March 29, 1932. B. H. O. DE VERDIER 1,851,814

CONNECTING ONE OR SEVERAL SODA MELTING FURNACES TO A ROTATING FURNACE

Filed Nov. 10, 1930 2 Sheets-Sheet 1

Fig. 1.

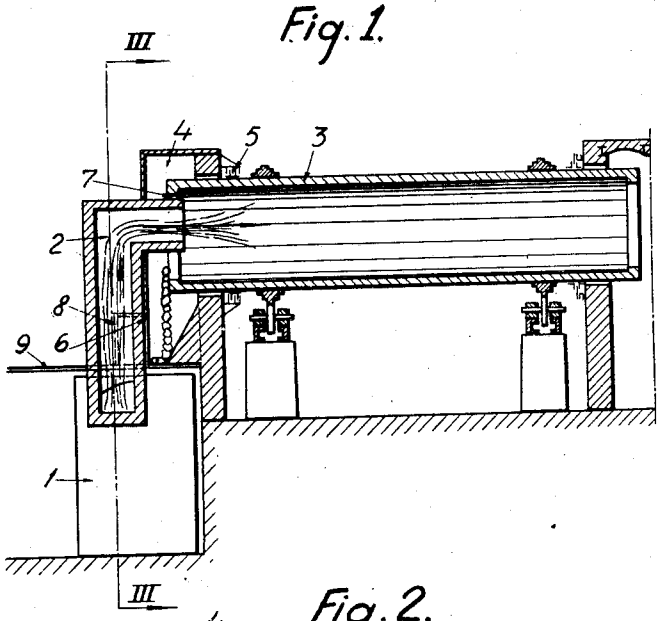

Fig. 2.

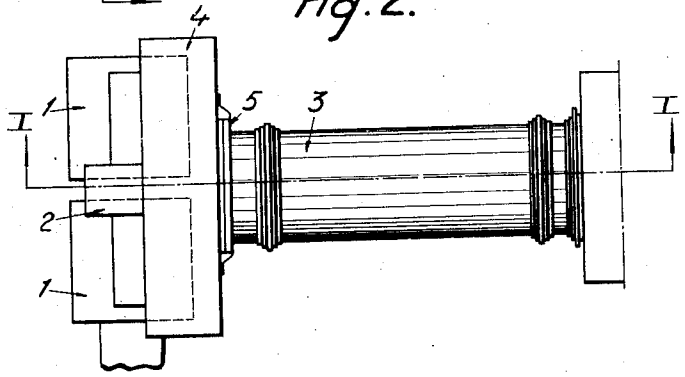

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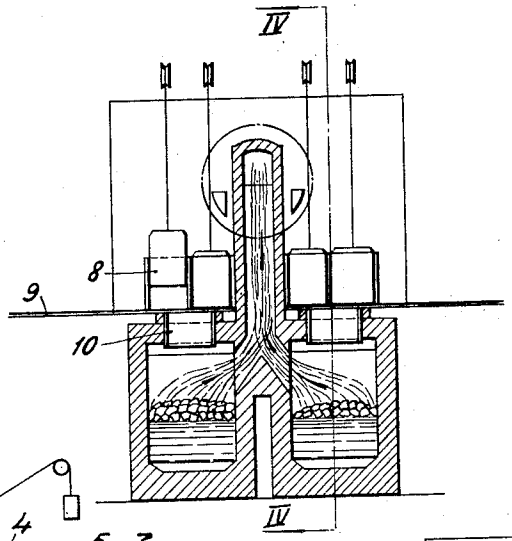
Fig. 3



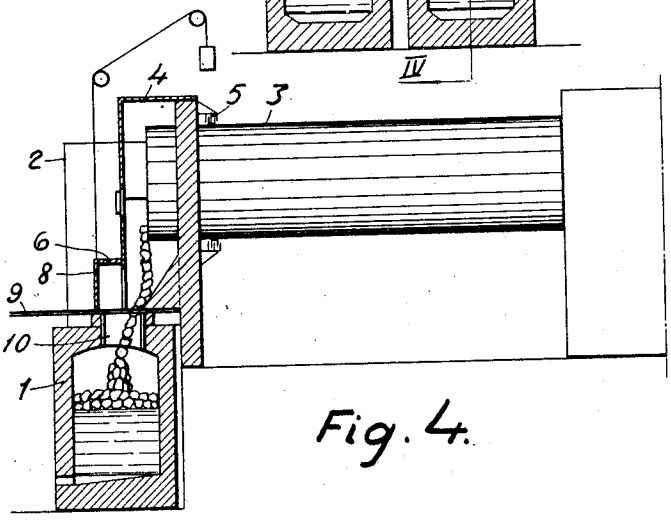


Fig. 4.

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Patented Mar. 29, 1932

1,851,814

UNITED STATES PATENT OFFICE

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CONNECTING ONE OR SEVERAL SODA MELTING-FURNACES TO A ROTATING FURNACE

Application filed November 10, 1930, Serial No. 494,735, and in Sweden September 14, 1929.

In the combinations of soda melting-furnaces and rotating furnaces used in the cellulose industry it has always been difficult to get a close connection of the gas canal from the melting-furnace to the rotating furnace. Said difficulties are based upon the fact that the gases which are to be introduced from the melting-furnace into the rotating furnace have a very high temperature resulting in a very strong draught effect through the intervening spaces which cannot be wholly avoided at the connection of the melting-furnace with the rotating furnace. The tightening devices tried hitherto have also involved the disadvantage that they, due to the heat, have been subjected to very rapid destruction. One has tried to avoid this by using water cooling or by pressing in blast-air. The last-mentioned devices cause, however, extra costs, and yet they have not given satisfactory results. The devices used heretofore have been very unsatisfactory also in the respect that it has not been possible to control the supply of air to the rotating furnaces.

The object of the present invention is to avoid said disadvantages, i. e. leakage of heat gases with accompanying losses of heat, destruction of material and dirtying, by preventing draught effect in the space between the gas canal of the melting furnace or the gas neck and the rotating furnace. This is effected according to the invention by the use of construction such that about the gas neck there is arranged a chamber containing air of a relatively low temperature, the outer portion of which embracing the rotating furnace supports a packing device known per se. The chamber may be open at the bottom and, if desired, be provided with sliders which may be raised or lowered or otherwise controlled in order to decrease or increase the effective height of the chamber.

The chamber is provided with sliders which may be raised or lowered or otherwise controlled. One or several charge openings may be located in the chamber in order to feed the raw material from the rotating furnace down into the melting-furnace.

The appended drawings illustrate diagrammatically an embodiment of a device according to the invention. Fig. 1 shows a vertical longitudinal section of the furnace assembly along the line I—I of Fig. 2. Fig. 2 is a view from above of the furnace assembly; Fig. 3 is a vertical cross section of the melting-furnace and the gas neck taken along the line III—III of Fig. 1, and Fig. 4 is a vertical longitudinal section along the line IV—IV of Fig. 3. 1 indicates the melting-furnace, 2 the gas neck, and 3 the rotating furnace. The connection between the gas neck 2 and the rotating furnace 3 is built into the chamber 4 which is provided with a tightening device 5 which prevents the efflux of the air enclosed in the chamber 4. All the walls of the chamber 4, which is shut off upwards, extend so far downwards towards the floor plane 9 that no draught effect arises at the lower edge 6 of the wall. The air volume in this chamber thus becomes relatively free from currents, and acts at the same time as heat insulation, and prevents the warm gases passing from the melting-furnace to the rotating furnace from flowing out through the space 7. The temperature of the enclosed air volume thus becomes relatively low, and by means of simple packing devices 5, arranged between the rotating furnace and the chamber, the enclosed air is prevented from escaping into the free air. The height of the lower edge 6 of the wall is determined by the draught effect in the inlet of the rotating furnace. If the effect of the draught varies in the rotating furnace, one may by means of sliders arrange in such a way that the said lower edge of some portion of the walls may be controlled. This arrangement may be also be carried out in such a way that the chamber 4 becomes quite shut off towards the atmosphere, and, if desired, provided with one or several sliders 8. By the last-mentioned arrangement, the air inlet of the rotating furnace may be controlled. It may also be arranged in such a way in this embodiment that the raw material from the rotating furnace is automatically charged into the melting-furnace in such a way that this takes place in the chamber 4, the feeding opening 10 of the melting furnace being directly connected to the hori-

zontal bottom of the chamber. Thus, the smoke, dust and dirt arising when the raw material is discharged in the free working room are avoided. The charge opening to the melting furnace may also be arranged within the walls of the chamber 4, thus admission of undesired air or exhaustion of gas from or to the working-chamber is avoided.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination, a rotary furnace adapted to rotate about a horizontal axis, a stationary melting furnace, a gas neck connecting the rotary furnace and the melting furnace, and an air chamber embracing the joint between the gas neck and the rotary furnace.

2. The apparatus set forth in claim 1, in which the air chamber comprises a shutter for controlling the amount of air entering said chamber for admission into the rotary furnace.

3. The apparatus set forth in claim 1, in which the air chamber has an opening for feeding material from the rotary furnace into the melting furnace.

4. The apparatus set forth in claim 1, wherein the rotary furnace is connected to a plurality of stationary melting furnaces through a common gas neck.

5. The apparatus set forth in claim 1, including a packing device between the air chamber and the rotary furnace.

In witness whereof I have hereunto signed my name.

BROR HELMER OLOF de VERDIER.