

H. W. O'DOWD.
METHOD OF CASTING.
APPLICATION FILED MAY 18, 1909.

1,170,180.

Patented Feb. 1, 1916.
2 SHEETS—SHEET 1.

Fig. 1

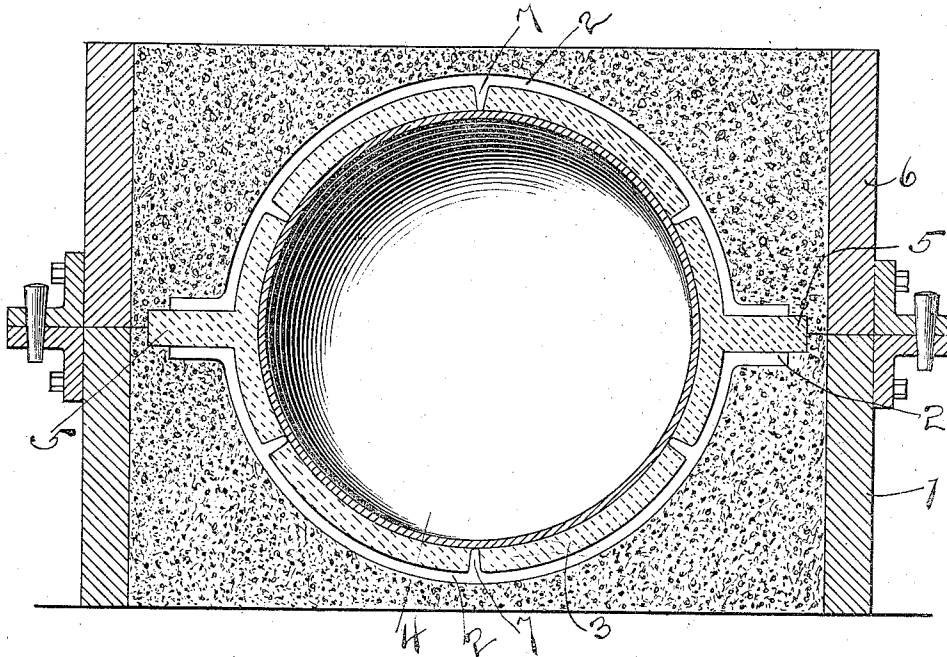
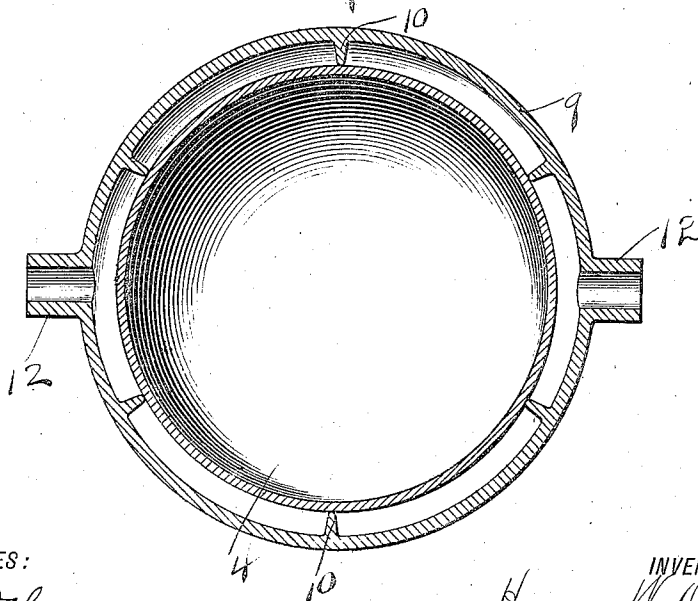


Fig. 2



WITNESSES:

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Fig. 3.

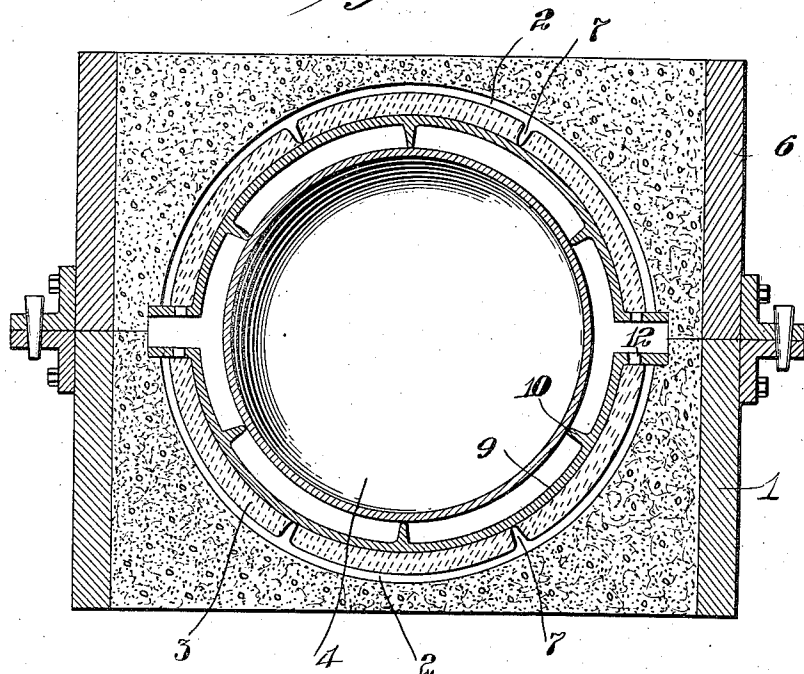
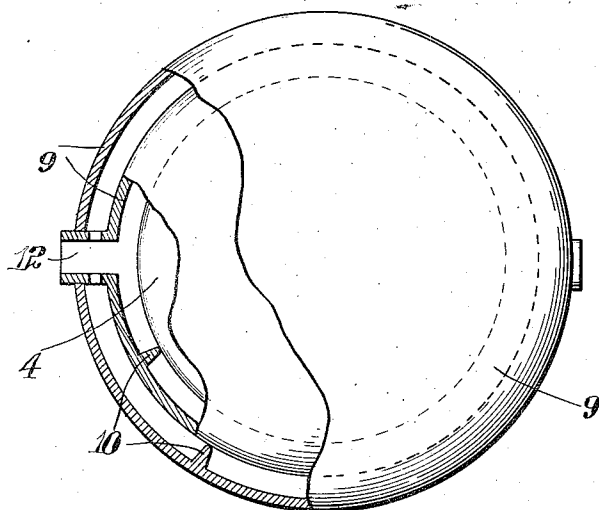


Fig. 4.



Attest:
L. E. Morrison

Inventor:
by *Henry W. O'Dowd*
J. J. Dolan, Atty

UNITED STATES PATENT OFFICE.

HENRY W. O'DOWD, OF PEEKSKILL, NEW YORK, ASSIGNOR TO WILLIAM M. CRANE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

METHOD OF CASTING.

1,170,180.

Specification of Letters Patent.

Patented Feb. 1, 1916.

Application filed May 18, 1909. Serial No. 496,751.

To all whom it may concern:

Be it known that I, HENRY W. O'DOWD, a citizen of the United States, and a resident of Peekskill, Westchester county, State of New York, have invented certain new and useful Improvements in Methods of Casting, of which the following is a specification.

My invention relates to metal ware, and more particularly to metal receptacles, and also to the method of casting such articles.

An object of the invention is to produce a hollow metal receptacle, for example, a sphere inclosing another object, which may also be a sphere, and which receptacle may be thin and light and yet strong, durable, and economical in construction.

My invention also has for an object to provide a method whereby such receptacles may be given the desired shape and dimensions and may be produced easily and cheaply.

These and other objects of the invention will in part be obvious and in part be more fully explained by the following description.

The invention consists in the novel steps and constructions herein set forth.

I have discovered that a hollow metal receptacle, inclosing another article, may be made by forming a dry core about said article, providing means for keeping said article and the receptacle to be cast spaced apart, forming a mold for the receptacle, placing the article inclosed in said core in said mold, and filling the space between said core and said mold with molten metal.

According to one feature of the invention, cavities are made in the dry core, into which cavities the molten metal flows and upon solidifying forms projections extending from the inner surface of the outer receptacle, and said projections, being suitably disposed over the area of said inner surface of said outer receptacle, serve to keep said outer receptacle and the inclosed article suitably spaced apart.

In order that my invention may be more fully understood, I have in the accompanying drawing, which is referred to herein and forms a part hereof, illustrated a mold prepared in accordance with certain features of my invention together with the product produced from the mold.

The particular product illustrated is de-

signed for use in a water heater and consists of two hollow spheres, one inclosed within the other, the spheres being kept suitably spaced apart. An inclosure between the spheres is thus provided of maximum capacity and of great efficiency in heating the water which flows through the same.

Of the drawing: Figure 1 is a vertical central section of a mold for casting a hollow metal body, inclosing another body, in accordance with my invention; Fig. 2 shows sections of metal spheres, one of which has been cast in the mold of Fig. 1 and incloses a second sphere; and Figs. 3 and 4 show a plurality of metal spheres one cast within another and the two cast within a third.

Referring now to the drawing in detail, the mold of Fig. 1 comprises a drag section 1, in which a mold recess 2 is formed. In said recess 2 is placed a dry sand core 3, inclosing an object, as shown in the drawing a hollow metal sphere, 4 about which is to be cast a metal receptacle. Said mold recess 2 is suitably fashioned for the casting of the object to be produced, in this instance another sphere, and the dry sand core 3 is preferably held in place by projections 5 resting on the green mold of the drag 1. The space between the green mold and the dry sand core 3, which forms the mold recess 2, is also made to correspond to the desired thickness and dimensions of the object to be cast. The mold is completed by the cope section 6, in which the mold recess 2 is continued and in which suitable gates, not shown, are formed, through which the mold may be filled with molten metal in the usual way. It is often desirable that the cast receptacle and the object contained within the dry sand core should be permanently and, preferably, uniformly spaced apart. While this step in the process may be accomplished in various ways and by different instrumentalities, preferably and as shown, cavities 7 are formed in the dry sand core 3, into which cavities the molten metal will run and form lugs projecting from the inner surface of the outer cast sphere. These cavities and the resulting projections may be of any desired number, shape, and location, to meet particular requirements. As shown, the said cavities extend entirely through the dry sand core 3 and are formed in pairs, the

members of which are diametrically opposite to each other. After removing the articles from the mold upon the completion of the casting process proper, the dry sand core 3, which will readily disintegrate, may be removed from the space between the spheres through apertures in the outer sphere, as shown, these apertures being preferably formed by the core projections 5. It will be noted, moreover, that these apertures may be of any desired number and made at any desired locations in the outer sphere and may be continued from the outer sphere by projections of desired configuration. It is to be observed that the outer sphere thus cast may in turn be used as an inner sphere, and another sphere be cast about it, as illustrated in Fig. 3.

The article cast in the mold illustrated, which article is a hollow sphere, is represented in section in Fig. 2. As there shown, the sphere 9 is provided on its inner surface with a plurality of lugs 10 so disposed that the inner sphere and said outer sphere 9 are uniformly spaced apart and would, for instance, offer no appreciable resistance to the flow of a stream of water through the space between said spheres. As shown, said outer sphere 9 has diametrically opposed bosses 12 by means of which the sphere 9 may be connected to other objects in any desired manner.

It is to be observed that various materials may be employed for the article produced in accordance with my invention, the material selected being that best adapted or suitable for the use to which the article is to be put.

It will be seen that in accordance with the method herein set forth hollow metal receptacles, inclosing other objects and separated therefrom, may be conveniently and easily cast; and said receptacles may be cast in various shapes and dimensions, as desired, and may be formed of light, thin, and yet strong metal. Other advantages will be apparent to those skilled in the art.

In its broader aspects my invention is not limited to the particular article or to the particular steps or mode of procedure herein specified by way of example, as many variations may be restored to without departing from the main principles of the invention and without sacrificing its chief advantages.

I claim:

1. The method of casting a hollow metal receptacle inclosing another article, which method consists in forming a core about said article, making cavities in said core, forming a mold for the receptacle, placing said article inclosed within said core in said mold, and filling the space between said core and said mold with molten metal, the said cavities in said core being so disposed that the projections on the hollow cast receptacle

formed by the molten metal flowing therein will keep said article and said receptacle spaced apart.

2. The method of casting a hollow metal receptacle inclosing another article, which method consists in forming a core about said article, making cavities in said core, forming a mold for the receptacle, placing said article inclosed within said core in said mold, and filling the space between said core and said mold with molten metal, the said cavities in said core being so disposed that the projections on the hollow cast receptacle formed by the molten metal flowing therein will keep said article and said receptacle spaced apart, and said dry core being so formed that the outer sphere will be cast with an aperture therethrough.

3. The method of casting a hollow metal receptacle inclosing another article, which method consists in forming a core about said article, forming a mold for the receptacle, placing said article inclosed within said core in said mold, providing casting cavities between said article and said mold whereby members are provided for keeping said article and said receptacle permanently spaced apart, and filling said space between said core and said mold with molten metal.

4. The method of casting a hollow metal receptacle inclosing another article, which method consists in providing means for forming bosses on said receptacle so that the same will be kept spaced apart from the article, forming a mold for the receptacle, placing said article inclosed within a core in said mold, and filling the space between said core and said mold with molten metal.

5. The method of casting a plurality of hollow metal receptacles each inclosing another article, which method consists in forming a core about an article, making cavities in said core, forming a mold for the receptacle, placing said article inclosed within said core in said mold, and filling the space between said core and said mold with molten metal, the said cavities in said core being so disposed that the projections on the hollow cast receptacle formed by the molten metal flowing therein will keep said article and said receptacle spaced apart, and said core being so formed that the outer receptacle will be cast with an aperture therethrough, and then repeating the above process using the said completed hollow receptacle in the further steps as the article inclosed in the core.

6. The method of casting a plurality of hollow metal receptacles, each inclosing another article, which method consists in forming a core about an article, forming a mold for the receptacle, placing said article inclosed within said core in said mold, providing casting cavities between said article and said mold whereby members are provided

for keeping said article and said receptacle permanently spaced apart, filling the space between said core and said mold with molten metal and then repeating the said process,
5 using the said completed hollow receptacle in the further steps as the article inclosed in the core.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HENRY W. O'DOWD.

Witnesses:

GEO. H. SCUDDER,
R. L. BOGART.