Aug. 30, 1932. H. C. MORTENSON 1,874,790

BUILDING MATERIAL AND RETAINING MEANS THEREFOR

Filed March 8, 1930 2 Sheets-Sheet 1

Fig. 1.

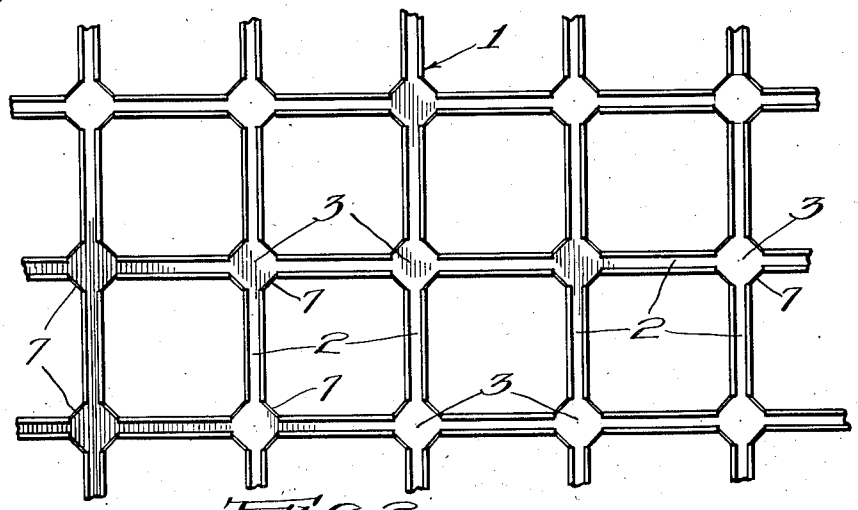
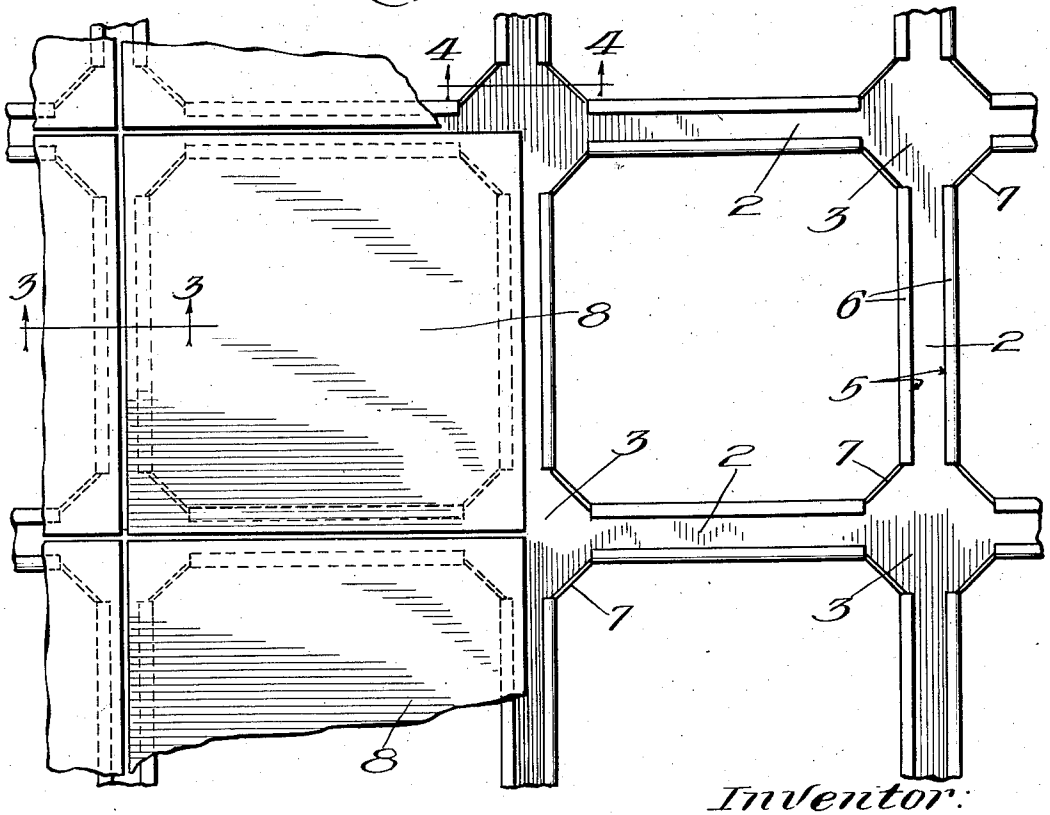


Fig. 2.



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Fig. 3.

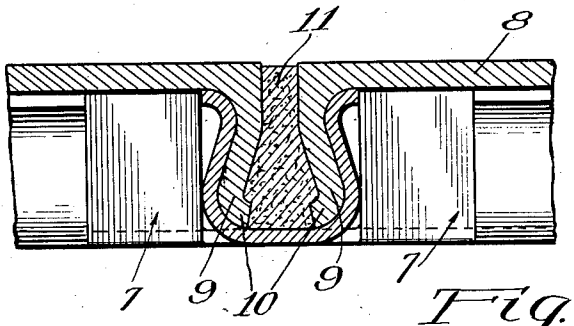


Fig. 4.

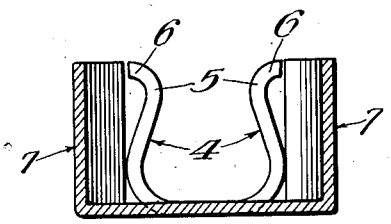


Fig. 5.

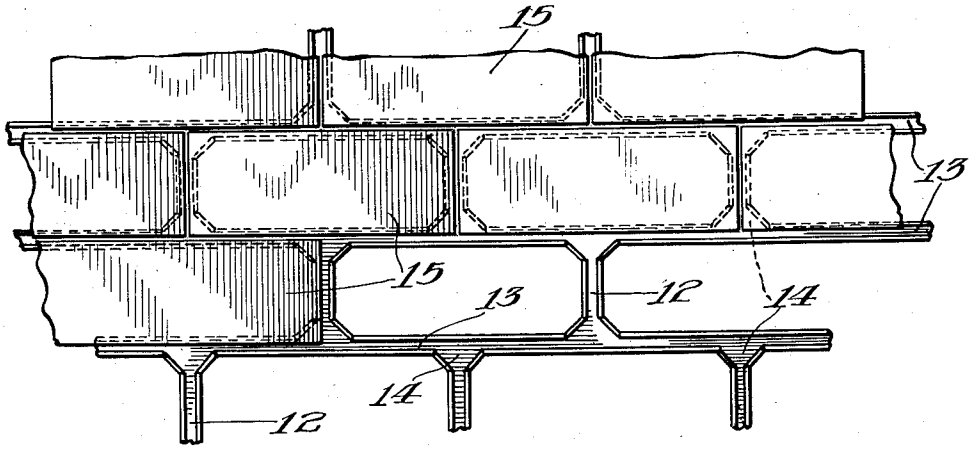
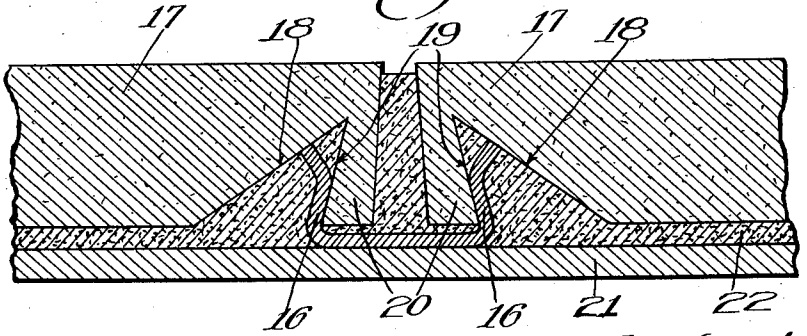


Fig. 6.



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Patented Aug. 30, 1932 1,874,790

UNITED STATES PATENT OFFICE

HENRY C. MORTENSON, OF HIGHLAND PARK, ILLINOIS, ASSIGNOR TO MORTENSON ENGINEERING CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

BUILDING MATERIAL AND RETAINING MEANS THEREFOR

Application filed March 8, 1930. Serial No. 434,389.

The present invention relates to building materials and retaining means therefor, and more in particular to a novel construction of tile, brick, metal or other building material or the like, and a means for retaining the same in position.

In the methods of building construction now employed, the cost of the materials, and especially of the labor required to assemble such material is highly excessive, the cost of such labor frequently being the major item in the initial cost of the building. The laying or setting of each of the materials going to make up the assembled building, requires men skilled in that art and of course necessitating a considerable outlay since such men demand and receive exceptionally high salaries. The present invention with reference to the retaining or holding means is adapted for holding materials going to make up the interior or exterior of a building, whether it be the side walls, floor, ceiling, roof, or any other portion of the building.

This invention comprehends the use of sheets of metal, stamped or formed in the shape of a screen, the same being provided with means for engaging the tile, whether it be ceramic, metal, or the like, bricks, stone or whatever material is desired to be used in whatever shape or configuration it is desired. The metal sheet or screen is readily and easily attached to the side walls, ceiling or floor of a room, or the exterior or interior of a building including the roof thereof, and the building material or roofing of whatever material desired can be quickly and easily attached by anyone without any previous experience in such attachment.

In its broadest aspect, the invention comprises means for holding any building material in its predetermined position with sufficient tension to prevent such building material or holding means from becoming detached or loosened by reason of any possible contraction or expansion of either or both thereof. In the adaptation of metal wall covering to this invention, the same is made in units of any desired configuration or size, it being of course understood that the holding means is so constructed as to take care of the desired shape of covering, and for this reason the present holding means can be stamped, cut or bent in a plurality of configurations and sizes depending upon the wall covering to be used. When the metal covering is used, the edges thereof are bent downwardly and inwardly so as to permit a tensional and frictional retaining of the covering by the spring flanges or projections of the holding means. Although such tension and friction is ordinarily sufficient to hold these metal parts in tight engagement, nevertheless, additional holding means in the form of cement is ordinarily applied intermediate the joints of adjacent metallic units, which would be so constructed as to simulate tile.

In the use of ceramic tile, brick, stone, marble, granite or other material suitable for building construction, either interior or exterior, the invention comprehends the provision of such materials with a groove or channel in its under surface and adjacent the edges thereof for the reception and retention of the spring flanges of the holding means. These cut-out portions, grooves or channels, are slightly cut-back so that the spring flanges have a maximum gripping action, and are also cut to uniform and sufficient depth so that the upper or outer edges of the spring flanges contact the side walls of the groove, allowing such building materials to be set uniformly and in alignment. The spring fingers or flanges are further so bent as to provide directing means for the units of the building material as they are set in position. Also in this construction, the spring flanges are normally sufficient to hold the units in position, but additional holding means in the form of cement is generally applied. The adjacent units are so spaced apart as to allow for the reception of the cement, and by reason of the configuration of the building material and the holding or retaining means, a wedge-shaped groove is provided intermediate the adjacent units. When the sheet mesh is attached to a backing such as wood, fibre board or other suitable backing means, the voids intermediate the mesh may be provided with cement so as to insure further attaching means for the building material. This

cement may be either applied by means of a trowel, or it may be applied by a pressure system whereby the cement is forced into the voids under pressure.

The retaining sheets may be of any desired size and are so constructed as to be adapted to be placed on a backing sheet such as fibre board, wood or other suitable material and thus assembled at the factory so that it is a simple matter to merely apply the building units or blocks and cement on the building site. My invention comprehends the application of line assembly to building construction, which is a distinct and far-reaching advance in the art. Although I have shown the retaining means engaging interiorly of the building units, it is to be understood that in certain constructions the engaging parts may be reversed so that the flanges engage the exterior of the units. This latter construction is more particularly set forth in my co-pending application Serial No. 494,245, filed November 8, 1930, in which the building units may be retained by the holding or retaining means engaging the exterior of the unit, in which case the curvature of the resilient flanges is reversed.

From the disclosure it will be readily comprehended that even though the building units or materials may vary in their dimensions, the curved spring flanges or fingers will tensionally receive and retain the same. It is a well known fact that building materials, such as ceramic tile, brick and various other units which are normally moulded or formed, vary in their dimensions, and such variation is admirably taken care of by the resilient curved flanges and their formation and spacing.

As clearly disclosed in the drawings and in the following description, the holding means is adapted to retain building material regardless of whether the individual units thereof are in both vertical and horizontal alignment, or whether they are in staggered relation.

Further objects are to provide a construction of maximum simplicity, efficiency, economy, and ease of assembly and detachment, and such further objects, advantages and capabilities as will later more fully appear, and are inherently possessed thereby.

The invention further resides in the combination, construction and arrangements of parts illustrated in the accompanying drawings, and while I have shown therein a preferred embodiment, it is to be understood that the same is susceptible of modification and change, and comprehends other details, arrangements of parts, features and constructions without departing from the spirit of my invention.

Referring to the drawings:

Fig. 1 is a fragmentary view in plan of the retaining sheet.

Fig. 2 is a fragmentary enlarged view similar to Fig. 1, but in addition, disclosing the means and method of holding the tile on the retaining sheet or mesh.

Fig. 3 is a view in vertical cross section taken on the line 3—3 of Fig. 2.

Fig. 4 is a view in vertical cross section taken on line 4—4 of Fig. 2.

Fig. 5 is a fragmentary top plan view of the retaining sheet adapted to hold units of building material which are placed in staggered relation and showing the means and method of retaining such units in position.

Fig. 6 is a fragmentary view in vertical cross section of the retaining means and building material, such as clay tile or the like, such material being provided with a groove or channel member for the reception and retention of the retaining means.

Referring more particularly to the disclosure in Figs. 1 to 4 inclusive of the drawings, the embodiment selected to illustrate the invention is shown as comprising a sheet or screen 1 of metal or the like, stamped or formed to provide rectangular openings having adjoining sides 2 and corner portions 3. Each of the sides 2 are provided with upwardly curved flanges 4, which, near their upper end at 5, are bent inwardly and then outwardly as at 6. The corner portions are provided with vertically extending flanges 7 which provide a retaining means for the cement. In Figs. 2 and 4, I disclose sheets of metal tile 8, the same being constructed in units of a size sufficient to bridge the mesh of the retaining sheet. These tile are provided with downwardly and inwardly extending sides or flanges 9, which, at their lower end 10 are bent outwardly. The flanges 4 of the retaining sheet and the flanges 9 of the metal tile are so formed as to provide inter-engaging and interlocking means for retaining the tile in predetermined position.

The flanges 4 of the retaining sheet, being of spring or flexible metal, will hold the tile in substantially rigid, adjusted position and at the same time allow for any contraction and expansion of either the tile or the retaining means without any possibility of disengagement of the interengaging and interlocking portions. The curvature of the ends of the flanges on both the tile and retaining sheet, is such that the tile will be directed and guided into position, the ends 10 of the flanges 9 of the tile forcing the flanges 4 of the retaining means outwardly during the initial engagement of the flanges.

After the tile is placed in position, cement 11 may be placed by means of a trowel in the spaces intermediate the adjacent units of the tile, or such cement may be forced therein by means of a pressure system whereby the cement is forced under high pressure into the channels or voids to provide additional

retaining means for holding the tile in position.

In Fig. 5 is disclosed a construction of the retaining means adapted to be used where the tile, bricks, or other building material is to be placed in staggered relation and not in direct vertical and horizontal alignment. In this construction, the sides 12 and 13 are provided with flanges similar to those shown in Figs. 3 and 4, but in place of the corner structure 3 of these figures, the portion 14 adjoining the sides 12 and 13 is so formed as to permit the ready retention of the building unit 15 when placed in staggered relation.

In Fig. 6 is disclosed a construction of ceramic tile, brick, marble, or other building material not constructed of metal, and which is so formed as to provide interengaging means for the reception and retention of flanges 16 of the retaining sheet. These building blocks or units 17 are shown as provided with a groove or channel 18, the side 19 of the channel being cut-back or so formed as to permit sufficient tensional and frictional contact between the ledges 20 of the material and the spring flanges of the retaining sheets. In the means and method of applying such building material, the same is shown as mounted above a backing 21, and to which the retaining sheets may be attached in any suitable manner. This backing may be placed either exterior or interior of the building, and either on the wall, ceiling, floor, or roof thereof, as desired. When desired, cement 22 may be spread in any suitable manner upon this backing and in the adjoining sides of the retaining sheet and the unit or block of the building material set thereon, the ledges of the units or blocks initially contacting the upper curved portion of the flanges 16 and spreading the spring flanges or flexible side portions so as to allow for the proper engagement of the flanges 16 with the sides 19 of the ledges. Also the upper ends of the flanges 16 contact the opposite sides of the grooves or channels 18 so as to allow for a definite and uniform setting of the building blocks. By reason of this construction, the retaining sheets may be mounted on such backing at the factory, and the backing and retaining sheets attached wherever desired in the building by one having had no previous experience therewith. The cement and building material is then placed thereon at the time the interior finishing or decorating is being performed, which operations can likewise be carried out by unskilled labor.

In the prior method of laying tile or other building material or units, the retaining cement was necessarily of considerable depth to retain the tile, and this was normally placed upon concrete backing. By reason of the varying coefficient of expansion and contraction of the concrete, cement and tile or other building unit, and the greater depth or thickness of the concrete and/or cement than the tile or other building unit, whenever the wall or other surface was subjected to varying temperatures, the tile or other building unit would frequently become loosened or crack. Because of the small amount of cement 22 being used in the present construction and the spring retaining means, this difficulty is obviated. In the present invention, when the tile or units have become set, the whole structure becomes a monolithic slab.

From the above description and disclosure, it will be readily understood that the invention is extremely comprehensive in scope and adapted for substantially all manner of building construction. The retaining sheet or screen when once attached, affords greater stability and rigidity to the building structure. These metal sheets may be constructed of any size desired and suitable for the use to which they are to be put, while the spring flanges thereof may be of any desired height, and provide any desired spacing therebetween, depending, of course, upon the material that is to be retained. When metal tile is to be held thereby, the retaining sheet and the flanges may be of a relatively light gauge sheet metal, having of course, sufficient tensile strength to hold the tile under varying conditions of temperature so as to allow for contraction and expansion thereof. When the retaining sheet is for the holding and retention of brick or the like on the exterior of the building, the retaining sheet must necessarily be made larger and of a heavier metal to withstand the weight of the building material.

By this construction, it is possible to greatly reduce the thickness of the tile or brick, or whatever building material is being employed, thus saving considerable in the cost and time consumed in erecting the structure. It will readily be seen that this structure is also suitable and highly advisable for the retention of roofing material, or in fact wherever building materials are now being employed.

Having thus disclosed my invention, I claim:

1. A retaining means for building materials, comprising a sheet of metal provided with outwardly extending resilient flanges adapted to receive and tensionally and frictionally retain a plurality of blocks of building materials such as tile, brick or the like, said flanges being so formed as to intercept such building materials even though the same may vary in their dimensions.

2. A retaining means for building materials, comprising a sheet of metal provided with outwardly extending resilient flanges adapted to receive and tensionally and frictionally engage the sides of a plurality of blocks of building materials such as tile, brick or the like, said flanges being provided with curved end portions adapted to intercept and

center the blocks and hold the same with sufficient tension to prevent their ready detachment.

3. A retaining means for building materials, comprising a sheet of metal provided with outwardly extending resilient flanges adapted to receive a plurality of blocks of building materials such as tile, brick or the like, said flanges being provided with curved end portions adapted to intercept the sides of said blocks and said flanges being bent inwardly sufficient to intercept and retain blocks of varying dimensions.

4. A determined means for building units such as tile, brick or the like, comprising a sheet of metal adapted to form a backing for the building units and retain a plurality of said units, said sheet being provided with outwardly extending spring flanges adapted to receive and direct said units into retaining position and tensionally retain the same in their adjusted position.

5. A retaining means for building units such as tile, brick or the like, comprising a sheet of pliable material adapted to form a backing for the building units and retain a plurality of said units, said sheet being provided with outwardly extending spring flanges adapted to receive and direct said units into retaining position and tensionally retain the same in their adjusted position, said flanges being so formed as to intercept such building units even though the same may vary in their dimensions.

6. A retaining means for units of building materials such as tile, brick or the like, comprising a sheet of pliable metal adapted to form a backing for the building units and retain a plurality of said units, said sheet being provided with outwardly extending curved spring flanges adapted to be displaced and intercept such materials even though they may vary in their dimensions, and retain the materials by a tensional grip of the flanges against the sides of the building materials.

7. A wall covering and retaining means therefor, comprising the combination of units for building construction and an integral retaining means for a plurality of such units, said retaining means being provided with resilient flanges adapted to be displaced by the units when the same are snapped thereon and tensionally gripping the sides of the units when the units are in an adjusted position.

8. A wall covering and retaining means therefor, comprising the combination of units of building materials and a retaining means for a plurality of said units, said retaining means comprising a metal backing formed with resilient flanges adapted to be displaced by the units when the units are forced onto said flanges by a force substantially perpendicular to the wall, said flanges being so formed as to intercept and retain the building units even though the same may vary in their dimensions.

9. A wall covering and retaining means therefor, comprising the combination of units for building construction provided with depending flanges, and a retaining means for a plurality of said units comprising a sheet of metal forming a backing for the units and having resilient fingers adapted to be displaced by said flanges when the units are forced onto said fingers by a force substantially perpendicular to the wall, said fingers by reason of their resiliency gripping and retaining said flanges in assembled position.

In witness whereof, I hereunto subscribe my name to this specification.

HENRY C. MORTENSON.

CERTIFICATE OF CORRECTION.

Patent No. 1,874,790. August 30, 1932.

HENRY C. MORTENSON.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, line 14, claim 4, for the word "determined" read retaining; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of November, A. D. 1932.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)