Oct. 27, 1931. F. W. SCHROEDER 1,829,114

MOLD FOR CASTING REFRACTORIES

Filed July 9, 1930

Fig. 1

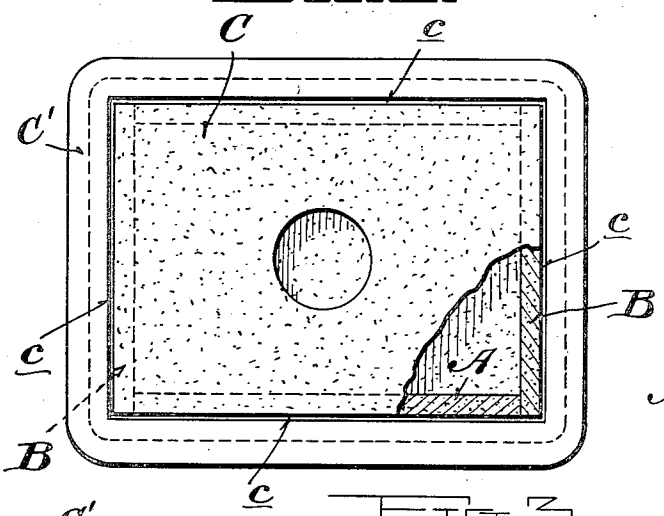


Fig. 2

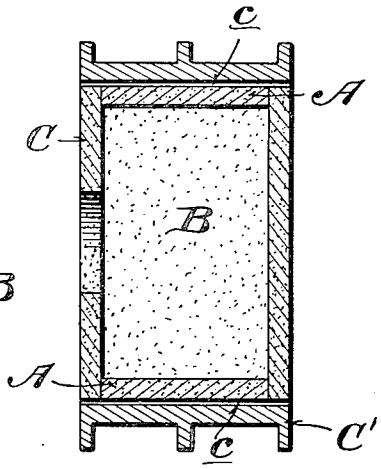


Fig. 3

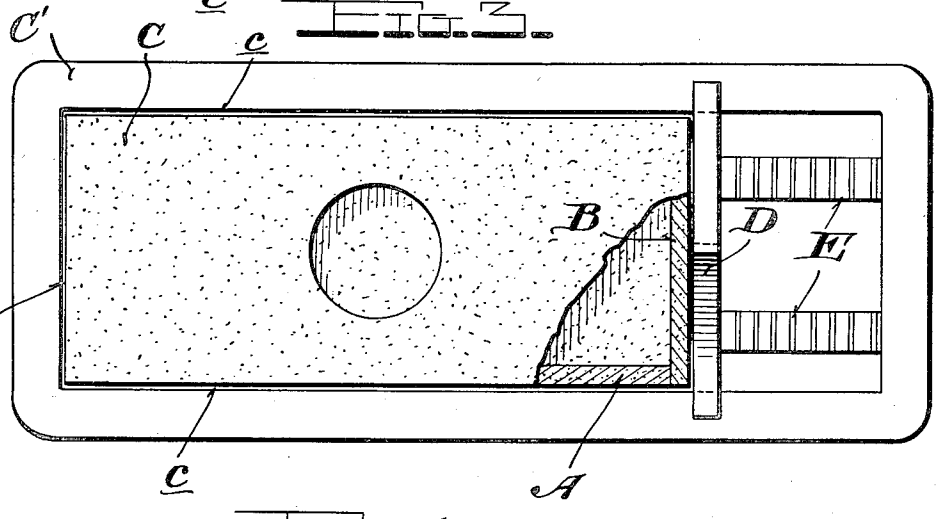
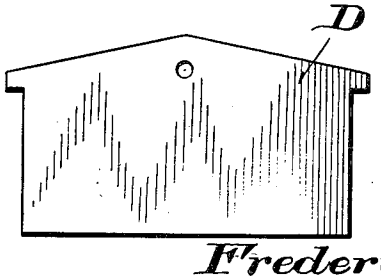


Fig. 4



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1,829,114

UNITED STATES PATENT OFFICE

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MOLD FOR CASTING REFRACTORIES

Application filed July 9, 1930. Serial No. 466,788.

This invention has for its object to provide a suitable mold structure in which refractories of the character described in the patent to Fulcher, No. 1,615,750, may be cast. As described in that patent, the molten material (a mixture essentially consisting of alumina and silica) is poured in a form built up of baked sand slabs, which are buried in sil-o-cel to retard heat losses in the cast article. In carrying out the process according to the disclosure of that patent, difficulty was experienced in that the slabs bend under the internal pressure of the molten material, so that sides of the cooled blocks were found to bulge, which was objectionable in building them into a wall. In an attempt to overcome this bulging, recourse was had to the scheme shown in the Fulcher Patent 1,700,288, in which the baked sand slabs were backed by supports of insulating bricks, but it was found that the slabs bulged between the brick supports. Further efforts to avoid the bulging involved supporting the slabs by a backing of boards throughout the entire area of the slabs, the boards being held in position by wedges, etc. While this last scheme was successful, in that it prevented bulging, it was expensive in material and labor. All these difficulties have been overcome by the invention described herein, in which the baked sand slabs are assembled into a mold of the desired shape within a rigid flask, of a shape and size adapted to receive the assembled mold, and the space between the exterior of the mold slabs, and the interior of walls of the flask is packed with granular material. Under these conditions it has been found that bulging is prevented, and that after the casting has set, the flask may be lifted from around the mold as formed by the slabs, the interposed granular material permitting this. My invention therefore consists in the construction, arrangement and combination of the parts of which it is comprised, as will be hereinafter described and claimed.

Referring to the accompanying drawings in which corresponding parts are designated by similar marks of reference,

Figure 1 is a plan view of a mold structure embodying this invention.

Figure 2 is a transverse vertical central section thereof.

Figure 3 is a plan view of a modified form of mold structure also embodying this invention.

Figure 4 is a detail of the spreader shown in Figure 3.

As represented in all the figures, the mold proper is made up of the side slab A, the end slabs B and B′, and the cover slab C, having a gate opening therein. These slabs are of baked sand prepared in accordance with the disclosure of the Fulcher patent, 1,615,750. In all the figures, the mold as thus formed, is enclosed in a suitable rigid flask C, consisting of side and end walls and preferably made of cast iron.

The flask in Figure 1 is of a size and shape to snugly receive the mold assembly, a space *c* of about an eighth of an inch being left between the inner face of the one and the outer face of the other. This space is filled with freely flowing sand. The sand readily accommodates itself to the irregularities in the surface of the slabs and of the flask, and supports the former throughout their area against the pressure of the molten material. At the same time the sand acts as a lubricant, as it were, when, after the casting is set, the flask is lifted away from the mold proper.

In Figures 3 and 4, an arrangement is shown in which the flask is longer than the mold. In this case a cast iron spacer D is laid across of the flask, and supported by brick E from the end thereof, the space between the inner face of the spacer and the end slab B being filled with sand. This arrangement permits the use of a single flask to produce cast blocks of different lengths.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. In a device of the character described, the combination of a mold composed of baked slabs, of a flask within which the mold fits, and a layer of freely flowing sand approximately one-eighth of an inch thick interposed

between the slabs and the inner surface of the walls of the flask.

2. In a device of the character described, the combination of a mold composed of baked slabs, of a flask within which the mold fits, and a layer of freely flowing sand interposed between the slabs and the inner surface of the walls of the flask, such layer of sand being sufficiently thin as to prevent appreciable distortion of the said slabs, substantially as described.

In testimony whereof I hereunto affix my signature.

FREDERIC W. SCHROEDER.