March 15, 1927. 1,621,281

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MOLD AND PROCESS OF MAKING THE SAME

Original Filed Nov. 27, 1925

Fig. 1.

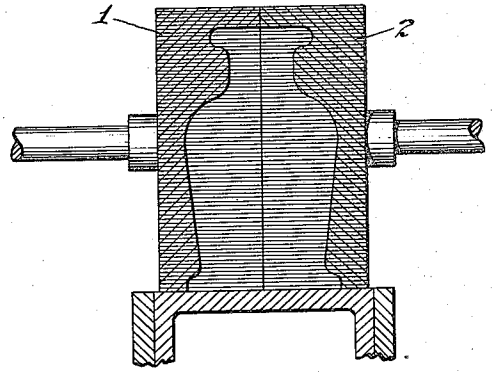


Fig. 2.

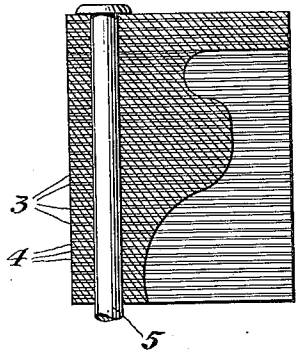


Fig. 3.

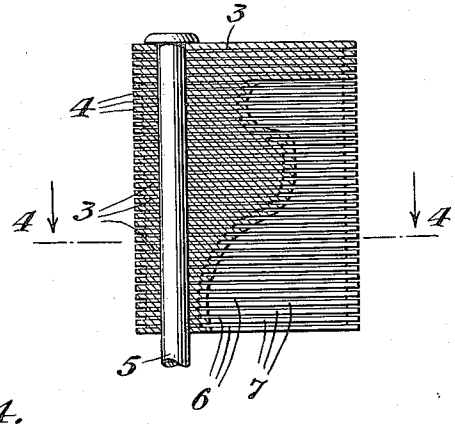
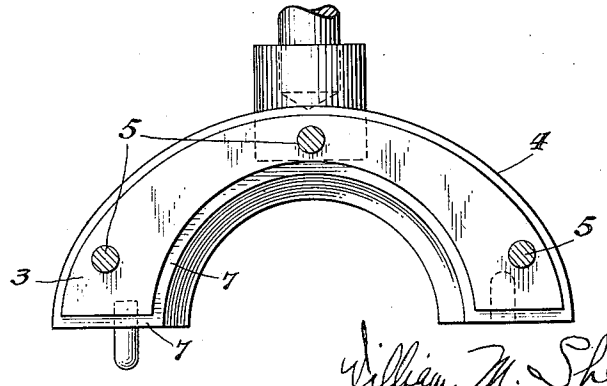


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MOLD AND PROCESS OF MAKING THE SAME.

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The present invention is an improvement on the perforate molds heretofore used in pulp molding machines and the like. Molds have usually been made with perforate walls of wire mesh or other fabric. Such mold walls are fragile, leave an imprint of their mesh on the molded surface and cannot well be used to produce sharply angled outlines.

In the copending application of Felix Louisot, Serial No. 35,848, filed on June 9, 1925, there is disclosed a mold formed of thin metal plates, or laminæ, alternate laminæ being cut back to form drainage channels. In making this mold it is necessary to clamp the plates together and cut all the plates to the level of the desired outline. The laminæ are then separated, the alternate laminæ are cut back the desired distance, and the laminæ again reassembled. This is a tedious and expensive process.

It is the object of the present invention to produce a mold of the type disclosed in said copending application, but in a more expeditious and convenient manner. This aim is accomplished by forming the alternate laminæ of paper or like material and cutting them back the desired distance by subjecting the assembled laminæ to the action of an acid, or other decomposing medium.

In the drawing:—

Fig. 1 is a sectional view of the assembled mold.

Fig. 2 is an enlarged sectional view of part of the laminæ as originally assembled.

Fig. 3 is a view similar to Fig. 2, showing the laminæ after being treated with an acid.

Fig. 4 is a cross-section on line 4—4 of Fig. 3.

Referring more particularly to the drawing, the mold is composed of two separable parts 1 and 2. The walls of each part are built up of alternating laminations of paper and resistant metal, shown at 3 and 4 respectively. The thickness of the laminæ is exaggerated for purposes of illustration, but obviously it may be varied as desired.

The laminæ are assembled under pressure and are then permanently secured together by rivets or bolts 5. The laminated block thus formed is subjected to a cutting operation by means of which a cavity of the desired configuration is formed therein, as shown in Fig. 2.

The block is next immersed in an acid bath for a length of time. The acid has no effect on the metal but attacks and disintegrates the exposed edges of the paper laminæ. The acid cannot seep between the laminæ due to the pressure used in their assembly. After a certain period in the acid bath the block is removed and the disintegrated paper washed away from its lodgment between the metal laminæ.

The acid treatment is repeated as often as is necessary to eat the paper laminæ back the proper distance to form adequate drainage channels. The block is then in the condition shown in Fig. 3, the drainage channels being indicated at 6 with the cavity-defining edges of the metal plates extending therebetween at 7.

The drainage channels are so minute that the pulp does not enter these channels but remains on the substantially smooth surface formed by the edges of the metal laminæ, allowing the water to escape through the drainage channels.

By this process a mold is formed which can produce an article having any desired angular conformation and carrying no noticeable imprint of the mold. At the same time the process is simple and inexpensive.

While I have disclosed a mold formed of alternate laminæ of metal and paper, I could use any suitable materials, the essence of the process lying in forming every other lamina of such a material that a portion at the edge can be removed without disassembling the laminæ.

The mold can also be produced by using spacing laminæ preformed to such a shape that they will, when assembled between the cavity-defining laminæ, terminate outside the boundaries of the desired cavity. The spaces between the free ends of the cavity-defining laminæ are then filled with melted paraffin, which upon hardening supports the cavity-defining laminæ during the cutting operation. The block is then subjected to the cutting operation, after which the paraffin is removed from the block by melting. This method also produces a laminated mold having drainage channels without requiring the separation of the plates once they have been assembled.

What I claim is:

1. A mold composed of laminæ of paper and laminæ of metal.

2. A mold composed of alternating laminæ of paper and metal.

3. A mold of laminate structure having alternate laminations made of paper.

4. A mold of laminate structure having some of its laminæ composed of acid resistant material and others of its laminæ composed of material decomposable by acid.

5. A mold of laminate structure having some of its laminæ composed of resistant material and others of its laminæ composed of decomposable material.

6. A mold of laminate structure having some of its laminæ composed of hard material and others of its laminæ composed of soft material.

7. A mold of laminate structure having some of its laminæ composed of relatively insoluble material and others of its laminæ composed of relatively soluble material.

8. A mold of laminate structure having a mold cavity defined by the edges of alternate laminæ, the intervening laminæ being made of paper and having their edges inset to provide drainage channels.

9. A mold of laminate structure having a mold cavity defined by the edges of alternate laminæ, the intervening laminæ being formed of a soluble material and having their edges inset to provide drainage channels.

10. The method of forming a laminate mold which comprises assembling alternating laminæ of paper and metal, securing said laminæ together to form a block, cutting a cavity in said block, subjecting said block to acid treatment, and washing out the débris resulting from said acid treatment.

11. The method of forming a laminated mold which comprises assembling laminæ of resistant and non-resistant material, permanently securing said laminæ together to form a block, cutting a cavity in said block and removing the edge portions of said non-resistant laminæ.

12. The method of forming a laminated mold which comprises assembling laminæ, some of which are decomposable, securing said laminæ together to form a block, cutting a cavity in said block, and subjecting said block to a decomposing bath.

13. The method of forming a laminated mold which comprises assembling laminæ, some of which are relatively less resistant than others, permanently securing said laminæ together to form a block, cutting a cavity in said block, and removing the edge portions of said less resistant laminæ.

14. The method of forming a laminated mold which comprises assembling alternate spacing laminæ and cavity-defining laminæ to form a block, the spacing laminæ being preformed to terminate outside the boundaries of the desired cavity in the block, providing a means for supporting the cavity-defining laminæ during cutting, cutting a cavity in said block, and removing the supporting means.

In testimony whereof I affix my signature.

WILLIAM M. SHEFFIELD.