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(71) Applicant : **Baker, James William**
45 Oxford Road
Abingdon, Oxford OX14 2EE (GB)

(72) Inventor : **Baker, James William**
45 Oxford Road
Abingdon, Oxford OX14 2EE (GB)

(74) Representative : **Courtney, Graham Sidney**
Whitegates
East Hanney Wantage Oxon OX12 0HR (GB)

(54) **Improvements in securing devices.**

(57) A member for securing the wall plate of a wall of a building to the wall more securely than present designs. The member (34) is built into the the wall with one part (34a) interleaved with the bricks or blocks at a position down the wall from the plate and another part (34b) which is attached to the wall plate. Better transfer of roof loads to the wall is achieved because the a number of rows of bricks or blocks have to be dislodged before the member can be pulled away from the wall.

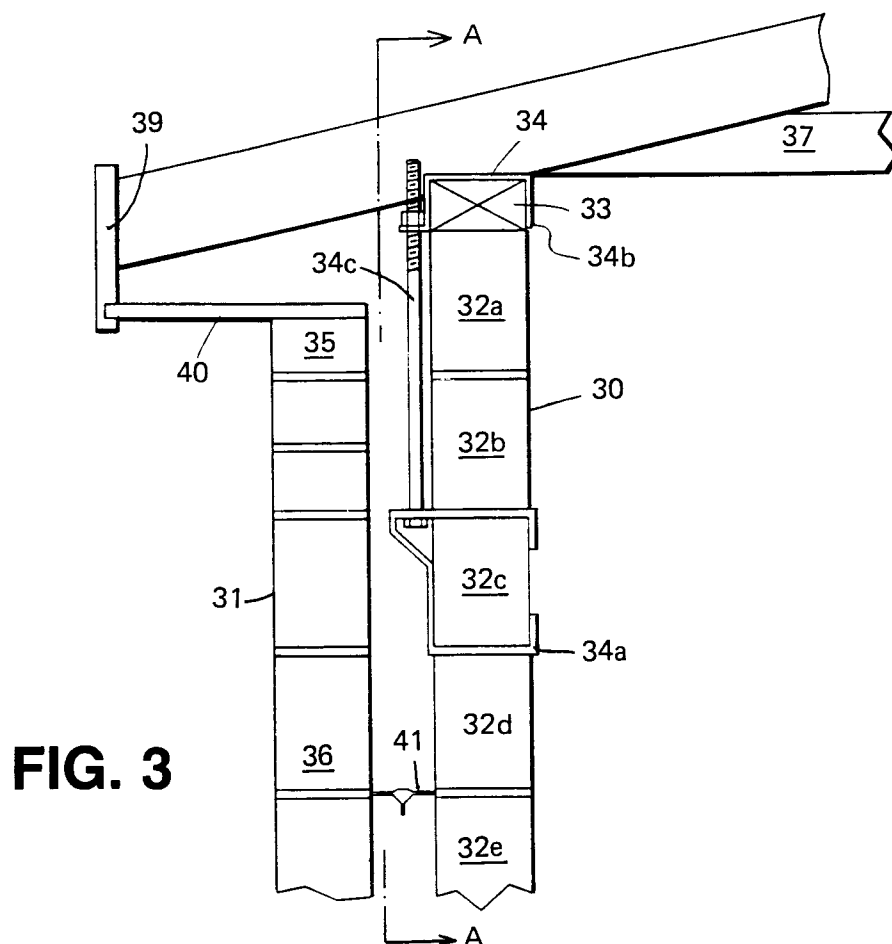


FIG. 3

In the construction of the wall of a building the row of brick or block at the very top of the wall has a timber laid along it which is called the wall plate. With a wall which consists of standard 4 inch brick or block laid in two leafs and having a 2 inch air gap between them, the inner leaf carries this wall plate along its length. The wall plate is usually made of lengths of 4 inch by 2 inch unplanned timber. The purpose of the wall plate is to allow the roof timbers, both the rafters and the joists, to be secured to the leaf of the wall. Thus, the roof loads are transferred to the plate and, because the plate is secured to the wall, they are thus transferred to the wall. The present arrangements for securing the wall plate to the wall consist of nailing metal strips across the top of the wall plate, these strips being bent to hang down against the inside of the inner leaf of the wall and to lie flat against it. They are then nailed to the wall and finally, when the inside leaf is plastered or screeded, the plaster or screed is meant to bind them to the wall.

This method of securing the strips is poor. The nails by which the metal strips are secured to the side of the wall do not hold the strips securely because brick and block material is not suited to receiving and retaining nails. In addition, plaster and screed only have limited capability for holding metal strip and both materials tend to crack and break up when subjected to upward pulling forces as happens when strong winds tend to lift the roof.

According to the invention there is provided a device for securing a roof member to the leaf of a wall, the device being capable of being secured to, built into or interleaved with the brick, block or other material of the leaf of the wall at an area spaced from the roof member, said device being capable of being attached to the roof member.

According to a feature of the invention there is provided a device for securing a roof member to the leaf of a wall, the device comprising two parts, a first one of said parts being capable of being secured to, built into or interleaved with the brick, block or other material of the leaf of the wall at an area spaced from the roof member, and the second of said parts being capable of being attached to the wall plate, and means for securing the two parts together.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which,

Figures 1 and 2 are perspective views of different designs of securing devices,

Figure 3 is a section through a wall having a wall plate securing device constructed in accordance with the present invention,

Figure 4 is a section taken along line A-A of Figure 3 through the cavity between the two leafs of the wall, and,

Figure 5 is a perspective view of the parts of the wall plate securing device.

In Figures 1 and 2 of the drawings, the inner leaf 10 of a wall is shown, made of concrete blocks 12 laid in rows, with the blocks in one row overlapping the joints between the blocks of the row below, as is usual in this kind of construction. Along the top of the upper row 12 of blocks a wall plate 13 has been laid, the plate 13 consisting of unplanned 4 inch by 2 inch timber, with the 4 inch dimension laid across to match the 4 inch width of the blocks.

A securing device 14 has been built into or incorporated into the top row 12 of blocks. In laying block 12A, device 14 has been fitted against one end of block 12A and bedded with mortar against it. The block 12A and device 14 have then been bedded with mortar into the wall so that block 12A lies in its usual position. Block 12B was then laid against device 14 and also bedded into its usual position with mortar.

The device 14 comprises two side plates 15, 16 which thus lie one each side of the blocks 12A and 12B. Each side plate is of substantially triangular shape and the bottom edge of each side plate 15, 16 is turned over to form a respective tongue 15a, 16a and these tongues meet to form a complete transverse plate which lies between the blocks 12A, 12B and the row of blocks below them in the space which is usually only occupied by mortar. The device 14 is bound into the structure when the mortar sets and this helps to unite the device 14 into the wall positively locating it under the two blocks 12A, 12B. In the event of upward forces due to strong winds on the roof structure after installation, before the roof can lift off, all the blocks in the top row 12 have to be dislodged.

The side plates 15, 16 are joined together by a cross plate 17 which has a central opening 18, the upper and lower edges 19, 20 of which are turned outwards slightly towards the adjacent blocks. These outwardly turned edges help to space the adjacent blocks 12A, 12B apart to give the correct separation distance to allow mortar to bed correctly between the blocks. The cross plate 17 has divots 21 pushed out of its surface to provide additional binding of the mortar to the blocks 12A, 12B and device 14.

Each side plate 15, 16 has a strap 22, 23 respectively attached to it and extending upwardly from it and these straps can be bent over to lie flat across the top of the wall plate to be nailed to the wall plate, the straps having holes through them to receive the nails. The device 14 shown in Figure 1 is thus built into the wall in an area spaced down the wall from the top and it forms an integral part of the wall and so provides a very strong attachment for the wall plate to the wall thus enabling high upward forces to be transferred to the wall in the event of strong winds and reducing the risk of the roof pulling away from the wall.

In the arrangement shown in Figure 2 a securing device 24 is of somewhat similar construction to that of the device of Figure 1, in that it comprises two side plates 25a, 25b joined together by a cross plate 25c.

The side plates lie along the outer surfaces of adjacent blocks 27A, 27B and are turned over at their lower edges to form a respective tongue 25d, 26e and these two tongues meet to form a complete transverse member which lies in the space between the blocks 27A, 27B usually only occupied by mortar. This helps to unite the device 24 into the wall by giving it positive location. Also, in the event of upward load due to strong winds on the roof structure after installation, the wind load is positively transferred to the wall and before the roof can lift off, all the blocks in the top row have to be dislodged.

In laying block 27A, device 24 has been fitted against one end of block 27A and bedded with mortar against it. The block 27A and device 24 have then been bedded with mortar into the wall so that block 27A lies in its usual position. Block 27B was then laid against device 24 and also bedded into its usual position with mortar.

In the arrangement of Figure 2, the cross plate 25c has a bolt 29a welded to its upper margin and this bolt is arranged to extend through a hole cut in the wood of the wall plate 26 to secure it to the device 24 by means of a nut and washers 29b screwed onto the bolt 29a.

The device 24, shown in Figure 2, is thus built into the wall in an area spaced down the wall from the top and it forms an integral part of the wall and so provides a very strong attachment for the wall plate 26 to the wall enabling high upward forces to be transferred to the wall in the event of strong winds, reducing the risk of the roof pulling away from the wall. The attachment of device 24, which is positioned under blocks in the top row of blocks, ensures that when load is transferred from the roof to the wall, the wall will take up that load to the point of destruction when the top row of blocks is dislodged. The wall shown consists of blocks but the same arrangement can be used with bricks provided the attachment of device 24 is spaced sufficiently down the wall to ensure that when load is transferred from the roof to the wall, the wall will take up that load to the point of destruction when the rows of bricks above the device 24 are dislodged.

Referring now to Figures 3, 4 and 5, the inner leaf 30 and the outer leaf 31 of a wall are shown, leaf 30 being made of concrete blocks 32 laid in rows 32a to 32e, with the blocks in one row overlapping the joints between the blocks of the row below, as is usual in this kind of construction. Along the top of the upper row 32a of blocks a wall plate 33 has been laid, the plate 33 consisting of unplanned 4 inch by 2 inch timber, with the 4 inch dimension laid across to match the 4 inch width of the blocks.

A securing device 34 is shown used in the construction of the wall, the device comprising a lower part 34a and an upper part 34b. The lower part 34a of device 34, as shown in the drawings, has been fitted over one of the blocks which has then been built into

the row 32c, this row being the third row down from the wall plate 33. Lower part 34a is of substantially channel section so that it can be slid over a block partially to surround the block, whilst its length is shorter than the length of a block; this enables part 34a to be built into the wall by being interleaved with the blocks, without interfering with the regular pattern of blocks which makes up the wall and whilst enabling the mortar used in wall construction to bind both the block and the part 34a into the wall construction.

The upper part 34b of device 34, is of substantially U-shape to fit over the wall plate. As shown Figures 3 and 4 of the drawings, upper part 34b has been laid over the wall plate 33 and secured, as by nails, to the wall plate.

A length of metal rod 34c joins the upper and lower parts 34a and 34b together. To fit this rod 34c, a head 34d (Figure 5) on the rod is slipped into a slot 34e formed in an offset portion 34f of the lower part 34a. At its upper end rod 34c is threaded and carries a pair of nuts 34f which can be tightened against a bracket or lug 34g on the upper part 34b to provide a reasonable tension between the upper and lower parts of member 34 whilst allowing adjustment for the usual variations which occur in the size of blocks and bricks and the different thicknesses of mortar used by different workers.

In this way the two parts 34a, 34b of the member 34 are held together thus securing the wall plate to an area spaced down the wall from the top of the wall and with a series of such members built into the wall all along its length, the loads of the roof are evenly spread into an area of the wall well down from the wall plate and the top of the wall. These wall plate securing members can be fitted about every 1200mm along the length of a wall.

In the event of upward forces due to strong winds on the roof structure after installation, before the roof can lift off, all the blocks in the top three rows have to be dislodged. Not only that, but because the lower part 34a partly sheaths one of the blocks in row 32c, this block would have to be physically pulled out of the wall and carried up before the roof could be lifted off.

The device 34 shown in the drawings is thus built into the wall and forms an integral part of the wall and so provides a very strong attachment for the wall plate to the wall so enabling high upward forces to be transferred to the wall in the event of strong winds and reducing the risk of the roof pulling away from the wall.

Also, in the event of upward load due to strong winds on the roof structure after installation, the wind load is positively transferred to the wall and before the roof can lift off, all the blocks in the top three rows have to be dislodged.

The remainder of the wall and roof construction is conventional with the outer wall leaf 31 comprising rows of bricks 35 and blocks 36 and with the ceiling joists 37 being secured, as by nailing, to wall plate 33

and rafters 38 being in turn secured, as by nailing, to the joists. The rafters 38 carry a fascia board 39 and the gap between the fascia board 39 and outer leaf 31 is closed by a soffit board 40. Between the two leafs of the wall are wall ties 41 for binding the leafs together. In Figures 6 and 7 there is shown the gable end wall 50 of a building and the end rafter 51 which is positioned against the wall 50. At regular positions in the wall 50 in a row parallel to the sloping edge of the wall, securing devices 52, made in accordance with the invention, are mounted. The securing devices 52 are of the design shown in Figures 3, 4 and 5 and have a lower part 52a built into the wall or interleaved with the block material of the wall at an area spaced from the roof. Upper parts 52b are attached to the rafter 51 and connected to lower parts 52a by metal rods 52c. Thus, the gable end of the roof is secured uniformly along both sloping faces to the gable end wall 50.

Claims

1. A device for securing a roof member to the leaf of a wall, the device being capable of being secured to, built into or interleaved with the brick, block or other material of the leaf of the wall at an area spaced from the roof member, said device being capable of being attached to the roof member.
2. A device as claimed in claim 1, comprising two members adapted to be positioned one each side of the leaf of a wall, a third member interconnecting said first two members and adapted to be positioned in the usual mortar gap between bricks or blocks of said leaf, and means extending from at least one of said members for providing a connection to said roof member.
3. A device as claimed in claim 2, including a fourth member extending normal to said third member, being formed by portions of said first two members and adapted to be positioned in the usual mortar gap between bricks or blocks of said leaf.
4. A device for securing a roof member to the leaf of a wall, the device comprising two parts, a first one of said parts being capable of being secured to, built into or interleaved with the brick, block or other material of the leaf of the wall at an area spaced from the roof member, and the second of said parts being capable of being attached to the wall plate, and means for securing the two parts together.
5. A device as claimed in claim 4, in which said first part has a portion on each side of the leaf of the wall and a further portion extending through the

usual mortar gap between said bricks, blocks or other material.

6. A device as claimed in claim 4, in which said first part is adapted to interleave a wall consisting of blocks so as to surround a major portion of a block.
7. A structure comprising a wall having a leaf thereof connected to a roof member by a plurality of devices which are secured to, built into or interleaved with the brick, block or other material of the leaf of the wall at an area spaced from the roof member, said plurality of devices being attached to the roof member.
8. A structure as claimed in claim 7, in which each said device comprises two parts, a first one of said parts being capable of being secured to, built into or interleaved with the brick, block or other material of the leaf of the wall at an area spaced from the roof member, and the second of said parts being capable of being attached to the wall plate, and means for securing the two parts together.
9. A structure as claimed in claim 8, in which said means for securing the two said parts together are positioned in the cavity between the two leafs of the wall.

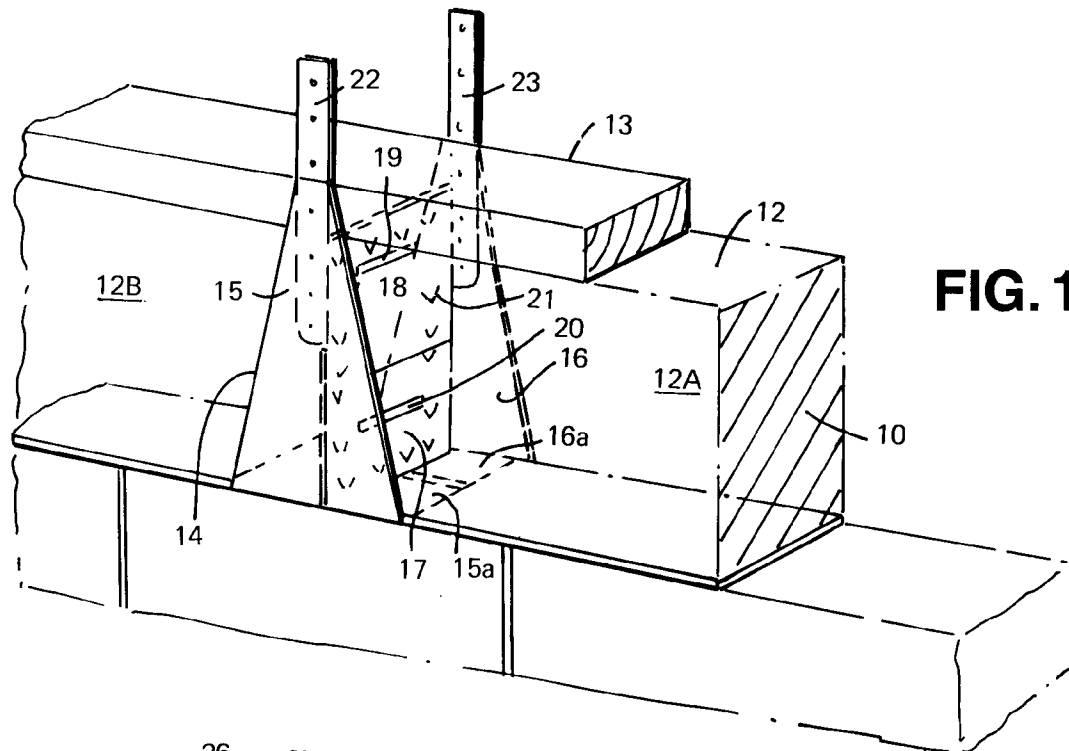


FIG. 1

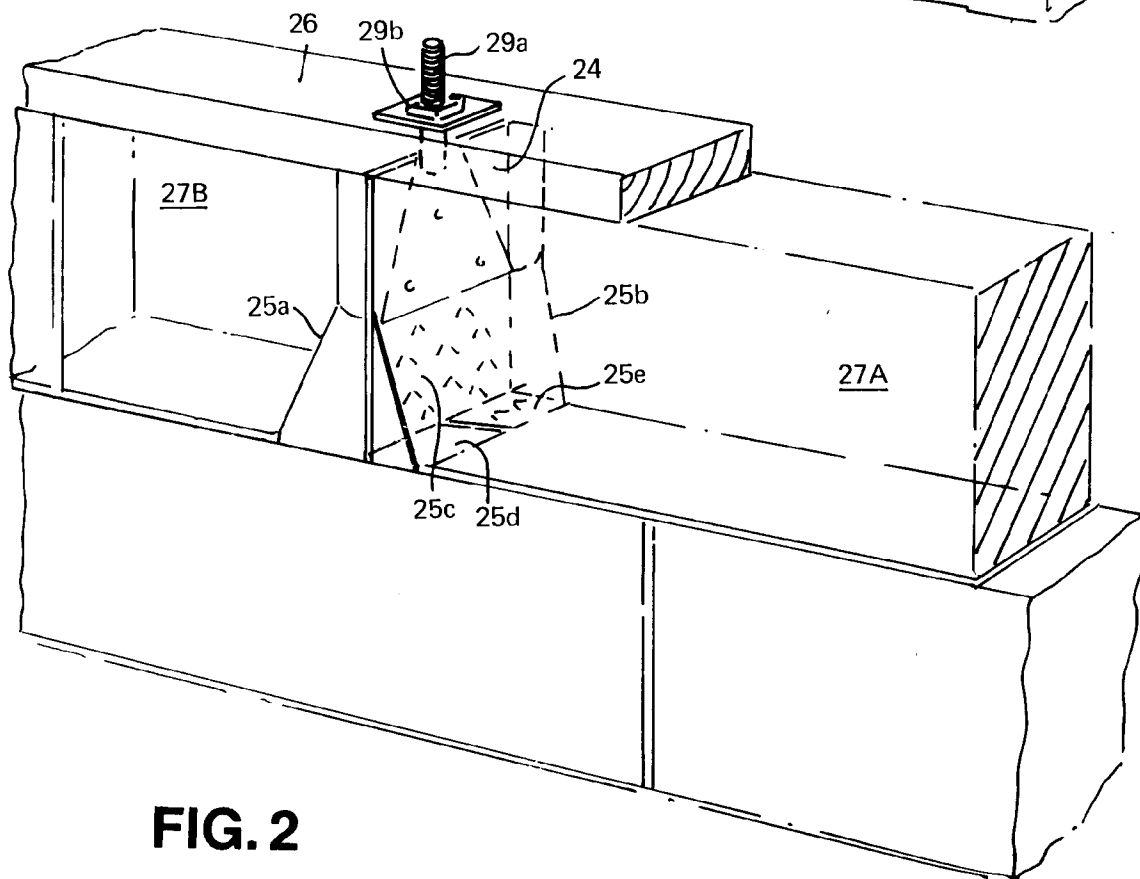
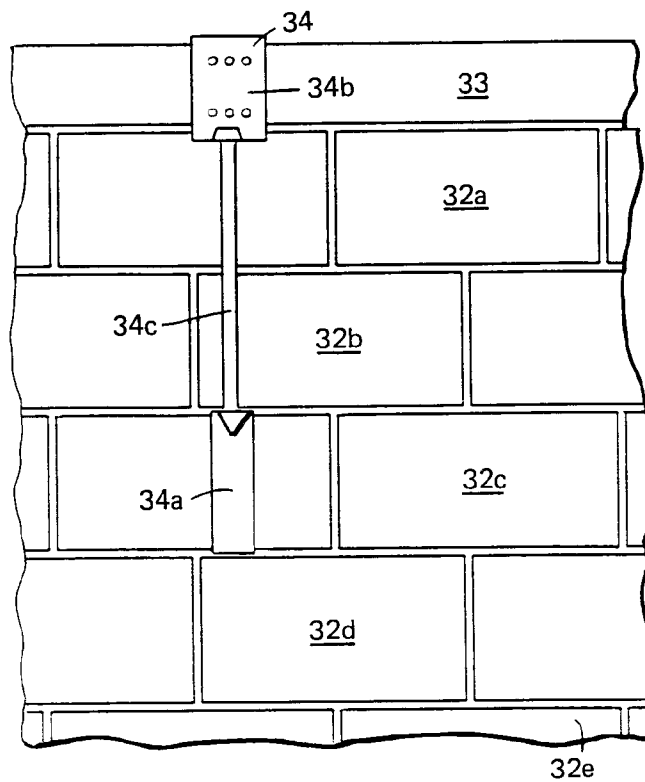
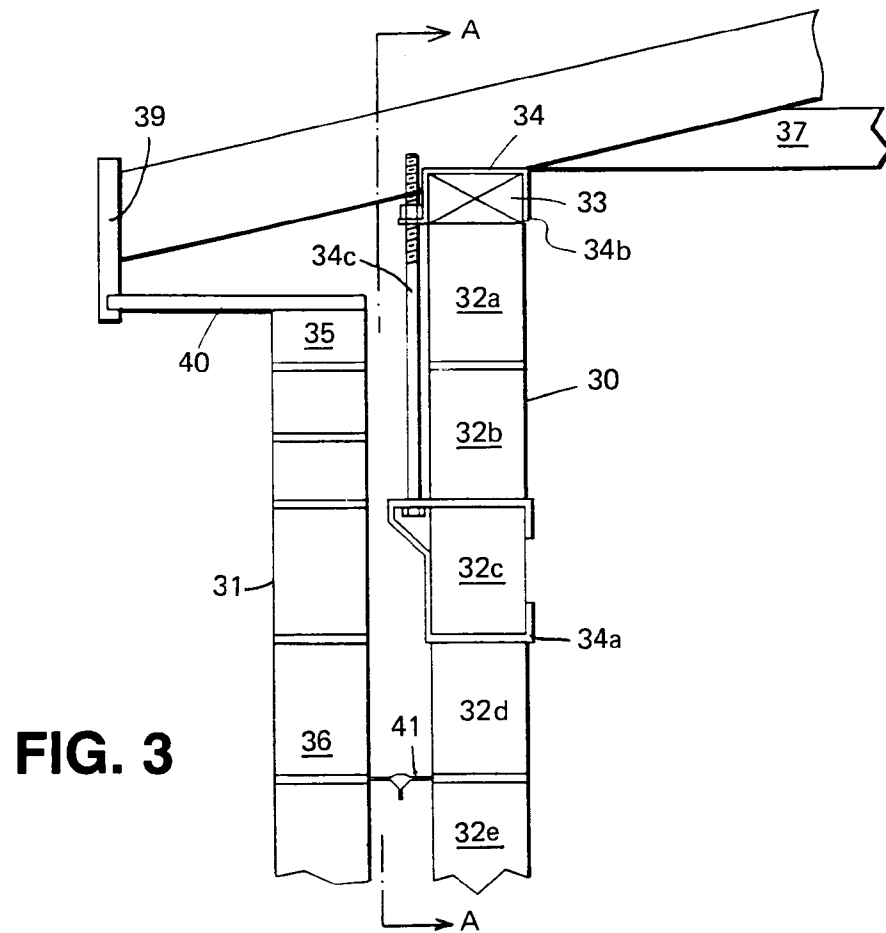


FIG. 2



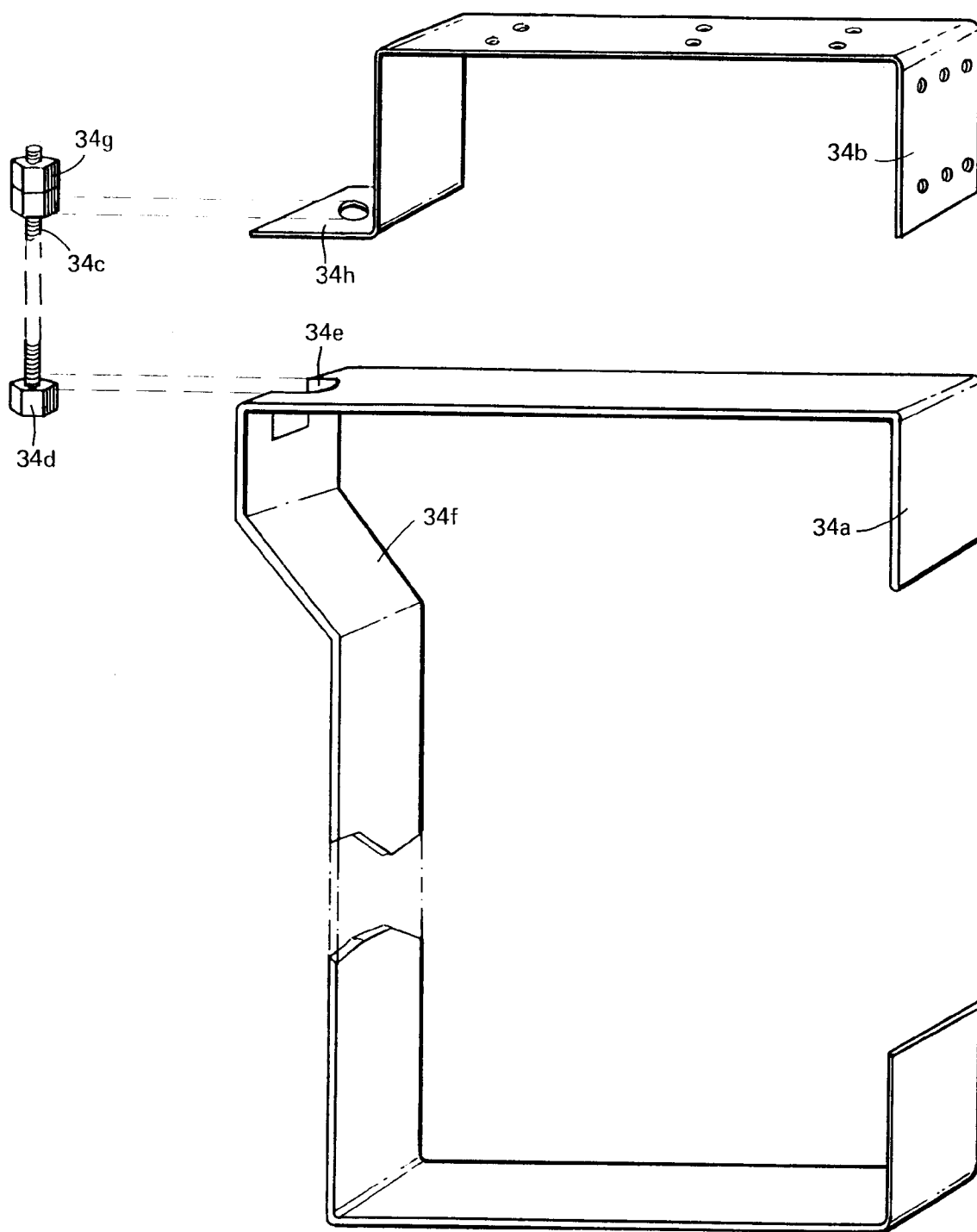


FIG. 5

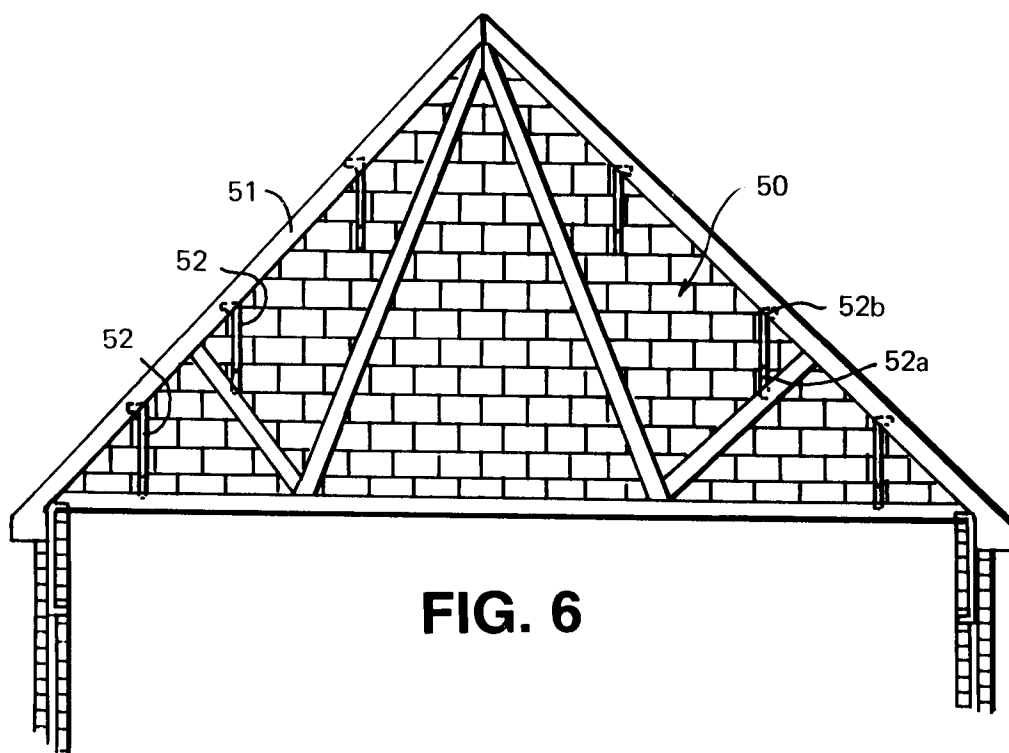


FIG. 6

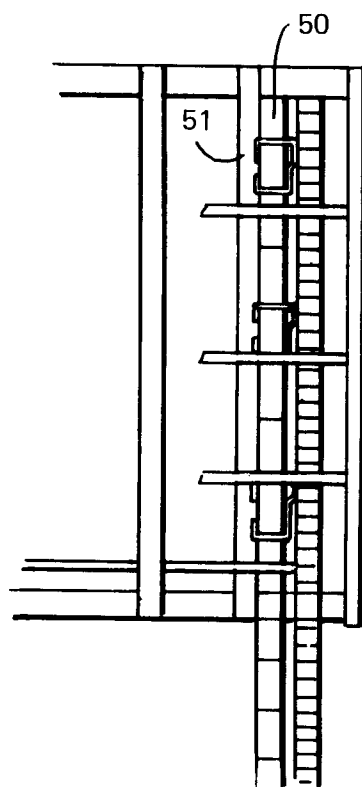


FIG. 7



European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 91 30 7552

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-3 471 988 (ALLEN) * column 1, line 30 - line 38 * * column 4, line 10 - line 57; figures 11-15 * ---	1-5, 7-9	E04B1/41 E04B7/04
X	GB-A-2 044 330 (ASSET BUILDING COMPONENTS LIMITED) * page 3, line 15 - line 21; figure 7 * ---	1, 4, 7, 8	
A	US-A-3 893 274 (SALISBURY) * abstract; figures * -----	1, 4, 7-9	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E04B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28 OCTOBER 1991	Examiner DE COENE P. J. S.
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
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