Sept. 1, 1925. 1,552,246

J. S. THOMPSON

MOLD FOR MAKING CASTINGS

Filed July 21, 1924

Fig. 1

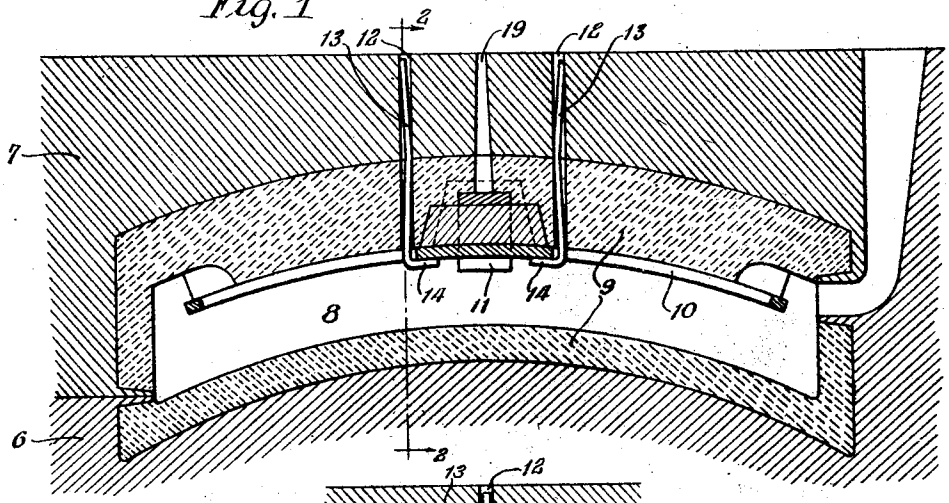


Fig. 2

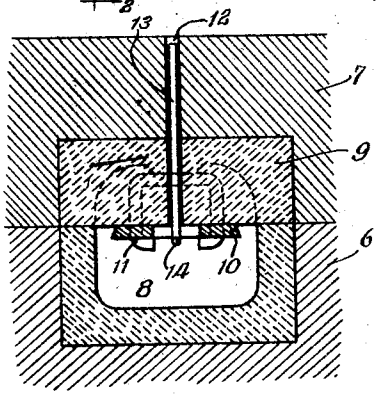


Fig. 3

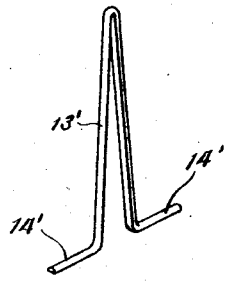


Fig. 4

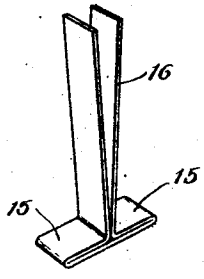
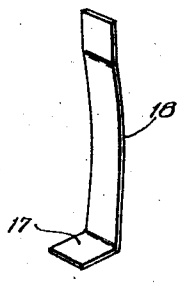


Fig. 5



Inventor:
James S. Thompson
By: Wm. O. Bell
Atty.

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UNITED STATES PATENT OFFICE.

JAMES S. THOMPSON, OF PELHAM, NEW YORK.

MOLD FOR MAKING CASTINGS.

Application filed July 21, 1924. Serial No. 727,101.

To all whom it may concern:

Be it known that I, JAMES S. THOMPSON, a citizen of the United States, residing at Pelham, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Molds for Making Castings, of which the following is a specification.

This invention relates to molds for making castings and it is particularly useful in permanent molds made of metal or part metal and part refractory, as will hereafter appear.

The object of the invention is to provide means of simple character which can be easily and quickly applied for holding in a proper position in the mold some insert which is to be embedded in the casting.

A further object of the invention is to provide holding means for the purpose aforesaid, which are adapted to be inserted in openings in the mold and held therein against displacement by frictional engagement with the walls of said openings.

My invention is adaptable to molds for making brake shoes and for this purpose its object is to provide simple means which can be easily applied for holding a reinforcing back or a back unit in the cope of the mold to be embedded in the casting.

My invention can be embodied in a variety of forms adapted for frictional engagement to secure them in place, and the invention can be used for making castings of many different kinds and in molds which vary greatly in construction. As a simple embodiment of the invention I have selected for illustration a brake shoe mold and have shown several forms of the holding devices, as I believe this will be sufficient to enable those skilled in the art to use the invention wherever it may be capable of or adapted for use and in a form indicated generally by the several forms shown.

Referring to the drawings, Fig. 1 is a longitudinal sectional view of a mold for making brake shoes having the mold cavity faced with refractory material and showing my invention.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

Figs. 3, 4 and 5 are detail perspective views of different forms of holding devices that may be employed.

Referring to the drawings, the mold comprises a drag 6 and a cope 7 having therein a mold cavity 8 for making a brake shoe. As hereinbefore stated, the mold may be made in any desired shape and with a mold cavity adapted for casting articles of any kind and shape, and the mold may be made entirely of metal or part metal and part refractory constructed and arranged in such manner as may be found necessary or desirable to best satisfy different conditions. In the mold illustrated, the mold cavity is lined with refractory material 9.

Brake shoes are commonly provided with a reinforcing steel back 10 and lug 11, which are embedded in the body of the shoe during the casting operation. The steel back, or the back and the lug, as the case may be, are inserted in the cope and means are provided for holding them in the cope against displacement while the mold is being closed and while the metal is being poured. Various means have been provided heretofore for this purpose, but the present means are simple and inexpensive and can be applied easily and quickly, and in many respects are superior to known means.

The cope has one or more openings 12 therein which extend through the wall of the mold cavity in a convenient position for receiving the holding devices to engage the steel back.

In Fig. 1 I have illustrated a simple form of holding device which I have found in practice to be very satisfactory, and this device is made of wire bent to form a shank 13 and a hooked end 14. The shank can be easily inserted in the opening 12 and when slightly distorted, as shown, it will frictionally engage the wall of the opening to hold itself in the cope and support the back. These wire holding devices may be made in the form shown in Fig. 1 ready for use, or the molder may be provided with wires having hooked ends 14 and he may distort the shank just before engaging the device with the back and cope; or the molder may be provided with straight wires to be bent and distorted as applied.

I find it convenient in casting brake shoes to provide two holding devices located on opposite sides of the lug, but it may be found sufficient to use only one holding device for many castings, and even in some types of brake shoes.

In Fig. 3 I have shown another form in which the holding device may be made. This form is also made of wire and it has a shank

which is made by bending the wire on itself, and is distorted in the broad sense of my invention so that when the shank is inserted in the opening 12 it will frictionally engage the wall of the opening. The ends of the wire are bent outward to form hooked ends 14'. In Fig. 1 the hooked ends 14 of the two holding devices are inwardly directed, but the hooked ends 14' of the holding device of Fig. 3 are directed transversely of the back 10, as will be readily understood.

In Figs. 4 and 5 I have shown holding devices made of strip metal, as illustrative of some other forms which may be used. In Fig. 4 the holding device consists of a section of strip metal bent upon itself between its ends to form the hooks 15 and having its end portions sprung slightly apart to form the shank 16. The holding device of Fig. 5 is in substantially the same form as that of Fig. 1 except that it is made of strip metal with a hooked end 17 and a distorted shank 18.

I realize that these holding devices may be made in many other different forms, but in foundry practice they should be as simple as possible, inexpensive, and easy to apply, and I regard the four forms shown as sufficient for the purposes of this application, it being understood that in the broad aspect of the invention any holding device having a shank distorted in any form to make frictional engagement with the wall of the opening in the cope, and having a back engaging portion on the end of the shank projecting into the mold cavity, is intended to be included within the scope of the appended claims. I use the word "distorted" to indicate any conformation of the shank which will provide for sufficient frictional engagement between the shank and the wall of the opening to retain the holding device in position.

I prefer that the opening 12 extend entirely through the cope because it will enable the opening to be readily cleaned if it should become obstructed, and furthermore it provides a vent for the escape of gases during the casting operation. In practice I have found that the gases do escape through this opening and the opening may be increased in size to provide a larger vent if it should be found necessary. Generally speaking, however, I prefer to make the opening 12 primarily for the purpose of receiving the holding device, and not to constitute the vent, although it will be understood, of course, that the opening must be sufficiently larger than the holding device to permit the latter to be readily inserted and hence there will always be some venting through this opening; but I prefer to provide one or more vent openings 19 so that it will not be necessary to enlarge the vent opening 12, which might, in some cases, result in metal flowing thereinto and interfering with the disengagement of the holding device from the cope when the mold is opened.

In casting brake shoes I have found that when the mold is opened the holding device remains sufficiently intact to pull out of the opening after which it can be easily broken off flush with the back of the shoe. If the holding device should be burned off where the hooked end joins the shank, during the casting operation, the shank can be readily removed from the opening by punching it out.

While my invention is particularly intended for use in connection with permanent molds, it can obviously be used in some forms with satisfactory results in sand molds, and I do not wish to be considered as limiting myself to the use of the invention in a mold of any particular kind or construction.

In casting brake shoes in permanent molds I have found that the back and lug for a subsequent casting may be arranged and held in the cope almost immediately after the mold is opened, and while the cope is still hot, and even before the shoe is removed from the drag, which will indicate in a general way the facility and speed with which the back and lug may be arranged in place for the next casting operation by the use of my present invention.

I have illustrated and described the invention as used in a mold for casting brake shoes because this is where I have used it, and it illustrates very well how the invention is intended to be used; but I do not wish to be understood as limiting or restricting the invention to use in connection with any particular form of casting, since I believe it can be easily adapted for holding different parts in different molds for making a variety of castings.

I am aware that changes in the form and construction of the invention may be made to adapt it for different uses, and I consider myself entitled to make all such changes as fairly fall within the scope of the following claims.

I claim:

1. A device for holding in place in a mold an insert to be embedded in a casting and comprising a hooked end to engage the insert in the mold cavity and a distorted shank to make holding engagement with the mold.

2. The combination of a mold having a mold cavity and an opening, and means for supporting in the mold cavity an insert to be embedded in the casting and comprising a device arranged at one end to engage said insert and having its other end arranged in said opening to frictionally engage the wall thereof.

3. The combination of a mold having a

mold cavity and an opening, and means for supporting in the mold cavity an insert to be embedded in the casting and comprising a device having a hooked end to engage the insert, and a distorted shank arranged in said opening to frictionally engage the wall thereof.

4. The combination of a mold having a mold cavity and an opening, and means for supporting in the mold cavity an insert to be embedded in the casting and comprising a wire bent at one end to engage the insert and having its remaining portion arranged in said opening and distorted to frictionally engage the wall thereof.

5. The combination of a brake shoe mold having a mold cavity and openings, and means for supporting in the mold cavity a reinforcing back to be embedded in the casting and comprising a pair of devices having oppositely directed hooked ends to engage said back, and shanks arranged in said openings and distorted to frictionally engage the walls thereof.

JAMES S. THOMPSON.