Dec. 8, 1931. C. B. NORRIS 1,835,805

METHOD OF MAKING DIES

Filed April 21, 1930

Fig. 1.

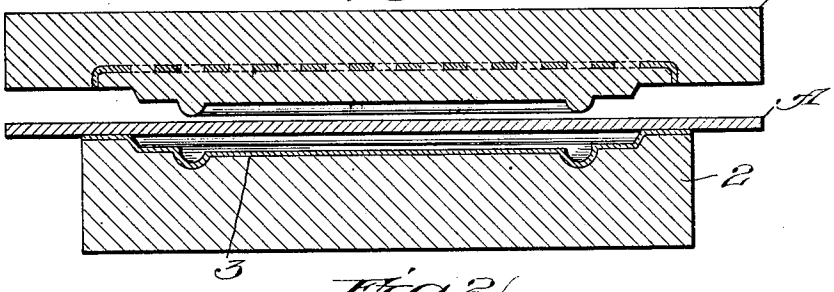


Fig. 2.

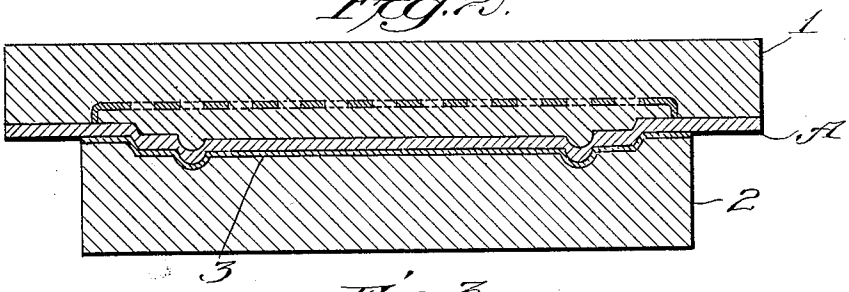


Fig. 3.

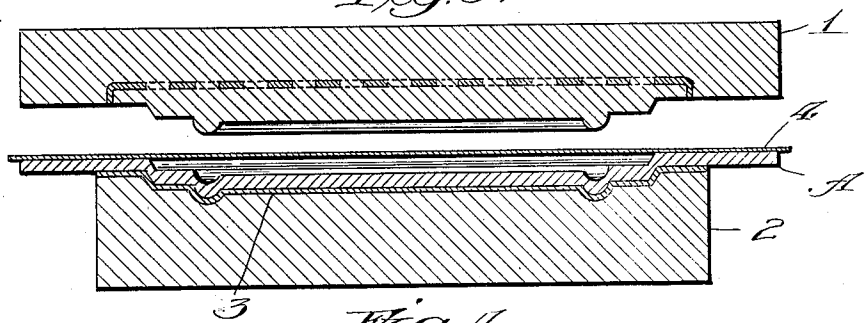


Fig. 4.

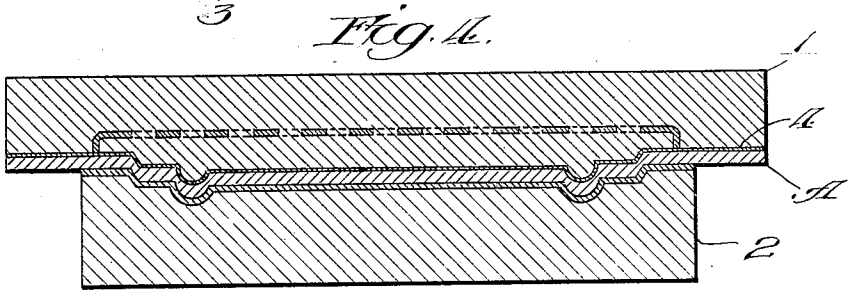
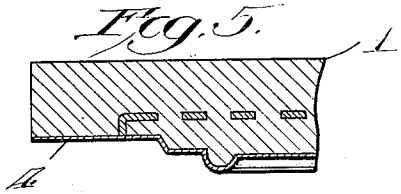


Fig. 5.



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UNITED STATES PATENT OFFICE

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METHOD OF MAKING DIES

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Simple plywood panels may be moulded in dies to give them the appearance of deeply carved wood. One of the dies is usually built up upon a shell electro-deposited upon a wax impression of a carving, or upon a shell electro-deposited upon the first shell. In either case the die has a smooth working face over which the wood will readily slide during the moulding operation. The other die is usually made by casting molten metal upon the working face of the first die while such face is protected against union with the casting. Although the working face of the second die will be complementary to that of the other die, it may be rough so that the wood will not readily slide over the same; the result being that in the use of the dies the wood will be torn or otherwise injured in attempting to conform to the dies.

The object of the present invention is to overcome the foregoing difficulty, in a simple manner.

In carrying out my invention, I first mould a panel in the dies, in the usual way, and then place between the panel and the die whose working face is to be improved a thin sheet of ductile metal, preferably aluminum. Upon closing the dies under heavy pressure, the ductile sheet is forced into intimate contact with the adjacent die face and caused accurately to conform thereto. Thereafter the working face of one of the dies consists of the face of the ductile sheet overlying the die. In the case of some designs the added sheet will be interlocked with the die block so that it will remain attached thereto. If the design be such that the metal sheet will not be held in place by reason of its shape, a thin layer of adhesive material may be interposed between the sheet metal and the die of which it is to form a part.

It will therefore be seen that, viewed in one of its aspects, my invention may be said to have for its object an improved die and a novel method of making the same.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figure 1 is a central section of a pair of dies about to close upon a panel; Fig. 2 is a section in a plane at right angles to the plane of Fig. 1, showing the dies closed on the panel; Fig. 3 is a view similar to Fig. 2, showing the dies opened again and a thin sheet of ductile metal laid on the panel; Fig. 4 is a view similar to Fig. 3, showing the dies closed on the previously moulded panel and the metal sheet; and Fig. 5 is a sectional view of a fragment of the upper die in the other figures.

Referring to the drawings, 1 and 2 represent a pair of die members adapted to mould a panel A. In the arrangement shown, the lower die 2 is built upon a copper shell 3 which forms the working face, whereas the working face of the upper die is the one whose condition is to be improved. These dies may be of any usual or desired type and the die faces of any desired configuration.

The first step in my process is to mould a panel by means of the dies in their original state, in the usual or any suitable manner, as indicated in Fig. 2. The dies are then opened and, immediately thereafter, or at any suitable time, a thin sheet 4 of ductile metal is laid upon the moulded panel as indicated in Fig. 3. Of course it is not necessary to leave the panel in the dies until the metal sheet is inserted, as it will be sufficient if the panel is between the dies at the time of inserting the sheet. The dies are then closed under heavy pressure, causing the ductile metal sheet to be moulded or drawn between the upper die and the moulded panel, acting as the working face of the lower die, as indicated in Fig. 4. The dies are then opened and the wood panel removed, leaving the dies in a condition to operate on other plain panels in order to mould them into the desired shape.

I have found that when the ductile sheet is made of aluminum, a thickness of about one sixty-fourth of an inch will give satisfactory results. I have further found that it is desirable to employ a pressure of between

four thousand pounds and five thousand pounds to the square inch in the process of facing the die member with the sheet metal.

In some cases the moulded or drawn metal sheet will remain on the die but, in other instance, it will come loose, depending upon the nature of the design. When the design is such that the sheet metal will not remain on the die as substantially a permanent part thereof, it may be fastened in place by means of a thin layer of adhesive material interposed between the same and the original working face of the die. In any event, at the end of the treatment the die 1 will have the appearance indicated in Fig. 5, consisting of the original die member faced with a thin layer of smooth sheet metal that will permit the surface of the wood to slip and slide during subsequent moulding operations in the normal use of the dies.

While I have illustrated and described with particularity only a single preferred form of my invention, I do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which come within the definitions of my invention constituting the appended claims.

I claim:

1. The method of producing a working face on one member of a pair of dies for moulding wood panels, which comprises placing between a panel of wood that has been moulded in the dies, and one of the die members, a thin sheet of ductile metal, and then closing the dies under heavy pressure to force the sheet metal to conform to the contour of the adjacent die face.

2. The method of producing a working face on one member of a pair of dies for moulding wood panels, which comprises the moulding of a panel of wood in said dies, placing a thin sheet of aluminum between the panel and one die member, and then closing the dies under a pressure of several thousand pounds per square inch.

3. The method of producing a working face on one member of a pair of dies for moulding wood panels, which comprises the moulding of a panel of wood in the dies, placing a thin sheet of ductile metal between the panel and one die member, closing the dies under heavy pressure, and afterward cementing the formed metal sheet to the die face of the member against which it was pressed.

In testimony whereof, I sign this specification.

CHARLES B. NORRIS.