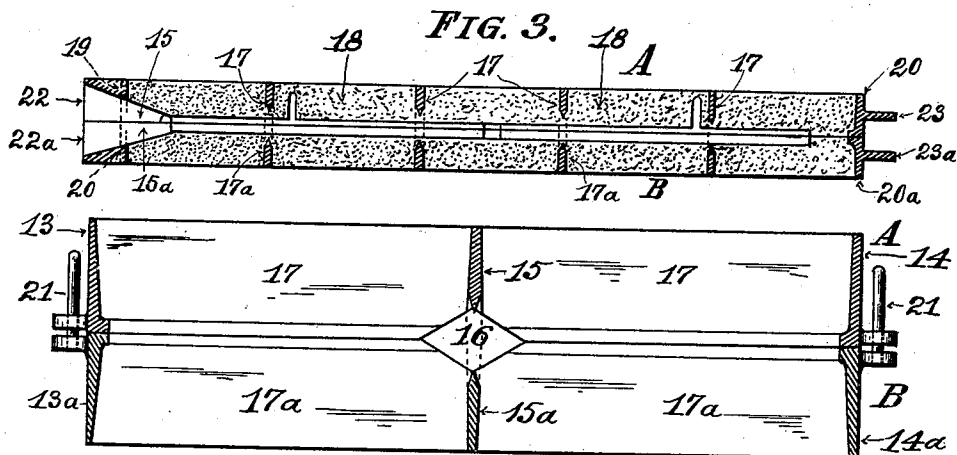
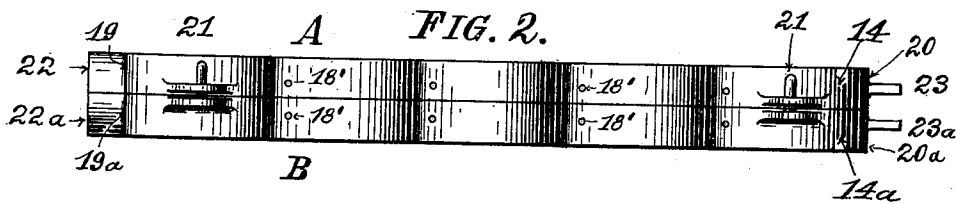
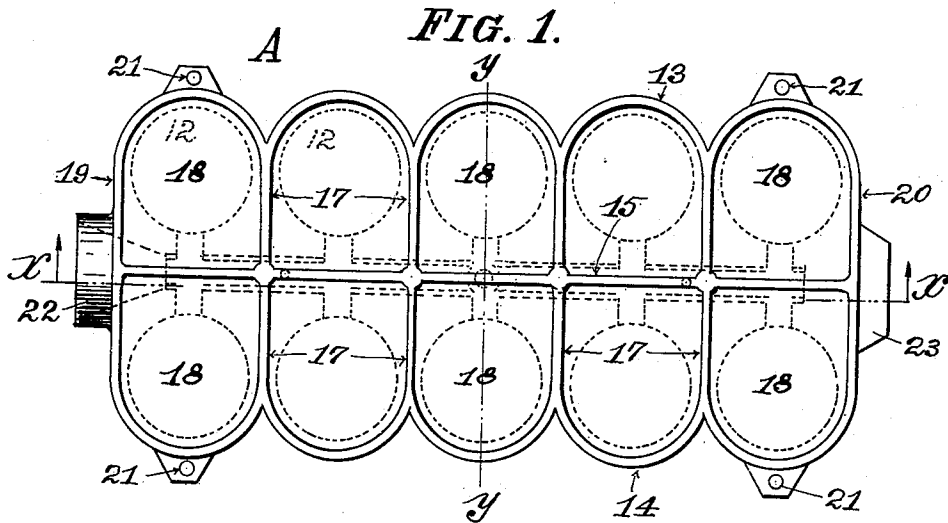


F. J. PHILLIPS.  
 ART OF CASTING NON-FERRIC METALS.  
 APPLICATION FILED SEPT. 1, 1910.

977,546.

Patented Dec. 6, 1910.



Witnesses:

L. Knudsen  
A. S. Peterson

**FIG. 4.**

Inventor:

Frank J. Phillips,  
 BY Michael J. Stark & Sons  
 Attorneys.

# UNITED STATES PATENT OFFICE.

FRANK J. PHILLIPS, OF CHICAGO, ILLINOIS.

ART OF CASTING NON-FERRIC METALS.

977,546.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed September 1, 1910. Serial No. 580,052.

To all whom it may concern:

Be it known that I, FRANK J. PHILLIPS, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in the Art of Casting Non-Ferric Metals; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to the art of producing non-ferric metal castings, such as are made in brass foundries and especially that class of castings which are produced in large quantities, and which are generally termed "straight work," that is to say, work which is produced from gated patterns, and which runs either continuously or repeats at greater or lesser intervals of time. This class of patterns are almost invariably molded in standard flasks, but in many cases these flasks are too large or too deep, or both, to suit the work, thereby causing considerable loss and waste of sand and labor in handling the same to produce the molds. On such straight work, the best output on the tub in brass foundries is thirty molds per day, while by my improved system of producing these castings I am enabled to make twice and three times this number of molds in the same time without any, or but a very few scrap or defective castings.

To attain these very desirable and important results, my invention comprises the employment of a series of flasks, the exterior shape and depth of which is governed entirely by the shape and thickness of the castings to be produced. In these flasks I form a series of partitions, so that each pattern on the gate is contained in a separate compartment, each compartment being separately rammed. I then bake these molds in a bake oven to make them very hard and easily handled, so that no gases are formed in said molds when the molten metal enters the same, thereby preventing oxidation of the metal and blow-holes, cold shuts, and other defects in the castings, vents being drawn from the sides of the flasks, preferably from each compartment to provide for the escape of air from the mold when the metal enters the same.

In the drawings already mentioned, which serve to illustrate this invention more fully, Figure 1 is a plan of a flask employed in my system of producing castings. Fig. 2 is a side-elevation of the same. Fig. 3 is a longitudinal sectional elevation thereof, on line  $x x$  of Fig. 1. Fig. 4 is a cross-section drawn on an increased scale, the figure being taken on line  $y y$  of Fig. 1.

Like parts are designated by corresponding symbols and characters of reference in all the figures.

A, in these drawings designates the cope, and B, the drag of a molder's flask adapted for use in brass foundries in connection with my system of producing non-ferric metallic castings. The exterior contour of these two parts of the flask is of a shape approximately conforming to the shape of the castings to be produced which may vary almost infinitely. In the drawings, I have indicated these castings as being circular disks 12, and, therefore, the outer walls 13, 13<sup>a</sup>, 14, 14<sup>a</sup>, of these flask members are formed of curved outlines, but it is to be understood that this outer contour of the flasks will vary with the shape of the castings required. In these flask members I form a series of intersecting partitions of which the longitudinal central partition 15, is of a height at the ends where they adjoin the end-members 19, 19<sup>a</sup>, 20, 20<sup>a</sup>, corresponding to the height of the flask members. This central partition is cut away at its inner edge to provide for space 16, for the runner or gate of the pattern. I also form in these flask members cross partitions 17, 17<sup>a</sup>, which cross partitions are also of a depth corresponding to the depth of the flask members A, B, thereby providing in each flask member a series of compartments 18, one for each pattern. In the side walls of these flask members I also provide vent openings 18', preferably one for each compartment to permit air escaping through said openings from said compartments when the metal is being poured into the mold.

The flask members A B are provided with the usual dowel pins and lugs 21, adapted to properly locate the two flask-members upon each other, and also with the pouring spout members 22, 22<sup>a</sup>, as well as with the usual lifting lugs 23, 23<sup>a</sup>, at the bottom members of said flask, as clearly shown in the drawings.

The operation of molding in my present system differs from that usually employed

in brass foundries that each compartment containing one of the gated patterns is filled with sand and separately rammed and then vented through the vent holes 18' in the side walls of the flask members. These flask members fit the patterns very closely, leaving but sufficient space between them and the walls of the flask and partitions to contain the minimum amount of sand, and they are so shallow that but a thin layer of sand covers the patterns. In this manner I save a large quantity of molding sand which at present is wasted, and also considerable time in the handling of the sand, the ramming of the same in the flask, &c.

After the patterns have been withdrawn from the flask, each flask member is placed in a bake oven where the sand is baked quite hard to eliminate therefrom all moisture so that when the two flask members are clamped together by suitable clamps, not shown, the mold is ready for pouring, where owing to the entire absence of moisture, and the peculiar venting, I produce castings of a superior quality practically free from imperfections and without any loss, at a much lower cost than what such castings have heretofore been produced.

In carrying out this system of producing castings, I am enabled to employ less skilled help than what is now required to produce this class of work, in fact boys can be economically employed who after a very short practice will produce as many and as good castings as any skilled brass molder.

When the castings to be produced are very small, I may bunch a number of the patterns for the same in each compartment and proceed with the molding, venting, baking, setting cores, when required, and the pouring, the same as heretofore described.

While my present system of producing castings is especially designed for nonferrous metals, such as brass, bronze, aluminum and the alloys thereof, it is obvious that the same system may be effectively employed in the production of ferrous metal castings without change and without departing from the scope of my invention.

Having thus fully described this invention, I claim as new and desire to secure to me by Letters Patent of the United States—

A two-part flask, comprising two like members open at top and bottom, there being in said members a longitudinal partition and a series of transverse partitions affording separate compartments each of which is adapted to receive one or more patterns, the inner edges of said transverse partitions being in contact with each other except at their intersection with said central partition, when said flask is in closed condition, a pouring-spout member on each flask-member and formed integral therewith, and means on said flask-members adapted to properly locate one flask-member upon the other.

FRANK J. PHILLIPS.

Witnesses:

MICHAEL J. STARK,  
LEON DONNE.