J. Brunner.

Casting Hollow Articles.

No. 95,645. Patented Oct. 12, 1869.

Fig. 1.

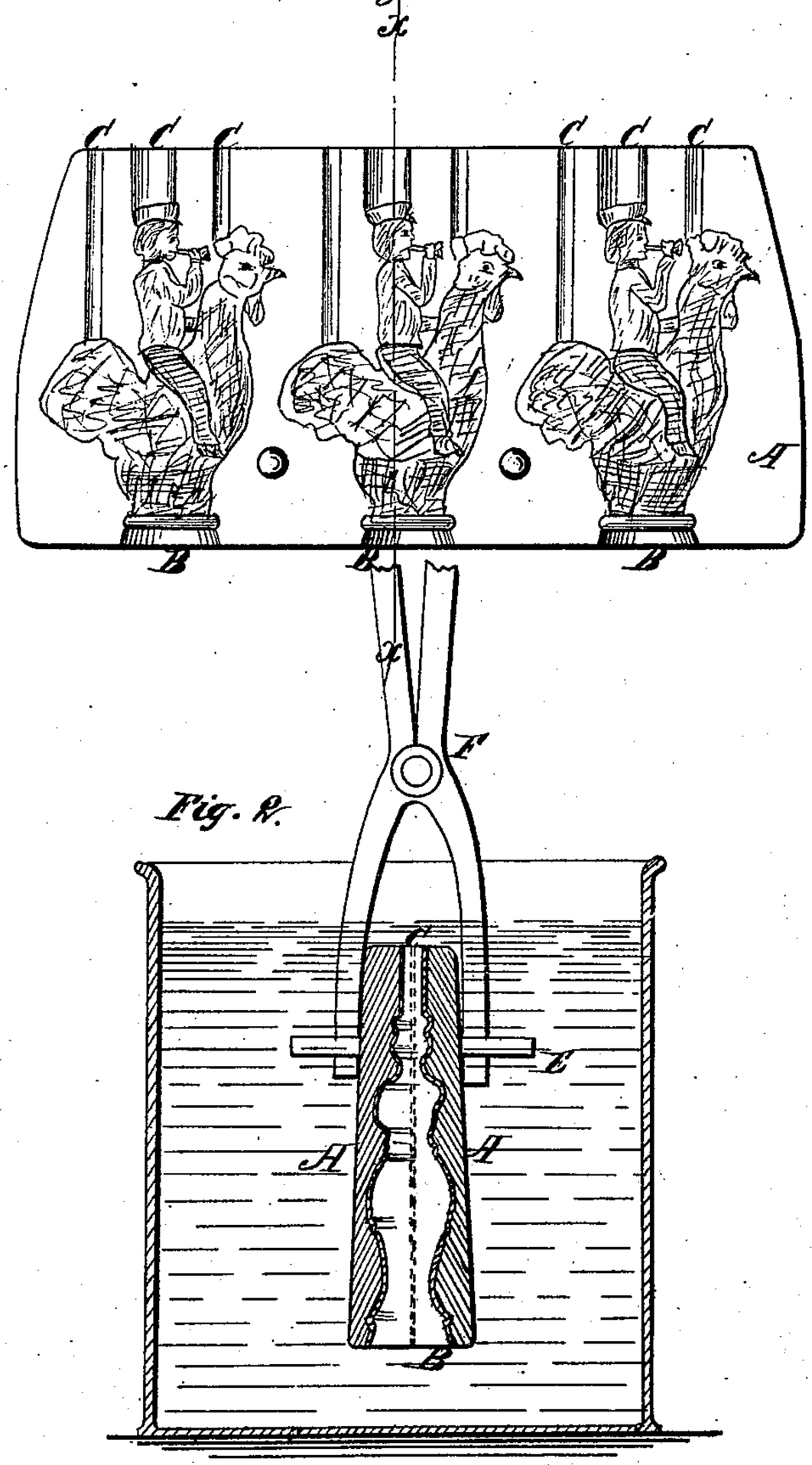

Fig. 2.

Witnesses

Gustave Dietenich

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Letters Patent No. 95,645, *dated October* 12, 1869.

IMPROVEMENT IN CASTING HOLLOW ARTICLES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, J. BRUNNER, of the city, county, and State of New York, have invented a new and useful Improvement in Casting Hollow Articles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to an improved mode of casting hollow articles, such as toys, commonly made of soft metal, and also made hollow for the purposes of lightness and economizing metal.

The invention consists in forming the hollow castings by the employment of chill moulds made in two parts, with large openings from the exterior to the moulds at one side, and smaller air-escaping passages from the opposite sides, which moulds are plunged into the molten metal from which the castings are to be made, with the said large openings downward, and the smaller ones upward, so that the metal will flow in freely to the moulds, and become chilled against the surface of the moulds, and solidified sufficiently to form the exterior shell of the article required. The flask or mould is then raised vertically out of the molten metal, to allow the central part not solidified to flow out, leaving the castings hollow. They are then removed from the moulds in the usual way.

Figure 1 represents a face view of one part of a flask, such as I use, with the castings remaining in the moulds thereof.

Figure 2 represents a transverse section of a flask when immersed in a vessel containing molten metal.

Similar letters of reference indicate corresponding parts.

I make a metallic flask of two parts, A, having the moulds for the articles required made in them in the usual way, that is to say, made half in each part, but instead of laying the said flask upon the side and forming the metal into it in the usual way, I make large openings B, leading to the moulds or dies from one side, preferably leading to that part which forms the base of the article to be cast, and at the opposite side, I make small air-escape passages, *c*, one or more, as may be required by the shape of the mould, for allowing the escape of the air from the highest parts of the mould when suspended, as shown in fig. 2.

These flasks, so constructed, and provided with as many moulds as found most convenient, I use by immersing in the molten metal F contained in any suitable vessel, so as to permit the metal to flow into the moulds or dies from below, while the air escapes at the passages *c* above, holding the said flasks by tongs F, or other preferred means.

The flasks being cold, will, on the dies therein being suddenly filled with the fluid metal, chill the same to a certain extent, according to the time it remains in the melted metal, forming a thin shell over the whole of the faces of the moulds. After holding the said flasks in the metal a sufficient length of time, as above, I draw them out vertically, leaving the metal not chilled or solidified to flow out from the central parts of the castings, whereby they are made hollow and light as required.

The flasks are then opened, and the castings removed and trimmed off as required.

I am aware that hollow castings have been made by the use of chill flasks, the mode of operation being to hold the flasks with the openings B upward, and filling them in that position, turning them over and pouring the metal out after the shells are formed by solidification; but this mode is objectionable, for the reason that only one casting can be well made at the time, for owing to the difficulty of pouring with regularity, and the short time required to chill and solidify the shell, the castings cannot be made uniform; moreover, the labor is much greater than by my improved mode.

Having thus described my invention,

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

Making hollow castings by inserting in molten metal a chill mould, A, having an air-passage or passages, *c*, in its upper side, and passage or passages B in its lower side, and then withdrawing the same when the shell is formed, to allow the central or unchilled portion of the metal to escape, substantially as herein set forth.

J. BRUNNER.

Witnesses:

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