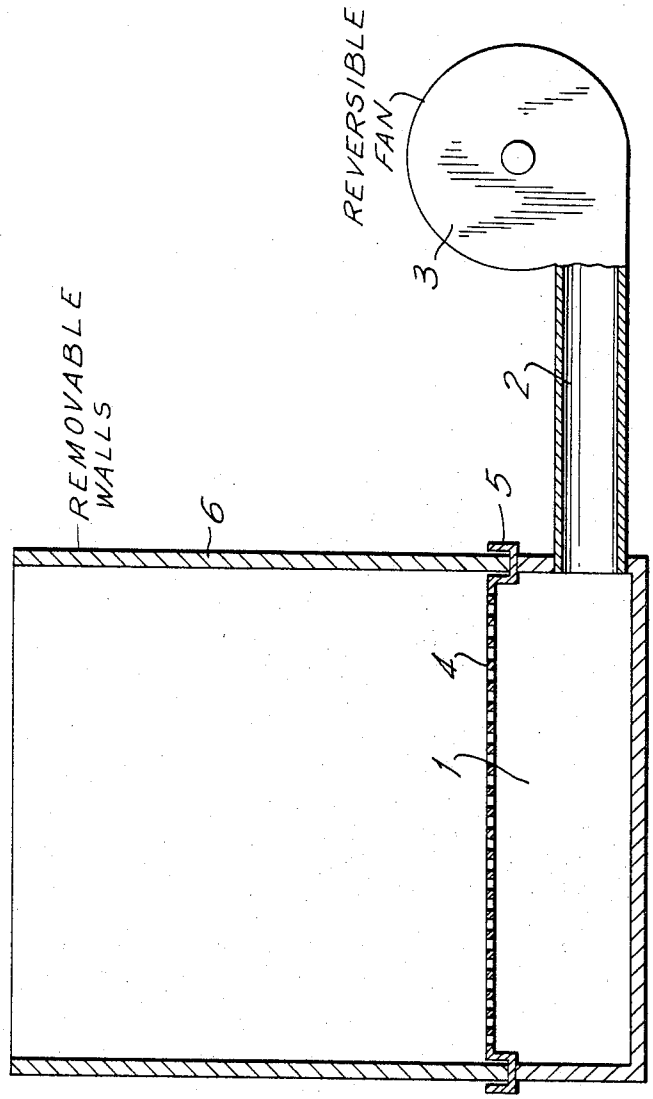
Oct. 22, 1968 W. KOWALENKO 3,406,955

METHOD AND APPARATUS FOR THE PRODUCTION OF LIGHTWEIGHT AGGREGATES

Filed Oct. 22, 1965



United States Patent Office 3,406,955 Patented Oct. 22, 1968

3,406,955

METHOD AND APPARATUS FOR THE PRODUCTION OF LIGHTWEIGHT AGGREGATES

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Filed Oct. 22, 1965, Ser. No. 500,825
Claims priority, application Poland, Oct. 24, 1964, 106,056
7 Claims. (Cl. 263—40)

ABSTRACT OF THE DISCLOSURE

Method and apparatus for the production of lightweight aggregates wherein a solid fuel is ignited on a grate mounted on an air chamber while air is drawn through the fuel and air chamber by a fan whereafter lateral walls are removably placed on the grate and a charge introduced on the fuel and then the fan is reversed and the air directed upwardly through the fuel and charge.

The present invention relates to a process for the production of lightweight aggregates and other constructional materials by means of the sintering method, and to a device for carrying this process.

Hitherto known processes for the production of lightweight aggregates consist in sintering the aggregates in sintering pans, shaft furnaces or on agglomeration bands.

A disadvantage of the pan sintering process is the small yield of the product as a consequence of the small capacity of the pan and the difficulties arising in discharging the agglomerate.

In sintering the charge in shaft furnaces, a greater periodic yield is obtained, but the process requires a continuous and difficult control of the fuel content.

In case of fuel deficiency, the process stops while in case of fuel excess, partial fusion of the mass and its adherence to the ceramic wall lining take place, the adhering mass being difficult to remove. This gives rise to stoppage of the charge in the furnace and interruption of the production. Besides, due to continuous downwards movement in the furnace, spalling of the material and formation of dust take place.

The above disadvantages are eliminated in the process according to the invention in which an increase of yield of the product in relation to that obtained from the pan is obtained and simultaneously the inconveniences of the shaft furnace are avoided. The process according to the invention consists in igniting the fuel on a grate resting on a container serving as an air chamber, placing lateral walls on the chamber and grate, covering the grate with a layer of the charge and then sintering the raw material while a bottom air blast is commenced. When the sintering process is finished, the lateral walls are raised and the agglomerate remaining on the grate is easily removed in any convenient manner.

In using the process according to the present invention, adherence of the charge to the lateral walls of the device does not occur nor are the walls excessively heated, because these walls are made of a non-insulated material i.e. heat conductive material which can be rapidly cooled by the surrounding air. A further advantage of the process according to the invention is that the walls are also cooled from the interior by a part of the air stream flowing from below. Due to this fact, in the immediate neighborhood of the lateral walls of the device, a thin layer of the

charge is formed which is not subjected to sintering and which protects the lateral walls against heating. After the process is finished the said layer facilitates raising of the walls.

A further advantage of the process according to the invention is the possibility of joining several devices into a cyclically operating assembly.

For carrying out the process according to the invention, a device is shown schematically in the sole figure of the accompanying drawing. The said device consists of a lower part constituting an air chamber **1**, and a removable upper part constituted by metal vertical lateral walls **6**. At the bottom, of the chamber **1** is connected by means of a pipe **2** with a fan **3** enabling the air to be sucked in while the fuel is being ignited and to be reversed and fed under pressure after the walls **6** are put on the chamber **1** and after the grate **4** is covered with the charge by introduction through the open top of the upper part. On the air chamber **1** the grate **4** is placed and around the grate **4** on a rim of the chamber a bed **5** is placed enabling the lateral walls **6** to be installed on the chamber **1** in sealing contact.

What is claimed is:

1. Apparatus for the production of lightweight aggregates comprising means defining an air chamber, a grate fixed to said air chamber at the upper end thereof, means coupled to said chamber for drawing air through said grate into the chamber and for blowing air from the chamber through said grate, and a removable assembly of walls on said chamber for surrounding said grate, said walls having lower ends which are at the level of the grate.

2. Apparatus as claimed in claim **1** comprising a bed secured to said grate and mounted on said air chamber, the lower ends of said walls being engageable in said bed.

3. Apparatus as claimed in claim **2** wherein said bed is of channel shape.

4. Apparatus as claimed in claim **1** wherein said assembly of walls define an open top substantially coextensive with the grate.

5. Apparatus as claimed in claim **1** wherein said means for the drawing and blowing of air comprises a fan communicating with said chamber.

6. Apparatus as claimed in claim **1** wherein said walls are constituted of heat conductive metal.

7. A process for the production of lightweight aggregates comprising igniting a solid fuel on a grate while drawing air through the fuel and grate to an air chamber beneath the grate, directly and removably placing upstanding walls on said grate, introducing a charge through an open top formed by said walls to cover said fuel with a layer of charge, reversing the direction of air flow through said grate so that the air now passes upwardly through the fuel and layer of charge, whereby the charge is sintered, and raising the lateral walls to remove the sintered product from the grate.

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