

(No Model.)

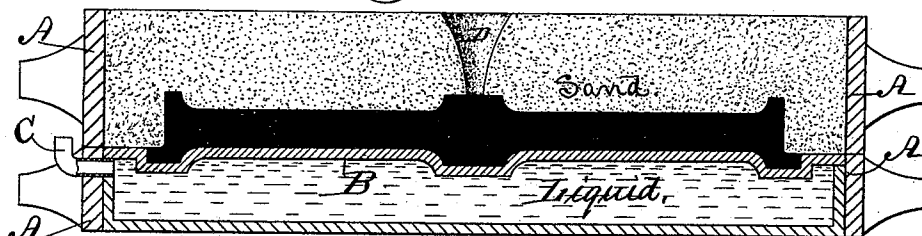
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METHOD OF AND APPARATUS FOR MAKING METAL CASTINGS.

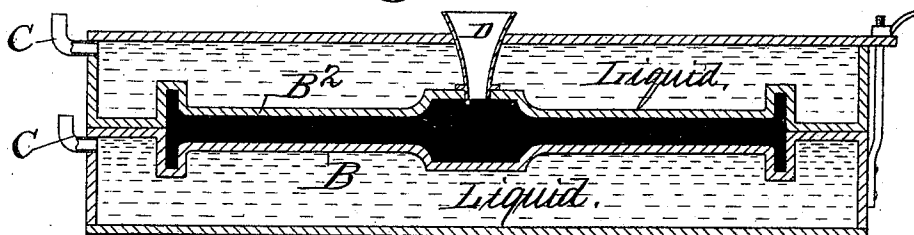
No. 473,382.

Patented Apr. 19, 1892.

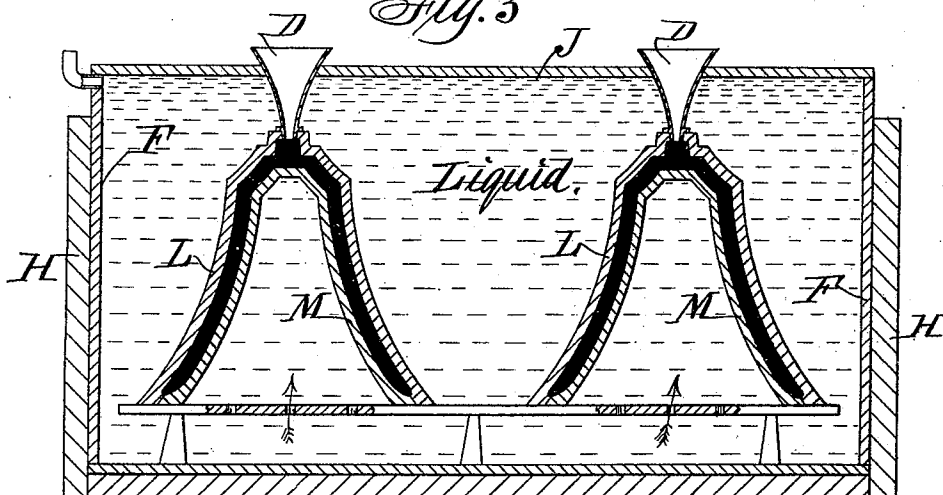
*Fig. 1*



*Fig. 2*



*Fig. 3*



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*By Thomas G. Orwig, Attorney.*

# UNITED STATES PATENT OFFICE.

WILLIAM LEACH CLARK, OF SIOUX CITY, IOWA.

## METHOD OF AND APPARATUS FOR MAKING METAL CASTINGS.

SPECIFICATION forming part of Letters Patent No. 473,382, dated April 19, 1892.

Application filed May 8, 1891. Serial No. 392,079. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM LEACH CLARK, a citizen of the United States of America, and a resident of Sioux City, in the county of Woodbury and State of Iowa, have invented a Method of and Apparatus for Making Metal Castings, of which the following is a specification.

My object is to reduce the time, labor, and expense required in making hard-metal castings—such as iron, steel, brass, &c.—in sand molds.

My invention consists in the arrangement and combination of a two-part metal mold, a receptacle for liquid, a support for the mold, and an ingate, as hereinafter set forth, pointed out in my claim, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical transverse section of the lower section of a metal mold and a top section of a sand mold combined to produce a complete mold adapted for producing a hard-metal casting. Fig. 2 is a corresponding view of two separable mating counterparts of a complete metal mold adapted to receive molten metal to produce a hard-metal casting. Fig. 3 is a transverse vertical sectional view of an apparatus adapted for practicing my method of making hard-metal castings without the use of sand.

A in Fig. 1 represents a wooden two-part flask.

B represents the lower section of a mold for producing a car-wheel or any other object, form, or article that is to be made by melting hard metal and pouring it in a mold. This section B of the mold is made of metal and is hollow and water-tight. Its bottom is flat and its top face corresponds in configuration with the face of a car-wheel or such other form and object as is to be produced in a complete mold. It is preferably made of brass, steel, or other hard metal, but may be made of earthenware or other material adapted for producing a rigid hollow water-tight vessel and mold.

C represents an open-ended tube through which water or any other suitable liquid may be filled into the vessel and through which steam and water may escape when the water is subjected to heat.

By placing the vessel and mold B in the lower portion of the two-part flask A and the

pattern of a car-wheel in the top of the mold the top section of the mold can be made of sand and the making of hard-metal castings facilitated and their cost reduced, because that portion only of the complete mold that is made of sand must be reproduced each time a casting is made, while the lower hollow metal section B of the complete mold can be used repeatedly to produce castings therewith in rapid succession.

In Fig. 2 the upper section B and lower counterpart section B<sup>2</sup> of the complete mold are hollow and water-tight and adapted to be clamped together by means of screws, as indicated, at the one end or in any suitable way.

D is an ingate combined with the upper section B<sup>2</sup>, through which molten metal is poured into the mold.

In Fig. 3 F represents a water-tight tank inclosed in a wooden open-topped case H. J is a removable cover fitted on top of the tank. This cover may be used when desired; but it is not an essential part of the apparatus and can be dispensed with without affecting the operation of the apparatus. K represents an elevated platform in the tank, and L and M are the counterpart sections of metal molds for casting bells therein. They have ground faces at their lower ends, where they are fitted and joined together to produce a complete mold and jointly rest upon the top surface of the elevated platform. Perforations in the platform allow the liquid to rise to cover the exterior of the under sections of the molds, so that the complete molds in the tank may be submerged and covered on their exteriors with liquid before molten metal is filled into the interiors of the molds. The numbers, sizes, and forms of molds thus placed in a tank may vary as required to produce hard-metal castings for various purposes.

In the practical use of my invention I fill the hollow molds with water or other liquid adapted to absorb and convey heat, or submerge a mold in a tank of liquid, and then pour molten metal into the mold through the ingate. The cold liquid in contact with one side of the wall of the mold while the hot liquid metal is in contact with the other side will absorb and carry off the heat and prevent the mold from fusing or being damaged by the hot metal, while the interior smooth

surface of the mold will produce a correspond-  
ingly smooth and clean surface on the hard-  
metal casting thus produced and the labor in-  
cident to cleaning a casting made in a sand  
5 mold is avoided, and as quick as the molten  
metal is cooled and hardened the two-part  
mold can be separated, the casting removed,  
and the sections of the mold readily replaced  
as required to produce hard-metal castings  
10 rapidly in succession from the same mold.

I claim as my invention—

An apparatus for making metal castings,

comprising a water-receptacle, a two-part  
metal mold removably arranged within the  
receptacle, means for supporting the two-part 15  
mold above the bottom of the receptacle or  
vessel, and an ingate detachably connected  
with the two-part mold, to operate in the man-  
ner set forth, for the purposes stated.

WILLIAM LEACH CLARK.

Witnesses:

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