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BUILDING STRUCTURE

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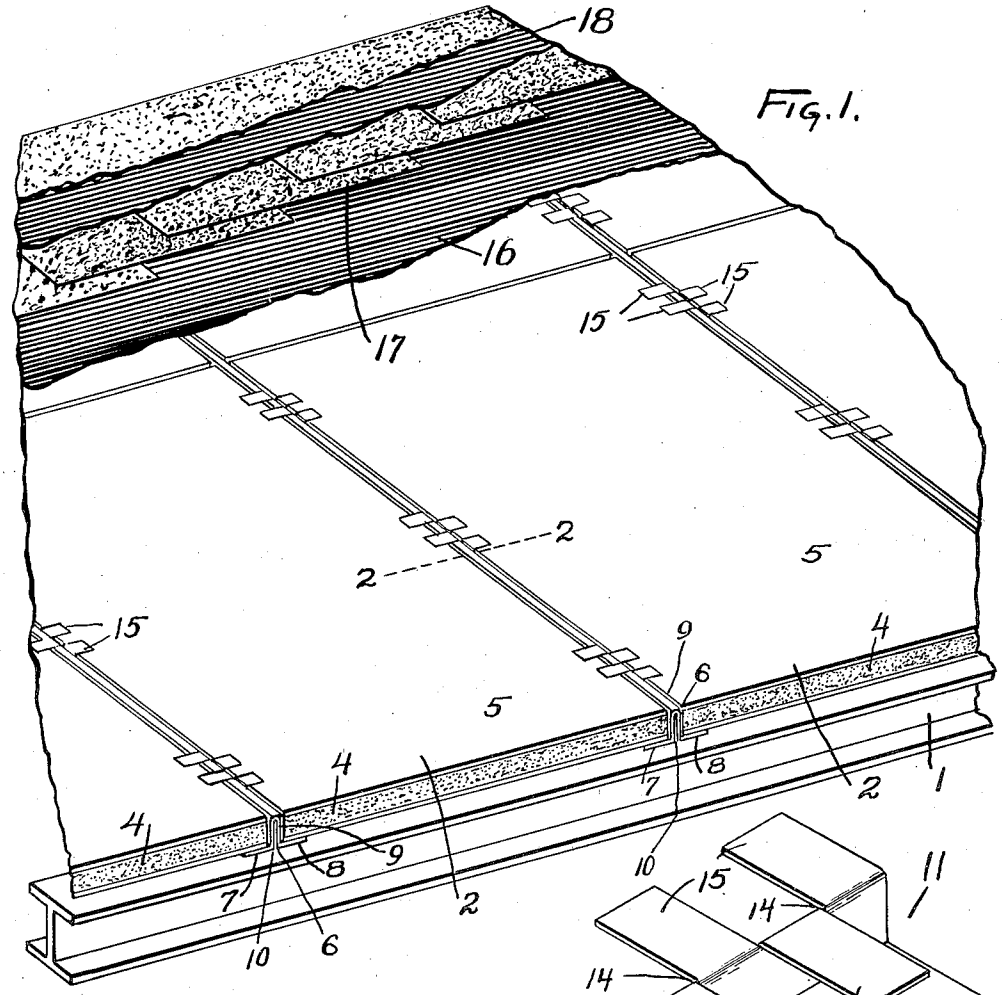


FIG. 1.

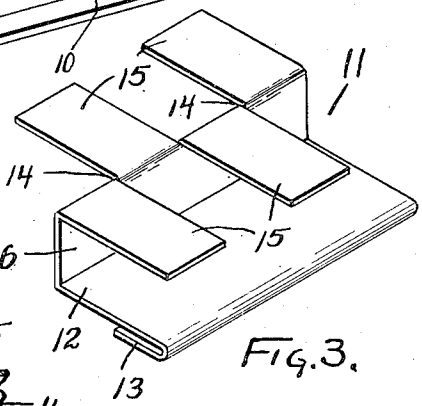


FIG. 3.

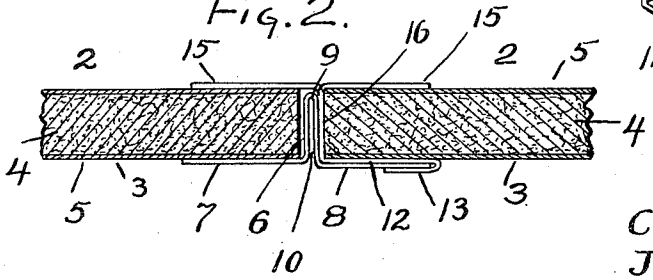


FIG. 2.

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BUILDING STRUCTURE

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8 Claims. (Cl. 108—6)

This invention relates to building structures having floors, roofs, walls or the like, composed of preformed building slabs or units adapted to be laid edge to edge to build up a layer of substantially uniform thickness, and particularly pertains to roof decks composed of preformed insulating slabs laid edge to edge with a means interposed for securing the adjacent side edges of the slabs in relative position and providing for contraction and expansion between said slabs.

The practice heretofore has been to provide plates extending over the joint between adjacent slabs and then secure the plates in place by bolt means extending through the slabs and plates. This, of course, necessitates providing holes in the slabs and plates that must be aligned in registration for insertion of the bolts therethrough, as well as requiring time for applying nuts and tightening them on the bolts after said bolts have been inserted in place. The slabs are weakened by these bolt receiving holes, and are rigidly secured together with no provision for contraction between the slabs.

It is the aim of this invention to provide means of resiliently spacing the slabs and clamping the adjacent edges together by means attached to the spacing means.

For a better understanding of the invention reference may be made to the accompanying drawings in which:

Fig. 1 is a perspective view of a section of a roof structure, with some of the parts removed, having a roof deck embodying the invention;

Fig. 2 is a cross-section taken on line 2—2 of Fig. 1; and

Fig. 3 is a perspective view of one of the clamps provided with means to engage the side edges of adjacent slabs and the spacing means inserted therewith.

Referring to the drawings, in which like numerals are used to designate like parts, numeral 1 designates conventional beams, such as I-beams or the like, commonly used in building structures for supporting a floor, roof, decking or the like. These are spaced apart at intervals with slabs 2 placed thereon in edge to edge relation to provide a continuous layer. These slabs are made of standard lengths in order to bridge between two spaced beams, and be supported at opposite ends of said beams. The slabs may be of any construction, but are preferably constructed to provide for thermal insulation. In the present instance they are typified by a composition sheet 3 having a relatively thick core 4 composed of one or more layers of any fibre composition board faced on one or both sides with a reenforcing surfacing layer 5. While this surfacing layer or layers may be of any desired material it is preferably of some such rigid material as cement asbestos. Such slab construction is board-like and rigid, thereby being load sustaining so that they may be walked upon and adapted to sustain heavy loads.

When assembled the opposite ends of the slabs rest upon slightly less than one-half the width of the face of each respective beam.

Between the side edges of adjacent slabs, are expansion and contraction member 6 formed from any suitable material, but preferably stamped from relatively thin flexible metal such as sheet metal. This member is formed with base portions 7 and 8, oppositely disposed, with an intermediate rib 9 disposed therebetween. This rib may be conveniently formed by bending a portion of the strip back upon itself and with the retroverted portions spaced apart to provide a groove 10. The rib is of a height slightly less than the thickness of the slab units, and is preferably of a height sufficiently less than the thickness of the units to leave about ⅛" clearance between the apex of the rib and the horizontal plane common with the upper sides of the slabs. The rib portion is disposed at right angles to the base portions or of a conformation to receive the lower corners of the slabs. Member 6 may be of any length, but is coextensive with the lengths of the slabs, and accordingly extends from one beam to another, the base portions thereof providing support for the slabs throughout their lengths.

Associated with the member 6 is clamp units 11 which may either be made in a long continuous strip disposed along the length of the slabs between the beams or several shorter ones at intervals therebetween. These clamps are provided with a base portion 12 terminating in a hook portion 13 formed from an end folded down and back upon the base in slightly spaced relation. This hook is adapted to fit over one of the base portions of the expansion member. The other portion of the clamp is disposed at an angle to the base portion and is of a length substantially greater than the thickness of the slabs. From points on this other portion to the edge opposite the hooked edge, a number of slits 14 may be provided, thereby dividing this edge into a number of tongues 15 extending from a web 16. The clamps are assembled between the side edge of adjacent slabs with the base and web seated respectively against one of the bases and the rib

of member 6, and the hook on the clamp engaging the edge of the base on member 6. When the clamps are thus assembled on the members 6 between the slabs, the tongues 15 may be hammered or bent upon the margins of the slabs, the alternate tongues being preferably bent back in opposite directions.

After the roof deck or other structure is thus formed, it may be covered with any suitable covering material. In the instant case the invention is typified in connection with a roof deck. Accordingly, the decking may be covered with any conventional weather surfacing material either in the form of "built-up" roofing, roll roofing, strips or individual shingles. For example, the decking may first be mopped with a layer 16 of hot asphalt, the mopping layer is overlaid with sheets of roofing felt 17, the edges of the sheets being overlapped. A second mopping 18 of asphalt is applied over the roofing felt sheets, and then surfacing material in the form of slag or gravel or in the form of granular surfaced cap sheets is applied over the second mopping layer.

In the construction of the expansion and contraction member 6, it will be noted that the base portion 8 is in a plane slightly below the plane of the base portion 7. Base portion 7 of the expansion and contraction member and base portion 12 of the clamp 11 are in the same horizontal plane. Thus constructed the composition sheets 3 are properly aligned in the same horizontal plane so that adjacent edges will not be raised one above the other. If the clips be inserted between the sheets directly over the I-beams, shims may be inserted beneath base portion 7 to provide a support on the beam in alignment with base portion 8. Or if hook portion 13 also seats on the I-beams, shims may be placed under both base portions 7 and 8 to provide supporting contacts in alignment with portions 13.

If on the other hand, it be not desirable to have the composition sheets in alignment, the base portions 7 and 8 may be in the same horizontal plane, with the base portion 12 of the clip 11 in a plane slightly above. This will also, of course, raise the end of one slab slightly above the other, that is, to an extent equal to the thickness of the base portion 12. Since these clips, however, are relatively thin—about the thickness of sheet metal—this displacement of the adjacent ends of the sheets 3 is not objectionable. They are ordinarily spaced at intervals and employed only between the I-beams, and accordingly do not need to be supported on the I-beams, but there may be constructions in which it is desired to have them resting on and supported by the I-beams, as they are, of course, of general adaptation and may be employed wherever desired.

In the construction above described, the edges of the adjacent slabs are slightly spaced from the rib 9 to provide spaces in which the mopping material may flow and fill in the spaces on both sides and above the rib. The mopping material is yieldable and expansion and contraction is thereby further provided. The rib 9 reenforces the member 6 thereby permitting lighter gauge metal material to be used. The member is sufficiently strong to serve as a support member for the slabs.

While the invention has been described in detail and particularly in connection with roofing as one embodiment, it will be understood that there may be various changes in details of construction and application without departing from the spirit thereof.

We claim:

1. In a roofing or flooring structure comprising spaced apart slabs, spaced apart supporting beams, a member for supporting the edges of adjacent slabs, a clamp strip disposed between the edges of adjacent slabs and between the member and one of the slabs, means for engaging and disengaging readily with the supporting member for mounting on and dismounting from the supporting member the clamp, and means for securing the slabs to the supporting member, said slab edge supporting member spanning the space between and mounted on adjacent supporting beams.

2. In a roofing or flooring structure comprising spaced apart slabs, spaced apart supporting beams, a member between the supporting beams for supporting the edges of adjacent slabs, a clamp member having a portion bent to engage and disengage readily one edge of the supporting member, and means on the clamp adapted to be bent over the edges of adjacent slabs.

3. In a roofing or flooring structure comprising spaced apart slabs, an expansion and contraction member having a yieldable web portion adapted to project between the slabs and base portions extending from the web to seat adjacent slabs, and a clamp having one portion adapted to engage the edge of one of the base portions of the expansion member and another portion adapted to engage the margins of the slabs.

4. A unit for use in a building structure between edges of adjacent slabs comprising a spacing member having an intermediate web portion extending upward from a base, a clamp member fitted to the spacing member and provided with means opposite to and cooperating with the base thereof to receive the edges of adjacently laid slabs.

5. As an article of manufacture, a sectional unit for clamping the edges of adjacent slabs comprising a supporting member provided with base portions which are adapted to seat upon spaced apart supporting beams and support the edge of adjacent slabs between the beams, a clamp having a web portion disposed at an angle to the supporting member, terminal portions on the clamp oppositely disposed for cooperating with the base portions of the supporting member to provide recesses for seating the edges of adjacent slabs, and means for readily attaching the clamp to the supporting member.

6. In a roofing or flooring structure comprising spaced apart slabs, spaced apart beams on which said slabs are mounted, a member for supporting the edges of adjacent slabs between the spaced apart beams, a clamp strip disposed between the edges of adjacent slabs and between the member and one of the slabs, means on the clamp for readily engaging with the supporting member for readily mounting the clamp on the supporting member, and oppositely disposed projections on the clamp for securing adjacent slabs to the supporting member, said slab edge supporting member spanning the space between and mounted on the spaced apart beams.

7. In a roofing or flooring structure comprising spaced apart slabs, a slab supporting member having a web portion adapted to project between the slabs and base portions extending from the web to seat adjacent slabs, and a clamp having one portion adapted to engage the edge of one of the base portions of the slab support-

ing member and another portion adapted to engage the margins of the slabs.

8. In a building or flooring structure comprising adjacent slabs supported upon spaced apart supporting members having a base and web portions which are adapted to seat upon spaced apart supporting beams and support the edge of adjacent slabs between the beams and a clamp for securing the slabs to the supporting members, said clamp comprising a base portion having a hook for engaging with the base portion of said supporting members and a slab separating web terminating in oppositely disposed projections to engage opposite edges of adjacent slabs and secure said slabs between the projections and the base of the supporting members.

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