

No. 881,558.

PATENTED MAR. 10, 1908.

W. P. DUN LANY.
MOLD AND PROCESS OF MAKING THE SAME.
APPLICATION FILED JUNE 8, 1906.

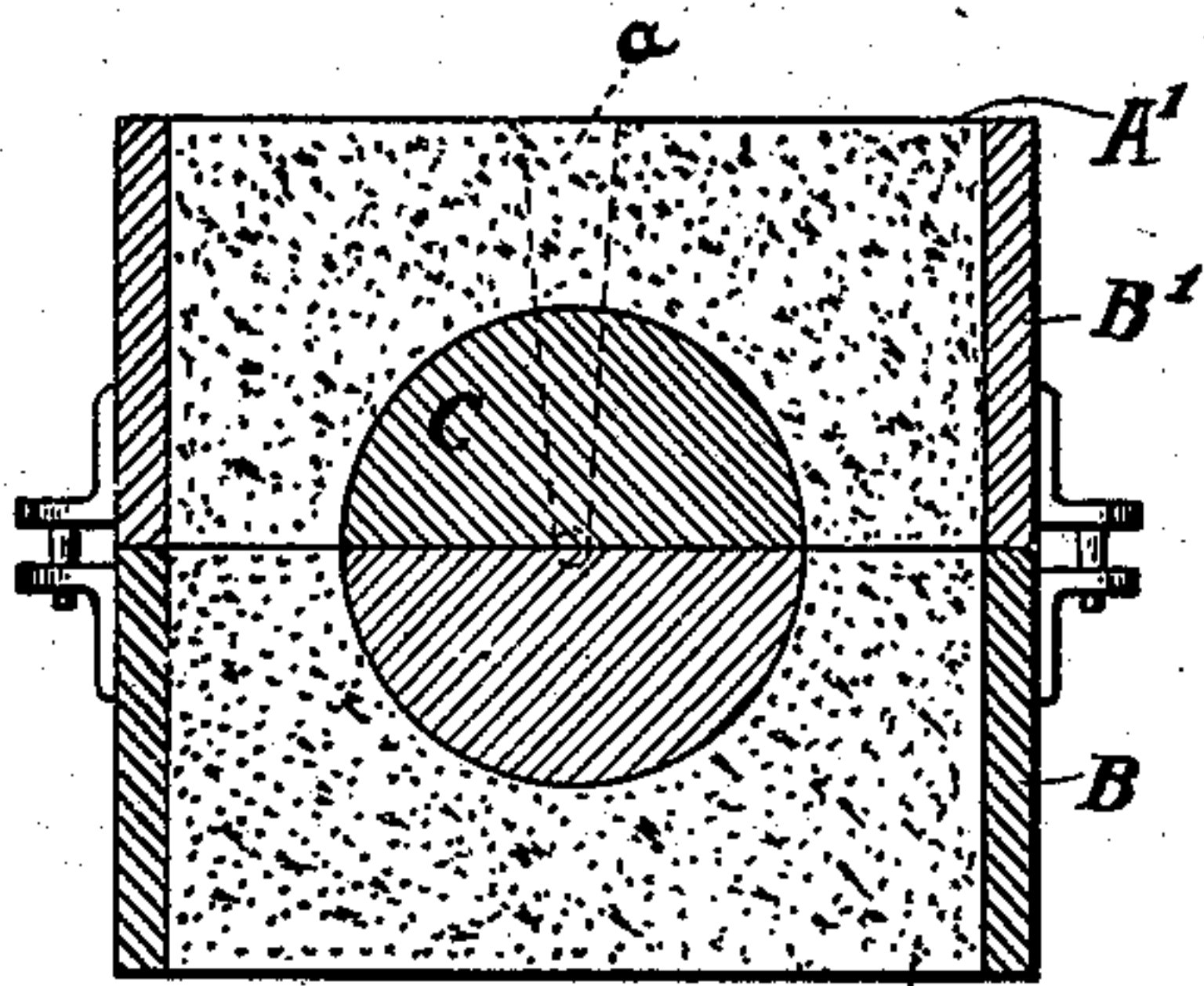


Fig. 1.

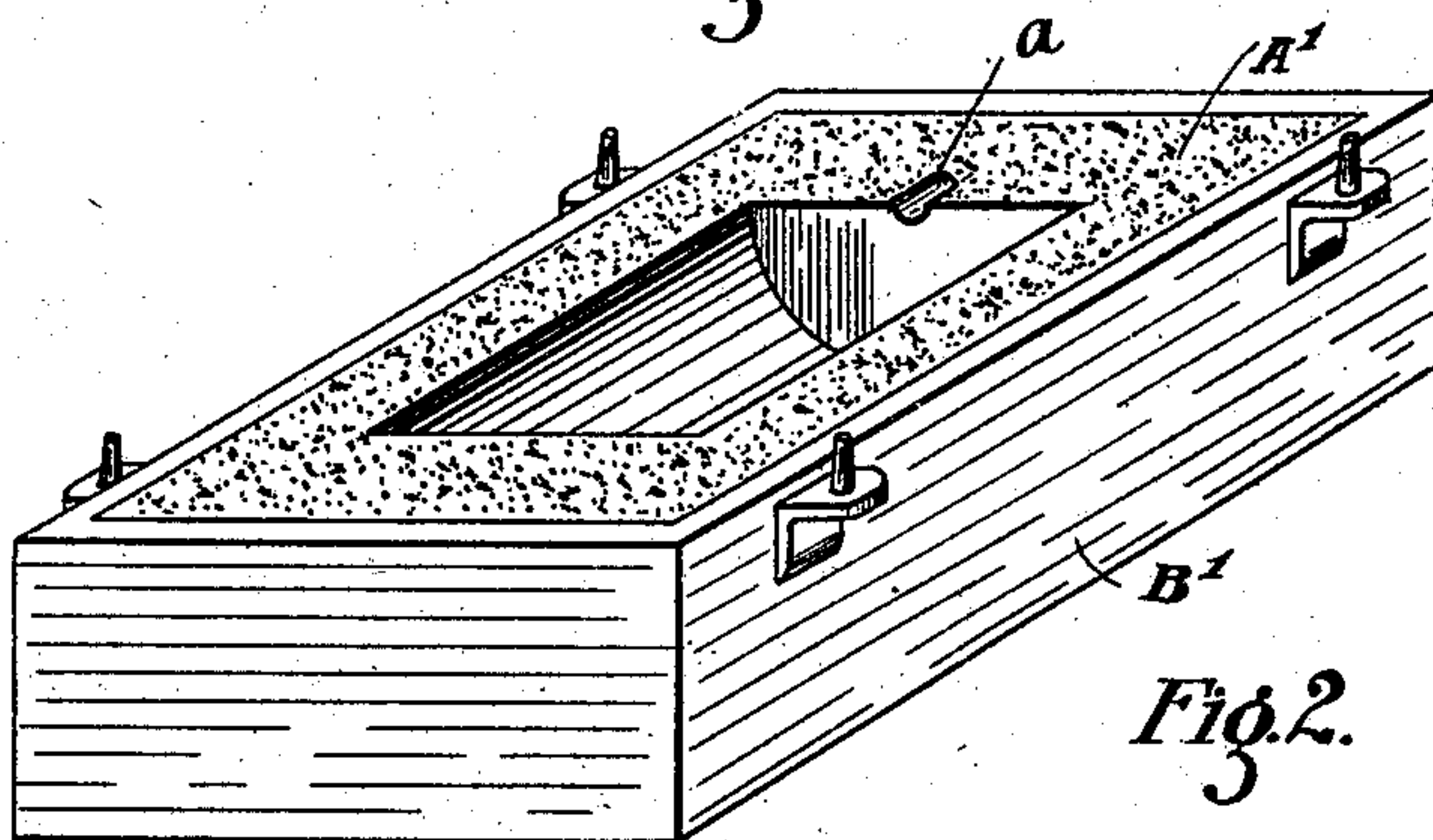


Fig. 2.

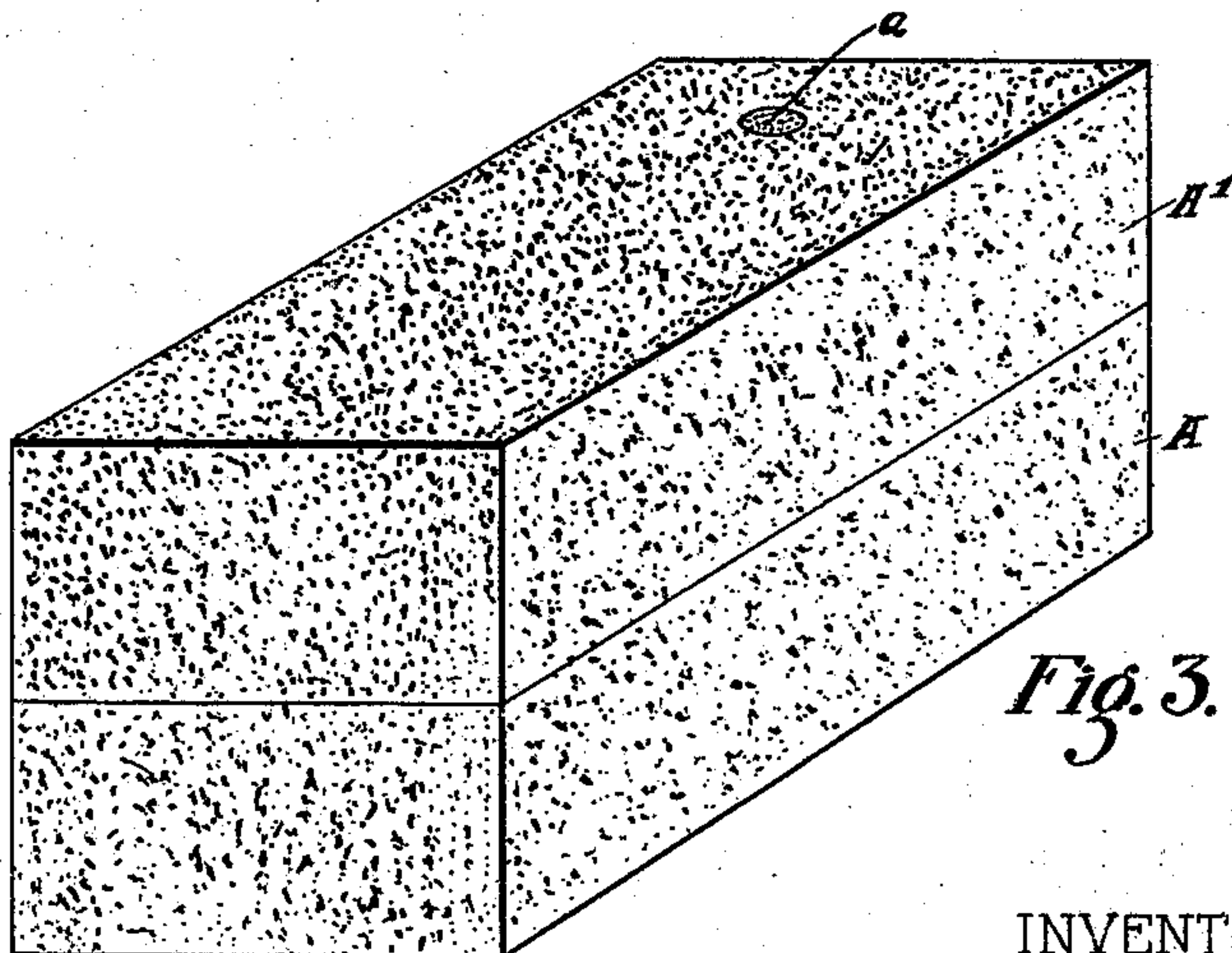


Fig. 3.

WITNESSES.

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MOLD AND PROCESS OF MAKING THE SAME.

No. 881,558.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed June 8, 1906. Serial No. 320,754.

To all whom it may concern:

Be it known that I, WILLIAM P. DUN LANY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Molds and Processes of Making the Same, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide an efficient mold for use in casting aluminium, brass or bronze, so composed and constructed that it may be used a great number of times.

One of the difficulties in molding is the proper venting of the mold. My mold is sufficiently porous to provide the vents in itself.

The present invention comprises the process of making the mold.

The drawings illustrate the mold and the process of making it.

Figure 1 is a cross section through a flask containing the pattern and the molding composition in its first stage. Fig. 2 represents one of the members of the flask after the same is separated and the pattern removed, and Fig. 3 represents the completed mold ready for use.

I make my mold of a composition of graphite, a refractory filler as lava, a woody material, as pulverized cork, or sawdust, and a suitable binder, preferably pitch. I have found the proportions of 80 per cent. graphite, 10 per cent. lava, and 10 per cent. woody matter, with enough pitch added to make the composition plastic, to be very satisfactory. The pattern is placed on the mold board within the drag of the flask and the same filled with my composition of matter and then the drag is turned over, the rest of the pattern put on and the cope put in place, which is then filled with my composition, in the usual manner of making molds.

Fig. 1 represents the mold in this condition. It is now put in a baking oven, flask, pattern and all, and is given a preliminary baking at a temperature of say from 400 degrees to 500 degrees Fahrenheit for say five or six hours. The purpose of this is to drive off the moisture and make the matter adhere sufficiently for subsequent handling. The flask and pattern are then removed and the mold itself is given a final heating at the

temperature of a coke oven, approximately 2800 degrees Fahrenheit, from forty-eight to sixty hours. In this final heating, the woody matter is entirely burned out, leaving the mold porous, so that it will automatically vent itself; at the same time the pores are not of such character as to interfere with the smoothness of the casting.

The mold produced by my process is very strong, and, being firmly held together, may be used many times in the casting of such metals as aluminium, brass or bronze. The composition of the mold varies with the metal which is to be cast in it. The variable element is preferably the refractory filler which should be in such proportion as to give the mold about the same coefficient of expansion as the metal, at the critical temperature of the metal in cooling.

In the drawings, A and A' represent the molds; B and B' the flask members, and C the pattern. The mold sections are provided with a pouring passageway *a* as usual. During the pouring a weight (not shown) is placed on the mold to hold the parts together.

Having thus described my invention, I claim:

1. The process of making molds which consists of mixing the mold material with woody matter in small particles, and subsequently heating the mold to a high temperature to burn out the wood to vent the mold prior to the casting of metal therein.

2. The process of making molds consisting of making the mold with powdered combustible matter interspersed in it, giving the mold a preliminary baking in its flask, removing it from the flask, and giving it a subsequent baking at a high temperature to burn out the combustible matter.

3. The process of making molds consisting of mixing carbon, woody matter, and a plastic binder, preliminarily baking the mold to drive off the moisture and make it hold together, and giving the mold a subsequent heating at a high temperature for a suitable length of time to burn out the woody matter.

4. The process of making molds consisting of mixing graphite, comminuted vegetable matter, and pitch, preliminarily baking the mold to drive off the moisture and make it hold together, and giving the mold a subsequent heating at a high temperature for a

suitable length of time to burn out said vegetable matter.

5 5. The process of making molds consisting of mixing approximately 80 per cent. graphite, 10 per cent. pulverized woody material, 10 per cent. refractory filler, and enough pitch to bind the composition together, preliminarily baking the mold to drive off the moisture and make it hold together, and giving the
10 mold a subsequent heating at a high temperature for a suitable length of time to burn out the woody matter.

6. The process of making molds consisting of mixing graphite, lava, powdered cork and
15 pitch within a flask, baking the composition and flask at a temperature of from 400 degrees to 500 degrees Fahrenheit, then removing the flask from the mold and baking the latter at a temperature of approximately
20 2800 degrees Fahrenheit, for approximately 48 hours.

7. The process of making molds consisting of forming the mold of its final substance and a temporary substance, mixed therewith, and
25 subsequently treating it to remove the tem-

porary substance prior to the casting of metal therein.

8. The process of making molds consisting of making a mixture comprising the substance of the mold and the temporary matter
30 in minute particles, preliminarily heating said mold to cause it to hold together, and finally treating the mold to remove the temporary particles.

9. A process of making molds for successive casting operations, consisting of mixing
35 carbon, comminuted vegetable matter and a plastic binder, preliminarily baking the mold to drive off the moisture and make it hold together, and giving the mold a subsequent
40 heating at a high temperature for a suitable length of time to burn out said vegetable matter, all these operations preceding the casting of metal in the mold.

In testimony whereof, I hereunto affix my
signature in the presence of two witnesses.

WILLIAM P. DUN LANY.

Witnesses:

J. A. LANNERT,

ALBERT H. BATES.