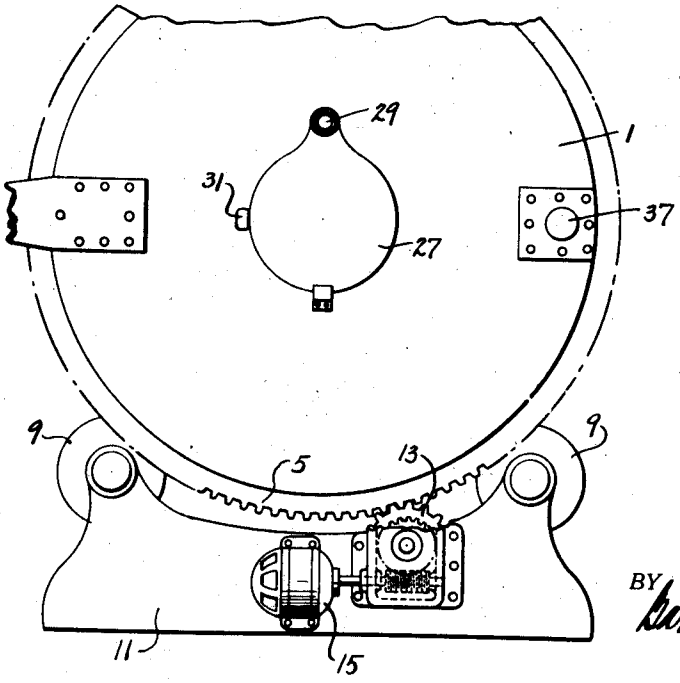


Fig 3



INVENTOR

J. R. Coe

BY Bartlett Brownell

ATTORNEYS

Patented Jan. 18, 1927. 1,615,109

UNITED STATES PATENT OFFICE.

JAMES ROBERT COE, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE AMERICAN BRASS COMPANY, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC FURNACE.

Application filed April 3, 1923. Serial No. 629,547.

My invention relates to electric furnaces and more particularly to what are known as rocking electric furnaces and has for its object to provide a rocking electric furnace in which the cylinder is readily separable from the electrodes and their carriers so that it can be lifted from its cradle and carried to any convenient point and there tilted so as to pour out its contents.

The following is a description of an embodiment of my invention, reference being had to the accompanying drawings, in which,

Fig. 1 shows a vertical longitudinal section of a furnace embodying my invention;

Fig. 2 shows a section on the line 2—2, Fig. 1; and

Fig. 3 shows an end view of the furnace cylinder and cradle on the line 3—3, Fig. 1.

Referring more particularly to the drawings, 1 is a metallic casing provided with a refractory lining 3, the same constituting the furnace cylinder having its axis horizontal. This cylinder is provided with circular racks 5 and tracks 7, the tracks 7 being supported by rollers 9 in a cradle 11 and the racks 5 being engaged by pinions 13 driven by an electric motor 15 through a worm gear as shown in Figs. 1 and 3. The ends of the furnace are each provided with axial orifices 17 through which the inner ends of electrodes 19 can be introduced and withdrawn. The inner ends of these orifices are provided with bushings 21 of refractory insulating material which closely surround the electrodes 19. The outer ends of the opening 17 are considerably larger than the orifices in the bushings 21 and are adapted to receive annular plugs 23 of refractory insulating material which surround the electrodes 19. These plugs are provided with hollow metallic castings 25 forming chambers for the circulation of a cooling medium, such as water.

The cylinder is provided with doors 27 swinging about pivots 29 and engaging stops 31 in their lowermost position, the said stops being located between the axis of the cylinder and the spout 33.

The cylinder is provided with trunnions 35 which are approximately in line with the lip of the spout 33 and with other trunnions 37 at the rear of the cylinder, said other trunnions forming an anchorage for hooks 39 and said trunnions 35 forming means for attaching the hooks 41 of a lifting and tilting mechanism carried by a traveling crane, preferably that of my Patent No. 1,395,040, dated October 25, 1921.

With the horizontal cylinder and cradle thus described, the cylinder can be rocked backward and forward by the electric motor, suitable means (not shown) being provided for reversal of the motor at the proper time as is common in rocking furnaces, and yet the cylinder, after the electrodes and plugs have been withdrawn, can be lifted and transported independently of the electrodes and their supporting mechanism and the pouring done wherever desired, the hot gases and fumes being practically confined to the interior of the cylinder during the transportation period by the closing of the doors 27.

In order to support and manipulate the electrodes 19 and plugs 23 I provide at each end of the cylinder a supporting standard 43 having at its upper end a sliding frame 45, in one portion of which the plug 23 is mounted so as to be carried thereby. This slide is adjusted by a screw 47 which engages a suitable threaded boss forming a part of the support 43. Each sliding frame 45 has a bar 46, which in turn carries a slide 51 to which an insulated electrode clamp 49 is attached by insulated screws 52. This slide has a depending yoke 53 engaged by a screw-threaded shaft 55 so that by turning the shaft 55 through the wheel 57 the clamp 49 together with the electrode 19 can be moved so as to cause the electrode to enter or withdraw from the orifice 17, as shown on the left and right hand ends of Fig. 1 respectively.

With the electrode- and plug-supporting and manipulating means described above, the electrodes and plugs can be easily withdrawn from the furnace cylinder or adjusted within the same so as to secure the desired relations.

The electrical conductors 56 for supplying electrical energy to the furnace are clamped directly to the clamps 49 and the clamps 49 are electrically insulated, as shown at 58, so that the proper electrical and circuit conditions are secured for the operation of the furnace.

As will be evident to those skilled in the

art, my invention permits of various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. In a rocking electric furnace a horizontal cylinder having in its ends openings in line with the axis of movement of said cylinder, the outer portions of said openings being larger than the inner portions thereof, electrodes substantially filling the inner portion of said openings, plugs surrounding said electrodes and substantially filling the outer portions of said openings, means for moving said plugs relatively to said cylinder, and means for moving said electrodes relatively to said cylinder and plugs, both of said means being supported independently of said cylinder, and means for lifting said cylinder when said plugs and electrodes are in outward position.

2. In an electric furnace, the combination of a furnace cylinder having axial orifices at its ends and a spout on its front side, a cradle for supporting the same, means for rotating said cylinder within said cradle, electrodes adapted to enter said orifices, means for supporting said electrodes independently of said cylinder, means for moving the inner ends of said electrodes into and withdrawing them from said orifices, means for closing said orifices when said electrodes are withdrawn, and means for securing lifting and tilting means to said cylinder.

JAMES ROBERT COE.