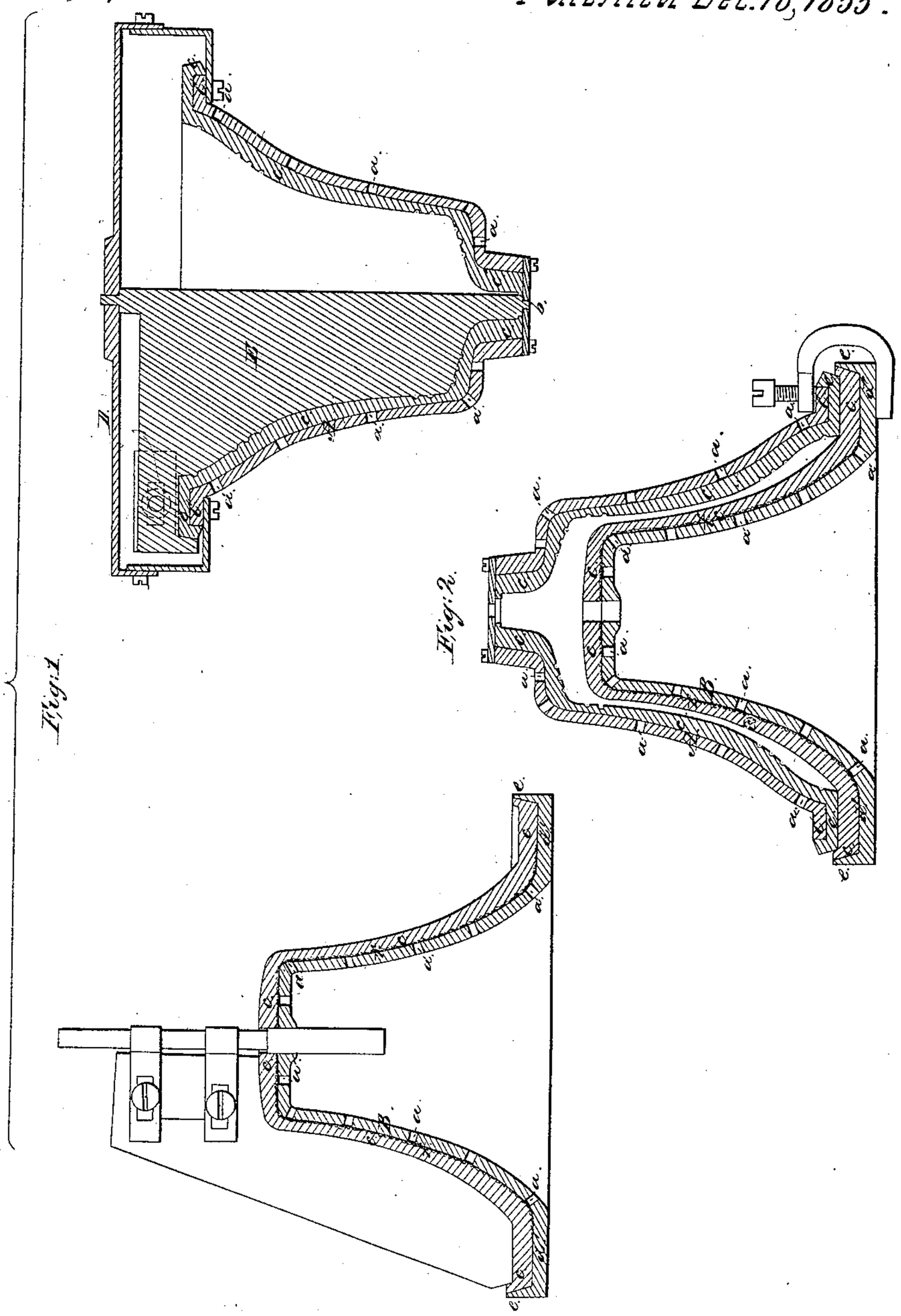
E. Jones,

Casting Bells, &c.

No. 13,948. Patented Dec. 18, 1855.



UNITED STATES PATENT OFFICE.

EBER JONES, OF TROY, NEW YORK.

MOLD FOR CASTING BELLS.

Specification of Letters Patent No. 13,948, dated December 18, 1855.

To all whom it may concern:

Be it known that I, EBER JONES, of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful improvements in methods of preparing molds or flasks for casting bells or other hollow castings where accuracy is required; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents the flasks separated the outer one being turned upside down, to show the method of molding the clay or loam, on them. Fig. 2, represents a vertical section taken through the molds when put together, and ready for the casting.

Similar letters in the figures denote like parts.

In the casting of bells of all kinds, but more especially those intended for chimes, great accuracy in molding is required, so that the proper tones may be had, and as the quantity of metal in the bell, influences this result to a great extent, it is necessary that there should be uniformity of thickness in all its corresponding parts.

The practice heretofore has been to use "pitch pins," guides, or metallic contact—the one shell or flask with the other, but which guides, marks, or whatever has been used, were of a permanent character, and the flasks were put together by these marks or guides, regardless of the discrepancies which might and do exist in the sweeps, and centers on and by which the mold is formed.

It is obvious that the centers, and sweeps, will become somewhat worm and loose, from the very nature of the case, and that by constant use of the flasks they will become warped or twisted by exposure and contraction. Now if the pins and guides are a permanent thing, which was heretofore the case, and the centers or sweeps or the shells themselves, vary from a perfectly true position, a perfect mold—one that is uniform in thickness in all its corresponding parts, cannot be made, for the reason that it is formed from a variable point while the flasks are put together by an unvarying point, pin or guide. And as before stated unless the bell, which is the counterpart of the mold in reverse, is of uniform thickness in its corresponding parts, it will not give a clear tone, nor the one sought for, in casting a chime of bells.

Another defect in the location of the guides by which the flasks are put together consists in having said guides underneath the outer flasks or cope, so that at the most delicate operation of placing the flasks together, the guides cannot be readily seen by the molder or fitter, and the least irregularity of position crumbles off the clay from one side or the other, and leaves their position untrue, which defect is of course imparted to the bell cast, between them.

The nature of my invention consists in the so making of flasks for casting bells the bodies of which are made of metal, as that the guides by which they are put together shall be turned or molded from the same centers, from which the flasks themselves, are coated with the lining or covering of clay or loam, and forming said guides where they are constantly under the inspection of the molder, so that if the centers should vary or the flasks warp, the discrepancy will be made up in the clay or lining of the flasks, and the mold be perfect, and the flasks accurately laid one upon the other, whatever may be the imperfection of the part from, or on which they are made.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

The outer shell A and inner one B, may be of cast-iron, and provided with any suitable number of air vents *a*, *a*, *a*. Two ears C, C, are placed on the outer shell or cope, for securing the bar D, which forms one of the supports or steps of one of the journals of the sweep E, the other journal being supported at *b*. The shape of the sweep gives the form to the outside of the mold, and the mold to the bell.

c, represents the clay on the inside of the flask or shell and it will be perceived that every portion of the shell A, which would come in contact with, or touch the inner shell, when the two are placed together is covered with clay even to the flanges and a precisely similar course is pursued with the inner flask or shell B, where *c* also represents the clay. This feature—it being a leading one in this invention and very im-

portant may be illustrated as follows, viz: Before the clay is molded onto the shells, there are no guides, marks or points, by which the two shells are placed together, and in this essential they differ from any other molds or flasks of which I have knowledge. The guides are molded with, and from the same center (whatever that may be) with the bell itself and the space between the flasks, which forms the bell must of necessity be uniform. Besides the so making of the guides, by which the flasks are put together, the position of the guides where they are constantly under the easy inspection of the molder or fitter enables him to place them together with the utmost accuracy, without allowing one to crumble, or crush the lining or coating of the other, and thus great perfection in the casting is obtained.

It might be assumed that adjustable guides would serve the same purpose as that aimed at by me. Such is not the case for the amount of adjustability cannot be ascertained. It might require adjustment from not working from a true center, or it might be from the warping of the flasks, but in either case it is not ascertainable. So long as permanent guides or marks are used for putting the shells together perfect bells cannot be cast.

The inner shell B, is cast with a horizontal flange *d'* projecting beyond the extreme point of the bell (which may be designated by the space between the clay moldings in Fig. 2) and from this point rises a vertical flange *e* which strengthens and supports the clay mold. The shell B, previous to receiving its clay is laid with straw *f*, which burns away and allows it to shrink and be drawn from the bell after it is cast. A horizontal flange, and vertical shoulder are also formed on the outer shell A which is also covered with clay, and these two clay surfaces form the guide by which the flasks or shells are put together.

Now if either of the sweeps E, should be working out of center it will make no difference with the bell after it is cast, the error corrects itself by putting on more or taking off clay from the shells. Whatever the center may be for the time being (and it may vary with every mold formed), the entire mold, guide, and all, is made from that center, and must be correct. It is not influenced by the putting together of the flasks or shells, for the guides are formed from the same center—every point and part is concentric, and thus a perfect mold and bell is formed. So accurate is this method of molding, that bells of uniform tone may be cast, without chipping or filing, which is a very important feature in casing sets or chimes.

A material advantage in making the lining of the flanges, the guide for putting the mold together, arises from the fact that the guides so formed are always under the eye of the operator, and he can readjust the outer over the inner mold without in the least endangering the mold.

Having thus fully described the nature of my invention what I claim therein as new and desire to secure by Letters Patent is—

The so making of flasks for casting bells, the bodies of which are made of metal, as that the guides by which they are put together, shall be turned or molded from the same centers from which the flasks themselves are coated with the lining or covering of clay or loam, and forming said guiding surfaces where they are constantly under the ready inspection of the molder, substantially as herein described.

EBER JONES.

Witnesses:

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