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APPARATUS FOR INTRODUCING AIR OR GASEOUS FLUID INTO THE CHARGE IN ROTARY FURNACES

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Fig. 1.

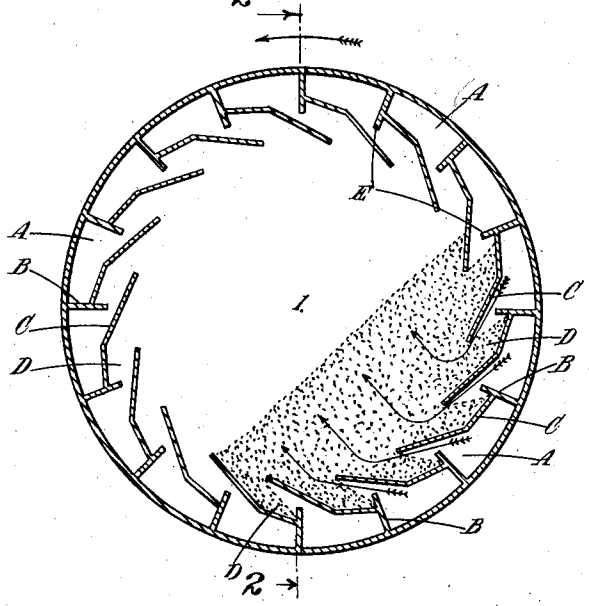
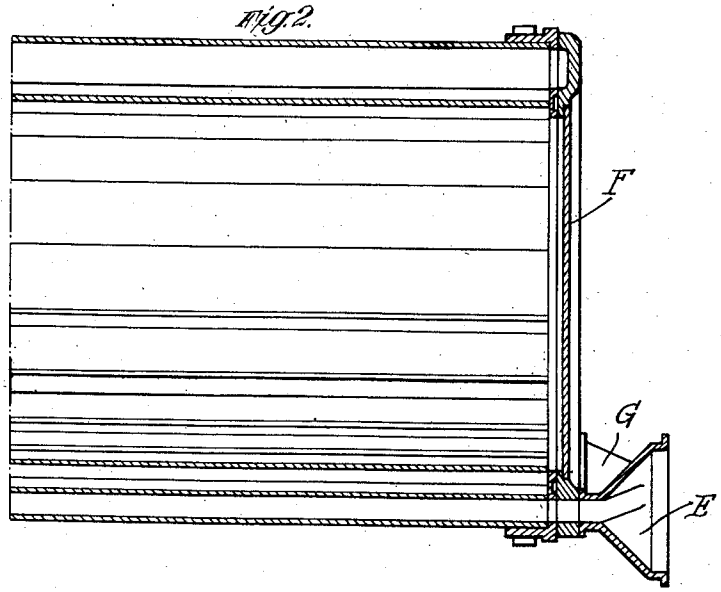


Fig. 2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR INTRODUCING AIR OR GASEOUS FLUID INTO THE CHARGE IN ROTARY FURNACES.

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This invention relates to rotary furnaces and has for its chief object to provide tuyères for such furnaces suitable for directing gaseous fluid through the charge therein when the latter is maintained at a comparatively substantial depth and is even in a finely divided condition.

According to the invention the furnace is provided with peripheral tuyères formed by a series of inwardly extending members which are so constructed or arranged that each member overlaps or extends over the adjacent one to leave an opening for the passage of gaseous fluid through the charge in the furnace. The said tuyères may be formed by a series of radially arranged and inwardly extending plates each of which is provided with another plate projecting laterally therefrom and extending above and beyond the adjacent radial plate so that an opening for the passage of gaseous fluid is formed between the inner end of said adjacent plate and the outer surface of the laterally extending plate. Each of the laterally extending plates may project from the radial plate with which it is associated at a point which is located between the inner and outer edges of such radial plate so that that part of the latter which extends inwardly beyond the laterally extending plate constitutes a ledge for obstructing the passage of material into the tuyères. By construction the tuyères in accordance with this invention it is possible amongst other advantages to satisfactorily treat a charge of material which is of a finely divided nature as owing to the particular arrangement of the tuyères the charge is unable to enter the tuyères and choke them but actually falls out of them during the rotation of the furnace.

In order that the said invention may be clearly understood and readily carried into effect the same will now be described more fully with reference to the accompanying drawings, in which:—

Figure 1 is a vertical section taken through a rotary furnace suitable for carrying out the method, and

Figure 2 is a longitudinal section on the line 2—2 of Figure 1.

A A are the tuyères which are of such a size as to be capable of receiving a substantially large quantity of gaseous fluid which it is desired to pass through the material in the furnace. The said tuyères are formed by the radially arranged and inwardly extending plates or members B B each of which is provided with the plate or member C projecting laterally therefrom and extending above and beyond the adjacent radial member so that an opening D is formed between the inner end of the said adjacent member and the outer surface of the laterally extending member. Each of the laterally extending members projects from the radial member with which it is associated at a point which is located between the inner and outer edges of such radial member so that that part E of the latter which extends inwardly beyond the laterally extending member constitutes a ledge for obstructing the passage of material into the tuyères during the rotation of the furnace. The aforesaid openings D D in some cases may be covered by perforated plates through which the gaseous fluid enters the furnace. The gaseous fluid is admitted to the tuyères A A by a distributing device or devices arranged either at one or both ends of the furnace or at a point between its ends. In the former arrangement the said device or devices comprises a gas distributing head E secured to the stationary end plate F of the furnace. The gaseous fluid may be caused to pass either through the material in the furnace into the space marked 1 above the material or in the opposite direction, that is to say, from the space 1 through the material in the furnace. In both cases the distributing head E is provided with side extensions G so that the gaseous fluid is conveyed through those tuyères A A around the lower part of the furnace which are at the time covered by the material in the furnace. In carrying out the invention variations may be made in which consideration may be give to the variation in angles the different materials take in the furnace during the rotation and to the alterations which those may demand regarding distributing device or devices and other arrangements.

What we claim and desire to secure by Letters Patent of the United States is:—

1. The combination with a rotary furnace of a plurality of peripheral tuyères formed by a series of inwardly extending plates which are so arranged that each plate over-

laps the adjacent one to leave an opening for the passage of gaseous fluid through the charge in the furnace.

2. The combination with a rotary furnace of a plurality of peripheral tuyères formed by a series of radially arranged and inwardly extending plates each of which is provided with a plate projecting laterally therefrom and extending above and beyond the adjacent radial plate so that an opening for the passage of gaseous fluid is formed between the inner end of said adjacent plates and the outer surface of the laterally extending plate.

3. The combination with a rotary furnace of a plurality of peripheral tuyères formed by a series of radially arranged and inwardly extending plates each of which is provided with a plate projecting laterally therefrom and extending above and beyond the adjacent radial plate so that an opening for the passage of gaseous fluid is formed between the inner end of said adjacent plates and the outer surface of the laterally extending plate and means for preventing the material in the furnace from entering said tuyères.

4. The combination with a rotary furnace of a plurality of peripheral tuyères formed by a series of radially arranged and inwardly extending plates each of which is provided with a plate projecting laterally therefrom and extending above and beyond the adjacent radial plate so that an opening for the passage of gaseous fluid is formed between the inner end of said adjacent plates and the outer surface of the laterally extending plate, said laterally extending plates projecting from the radially arranged plate with which it is associated at a point which is located between the inner and outer edges of said radially arranged plate so that that part of the latter which extends inwardly beyond the laterally extending plate constitutes a ledge for obstructing the passage of material into the tuyère.

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