May 29, 1928. 1,671,337

T. F. BAILY

SOAKING PIT

Filed March 5, 1925

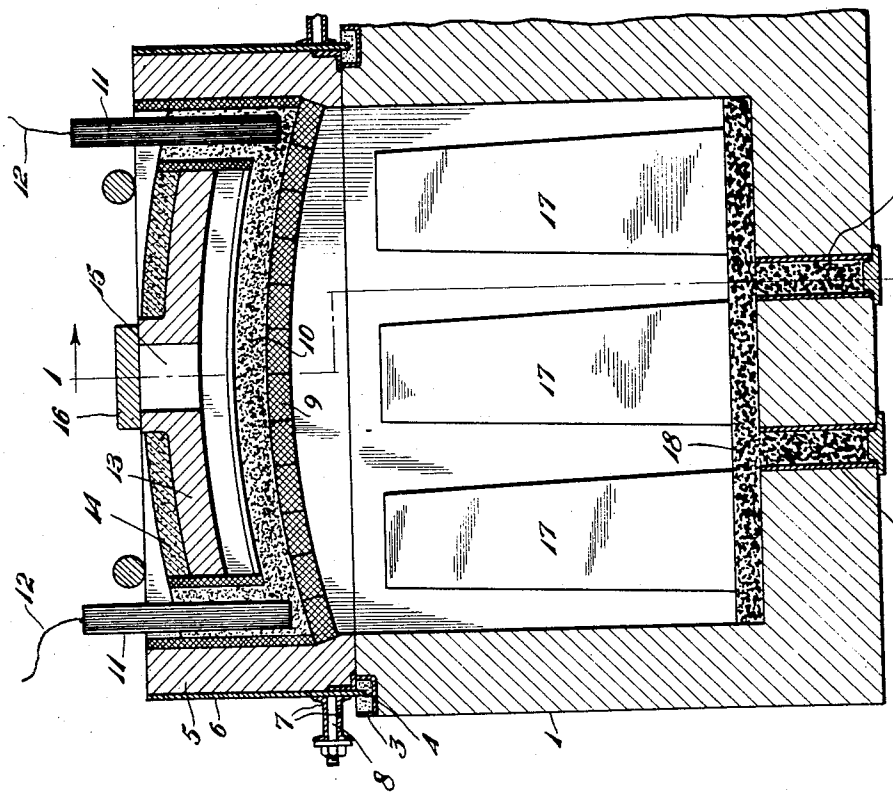


Fig. 2

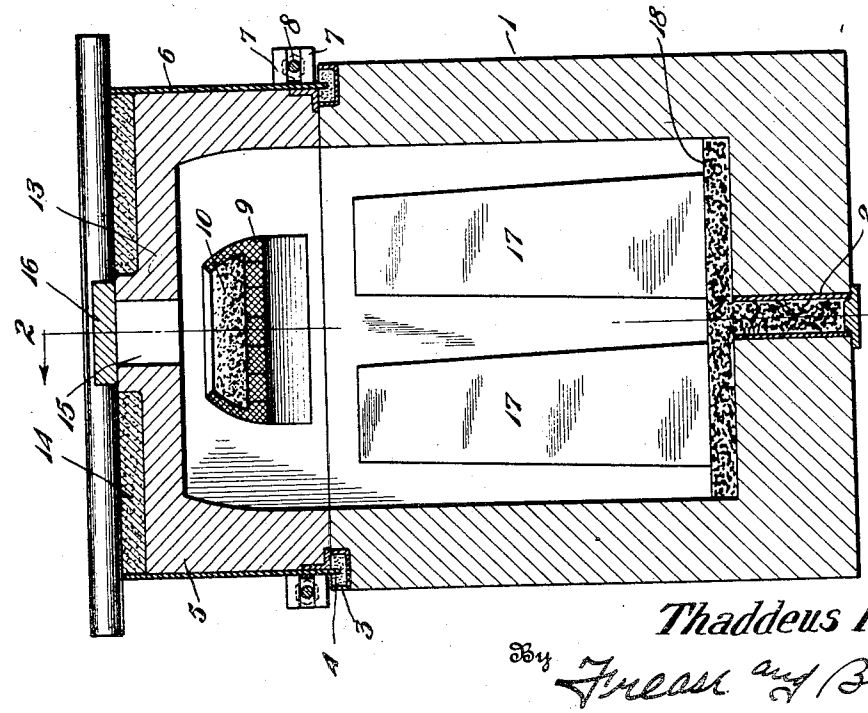


Fig. 1

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UNITED STATES PATENT OFFICE.

THADDEUS F. BAILY, OF ALLIANCE, OHIO.

SOAKING PIT.

Application filed March 5, 1925. Serial No. 13,088.

This invention relates to electric furnaces and more particularly to a soaking pit provided with a removable cover with the electric heating elements located therein.

The objects of the improvements are to provide a soaking pit or furnace adapted to receive ingots or other articles to be heated in spaced upright position, the heating elements being located above the upper ends of the ingots whereby the heat is radiated downward therefrom along the sides of the ingots and against the bottom of the pit, as well as upon the upper ends thereof; to provide a removable cover, for the pit, in which the heating element is carried, thus removing the heating element from all danger of accident due to careless handling of the ingots in the pit; to provide an arched, self-supporting resistor supported at its opposite ends upon the side or end walls of the cover; to provide means whereby the resistor element may be easily and readily renewed or replaced without cooling down the pit; and to provide means whereby existing gas heated soaking pits may be easily and readily converted into electrically heated pits at a minimum expense and delay.

The above and other objects may be attained by constructing the soaking pit in the manner illustrated in the accompanying drawing, in which—

Figure 1 is a transverse, vertical, section through one hole of a soaking pit embodying the invention, taken substantially on the line 1—1, Fig. 2; and

Fig. 2, a longitudinal, vertical, section through the same taken substantially on the line 2—2, Fig. 1.

Similar numerals refer to similar parts throughout the drawing.

The soaking pit may contain any usual or desired number of holes, each of the same construction, one hole being shown for the purpose of illustration and comprising the fire brick side and bottom walls shown generally at 1.

The bottom of the pit may be provided with the usual cleanout openings 2 and a sand trough 3 is preferably provided around the upper open end of each hole of the pit to receive the depending flange 4 carried by the cover, indicated generally at 5.

The pit cover is preferably a hollow inverted fire brick structure located within a metal casing 6 and reinforced as by the channel members 7 and buckstays 8. This cover may be raised clear of the sand seal and moved to one side of the pit by any usual or well known manner, preferably by the mechanism illustrated in my copending application Serial No. 152, filed January 2, 1925.

Heat is supplied to each hole of the pit by an electric resistor carried by the cover and preferably in the form of a resistor trough 9, formed of carbide of silicon or the like and preferably arched from end to end and supported, at its ends only, upon the side or end walls of the cover.

The trough 9 is filled with a suitable granular resistance material such as crushed carbon, illustrated at 10, and an electrode 11 is located through the top of the cover and extended into each end of the trough and surrounded by the granular resistance material, a flexible cable 12 connecting each of the electrodes with a source of electric supply.

The cover preferably has the arched roof 13, upon the top of which may be located any suitable heat insulation as shown at 14, and an opening 15, arranged to be normally closed, as by the cover block 16, which is provided in the top of the cover for the purpose of renewing or replacing the granular resistance material within the trough.

The ingots, as shown at 17, are placed in spaced upright position within the pit, in the usual manner, and for the purpose of absorbing the heat radiated downward from the resistor, and heating the lower ends of the ingots by conduction, crushed coke or the like, as indicated at 18, is preferably placed upon the bottom of the pit, supporting the ingots as well.

When the cover is in position upon the pit, as shown in the drawings, it will be seen that the heat will radiate downward from the trough, not only upon the upper ends of the ingots, but around all sides thereof to the bottom, the crushed coke in the bottom of the pit absorbing the heat and conducting it to the lower ends of the ingots to assist in bringing them to the proper temperature.

Since the upper ends of the ingots are in close proximity to the resistor, they may be heated to a greater temperature than the remaining portions, if the pit is operated at high capacity. As the upper ends of the in-

gots enter the rolls first, it will be seen that this slight overheating of this end of the ingot will be an advantage.

Since the upper portion of the pit is subject to greater heat loss than the bottom of the pit, due to the cooling effect of frequent opening of the cover, it will be seen that this cooling effect is compensated by placing the resistor in the cover.

It will also be obvious that any existing type of gas heated soaking pit may be easily converted into an electrically heated pit, at a minimum of expense and delay, by providing the electrically heated cover, as shown and above described.

I claim:

1. A pit type furnace, a removable cover for the furnace and a longitudinally arched resistor trough carried by the cover.

2. A pit type furnace, a removable cover for the furnace and a resistor trough, arched longitudinally and supported at its ends upon the side walls of the cover.

3. A pit type furnace, a removable cover for the furnace, a resistor trough carried by the cover, granular resistance material in the trough and means for renewing or replacing the resistance material while the furnace is in operation.

4. A pit type furnace, a hollow inverted removable cover for the furnace and a resistor mounted in the cover and supported at its ends only upon the end walls of the cover and spaced from the top and side walls of the cover.

5. A pit type furnace, a removable cover for the furnace, a resistor trough mounted in the cover and electrodes extending through the top of the cover into the trough.

6. A pit type furnace, a removable cover for the furnace, a resistor arched longitudinally and supported at its ends upon the walls of the cover.

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

THADDEUS F. BAILY.