

Nov. 20, 1928.

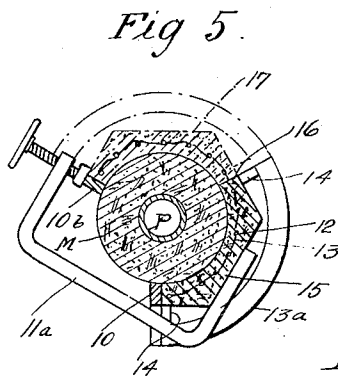
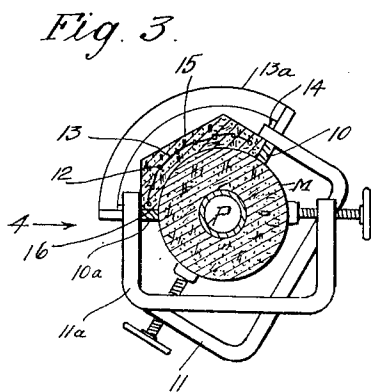
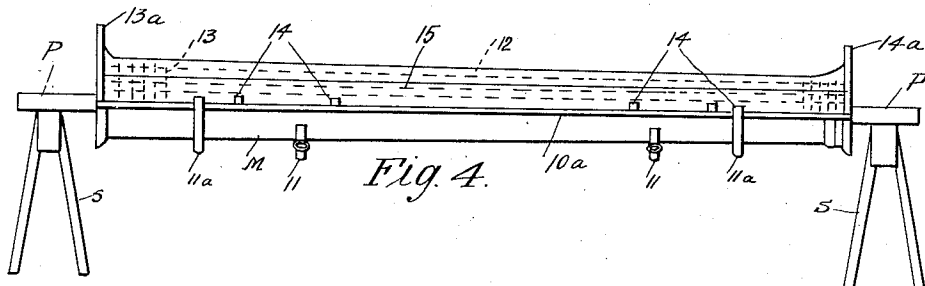
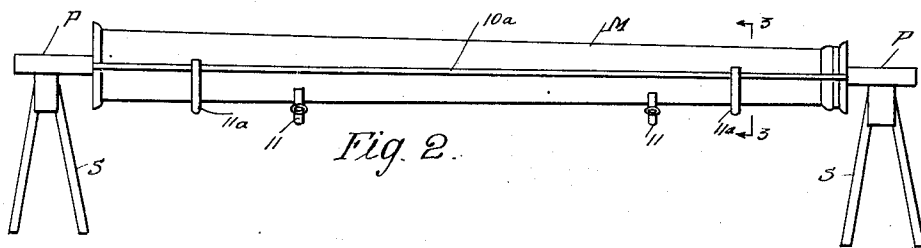
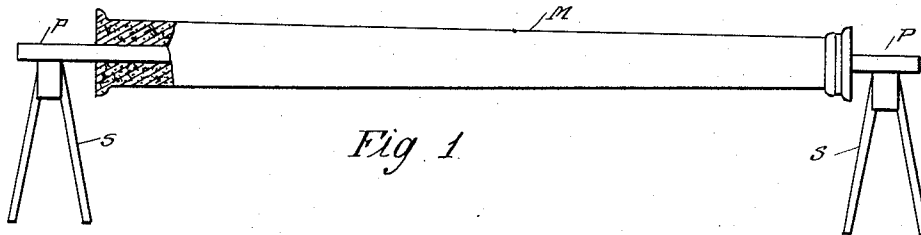
1,692,433

H. BARKSCHAT

METHOD FOR MAKING HOLLOW MOLDS

Filed March 29, 1926

2 Sheets-Sheet 1



Inventor.
Henry Barkschat.

[Signature]
Attorney.

Nov. 20, 1928.

H. BARKSCHAT

1,692,433

METHOD FOR MAKING HOLLOW MOLDS

Filed March 29, 1926

2 Sheets-Sheet 2

Fig. 6.

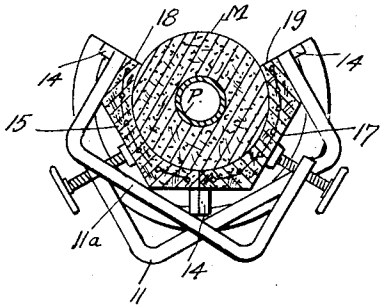


Fig. 7.

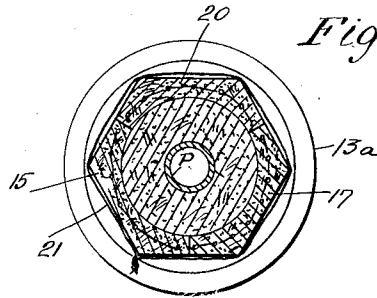
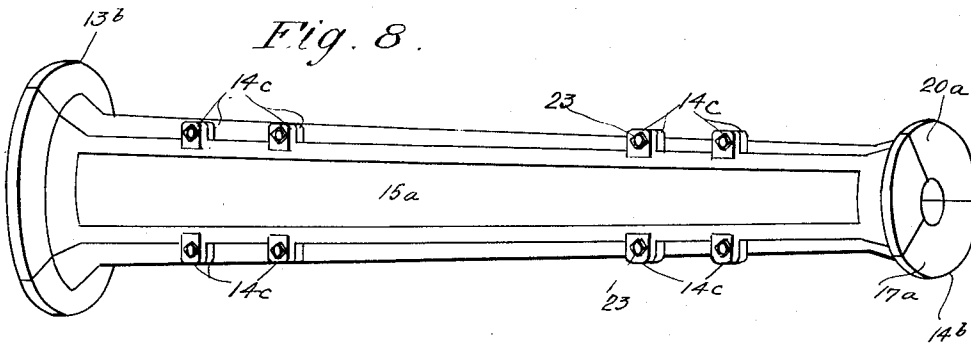


Fig. 8.



Inventor.
Henry Barkschat.

Attorney

UNITED STATES PATENT OFFICE.

HENRY BARKSCHAT, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO MARBELITE CORPORATION OF AMERICA, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF DELAWARE.

METHOD FOR MAKING HOLLOW MOLDS.

Application filed March 29, 1926. Serial No. 98 177.

This invention relates generally to the art of making hollow molds, and is particularly well adapted to the making of molds used in connection with centrifuges for casting hollow bodies of plastic material, though not limited to such application.

Without intending to limit the invention, considered in its broader aspects, I will describe the apparatus for and method of making molds employed in casting concrete posts such as are used for supporting street lamps, trolley poles, and the like. From this description it will be evident to those skilled in the art how the invention may be applied with equal advantage in other situations. The example chosen for illustration is particularly apt since such posts are usually of considerable bulk and are superficially ornamented. In order to bring out the finer details of ornamentation, it is necessary that the interior of the finished mold be very carefully prepared, and the method and apparatus I employ renders such preparation comparatively easy.

The finished mold is, of course, in the form of a shell, the inner face thereof being shaped to determine the superficial appearance of the article cast therein, while the exterior face of the shell is shaped to conform with requirements determined by the nature of the centrifuge. It is also necessary that the shell be made up of separable sections so the mold may be parted to allow withdrawal of the casting therefrom. It follows that means must be provided about the shell sections to secure them together during the casting operation, and such means preferably take the form of bolts which extend through lugs forming an integral part of the mold sections and arranged at opposite sides of the parting line. These lugs, therefore, must be formed and shaped on the pattern from which the mold is cast.

With a mold of any size, it will be seen that it would involve a prohibitive expense to carve out and shape wooden shells to serve as patterns from which the finished mold is cast, for such wooden shells would have to be shaped internally and externally with infinite care and a prohibitive expenditure of time, and even then there would be great

likelihood that the castings made from the pattern sections would not match accurately when the finished mold was assembled.

Therefore, it is the principal object of this invention to provide a method and apparatus whereby the mold sections may be cast with comparative ease and little cost, and yet be accurate and a faithful reproduction of a given model.

A full understanding of the invention may be had from the following detailed description, reference being made to the accompanying drawings in which:

Fig. 1 illustrates a model which is to be reproduced externally by use of a mold made in accordance with the invention;

Fig. 2 is a view similar to Fig. 1 but showing the application of section-defining strips to the model;

Fig. 3 is an enlarged section on line 3—3 of Fig. 2, but showing one section of the pattern formed over the model;

Fig. 4 is an elevation of Fig. 3 as viewed from the position of arrow 4;

Figs. 5, 6 and 7 illustrate successive steps in forming the pattern sections; and

Fig. 8 illustrates an assembled mold made in accordance with the invention.

I have chosen here to illustrate a mold which is adapted to be used in producing a tapering column having annular relief or decoration at each end, but it will be understood this is merely done for the purpose of describing clearly the method and apparatus without complicating the drawings. Ordinarily, the post to be cast will have considerably more surface ornamentation than that shown in the drawings. For instance, the shaft portion may be longitudinally fluted, and the base and cap portion may have designs in high or intaglio relief. It is also to be remembered that this method is not necessarily confined to the making of elongated, cylindrical hollow molds, though it is particularly well adapted to such use.

The first requisite is the provision of a model which is to be reproduced by use of the mold.

Considering the invention in its broader aspects, it is immaterial as to how and of what this model is made. However, when-

ever the model is to have any appreciable amount of surface decoration, it is impractical to use wood since the carving operations would render such use prohibitive from an economic standpoint. Therefore, I prefer to make the model in the manner described below, and such a model is preferable to wood, even though the design be uncomplicated, due to its relative cheapness of manufacture. A pipe P is laid across supports S, and a plaster of Paris, preferably reinforced with fibrous material such as upholstering hair, is applied to the pipe by one workman while another workman rolls the pipe along the supports to enable the first workman to give the model its desired cylindrical configuration, the plaster being built up at the ends of the model, or elsewhere, to conform with the requirements of the finished design. The plaster is allowed to set slightly and then if the design calls for fluting or other superficial ornamentation, the necessary carving and modeling are done. Pipe P serves not only as a means whereby the plastic mass may be rotated during the formative stages of the model, but also holds the plaster from warping, and, of course, reduces the amount of plaster required to give the desired outside diameter to the model. This reinforcement and stiffening of the model M is necessary due to the pronounced tendency of the plaster to warp when it dries out.

As soon as the model is in its finished state of configuration, it is dried out and preferably shellacked or otherwise surfaced with a material to protect it against the absorption of moisture.

The face of the model is then thoroughly greased in order to provide a film which will separate the model from the cast subsequently taken therefrom, the film rendering it possible to strip the cast from the model easily and without damage to either.

In the drawings I have illustrated the pattern or casting which is taken from the model as being made of three parts or sections, each part or section being longitudinally co-extensive with the model. However, this is not intended as a limitation on the invention, for depending upon the nature of the model, the pattern which is cast therefrom may be of any desired number of parts or sections.

Assuming that the pattern which is to be made from the model is of three parts, a pair of angularly spaced, section-defining strips 10 and 10^a are extended longitudinally along the model, and preferably substantially parallel to the axis thereof; the strips following the model surface exactly, and preferably being of a height substantially equal to the predetermined thickness of the pattern to be cast. Any suitable means, such as clamps 11 and 11^a, may be employed for holding the defining strips firmly in position of con-

tact with the peripheral face of the model. The angular space between strips 10 and 10^a is then filled with plaster of Paris which is preferably reinforced by a fibrous material such as upholstering hair and also by longitudinally extending rods 12 and traverse wire 13, the latter being laid under or over the rods in a manner to form an armature or reinforcing structure which binds the plaster together and holds it against warping or otherwise moving out of true after it has set. The plaster then occupying the space between the defining strips becomes one section of the shell pattern from which the finished mold is cast, and the exterior face thereof is formed, while the plaster is still unset, to conform with the requirements of the finished mold or shell section. For instance, there may be external peripheral flanges 13^a and 14^a formed, which flanges reproduce like flanges on the mold cast from this plaster pattern. There may also be formed attachment lugs 14 on the outer face of the plaster pattern, each of these lugs having one face flush with the opposed face of the adjacent defining strip, so when castings taken from these patterns are placed in complementary relation, lugs 14 lie at the parting lines of the sections and are in opposed relation so as to take attachment bolts.

As soon as pattern section 15 has been fully formed, one of the defining strips, (for instance, strip 10^a,) is removed and that edge 16 of the pattern section which is exposed by such removal is greased. Clamps 11 are then applied to the model and pattern section to hold said section in place and the assembly is rotated into the position of Fig. 5. Clamps 11 are also utilized to hold section defining strip 10^b to the model, strip 10^b being angularly spaced from edge 16. Pattern section 17 is then formed between edge 16 and a strip 10^b in the manner described in connection with section 15 (see dotted lines Fig. 5). Section strips 10 and 10^b are then removed and the exposed, facing mold edges 18 and 19 of sections 15 and 17, respectively, are greased. Clamps 11 and 11^a are then applied to the two sections as shown in Fig. 6 to hold them against dislodgment from the model, the latter being rotated to bring edges 18 and 19 facing upwardly as shown in this figure.

The third and final pattern section 20 is then formed on the model between edges 18 and 19 in the manner described in connection with the formation of the other sections. It will be noted that as each section, after the first, is formed with at least one of its edges in contact with the edge of the adjacent section, except for the separative film of grease, it is assured that the finished pattern, as shown in Fig. 7, will have its sections perfectly matched along their meeting edges; and consequently, this same condition of

matching will exist in the mold sections cast from these pattern sections.

The clamps may then be removed, but preferably they are replaced by wire bands 21 in order that the sections may be held from displacement with respect to each other or to the mold until they have dried out. After the plaster has set, the bands are removed and the pattern sections stripped from the model, the presence of the separative film between the model and sections and between meeting edges of adjacent edges insuring that this stripping may be facilitated without danger of mutilating the sections. The pattern sections are then shellacked, or otherwise suitably surfaced.

The plaster sections are then used as patterns for making the finished mold castings, the latter being of any suitable material such as cast iron or cast aluminum. Mold sections 15^a, 17^a and 20^a, corresponding exactly to pattern sections 15, 17 and 20, respectively, are then assembled to form the complete hollow mold shown in Fig. 8, flanges 13^b and 14^b, corresponding to flanges 13^a and 14^a, respectively, of the pattern sections, and being utilized for attachment of other mold elements (not shown). The mold sections may be detachably secured in assembled relation in any suitable manner, though I prefer to secure them by means of bolts 23 extending through complementary lugs 14^c on adjacent sections.

It will be seen that the interior of the mold shown in Fig. 8 will be of such a configuration that a body cast therein, either by the pouring or centrifugal method, will have the exact external configuration of model M. Of course, a number of mold sections may be cast from impressions made by a single set of pattern sections, for the reinforcement of these plaster pattern sections, (the reinforcement consisting of rod 12, wires 14 and the fibrous material) is of such a nature as to render the patterns able to withstand the wear and tear incident to molding operations.

It will be understood the drawings and description are to be considered merely as illustrative of and not restrictive on the broader claims appended hereto, for various changes in design, structure and arrangement may be made without departing from the spirit and scope of said claims.

I claim:

1. The method of making hollow, cast molds from a model, that includes building up a multi-part pattern of plastic material on the outer face of a model, allowing the plastic

pattern to set at least partially on the model, stripping the pattern parts from the model, and making individual casts from the several pattern parts.

2. The method of making hollow, cast molds from a model, that includes building up a multi-part pattern of plastic material on the outer face of a model, embedding reinforcing members in the plastic material as it is being built up, allowing the plastic pattern to set at least partially on the model, stripping the pattern parts from the model, and making individual casts from the several pattern parts.

3. The method of making hollow, cast molds from a model that includes building up a multi-part pattern of plastic material on the outer face of a model, allowing the plastic pattern to set at least partially on the model, molding the exterior faces of each pattern part to present predetermined configuration with relation to adjacent pattern parts, stripping the pattern parts from the model, and making individual casts from the several pattern parts.

4. The method of making hollow, cast molds from a substantially cylindrical model, that includes detachably securing a pair of angularly spaced defining strips to the peripheral face of the model, said strips extending longitudinally in substantial parallelism with the axis of the model, applying plastic material to the peripheral face of the model between said strips at one side only of a given axial plane, allowing the plastic material to set at least partially, removing at least one of the strips, applying a separative film to the edge of the material where exposed by such removal, and applying a body of plastic substance to the peripheral face of the model, said body being extended angularly about the model to meet the film on said exposed edge.

5. The method of making hollow and substantially cylindrical cast molds, that includes the making of a plaster model about a central, relatively rigid core, building up a multi-part pattern of plastic material on the outer face of the model, allowing the plastic pattern to set at least partially on the model, stripping the pattern parts from the model, and making individual casts from the several pattern parts.

In witness that I claim the foregoing I have hereunto subscribed my name this 8th day of March 1926.

HENRY BARKSCHAT.