

PUBLISHED
MAY 25, 1943.
BY A. P. C.

P. COIFFU
PROCESS AND APPARATUS FOR MANUFACTURING BURNT,
MOLTEN OR CLINKERIZED MATERIALS
AND PARTICULARLY CEMENTS
Filed April 22, 1941

Serial No.
389,810

Fig. 1

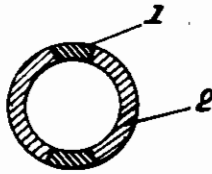
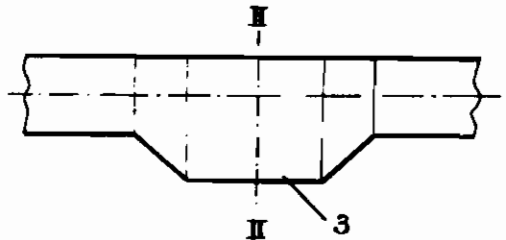


Fig. 2



Fig. 3



Pierre Coiffu
INVENTOR

E. F. Wendroth
ATTORNEY

ALIEN PROPERTY CUSTODIAN

PROCESS AND APPARATUS FOR MANUFACTURING BURNT, MOLTEN OR CLINKERIZED MATERIALS AND PARTICULARLY CEMENTS

Pierre Coiffu, Paris, France; vested in the Alien Property Custodian

Application filed April 22, 1941

The use of rotary furnaces which are continuously fed with raw materials at the upper end and heated by a flame at the other end lead, particularly in the manufacture of cements, to the formation of an inner ring which progressively increases and finally obstructs the furnace.

The various known means for proceeding with the destruction of the said ring vary with the nature of the products being treated and the size of the furnace but all of them cause a deterioration of the refractory lining and frequent interruptions in the operation of the furnace.

It has also been attempted to delay the formation of the ring by different means. Thus, for instance, by modifying the composition and the state of the raw materials introduced in the furnace. Such means generally cause an irregular operation of the furnace, either in modifying the composition of the finished products obtained or by varying the heating process which consequently do not enable to secure a perfectly regular operation and combustion and thus an economical production.

The present invention has for its objects a process which enable to more effectively delay the formation of the said ring and even in some cases to prevent it without having the above mentioned disadvantages, and which consists in systematically bringing at different temperatures various spots of the furnace lining located in the usual region in which the said ring is being formed and in a same plane which is at right angles to the axis of revolution of the said furnace, so that the isothermal curves of the lining are not any more located, as is usually the case, substantially in planes at right angles to the said axis.

In a first embodiment of the said invention, the lining of the furnace, in the zone in which the ring is likely to be formed, is provided with arcs constituted by a material having a thermal conductivity which is higher than that of the adjacent arcs.

By way of example, Fig. 1 shows the section of a furnace according to the said embodiment.

The lining of the said furnace is constituted by two sectors of carborundum bricks 1, separated by two sectors of silico-aluminum bricks 2. The latter being of lower thermal conductivity, the corresponding furnace walls are hotter than the walls corresponding to the sectors 1.

In a second embodiment of the present invention, the furnace is provided in the region in which the ring is likely to be formed, with a non-circular section, i. e. a section in which some

points are more remote than the others from the general axis of revolution of the furnace.

By way of example, the Figures 2 and 3 show two sections at right angles to each other of a furnace according to the said second embodiment.

The section of the said furnace is circular over most of the length of the furnace and is larger at 3 in the zone in which the ring is likely to be formed.

In such conditions, in the parts 3, which are most remote from the axis, is obtained a temperature which is lower than that prevailing in the parts closer to the axis.

In both abovementioned embodiments, the means for solving the problem suggested; i. e. the destruction of the rings, consist in special constructions of the furnace. The said means do not vary in a given furnace, whilst the position, shape and nature of the ring are at each time different. The remedy is thus not exactly adapted to the evil.

On the contrary, in the third embodiment described hereunder, the remedy may be varied according to the evil.

In said third embodiment of the present invention, a difference of temperature in the zone of formation of the ring is generated when it is desired to prevent the formation of the ring, by modifying the normal distribution of calories transferred to the lining by the heating device, for instance by stopping or slowing down the rotation of the furnace or by modifying the length of the flame of the heating device when one or more generatrices of the furnace reach the highest position.

In such conditions, some generatrices of the lining are brought at higher temperatures than the others, thus causing the destruction of the ring or preventing its formation.

It is, of course, possible to slow down the furnace several times at each revolution, said slowing down being always produced at the time at which one or more generatrices of the furnace pass at the highest point. Full stopping for a very short time could also be provided at each revolution.

The mechanical embodiment of said controlled slowing down or stopping of the furnace only involves very simple mechanical or electrical problems, known by themselves. It would naturally be necessary to adjust the average speed of revolution of the furnace, so that its production will not be reduced.

PIERRE COIFFU.