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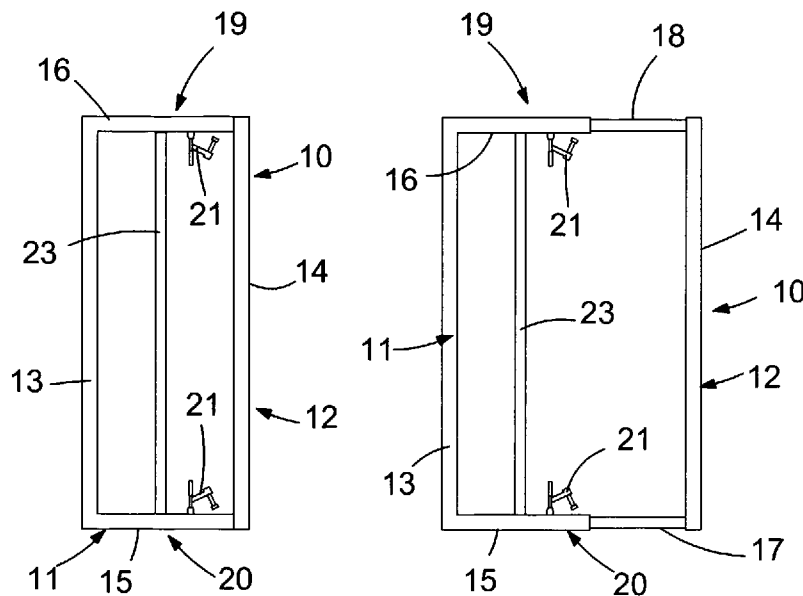
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(54) Title: WINDOW AND DOOR FRAMES



(57) Abstract: A removable reusable frame (10) for defining an opening in a brick or block wall that is under construction. The frame (10) comprises a first vertical member (13), defining a first lateral extremity of the opening and a second vertical member that defines a second lateral extremity of the opening. The second vertical member (15), the first vertical member (13) and the second vertical member (14) are interconnected by one or more horizontal links (19, 20) that are of adjustable lengths. Releasable clamps (21) are provided for securing the position of the second part of the, or each link (19, 20). The or each clamp (21) is secured to the first part and has an arm that carries a clamping member that can be inserted through a hole in the first part to clamp on to the second part and thereby lock them together.

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### Window and Door Frames

5 This invention relates to removable reusable frames for defining openings in a wall that is under construction in bricks or blocks and for defining openings formed by wooden or plastics frames.

10 When building houses, an architect will design the placement of a window and this can often be problematic to the bricklayer since the window will not necessarily align perfectly with the bricks along a brick course. This necessitates cutting the bricks so as to fit the window frame or alternatively “stretching” the row of bricks by increasing the mortar joint between adjacent bricks beyond the 10mm ideal so that the bricks abut the position of the window frame without the  
15 need for cutting. Both are unsatisfactory since cutting is a time consuming and fiddly job whereby “stretching” results in the formation of “zipping” whereby subsequent courses of bricks or blocks have vertical mortar joints of different thicknesses that do not align producing an aesthetically unattractive appearance.

20 When building properties with many windows, builders have been provided with specific dimensions for the windows to accept standard window fitments. A carpenter is then employed to produce a series of dummy window frames (effectively rectangular wooden frames) which are then inserted into the brickwork to allow the bricklayer to work around the rectangular frame. The

frame is then subsequently removed to allow the correct window to be placed in the opening defined by the frame. This results in considerable wastage in wood whereby, due to the expansion and movement of the wood joints, the wooden frames often become wedged within the brickwork necessitating a high force for removal. This damages the wood, preventing its reuse and also possibly damages the brickwork itself. The use of such dummy frames is time consuming, expensive, and potentially damaging. Furthermore, such frames are subject to twisting out of 90° alignment making the use of such frames difficult since the window must be perfectly rectangular. In a house having up to twenty or thirty windows the costs involved in forming such dummy frames is considerable and is complete wastage.

Most modern houses now utilise new PVC windows which are made to fit existing openings. Once the house has been built with the window sockets left in the brickwork, the glaziers or window companies simply measure the size of the opening and make the windows to fit the opening. This obviates the need for standard frame fitments. One of the advantages of using non-standard frame sizes is that the windows can be placed so as to align perfectly with the brickwork without the need for “stretching” or cutting. However, this does not obviate the need for construction of conventional wooden dummy frames nor the problem that if the window thickness does not correspond to a preset number of bricks in its width, then the cutting or “stretching” will be necessary at one side of the window frame. It is particularly difficult where there are fewer than five brick widths

between the window and the edge of the building such as occurs where there is another window, or door-frame, or corner.

When constructing door openings a pre-existing door opening in a wall is usually  
5 lined by a wooden frame or, a UPVC frame. Conventionally the door lining  
frames are self-assembly items comprising two uprights joined by a horizontal  
member at the top, and sometimes have a horizontal sill at the bottom. The lining  
frame is often fitted with the fittings such as hinges and lock plates. It is not  
unusual for the members of the lining frame to be severely warped thus making  
10 fitting very difficult. The usual practice for fitting the lining frame to pre-existing  
openings in a wall is to wedge pieces of sticks, off cuts of wood, or the like across  
the gap between the uprights to ensure a tight fit in the pre-formed opening. Once  
located in the opening, the lining frame is held in place by injecting a rigid-setting  
foam between the wall structure and the lining foam. This method of fitting lining  
15 frames is universally adopted and is very time consuming, unreliable and very  
costly.

*It is an object of the present invention to provide a removable reusable frame for  
defining openings in a wall that is under construction or for fitting lining frames in  
20 existing openings that is adjustable to accommodate different widths of opening.*

It is a further object of the present invention to provide an adjustable frame that  
can be made to fit an existing opening in a wall under construction.

According to one aspect of the present invention there is provided a removable reusable frame for defining an opening in a wall, said frame comprising a first vertical member defining a first lateral extremity of the opening, a second vertical member defining a second lateral extremity of the opening, one or more horizontal links that are of adjustable length interconnecting the second vertical member to the first vertical member, and locking means for securing the position of a first part of the, or each, link relative to a second part of the, or each, link, the locking means comprising a releasable snap clamp that has a base secured to the first part and has an arm that carries a clamping member that can engage the second part of each link and clamp onto the second part and thereby lock them together.

Preferably there are two horizontal links that define the upper and lower extremities of the opening respectively.

The, or each, horizontal link may comprise two parts, one of which is moveable relative to the other to vary the length of the horizontal link.

Preferably, the first part of the or each horizontal link is a hollow tubular member and the second part of the or each link slides inside the bore of the first part.

Preferably the or each clamp comprises a handle lever pivotally attached to

the base on a first pivot, the arm is pivotally attached to the base on a second pivot spaced from the first pivot, a locking lever is pivotally attached at one end to the handle lever and pivotally attached at a second end to the arm, and the clamping member is provided at the free end of the arm and is positioned so as to be able to enter the hole in the first part and thereby engage the second part, the spacing of the pivots and lengths of the arm and levers being chosen so as to cause a toggle action when the handle lever is moved to a locking position and thereby cause the adjustable member to move through the hole into locking engagement with the second part.

10

The frame may be provided with one or more further vertical support members that extend between two horizontal links.

15

The frame may be used for defining an opening in a wall that is linked with a lining frame, in which case the frame has fixing means for temporarily holding a lining frame to an outside surface of the frame.

20

The frame may be provided with adjustable fee to permit adjustment of frame.

The frame may be provided with a steady bar that is pivotally attached to the frame for holding the frame upright.

The present invention will now be described by way of example only, with reference to the accompanying drawings:-

Figures 1 to 3 show three frames constructed in accordance with the present invention.

5 Figure 4 shows in more detail one of the clamps of the frames of Figures 1 to 3; and

Figure 5 shows a second embodiment of the present invention.

Referring to Figures 1 to 4 of the accompanying drawings there is shown three  
10 removable reusable frames (10) each for defining an opening in a wall (not shown) that is to be constructed in bricks or blocks. The frame of Figure 1 is for defining an opening that is 1455mm high and between 600mm to 1200mm wide; Figure 2 shows a frame for defining an opening 1455mm high by 1000mm to 2000 mm wide. Figure 3 shows a perspective view of a third frame.

15

The metal frame (10) comprises two parts (11, 12) each of which is made of hollow box like construction and has a vertical member (13) or (14) and two horizontal tubes (15, 16) or (17, 18). The cross sectional dimensions of the horizontal tubes (15, 16) of the first part (11) are slightly larger than those of the  
20 horizontal tubes (17) and (18) of the second part. The tubes (17, 18) are inserted into the bores of the tubes (15, 16) so as to slide therein. Each pair of tubes (15, 17) or (16, 18) together define a horizontal link (19, 20) of adjustable length which effectively interconnect the vertical members (13, 14).

In use, the vertical members (13, 14) define the lateral extremity of an opening to be provided in a wall that is to be constructed, for example, in brick or concrete blocks. The height of the frame (10), that is to say the length of the vertical members (13, 14), is chosen to be equal to modules of the height of a number  
5 individual courses of bricks or blocks. The horizontal links (19, 20) define the upper and lower extremities of the opening in the wall respectively.

It will be seen from the drawings that the tubes (15, 16) of the first part (11) are provided with two securing means (21) in the form of standard snap clamps the  
10 bases of which are secured to each of the tubes (15,16) and a part of which is inserted through holes (22) in the tubes (15, 16) to clamp onto the tubes (17, 18) of second part of the frame (10). The clamps (21) thereby lock the two parts of the frame together in a fixed relationship. The clamps are shown in more detail in  
15 Figure 4.

Referring to Figure 4 each clamp 21 is of the type manufactured by HMC Brauer Limited under Model No SCH 1547 and comprises a base member 24 that is bolted or welded to the outside tube 15, 16 close to a hole 22. The base 24 has  
20 two pivots 25, 26 on which are mounted respectively a handle lever 27 and an arm 28. Mounted on the free end of the arm 28 is a screw threaded rod 29 with a head 30 at one end of the rod 29. A locking lever 31 is pivotally attached to the arm 28 by way of the pivot 32 and is pivotally attached to the handle lever 27 by way of



the pivot 33. The spacing of the pivots 25, 26, 32 and 33 and the lengths of the arm 28 and the levers 27 and 31 are such that movement of the handle inserts the head 30 through the hole 22 in the outer tube 15, 16 and clamps the head 30 against the inner tube 17, 18. Movement of the handle 27 over the centre of the pivot 32 performs a toggle action that locks the head 30 in place against the tube 15, 16.

One or more additional vertical support members (23) may be provided between the horizontal members (15, 16) to provide rigidity. It may be possible to provide similar additional vertical supports between the tubes (17, 18) providing the additional support member does not restrict the amount of horizontal adjustment of the vertical members (13, 14).

To use the frame, the frame (10) is placed upon the course of bricks where it is desired to provide a window or door opening. The bricklayer lays the next course of bricks up to the location of the frame (10) at each side of the frame (10). The length of the horizontal links (19, 20) are adjusted to bring the vertical members (14, 15) into contact with the edges of the first row of bricks and the clamps 22 operated to lock the frame 10 to the correct size. The bricklayer then lays the remaining courses of bricks or blocks so that they abut the vertical members (13, 14) at each side of the frame. Finally, a lintel (not shown) is placed across the top of the frame (10) onto the top course of bricks at each side of the frame to complete the opening in the wall.

Subsequently, when it is required to replace the frame (10) with the final window, the frame (10) is removed and the size of the opening is measured. The final finished permanent window/window frame is made to the size of the opening in the wall and the final window frame is then fitted into the opening.

The frame (10) is reusable and can be adjusted to suit various widths of openings. Different sizes of frames that are adjustable to suit different heights and widths of openings are made to give the builder the flexibility of mixing and matching different sizes of windows or doors.

Referring to Figures 5 and 6 there is shown a second frame constructed in accordance with the present invention for use in fitting door lining frames made of wood or UPVC (not shown) into an existing opening in a wall (not shown).

The frame 10 is constructed in the same way as the frames 10 of Figures 1 to 3 and has the same clamps 22 as shown in Figure 4. The frame is provided with four additional features compared with the frames of Figures 1 to 3 but in other respects are identical to those of Figures 1 to 3.

The additional features are the provision of adjustable feet 35 at the bottom, a spirit level 36 located on the bottom horizontal member 16, a steady bar 37 pivotally attached to the outer tube 16 of the horizontal link 19 and a removable

alignment bar 38 that sits in brackets 39 at the lower end of each upright member 13, 14.

In use, a door lining frame made of wood or UPVC (not shown) but comprising  
5 two uprights and a horizontal top member is assembled, and the frame 10 of the present invention is positioned loosely inside the door lining frame. The frame 10 is then adjusted to the correct size and thereby define the opening of the door lining and the clamps 21 operated to secure the frame 10 to the correct size. Screws (not shown) are inserted in holes 40 in the frame 10 and screwed into the  
10 door lining frame to pull the door lining frame tight against the outside surfaces of the frame 10. The alignment bar 38 is fitted into the brackets 39. The brackets 39 (as shown in detail in Figure 6) are dimensioned so that the bar 39 lies flush with the front face of the upright members of the wooden or UPVC door lining frame that is fitted inside the frame 10. In this respect, the brackets 39 have a stepped  
15 recess 41 to accommodate different thickness of lining frames.

The feet 35 are adjusted so that the spirit level 36 indicates that the bottom member 15 of the frame 10 is horizontal. The steady bar 37 is pivotally attached to the frame 10 to hold the frame 10 upright.

20

The frame 10 together with the door lining frame assembled to it is pushed into the preformed opening in the wall until the alignment bar 38 contacts the wall and the steady bar 37 is adjusted to position the frame 10 vertically.

A rigid setting foam (not shown) is then injected between the door lining frame and the wall and allowed to set. When the door lining frame is secured to the wall by the foam, the screws are removed from the holes 40, the clamps 22 released, and the frame 10 is collapsed and then removed from the door lining frame. The door lining frame can then be further secured, if desired, by securing screws through the frame into the wall.

## Claims

1. A removable reusable frame for defining an opening in a wall, said frame comprising a first vertical member defining a first lateral extremity of the opening, a second vertical member defining a second lateral extremity of the opening, one or more horizontal links that are of adjustable length interconnecting the second vertical member to the first vertical member, and locking means for securing the position of a first part of the, or each, link relative to a second part of the, or each, link, the locking means comprising a releasable snap clamp that has a base secured to the first part and has an arm that carries a clamping member that can engage the second part of each link and clamp onto the second part and thereby lock them together.

5

10
2. A frame according to claim 1 wherein there are two horizontal links that define the upper and lower extremities of the opening respectively.

15
3. A frame according to claim 1 or claim 2 wherein the, or each, horizontal link comprises two parts, one of which is moveable relative to the other to vary the length of the horizontal link.

20
4. A frame according to claim 2 wherein the first part of the or each horizontal link is a hollow tubular member and the second part of the or each link slides inside the bore of the first part.

5. A frame according to claim 4 wherein a handle lever is pivotally attached to the base on a first pivot, the arm is pivotally attached to the base on a second pivot spaced from the first pivot, a locking lever is pivotally attached at one end to the handle lever and pivotally attached at a second end to the arm, and the clamping member is provided at the free end of the arm and is positioned so as to be able to enter a hole in the first part and thereby engage the second part, the spacing of the pivots and lengths of the arm and levers being chosen so as to cause a toggle action when the handle lever is moved to a locking position and thereby cause the adjustable member to move through the hole into locking engagement with the second part.
6. A frame according to any one of the preceding claims wherein there is provided one or more further vertical support members that extend between two horizontal links.
7. A frame according to any one of the preceding claims for defining an opening in a wall that is lined with a lining frame, wherein the frame has fixing means for temporarily holding a lining frame to an outside surface of the frame.
8. A frame according to claim 7 wherein the frame is provided with adjustable feet.

9. A frame according to claim 7 or claim 8 wherein the frame is provided with a steady bar that is pivotally attached to the frame for holding the frame upright.

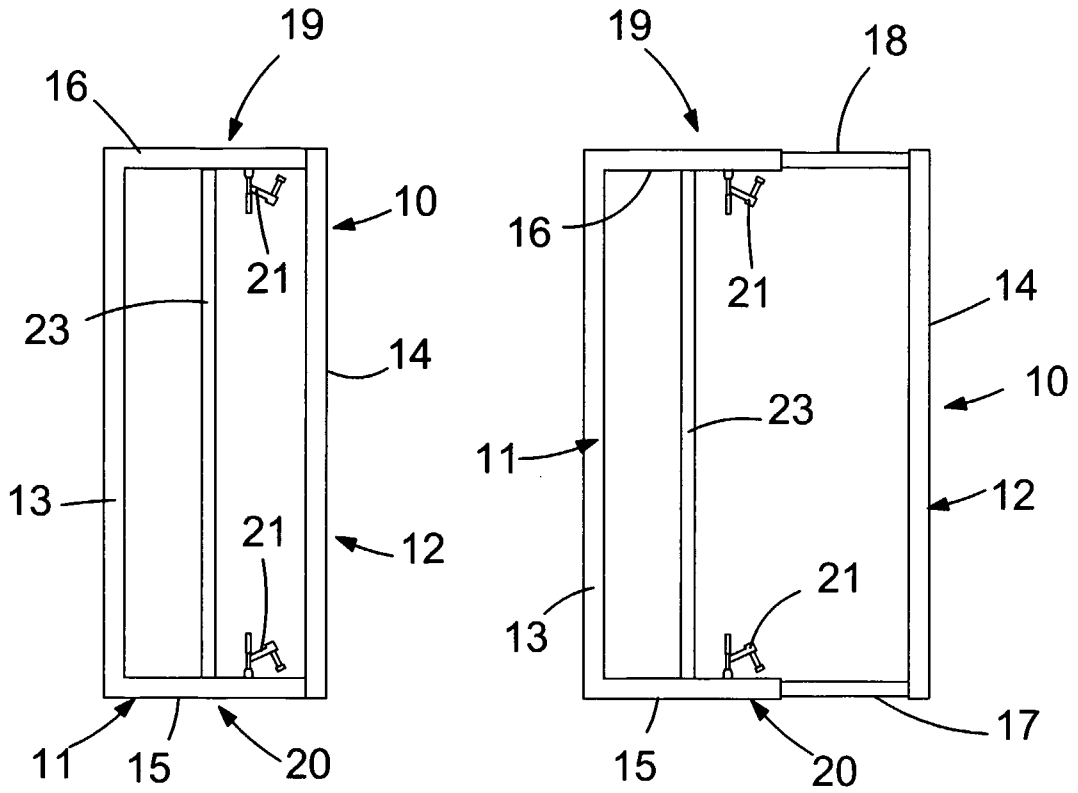


FIG.1

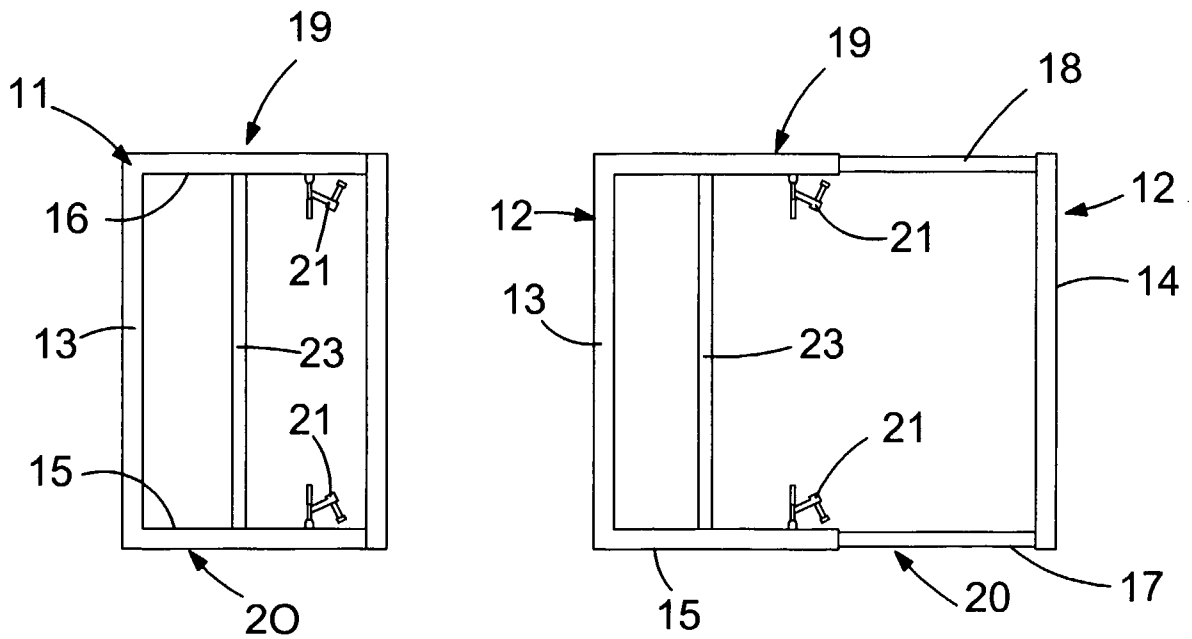


FIG.2



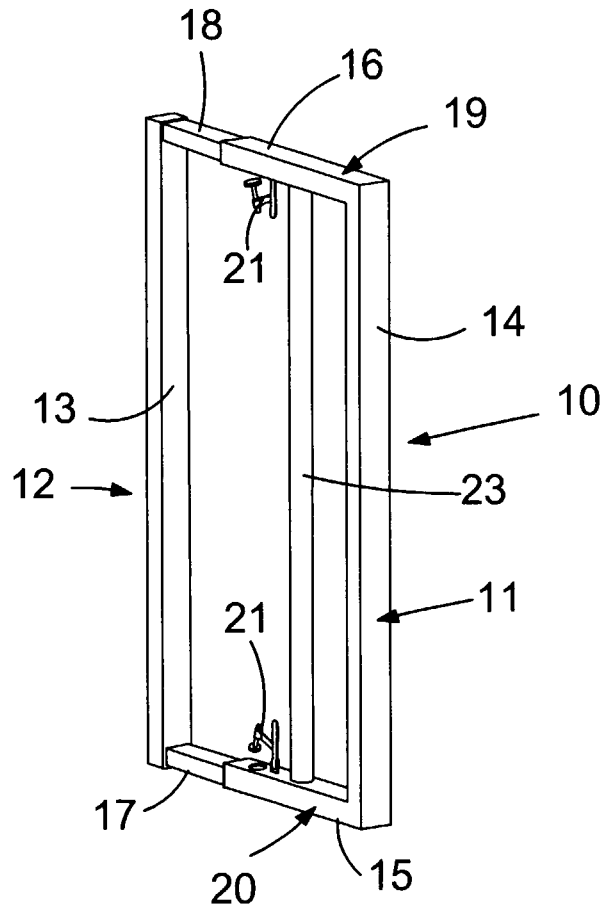


FIG.3

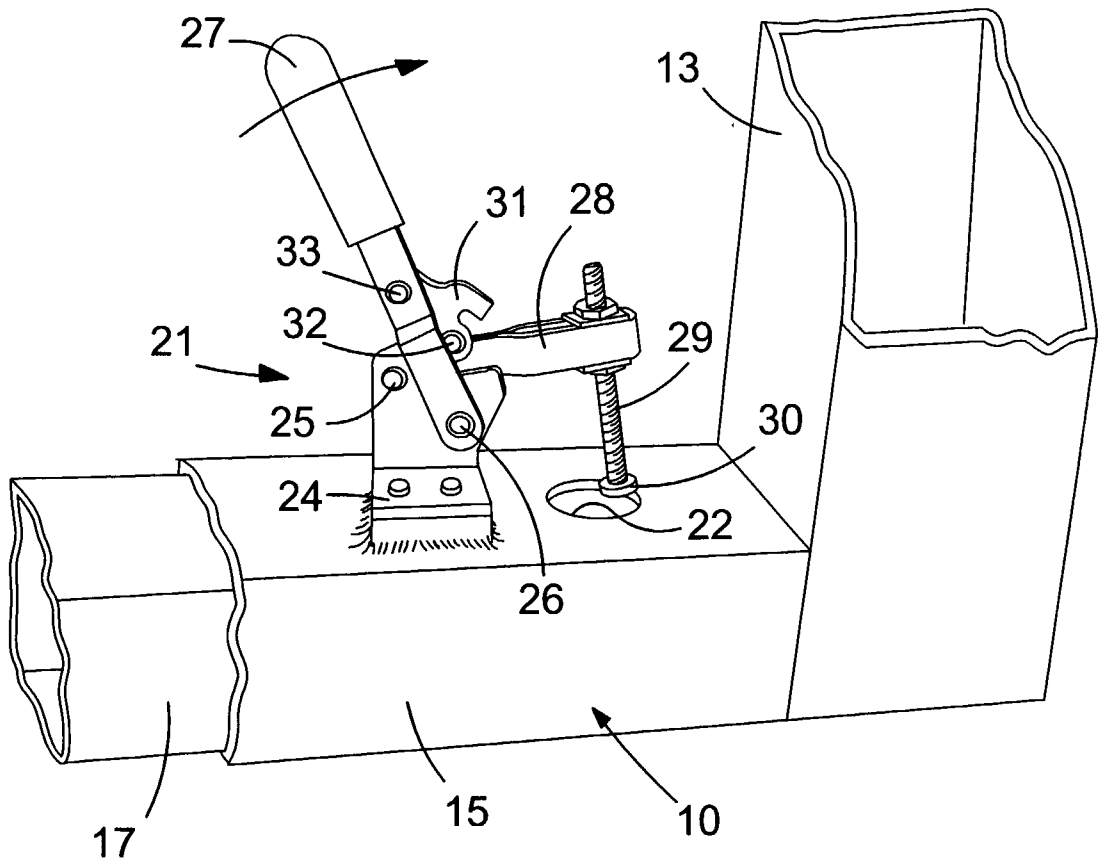


FIG.4

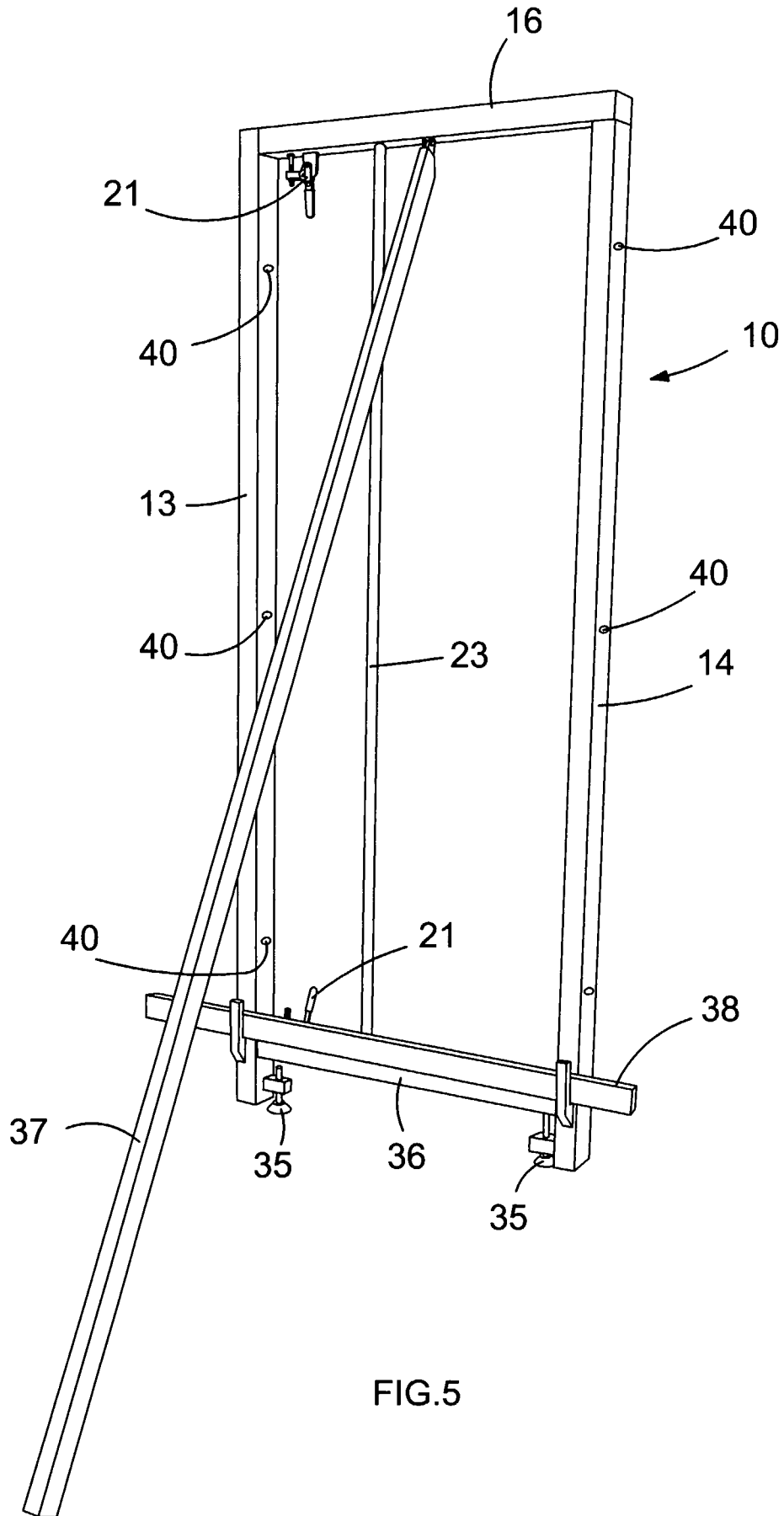
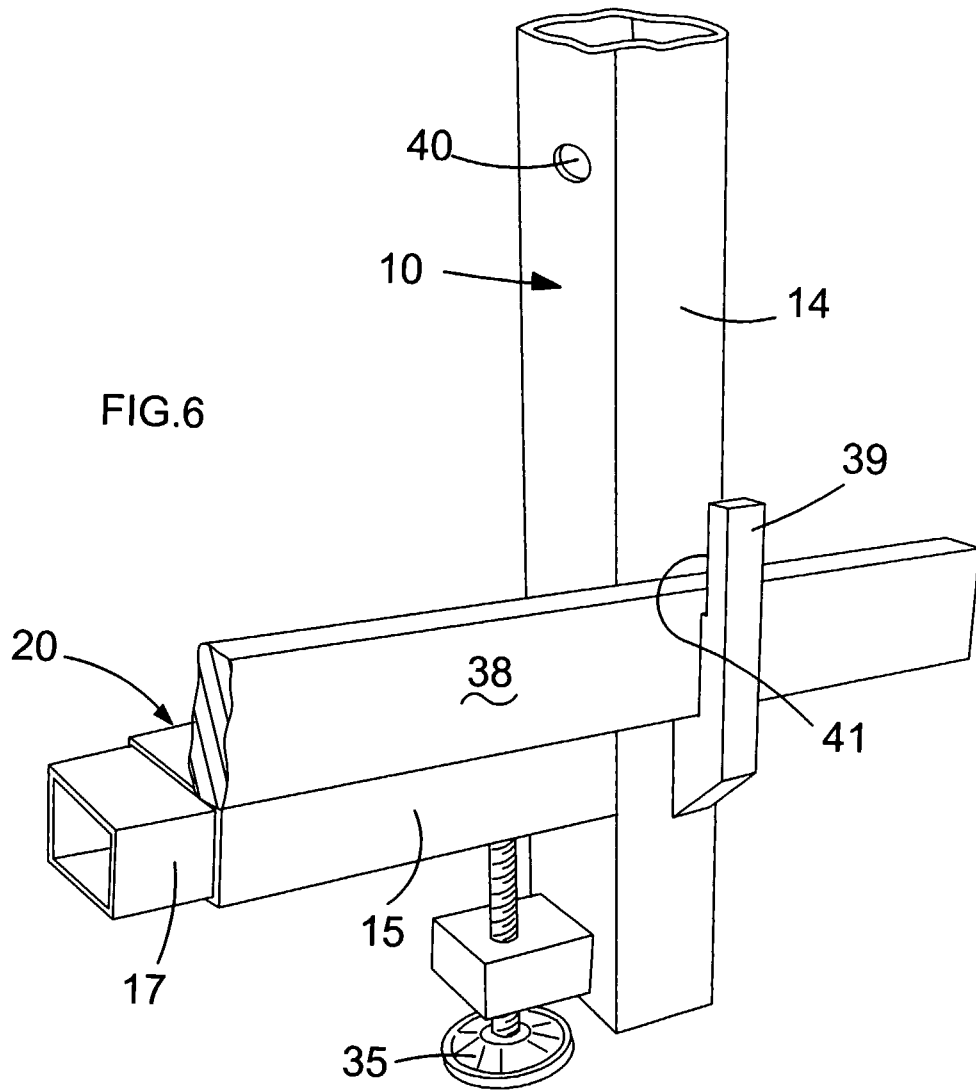


FIG.5



# INTERNATIONAL SEARCH REPORT

International Application No  
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**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 E04G21/18 E04G21/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**  
Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 E04G E04F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  
EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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Y	GB 680 308 A (BECORIT GRUBENAUSSBAU GMBH) 1 October 1952 (1952-10-01) the whole document	1-5, 7-9
Y	AU 753 074 B (ASHBY GREGORY ERIC JOHN) 10 October 2002 (2002-10-10) figure 1	6
A	"Brauer Clamping Products" September 2001 (2001-09), BRAUER, MILTON KEYNES, XPO02302050 page 84 - page 86	2
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search  <b>22 October 2004</b>	Date of mailing of the international search report  <b>09/11/2004</b>
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  <b>Andlauer, D</b>
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## INTERNATIONAL SEARCH REPORT

International Application No  
.../GB2004/003218

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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