Dec. 25, 1923. 1,478,495

G. WALTHER ET AL

BOTTOM BOARD

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Fig. 1

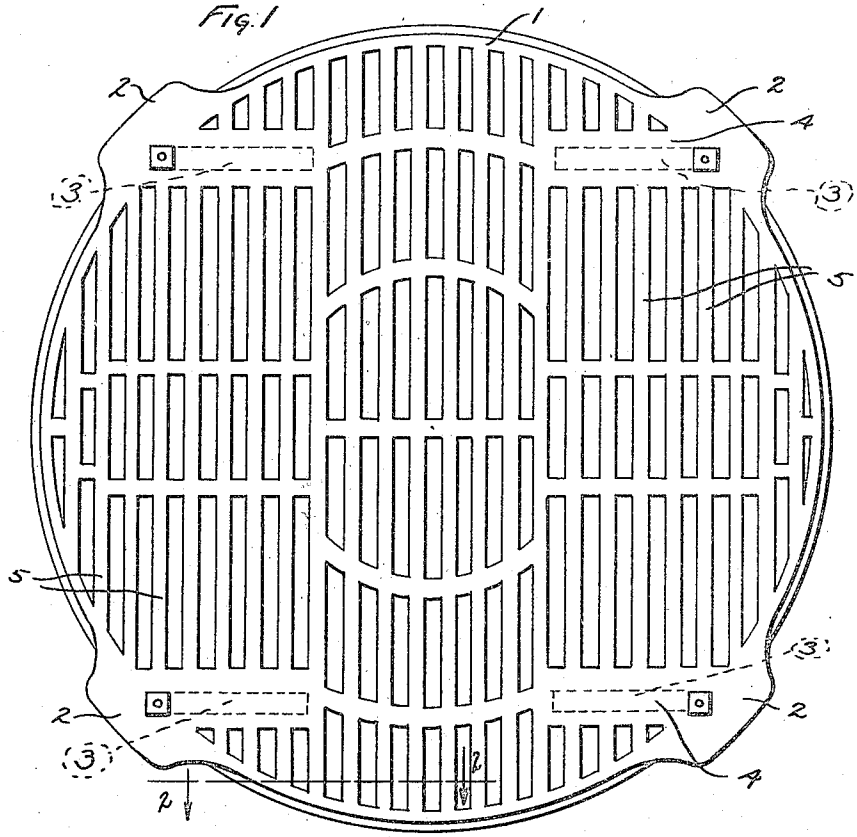
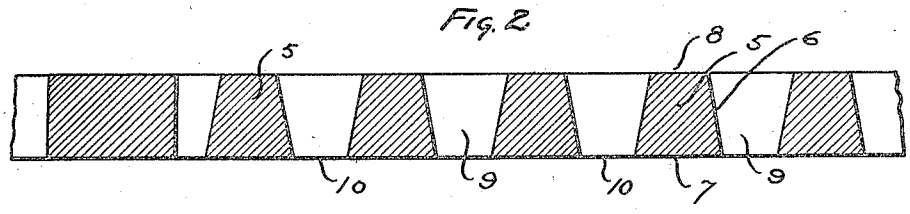


Fig. 2



Inventor

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Fig. 3

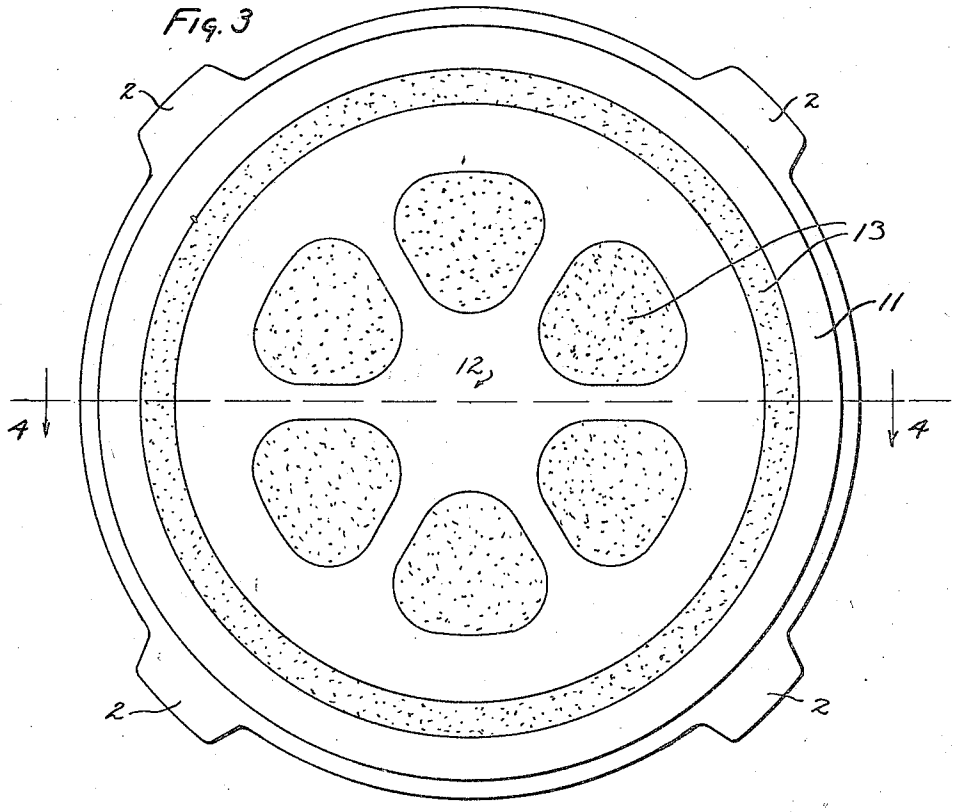
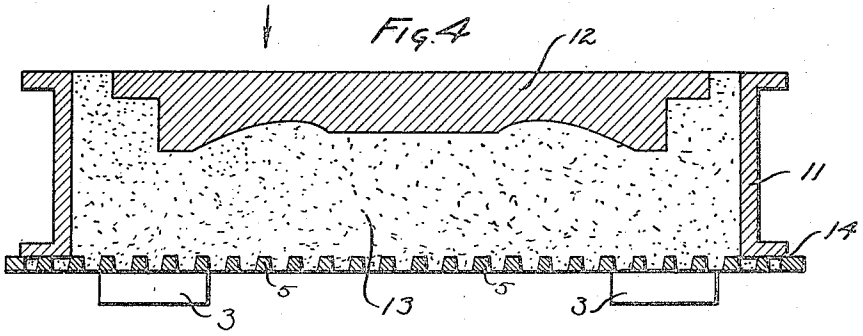


Fig. 4



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Patented Dec. 25, 1923. 1,478,495

UNITED STATES PATENT OFFICE.

GEORGE WALTHER AND JOHN A. WINTERS, OF DAYTON, OHIO, ASSIGNORS TO THE DAYTON STEEL FOUNDRY COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO.

BOTTOM BOARD.

Application filed April 3, 1922. Serial No. 548,954.

To all whom it may concern:

Be it known that we, GEORGE WALTHER and JOHN A. WINTERS, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Bottom Boards, of which the following is a specification, reference being had therein to the accompanying drawing.

Our invention relates to casting apparatus and a method of casting, and in particular to a bottom board and the method of its use in connection with the remainder of the casting apparatus and the process of casting.

It is an object of our invention to provide a bottom board and a method of using it which will enable one using our invention to secure castings of uniform size and thickness, secure a mold of the desired dimensions and will prevent the shifting of the sand in a flask in a way to upset the previously determined size of the casting.

In particular it is our purpose to employ this bottom board and method of employing it in connection with casting articles having thin walls such as cast steel wheels where the variation of $\frac{1}{32}$ inch in the thickness of the wall of the cast structure becomes of great importance and may mark the difference between a successful casting and one that is a failure.

It is our object to provide a bottom board that will be durable, rigid and accurate, easily handled by the workmen.

Referring to the drawings:

Fig. 1 is a plan view of the bottom board;

Fig. 2 is an enlarged section on the line 2—2 of Fig. 1 looking in the direction of the arrows;

Fig. 3 is a plan view looking in the direction of the arrow of Fig. 4 showing the pattern in place in the sand and the hand holds for the bottom board as well as the portion of the rim of the board exposed;

Fig. 4 is a section on the line 4—4 of Fig. 3, showing in section the bottom board, the flask and the pattern.

Referring to the drawings in detail, and in particular to Fig. 1, a bottom board preferably of steel is constructed as shown in the drawing consisting of a rim member 1, hand holds 2, lugs or feet 3 mounted in supporting members 4. Any desired design may be employed for the grating within the rim 1 but we prefer to employ in groups a plurality of spaced bars parallel to one another such as 5—5. These bars are tapered on their walls (see Fig. 2) as at 6 and have their outer and inner surfaces 7 and 8 respectively parallel to one another. This construction provides the spaces 9 that are wedge shaped between the members 5 so that the sand may sift between the bars 5 and wedge therebetween in such a way that very little if any of the sand will pass through the outer opening 10.

In practice, we find it feasible to employ a board of such typical dimensions as $\frac{5}{8}''$ along the surface 7, $\frac{7}{16}''$ along the surface 8. The member 5 is $\frac{5}{8}''$ deep. The space between the members 5 on the entire side is $\frac{11}{16}''$.

Such dimensions provide a feasible and practical bottom board but, of course, we do not desire to confine ourselves to any particular dimensions as the dimensions are not in any way essential to the practice of our invention because such dimensions depend upon other factors in the construction and may be adjusted upon the basis of our disclosure to suit varying foundry conditions.

The numeral 11 designates the flask on the bottom of which is placed the pattern 12 and then the sand 13 until the sand is leveled off with the surface 14 of the flask in the usual manner. Sufficient sand is usually added to bring the sand up to level with 14 or slightly above.

It has heretofore been common practice to use a solid board so that when the flask was inverted as in Fig. 4, ready for the removal of the pattern, there would be some slight upward shifting of the sand due to the surplus in the neighborhood of 14 and thus the thickness of the wall of the resulting casting would be varied.

In the present instance, in using our bottom board, when it is shifted laterally before inverting of the flask, any surplus sand finds its way into the areas 9 and packs therein thus permitting the sand to accommodate itself to the precise area of the flask without disturbing the dimensions of the resulting casting. When the flask is inverted with the sand using our board any inequalities in the quantity of the sand are taken up by the accommodating spaces 9. In casting thin wall structures it is better to

err on the side of slight heaviness of the walls rather than having walls too thin particularly in the case of such structures as cast steel wheels where the factor of strength and safety is most important.

While we have shown and described certain features as constituting our invention, it will be understood that parts have been shown for purposes of illustration only, and that we do not desire to be limited to such details, as obvious modifications will occur to persons skilled in the art.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In a new article of manufacture, such as a bottom board for castings, a bottom board consisting of a plurality of spaced members adapted to accommodate surplus sand therebetween.

2. In a new article of manufacture, such as a bottom board for castings, a bottom board consisting of a plurality of spaced members adapted to accommodate surplus sand therebetween, said members being wedge shaped in section and the apertures therebetween being wedge shaped in section, the mouth of the aperture being narrower at the outside of the board than at the inside, whereby the sand will not only be accommodated by the apertures but packed therein to prevent the escape therethrough of the sand.

3. In a new article of manufacture, such as a bottom board for castings, a bottom board consisting of a plurality of spaced members adapted to accommodate surplus sand therebetween, and legs upon which said bottom board may rest.

4. In a new article of manufacture, such as a bottom board for castings, a bottom board consisting of a plurality of spaced members adapted to accommodate surplus sand therebetween, said members being wedge shaped in section and the apertures therebetween being wedge shaped in section, the mouth of the aperture being narrower at the outside of the board than at the inside, whereby the sand will not only be accommodated by the apertures but packed therein to prevent the escape therethrough of the sand, and legs upon which said bottom board may rest.

5. In a bottom board, a plurality of spaced members parallel to one another, a plurality of cross members bracing said spaced members, said spaced members being arranged in groups, and a rim member which engages the ends of the spaced members.

6. In a bottom board, a plurality of spaced members parallel to one another, a plurality of cross members bracing said spaced members, said spaced members being arranged in groups, a rim member engaging the ends of said spaced members, said spaced members being wedge shaped in section with wedge shaped apertures therebetween, said apertures having their narrower portions at the outside of the board.

7. In a bottom board, a plurality of spaced members parallel to one another, a plurality of cross members bracing said spaced members, said spaced members being arranged in groups, a rim member engaging the ends of said spaced members, said spaced members being wedge shaped in section with wedge shaped apertures therebetween, said apertures having their narrower portions at the outside of the board, and a plurality of spaced feet for supporting the board when the flask is mounted thereon.

8. In a method of casting, locating a flask, placing a pattern therein, placing the sand therein adjacent the pattern, leveling the sand with the top of the flask with the bottom board consisting of a plurality of spaced members with tapered spaces therebetween, the narrow portion of the taper being towards the top of the board, inverting the flask, sand and pattern upon the bottom board, whereby any surplus sand may be accommodated in the spaces between the members constituting the bottom board.

In testimony whereof, we affix our signatures.

GEORGE WALTHER.
JOHN A. WINTERS