J. A. FERGUSON.

TILE AND TILING COMPOSED THEREOF.

APPLICATION FILED MAY 25, 1917.

1,249,362.

Patented Dec. 11, 1917.

2 SHEETS—SHEET 1.

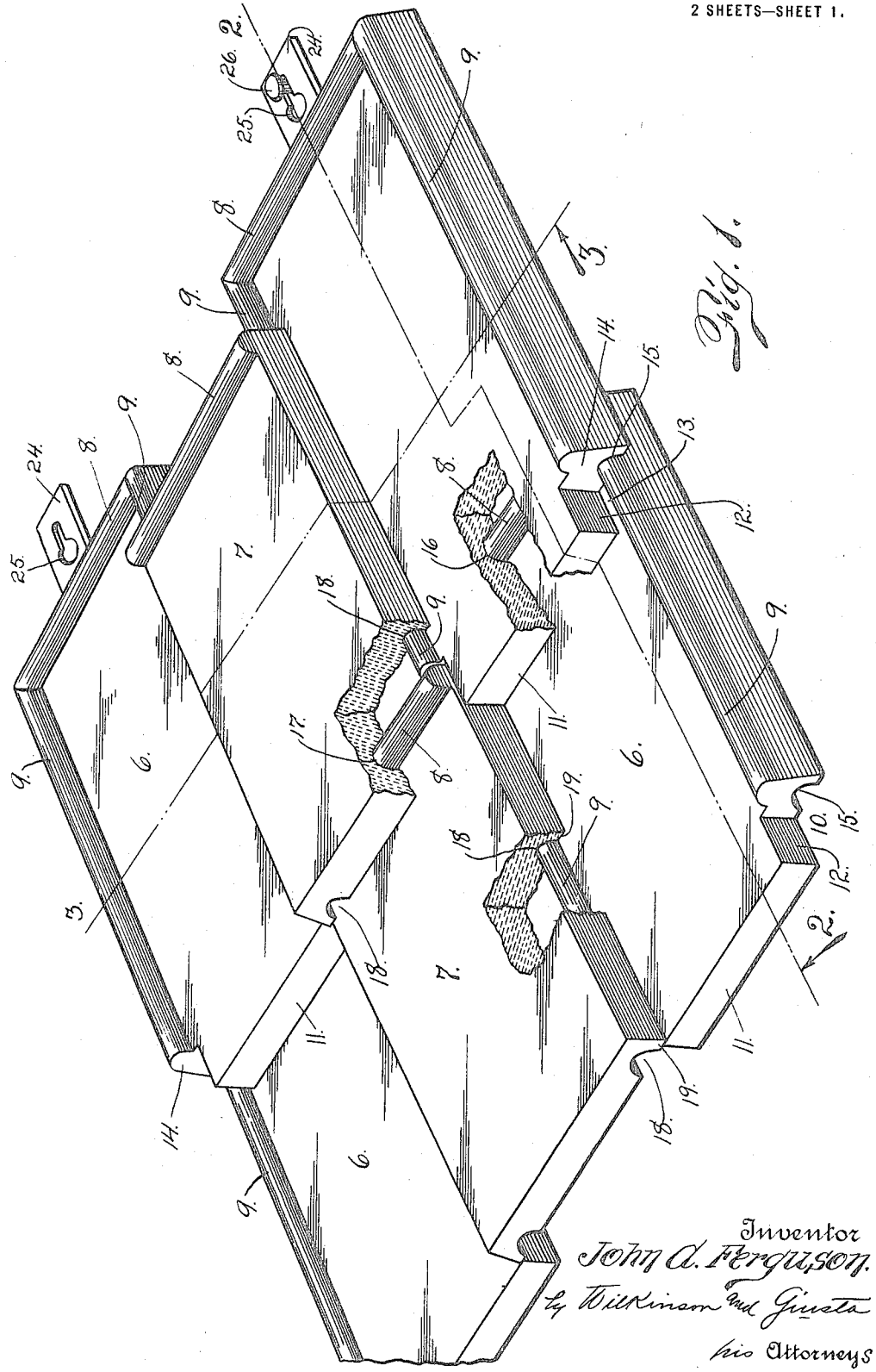


Fig. 1.

Inventor
John A. Ferguson.
by Wilkinson and Giusta
his Attorneys

J. A. FERGUSON.

TILE AND TILING COMPOSED THEREOF.

APPLICATION FILED MAY 25, 1917.

1,249,362.

Patented Dec. 11, 1917.

2 SHEETS—SHEET 2.

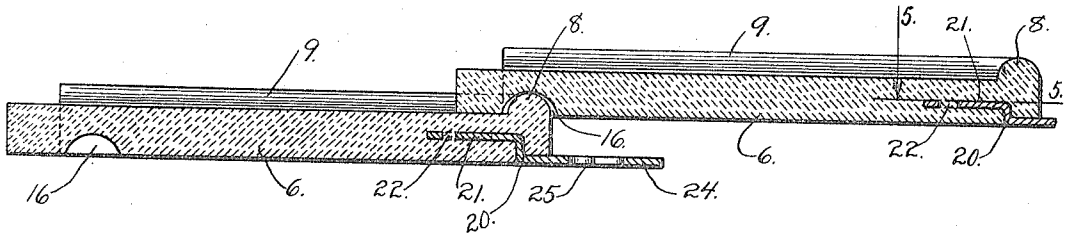


Fig. 2.

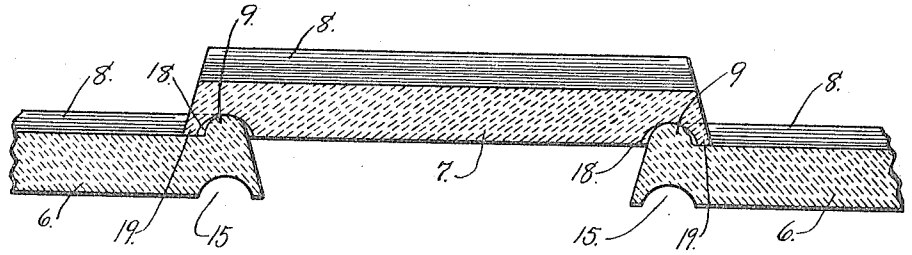


Fig. 3.

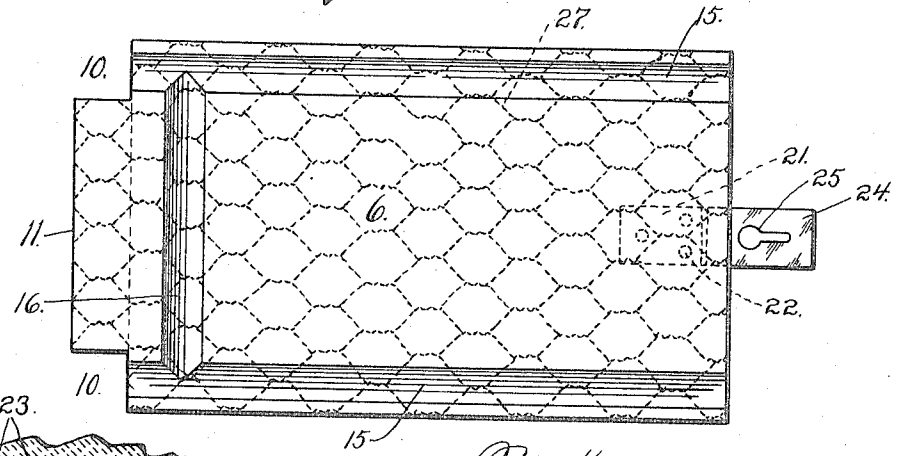


Fig. 4.

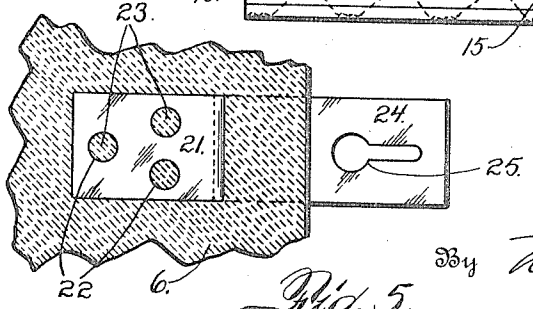


Fig. 5.

Inventor

John A. Ferguson.

By Wilkinson and Ginsta

his Attorneys

UNITED STATES PATENT OFFICE.

JOHN A. FERGUSON, OF DENVER, COLORADO.

TILE AND TILING COMPOSED THEREOF.

1,249,362. Specification of Letters Patent. Patented Dec. 11, 1917.

Application filed May 25, 1917. Serial No. 170,902.

To all whom it may concern:

Be it known that I, JOHN A. FERGUSON, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Tiles and Tiling Composed Thereof; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in tiles and tiling composed thereof, the tile elements being formed from a suitable plastic substance allowed to set in a mold form and become thoroughly hardened.

While the invention is particularly designed with relation to roofing tiles, molded from a cementitious mixture, it will be understood that the words "tile" and "tiling," as herein used, are not limited necessarily to "roofing" structures, but cover analogous forms of tiles used collectively in other forms of tiling, wherein one tile element is laid in overlapped and inter-engaged association with another.

As such cement mixtures have a decided tendency to settle, when in a fairly liquid state, I have found that, in making these more or less fragile articles, it is of great advantage to mold each tile, with its top surface facing downward, in a suitable mold form or settling pan, wherein the heavier cement in part becomes more evenly distributed toward the bottom of the mold form, not only providing a smooth, glaze-like finished top surface for the tile, but also producing a somewhat stratiform facing, which, when thoroughly indurated, will uniformly reinforce, as it were, the whole body structure of the tile.

One of the objects of this invention, therefore, is to preserve the superior quality of such tiles as to uniform coherence and finished facing, and at the same time producing tiles of novel structure and formation, whereby, when collectively laid as tiling, provision is so made for the overlapping and inter-engaging of the tile elements in interlocked relation that a more satisfactory water-tight joinder is effected, between the tiling elements, which is especially desirable in tiled roofing and the like, where proof against leakage is essential.

Another object of the invention is to provide a novel form of securing element, embedded in the body of the tiles and projecting beyond their upper end faces, whereby each individual tile may be firmly but detachably secured to the tiling support in such manner that an individual tile, if it should happen to become broken or otherwise ineffective, may readily be detached and replaced by a similar tile, which in turn is also fixedly secured to but in detachable relation with the tiling support, and without substantially disturbing any other part of the roofing structure.

With these and other objects in view, the invention consists of the novel structural formation of the tiles, and in the combination and arrangement of their inter-engaging locking elements, coöperating when laid as tiling, together with the novel form of securing element, for detachably securing the tiles to the tiling support, independently of the interlocked association of the tile elements collectively, all of which will more fully hereinafter appear, the particular features of novelty being more succinctly set forth in the appended claims.

To more fully disclose the invention, reference will now be had to the accompanying drawings, forming a part of this application, in which drawings like reference characters refer to the same parts in the several views, and in which—

Figure 1, is a perspective view of a portion of a tiled roofing, illustrating the manner of laying the sets of tiles relatively to each other, and portions of the tile elements being broken away to show more clearly the inter-engaged locking beads and grooves thereof.

Fig. 2, is a view, in longitudinal vertical section, taken along the line 2—2 of Fig. 1, the intermediate overtopping or spanning tiles being omitted.

Fig. 3, is a vertical transverse sectional view, taken along the line 3—3 of Fig. 1.

Fig. 4, is a bottom plan view of one of the foundation or base tile elements, and addi-

tionally illustrating, in dotted lines, the application of an embedded metal reinforcing netting, if desired, and

Fig. 5, is a fragmentary detail horizontal sectional view, taken on the line 5—5 of Fig. 2, and showing the end securing metal strip in embedded relation with the tile body.

In fully carrying out my present invention, I employ two sets of tile elements, which may be conveniently referred to as "base" or "foundation" tiles, in one instance, and as "spanner" or "topping" tiles, in the other, the former being laid in laterally spaced rows and being designated by the numeral 6, while the latter surmount and cover the lateral space or gap, between the rows of base tiles, and are designated by the numeral 7.

These two sets of tile elements, however, are substantially similar in general structure, with the exception that the base tiles 6 are slightly longer than the spanner tiles 7, and the spanner tiles are not necessarily provided, on their top faces, with the longitudinal edge beads formed on the top faces of the base tiles, as hereinafter referred to.

Each one of the tiles is provided on its top face, at the upper end thereof, with a transversely disposed raised surface or bead 8, which preferably lies immediately adjacent the upper end face of the tile, both the end faces and side faces of the tiles being desirably slightly beveled as shown.

With these beads 8 so located, immediately adjacent the upper end faces of the tiles, instead of farther down on their top surfaces, the waste of considerable material is avoided, as the opposite superimposed end of the next adjacent upper tile completely overlaps these beaded portions, when the tiles are laid as tiling.

In addition to this transverse bead, the top face of each of the base tiles 6 is further provided with a longitudinal bead 9 at both sides of the tile, which beads are also disposed immediately adjacent the side faces thereof, practically forming an upwardly projecting rounded continuation of the side surfaces.

At the opposite or lower end of the base tiles 6, the corners thereof are recessed, as at 10, providing a centrally projecting tongue portion 11, the transverse depth of said recesses being sufficient to permit the side faces 12 of the tongue portion to lie well within the confines of the longitudinal beads 9, so that when the base tiles are laid in rows the overlapping or tongued end of an upper tile will form, with the beads 9 of a lower tile, socketed spaces 13 therebetween, headed by the abutting transverse faces 14 of these corner recesses 10, which are adapted to receive and seat the upper corners of a spanner tile, in inter-engaged relation, the joinder therebetween being completely covered by the superimposed lower end of the next adjacent upper spanner tile.

The bottom faces of the base tiles, as more clearly shown in Fig. 4, are each provided with a longitudinal groove 15, near both side edge faces thereof, and these grooves 15 are disposed in substantial complementary alinement with the beads 9 on the top faces, extending from the transverse faces 14 of the corner recesses to the opposite ends of the tiles.

Also a transverse groove 16 is formed in the bottom faces of these tiles, located substantially forward of the tongue portion 11, and merging at their ends into the longitudinal grooves 15. It will be observed that these transverse grooves 16 are located at the lower end of the tiles, or at the end distant from the top beads.

The bottom faces of the spanner tiles 7 are similarly provided with a transverse groove 17 at their ends distant from the beads 8, and likewise are also provided with the longitudinal side grooves 18, forming with the side faces the overhanging edge portions 19, which at their upper ends function as interlocking shoulders fitting within the socketed spaces 13 hereinbefore mentioned.

The bottom faces of these spanner tiles 7 are identical with the bottom faces of the base tiles, the only difference between the two sets of tiles, as previously stated, being that the spanner tiles need not be provided with the top longitudinal beads 9, and also they are shorter than the base tiles, terminating in the plane of the transverse faces 14, and therefore minus the tongue portion 11.

20 designates a flat angularly bent metallic securing strip, of substantially Z-shaped construction with elongated arms, the inner arm 21 of which is adapted to be embedded within the body of the tile, when the latter is being molded, and in order to prevent the displacement or pulling out of this securing element, the inner arm is provided with one or more apertures 22, within which the cement 23 of the tile body is embedded, providing anchoring means therefor, as more clearly shown in Fig. 5. At the same time it will be noted, especially from Fig. 2, that the bent portion, connecting the inner and outer arms, of the substantially Z-shaped securing member, is also embedded in the cement tile body, thus affording additional security against the pulling out or displacement of the metallic securing element.

The other end or arm 24 of this securing element projects outwardly beyond the upper end face of the tile, substantially flush with the bottom face thereof, and is provided with a key-hole slot 25, the enlarged opening of which is disposed toward the end face of the tile, while the elongated

opening is disposed outwardly, as clearly shown, so that when a tile is laid in place, the enlarged opening is slipped over a headed stud or nail 26, in the tiling support, and the tile slid downwardly, with the stud or nail riding in the elongated opening of the key-hole slot, as clearly indicated in Fig. 1.

In Fig. 4, I have shown, in dotted lines at 27, a metallic netting, embedded in the body of the tile as it is molded, and serving as a reinforcing means therefor, but I lay no particular claim to this feature, as it is old in practice and may be included or omitted as desired.

In applying the invention as a tiled roofing, the base tiles 6 are laid in parallel rows on the roofing support, the rows being spaced apart a distance to conform with the lateral space between the longitudinal grooves 15 in their underneath faces.

As each tile is laid, where the securing strips 20 are employed, a nail is driven into the roofing support through the elongated portion of the key-hole slot, or where the nail or a headed stud is driven first into the roofing, then the enlarged opening of the key-hole slot is passed over the nail head, and the tile slid down until the nail passes up to the closed end of the elongated opening, securely holding the tile detachably secured to the roofing support.

From Figs. 1 and 2, it will be observed that the lower end of an upper tile 6 substantially projects beyond to completely overlap the upper end of the next adjacent tile below, with the faces 12, of the tongue portion 11 of the upper tile, slightly spaced from the longitudinal beads 9 of the lower tile, leaving socket-like spaces therebetween.

At the same time the transverse bead 8 on the top face of the lower tile is caused to inter-engage the transverse groove 16 in the underneath face of the tile above, while the upper ends of the longitudinal beads 9 of the lower tile interengage the lower portions of the longitudinal grooves 15 of the upper tile.

The "spanner" tiles are laid with their upper corners seated within and filling the corner recesses 10 of the alternate rows of "base" tiles to provide an inter-engaged joinder therewith, these tiles being also laid with their longitudinal grooves 18 inter-engaged by their complementary longitudinal beads 9 of the "base" tiles of alternate rows, so that the upper overhanging ledge portions 19 of the "spanner" tiles are projected into the socket-like spaces 13, serving in a fashion as a wedging means between the faces 12 of the tongues 11 and their adjacent beads 9, more securely holding the tiles in lateral security.

The lower end of an upper "spanner" tile substantially overlaps the upper end of a lower "spanner" tile, with the transverse bead 8 of the lower tile inter-engaging the transverse groove 17 of the upper one, and this overlap completely closes the otherwise open tops of the corner recesses 10 of the "base" tiles.

The additional securing elements 20 are of themselves also important, for although I am aware that somewhat similar securing members have heretofore been employed, they will not function the same as my improved means, as they simply provide a plain aperture for driving a nail through, and hence if a tile becomes broken, the nail has to be cut off to replace the defective tile, so that the replacing tile cannot be secured to the roofing support. By the key-hole slot connection, however, by simply prying up the adjacent tiles slightly, the broken tile may be slid upwardly to disengage the key-hole slot from the securing nail, when the broken tile may be withdrawn. A new tile is then set in place by passing the enlarged opening of the key-hole slot over the nail head, and then sliding the tile downwardly, reversing the operation of removal, as is believed to be apparent.

Thus by the general arrangement and novel functioning of elements as described, a substantially secured leak-proof roofing, of interlocked tiles, is provided.

Having thus fully disclosed my invention and the manner of carrying out the same in its entirety, it will be understood that I do not limit myself to the precise details set forth, excepting as come within the purview of the ensuing claims and a reasonable construction thereof, contemplating a fair range of equivalents.

What I do claim as new and patentable, is:—

1. A roofing tile, comprising a body portion, rabbeted at its lower end to form corner recesses and a central tongue portion, the top face of said tile having a transverse bead, disposed immediately adjacent its upper end edge, and a pair of longitudinal beads, one of which extends along each side edge thereof, the underneath face of the tile being provided with a pair of longitudinal grooves, disposed in congruent alinement with said longitudinal beads on the top face, the said longitudinal beads and grooves terminating at said corner recesses, and the underneath face of said tile being also provided with a transverse groove, merging at its ends into said longitudinal grooves at positions substantially distant from the terminal lower ends of the latter and forwardly of said tongue portion, substantially as described.

2. In tiling for roofing or the like, the employment of base tiles providing, on their top and underneath faces respectively,

transverse and longitudinal beads and grooves, functioning as set forth, and also providing, at their lower ends, corner recesses and a central tongue, the said tiles being laid in substantially spaced rows, with the tongue portion of one tile overlapping the upper end of an adjacent tile, the transverse bead of the lower tile inter-engaging the transverse groove of the upper one, and the upper ends of the longitudinal beads of the lower tile inter-engaging the lower ends of the longitudinal grooves of the upper tile; in combination with spanner tiles disposed in rows alternating with said base tiles, for covering the spaces therebetween, each having a transverse bead on its top face and a transverse groove and longitudinal grooves in its underneath face, said beads and grooves being disposed and functioning as set forth, and said spanner tiles being so laid that their upper corners seat in said corner recesses of the alternate rows of base tiles, the lower end of one spanner tile overlapping the upper end of a spanner tile below and completely covering the adjacently opposed corner recesses of the base tiles, with the transverse bead of a lower spanner tile inter-engaging the transverse groove of an upper one, and the proximate longitudinal beads, of alternate rows of base tiles, inter-engaging the longitudinal grooves of the spanner tiles, substantially as described.

3. The combination with a roofing tile molded from a cementitious mixture, substantially as set forth, of a substantially Z-shaped metallic securing element, having elongated arms, the inner arm and bent portion of said securing element being actually embedded within the cement tile body, at one end of the latter, while the same is being molded, and with its outer arm projecting beyond that end edge face of the tile; the inner end of said securing element being suitably apertured to receive the cement mixture, in embedded relation, to provide anchoring means for assisting in preventing its displacement, and the said projecting end thereof, lying entirely outside of the tile body, being adapted to engage fastening means on the tiling support, independently of any of the other tiles, substantially as described.

In testimony whereof, I affix my signature.

JOHN A. FERGUSON.