

May 17, 1927.

1,629,151

C. B. CUSHWA

DRYING TILE

Filed Feb. 10, 1926

2 Sheets-Sheet 1

Fig. 1.

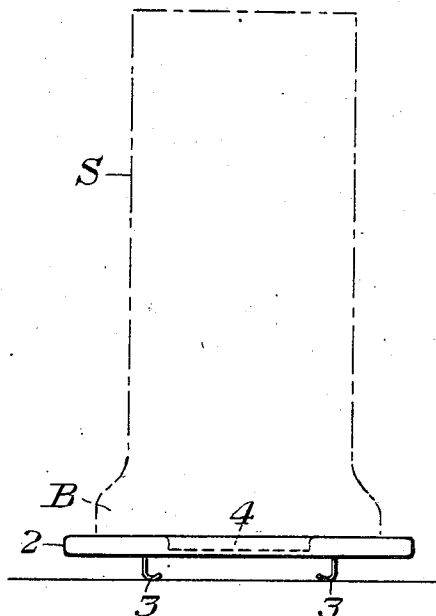


Fig. 2.

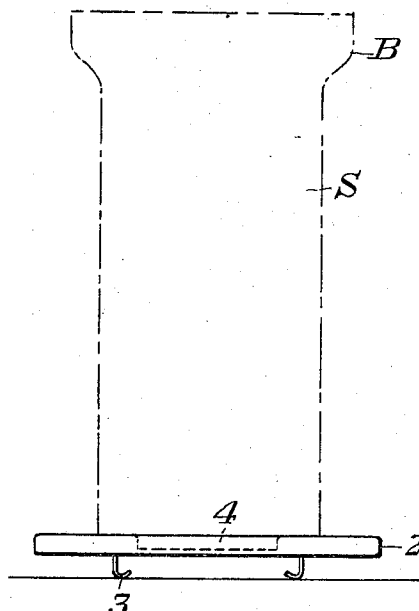
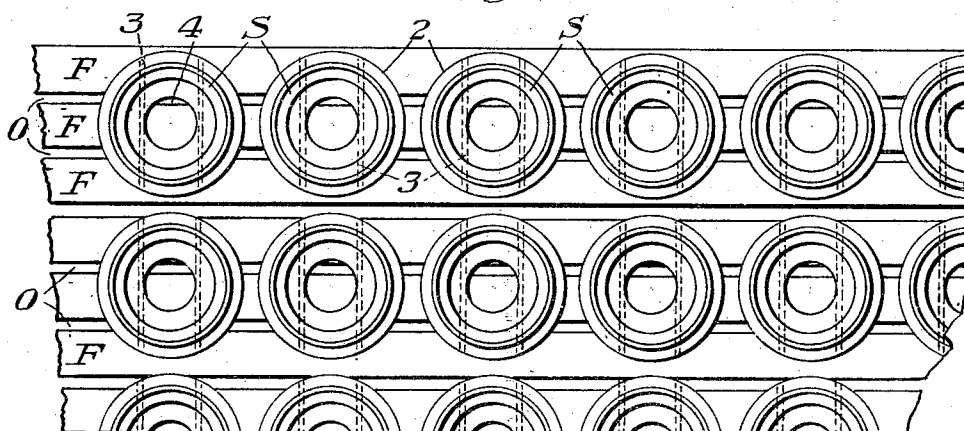


Fig. 3.



INVENTOR

Charles B. Cushwa
by his attorney
Byrnes, Stubbins & Foxmiller

May 17, 1927.

C. B. CUSHWA

1,629,151

DRYING TILE

Filed Feb. 10, 1926

2 Sheets-Sheet 2

Fig. 4.

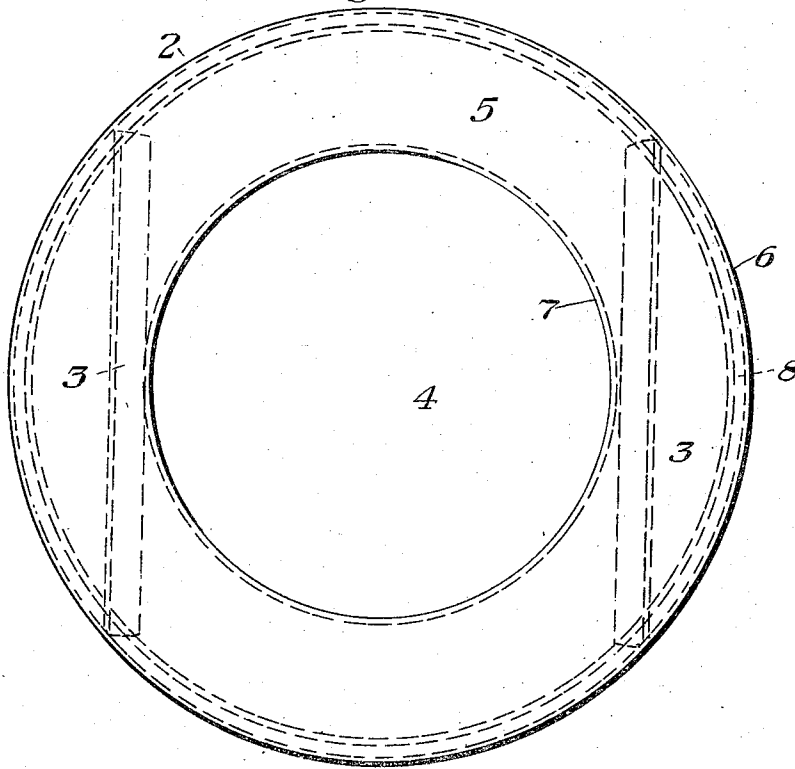


Fig. 5.

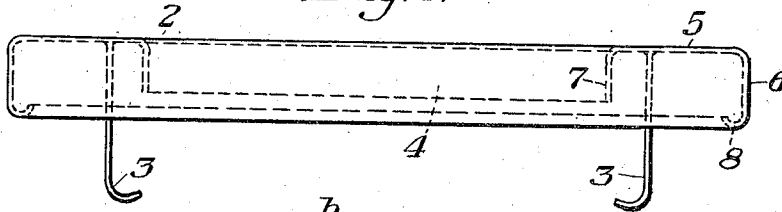
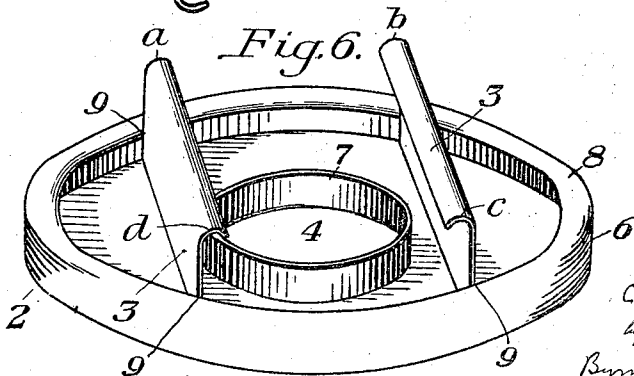


Fig. 6.



INVENTOR

Charles B. Cushwa
by his attorneys
Byrnes, Stubbins & Parmelee

UNITED STATES PATENT OFFICE.

CHARLES B. CUSHWA, OF YOUNGSTOWN, OHIO, ASSIGNOR TO THE COMMERCIAL SHEARING & STAMPING COMPANY, OF YOUNGSTOWN, OHIO, A CORPORATION OF OHIO.

DRYING TILE.

Application filed February 10, 1926. Serial No. 87,271.

This invention relates to the drying of tile, and particularly to an improved method of drying green sewer tile so as to materially reduce the time of drying and also raise the quality of the product produced. The invention also contemplates an improved form of drying board which has been found to be highly satisfactory in the manufacture of sewer tile.

10 In the manufacture of sewer tile, the green tile usually comes out of the mold with the bell downward. It is caught on a mold board which is, of course, larger than the outside diameter of the bell. The work-
15 men then place a drying board on the top of the tile and turn it over so that the tile is supported on the drying board with the bell up. The green tiles are placed in drying rooms which are usually three to five stories
20 high. The tiles are placed fairly closely on each floor and the floors are made of wood slats to permit circulation of drying currents through the drying room. Heat is liberated in the basements of these buildings
25 and rises up through the slatted floors, being taken off by ventilators in the roof. It has heretofore been customary to use rectangular wooden boards made up of cleats which allow some air to come up through the board
30 itself. These boards are rectangular, and as they are usually placed very close together on the floor the wooden boards cut off the flow of air to such an extent that the drying is frequently interfered with to a very
35 undesirable extent.

I provide a drying board of substantially the same contour as the sewer tile which it is adapted to support. Generally, the sewer tiles are circular, and therefore the boards
40 will be circular. Even if the boards are placed in contact with one another there will still be a material space between the boards permitting free flow of drying currents. I also provide an opening through the drying
45 board whereby the air is free to pass centrally through the tile itself. This is advantageous because it permits drying on the inside and outside of the tile to proceed at substantially the same rate, thereby elimin-
50 ating uneven shrinkage and reducing the percentage of imperfect tile.

With the old style rectangular wooden boards the drying progresses from the top

downwardly, that is to say, the bottom of the tile is the last portion to dry. This is due to the fact that the rectangular pallets substantially prevent air circulation near the several floors of the drying room and very materially reduce the vertical draft. This difficulty is overcome by my improved board.

A very serious objection to the old style drying board is occasioned by its slatted construction. The hot air comes up through the space between the cracks and tends to crack the tile directly above such openings. This is because the small portion of the tile immediately above the openings is soon dried hard, whereas the drying of the portion of the tile over the wooden slat is retarded. This is entirely eliminated by my improved board since the new form of board provides a substantially uninterrupted supporting surface.

During the drying operation it is frequently desirable to turn the tiles end for end, and this involves placing a drying board on top of the tile, then tilting the bottom drying board and reversing the tile to support it on the first-mentioned board. In order that all of the boards may be uniform in size, I provide a board which is larger than the bell portion of a tile and having an opening therethrough which is smaller than the interior diameter of the tile. To assist in the tilting operation, I provide a flange on the outside of the drying board and round this off so as to provide a ready grip. This flange, as well as the flange which is formed around the interior opening, also acts as a stiffener.

The board is preferably supported on legs which space it from the floor of the drying room and thus materially improve the air circulation. Preferably, I provide two parallel supporting legs on the under side of the board. In using the boards the legs are placed at substantially right angles to the direction of the floor slats. When it is desired to tilt a tile for turning it over, the bottom board may be tilted in four directions since it may be tilted about either leg at will or around the ends of the two legs. This is a material advantage over the old style board which could be conveniently tilted only in two directions.

Preferably, the legs are placed fairly close together, as this makes the board a little easier to tilt, and on a circular board positions the legs at such a point that they can be of adequate length. The legs should not project beyond the drying board proper because one advantage of the circular form is that the board can be rolled like a hoop. This frequently saves considerable carrying around the factory.

In the accompanying drawings, illustrating the present preferred embodiment of my invention as applied to the manufacture of circular sewer tile,

Figure 1 is a side elevation showing a sewer tile supported on my improved board and with the bell down;

Figure 2 is a similar view showing a sewer tile supported with the bell up;

Figure 3 is a top plan view, partly broken away, showing a number of sewer tile supported on a drying floor;

Figure 4 is a top plan view of my improved drying board;

Figure 5 is a side elevation thereof; and

Figure 6 is a perspective view of the drying board, the board being turned upside down to show the construction of the legs.

In the illustrated embodiment of the invention, there is shown a pallet, indicated generally by the reference character 2, having a sewer tile thereon. The sewer tile (Fig. 1) is shown in the position from which it generally issues from the machine, the bell portion B being downwardly. It will be noted that the board or pallet 2 is somewhat larger than the bell portion B, and since the board provides a substantially uninterrupted surface the tile is uniformly and properly supported.

It is customary to invert the tile prior to drying, and this is done by placing another drying board or pallet on top of the tile as viewed in Figure 1, and then tilting the tile preliminary to turning it entirely over. It will be seen from Figure 1 that the board 2 is provided with legs 3, these legs being rounded on the bottom, and that it is a relatively simple matter for a workman to place his fingers under the edge of the drying board to tilt the same preliminary to the operation of turning the tile completely over. Figure 2 shows the tile in inverted position and ready for the drying room.

The floor of the drying room consists of slats or floor boards F having openings O therebetween through which currents of warm air are permitted to rise to dry the tiles. Figure 3 shows a number of the drying boards in their position on the drying floor, and it will be noted that they are spaced apart a short distance. This is desirable, but is not in any wise essential, since the circular shape of the drying boards leaves large gaps between them through

which the circulating air may readily pass. It will be noted from Figure 3 that each of the drying boards 2 is provided with a central opening 4, this opening being somewhat smaller than the internal diameter of the tile supported by the board. The openings 4 are of value in that they permit the air currents to pass through the tile and thus permit them to dry inside as rapidly as on the outside. The legs are preferably placed crosswise of the floor boards F as shown. They are effective for supporting the drying boards a short distance off the floor and thus materially assist circulation adjacent the drying boards.

The construction of the drying board is shown more in detail in Figures 4 to 6, inclusive. As there shown, the board consists of an annular face 5 adapted to support the tiles. This face is made of a sheet of wrought material, such as sheet steel, which is flanged downwardly on the outside of the board, as indicated at 6, and also adjacent the opening 4, as indicated at 7. The flanges 6 and 7 materially stiffen the drying board, and the flange 6 is rounded at the bottom, as indicated at 8, in order to provide a smooth grip for a workman. This is highly desirable in turning the tiles over whether the work is done by one or two men.

The legs 3 of the drying board are preferably held in place by welding as, for example, at the points 9.

It will be noted that the legs 3 are placed relatively close together instead of being at the extreme edges of the drying board. This makes a more convenient construction, and also a highly desirable one in practice, since the legs, while they are of sufficient length to provide a stable support, are contained entirely within the circular outline of the drying board proper and the drying boards may therefore be rolled around like hoops. This is of advantage particularly in the larger sizes. The drying board may be conveniently tilted about the legs in any one of four directions. In Figures 6 I have marked points *a*, *b*, *c* and *d* on the two legs. It will be seen that the board may be tilted readily about a line connecting the points *a*, *b*, and *c*, *d*, as well as along either one of the legs, which is equivalent to tilting the board around a line *b*, *c*, or a line *a*, *d*.

In the old style drying boards the continuous supporting surface provided by my improved drying board was not secured, and as a result a considerable quantity of the product was cracked due to uneven drying. This is substantially eliminated by the improved board. Better drying conditions are also obtained due to the fact that drying on the inside and outside proceeds at substantially the same rate. The provision of a board having the general contour of the tile instead of being rectangular makes for

better circulation between adjacent tiles, and therefore more rapid drying. In some cases it is desired to reverse the tiles while they are in the drying room, and this may be readily done by placing another drying board on top of the tile and tilting the board with the tile thereon, then grasping both drying boards and turning the tile completely over. This operation is materially simplified by the use of my drying board, since provision is made for supporting either end of the tile on the same board and the board may be tilted in any one of four directions. The term "sewer tile" as used herein is used as a term of definition and not of limitation, and is intended to include conduit tile, flues and the like.

It will be apparent to those skilled in the art that the drying board is adapted to have the shape changed as required for different shapes. For example, flue linings are frequently rectangular or oval, and if desired, corresponding changes may be made in the drying boards to better adapt them to use with such shapes. Similar pallets are likewise adapted to the manufacture of so-called "hot tops" or "feeders" for ingot molds. The word "ring", therefore, as used in the specification and claims is a word of definition and not limitation, it being equally descriptive of a true annulus, an oval shaped body or a rectangular body.

I have illustrated and described a preferred method and apparatus used in connection therewith, but it will be understood that the invention is not limited to the described embodiment but may be otherwise embodied or practiced within the scope of the following claims.

I claim:

1. A drying board, comprising a substantially circular supporting member having a central opening therethrough and providing a substantially continuous ring, and a stiffening flange on the supporting member, the flange being integral with the supporting member and extending all around the same in a substantially uninterrupted manner.

2. A drying board, comprising a supporting member having an opening therethrough

and providing a substantially continuous supporting ring, and stiffening flanges on the supporting member adjacent the opening and also on the outer edge of the supporting member.

3. A drying board, comprising a supporting member having an opening therethrough and providing a substantially continuous supporting ring, stiffening flanges on the supporting member adjacent the opening and also on the outer edge of the supporting member, and legs for holding the supporting member spaced from the floor.

4. A drying board, comprising a substantially circular sheet metal supporting member providing a substantially continuous supporting ring, a flange on the outside of the supporting member, and legs on the bottom of the supporting member contained entirely within the flange.

5. A drying board, comprising a sheet metal supporting member having an opening therethrough and providing a substantially continuous supporting ring, flanges on the outside of the ring and also adjacent the opening, the bottom of the outer flange being rounded to provide a hand hold, and legs contained within the outer flange for holding the supporting member spaced from the floor.

6. The method of drying tile which comprises passing drying currents in a vertical direction between the tiles and through the openings thereof and shielding the tiles at their bottoms from direct impingement of the drying currents, only over an area of substantially the same general contour as the tile walls.

7. The method of drying tile which comprises passing drying currents in a vertical direction between the tiles and through the openings thereof and shielding the tiles at their bottoms from direct impingement of the drying currents, only over an area of substantially the same general contour as the tile walls but of materially greater width.

In testimony whereof I have hereunto set my hand.

CHARLES B. CUSHWA.