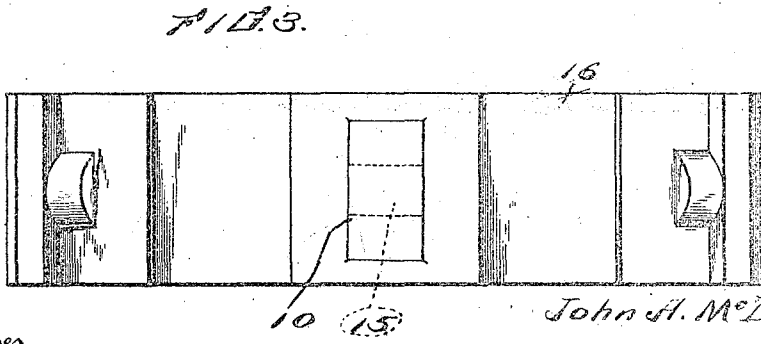
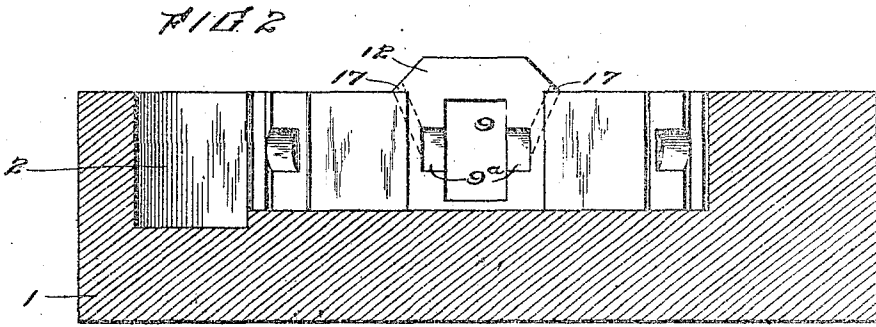
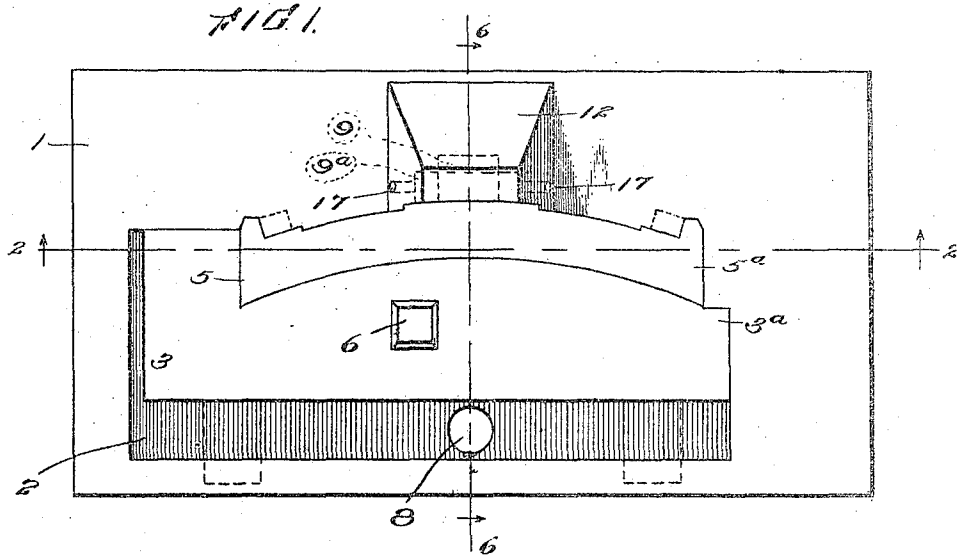


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APPLICATION FILED JAN. 13, 1915.

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2 SHEETS—SHEET 1.



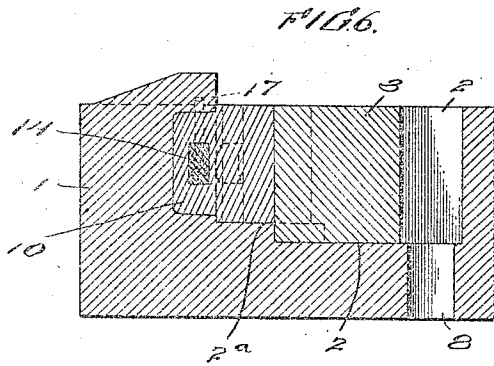
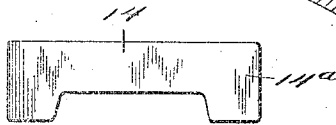
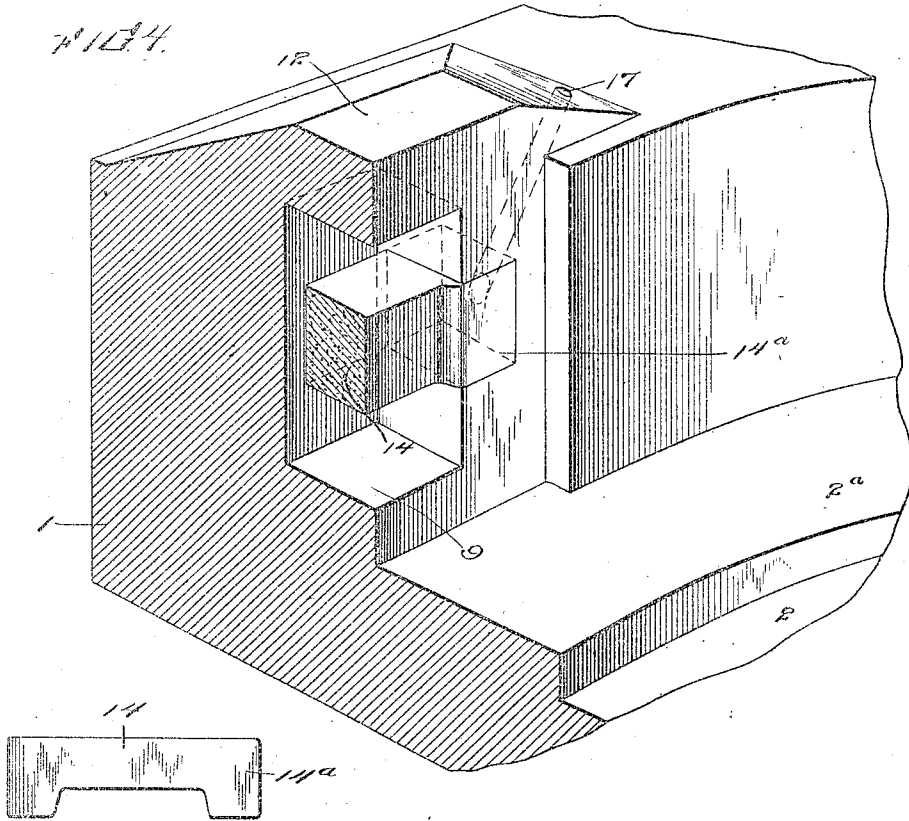
Witnesses  
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*John A. M. Dougall,*

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 Attorney

# UNITED STATES PATENT OFFICE.

JOHN A. McDOUGALL, OF WILMINGTON, NORTH CAROLINA.

## MOLD FOR BRAKE-SHOES.

1,170,549.

Specification of Letters Patent.

Patented Feb. 8, 1916.

Application filed January 13, 1915. Serial No. 1,943.

*To all whom it may concern:*

Be it known that I, JOHN A. McDOUGALL, a citizen of the United States, residing at Wilmington, in the county of New Hanover and State of North Carolina, have invented certain new and useful Improvements in Molds for Brake-Shoes, of which the following is a specification.

This invention relates to molds and particularly to those designed for casting of brake shoes.

One of the objects of my invention is to provide an all-metal mold without sprues or gates to facilitate the rapid pouring of the molten metal and the quick removal of the cast shoe.

Another object of my invention is to lessen the labor required in handling the mold during the casting operation and to simplify the construction so that less skill is required, thereby reducing the cost of production.

Certain embodiments of the invention as applied to molds for brake shoes are illustrated in the accompanying drawings, wherein:—

Figure 1 is a top plan view of a mold showing the parts in position for casting; Fig. 2, is a vertical section of the empty mold on the line 2—2 of Fig. 1; Fig. 3, is a rear plan view of a brake shoe cast in said mold; Fig. 4 is an enlarged fragment perspective of a portion of the mold, partly in section, showing the manner of inserting the core which forms the slot for the locking key in the lug on the back of the shoe; Fig. 5 is an enlarged plan view of the sand core; and Fig. 6, is a vertical section on the line 6—6 of Fig. 1.

The mold or chill as shown in Fig. 1, for casting brake shoes, is formed of two metal parts, the main body 1, which is provided with an open chamber or cavity 2, to receive the other part 3, constituting the face plate. These parts form the bounding metal walls of the mold for the face, back, ends and one side of the brake shoe, the other side being uppermost and uncovered. It will be seen that I do not use an upper cope as is usual and I also avoid the necessity for a sprue or gate, as the molten metal is poured directly into the open mold cavity. I have found in the practical use of this mold that the shoes cast therein are so perfectly formed that they need no finishing but are ready for use as soon as they are cool.

The face and one end 5, are formed by the movable face plate 3, and the other end 5<sup>a</sup>, the back and one side are formed by the walls of the main body 1. I prefer to construct one end of the face plate or block 3, with a squared end 3<sup>a</sup>, to fit snugly into a squared recess or offset in the cavity of the main body and to make the chamber or cavity 2, somewhat longer than the plate or block 3, to facilitate the ready insertion or removal of the block and so that it may easily be shifted away from the cast shoe when the latter is to be removed. A lug 6, which projects upwardly several inches from the face plate or block 3, serves as a handle for lifting it out of the chill. Inasmuch as the chill is quite heavy and not easily moved, a hole 8, is provided in the bottom for cleaning purposes.

The side of the chill which contains the recess 9, that forms the fastening or attaching lug 10, on the back of the shoe, is reinforced by an integral boss or projection 12.

One of the important features of my invention which contributes to the ease with which brake blocks may be cast in any mold or chill, is the manner of forming the slot for the locking-key in the lug. I have pointed out above that the fastening lug is formed by means of a recess in the walls of the chill, indicated clearly in the section, Fig. 6. The slot is formed by a sand core or porous insert 14, which is preferably of the shape shown in Fig. 5, having enlarged ends which are received and supported in rectangular niches 9<sup>a</sup>, extending laterally from opposite sides of the lug recess 9. In this manner the sand core is suspended so that it extends through the center of the recess 9 and the molten metal may flow entirely around it to form the lug. When the shoe casting 16 is knocked out of the chill, the core is destroyed and falls out in the mere handling, leaving the key slot 15 perfectly formed. A vent hole 17, extends upwardly through the reinforced portion to carry off any gases that may be formed in the sand core.

In order to make a tight joint between the parts of the chill at the edges forming the corners of the shoe, I make the bottom of the chamber, or cavity 2 in which the block 3 is seated, lower than the portion 2<sup>a</sup>, which forms the molding wall for the side of the casting. It will be seen that by this ar-

rangement of the meeting parts of the chill, the edges of the cast shoe will be sharp and well defined.

The manner of using my chill or mold will be understood from the foregoing detailed description of the construction. The sand core 14 is first inserted with the ends supported in the recesses 9<sup>a</sup> and the face plate or block 3, is slid or forced by means of a lever, into the position shown in Fig. 1, with the corner 3<sup>a</sup> fitting snugly in its recess. The molten iron is then poured from a ladle into the open top of the mold until the mold cavity is full. As soon as metal has solidified the casting is knocked out of the chill, being usually thrown into a pile ready for shipment. The face block 3, is then moved away from the shoe cavity, the chill is brushed clean and the process is repeated.

The advantages in construction and in manipulation of my two-part open top chill over the usual type requiring an upper cope with the attendant sprue or gate will be apparent to those familiar with this art.

I have described in detail the particular construction illustrated in the accompanying drawings for the purpose of fully disclosing one embodiment of my invention but it is evident that changes may be made therein and other adaptations may be formed without departing from my claims or from the spirit of my invention.

I claim:

1. A mold for brake shoes comprising two separable metal parts cooperating to form the walls for the face, back, ends, and one side of the brake shoe, the mold cavity being uncovered upon the opposite side, the wall of one part corresponding with the back of the shoe having a recess to provide the walls which shape the attaching lug, and a porous fragile plug or insert extending across said recess to displace the casting metal and form the locking-key slot, said wall being provided with niches upon

either side of said recess to receive the supporting ends of said plug.

2. A two-part metal mold for brake shoes having a main body portion provided with an open cavity or chamber conforming to the back and one end of a brake shoe, a face plate or block seated in said cavity and movable therein and conforming to the shape of the face and the other end of the shoe, said body portion and said face plate having contiguous walls shaped to provide a mold cavity conforming to the shape of a brake-shoe, the top of said mold cavity being open and uncovered, said open top corresponding to one side of the shoe, whereby the molten casting metal may be poured into the open mold cavity.

3. A two-part metal mold for brake shoes, comprising a main body portion having a chamber or cavity open at the top and having the configuration of one wall shaped to conform to the back of the brake shoe and one end thereof, said wall being provided with a recess conforming to the shape of the attaching lug and having lateral extensions, a porous core piece having its ends supported in said extensions and extending across said recess to displace the casting metal and form the locking key slot, and a face block seated in said chamber and which may be moved therein toward and from said shaped wall, the contiguous side of said block conforming to the shape of the face of the brake shoe and the other end thereof, so that when the parts are brought together they will form a mold cavity conforming to the shape of the shoe, the mold cavity being open and exposed on top, whereby the molten casting metal may be poured directly into the mold cavity.

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

JOHN A. McDOUGALL.

Witnesses:

D. R. BESLER,  
W. P. FLETCHER.