

Dec. 5, 1933.

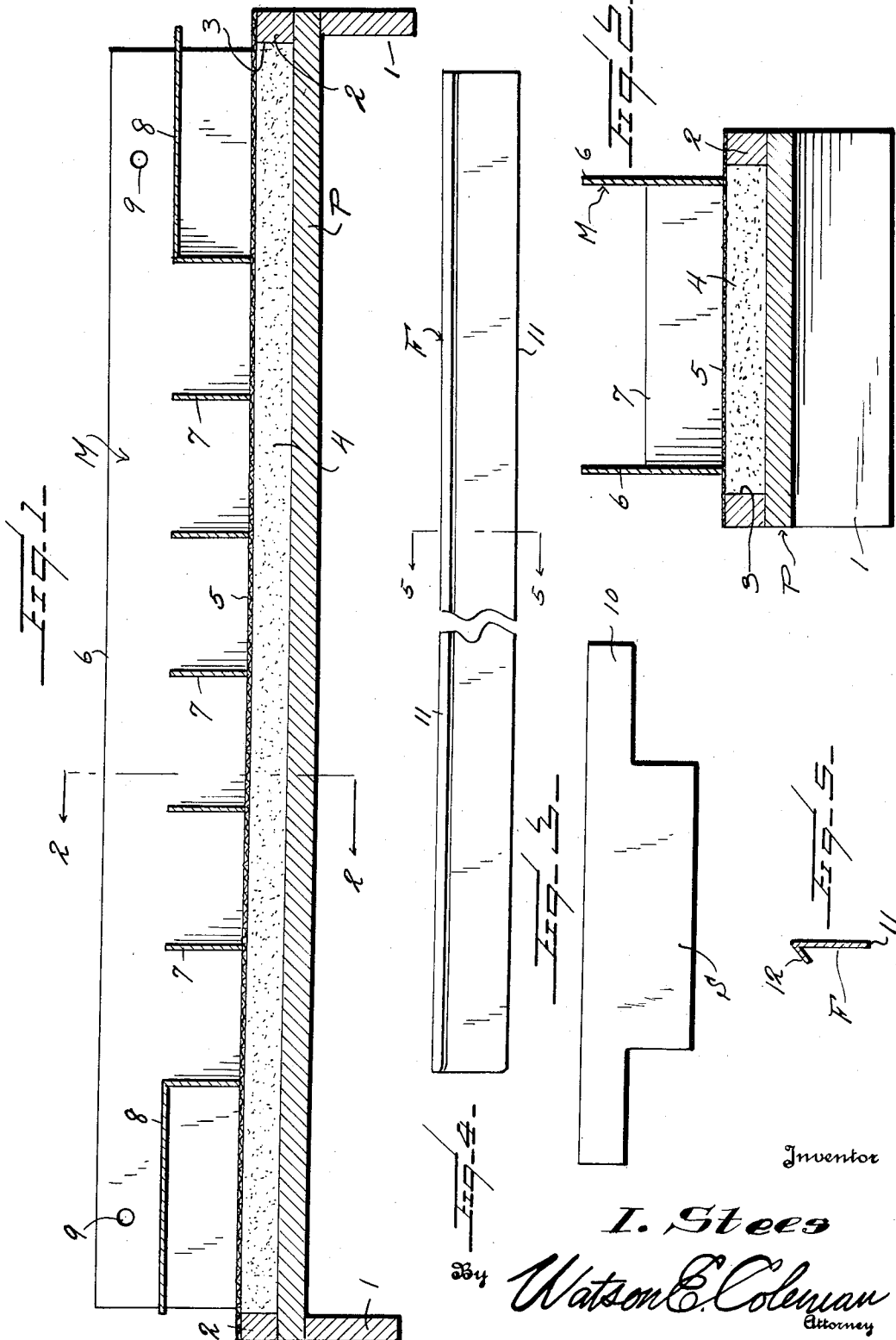
I. STEES

1,937,993

MOLDING APPARATUS

Filed Aug. 28, 1930

3 Sheets-Sheet 1



Inventor

I. Stees

Watson E. Coleman
Attorney

Dec. 5, 1933.

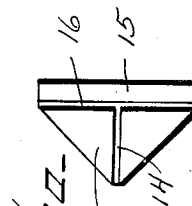
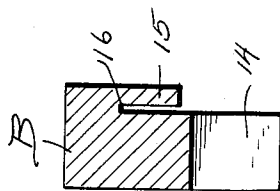
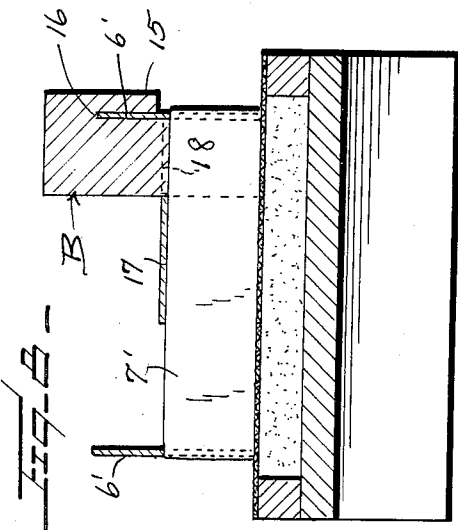
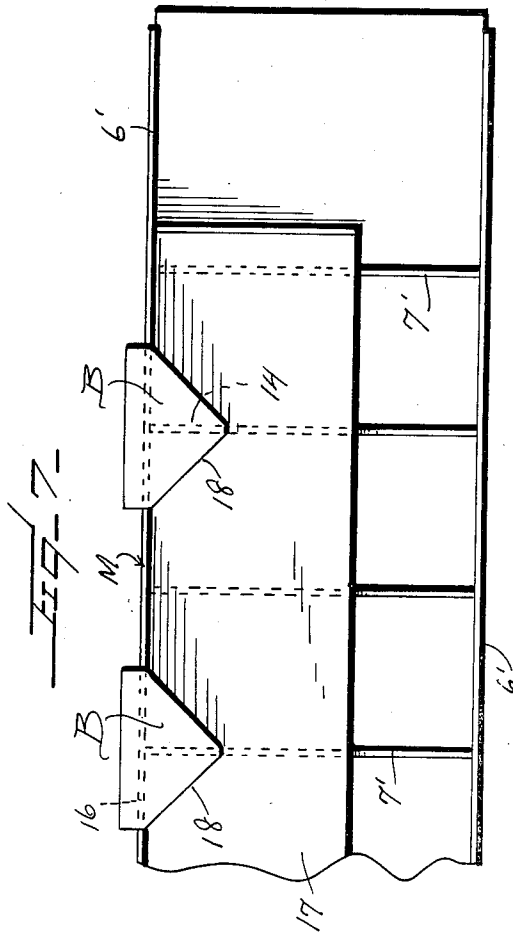
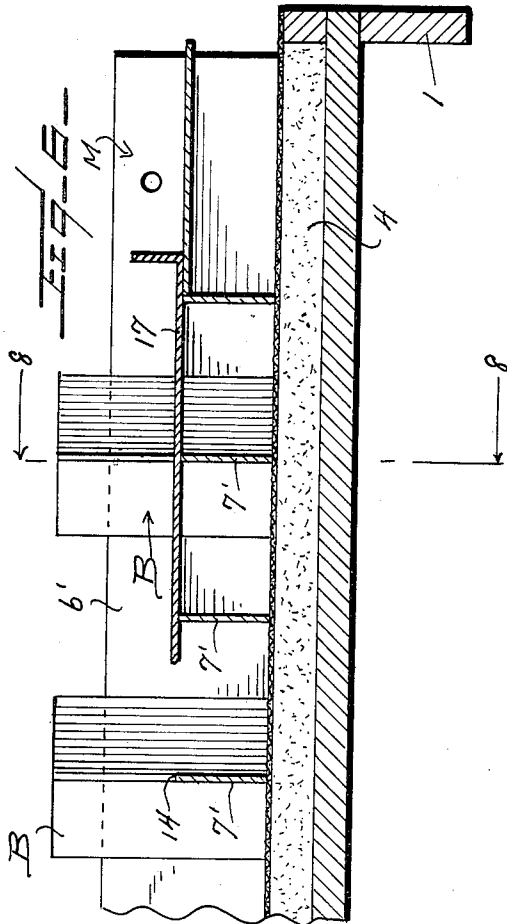
I. STEES

1,937,993

MOLDING APPARATUS

Filed Aug. 28, 1930

3 Sheets-Sheet 2



Inventor

I. Stees

By

Watson E. Coleman
Attorney

Attorney,

Dec. 5, 1933.

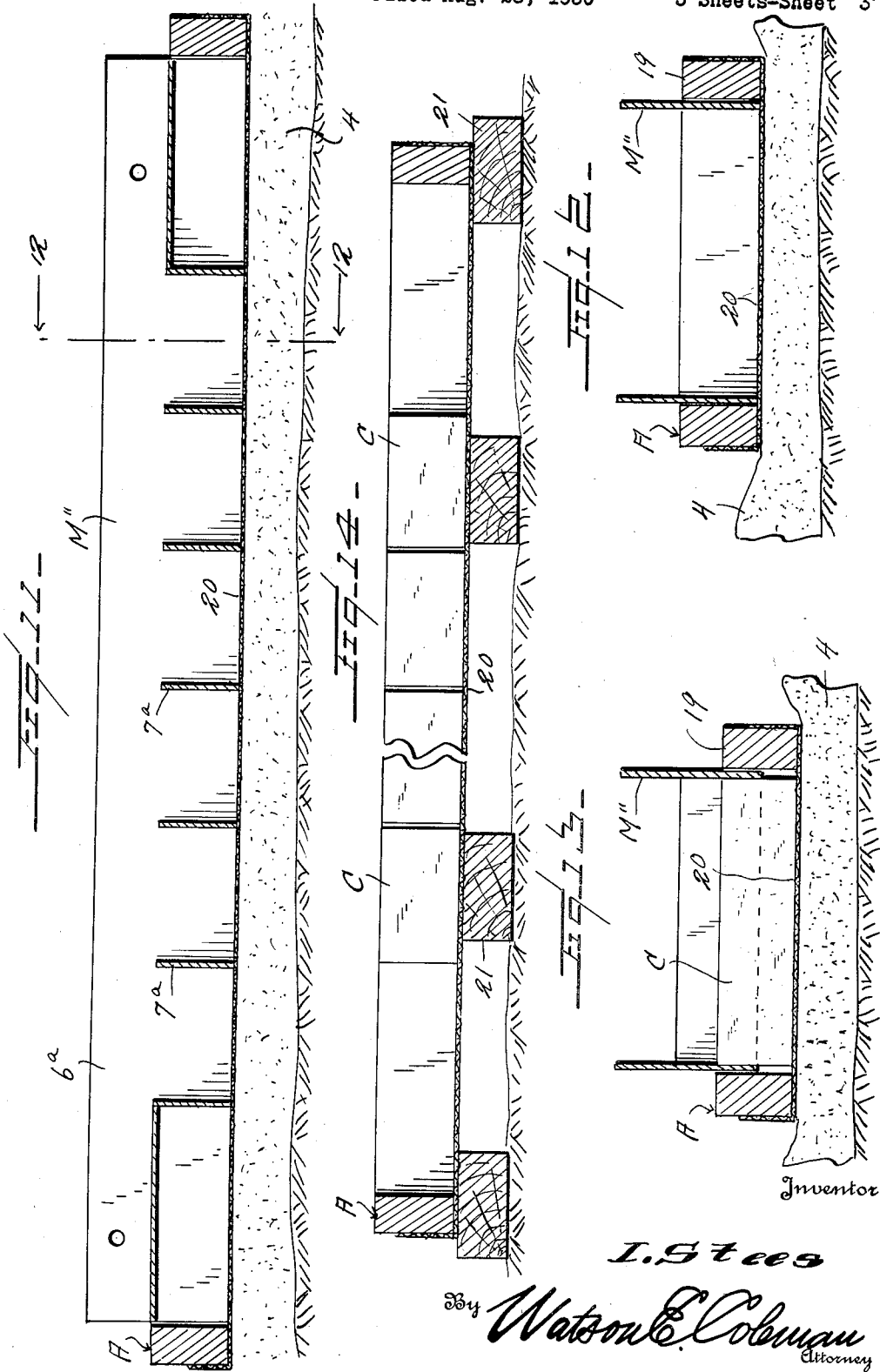
I. STEES

1,937,993

MOLDING APPARATUS

Filed Aug. 28, 1930

3 Sheets-Sheet 3



Inventor

I. Stees

By *Watson E. Coleman*
Attorney

UNITED STATES PATENT OFFICE

1,937,993

MOLDING APPARATUS

Isaac Stees, Harrisburg, Pa.

Application August 28, 1930. Serial No. 478,520

6 Claims. (Cl. 25—121)

This invention relates to a molding apparatus and it is primarily intended for the production of cementitious blocks or the like and which is of a character to be successfully operated by unskilled labor.

The invention has for an object to provide an apparatus of this kind employing a medium assuring rapid absorption of moisture whereby the blocks molded by the apparatus may be readily removed within a very short period of time after the pouring operation.

Another object of the invention is to provide an apparatus of this kind wherein a member is disposed over the absorbing material to prevent such material adhering to or otherwise disfiguring the adjacent faces of the blocks molded by the apparatus and which member may also be so associated with the apparatus to provide means for facilitating the drying of the blocks.

An additional object of the invention is to provide an apparatus of this kind having associated therewith members permitting the blocks to be molded in different styles or configurations as may be desired.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved molding apparatus whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:—

Figure 1 is a longitudinal vertical sectional view taken through a molding apparatus constructed in accordance with an embodiment of my invention;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is an elevational view of a striker-plate as herein employed;

Figure 4 is an elevational view of a block finishing member as herein employed;

Figure 5 is a sectional view taken substantially on the line 5—5 of Figure 4;

Figure 6 is a fragmentary vertical sectional view taken longitudinally through an end portion of the apparatus showing a further embodiment of my invention;

Figure 7 is a fragmentary view in top plan of the structure as illustrated in Figure 6;

Figure 8 is a sectional view taken substantially on the line 8—8 of Figure 6;

Figure 9 is a vertical sectional view taken through a forming block as illustrated in Figures 6, 7 and 8;

Figure 10 is a view in bottom plan of a forming block as illustrated in Figure 9;

Figure 11 is a longitudinal vertical sectional view taken through an apparatus constructed in accordance with another embodiment of my invention;

Figure 12 is a sectional view taken substantially on the line 12—12 of Figure 11;

Figure 13 is a view similar to Figure 12 but showing a block forming mold partially removed;

Figure 14 is a longitudinal vertical sectional view taken through the palette as comprised in this embodiment of my invention and set in a position to facilitate the drying of the blocks.

In the embodiment of my invention as illustrated in Figures 1 to 5, P denotes a palette of desired length and width and which has depending from its opposite end portions transversely disposed members 1 whereby the palette is spaced a desired distance from a supporting surface and which spacing is of especial advantage when the palettes are stacked one upon the other.

The marginal portions of the palette P are defined by upstanding flanges or walls 2 providing a well or pocket 3 which is adapted to be filled with an absorbing medium or material 4. This medium or material 4 comprises a dry granular mixture in substantially the proportions stated of volatile matter 5%; fixed carbon 73%; and ash 22%. The physical condition of this material as determined by screen tests is substantially as follows:

	Percent
Retained on 20 mesh screen	1.04
Retained on 40 mesh screen	27.09
Retained on 60 mesh screen	23.96
Retained on 80 mesh screen	30.22
Retained on 100 mesh screen	7.29
Passing on 100 mesh screen	10.40
	100.00

The various materials herein referred to are obtained as a result of burning coal. The fixed carbon is the residue from anthracite coal after the volatile matter has been expelled by the application of heat in an air free medium less the ash constituents and the volatile matter. The

volatile matter is the residue after the carbon and ash constituents have been removed.

The purpose of the volatile matter is to quickly absorb the moisture from the concrete mixture so that the concrete will set rapidly.

The mixed material 4 is also very light and fluffy but can be compressed when desired into a very solid bed. The material is also very light in weight and can be handled considerably easier than sand and kindred material.

The material or medium 4 is highly absorbent and within a very few minutes after blocks have been molded upon such material or medium they will be sufficiently set to allow the same to be moved for further drying and, in fact, are sufficiently set to be directly handled without losing their shape or form. It is, therefore, to be particularly emphasized that the material or medium 4 constitutes an important factor of the apparatus as it permits production of blocks with a decided saving in the cost of labor and without requiring any complicated structural devices.

After the material or medium 4 has been properly placed upon the palette P, said material has disposed thereover a perforated lamination 5, preferably a copper screen fabric with a relatively fine mesh. After the lamination or fabric 5 has been applied the mold M is rested upon the lamination or fabric.

The mold M, as herein disclosed, comprises the elongated side plates 6 of desired dimensions and which have their lower portions at desired points spaced lengthwise thereof tied or connected by the transversely disposed plates 7. The lower marginal portions of the plates 7 are substantially coplanar with the similar marginal portions of the side members or plates 6 while the upper margins of the plates 7 terminate a material distance below the upper longitudinal margins of the members 6. Extending outwardly from each end cross plate 7 and also bridging the space between the members 6 and secured thereto, is a horizontally disposed table 8. The upper portions of the extremities of each of the side members 6 are provided with the openings 9 in which suitable implements may be engaged to facilitate the desired handling or manipulation of the mold M.

The spaces between the adjacent plates 7 constitute molding chambers and the cementitious material or the like is poured within said molding chambers in any manner preferred and preferably to fill between the side members 6 a distance above the upper margins of the plates 7. After the pouring operation, the striker plate is drawn along the apparatus to smooth off the upper surface of such material, said striker plate S having at its opposite ends the outstanding arms 10 which contact with and ride upon the upper longitudinal edges of the side members 6. After the striker plate S has been used the finishing member F is then employed. This member F is of a length to extend over all of the molding chambers and has a straight edge 11 adapted to contact with the upper margins of the plates 7. The member F in its operation is moved transversely of the space between the side members 6 of the mold M and when the straight edge 11 is brought into close contact with the inner face of each of the side members 6, a proper finish of a corresponding edge or corner of the molded block is assured. The upper longitudinal marginal portion of the member F is provided with an inwardly directed flange 12 extending therealong to facilitate its handling.

Within a few minutes after the member F has been used, the mold M may be removed by an up-

ward pull leaving upon the lamination or fabric 5 and the material 4 therebeneath the molded blocks, said blocks being sufficiently set to permit the palette P to be carried to a desired location for further drying of the blocks and also to permit said palette with the blocks thereon to be arranged in stack or column.

After the molded blocks have become sufficiently dried they are taken off from the lamination or fabric 5 and stored in the usual manner.

During all of this period of making the blocks, the lamination or fabric 5 provides an effective means to prevent adherence of the medium or material 4 to the opposed faces of the blocks, nor are such faces in any other way mutilated. The lamination or fabric 5 in fact serves to give a finished appearance to the molded blocks and of a somewhat roughened character to assure effective coaction therewith of cement or other binding material employed in a wall construction in which the blocks are used.

In the building of walls or the like it is often required that the ends of the blocks have a particular configuration or design other than the right angular. In Figures 6 to 10 inclusive of the accompanying drawings I illustrate an embodiment of my invention whereby this result may be obtained and which figures particularly illustrate a means for bevelling the corners of a block at an end thereof. It is believed to be obvious that if desired both ends of the block could be similarly beveled and it is also believed to be obvious that the corners of a block could be given a form or aspect different from that suggested by the invention as illustrated in these Figures 6 to 10 inclusive.

In this embodiment of my invention, before the material is poured within the molding chambers a block B is engaged with an end portion of a plate 7' and an adjacent side wall 6' of the mold. This block B, as herein disclosed, in horizontal section is triangular and at its transverse center is provided in its lower portion with a kerf or slot 14 whereby the block B may readily strike an end portion of the plate 7'.

The upper portion of the block B and above the kerf 14 is of increased thickness, as at 15, and this portion 15 from below is provided with a kerf or slot 16 substantially at right angles to the kerf or opening 14. This slot or kerf 16 is adapted to receive the adjacent upper portion of a side member 6'.

To prevent lipping or ridging of a molded block, and particularly adjacent to an applied block B, I find it important to provide a relatively broad flat member or plate 17 which is rested from above upon the molded blocks, said plate in one margin thereof being provided with the recesses 18 which snugly receive the portions of the blocks B projected within the mold M'. With the plate 17 in applied position the blocks B are removed and after the removal of the blocks B the plate 17 is also removed whereupon the mold M' is withdrawn from the molded blocks.

I have fully demonstrated in practice that it is at all times not essential to employ a palette as an element of the apparatus as in many conditions the absorbing material or medium 4 may be properly spread upon the ground or other convenient surface. When the material or medium 4 is so used I prefer to use the embodiment of my molding apparatus as particularly illustrated in Figures 11, 12 and 13 of the drawings. In this embodiment of the invention the apparatus comprises the side plates 6a having associated there-

with the cross plates 7' and the other structural features as hereinbefore particularly described with respect to the mold M. The mold M, however, is employed in connection with a frame structure A of such dimensions to snugly receive the mold M''.

The side members 19 of the frame A are of such height to assure the withdrawal or removal of the mold M'' with respect to the frame A in substantially a fixed vertical path as indicated in Figure 13 of the accompanying drawings, so that distortion or disfiguration of the molded blocks C as a result of such removal of the mold is avoided.

Disposed over the under face of the frame A and secured to the members 19 of the frame so as to constitute a part of said frame, is a perforated lamination or fabric 20, preferably a copper screen of relatively small mesh.

In the molding of the blocks the frame A is first placed upon the absorbing material or medium 4 and after the mold M'' has been positioned therein the cementitious material is poured within the mold and the various operations as hereinbefore mentioned are proceeded with. After the mold M'' has been removed with respect to the frame A the frame A with the molded blocks thereon may be rested at a desired location upon suitable supports 21 to maintain the frame A sufficiently raised to allow air to circulate thereunder and up through the lamination or fabric 20 and thereby further facilitate the desired drying out of the blocks C.

From the foregoing description it is thought to be obvious that a molding apparatus constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

1. A mold of the class described comprising side plates, cross plates interposed therebetween, said side plates and cross plates having their lower margins substantially coplanar, the upper margins of the cross plates terminating below the upper margins of the side plates, tables extending from the upper marginal portions of the end cross plates and disposed outwardly therefrom, and a molding block adapted to be placed within the mold, said block having means whereby the block interlocks with a side plate and a cross plate.

2. A mold of the class described comprising side plates, cross plates interposed therebetween, said side plates and cross plates having their lower margins substantially coplanar, the upper margins of the cross plates terminating below

the upper margins of the side plates, tables extending from the upper marginal portions of the end cross plates and disposed outwardly therefrom, a molding block adapted to be placed within the mold, said block having means whereby the block interlocks with a side plate and a cross plate, said block being removable from applied position upon pull, and a plate adapted to freely rest on the cross plates and having a recess in which is snugly received the applied block, said plate operating to prevent lipping of the blocks molded within the apparatus upon removal of the block.

3. A mold of the class described comprising side plates, cross plates interposed therebetween, said side plates and cross plates having their lower margins substantially coplanar, the upper margins of the cross plates terminating below the upper margins of the side plates, tables extending from the upper marginal portions of the end cross plates and disposed outwardly therefrom, a molding block adapted to be placed within the mold, the lower portion of the block having a kerf to receive the upper marginal portion of a cross plate and the upper marginal portion of the block having a kerf to receive the upper marginal portions of a side plate at the opposite sides of the cross plate.

4. A mold of the class described comprising side plates, cross plates interposed therebetween, said side plates and cross plates having their lower margins substantially coplanar, the upper margins of the cross plates terminating below the upper margins of the side plates, a molding block adapted to be placed within the mold, the lower portion of the block having a kerf to receive the upper marginal portion of a cross plate and the upper marginal portion of the block having a kerf to receive the upper marginal portions of a side plate at the opposite sides of the cross plate.

5. A mold of the class described comprising side plates, cross plates interposed therebetween, said side plates and cross plates having their lower margins substantially coplanar, the upper margins of the cross plates terminating below the upper margins of the side plates, and a molding block adapted to be placed within the mold, said block having means whereby the block interlocks with a side plate and a cross plate.

6. A mold of the class described comprising side plates, cross plates interposed therebetween, said side plates and cross plates having their lower margins substantially coplanar, the upper margins of the cross plates terminating below the upper margins of the side plates, and tables extending from the upper marginal portions of the end cross plates and disposed outwardly therefrom, the upper portions of the side plates providing side walls for the tables, the outer ends of the tables being free and unobstructed.

ISAAC STEES.