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APPARATUS FOR MAKING TILE

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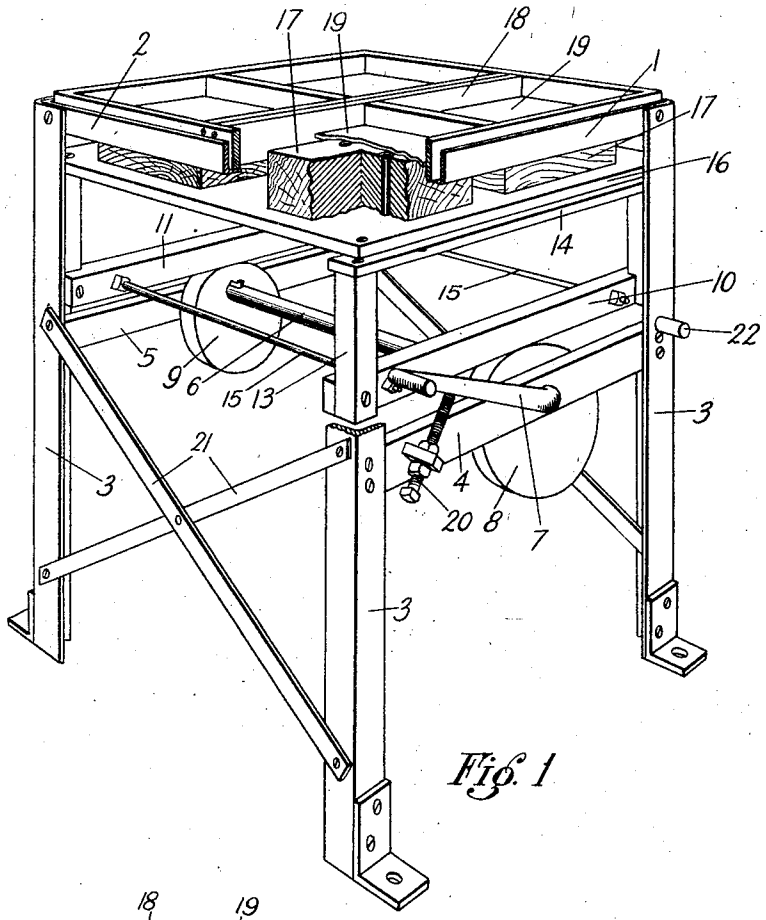


Fig. 1

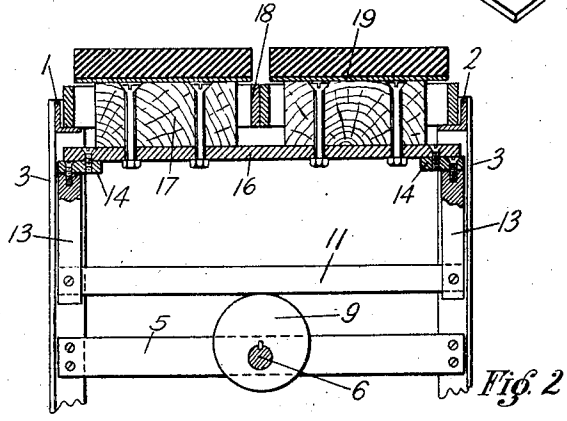


Fig. 2

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING TILE.

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My invention relates to method and apparatus for making tile. It has to be primarily with method and apparatus for the making of tile from concrete, which tile is suitable for use in floors, hearths and mantels.

Tile of this kind is usually made from clay and is an expensive production. In the first place, only certain kinds of clay are suitable for making tile and the manufacturer quite frequently has to have his clay shipped to him in a crude state from a distant point with a consequent addition of high freight rates to the cost of the finished product. Furthermore, after the clay is received, it must then be graded, mixed and treated before it is used.

After the clay has been molded, it must then be cured and burned. Great loss is occasioned to the manufacturer from the burning process because of the fact that there is a variable warpage and shrinkage during such burning. Likewise, such tiles should be of exact dimensions and a great many tiles are worthless because they are not of proper dimensions, while the variation which is permissible in practice results in an increased labor cost in the setting of the tile to hide the deficiencies.

I have devised a method which makes possible the production of tile from concrete and of exact dimensions with smooth, clean-cut edges. In devising this method, I have produced a novel type of apparatus which, while permitting the production of tile of exact dimensions, also permits of the production of different sized tiles on the same apparatus by means of an extremely simple adjustment. My method is such that I am able to produce concrete tile without the use of applied pressure.

Another phase of my invention consists in the fact that I have provided a method and apparatus whereby a plurality of tiles may be made at one time. Likewise, the apparatus required for the making of my tile is of extreme simplicity.

The apparatus which I preferably use in the performance of my process is shown in the accompanying drawings wherein similar characters of reference designate corresponding parts and wherein:

Figure 1 is a perspective view of my tile making apparatus with one corner of the top framework cut away to show the mold, pallet and pallet-supporting block in detail.

Figure 2 is a vertical section taken through the upper part of the structure shown in Figure 1.

As will be seen from the drawings my tile making machine consists of a main frame 1, having top flanged cross-bars as at 2, connected at their ends to legs 3. In the drawing these cross-bars 2 are cut away at one corner to show the interior mold structure. The legs 3 are braced on two sides of the frame by diagonal brace members 21 while 4 and 5 indicate longitudinal cross-bars connected at their ends to the legs 3.

A shaft 6 is shown journaled at its ends in the cross-bars 4 and 5 and provided at one end with a crank handle 7. A stop 22 is provided to limit the rocking of said crank handle 7 and to hold the pallets elevated when the machine is in a discharge position. mounted on the shaft 6 are over-center cams 8 and 9 which support and operate upon a rigidly built vertically movable frame having horizontal bars 10 and 11. This frame is also provided with upright bars 13 which are in turn connected at their upper ends to horizontal bars 14 and bracing rods 15.

Resting upon and secured to said bars 14 is a square plate 16. This plate 16 has a series of holes drilled therein so that pallet supporting blocks 17 can be fastened thereto by means of bolts or screws or in any other manner.

It will be apparent that this structure produces a rectangular frame work of unusual rigidity and I have found that this contributes materially to the maintenance of straight-edges for the tile during the raising of the tile from their molds preliminary to removal and curing.

Supported by a flange on and fastened to said bars 2 so as to be easily removable therefrom is a mold box 18 having openings of a suitable shape therein. These molds have removable bottoms or pallets 19 resting upon the pallet supporting blocks 17. However the number, size and shape of these molds may be changed as desired by merely unfastening the mold boxes in the machine and substituting mold frames of

the size and shape desired. The thickness of the tile to be formed may be regulated by the thickness of the pallet supporting block used. If a shallow mold block is used the tile will be thick while if a deep mold block is used the tile will be thin. The depth of the mold may also, be regulated by adjustment of the set screw 20 against the crank handle, thus limiting the downward movement of the frame 11 and mold bottoms consisting of the blocks 17 and pallets 19, resting upon the plates. Either or both of these means may be used for regulating the depth of the mold or thickness of the tile to be formed therein. The size and shape of the pallets and pallet supporting blocks used, preferably conform to the size and shape of the mold used or the tile to be formed.

In operation, the rectangular frame-work is in lowered position with the handle 7 on the cam shaft supported upon the set screw 20. The cement mixture is then placed in the molds and smoothed off level with the top of such molds by means of a trowel. When this operation is completed, the handle is swung to the right with the result that the rectangular frame-work is elevated by the cams and the higher portions of these cams passes over their centers until they assume a position in which the handle is stopped from further movement to the right of Figure 1 by a pin 22 and the frame-work is maintained in elevated position.

In elevated position the pallets which support the tiles are above the level of the molds and these pallets with the tiles thereon are set aside for the curing operation. After curing, the tiles are removed from the pallets by giving each a slight tap.

It will thus be seen that I have invented a machine for making concrete tile and the like, that is simple in construction but very efficient in operation. With this machine perfect tile with clear cut edges can be turned out with great speed, and at a greatly reduced cost over the clay tile. One of the great advantages of this machine is that tile of any size, shape or thickness may be made by simply changing the mold frame, pallets and pallet supporting blocks, the machine being so constructed that these changes may be made with a minimum amount of time and effort.

The plates which I use may be made of different materials. I have found that I can produce tiles with smooth hard surfaces very effectively by using glass plates or by using aluminum, brass or copper pallets suitably buffed. I can also use steel or iron plates or pallets.

I have also discovered that a superior tile can be made by first inserting a layer of one material into the mold and then placing another layer of a different mixture on top of the first layer.

A still further important feature of my invention arises from the fact that I am able to produce an unusually beautiful product by introducing, with the cement, colored glass, micasparcrystals, or granite of different colors. These elements may be introduced throughout the entire tile or only in the surface layer, that is, the layer first placed in the mold or troweled in from the top side.

Having thus described my invention, what I claim is:

1. Apparatus for making tiles comprising a movable frame, a plate mounted upon the top of said frame, pallet blocks resting upon said plate and secured thereto, pallets mounted upon said blocks, means for supporting said frame, means for actuating said supporting means to raise and lower said frame, and means adapted to engage said actuating means to limit the lowermost position of said frame.

2. Apparatus for making tiles comprising a movable frame, a plate mounted upon the top of said frame, pallet blocks resting upon said plate and secured thereto, pallets mounted upon said blocks, means for supporting said frame, means for actuating said supporting means to raise and lower said frame, and adjustable means adapted to engage said actuating means to limit the lowermost position of said frame.

3. Apparatus for making tiles comprising a stationary frame, a plurality of molds with open bottoms mounted upon the top of said frame, and a movable frame mounted within said stationary frame, said movable frame comprising a plate secured to the top of said movable frame, pallet blocks resting upon said plate and secured thereto, pallets adapted to fit said molds mounted upon said blocks, supporting means for said movable frame, means for actuating said supporting means to raise and lower said movable frame, and means adapted to engage said actuating means to limit the lowermost position of said movable frame.

4. Apparatus for making tiles comprising a stationary frame, a plurality of molds with open bottoms mounted upon the top of said frame, and a movable frame mounted within said stationary frame, said movable frame comprising a plate secured to the top of said movable frame, pallet blocks resting upon said plate and secured thereto, pallets adapted to fit said molds mounted upon said blocks, cam members for supporting said movable frame, means for actuating said cam members to raise and lower said movable frame, and means adapted to engage said actuating means to limit the lowermost position of said movable frame.

5. Apparatus for making tiles comprising a stationary frame, a plurality of molds with open bottoms mounted upon the top of said frame, and a movable frame comprising a plate secured to the top of said movable frame, pallet blocks resting upon said plate and secured thereto, pallets adapted to fit said molds mounted upon said blocks, cam members for supporting said movable frame, a handle for actuating said cam members to raise and lower said movable frame, and a set screw adapted to engage said handle to limit the lowermost position of said movable frame.

In testimony whereof I hereby affix my signature.

ALBERT C. DALE.