



(22) Date de dépôt/Filing Date: 2007/02/08

(41) Mise à la disp. pub./Open to Public Insp.: 2008/08/08

(51) Cl.Int./Int.Cl. *E04G 17/14* (2006.01),  
*E04B 2/84* (2006.01), *E04G 5/04* (2006.01),  
*E04G 25/00* (2006.01)

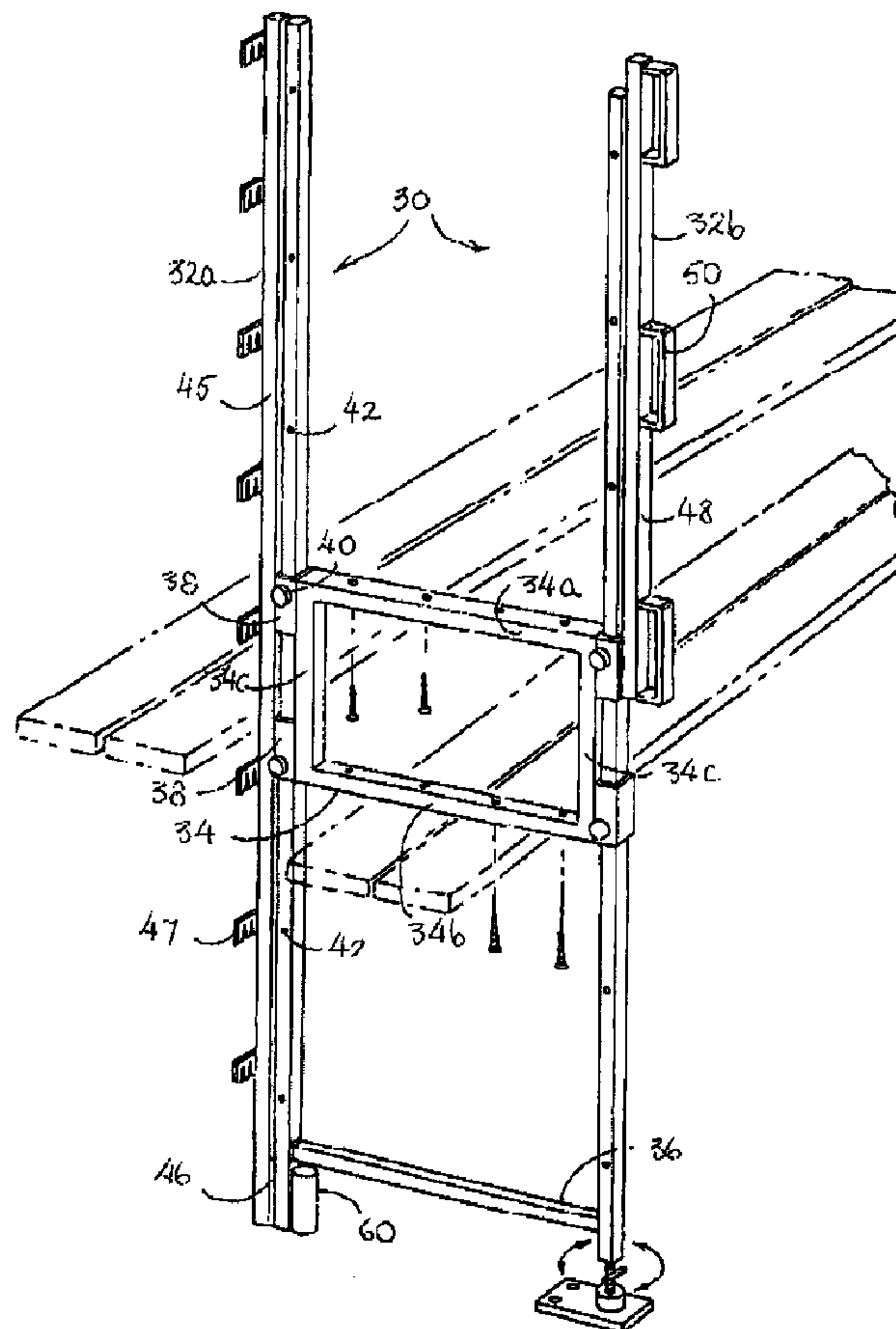
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(54) Titre : ENTRETOISES POUR COFFRAGES ISOLANTS

(54) Title: BRACING FOR INSULATING CONCRETE FORMS



This invention relates to bracing for use in construction and more particularly to a bracing for supporting a wall composed of blocks of preformed hollow foam plastic while the blocks are being layed in situ and while they are being filled with concrete.

Conventionally, walls composed of insulating concrete forms are supported by a number of adjustable steel rods which are propped against the walls at an angle of approximately 45 degrees. The upper ends of the braces are attached to vertical bars which are attached to the exterior and interior faces of the forms while the lower ends of the rods are anchored to the floors of the building as each floor in turn is constructed.

Many problems are encountered from the use of such rods One problem is that the rods are a hazard to the unwary since they are all too easily tripped over. Serious injuries can result from such accidents. Another problem is that such rods impede the progress of construction of a building. Each floor must be constructed before the next floor above it can be constructed. This is because each floor is required to provide a base upon which the rods can be attached before the forms of the walls above that floor can be laid. A floor cannot be constructed until the forms beneath the floor are completely laid and the concrete poured into the cavities of those forms.

Delays are inevitably encountered as the floors of a building are constructed. Carpenters are usually required to construct the floors while the walls are constructed by other workmen. Frequently, when the walls are being constructed, the carpenters are idle and when the floors are being constructed, the workmen building the walls are idle.

The bracing of the present invention overcomes many of the problems mentioned above. The bracing is not a hazard in the way that adjustable rods are since the bracing projects outwardly from a wall the same distance at eye level as it does at its base. A workman cannot miss seeing the bracing by failing to look downward. Furthermore the bracing is self-supporting and provides support for the wall whether the floors are in place or not. The entire exterior walls of a building can be constructed without the delays encountered during construction of the floors according to conventional practices. The bracing of the invention accordingly significantly accelerates the pace of construction of a building while at the same time reduces the likelihood of injury from accidental encounters by workmen with conventional adjustable rods.

Briefly the bracing of the invention includes a pair of uprights; a sleeve slidable on each upright; means for fixing the sleeve firmly to the upright at a number of preselected elevations; and a platform-supporting member connected to the sleeve on each upright and extending between the uprights. The platform-supporting member maintains the uprights in a spaced apart relationship and provides a support for a platform on which work can be carried out. An angle adjusting means associated with at least one upright is provided for adjusting the angle of the support.

The bracing the invention is described with reference to the accompanying drawings in which:

Figure 1 is a perspective view of the conventional way of supporting a wall composed of

insulating concrete forms as construction of the wall is in progress;

Figure 2 is a perspective view of the bracing of the invention in conjunction with two platforms;

Figures 3 and 4 are elevations of a portion of the bracing showing the way in which it is levelled;

Figure 5 is an elevation of one entire bracing of the invention and a portion of a second bracing on opposite sides of a wall composed of insulating concrete forms before concrete is poured into the cavities of the blocks;

Figure 6 is the same as Figure 5 except that the cavities in the forms are filled with concrete;

Figure 7 is a perspective view of a conventional insulating concrete form;

Figure 8 is an elevation of the form attached to an upright of the bracing;

Figure 9 is a portion of the form before concrete has been poured into its cavity;

Figure 10 is a portion of the form after concrete has been poured into its cavity;

Figure 11 is a perspective view of the bracing in conjunction with a platform and a pair of hand rails;

Figure 12 is a perspective view of the level-adjusting components of the bracing;

Figure 13 is a perspective view of a flange for facilitating the attachment of the bracing of the invention to a wall;

Figure 14 is a perspective view of the bracing attached to a conventional scaffold together with a wall to which the bracing is attached ; and

Figure 15 is a perspective view of the means by which the bracing can be attached to a conventional scaffold.

Like reference characters refer to like parts throughout the description of the drawings.

With reference to Figure 1, a wall of insulating concrete forms 20 is supported by steel rods 22 on either side of the wall. The lower ends of the rods have threaded bores which receive externally threaded shafts 23. The shafts are swivally attached to basal plates 24 which are bolted to the floor 25. The upper ends of the rods are removably attached in any one of a number of openings 26a in vertical bars 26. The bars in turn are bolted to the insulating concrete forms.

Handles 27 at the lower ends of the rods allow the rods to be rotated before they are attached to bars 26 so that the effective length of the rods can be adjusted until the bars are vertical.

Brackets 28 support planks for workmen to walk on. The brackets are attached to any adjacent pair of openings 26a of the bar to allow the level of the planks to be adjusted.

It will be noted in Figure 1 that the lower ends of the rods and the basal plates 24 extend into the area of the floor in which workmen are engaged in their tasks and constitute a hazard to them if they are engrossed in what they are doing and are not careful to look downward as they move about the floor.

With reference to Figure 2, the bracing of the invention, generally 30, includes inner and outer uprights 32 a,b, a platform-supporting member 34 and a lower spacer 36. The uprights serve to support the platform-supporting member while the spacer interconnects the two uprights.

The platform-supporting member is rectangular and is composed of upper and lower bars 34a,b interconnected and spaced apart by side bars 34c. A pair of vertically spaced sleeves 38 is attached to each side bar and the uprights are received in the openings in the sleeves. A spring loaded pin 40 passes through an opening in each sleeve and into a selective opening 42 in the uprights for securing the platform-supporting member to the uprights. The level of the member can be adjusted by withdrawing the pins from the openings in the uprights and either raising or lowering the level of the member to the required elevation.

A column 45 is attached to the inner upright 32a by means of plate 46 at the lower ends of the uprights. The plate separates the inner upright from the column sufficiently so that there is enough room for sleeves 38 to slide up and down on the inner upright without interference from the column. A number of vertically spaced flanges 47 are attached to the column and serve as a means for attaching the column to the wall. The flanges are described in detail below.

A vertical rod 48 is attached to the outer upright and a number of vertically spaced U-shaped holders 50 are attached to the outer wall of the vertical rod for removable receipt of railings 51 illustrated in Figures 6 and 11.

With reference to Figures 3 , 4 and 12, a threaded rod 52 is threadably received in an

opening in the lower wall of the outer upright 32b. The rod extends downwardly and into a threaded opening in a cylinder 54 which is welded or otherwise attached to a basal plate 56. Openings are formed in the plate so that it can be nailed to a floor. A handle 58 is welded to the rod so that the rod can be manually rotated. Rotation of rod 52 will either lengthen or shorten its effective length between the lower end of upright 32b and the basal plate so that the bracing can be levelled from the unstable position illustrated in Figure 3 to the stable position illustrated in Figure 4.

With reference to Figures 2, 14 and 15, a tube 60 is attached to the lower end of the inner upright 32a. The tube removable receives a connector 62 for removably attaching the upright to a conventional scaffold, generally 64. As illustrated in Figure 15, the connector has upper and lower portions 62a,b separated by an annulus 62c of larger diameter. The upper portion of the connector fits into tube 60 while the lower portion fits into the inner leg 66 of the scaffold. The outer upright 32b is attached to a horizontal bar 68 of scaffold 64 by means of a pair of conventional collars 70 and U-bolts 71.

It will be obvious that the level of the bracing of the invention can be raised from the level illustrated in Figure 14 by adding additional scaffolds to the one illustrated in Figure 14.

With reference to Figures 5 and 6, two bracings of the invention are adjacent to wall 72, one adjacent to its inner face 72a and the other adjacent to its outer face 72 b. The level of the platform supporting members 34 can be raised as the level of the forms rises. In Figure 6, and

also in Figure 11, two planks 74 are attached to the upper surface of upper bars 34a adjacent to the inner upright 32a while two more planks 75 are attached to the upper surface of lower bars 34b adjacent to the outer upright 32b.

The upper surfaces of the two bars 34a,b constitute supporting surfaces for the planks. Both sets of planks may support a workman at different elevations. Alternatively the upper planks may support a workman's tools while he stands on the lower planks.

In Figure 5, the space 76 between the inner and outer components 78,80 of the forms which make up the wall is empty while in Figure 6, the space is filled with concrete.

In Figures 7 and 8, the inner and outer components of the forms are spaced apart by a number of vertically spaced bridging elements 82. The ends of the bridging elements are attached to vertical elements 84 embedded in the inner and outer components. The bridging and vertical elements are composed of high-strength plastic to ensure that the form remains intact as the concrete is poured into the cavity between the inner and outer components.

With reference to Figures 8 and 13, the column 45 of the bracing is attached to the outer component 80 of the blocks by means of one or more nails 86. Flanges 47 offer various possible locations for the nail in order to ensure that the nail penetrates a relatively strong vertical element for maximum holding strength and not weaker areas of the outer component on opposite sides of the vertical element. With reference to Figure 7, a groove 88 on the outer wall of the outer component indicates where the vertical element is located.



In Figure 9, nail 86 interconnects column 45 with block 90 before the cavity in the form is filled with concrete and in Figure 10, the cavity is filled with concrete. It will be noted in Figure 10 that the form under the weight of the concrete has descended from the position illustrated in Figure 9.

It will be understood of course that modifications can be made to the structure of the bracing of the invention illustrated and described herein without departing from the scope and purview of the invention as defined in the appended claims.

I claim:

1. A bracing for supporting a wall in the course of construction, said bracing including: a pair of uprights; a sleeve slidable on each said upright; means for fixing said sleeve to said upright at a plurality of preselected elevations; a platform-supporting member connected to said sleeve on each said upright and extending between said uprights, said member maintaining said uprights in a spaced apart relationship and having a supporting surface upon which a platform is adapted to rest; and angle adjusting means associated with at least one said upright for adjusting the angle of said supporting surface.
2. A bracing for supporting a wall, said bracing including: a pair of uprights; a pair of sleeves slidable on each said upright; means for fixing said sleeves to said uprights at a plurality of preselected elevations; a platform-supporting member connected to said pair of sleeve on each said upright and extending between said uprights, said member maintaining said uprights in a spaced apart relationship and having a supporting surface upon which a platform is adapted to rest; and angle adjusting means associated with at least one said upright for adjusting the angle of said supporting surface.
3. A bracing for supporting a wall, said bracing including: two pairs of uprights; a pair of sleeves slidable on each said upright; means for fixing said sleeves to said uprights at a plurality of preselected elevations; a pair of platform-supporting members each connected to said pair of sleeves on a separate pair of said uprights, each said member extending between said separate

pair of said uprights and maintaining said separate pair of said uprights in a spaced apart relationship, each of said members having a supporting surface upon which a platform is adapted to rest; and angle adjusting means associated with at least one said upright in each said separate pair of said uprights for adjusting the angle of said supporting surfaces.

4. The bracing of claims 1 or 2 further including a holder attached to at least one of said pair of uprights for removably attaching a hand-rail thereto.

5. The bracing of claim 3 further including a holder attached to at least one of each pair of said uprights for removably attaching a hand-rail thereto.

Prior Art

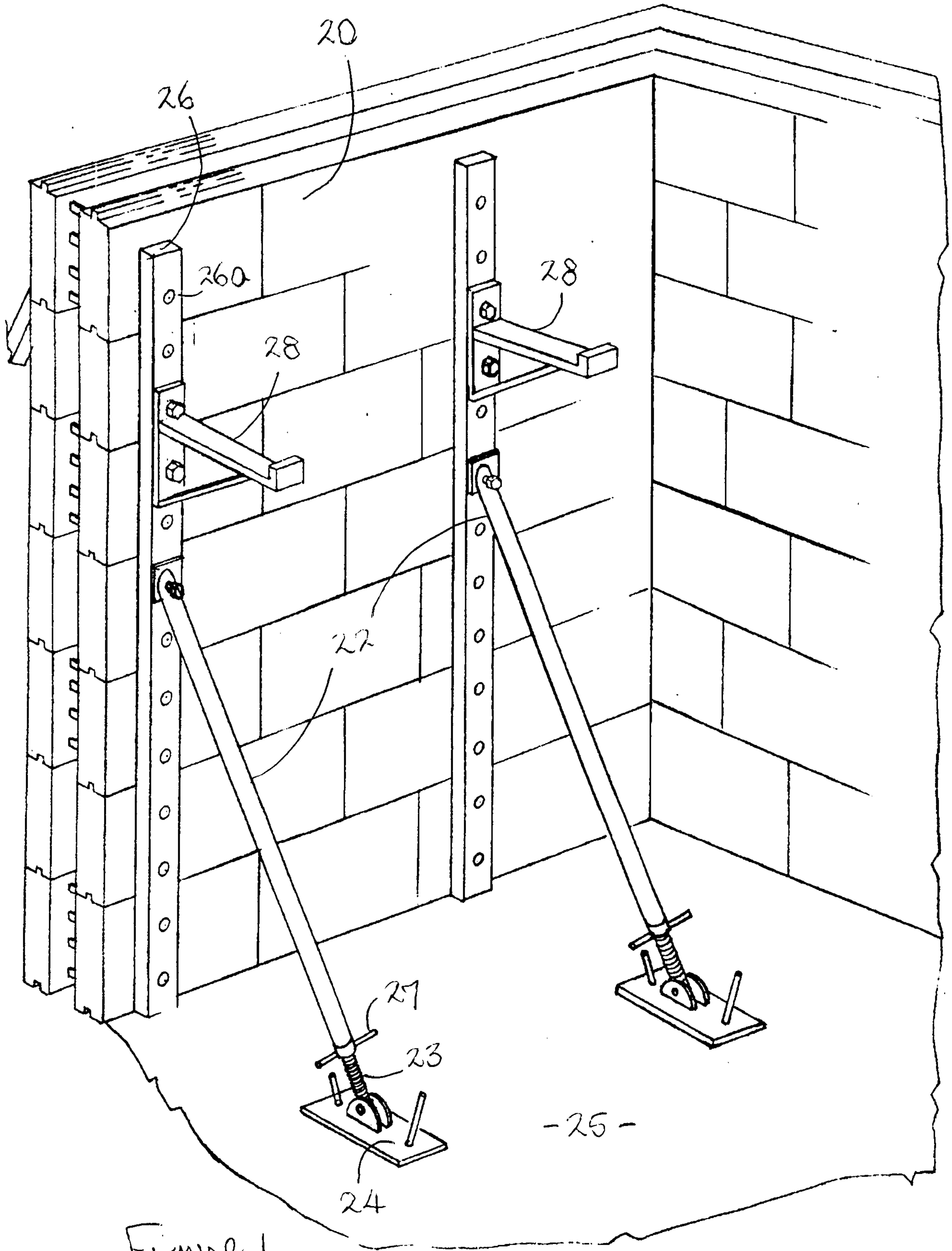


Figure 1

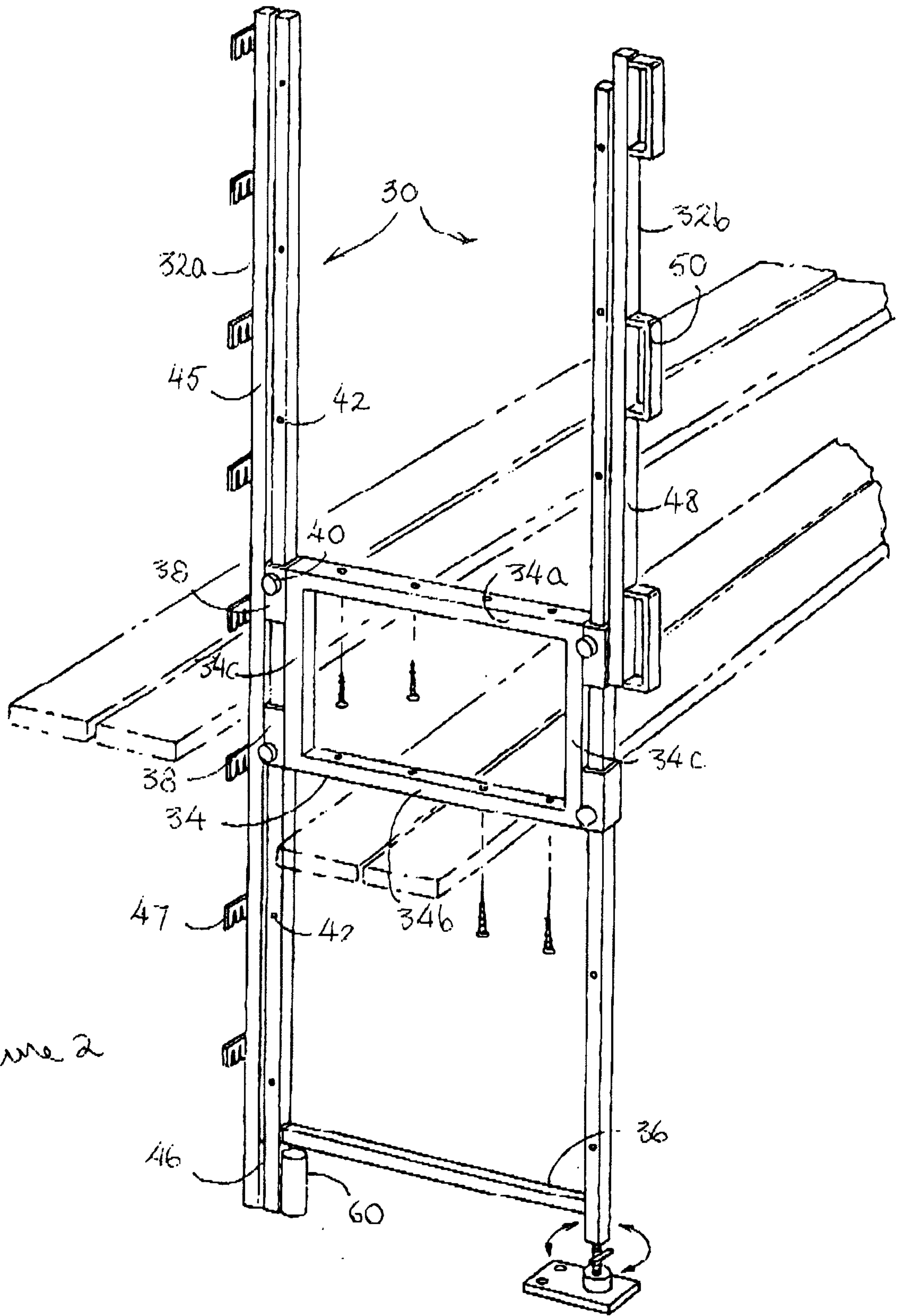


Figure 2

Figura 3

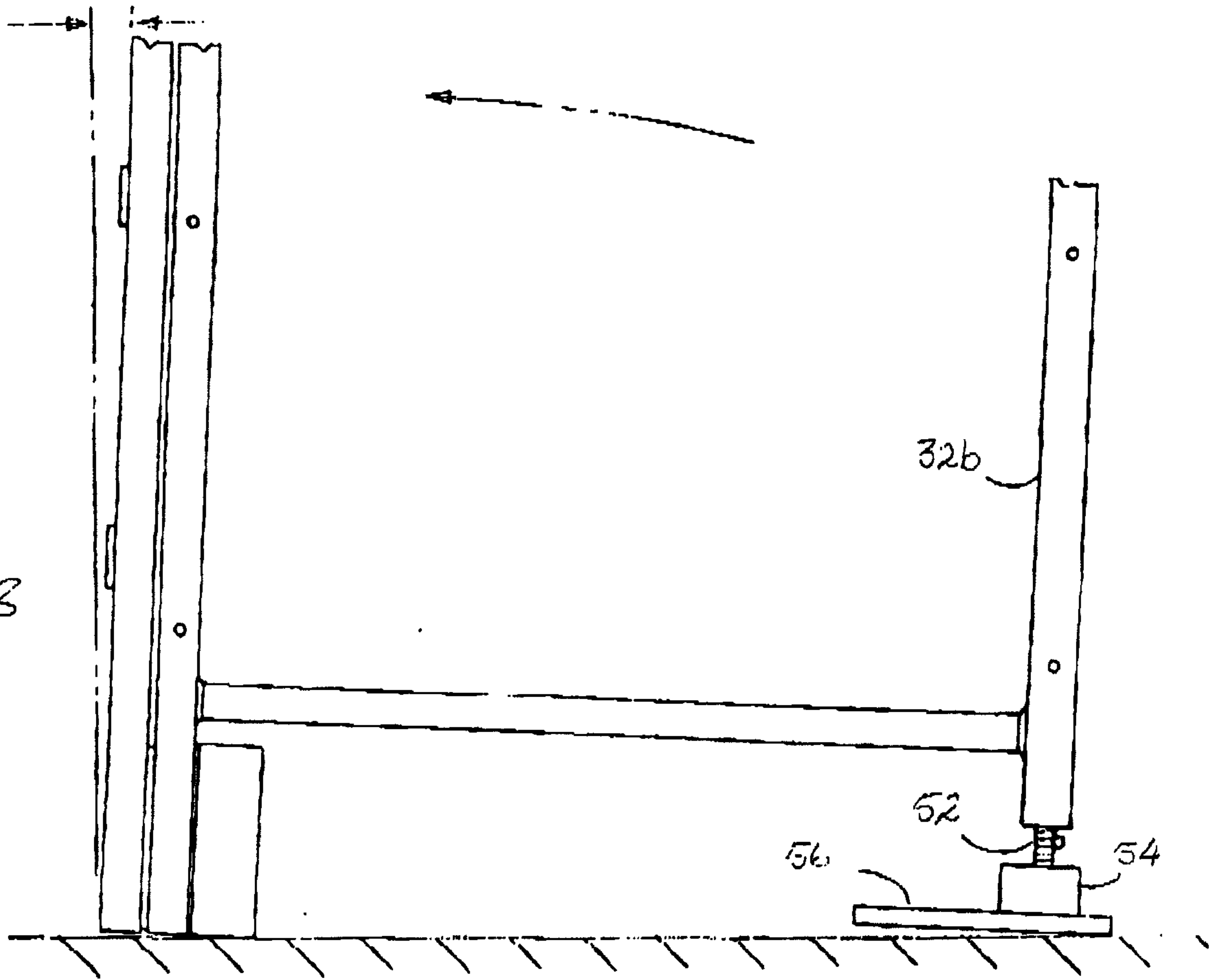
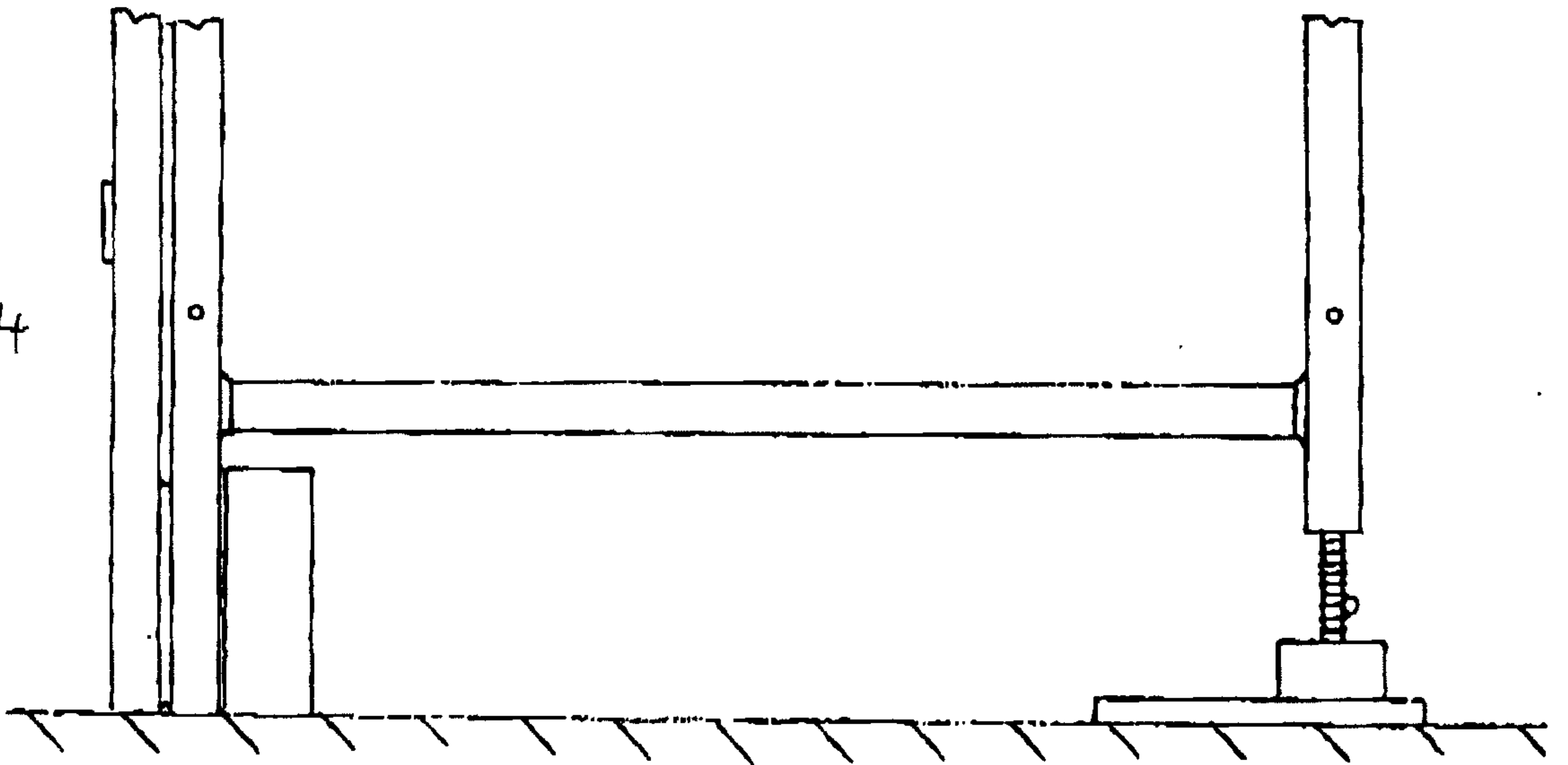


Figura 4



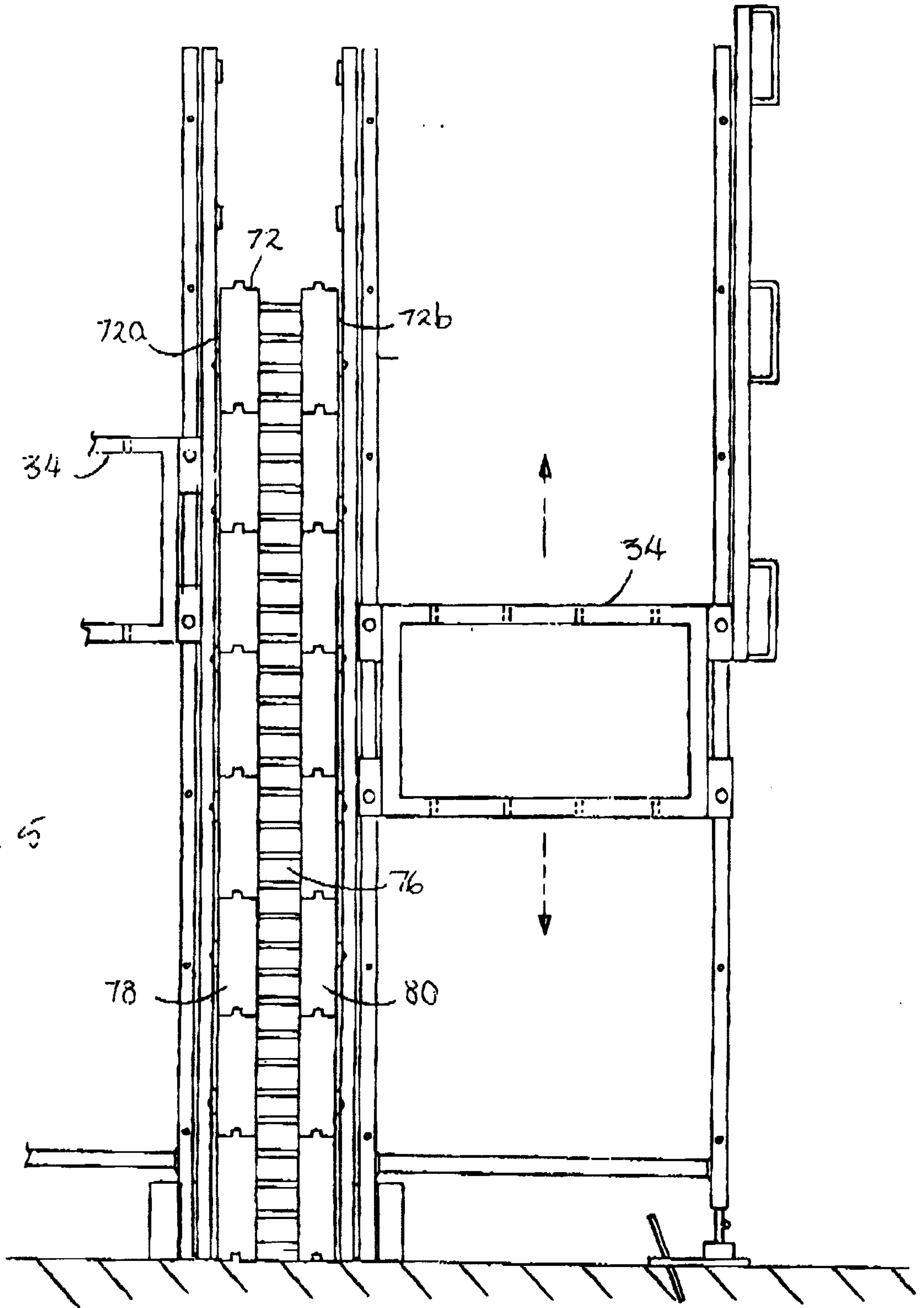


Figure 5

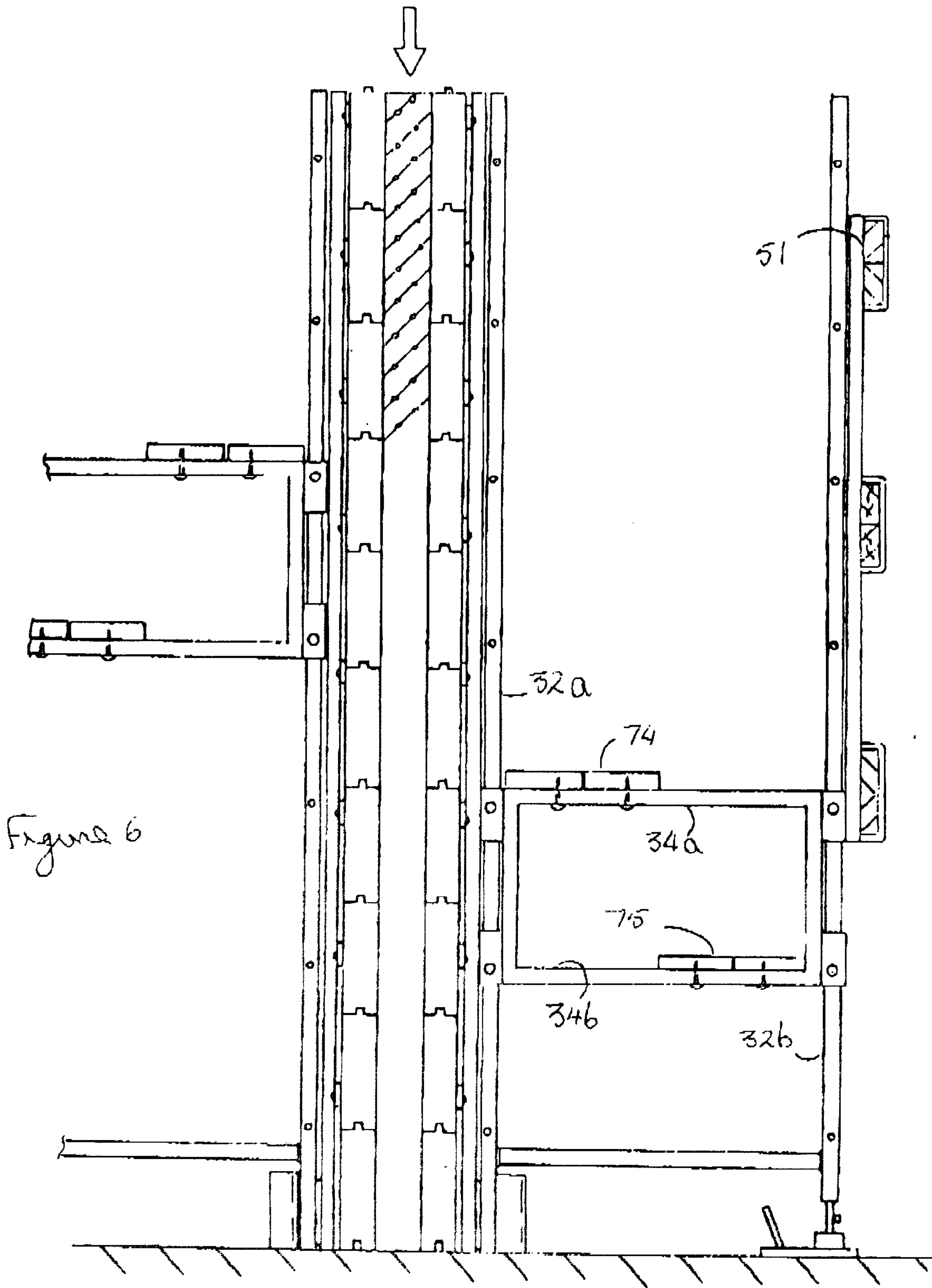


Figure 6



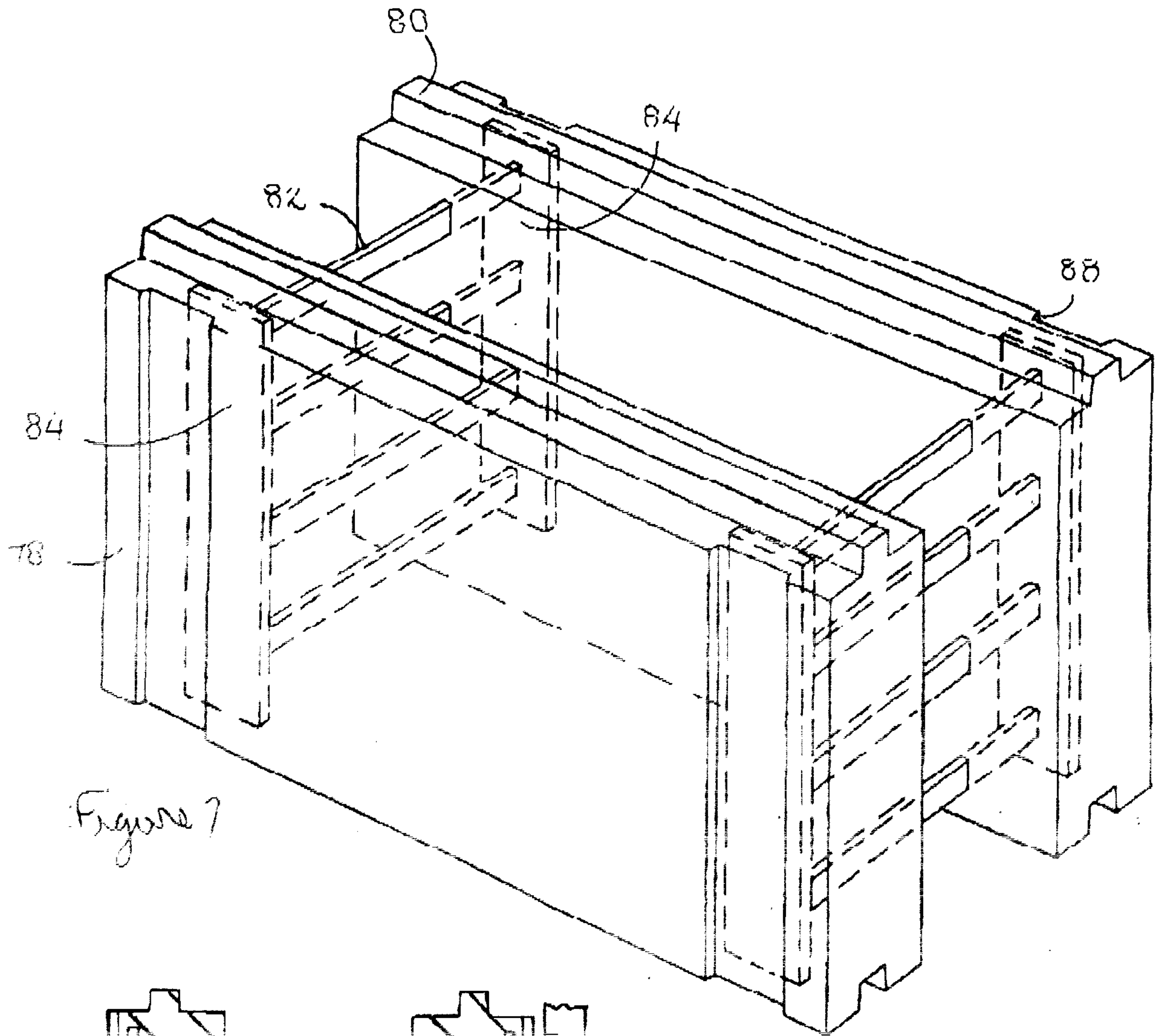


Figure 7

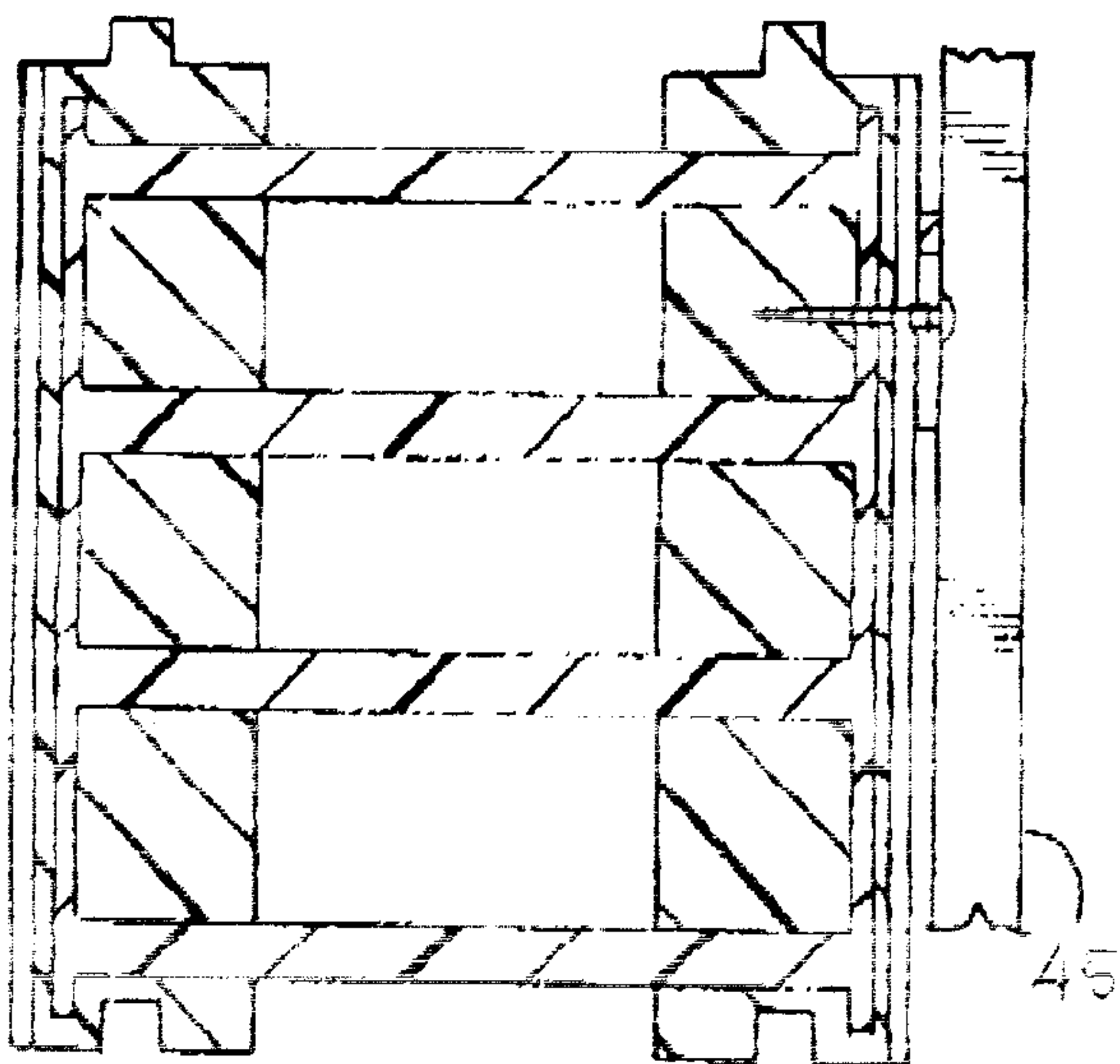


Figure 8

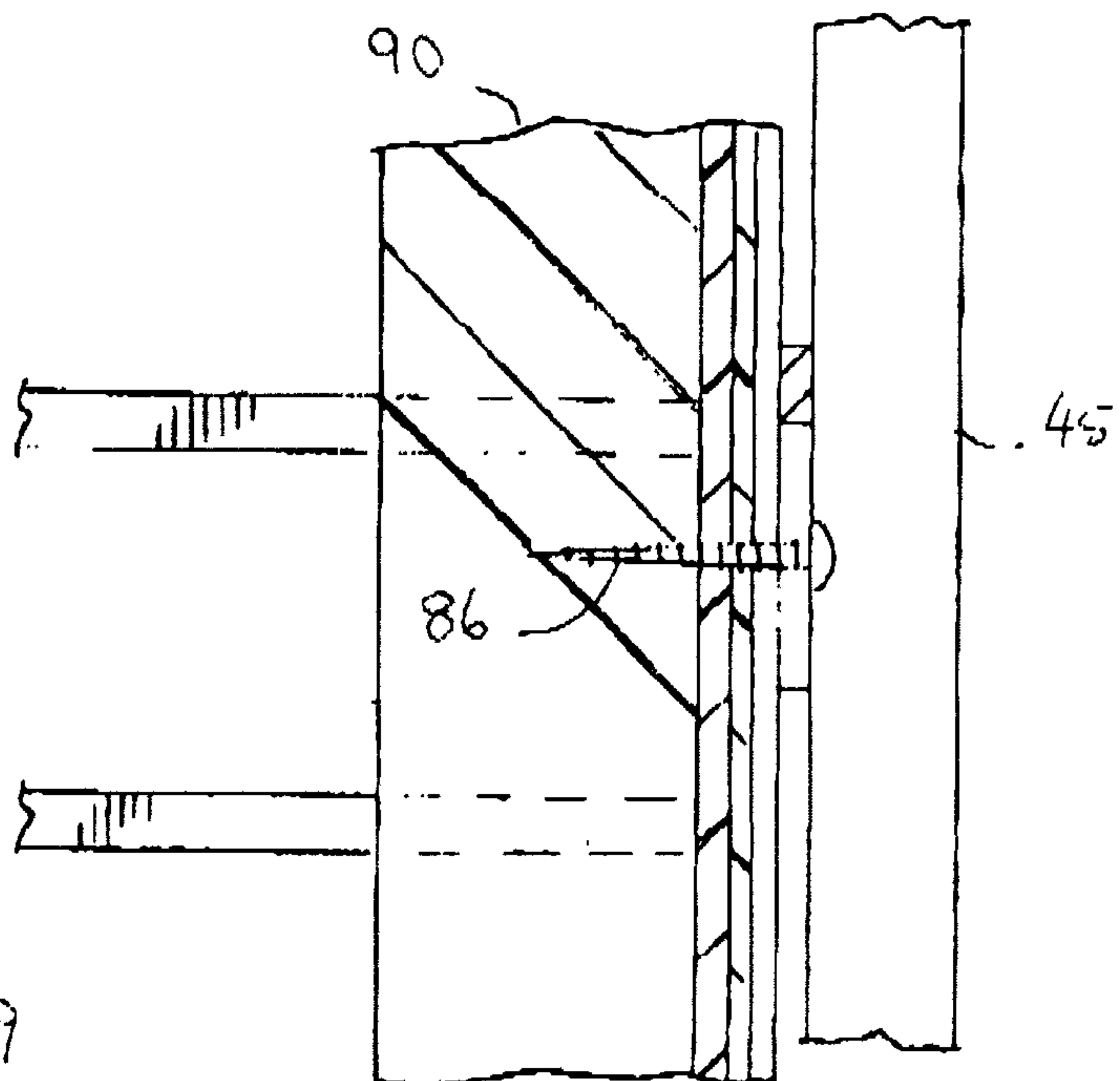


Figure 9

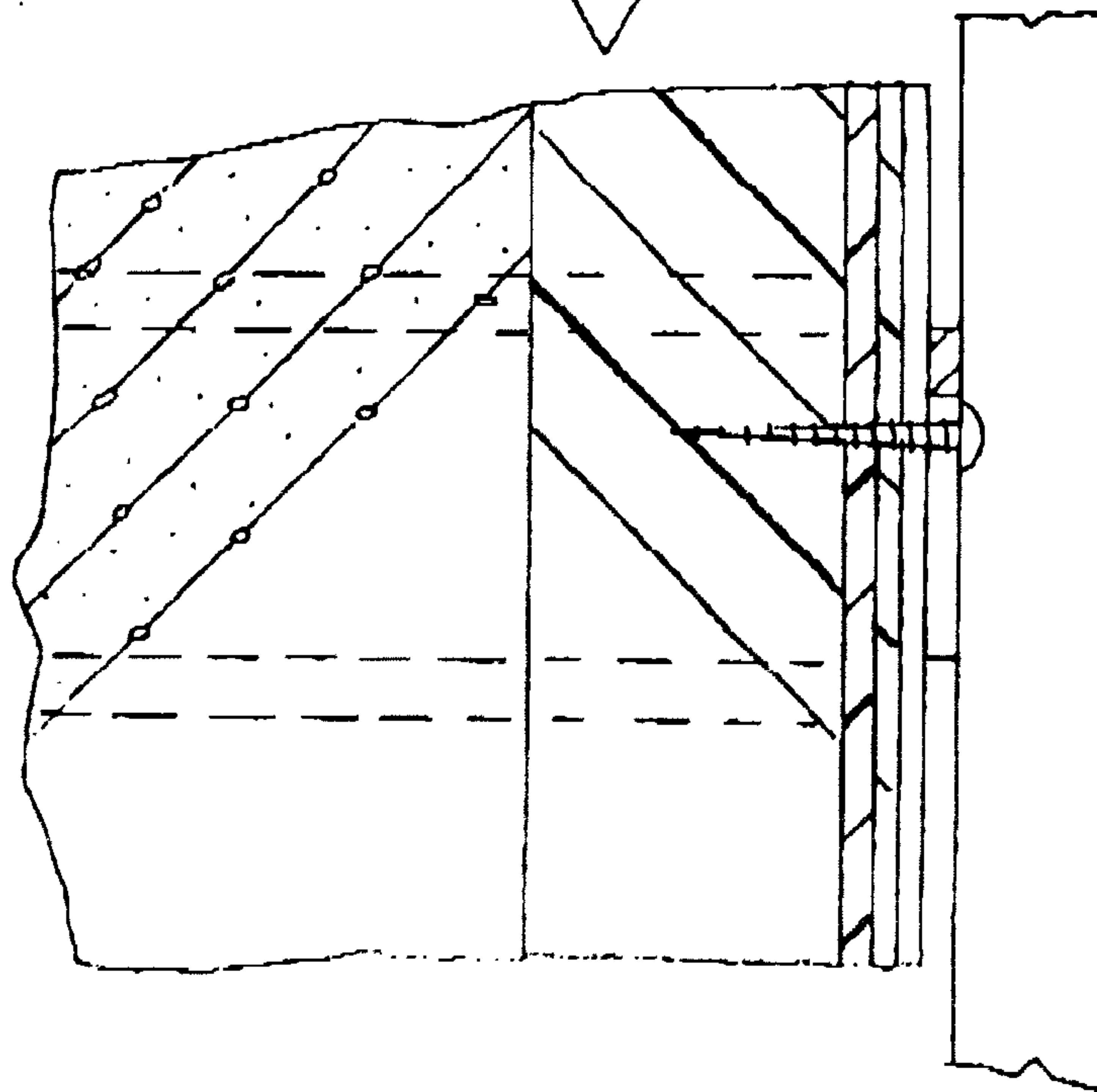


Figure 10

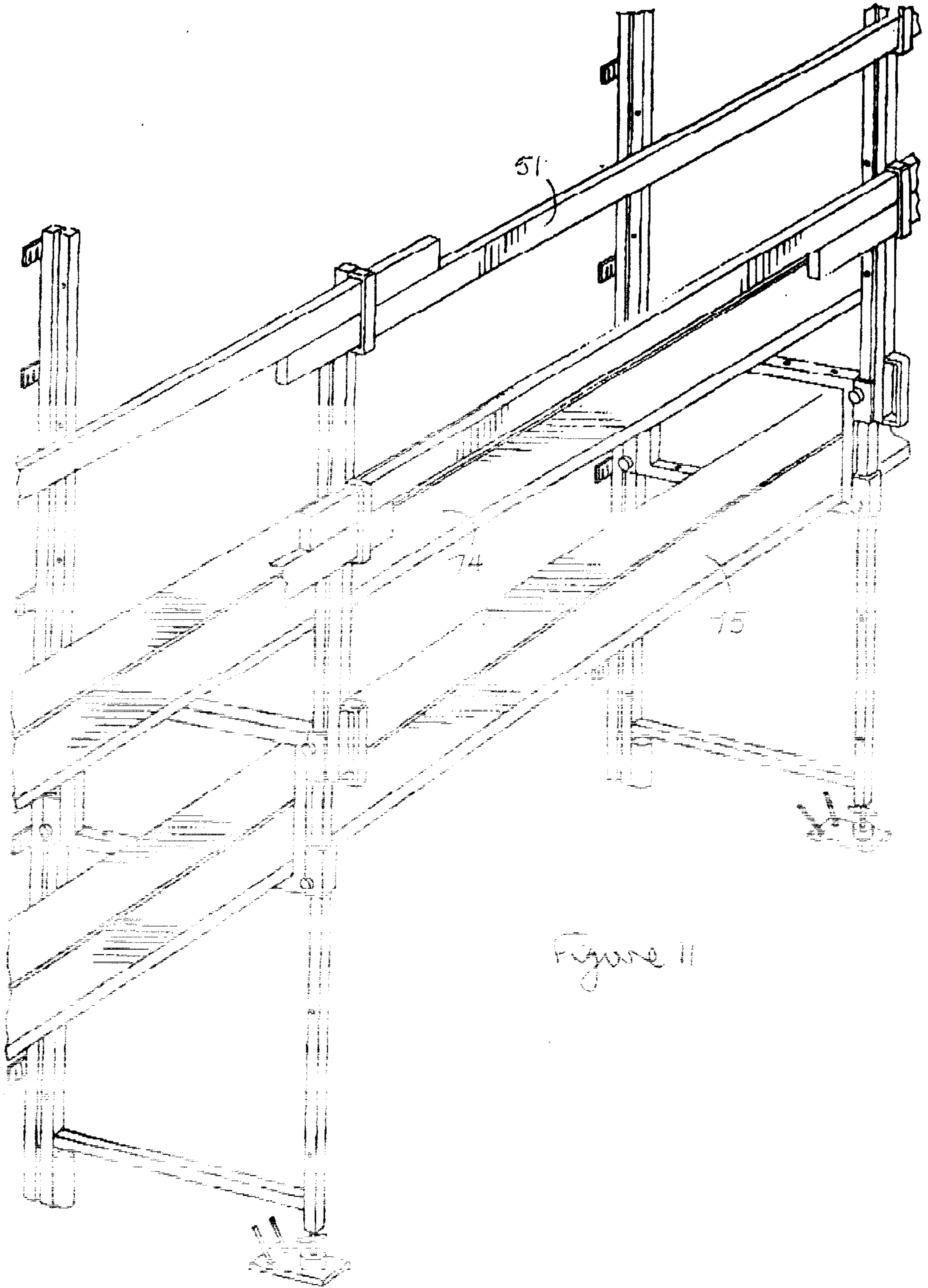


Figure 11

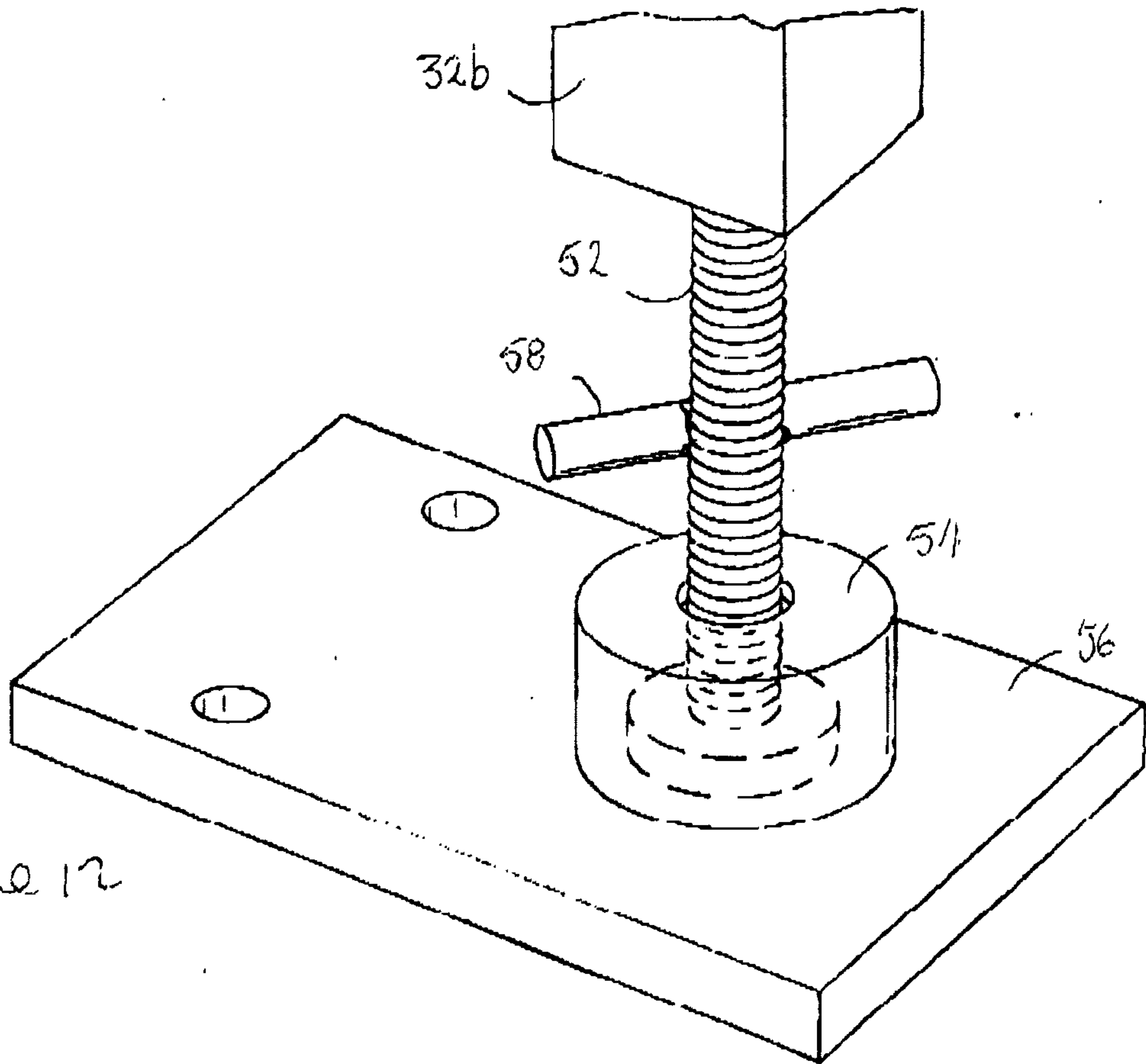


Figure 12

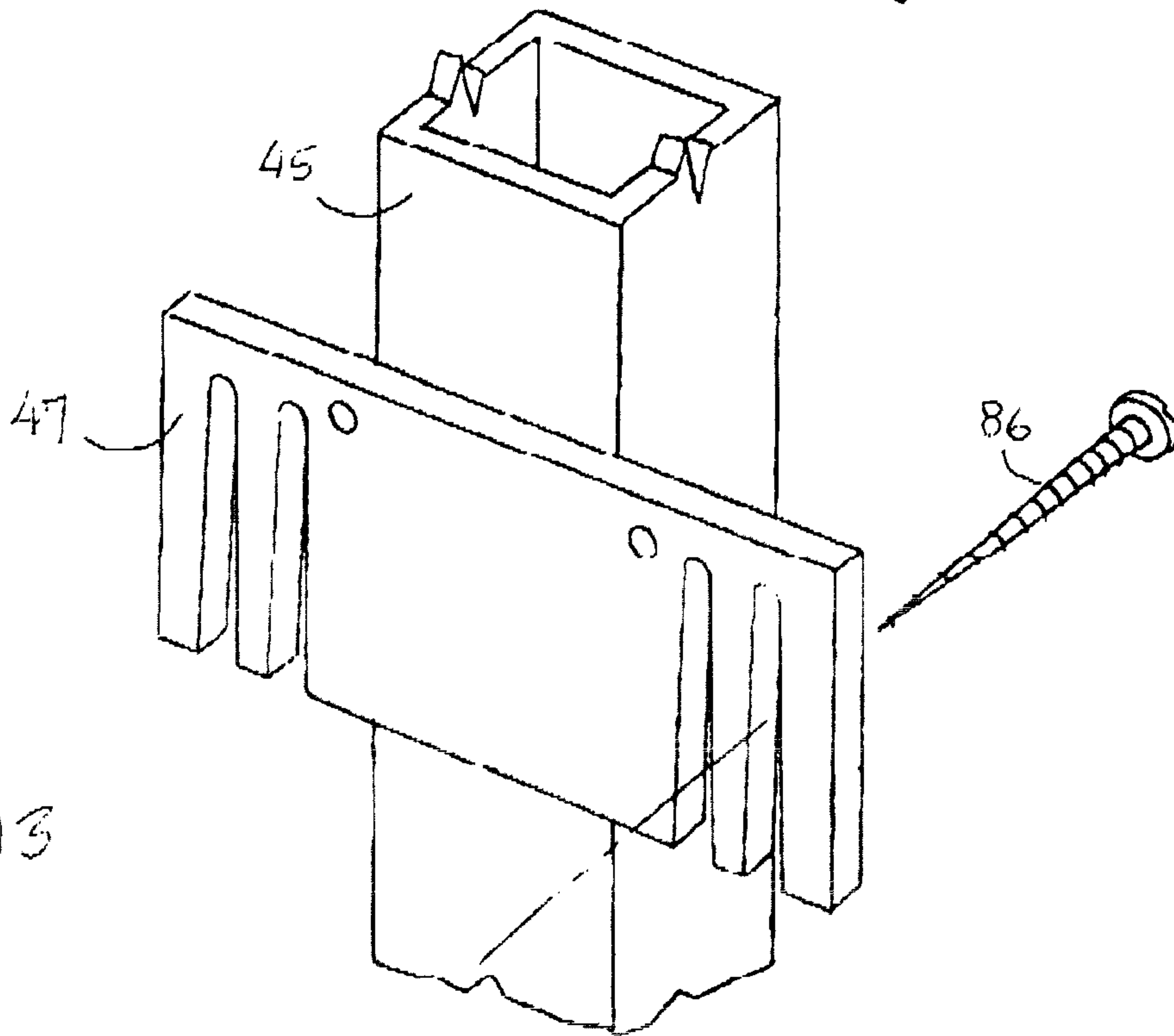
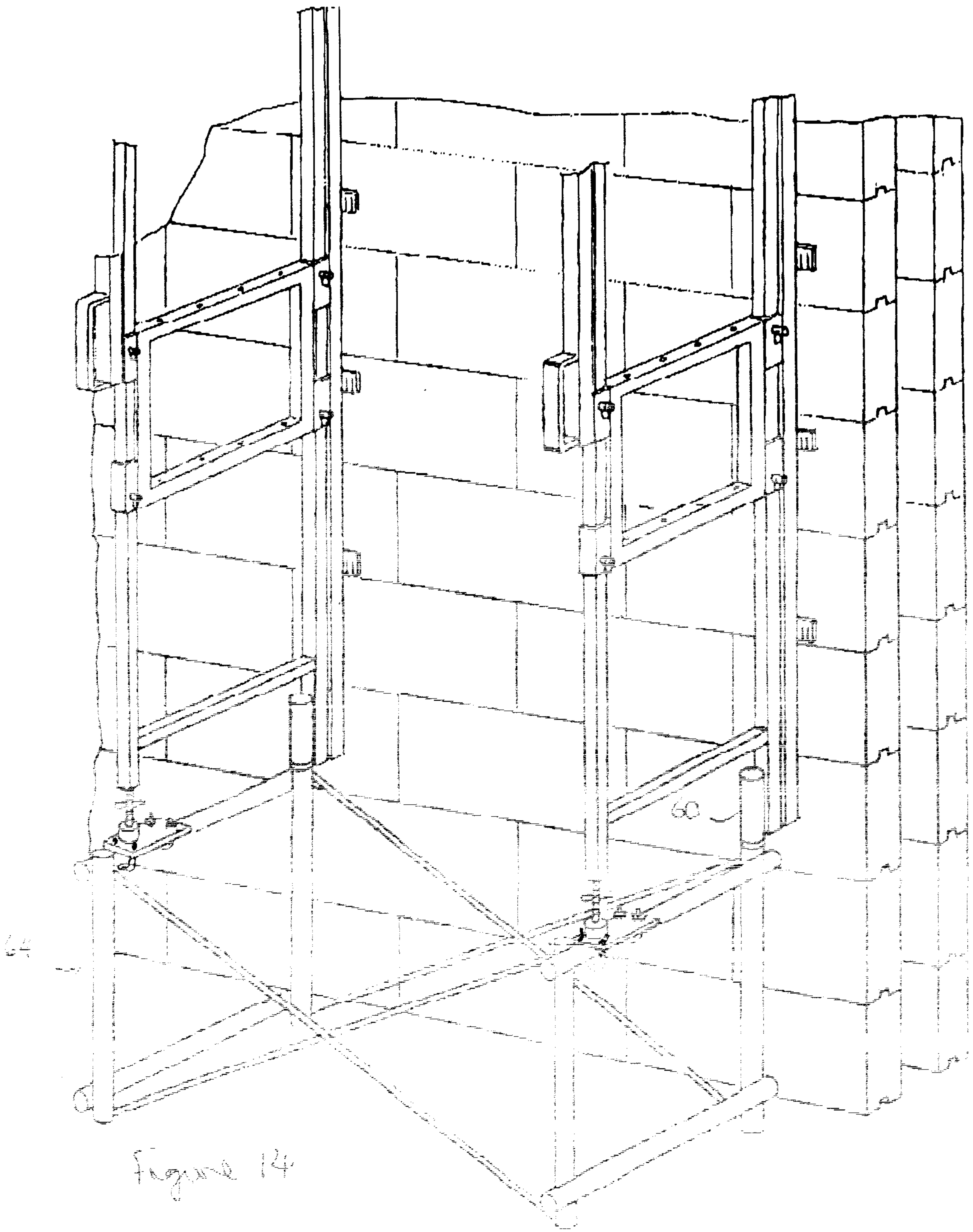


Figure 13



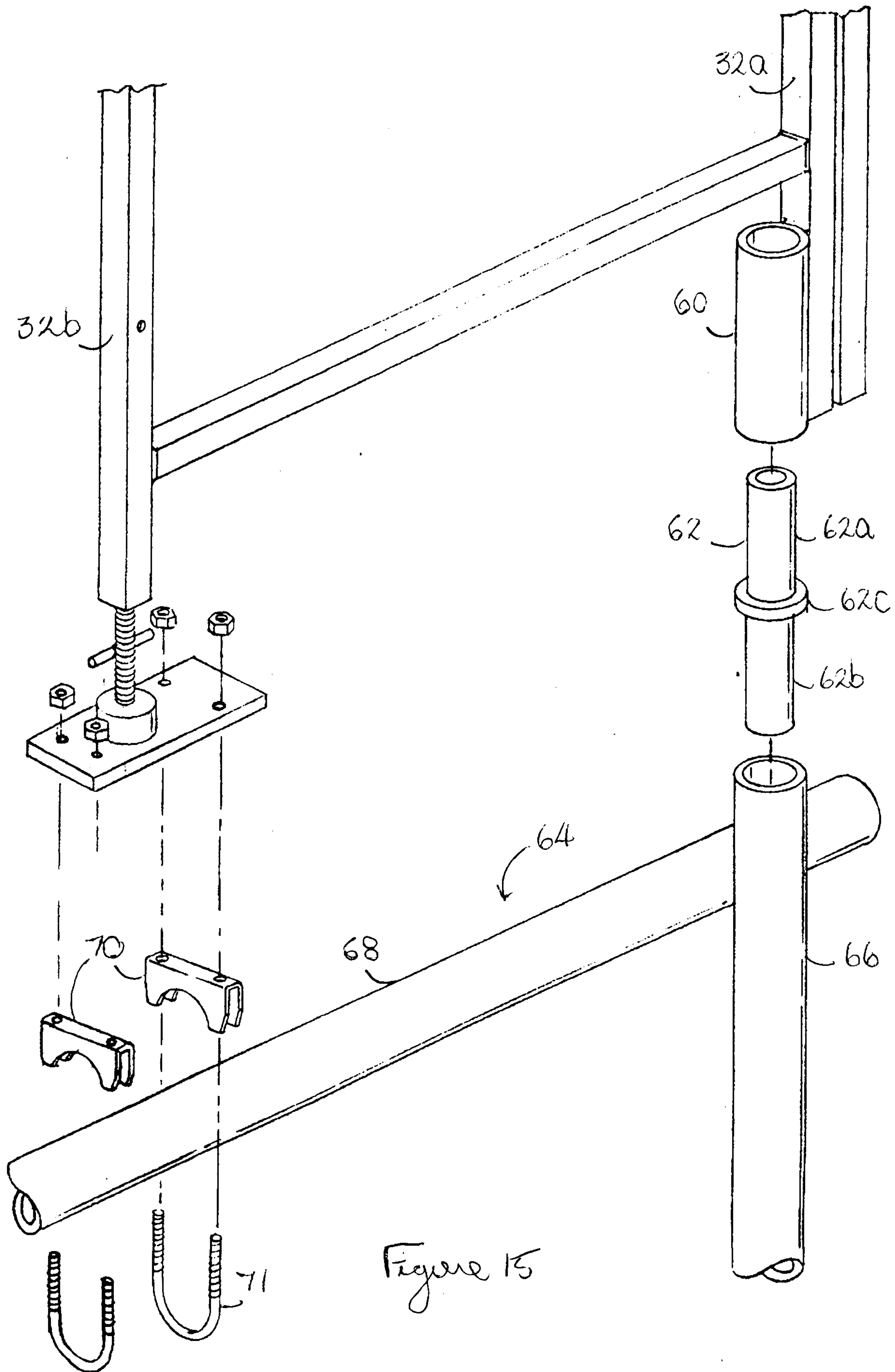


Figure 15

