(No Model.)

C. C. ALEXANDER.

TILING FOR FLOORS, WALLS, CEILINGS, FIREPLACES, &c.

No. 602,691. Patented Apr. 19, 1898.

Fig. 1.

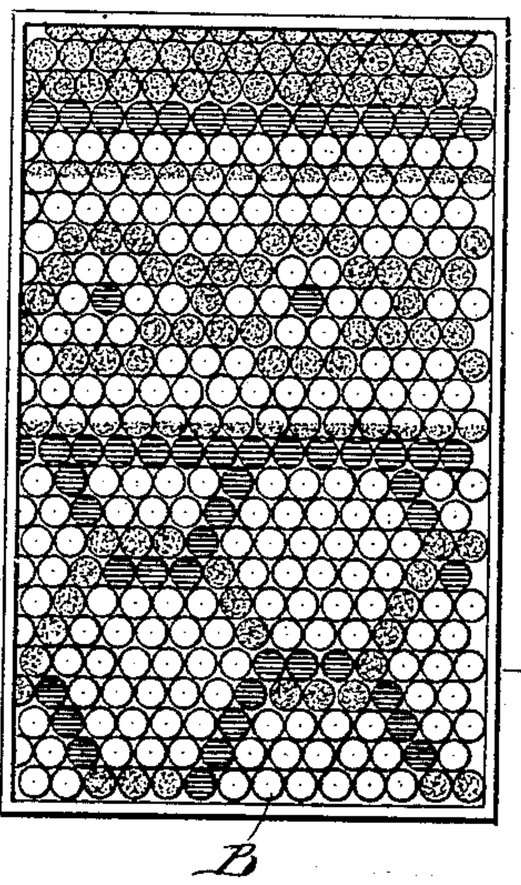


Fig. 2.

Fig. 3.

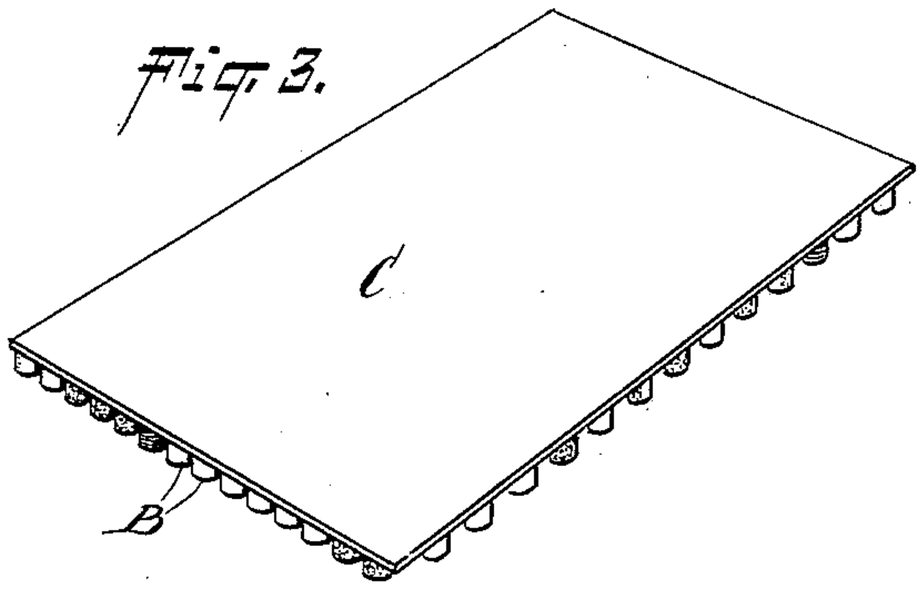


Fig. 6.

Fig. 4.

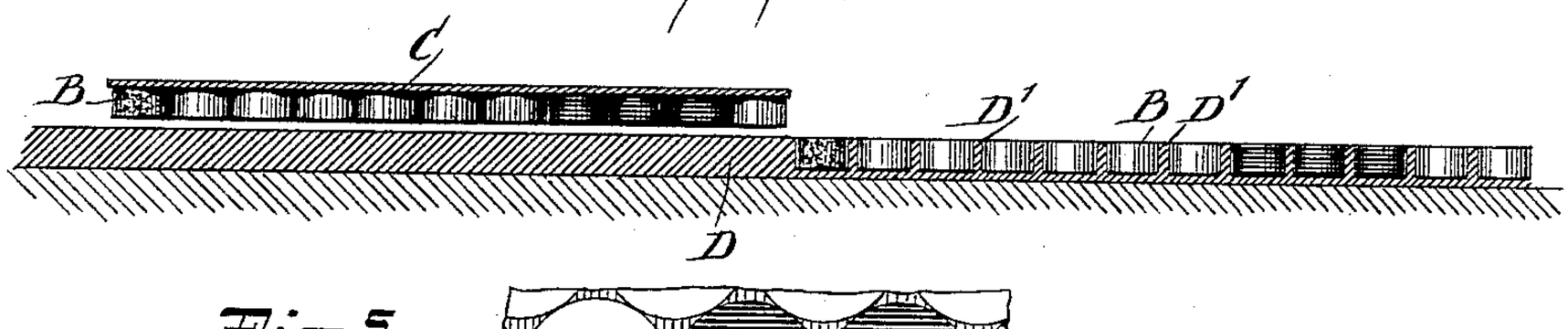
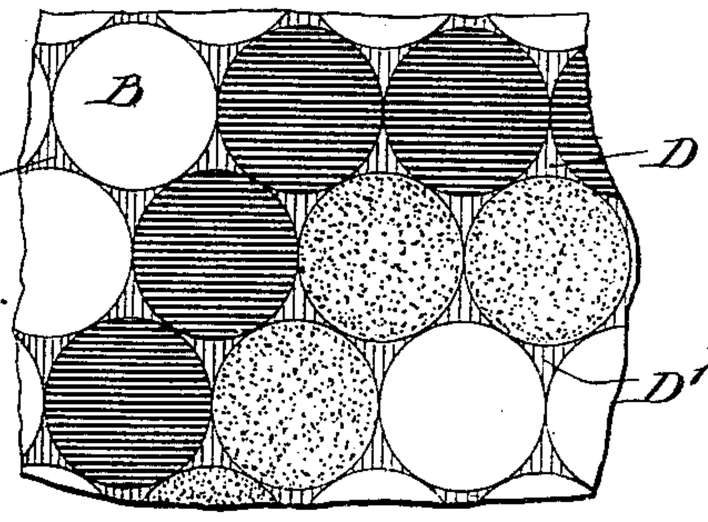


Fig. 5.



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TILING FOR FLOORS, WALLS, CEILINGS, FIREPLACES, &c.

SPECIFICATION forming part of Letters Patent No. 602,691, dated April 19, 1898.

Application filed June 11, 1897. Serial No. 640,308. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. ALEXANDER, of Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in the Making and Setting of Tiles for Floors, Walls, Ceilings, Fireplaces, &c., of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful improvements in the making and setting of tiles for floors, walls, ceilings, fireplaces, &c., whereby adequate space between the tiles is obtained and the tiles are accurately set and securely bound in place to produce an endless variety of highly-ornamental designs and without the employment of skilled labor.

The invention consists principally of tiling comprising small disks embedded in cement or other binding material and with the peripheral surfaces of the tiles in contact with each other and a filling or binding material in which the said disks are embedded and which fills the triangular spaces between the adjacent disks to bind the same at their edges and to form part of the design of the tile at the top surface thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the tray for assembling the disks according to a predetermined design. Fig. 2 is a sectional side elevation of the same on the line 2 2 of Fig. 1. Fig. 3 is a perspective view of the sheet supporting the disks. Fig. 4 is an enlarged sectional side elevation of the tile on the floor and showing some of the disks embedded and others ready for embedding. Fig. 5 is an enlarged plan view of part of the finished tiling, and Fig. 6 is a detail edge view of one of the tile-disks.

The principle that has ruled all tile making and setting in the past has been to secure the smallest possible spaces or openings between the tiles. When tiles of this character are set in cement or other binding material, the adhesion of the latter on the back of the tiles is depended upon to secure them permanently in place, the retaining material having little or no opportunity of securing the tiles at the edges to the foundation. This bond on the back of the tiles, particularly on those of a vitreous or non-absorbent texture, has not been satisfactory or permanent, and various methods have been tried of scoring and roughening the backs of tiles with the purpose of obtaining a stronger bond with the cement. When tiles are set very close together, it is not possible to fill the joints solidly and perfectly with the cement in the process of "grouting"—*i. e.*, a solution of cement applied on the surface of the tiles for the purpose of filling the joints—and the failure to solidly fill these joints produces a result that is unsanitary and therefore undesirable.

In the effort to overcome the above defects ordinary tiles have been set with wide joints. This result has been obtained by pasting the tiles on paper in suitable sections by hand or mechanical process, with the desired spaces between the tiles. Then the sections are placed on the cement bedding preparatory to the process of setting. This plan secured the desired bond on the edges of the tiles, but failed in obtaining the uniform result in that some joints were wider than others, the different pieces having no bearing against each other, the soft cement being insufficient to keep each tile in its intended position while the work of setting is being done. It is usual to find when tiles are laid close together that they become in time smooth and slippery, as the material composing the tile is of a uniform texture, and the harder the tiles the more objectionable they are in this respect.

With my improvement presently to be described in detail I overcome the above-mentioned defects and produce a tile in which the tile-disks are accurately set according to a predetermined design and are securely bound in place at their edges.

In order to carry the above-mentioned method into effect, I prefer to employ a shallow tray A, into which the tile-disks B—say of a diameter of about three-fourths of an inch—are assembled in such a manner that the peripheral edges of the disks touch each other and form straight rows of disks, with the disks of the adjacent rows contacting with one another to form triangular spaces between the adjacent disks, as plainly indicated in Figs. 1 and 5. The disks are made in dif-

ferent colors, and in assembling the disks in the tray great care must be taken to place the differently-colored disks in proper position to produce a predetermined design, as will be readily understood by reference to Fig. 1. It is, however, expressly understood that the adjacent disks always contact with each other, one disk having six contacting points with six adjacent triangular spaces.

The upper surfaces of the disks extend slightly above the top of the tray, and in order to transfer the disks so assembled to the floor, wall, or ceiling I employ a sheet C, covered with an adhesive substance for attaching the upper surfaces of the disks to the under side of the said sheet, as plainly indicated in Figs. 2 and 3. The sheet, with the disks, is then removed from the tray and placed with the disks downward upon cement or other binding material D, after which the sheet C is removed, and the disks previously assembled are now pressed down and embedded in the binding material D, so that the latter passes into the triangular spaces between the adjacent disks, as plainly indicated at the right in Fig. 4. It is evident that the binding material D′ thus passed into the triangular spaces binds the disks in place at their edges, and at the same time the adjacent disks remain in peripheral contact with each other at certain points, as previously explained and plainly indicated in Fig. 5.

An important advantage results in setting the tile from the circular formation of the tile-disks and the formation of such tiles with flat bottoms, so they may be readily shifted laterally to properly close up spaces occurring in fitting the different papers together and also to compensate for slight variations in the arrangement of the disks on the papers because of the different expansions or contractions resulting from different conditions of the paper, the paper when very dry holding the tiles thereon closer together than when the paper is damp to any degree. In so shifting the tiles they are pushed up by the hand or a trowel or other implement, and the motion so imparted to tiles at one point to properly regulate the floor will be transmitted to the tiles beyond for a considerable distance, and the circular form of the tile insures their moving properly together, while the flat bottoms of the disks permit their movement to effect such regulation before described.

Tile-disks of the character described can be readily formed by the use of suitable dies, which latter are less expensive to make and maintain than those used for any other shaped tile, and by the peculiar form of the disks less loss is had by breakage in making and shipping the tiles than with other forms of the tiles.

In setting the tiling, as above described, the desired spaces are obtained between the disks for the binding or retaining material to bind the disks at their edges, while at the same time each disk is set in contact with the adjoining disks, so that by the said contact each and all the disks are held in their intended positions whether the disks are laid singly by hand or in sections assembled and pasted on paper, as above described.

The triangular spaces between the tile-disks, which are readily and solidly filled with the cement or other binding material, confer a distinct advantage to a floor by preventing the whole surface from becoming slippery from constant traffic. This is due to the fact that the texture of the cement in the joints is different from that of the tile-disks.

In practice the peripheral edges of the tile-disks are very slightly beveled (see Fig. 6)—that is, the disks are more in the form of a frustum of a cone, and in embedding such disks the bases of adjacent disks contact, so that the cementing material may cover the entire edges of the disks and still the latter are in contact and thereby kept in proper alinement with each other. As the bases of such tile-disks are downward, the bases are securely locked in place on the hardening of the cementing material.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A tiling composed of disks arranged in series of rows with the disks of each row in peripheral contact with the adjacent disks of such row and with the disks of each row in line with the spaces between the disks of the next row and in peripheral contact with two disks of such next row whereby to properly aline the disks in each row and to form triangular spaces between the contacting disks and a binding material filling the triangular spaces between the adjacent disks, the inner or base ends of said disks being flat, substantially as described.

2. A tiling composed of circular disks of uniform size and made in the form of a frustum of a cone with the large ends or bases of said cones inward and in peripheral contact with the adjacent disks, and the binding material filling the spaces between said disks and the interstitial openings between their contacting portions, substantially as shown and described.

3. A tiling composed of circular disks of uniform size and made in the form of truncated cones with their large ends innermost, such disks being set with portions in peripheral contact with the similar adjacent disks leaving triangular spaces and interstitial openings between the adjacent disks and the cement-like binding below and between the disks and extended through the interstitial openings between the large ends of the disks tying the material below the disks to that between the same and keying the disks in place, substantially as shown and described.

4. A tiling composed of contrasting disks made alike in shape, and having their peripheral edges in contact with each other to

form triangular spaces between adjacent disks, the top surfaces of the disks extending in the same plane, and a binding material in which the said disks are embedded, and which material fills the triangular spaces to bind the tile-disks at their edges, the top surface of the material being flush with the top surface of the disks and in contrast thereto to set off the contrasting disks, substantially as shown and described.

5. A tiling composed of the blocks made circular in cross-section and frusto-conical with their large inner ends flat, and the binding material in which said blocks are set with their inner flat ends in peripheral contact with the corresponding ends of the adjacent blocks, the interstitial spaces between the blocks being filled with the binding material and the flat inner ends of the blocks forming broad bases by which to prevent any tilting of the tile-blocks, substantially as shown and described.

6. A tiling substantially as described, comprising circular tile-disks having their peripheral surfaces in contact with each other to form intermediate spaces between the adjacent disks and binding material in which said disks are embedded and in the spaces between the disks at the edges thereof, the circular form of the disks permitting the shifting thereof in securing a regulation of the pattern in setting the tiles, substantially as set forth.

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