Dec. 28, 1937. H. BUSSMANN 2,103,894

JOINT FOR CONCRETE BUILDING UNITS

Filed April 14, 1937

Fig. 1.

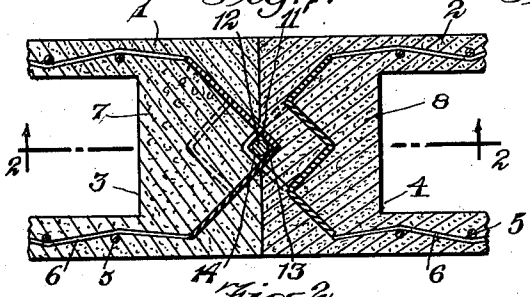


Fig. 2.

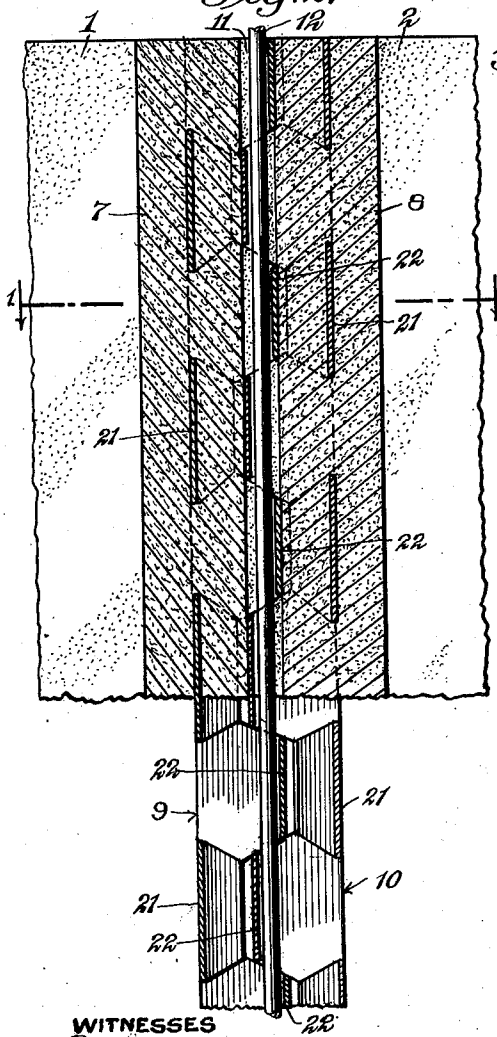


Fig. 7.

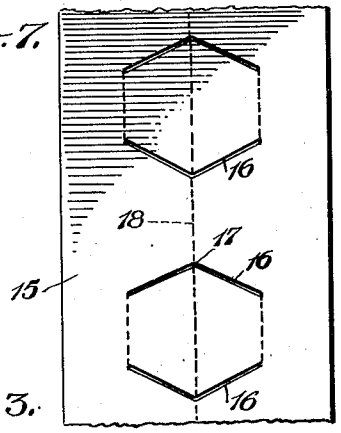


Fig. 3.

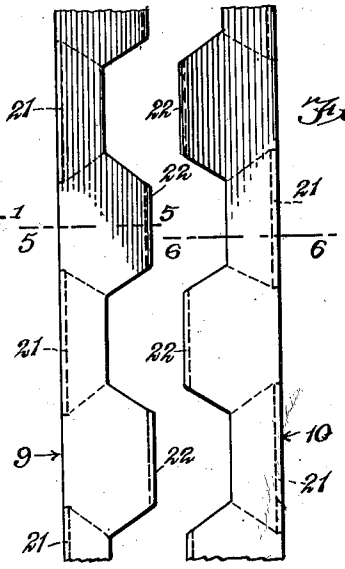


Fig. 4.

Fig. 5.

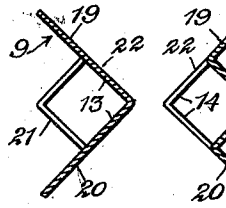
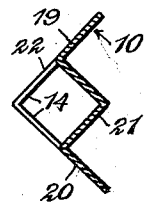


Fig. 6



WITNESSES

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Patented Dec. 28, 1937 2,103,894

UNITED STATES PATENT OFFICE

2,103,894

JOINT FOR CONCRETE BUILDING UNITS

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Application April 14, 1937, Serial No. 136,717

5 Claims. (Cl. 72—107)

The present invention relates to pre-fabricated concrete units employed in the construction of buildings, particularly in the walls, floors and partitions.

The object of the invention is to provide such building units with a coupling member embedded in one or more of its edges adapted to be interlocked with and connected to a similar coupling member in the edge or edges of an adjacent unit and to so form the coupling members that they will reinforce and strengthen the edges of the unit as well as provide a secure union between the meeting edges of adjacent units.

A further object is to so form the coupling members that portions thereof project along the edge of the unit in the form of angular straps or loops which may be positioned in staggered relation to similar straps or loops in the edge of an adjacent unit and thus form a practically continuous passage to receive a metal rod passed through the loops or straps on each unit, thus locking the units to each other throughout the entire length of the joint.

The invention is illustrated in the accompanying drawing in which—

Fig. 1 shows a section on the line 1—1 in Fig. 2, and showing the adjoining edges of two units united by my improved joint;

Fig. 2 shows a vertical sectional view taken on the line 2—2 in Fig. 1;

Fig. 3 shows one member of the coupling joint;

Fig. 4 shows a mating member;

Figs 5 and 6 show a cross section on the lines 5—5 and 6—6 in Figs. 3 and 4, respectively;

Fig. 7 shows a portion of a metal blank from which the joint members are produced.

Similar reference characters will be employed to designate corresponding parts.

The building units 1 and 2, except as hereinafter described, are formed of pre-cast concrete or other suitable plastic material prepared and molded in the usual manner, and as indicated may have internal hollow spacers 3 and 4 which may be filled with a suitable insulating material of mineral wool or similar material (not shown). Also there may be embedded in the pre-cast unit any usual form of reinforcing metal rods 5 and metal wires 6 extending at right angles to and interlaced with the rods 5, as shown in Fig. 1. The edges of the unit are solid as indicated at 7 and 8, and the meeting faces make contact with each other as indicated at 8.

The improved joint consists of two members 9 and 10, duplicates of each other, and so placed in the edges of the units that the forwardly projecting portions of the members alternate with each other, the space defined by the overlapping portions of the members forming a rectangular continuous passage 11 through which is passed a metal rod 12 of such diameter as to make contact with the inner walls 13 and 14 of the overlapping portions of such projections which as shown extend along the longitudinal medial line of the edges of the adjacent units 1 and 2. The members 9 and 10 of the coupling are formed from a strip of suitable metal 15 preferably of sheet iron of sufficient stiffness and strength. In the formation of the coupling members 9 and 10 the metal strip 15 is cut at intervals as indicated at 16, the said cuts extending transversely of the strip, the cuts preferably, however, being inclined and converging at 17 along the longitudinal medial line 18 of the strip 15. After cutting the strip 15, it is then bent along the line 18 so that the lateral edges extend at right angles to each other, as indicated in Figs. 5 and 6, producing practically side portions 19 and 20 (see Figs. 5 and 6). The bending along the longitudinal medial line 18 of the portions 21 will cause them to project in one direction, while the bending of the portions 22 will be in the opposite direction. Thus there will be formed forwardly extending loops or keepers 22 in the plane of the side portions 19 and 20, while the portions 21 will extend rearwardly with the walls thereof at right angles to the inner surfaces of the wing members 19 and 20 forming braces therefor.

As indicated in Figs. 3 to 6 inclusive, when the forwardly projecting loops or keepers are alternately arranged and intersect each other, there will be formed a continuous channel to receive and confine the rod 12. By making the cuts 16, as hereinbefore described, both the inward and outward projecting portions of the members 9 and 10 will present inclined edges not only at the top and bottom of each of the forwardly projecting loops or keepers 22, but also along the upper and lower edges of the rearward braces 21, as shown in dotted lines in Figs. 3 and 4. By so forming the edges of the interlocking loops or keepers, I provide for a limited range of relative adjustment insuring that the joint members in the edges of adjacent units may be coupled even though they should not be accurately positioned when affixed in the edges by casting or molding the plastic material as hereinbefore set forth.

The joint members 9 and 10 are secured in building units by casting the concrete or other material about them while they are held supported in a mold. When thus embedded in the plastic

material they produce not only reinforcements along the edges but because of the angular formation of the elements of each of the members, the resistance to longitudinal stress and strain passing through the joint is greatly enhanced. Preferably the longitudinal wires 6 will be so incorporated that they will terminate at points adjacent the edges of the joint members as shown in Fig. 1.

It should be noted that the joint members 9 and 10 also form a continuous reinforcement of the meeting edges and a firm and accurate coupling of the edges of adjacent units.

It should be observed that in forming the unit the joint members are supported adjacent and substantially parallel to that portion of the mold which imparts to the unit the desired length, and that in so positioning the members of the joint the projecting loops will be positioned to extend beyond the face or edge of the unit a distance dependent upon the diameter of the coupling rod and to form in cooperation with the projecting loops in the edge of an adjacent unit a rectangular passage to receive a rod of the required diameter which, as hereinbefore explained, makes contact with the inner faces of the projecting loops in the alternately disposed and interlocking loops.

It is of course understood that the coupling members in the edges of the building unit will be so positioned that the projecting loops in adjacent units will assume a staggered relation to each other. This can be accomplished by putting one of each pair of coupling members at opposite ends or edges of the same unit.

I claim:

1. A joint for pre-cast building units comprising a sheet metal member angularly bent along a longitudinal central line with the marginal portions on each side of the line of bend disposed at an angle to each other, a plurality of alined spaced sheet metal loops at the front of said member, and a plurality of alined spaced angular braces at the back of said member, the loops and braces projecting in opposite directions and said braces supporting the marginal portions of said member at opposite sides of the line of bend.

2. A joint for pre-cast building units as defined in claim 1, in which the free edges of the sheet metal loops and angular braces are inclined or beveled from their base to the longitudinal centers.

3. A joint for pre-cast plastic building units comprising a pair of sheet metal joint members each bent along its longitudinal central line forming wings extending substantially at right angles to each other, said members at spaced intervals along said line of bend being cut transversely thereto forming a plurality of alined spaced loops at the front of said member, the intervening metal between said spaced loops bent rearwardly along said central line forming a plurality of alined spaced angular braces at the back of said joint members.

4. A joint for pre-cast plastic building units as defined in claim 3, in which the alined spaced loops at the front of the opposing members are staggered with relation to each other.

5. Pre-cast building units of concrete or other suitable material, having embedded in their edges an angularly bent joint member, a plurality of alined spaced angular sheet metal loops at the front of said member and projecting from the face of the edge of the unit, the loops in one member staggered with relation to the loops in an adjacent member, each member also having at the back alined spaced angular sheet metal braces extending transversely and supporting the marginal portions of said member at opposite sides of the line of bend of said member, and a coupling rod passed through the projecting loops of the meeting ends of adjacent units.

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