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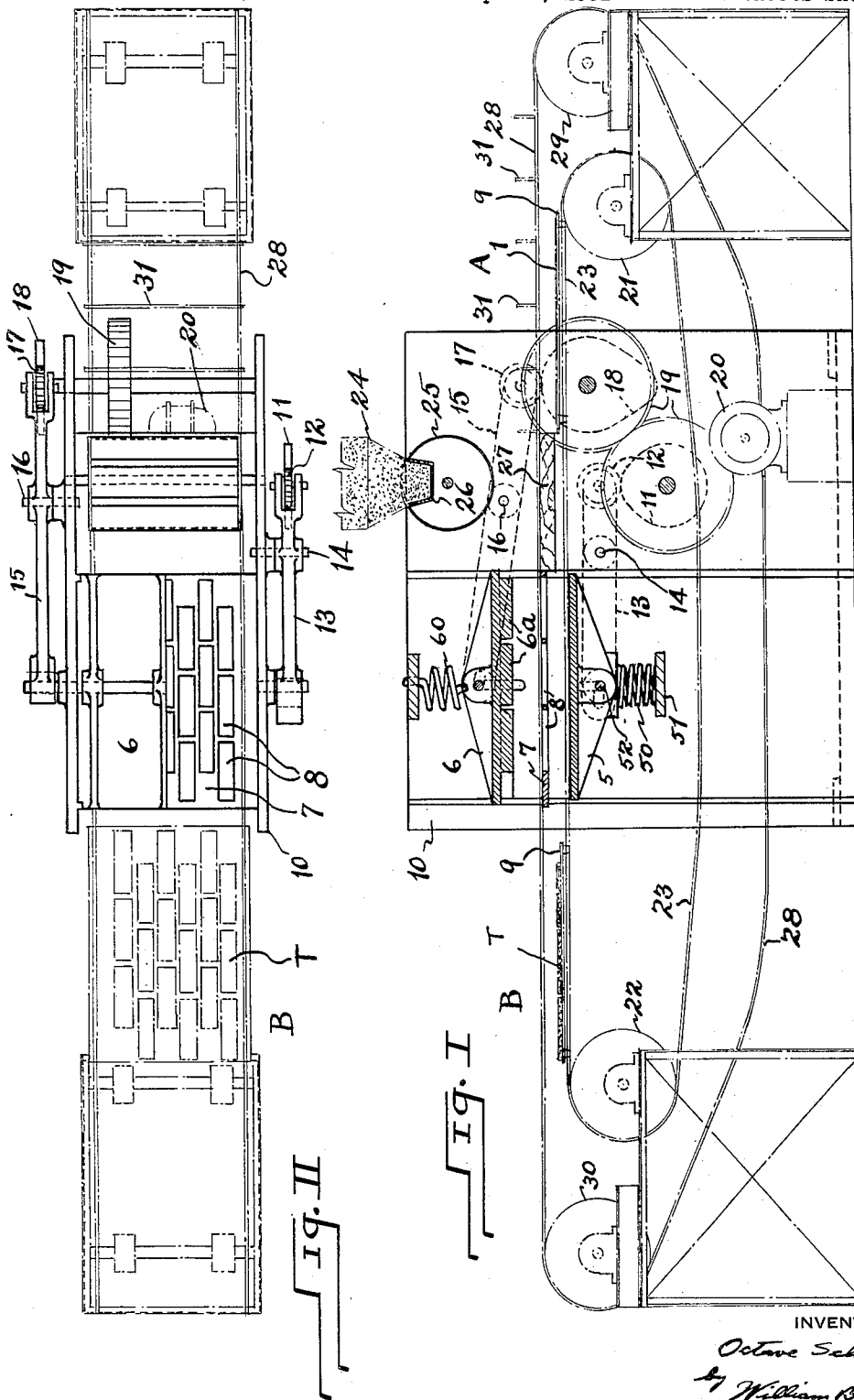
O. SCHNURER

1,921,100

METHOD OF AND APPARATUS FOR MAKING BUILDING TILES

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4 Sheets-Sheet 1



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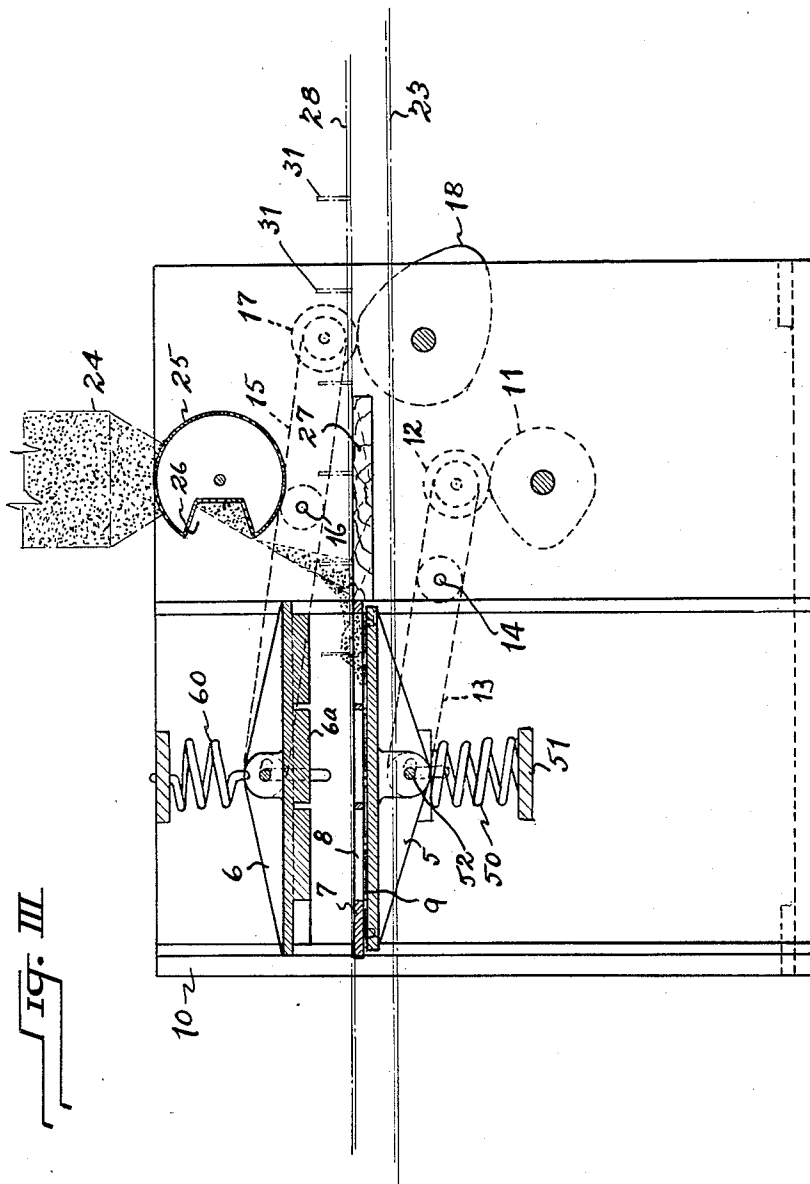
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METHOD OF AND APPARATUS FOR MAKING BUILDING TILES

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4 Sheets-Sheet 2



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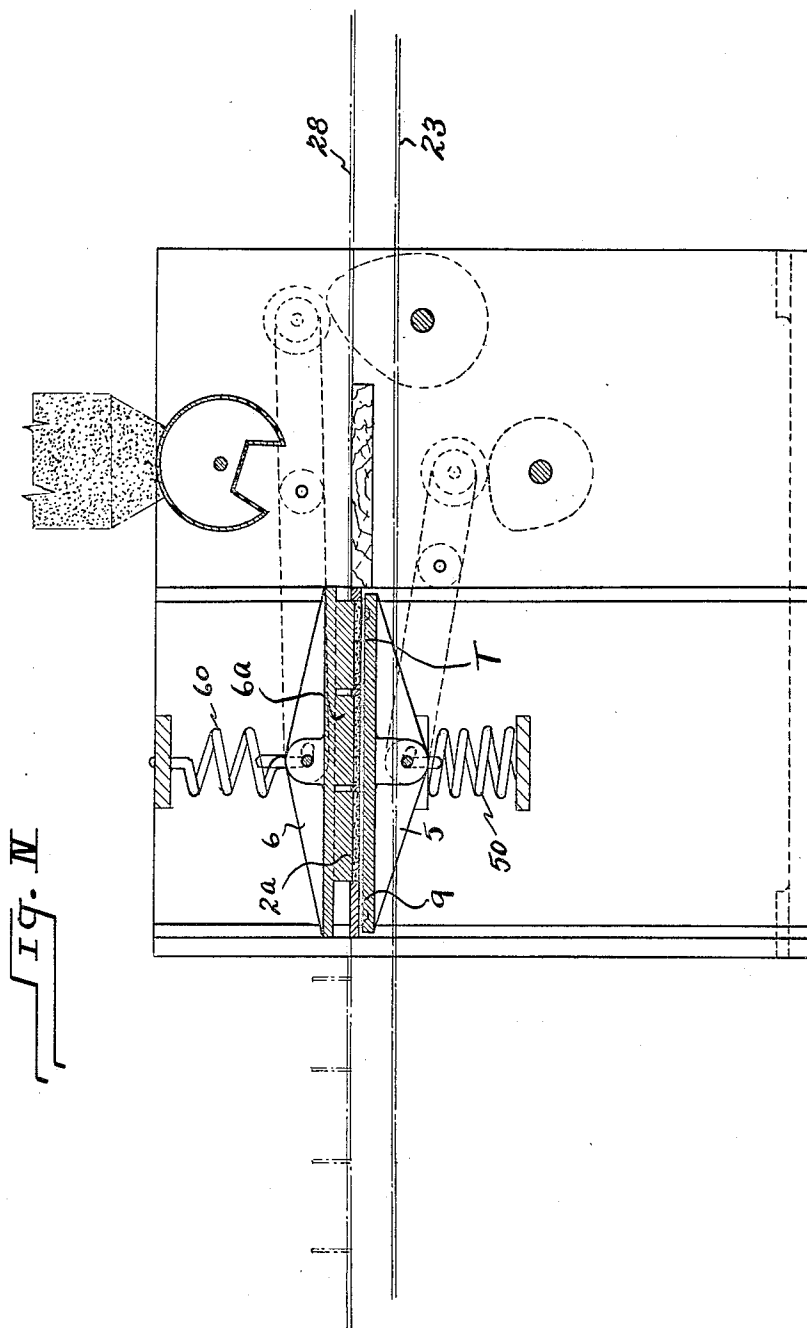
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METHOD OF AND APPARATUS FOR MAKING BUILDING TILES

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4 Sheets-Sheet 3



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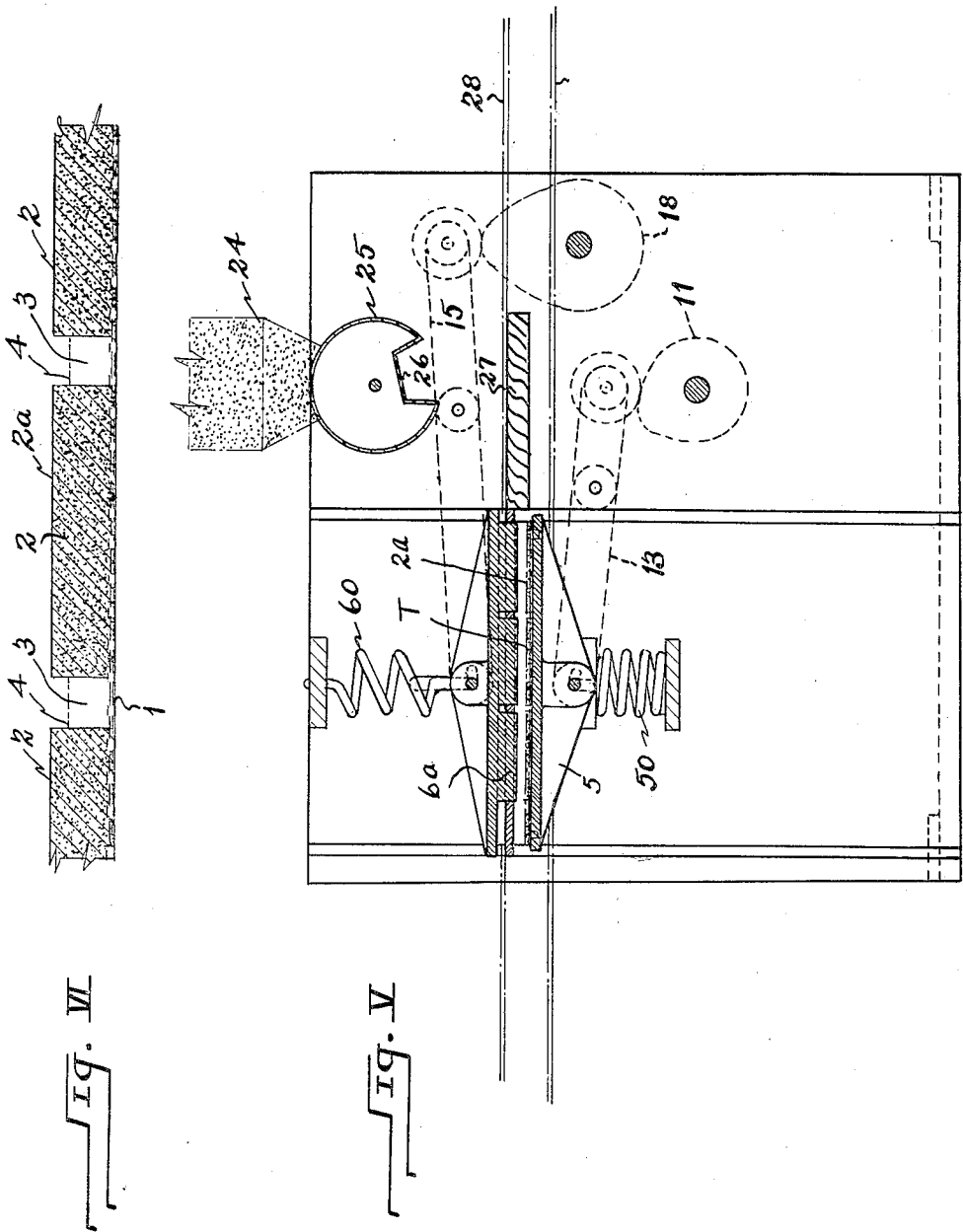
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METHOD OF AND APPARATUS FOR MAKING BUILDING TILES

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

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METHOD OF AND APPARATUS FOR MAKING
BUILDING TILES

Octave Schnurer, Pittsburgh, Pa.

Application September 8, 1931. Serial No. 561,624

4 Claims. (Cl. 25—42)

My invention relates to the manufacture of siding tiles and like articles of manufacture which are shaped from green concrete, clay, or other suitable substance. Tiles of the type with which I am chiefly concerned comprise slabs that are adapted to be secured to the outer walls of a building; the slabs are provided with surface ornamentations, such that, when a building has been "dressed" with a veneer of the tiles, it will appear as a building of brick, or of stone blocks, or of other construction, according as the faces of the tiles applied thereto have been ornamented. More specifically, the invention is directed to method of and apparatus for the manufacture of such tiles.

In the accompanying drawings Fig. I is a view, partly in side elevation and partly in vertical section, showing apparatus in accordance with the invention. Fig. II is a view of the same, in plan from above. Figs. III, IV, and V are views of the tile-forming portions of the apparatus, to larger scale, and comparable with Fig. I. The last-named figures illustrate progressive steps in the manufacture of tile. And Fig. VI is a fragmentary view, showing in cross section, and to still larger scale, a tile of the type which my apparatus is particularly adapted to make.

The tile with which I am particularly concerned, and which for purposes of illustrating the invention I shall herein describe, is formed of a water-proof cementitious composition. The tile is of such design as, when applied to a building, to present the pleasing appearance of brick masonry as is indicated fragmentarily in section in Fig. VI, such tile comprises a metallic reinforcement sheet 1 upon which there is molded and hardened a plurality of blocks 2. The blocks 2 are disposed at intervals from one another, leaving open spaces 3; these spaces 3 afford clearance for the passage of nails whereby the tile may be nailed immediately upon the wall to be veneered. That is to say, the nails are inserted in spaces 3 and driven through the metallic reinforcement 1 and into the wall or other supporting structure which is to be veneered. The wall is completely covered with a veneer of such tiles; the tiles are matched or of complementary form, so that, when the spaces 3 are partly or wholly filled with mortar, as indeed they are filled, the facing of tiles appears as a brick, or a stone block wall, depending upon the size, shape, and color of the blocks 2 and of the fillings placed in spaces 3. Conveniently, the spaces 3 are filled to the depth indicated by the dotted lines 4. Thus the utility and appearance

of brick masonry is obtained at minimum cost.

Apparatus for conducting the manufacture of the tiles comprises a frame 10, a table 5 (cf. Fig. I) and a pressing head 6. Between the table and head is a grid 7; the grid is provided with matrices or windows 8, corresponding in size and relation to the ornamentation or figures which the tiles are to include, and the head 6 is provided with pressing blocks 6a, corresponding in relation to the windows in the grid. The table 5 is adapted to receive a platen 9. A compression spring 50 is disposed between a frame member 51 and the table 5; this spring tends to thrust the table upward, but the action is regulated by a cam 11. An arm 13, pivotally supported at 14, is provided with a cam rider 12 at its one end, while at its other end it engages the table 5 with a slot-and-pin connection 52. The cam 11 is so designed that the table 5 is released, at the moment desired, to move upward under the forces of spring 50 and to move the platen to a position against the bottom of the grid 7 (see Fig. III).

The pressing head 6 is vertically movable relatively to the grid 7; means for effecting vertical movement of the head comprise an arm 15, which arm is pivoted to the frame 10 at 16, and is secured at its one end to the head 6, and at its other end is equipped with a roller 17 which rides a cam 18. Manifestly, revolution of cam 18 will effect the downward movement of the head 6 from the position in which it is shown in Fig. III. A spring 60 is organized to resist downward movement of the head, and, when permitted by the revolving cam 18, the spring 60 is adapted to raise the head from its lowered position. The movement of the table 5 and head 6, due to the springs 50, 60, arms 13, 15, and revolving cams 11, 18, will manifestly be one of reciprocation toward and away from each other. The rotary cams 11 95 and 18 are interconnected by gearing 19 (Fig. I); accordingly, they will move in synchronism when driven by motor 20. Presently, I shall describe the manner in which the grid 7, the table 5, and the head 6 operate to effect the molding of green material into a tile.

A pair of endless chains 23 is trained over rollers 21, 22; any convenient means known to the engineer (connection may be made to motor 20) may be employed to move the chains step-by-step, so that in their upper reaches the chains will travel from right to left (Fig. I). The chains 23 are adapted to carry platens 9, and their motion is such that a platen 9, when positioned on the chains at station A, will be shifted at the

proper time to a position immediately overlying table 5. The synchronism of the parts is so determined that when the platen 9 has reached its said position over the table 5, the table will (by operation of the compression spring 50 and the linkage 11, 12, 13, 14) rise and lift the platen from the chains to a position against the nether face of grid 7. It should be understood that a suitable sheet of metal lath or reenforcement 1 is placed on the platen, desirably but not essentially, before the platen is shifted to a position overlying the table 5, whereby, when the table 5 rises, the metallic reenforcement will be brought to position against the grid. In this position of the parts, the platen provides in effect a floor for the windows of grid 7; that is, the windows in effect provide a plurality of matrices in which green material may be pressed to desired form, and bonded to the reenforcement 1. Accordingly, when the platen 9 has been brought to position against the nether face of the grid, means are caused to supply a charge of green material to the grid.

Advantageously, a mass of ready mixed cementitious material is stored in a hopper 24; a feeder is associated with the hopper; the feeder comprises a revoluble cylinder 25 having a pocket 26 inset in its cylindrical face. Normally the cylinder is positioned as shown in Fig. I, i. e. with its pocket in registry with bottom opening of the hopper 24. Manifestly, the pocket will be filled with the material contained in the hopper. The capacity of the pocket is so determined that it contains sufficient material for the formation of one tile "T". When, therefore, the platen and grid are ready for a charge of tile-forming material, the cylinder 25 is rotated through one complete, counter-clockwise revolution, and, as indicated in Fig. III, during such revolution the contents of pocket 26 are emptied upon a receiving plate or surface 27. It will be perceived that the curved face of the cylinder 25 serves as a closure for the bottom opening of the hopper 24 during such material-feeding movement of the cylinder. The material deposited upon plate 27 is swept into place in the grid structure, ready for the head 6 to lower and press the tile to form.

I provide a pair of endless chains 28, trained over rollers 29 and 30; these chains carry wiper vanes 31, as the means for sweeping the charge of material, which is deposited on plate 27, into the grid for pressing. Fig. III indicates the action.

When the group of vanes 31 as advanced in its right-to-left movement beyond the grid 7, the windows of the grid will be provided with an evenly-distributed charge of green material, ready to be pressed. At this time the cam 18 will have reached such position in its rotation as to swing the arm 15 counter-clockwise effecting a lowering of the head 6. Accordingly, the material within the grid is compressed to the form of the windows, and is forced into a so-called bonding engagement with the metal lath 1. Fig. IV illustrates this stage of the operation—it shows how the table yieldingly supports the platen 9 against the grid, how the pressing blocks 6a enter the windows of the grid, and how the top faces 2a of the blocks 2 of the tile T lie within the windows of the grid. So the tile is pressed to form.

After the tile has been thus formed, the downward movement of the pressing head continues, but does not do so against a maximum resistance

of the spring 50. That is to say, the cam 11 and arm 13 now become effective to lower the table 5 against the resistance of spring 50, so that the pressing head 6 and table 5 move in concert. Of course, it is necessary to free the pressed tile from the grid, and in so doing the edges and corners of the blocks 2 desirably should be sharply maintained.

It will be perceived that the pressing blocks 6a are of greater depth than the windows of the grid 7. Accordingly, the pressing blocks may contact and support the top faces 2a of the pressed tile, until the tile has been cleared of the grid; that is, the blocks 6a are adapted to follow and to support the tile until it is clear of the grid. Due to the co-operation and synchronism of the cams 11, 18, it will be understood that, once the material within the windows of the grid have been compressed and formed, there is little or no pressure exerted on the formed tile T while it is being lowered from and cleared of the grid 7. The bottom faces of the pressing blocks 6a support the top faces of the pressed blocks 2, until the blocks 2 are freed from the grid. The table 5 continues to lower (cf. Fig. V) under the instrumentality of linkage 11, 12, 13, and ultimately lowers to the position in which it is shown in Fig. I, whereupon the chains 23 engage the platen 9, bearing the formed tile T. The platen and tile T are, by means of chains 23, shifted to the left of frame 10 (Fig. I), where they are accessible for removal from the machine. In the case of concrete tiles, the removed platens and their burden are stored in steam rooms, or in drying rooms, where the tiles are hardened and prepared for service. If the material of which the tiles are formed be clay, then the platens removed from station B will be placed in a firing kiln for such heat treatment.

So the method is conducted; so the apparatus will continuously operate; and so advantages of the nature indicated are obtained as is expedient.

I claim as my invention:

1. The method of forming siding structure and the like which comprises the steps of supporting a metallic reinforcement upon a platen against the bottom of a windowed grid, compressing the material of which the siding structure is to be formed within the windows of such grid, and forcing such material into bonding engagement with the metallic reinforcement upon said platen, then lowering the platen away from the grid, while freeing the pressed material from such grid and supporting the top faces of the compressed material, whereby a plurality of blocks are shaped and bonded to the reinforcement in spaced relation and predetermined pattern.
2. The method of forming siding structure and the like which comprises the steps of supporting a metallic reinforcement upon a platen against the bottom of a windowed grid, powerfully compressing the material of which the siding structure is to be formed within the windows of said grid, and forcing such material into bonding engagement with the metallic reinforcement upon said platen, then shifting the platen relatively to the grid and freeing the pressed material therefrom, and leaving bonded upon said reinforcement a plurality of blocks in spaced relation and predetermined pattern.
3. The method of forming siding structure and the like which comprises the steps of supporting a metallic reinforcement upon a platen against

the bottom of a windowed grid, powerfully compressing the material of which the siding structure is to be formed within the windows of said grid, and forcing such material into bonding engagement with the metallic reinforcement upon said platen, then shifting the platen relatively to the grid, while freeing the pressed material from said grid and supporting the top faces of the compressed material, whereby a plurality of blocks are shaped and bonded to the reinforcement in spaced relation and predetermined pattern.

4. A machine for the manufacture of veneering, which machine comprises the combination of a grid having a plurality of windows in which green material may be pressed to shape, means for supporting an expanse of metallic reinforcement against the nether face of said grid, whereby the windows of said grid become matrices adjacent whose bottom surfaces areas of metallic reinforcement are presented, a receiving surface, means for discharging measured quantities of green material upon said surface, means for sweeping the measured material from said surface and distributing it in said matrices and upon the areas of metallic reinforcement presented therein, and a pressing head provided with a plurality of pressing blocks for co-operation with said matrices, and means for operating said pressing head, to compress the material in said matrices into bonding engagement with the presented areas of said metallic reinforcement.

OCTAVE SCHNURER.

20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150