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HENRY H. HARRIS, OF DETROIT, MICHIGAN

METAL COATED REFRACTORY MATERIAL AND PROCESS OF MAKING THE SAME

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This invention relates to refractory lining walls and bricks generally employed in heat treating furnaces.

The primary object of this invention is to provide a refractory brick having high temperature resistance as well as fracture resisting qualities.

Another object of this invention is to provide a refractory substance or compound of the above mentioned character which may be formed in such a manner as to provide an open structure thereby forming a porous mass which is caused by the oxidation of one of the elements in the composition.

A still further object of this invention is to provide a refractory lining of the above mentioned character which is inexpensive in construction and adapted to resist the chemical action of gases, metals and slags.

Other objects and advantages of this invention will appear during the course of description.

Heretofore it has been common practice to form refractory bricks by mixing silicates with coke and other granular material.

The disadvantages of the above type of refractory bricks are numerous, one of which is the cracking and fracturing most commonly caused by variations in the furnace temperature and another cause is the chemical action of gases slags and metals thereon.

The above disadvantages are overcome by the use of a filler such as carborundum mixed with an alloy metal such as chrome or aluminum alloy. It is well-known in the art that chrome alloys will allow a high temperature heat above 1700° and certain aluminum alloys range about the same or a little below.

The metal alloy forms a binder for the refractory material which may be the conventional clay refractory or carborundum. Carborundum has known properties which are well adapted for use in connection with refractory material and for this reason it is well to employ carborundum to obtain the best results.

In preparing my furnace lining, I prefer to employ carborundum for the filler as it is manufactured in flake or finely divided form. To the filler is added fragments of metal alloys such as aluminum or chrome alloy metals which are also in a finely divided form for facilitating easy and even mixing of the filler and binder.

After the two elements have been thoroughly commingled, the mass is then formed into bricks or the desired shape best adapted for the particular use which the refractory material is to be employed. The pressed forms or bricks are then subjected to a high heat causing oxidation of the metal alloys which forms a porous mass, while the metal alloys are running through the filler. Only particles of the metal alloy are oxidized as it is impossible for air to reach the most interior part of the form or brick.

The oxide formed in this manner has a higher heat resistance than the metal chrome or aluminum alloys and it also further acts as a binder to hold the mass together thereby preventing fracturing of the material.

It is to be understood that I do not wish to limit my disclosure to a carborundum filler or a chrome or aluminum alloy binder, as other alloys may be substituted with the filler and likewise other refractory fillers may be substituted with the alloy binder without departing from the spirit of the invention or the scope of the subjoined claims. It is also to be understood that this disclosure is for the purpose of teaching the gist of my invention and that I do not wish to be restricted to exact proportions.

What I claim is:

1. Process of making a strong refractory product comprising commingling refractory filling material such as carborundum in subdivided form with heat resisting alloy materials such as chrome and aluminum alloys also in subdivided form, pressing same into tiles or bricks, and applying high heat thereby causing oxidation of the metal and resultant added binding together of the particles.

2. A refractory brick or tile comprising a non-metallic refractory filling material incorporated with a heat resisting alloy, such as chrome or aluminum alloys, said alloy be-

ing at least in part oxidized, and providing a porous binder having heat and fracture resisting qualities.

3. A refractory brick or tile comprising a mixture of subdivided non-metallic refractory material, such as carborundum, and subdivided heat resisting alloy materials, such as chrome or aluminum alloys, fused together, the fused mass containing the oxide of the alloy, and providing a porous binder having heat and fracture resisting qualities.

In testimony whereof, I have signed my name hereto.

HENRY H. HARRIS.