

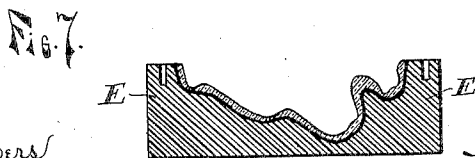
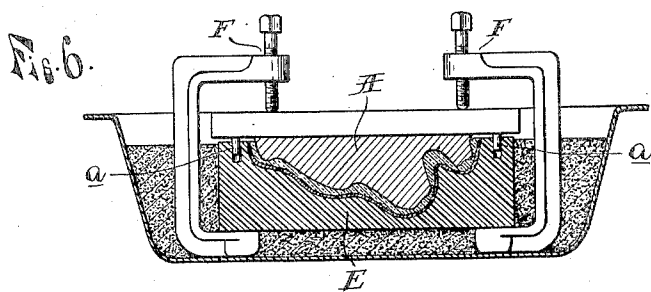
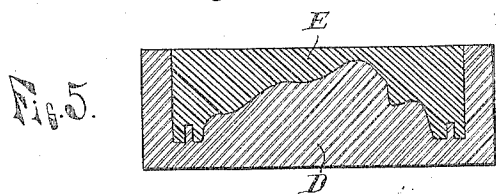
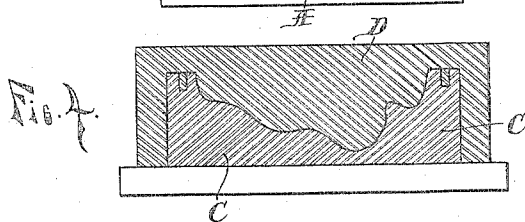
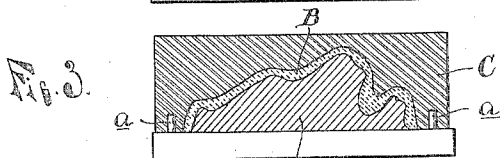
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J. WALTER.

MANUFACTURING DECORATIVE ARTICLES FROM PLASTIC MATERIALS.

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WITNESSES.

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UNITED STATES PATENT OFFICE.

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MANUFACTURING DECORATIVE ARTICLES FROM PLASTIC MATERIALS.

SPECIFICATION forming part of Letters Patent No. 779,979, dated January 10, 1905.

Application filed February 29, 1904. Serial No. 195,904.

To all whom it may concern:

Be it known that I, JOHN WALTER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Manufacturing Decorative Articles from Plastic Materials, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to the art of producing decorative articles of various kinds from plastic material, and has particular reference to the construction of a flexible mold for casting the material in.

In the plastic arts gelatin is commonly used as the material for the mold for casting any article which has undercut parts, as in the production of reliefs, panels, medallions, artistic decorations of various kinds, pictorial advertising - signs, &c. Gelatin, however, quickly deteriorates, and the artistic value of the casts made from such molds is soon lost after few casts have been made. It is also impossible to reproduce with a gelatin mold the finer lines and details of the original from which the cast is made and the absence of which greatly impairs the artistic value of such productions.

It is the object of my invention to produce a flexible mold which overcomes these drawbacks, and I have succeeded in constructing a mold of rubber which is far superior to the gelatin mold, not only by reason of its greater durability, which makes it more adapted for commercial uses, but mainly on account of the absolute fidelity with which it reproduces even the finest lines and details of the original, and therefore makes the cast of the highest artistic value. In thus making a flexible mold from rubber in the manner hereinafter described I have obtained entirely new results in that I have made casts which represent the very texture of the material from which the original was made. Thus in the case of an article carved in wood the grain of the wood, tool-marks, and all will be so faithfully reproduced by the cast that the most perfect imitation of wood can be produced with the

aid of this rubber mold, as will be more fully described in a concurrent application for Letters Patent.

In describing the process of making my rubber mold reference will be made to the accompanying drawings, in which—

Figure 1 is a side elevation of the pattern from which the mold is to be made. Figs. 2, 3, 4, 5, and 6 illustrate the various steps to be taken in the process of constructing the mold from the pattern shown in Fig. 1, as will be explained by special reference to each figure hereinafter. Fig. 7 is a section of the completed mold together with the supporting-matrix.

In the drawings, A represents the article from which the mold is desired to be made. If this is, as in the usual practice, a wood carving, the surface of the article is first treated in any known manner to prevent the materials to be brought into contact with it from sticking thereto. Washing it with gasolene in which a little powdered French chalk is incorporated accomplishes the purpose, the surplus French chalk being dusted off after the gasolene has evaporated. The article is then fastened upon a mold-board, as shown in Fig. 2, and covered over with soft clay applied in an even thin layer B as far as it is possible and yet cover all the undercut portions sufficiently to eliminate them from the new surface thus formed. The layer thus applied may have an average thickness from one-eighth to one-fourth of an inch. I then proceed after the clay is laid on to make a plaster mold of it. This may be done by simply covering the article, without taking it off the mold-board, with plastic material of proper consistency to maintain its form without the use of an outside casing, although a suitable casing may be used. For convenience in handling this mold C, as shown in Fig. 3, is suitably shaped into the form of a block, and when hardened it is separated from the article embedded therein and the clay removed. The next step is to form a duplicate of this plaster mold C of some metal, preferably one that is easy to cast, such as lead or alloys of lead. This metal mold may be made in the

usual way of casting in sand, the plaster mold C being used as the pattern. Another way which I have illustrated in the drawings in Figs. 4 and 5 consists in placing the plaster mold C upon a suitable mold-board face side up and covering it over with plastic material, thus making a counterpart mold D, which, after hardening, is removed from the mold C and then used as the mold for casting the lead in, as shown in Fig. 5, in which E represents the resulting lead mold, which is a duplicate of the plaster mold C. After having thus obtained the lead mold E, I can proceed to make the rubber mold. To this end the mold E must be heated to a suitable degree of heat to render unvulcanized rubber plastic when in contact therewith; but since rubber in this condition would stick to the metal the mold must be protected upon its face by some suitable coating. This may be done in various known ways. A very efficient way is to line it with paper by first applying a coat of paste to the face of the mold and then pressing a double sheet of paper which has been made soft by soaking in water into close contact with every part of the surface of the mold. A lining of two coats of paper is thus formed, the outer one of which adheres to the surface of the mold, while the inner one has little or no adhesion after the water has evaporated. The mold E being thus prepared, a sheet of unvulcanized rubber is then laid over it and pressed into close contact with it by using the article A as a pressure-head and heat is applied to the mold. Care must be taken to heat the mold E uniformly to a degree of heat suitable to just render the rubber plastic. If necessary, a sand-bath may be resorted to for the purpose; but ordinarily with small articles the heat of a flame may be used, since the paper lining greatly helps to diffuse the heat through the whole mass and prevent overheating at any particular spot. Pressure may be applied by means of screws F or otherwise, and it is obvious that with sufficient pressure the softened rubber will flow and fill out the smallest spaces, even the very pores of the wood from which the article A is carved. In thus pressing, the article A forms the upper die and the mold E the lower die, as shown in Fig. 6, and they must properly register with each other. To obtain this registration mechanically, some pins or projections *a* are provided upon the mold-board, as shown in Fig. 2, which results in forming the mold E with registering sockets to receive these projections. After the rubber mold is thus formed and the parts have cooled down the article, with the rubber mold adhering to it, can be taken right out of the mold E, since the rubber adheres only to the loose inner lining of paper. By soaking in cold water the rubber mold can then

be readily stripped off the part A without destroying or marring its minutest details, and after the paper is soaked off and removed the rubber mold is placed back either into the mold E or into the plaster mold C, making thus a composite mold. In making plaster castings the inner or rubber portion of the mold is first soaked in water and then placed back into the outer mold, which it then completely fits, since the slight swelling of the rubber by soaking compensates for the paper which has been removed. After the plastic material has hardened the inner or rubber mold is taken from the outer mold and the finished articles detached by carefully peeling off the rubber mold from it. A rubber mold of this character is an entirely new thing in the plastic art, being not only a mold of flexible material in the sense that gelatin is, but being flexible as a whole, which the gelatin mold is not, since gelatin must be associated with a flask or casing of some kind. It will thus be readily understood that my invention brings within the scope of the plastic art the commercial production of high reliefs and other work which could not be produced heretofore in a one-piece mold. Besides, the work produced will be the most perfect copy of the original without restriction to the number of articles that may be produced from the same mold.

The method herein described of making the rubber mold could be departed from in many of its details without departing from the scope of the invention, which includes the ultimate production of a rubber mold which has the character of a mere mask or skin, so that it is capable of being removed from the cast articles much like a well-fitting glove from the hand without injury or damage to either.

Having thus fully described my invention, what I claim is—

1. The herein-described method of forming a rubber mold for use in casting articles from plastic material which consists in first masking the face of the pattern with a layer of clay, then making from the masked pattern a mold of suitable material, then lining said mold with a material adapted to form a parting, then placing a sheet of unvulcanized rubber between the mold and the face of the pattern, pressing the same together and simultaneously applying heat to render the rubber plastic; then removing the molded rubber and pattern together from the mold, and finally stripping off the molded rubber from the pattern.
2. The herein-described method of forming a rubber mold for use in casting articles from plastic material, which consists in first masking the face of the pattern with a layer of clay in a manner to retain the general outline

without the details and undercut portions,
then constructing a metal mold of the masked
pattern, then lining the same with paper, then
pressing a sheet of unvulcanized rubber be-
5 tween the mold and the face of the pattern
and applying heat to the mold, then cooling
the parts, then removing the molded rubber
and pattern together from the mold, then

stripping the molded rubber from the pat- 10
tern.

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

JOHN WALTER.

Witnesses:

SYLVIA TRILCK,
OTTO F. BARTHEL.