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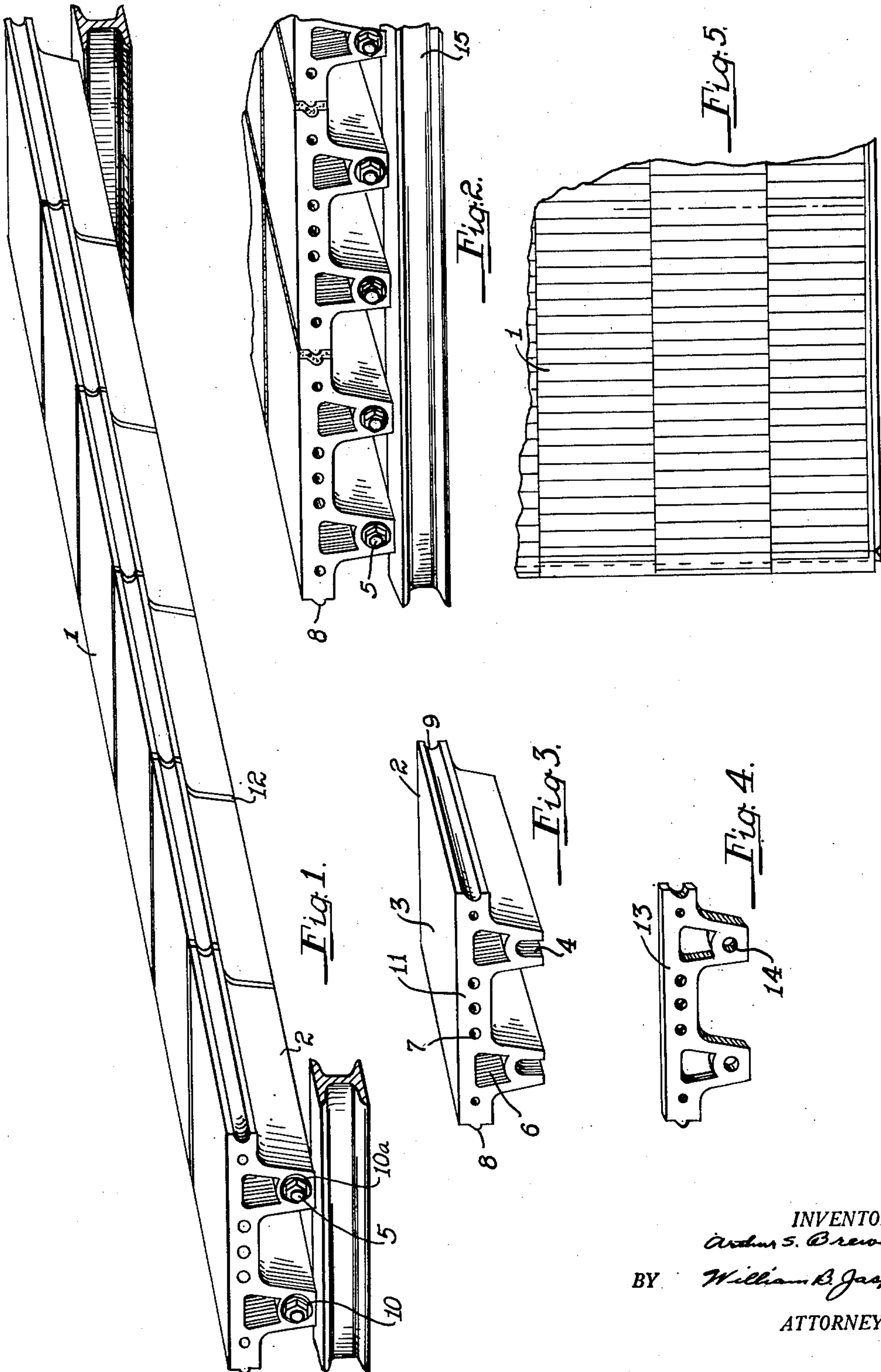
A. S. BREWER

2,184,137

COMPOSITE BUILDING MEMBER

Filed Dec. 1, 1936

2 Sheets-Sheet 1



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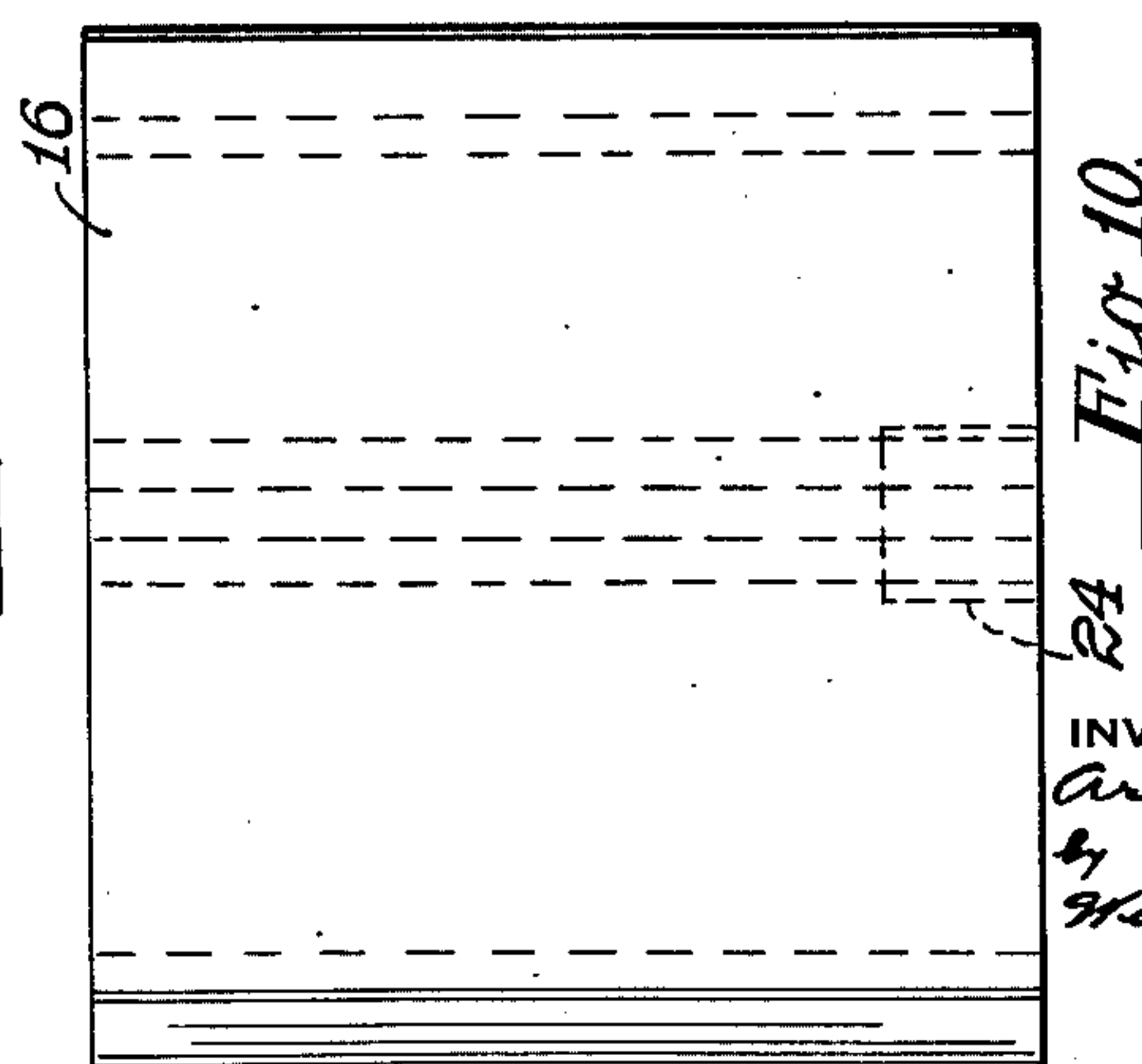
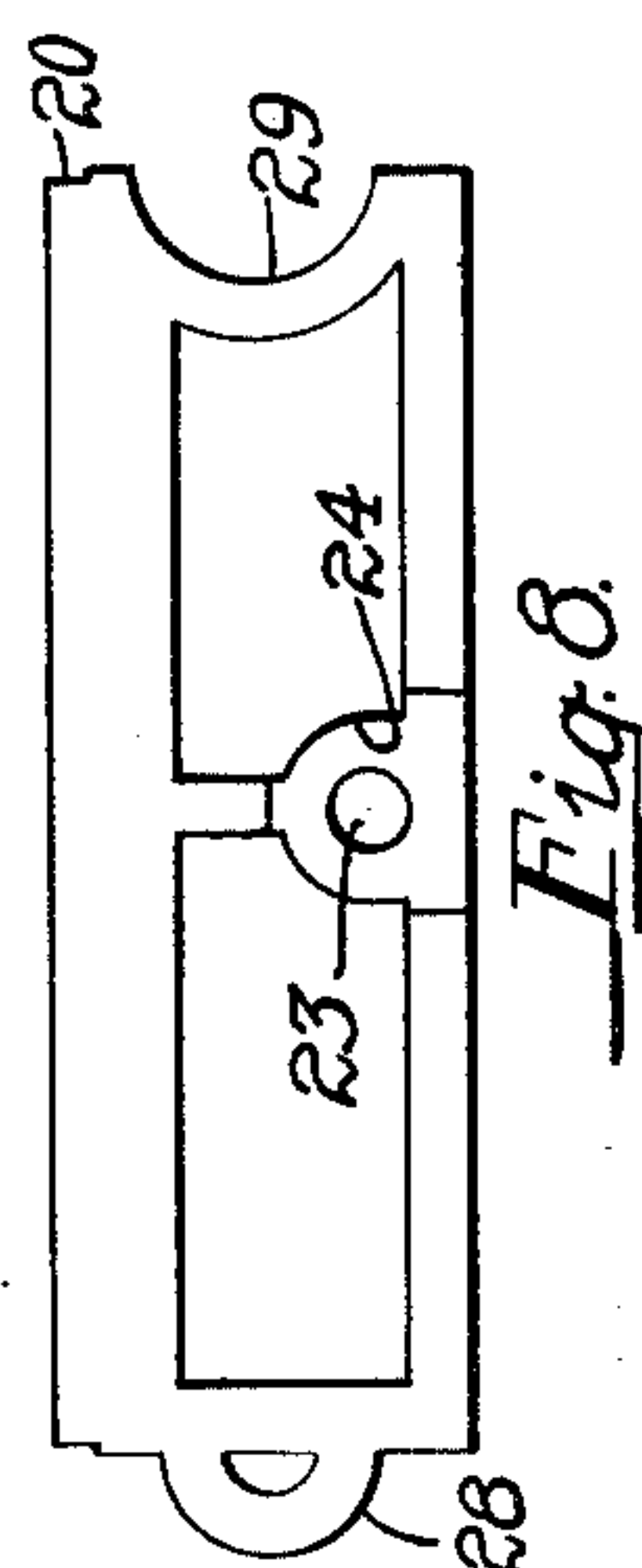
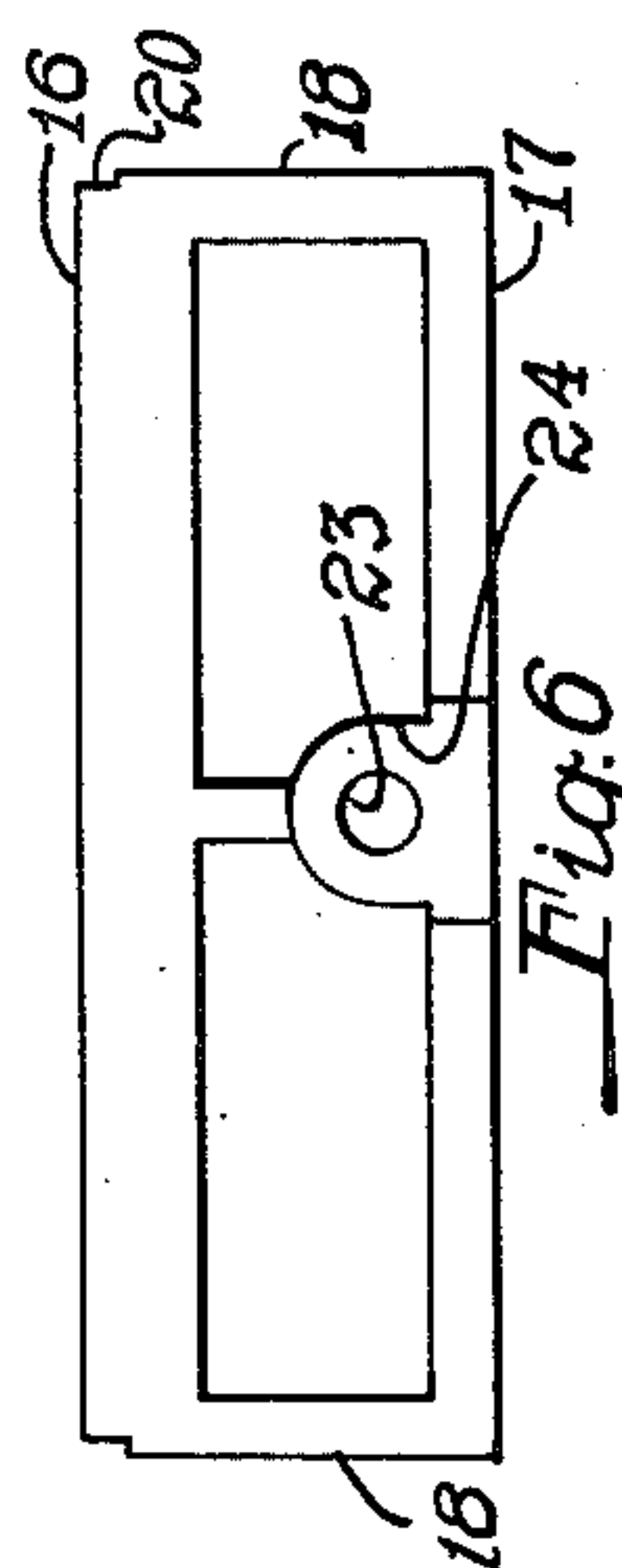
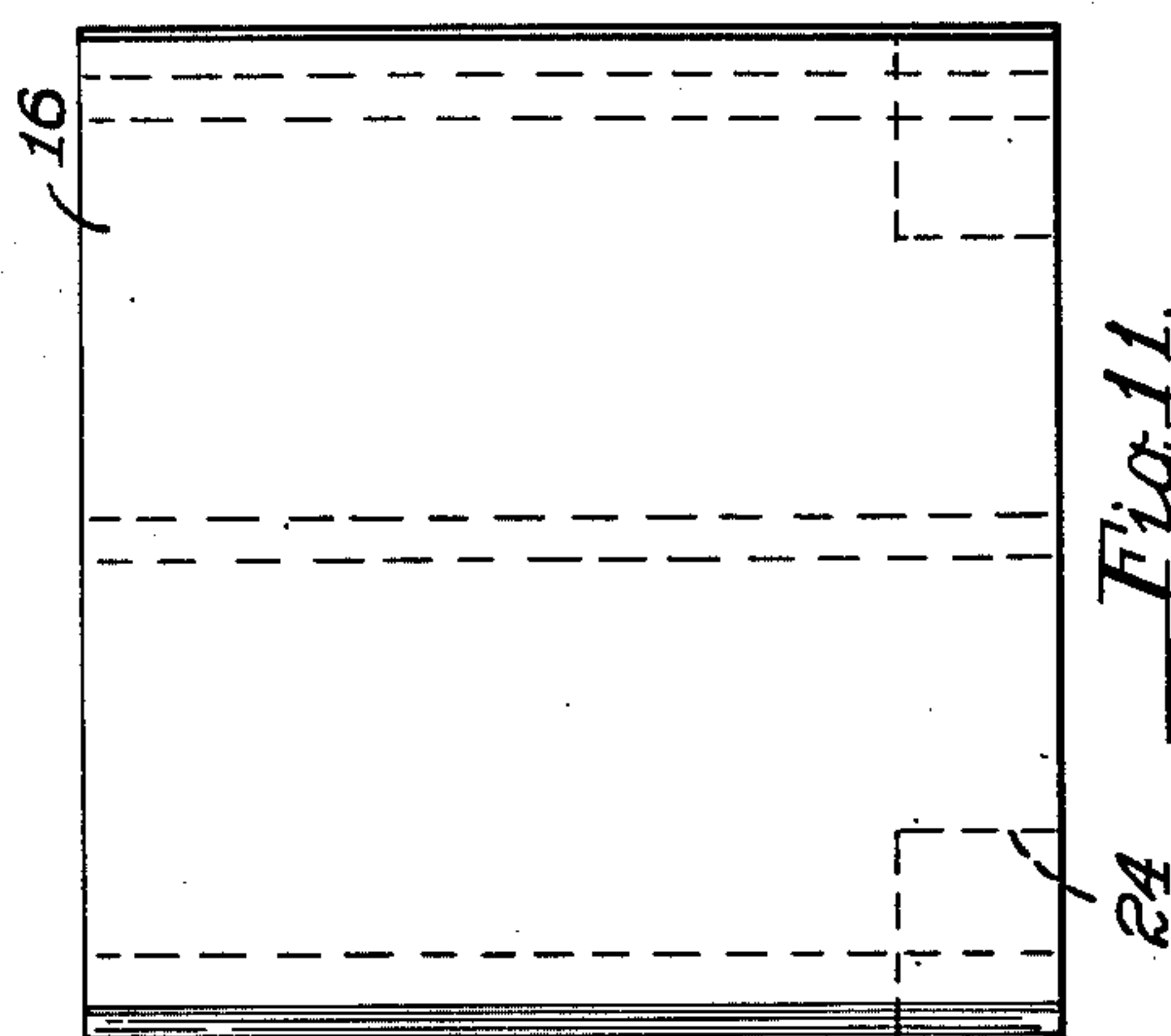
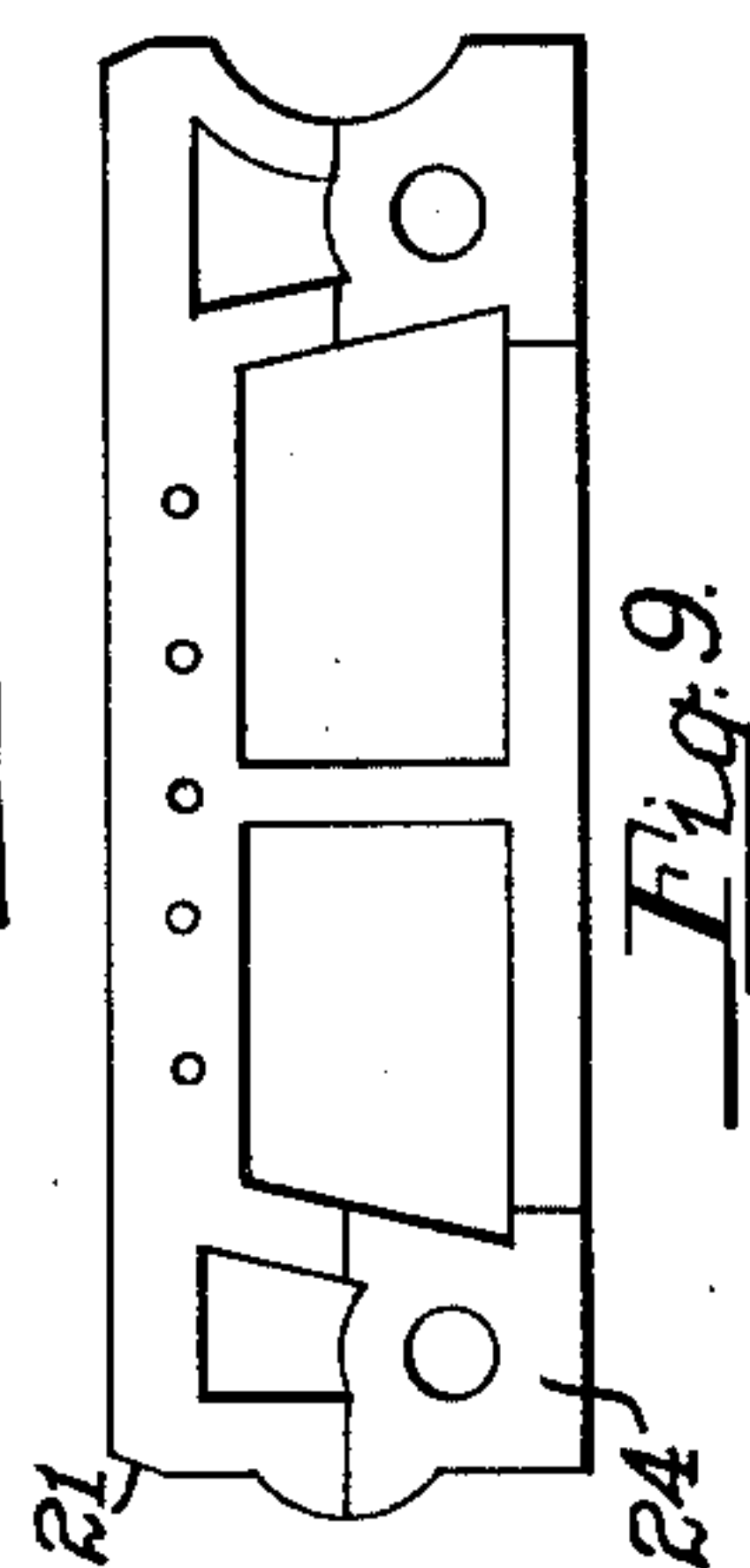
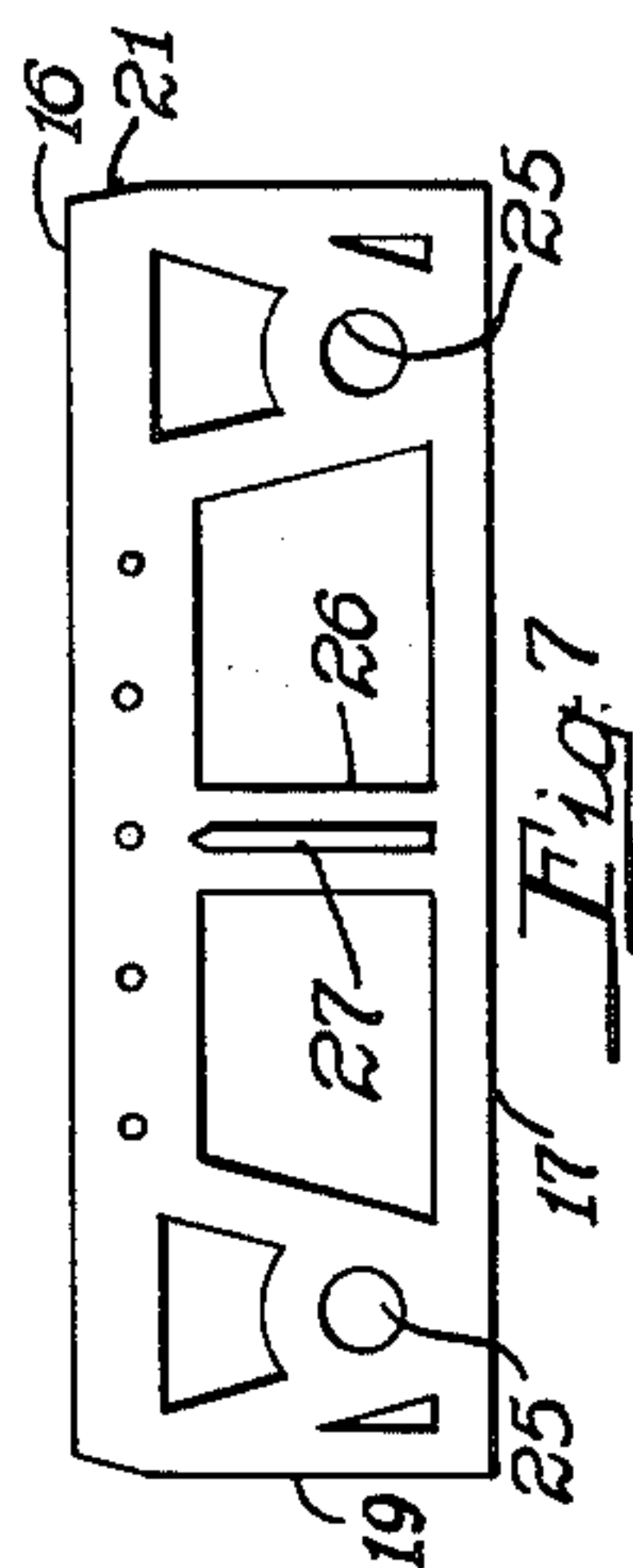
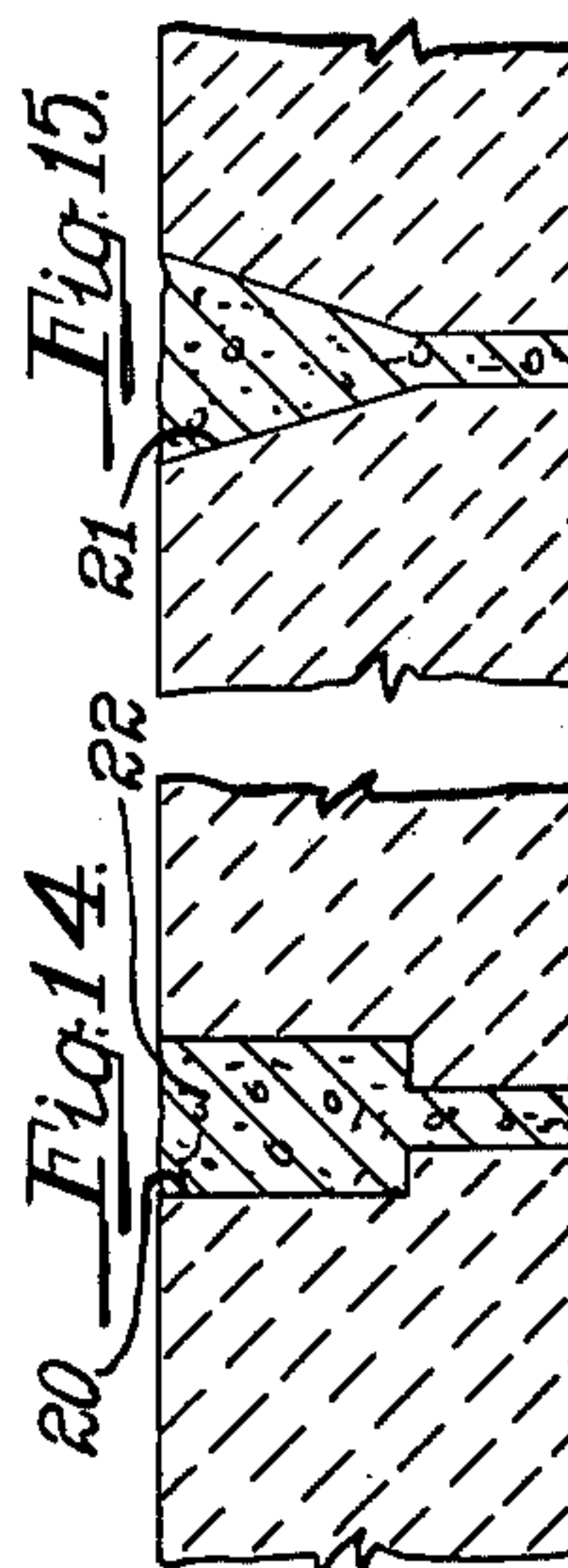
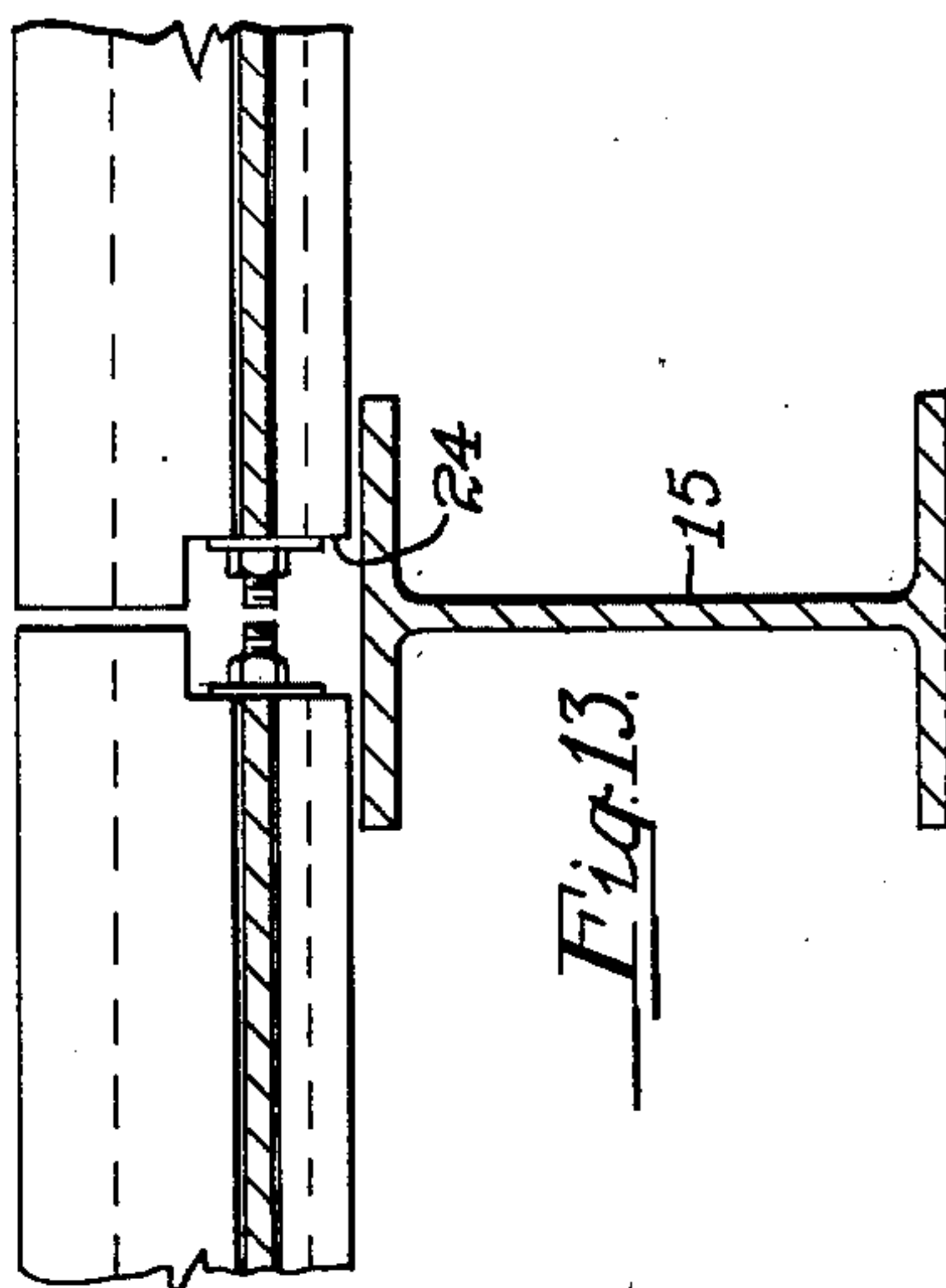
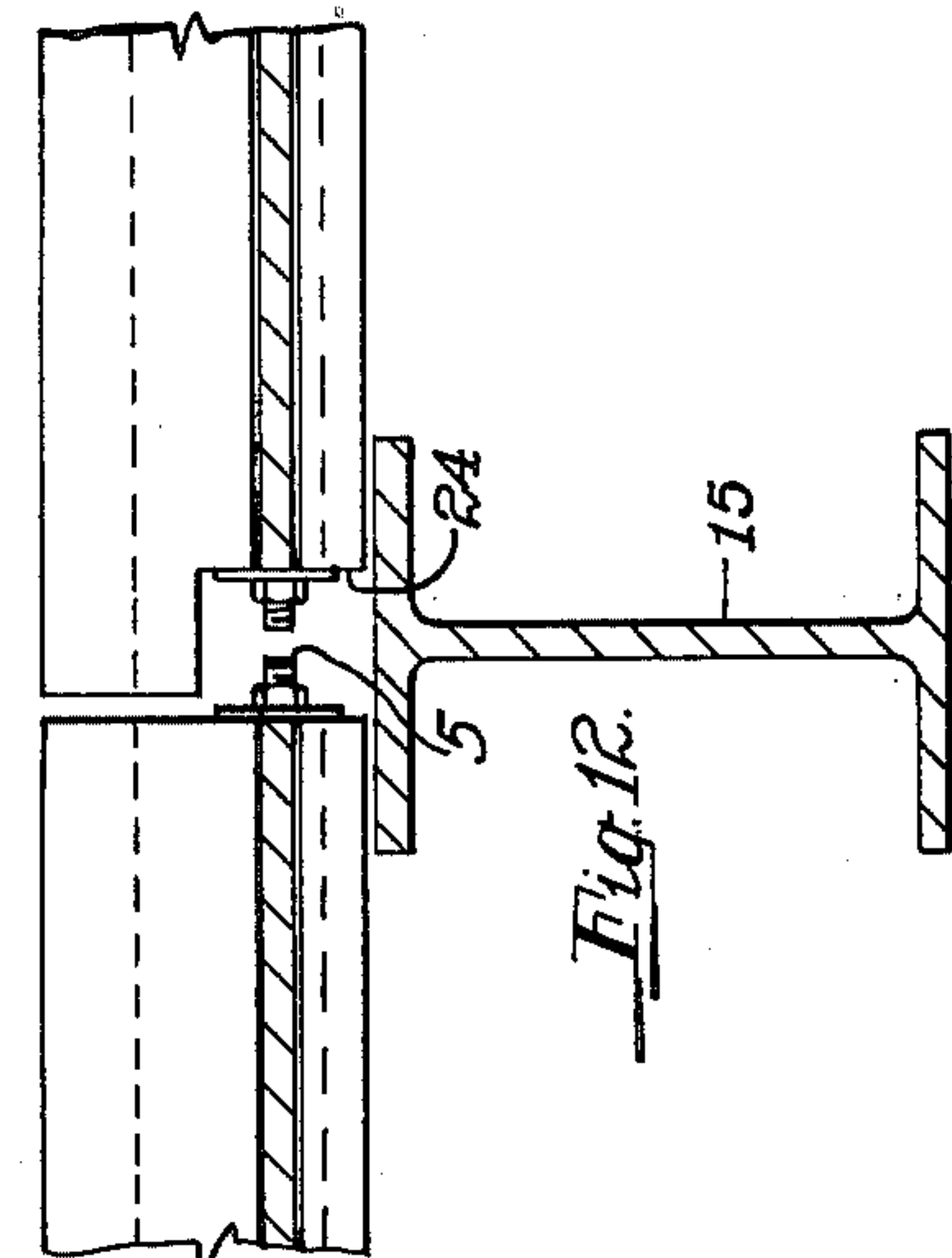
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2,184,137

COMPOSITE BUILDING MEMBER

Filed Dec. 1, 1936

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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COMPOSITE BUILDING MEMBER

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3 Claims. (Cl. 72—68)

This invention relates to new and useful improvements in building structures, more particularly to building units of tile assembled as beams for constructing building roofs, floors, partitions, walls or the like.

It is among the objects of the invention to provide a building unit consisting of a plurality of tile having a plain surface of maximum area and a cross-sectional area of structural shape, which are assembled with their ends in abutting relation and joined by tie rods to form a unitary column.

A further object of the invention is to assemble a series of beams so constructed in a manner to form a roof or ceiling, or a floor, of plain uninterrupted surface by assembling such units on the building supports, such as on I-beams or the like.

Another and important object of the invention is the provision of means whereby a plurality of tile may be assembled by joining them with tie rods in a manner to prevent misalignment due to irregularities of the abutting faces of the tile by providing a resilient material either in plastic or preformed condition, which is interposed adjacent the end faces of the blocks.

These and other objects of the invention will become more apparent from the accompanying drawings constituting a part hereof in which like reference characters designate like parts and in which:

Fig. 1 is a view in perspective of a building unit of tile block embodying the principles of this invention;

Fig. 2 a perspective view of an end portion of a plurality of such units assembled in their manner of use;

Fig. 3 a view in perspective of a tile block of which the beams are constructed;

Fig. 4 a view in perspective of a gasket of filler material for use between the end faces of abutting tile;

Fig. 5 a plan view of an assembly of building units forming a roof or floor structure of a building;

Figs. 6, 7, 8 and 9 front elevational views of a modified form of tile adapted for use in constructing smooth uninterrupted ceilings;

Figs. 10 and 11 plain views of the tile shown in Figs. 8 and 9, respectively;

Fig. 12 a sectional elevational view illustrating bolted ends of a pair of beams supported on an I-beam;

Fig. 13 a similar view of a modified form of tile ends; and

Figs. 14 and 15 cross-sectional views of abutting edges of tile shown in Figs. 6 and 7, respectively.

With reference to Figs. 1 to 4 inclusive of the drawings, a beam generally designated by the numeral 1 is constructed of individual tile generally designated by the numeral 2 having a plain face 3 and a body portion, the cross-sectional area of which is of structural shape, an embodiment shown in the drawings being of a double T or channel construction with voids 4 of slotted or circular form for receiving tie-rods 5, Figs. 1 and 2. The tile is also preferably hollow as at 6, and provided with perforations 7 to make it lighter, and may be provided with tongues 8 and grooves 9 in the side faces thereof. Tie rods 5 are provided with threaded ends for receiving nuts 10 acting against relatively large washers 10a, by means of which the tile 2 is drawn up to form a unitary beam.

Due to irregularities in the surfaces 11 forming the end faces of fired clay tile blocks 2, such blocks cannot be assembled and drawn-up square. Furthermore, if the blocks 2 are assembled with their juxtaposed faces in abutment, the tension of the tie-rods 5 acting upon the portions of the end faces contacting each other will set up localized stresses or strains in the beam. To overcome these difficulties, an aligning material 12 is interposed adjacent the end faces 11 of the tile so as to render the tile more or less self-aligning, and such material may either be a plastic substance having the characteristics of quickly setting after the tile have been assembled, or it may be in the form of gasket material of resilient quality preformed by stamping or otherwise, as shown in Fig. 4 of the drawings, such gasket being designated by the numeral 13 and being of substantially the same cross-sectional area as the tile block, the embodiment of Fig. 4 being provided with perforations 14 instead of slots 4 of the type shown in Fig. 3.

The tie-rod voids such as the slots 4 or perforations 14 of the tile and resilient material are preferably of such dimensions as to provide a clearance space around the tie-rods 5 and the latter may be coated with pitch or other rust-proofing materials before assembling in the rows of tile. To construct a roof or other horizontal partition of the tile beam as shown in Fig. 1, they are assembled in the manner shown in Fig. 2 with the tongues and grooves 8 and 9 of ad-

jacent tile interacting in the manner shown. A mortar or other substance may be poured or otherwise interposed in the tongues and grooves to provide an uninterrupted finished surface.

5 When assembling the beams as shown in Fig. 2, they are preferably staggered as shown in Fig. 5 to displace the ends of the tie-rods relative to each other, thereby reducing the space between the ends of the beams to a minimum.

10 As shown in Figs. 1 and 2, the beams are assembled on I-beams 15, and after assembly constitute a unitary floor, roof or other partition member.

While the tile and beam assembly shown in Figs. 1 to 5 inclusive are especially adapted for roof construction, the principle of the invention may be applied in the construction of roofs or ceilings having a plain uninterrupted surface. To this end, the form of tile and manner of assembly illustrated in Figs. 6 to 15 inclusive may be employed, the form shown in Figs. 6 and 7 having upper and lower plain surfaces 16 and 17 which constitute a floor and ceiling, respectively, or a roof and ceiling, as the case may be. These tile are provided with straight abutting faces 18, Fig. 6, and 19 Fig. 7, the faces 18 being recessed at 20 and the faces 19 beveled at 21 so that in assembly they form spaces or grooves for grout 22, which is poured therein in a semi-liquid state. The tile of Fig. 6 is provided with a single central perforation 23 for receiving the tie-rods 5, the end face of the tile being recessed at 24, Figs. 10 and 12, to receive the ends of the juxtaposed tie rods when the beams in which the tile are formed are assembled on the I-beams 15. The recesses may be at both ends of the tile, as shown in Fig. 13, so that the ends of the beams may be assembled on the I-beams without staggering, as shown in Fig. 5, and without interference of the tie-rod ends. In the form of construction of tile of Fig. 7, perforations 25 are provided in pairs to receive the tie rods in the manner of the T-shaped tile of Figs. 1 to 5 and a central web 26 is provided with a slotted opening 27, which constitutes a line of cleavage along which the tile may be supplied.

Figs. 8 and 9 illustrate the uninterrupted surface tiles of Figs. 6 and 7 provided with tongues and grooves 28 and 29, respectively, for interlocking the assembled beams when placed upon the I-beam supports. The tile of Figs. 8 and 9 are also provided with the recesses 20 and bevels 21, which form a space for pouring grout after the assembled beams are mounted in cooperative

abutting relation on the building and supports.

Although several embodiments of the invention are herein shown and described, it will be evident to those skilled in the art that other structural shapes may be utilized. The double T-shape shown in the drawings provides for large compression stresses at the top of the building unit to counteract the tension of the reinforcing members therein, which are preferably located at the bottom of the unit.

I claim:

1. A building unit comprising a plurality of tile block having an uninterrupted surface on one side and channeled on the opposite side thereof, the legs of the channel portion being perforated, tie-rods disposed through the perforations of said blocks spaced from the walls of said blocks and extending the full length of the plurality of blocks to constitute reinforcement therein, filler material interposed adjacent the end faces of said blocks out of contact with the body of said rods, and means on said tie-rods for drawing said blocks against said filler material to constitute said blocks and rods a unitary beam.

2. A building unit comprising a plurality of tile block having an uninterrupted surface on one side and channeled on the opposite side thereof, the legs of the channel portion being perforated, tie-rods disposed through the perforations of said blocks spaced from the walls of said blocks and extending the full length of the plurality of blocks to constitute reinforcement therein, resilient gaskets of the cross-sectional shape of the blocks interposed adjacent the end faces of said blocks and spaced from said tie-rods, and means on said tie-rods for drawing said blocks against said gaskets to constitute said blocks and rods a unitary beam.

3. A building unit comprising a plurality of tile block having plain, top and end faces and a cross section of structural shape, said tile having longitudinal voids for receiving tie-rods common to all of said tile, filler material interposed adjacent the end faces only of said tile and tie-rods for joining said tile extending through said voids and filler material, said rods being of less cross-sectional dimension than the voids in the tile and having screw threaded ends for receiving screw nuts, and washers of relatively large diameter disposed between the nuts and end faces of the tile to distribute the compressive strain over a relatively large area of said tile.

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