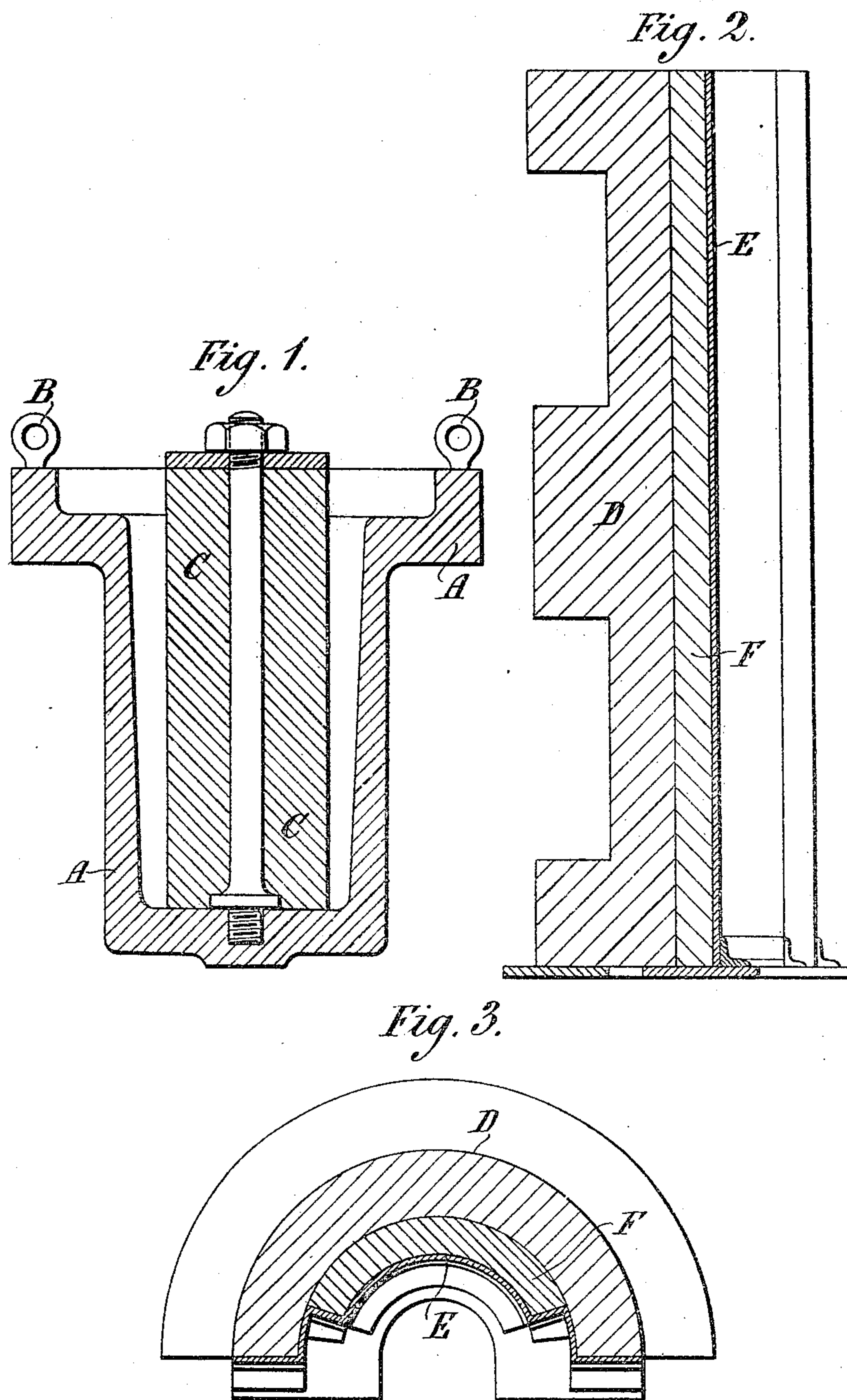


No. 801,229.

PATENTED OCT. 10, 1905.

J. EATON-SHORE.  
METHOD OF CASTING METALS.  
APPLICATION FILED OCT. 5, 1903.



Witnesses.  
*[Signature]*  
M. L. Adams

Inventor.  
J. Eaton-Shore  
By his attorneys  
Baldwin Davidson & Wright



# UNITED STATES PATENT OFFICE.

JAMES EATON-SHORE, OF RUGBY, ENGLAND, ASSIGNOR TO WILLANS & ROBINSON, LIMITED, OF RUGBY, ENGLAND.

## METHOD OF CASTING METALS.

No. 801,229.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed October 5, 1903. Serial No. 175,860.

*To all whom it may concern:*

Be it known that I, JAMES EATON-SHORE, engineer, a subject of the King of Great Britain, residing at Ditton House, Rugby, England, have invented an Improved Method of Casting Metals, of which the following is a specification.

According to this invention the metal is cast in comparatively thin metallic molds, which before the metal has had time to cool materially are lowered gradually into water or are otherwise cooled gradually from the bottom upward, the object being to insure the cooling of the metal as a whole substantially in the state in which it arrives in the mold—that is to say, before the particles of any constituents which differ from the remainder have time to segregate and collect together—thus insuring a denser and more homogeneous casting. The thickness of the walls of mold must be varied to suit the nature of the casting. To cast a cylinder with thin walls, a thin-walled mold should be employed, and vice versa. In the case of alloys which fuse at a comparatively low temperature the mold may be as thin as practical considerations of strength will permit, sheet-steel being suitable in the case of the majority of castings made from the so-called “antifriction” metals. The metal may be cooled in any suitable well-known way, except that great care should be taken to cool the metal gradually from the bottom of the mold upward. This may be effected, of course, in a variety of ways.

In the accompanying drawings, Figure 1 shows a vertical section of a mold which may be employed to cast a hollow cylinder of phosphor-bronze. Fig. 2 shows a vertical section of a portion of a mold suitable for lining a cast-iron bearing with white-metal, and Fig. 3 shows a transverse section thereof.

The molding-box A is of cast-iron, with two eyebolts B B, which are to enable the operator to easily handle it.

The bore of the molding-box is slightly tapering, being of a smaller diameter at the bot-

tom than at the top. This insures close contact of the outer surface of the casting with the inner wall of mold, which is brought about by the descent of the casting upon its cooling and consequent contraction. This comparatively close contact helps in the cooling effect when the operation of pouring has been effected.

C is the core.

In place of a solid core C a hollow core of thin sheet-steel may be employed, which in the case of white-metal gives much better results.

Figs. 2 and 3 show the method of lining a cast-iron bearing with white-metal. D is the bearing, and E is the core of thin planished steel. As the white-metal F is run in a spray of water is played upon the inside of the core E, at first at the bottom and then higher, following the head of metal. Owing to its thinness, the core, even when cold, does not chill the alloy unduly upon casting, and so allows it to run.

In the ordinary method of casting, on the other hand, the two ends of the lining cool first, forming seals, so that when the middle part cools and contracts soft or spongy spots are formed, and this is especially the case if the bearing is of irregular section, and therefore cools unevenly.

In place of spraying the water it may be passed through the core C, but usually not advantageously.

What I claim is—

The process of castings metals herein described consisting in running them into a thin mold of such thickness as not to chill the metal and then cooling the metal gradually from the bottom upward in such manner as to rapidly abstract the heat from the molten metal locally without affecting such metal in the parts of the mold which are not being cooled.

JAMES-EATON SHORE.

Witnesses:

W. IVES,  
S. McHARDY.