

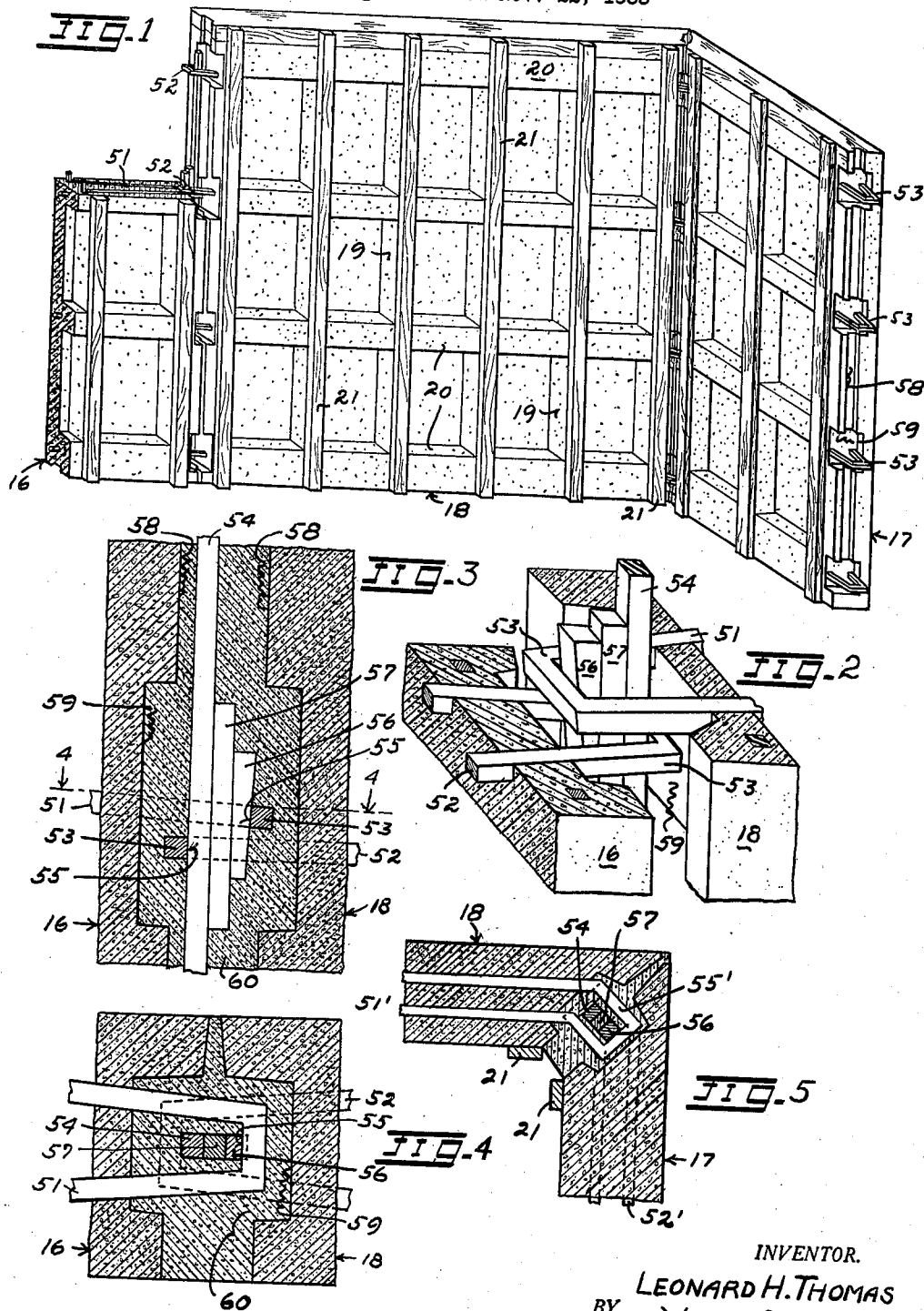
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JOINTURE FOR PRECAST CONCRETE SLABS

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JOINTURE FOR PRECAST CONCRETE SLABS

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7 Claims. (Cl. 72-107)

The invention relates to precast concrete slabs, and particularly to the associated assembly of such slabs in a unitary structure, and comprises a division of my copending application Ser. No. 699,161, filed Nov. 22, 1933, which application issued into Patent No. 2,111,577, March 22, 1938.

An object of the invention is to provide a generally improved and positively operative jointure means at the abutting side edges of slabs in a structure formed therewith.

Another object is to provide for a tensing of the jointure elements which extend from the connected slabs by a simple means which may be applied with particular readiness.

A further object is to provide for the complete embedment of the jointure means in a mass of concrete which keys the slabs together against relative lateral movement.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth or be apparent in the following description of a typical embodiment of the invention, and in the accompanying drawing, in which,

Figure 1 is a fragmentary perspective view showing an assembly of wall slabs illustrating an application of the invention.

Figure 2 is a fragmentary perspective view of an interlocking means as operative between adjacent and mutually coplanar slabs of the assembly.

Figure 3 is a vertical section through a completed jointure between adjacent slabs which are mutually coplanar.

Figure 4 is a section at 4-4 in Figure 3.

Figure 5 is a fragmentary plan section of a completed jointure for slabs which define a wall corner.

As illustrated in Figure 1, the present invention concerns the tied and keyed assembly of an intermediate wall slab 16 and complementary corner wall slabs 17 and 18. The slabs are cast of concrete or other material and are cored out from what may be conveniently termed their inner faces to define intersecting ribs 19 and 20 which provide the requisite transverse stiffness and effective thickness for the slabs while providing slabs of minimum weight.

The ribs 19 provide the equivalent of studding in the slabs when they are used as wall elements, and beams when they are used as floor members, and the intermediate ribs 20 carry elements for connecting adjacent slabs in an assembly thereof which provides a wall, as is particularly illustrated. Suitable reinforcement is provided

within the ribs 19 and 20, and wooden furring strips 21 are shown as provided at and along the inner faces of the ribs 19. A means and method for producing the illustrated slabs is disclosed in my said copending application Ser. No. 699,161.

The present jointure for mutually coplanar slabs is shown in Figures 1 to 4 inclusive, wherein the adjacent and mutually aligned wall slabs 16 and 18 are slightly spaced in the assembly and tie bars 51 and 52 extend from the exposed side edges of the respective slabs for interlocking in the space defined between the slab ends. The protruding ends of the bars 51 and 52 provide stirrup-like loops 53 which are mutually overlapped to have their eyes or openings vertically aligned for receiving a locking bar transversely through the loop eyes in a manner to thereafter prevent a separation of the slabs in their plane. Preferably, and as shown, the bars 51 and 52 are intermediately doubled to provide U-shaped loops 53 and have the remaining portions thereof embedded and anchored in the slabs at the ribs 20 thereof as a reinforcement for the ribs. The tie bars 51 and 52 and the locking bar 54 are advantageously of square section, as is shown.

It will now be noted that the bars 51 and 52 are arranged in generally aligned pairs whereby the eye loops of a pair of bars are laterally close together and generally parallel. When the bar 54 is engaged against the inside end face 55 of one eye loop, it is arranged to be spaced from the inside end face 55 of the other eye loop of the pair, and wedge means are provided for coaction between the latter end face and the bar 54 to forcibly engage the bar with the end face of the first loop and so secure the loops against a separation thereof and of the slabs which carry them, it being understood that the slabs are frictionally held in their initial set up relation. As is particularly shown, the aforesaid wedge means comprises a wedge 56 for engagement against the loop face 55 not engaged by the bar 54, and a block 57 is engaged between the wedge and bar.

With the slabs 16 and 18 erected in desired spaced relation, the bar 54 is disposed through the line of loops 53, after which the blocks 57 and wedges 56 are applied in corresponding eyes of each pair and at the same side of the bar 54 for fixing the slabs together along their mutually abutting edges. Preferably, and as shown, each loop 53 which is to be directly engaged by a wedge 56 is slightly curved toward the companion loop of a loop pair whereby the flat outer wedge face may engage flat against the opposed loop

face 55. The bar 54 is large enough to be relatively stiff against flexure whereby to minimize the effect of the mutually offset coaction of each pair of loops 53 therewith. It will be understood that the loops engaged directly by the installed bar 54 may be either above or below the other loop of each pair without affecting the operativeness of the arrangement.

It will now be noted that the slab edges at the loops 53 are formed to provide grooves 58 along their lengths, and that each said groove is deepened at portions 59 thereof opposite the outer ends of the loops 53 which extend theretoward from the opposed slab edge whereby to freely receive said loop ends in said groove portions. The opposed slab ends are otherwise, and correspondingly so shaped that they are but slightly spaced adjacent the outer slab faces, and are so spaced at and inwardly of the loops 53 as to permit an operative disposal of the wedges 56 from the inner side of the slab assembly.

When adjacent slabs are mutually interlocked along their opposed edges by the described means, the outer and narrow portion of the space between the slab ends is filled with concrete to a flush relation with the outer slab faces whereby to conceal the jointure at the latter. Subsequently, a form board (not shown) is placed at the inner side of said space and the remainder of the space is filled with self-setting concrete whereby a filling and sealing mass 60 is provided between the slab ends and between the wall faces. It is noted that the mass 60, through its extension into the grooves 58, keys the slabs against a relative transverse displacement, while the protrusion of said mass into the deeper groove portions 59 keys the slabs against a relative vertical shifting. The aforesaid keying functions of the filling mass 60 are important in supplementing and making rigid the described metallic interlock of the slabs.

Figure 5 is a plan section of the completed jointure for the corner slabs 17 and 18. The structural and operative relation is generally as in the first-described embodiment except that the abutting slab edges are complementarily bevelled. Accordingly, the eyes 55' for receiving the bar 54 and the block 57 and the wedge 56 are angular to the mutually coplanar embedded portions of the bars 51' and 52' which provide the eyes.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the jointure and the means for producing the same will be readily understood by those skilled in the art to which the invention appertains, and while I have described the principle of operation, together with a device which I now consider to be a preferred embodiment thereof, I desire to have it understood that the device shown and described is primarily illustrative, and that such changes may be made, when desired, as fall within the scope of the following claims.

I claim:

1. In a built-up structure of precast slabs which are in direct edge-to-edge relation, adjacent slabs having mutually opposed edges having longitudinal grooves to cooperatively provide a space for the casting of a keying mass therein, tie members comprising flat loops providing eyes transverse to their plane and extending from the groove bottoms into said space their planes transverse to the longitudinal line of the space and having the loops of each slab mutually overlapping the loops of the other slab to such a degree

that outer eye portions are in mutual alignment in a line which is generally parallel to said longitudinal line of the space, and a locking-bar assembly disposed engaged through said loop aligned eye in direct and forcible contact solely with the outer side of each of the loop eyes through which it extends.

2. In a built-up structure of preformed members which are in direct edge-to-edge relation and have their mutually opposed edge portions formed to cooperatively provide a space between the members for the casting of a keying mass therein, tie members comprising flat loops extending from the different members into said space in mutually parallel relation and providing eyes having corresponding outer portions thereof mutually aligned, and a locking-bar assembly disposed through all of the aligned eye portions in direct and forcible contact solely with the outer side of each of the loops through which it extends.

3. In a built-up structure of preformed members which are in direct edge-to-edge relation and have their mutually opposed edge portions formed to cooperatively provide a space between the members, tie members comprising flat loops extending from the different members into said space in mutually parallel relation and providing eyes having corresponding outer portions thereof mutually aligned, a common locking bar disposed through all of said aligned eye portions in direct and forcible contact solely with the outer sides of the loops of one said member, and wedges operatively engaged between said bar and the outer sides of the loops of the other said member in forcible contact with the bar and the latter loop sides.

4. In a built-up structure of preformed members which are in edge-to-edge relation and have a space defined between their opposed edge portions, tie members extending from the different members into said space and comprising flat loops disposed transversely of the said edges in mutually parallel relation and providing eyes having corresponding outer portions thereof mutually aligned, a common locking bar extending through said aligned eye portions, and wedges disposed in said eye portions and coactive between said bar and the outer sides of certain of said loops in such manner that the bar is forcibly engaged with the outer sides of the remaining said loops for constantly tensing the loops to positively urge the members toward each other.

5. In a built-up structure of preformed members which are in direct edge-to-edge relation and have their mutually opposed edge portions cooperative to provide a space between the members thereat, a pair of tie members comprising flat loops extending fixedly from the different members into said space in mutually adjacent and overlapped and generally parallel relation and providing eyes which have corresponding outer portions thereof mutually aligned in the general line of said edges, a locking bar disposed through said aligned eye portions, means retaining the bar against swinging from its said line, and a wedge means coactive through the bar and between the outer ends of the said eyes to tense the tie members for positively urging the connected members toward each other while preventing their mutual separation.

6. In a built-up structure of preformed members which are in direct edge-to-edge relation and have their mutually opposed edge portions formed to cooperatively provide a space between

the members, tie members comprising flat loops extending from the different members into said space in mutually overlapped and generally parallel relation, and a locking-bar assembly disposed through all of the loops in direct and forcible contact solely with the outer side of each of said loops for tensing the loops to positively urge the members toward each other.

7. In a built-up structure of preformed members which are in direct edge-to-edge relation with respect to a common plane of abutment and have their mutually opposed portions coopera-

tively providing a space between the opposed edges of the members, tie members extending into said space from the different members in mutually overlapped relation and having mutually parallel terminal cross-members providing inner faces parallel to said plane and facing the member which carries them, and a locking bar assembly engaged with and between solely said inner faces of the cross-members to positively urge the connected members toward each other.

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