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HEAT RESISTING PANEL AND METHOD OF MAKING SAME

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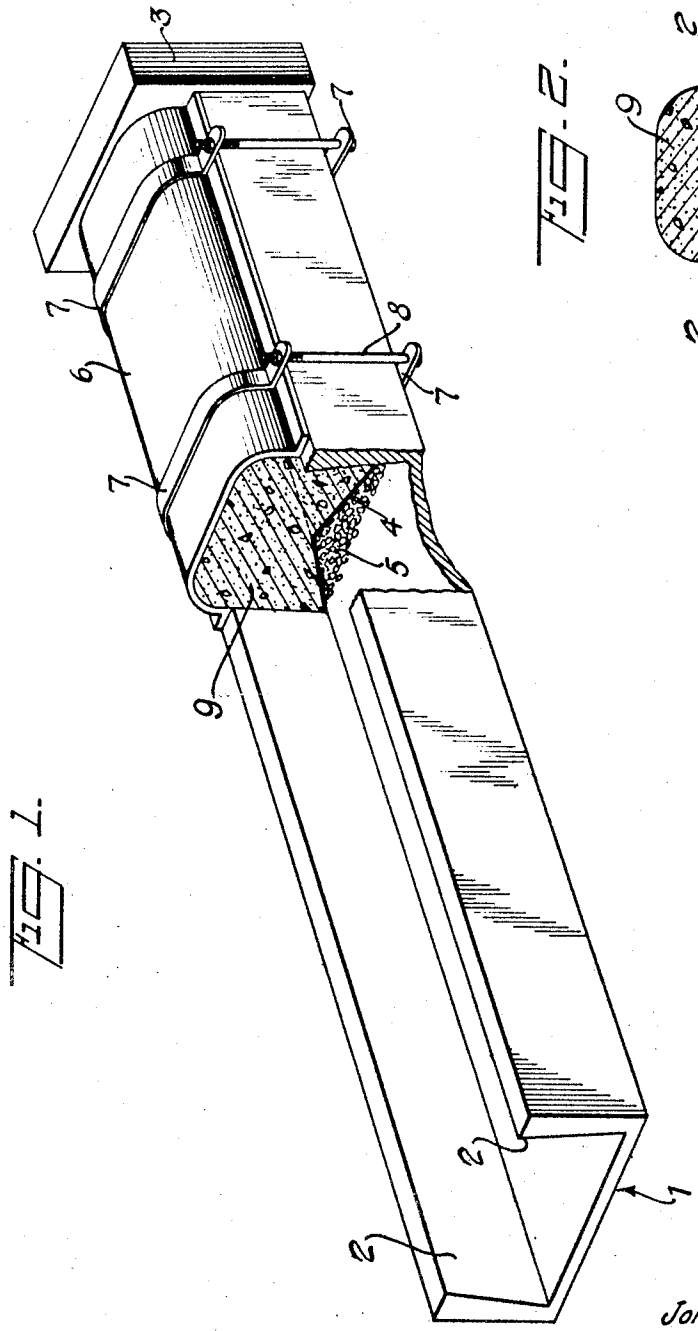

FIG. 1.

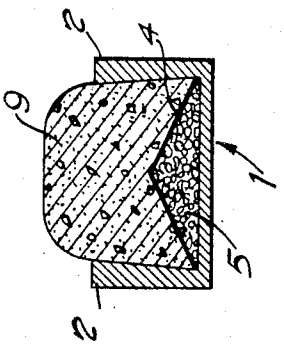

FIG. 2.

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HEAT RESISTING PANEL AND METHOD OF MAKING SAME

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5 Claims. (Cl. 25—156)

This invention relates generally to the production of heat resisting panels, but is particularly designed to be used in the making of doors for a common type of modern coke ovens which have long, narrow, deep retorts which must be opened up completely at each end to permit the coke to be discharged in a mass by the action of a horizontally moving ram. Such doors are long, narrow panels usually formed of an outer metal casing with an inner facing and filling of refractory cement or composition of refractories which has been allowed to set in said casing. The heat in the retort is so intense that a cement or other refractory composition of great heat resisting capacity and consequent high cost, is required, and as a door lining of considerable thickness must be built up to protect the metal casing or frame of the door from the destructive action of high temperatures, and to reduce the loss of heat by conduction to the outer atmosphere, the cost of the present structure is considerable. This cost can be reduced and the heat insulating efficiency of such doors and similar structures increased by the use of my herein described invention, which consists essentially in casting into or onto such originally plastic refractory lining, a core or facing of cheap non-heat-conducting aggregate, such as coal cinders or other non-combustible, granular material which will form a mass relatively light in weight, containing many air cells, and inexpensive in production. One form of such a coke oven door and the process of making it are illustrated in the accompanying sheet of drawing in which

Fig. 1 is a perspective view of the door in process of formation, parts being broken away and others shown in section, and

Fig. 2 is a cross section on a reduced scale taken along line 2—2 of Fig. 1 after the mold members have been removed.

Throughout the drawing like reference characters indicate like parts. 1 is a long, channeled casing usually made of cast iron which forms the front and sides of the door when completed. This may be about 15 feet long and 30 inches wide in exterior dimensions, the inner surfaces of the walls 2, 2, being inwardly included, or undercut as shown. The practice has been to install the refractory lining in casing 6, as follows: A mold member 6 is fastened over a portion of the length (say five feet) of the channel opening in casing 1, as by means of straps 7, 7, and the bolts 8, 8, the casing is raised to a vertical position with that end resting on a base plate 3, and the plastic refractory mixture 9 poured into the space so formed. The mold member 6 is then raised and fastened in a higher position and the operation repeated until the whole length of the casing is lined.

According to my present invention a sheet of metal lath 4, wire cloth, or other material adapted to form a reticulated septum is first inserted in the casing 1, and the pocket thereby formed filled with coal cinders, or other cheap, granular or loose material 5, which is non-combustible and will not carbonize or otherwise be seriously affected by high temperature, but will contain a multiplicity of air cells so as to form an efficient heat insulating mass.

The mold member 6 is then attached and the semi-liquid refractory poured in. Part of this passes through the metal lath 4 and partway penetrates the cinder mass, thus keying the parts together to a sufficient extent.

The result is a panel lining weighing less than the old form, costing less, and a much better non-conductor of heat, so that the metal casing does not get as hot, as though the lining were only a set, originally plastic mass, and less heat is conducted away from the oven.

Having described my invention, I claim:

1. The method of forming a heat resisting panel which comprises providing an exterior casing open on one face, arranging a reticulated partition in and across said opening: filling the space so enclosed with a loose dry granulated body of non-heat-conducting, refractory material: fastening a mold member over said opening, pouring a fluid mass of refractory cement into the space between said partition and said mold member, and allowing the same to set, and finally removing said mold member.

2. The product of the herein described process, being a heat resisting panel structure comprising, in combination, an exterior casing open on its inner face, a mass of originally granulated, heat resisting material packed in but filling only a portion of said casing interior and extending across within said opening on its inner face, a reticulated septum extending across said casing interior along the exposed surface of said body of granular material, and a body of said refractory cement set in the relatively large outer portion of said casing interior so left free and forming a facing therefor, portions of said cement extending through said reticulated septum and into the interstices of said body of granular material.

3. A product such as defined in claim 2 in

which said exterior casing has a channeled cross section, the inner walls of such channel being slightly undercut so that said set cement mass is keyed into said casing.

4. A product such as defined in claim 2 in which said granular material is composed of coal cinders, and said septum is formed of metal lath.

5. As a new article of manufacture a heat resisting panel comprising a body of set cement, a mass of mineral aggregate and a reticulated septum through which portions of said cement extend into the interstices of the body of mineral aggregate.

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