(No Model.)

G. CAMPBELL.

MOLD FOR CASTING BELLS.

No. 385,443. Patented July 3, 1888.

Fig. 1.

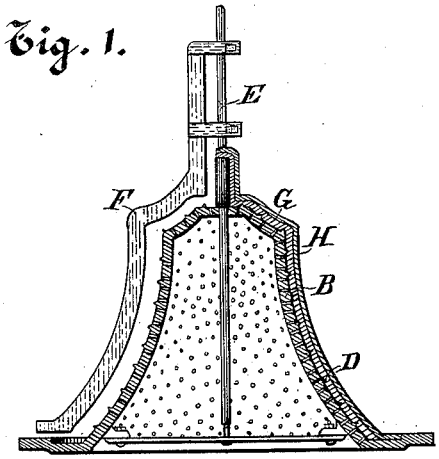


Fig. 2.

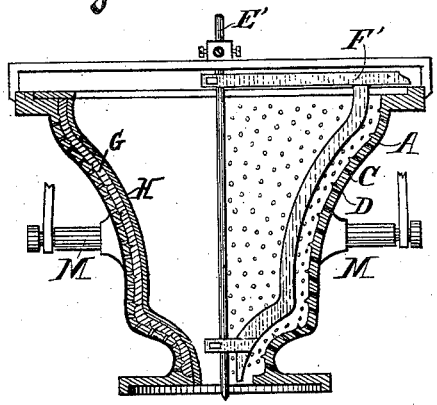
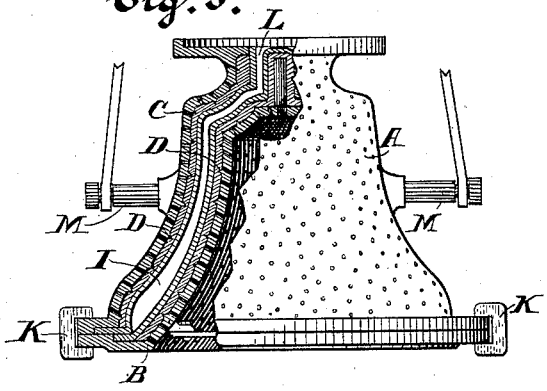


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

GARDINER CAMPBELL, OF MILWAUKEE, WISCONSIN.

MOLD FOR CASTING BELLS.

SPECIFICATION forming part of Letters Patent No. 385,443, dated July 3, 1888.

Application filed April 11, 1887. Serial No. 234,363. (No model.)

To all whom it may concern:

Be it known that I, GARDINER CAMPBELL, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Molds for Casting Bells; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

Heretofore in casting bells it has been common to form a mold by the use of a mixture of loam and some combustible material placed on and secured to an outer and an inner flask, which combustible material was deemed necessary in the process of casting, and to provide a substance which by its destruction by burning from the heat of the molten metal would provide the necessary space to permit of the contraction in the bell as the metal cools and hardens, whereby to obviate fire-cracks or strains in the bell.

My improved mold obviates the necessity of using a combustible material, which is difficult to use in molding, is more or less unsatisfactory in results, and, being constantly destroyed, needs to be renewed at every molding.

My improved mold is adapted to overcome these difficulties, as well as others, which will be understood by the following description.

In the drawings, Figure 1 is a vertical sectional view of the inner flask, showing the molding-casing thereon at one side and the templet or sweep shown on the other side. Fig. 2 is a vertical section of the outer flask and the molding-casing thereon on the inner surface at one side and the templet or sweep shown on the other side. Fig. 3 is an elevation of the outer and inner flask secured together, parts being broken away to show the relation of the flasks to each other and the construction of the completed mold.

The outer flask, A, and inner flask, B, are both provided with apertures C C for the passage therethrough of gases or air. The outer flask, A, on its inner molding-surface, and the inner flask, B, on its outer molding-surface, are each provided with studs D D, adapted to retain the molding material and prevent it from slipping or changing position on the surface of the flask. Any other form of projections on these molding-surfaces of the flasks would probably perform the same functions and be a practical equivalent therefor. As a tool to aid in forming the inner mold or core, a guide-rod, E, is secured to the inner flask, B, centrally vertically, and thereon is hung a templet, F, which templet revolves on its guide-rod E about the flask B at a distance therefrom. A similar guide-rod, E′, and templet F′ are used in connection with the outer flask, A, in the process of securing and forming the mold-case on the flask.

In preparing the mold for the bell a coating of molding-sand, G, is placed on the roughened surface of the flask and is secured thereto by tamping until a complete and entire covering on the flask is formed from one inch to four inches in thickness, varying in thickness at different parts of the mold, and also varying in thickness as constructed for casting large or small bells. This coating of sand is then smoothed off and shaped by sweeping it with the templet F or F′. This sweeping is performed by revolving the templet about its axle, its inner edge coming into contact with and shaving off the inequalities and outer part of the sand until a properly-shaped coating is secured. The mold is then baked until all moisture is driven out. A coating of molding-loam, H, is then placed upon the coat of sand and secured thereto by sufficient pressure to cause it to adhere to the sand. This coat of loam is then shaped and smoothed by sweeping the templet over it in the same general manner as was done on the sand coat. A loam coat of from one-half to three-fourths of an inch in thickness will generally be sufficient. The mold is then baked again and afterward a coat of plumbago or blackwash is applied as a finish in the usual manner and the mold is again dried.

When the inner and the outer flasks have both been covered in the manner described, forming what is called an "inner shell" or "core" and an "outer shell" the two shells are placed together in the manner shown in Fig. 3. The two flasks are of such size and relative shape (the templets F and F′ having also the same relative size and shape) that there is formed a vacant space or matrix, I, for receiving the molten metal of which

the bell is to be formed. The two shells are then secured together by the clamps K K or equivalent means. The molten metal is poured in at the top through an aperture, L, therefor. Under the influence of the heat of the molten metal the moisture and gases in the sand and loam are driven off through the apertures in the flasks, and as the metal cools and contracts the sand crumbles and gives way at the proper time sufficiently to provide for the contraction of the metal, and at the same time furnishes ample resistance to properly support the metal until it has so hardened as to be self-supporting. By the use of such a mold as herein described I am able to construct a very complete and satisfactory bell, with few or no seams or fire-cracks. The outer flask, A, is provided with trunnions M M, rigid therewith, whereby it may be supported or moved from one place to another.

What I claim as new, and desire to secure by Letters Patent, is—

1. A flask or frame for the mold, having a roughened surface for retaining sand, a coat of sand thereon, and thereon a coating of molding-loam shaped and formed for the reception of the molten metal, substantially as described.

2. An inner and an outer flask or frame and on the surface of both inner and outer flasks a lining of sand and thereon a coating of loam, said lining of sand and coating of loam being so molded and shaped and said inner and outer flasks so secured together as to form a matrix for the reception of the molten metal, substantially as described.

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

GARDINER CAMPBELL.

Witnesses:
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