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 BRICK FOR METALLURGIC FURNACES.
 APPLICATION FILED MAR. 11, 1910.

1,016,350.

Patented Feb. 6, 1912.

FIG. 1

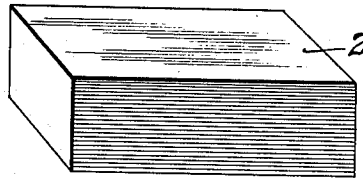


FIG. 2

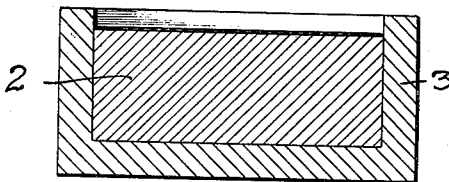


FIG. 3

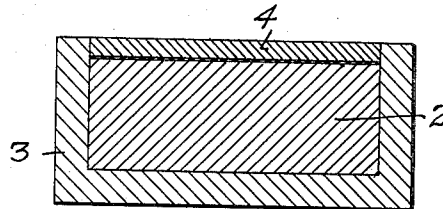


FIG. 4

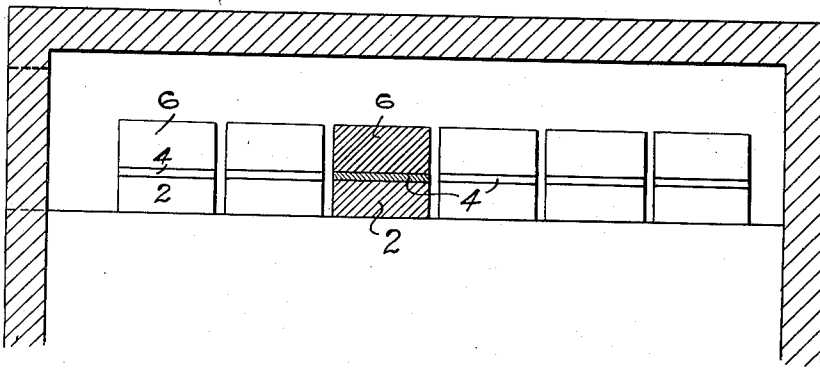
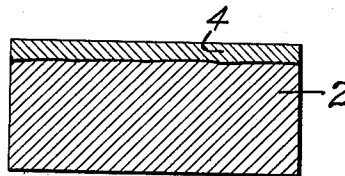


FIG. 5



WITNESSES.

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UNITED STATES PATENT OFFICE.

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BRICK FOR METALLURGIC FURNACES.

1,016,350.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, WILLIAM N. McKNIGHT and ROBERT H. YOUNGMAN, residents of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Bricks for Metallurgic Furnaces; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to refractory brick for metallurgic furnaces.

The object of our invention is to provide a brick for metallurgic furnaces whose body-portion is composed of a material which will resist high temperatures without yielding to pressure or losing its shape, and whose exposed side is composed of material that will likewise resist high temperatures and at the same time offer greater resistance to the chemical action of metals, slags, gases, etc.

To these ends our invention comprises, generally stated, a refractory brick for metallurgic furnaces comprising a main body portion of a refractory material, and an added similar body portion of a thickness not less than one-fourth of an inch, and forming the exposed face of the brick of a refractory material less subject to chemical action than said main body portion.

In the accompanying drawing Figure 1 is a view of the body portion of the brick; Fig. 2 is a view showing the mold with the body-portion of brick therein; Fig. 3 is a view of the mold with the brick ready for burning; Fig. 4 is a view of the bricks in a suitable kiln; and Fig. 5 is a view of the finished brick.

The brick shown in Fig. 5 of the drawing is composed of two parts, the larger part or main body 2 of the brick being made of a material which will resist high temperatures without yielding to pressure or losing its shape. For this purpose we may employ a burned silica brick, or the body of the brick may be formed of suitable fire-clay. The brick-body 2 is placed in a suitable mold 3, said mold being of such depth that when the brick-body 2 is placed therein the exposed surface of the brick-body will be below the surface of the mold. A coating of good quality plastic clay or other material that will fuse at a slightly lower temperature than the material of which the

brick-body is made or with which it is to be fused, is applied to the surface of the brick-body to be faced by spreading thereon a thin coating of such material. After a coating of this character has been applied, the material to form the thinner portion of the brick is to be introduced into the mold and fills up the space not occupied by the brick-body. The thickness of this thinner portion of the brick should be not less than one-fourth of an inch, as it is to form a substantial body portion and not a mere enamel or glaze such as has been employed in some forms of brick. This material is of a character that will resist high temperatures, and at the same time better resist the chemical action of metals, slags, gases, and such other substances as are likely to come in contact with the exposed face of the brick at high temperatures in metallurgic furnaces. One of the materials possessing such qualities is chrome ore, and sufficient water is added to the ore to render it plastic, when the same is introduced into the mold, to fill up the mold. The material is then well rammed or pressed into the mold. The brick should then be dried with a weight upon the upper side, and then introduced into the kiln for burning. Each brick should preferably bear some weight during the burning to press the two materials together, and the heat will fuse the coating introduced between the two materials and cause a fused joint uniting the material 4 securely to the body of the brick.

A number of other materials may be used instead of chrome ore, for instance, burned magnesite may be employed to form a basic lining for the brick, or the exposed portion may be made of aluminous clays or aluminous products.

If desired, the body of the brick may be made of unburned material such as unburned fire clay or unburned silica material, and the portion of chrome, magnesite or aluminous material may be added to the unburned body of the brick, as described, in connection with adding the same to the burned brick-body. When this method is adopted, the unburned brick would then be burned in a suitable kiln, and the facing burned at the same time. In cases where magnesite is used in connection with a silica brick body portion the interposed fusible

coating may be omitted and a fusion obtained directly between the magnesite and the brick body by raising the brick to an extremely high temperature.

5 By our invention we provide a brick-body portion which is able to resist high temperatures, and which maintains the lines of the furnaces, such as the side walls, crowns, etc., while the smaller portion of
10 the brick at the same time of a refractory nature, is capable of resisting disintegration or chemical action due to metal, slags, gases, etc.

What we claim is:

15 1. As a new article of manufacture, a refractory brick for metallurgic furnaces, comprising a main body-portion of a refractory material, and an added smaller
20 body portion of a thickness not less than one-fourth of an inch and forming the ex-

posed face of the brick of a refractory material less subject to chemical action than the said main body-portion.

2. As a new article of manufacture, a refractory brick for metallurgic furnaces, 25 comprising a main body-portion of a refractory material, and an added smaller body portion of a thickness not less than one-fourth of an inch and forming the exposed face of the brick united to the main
30 body-portion by a fused joint.

In testimony whereof, we the said WILLIAM N. McKNIGHT and ROBERT H. YOUNGMAN, have hereunto set our hands.

WILLIAM N. McKNIGHT.
ROBERT H. YOUNGMAN.

Witnesses:

ROBERT C. TOTTEN,
JOHN F. WILL.