

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 869 083 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
07.10.1998 Bulletin 1998/41

(51) Int Cl.⁶: **B65G 1/02, B65D 21/04**

(21) Application number: **98301529.8**

(22) Date of filing: **03.03.1998**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**

Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **03.03.1997 GB 9704391**

(71) Applicant: **Caston, Ian Michael
Lustleigh, Devon TQ13 9TS (GB)**

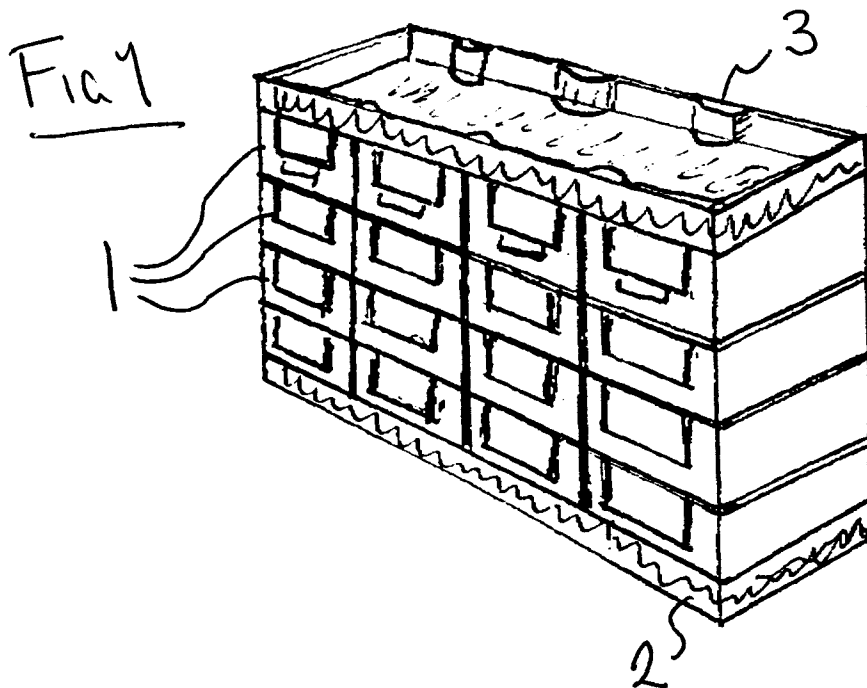
(72) Inventor: **Caston, Ian Michael
Lustleigh, Devon TQ13 9TS (GB)**

(74) Representative: **Craske, Stephen Allan
International Technology & Innovation Limited,
c/o Patent Law Chambers,
15 Queens Terrace
Exeter, South Devon EX4 4HJ (GB)**

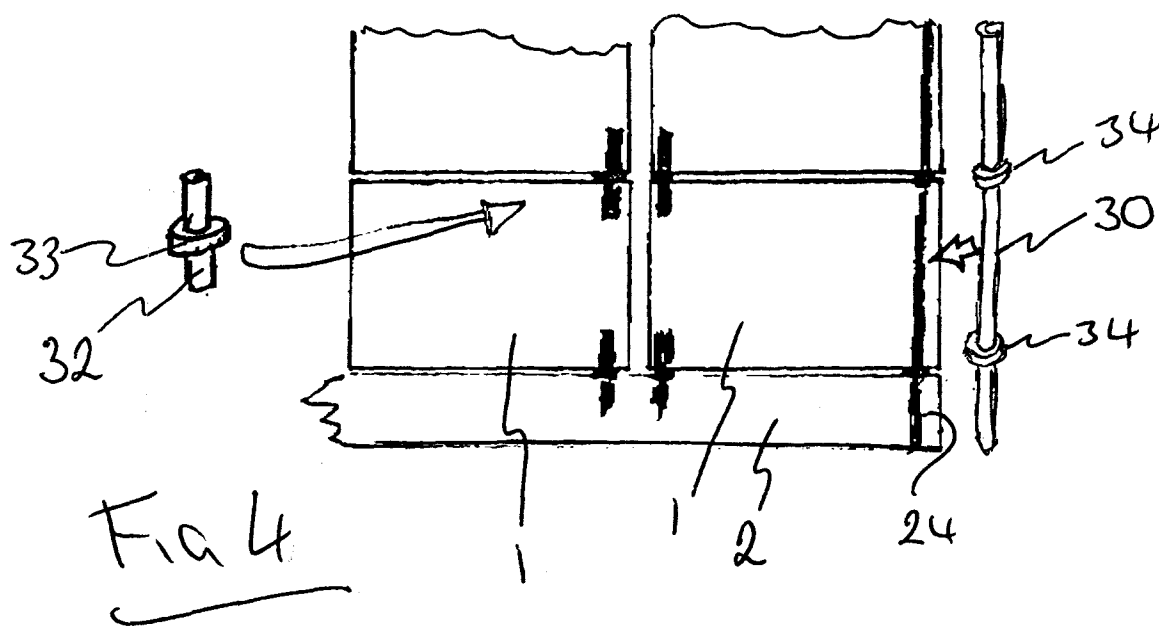
(54) Storage racks

(57) A set of plastics boxes 1 arranged in rows and columns are formed with passages 16 extending substantially vertically therethrough. At least two generally planar units 2, 3 are disposed one above another with said boxes positioned therebetween and a set of posts

30 connect the planar units inserted through the passages 16. The posts carry spacers 34 inserted between rows of boxes, and between the ends of the rack the aligned passages 16 contain locating pegs 32 provided with spacer flanges 33.



EP 0 869 083 A2



Description

TECHNICAL FIELD OF THE INVENTION

This invention relates to storage racks.

BACKGROUND

Known forms of storage racks are often manufactured wholly or principally from metal, so that they are very strong. Such racks may be used to carry large numbers of components in motor vehicles, as static racks for use in factories and storerooms for example, and mobile racks mounted on wheels or castors.

The present invention seeks to provide a new and inventive form of storage rack.

SUMMARY OF THE INVENTION

The present invention proposes a storage rack comprising:

- a set of plastics boxes which are formed with passages extending substantially vertically there-through;
- at least two generally planar units disposed one above another with said boxes positioned therebetween; and
- a set of posts which connect said planar units and which are inserted through the passages in the boxes.

It is not necessary for the posts to pass through all of the passages, or even all of the boxes, although they are preferably inserted through the outermost passages. The remaining passages may be provided with short locating pegs which enter the adjacent upper and lower ends of aligned passages.

BRIEF DESCRIPTION OF THE DRAWINGS

The following description and the accompanying drawings referred to therein are included by way of non-limiting example in order to illustrate how the invention may be put into practice. In the drawings:

Figure 1 is a general view of a storage rack in accordance with the invention,

Figure 2 is a general view of one of the storage boxes including in the storage rack,

Figure 3 is a general view of the base unit of the storage rack,

Figure 4 is a skeletal front elevation of part of the storage rack,

Figure 5 to 7 are front elevations of modified forms of the storage rack as used in a motor vehicle,

Figure 8 is a general view of a support leg included in the storage rack of Fig. 7, and

Figure 9 is a general view of a linking element for use in the storage racks of the invention.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring firstly to Fig. 1, the storage rack comprises an array of moulded plastics storage boxes 1 (sometimes referred to as trays) which in the present example are arranged in four adjacent stacks of four (i.e. four rows and four columns). As will become apparent however, the number of boxes in the rack can vary. The boxes 1 are supported on a generally planar base unit 2 and they, in turn, support a planar top unit 3 positioned vertically above the base 2.

Once of the storage boxes is shown in Fig. 2. It will be noted that the box is of a kind which is already used for general storage purposes. The box comprises a bottom wall 10, a rear wall 11, two side walls 12 and 13, and a front wall 14. The top of the box is open as shown, but when the boxes are stacked the interior can still be accessed via an access window 15 formed in the front wall 14. If desired, the window may be provided with a hinged or sliding cover (not shown). It will further be noted that the four corners of the box 1 are provided with vertical through-passages 16 which open at the top and bottom of the box. As will be explained more fully below, these passages are utilised in the present invention for securing the boxes together to form a solid, lightweight structure.

In the present example, the base 2 and top unit 3 are identical, both being injection moulded from plastics. The base unit 2 is shown in Fig. 3, and comprises a bottom wall 20 surrounded by a shallow upstanding side wall 21. It will be noted that, at intervals, the side wall is provided with vertically extending external recesses 22 to allow unrestricted access to the windows 15 when the unit is mounted on top of the boxes 1. In between the recesses 22 the side wall 21 is formed with vertically extending through-passages 24 which correspond in position to the passages 16 (see below). The side wall 21 is joined to the bottom wall 20 by internal strengthening webs 25. In addition, the base contains fixing platforms 26 and 27 which provide fixing holes through which the base can be bolted down to a floor, including the floor of a vehicle.

Referring now to Fig. 4, four tubular metal fixing posts 30 are inserted in the four outermost passages 24 at the four corners of the base unit 2, within which they are secured by grub screws or the like (not shown). The posts are inserted through the corresponding holes 16 of the opposite end stacks of storage boxes 1, following which a similar unit 3 is secured to the tops of the posts

(Fig. 1), again using grub screws or like fixings. The top and base units 3 and 2, together with the posts 30, thus provide a rigid yet lightweight skeleton for the storage boxes. Although a post 30 could be inserted through each set of aligned passages 16, 24 this is not generally necessary. The boxes can be located at intermediate positions by lightweight short plastics pegs 32 (Fig. 4) which are inserted into the aligned top and bottom ends of each pair of passages. The pegs may have an integral annular flange 33 which is located between the two boxes acting as a spacer, and in order to ensure corresponding spacing of the boxes in the region of the posts 30, circular spacers 34 may be threaded onto the posts between each pair of boxes.

The size of the rack can of course vary according to the number of rows and columns of boxes. A small rack such as that illustrated in Fig. 1 may be freestanding, but in the case of taller racks the base unit 2 can be bolted down to a floor to ensure stability. A smaller rack could also have wheels or castors secured to the base 2 to construct a strong but lightweight mobile rack. The rack can be installed in a motor vehicle with the base 2 bolted down to the floor of the vehicle so that the rack is extremely strong and will not shift even in the event of a substantial impact. The rack system can easily be adapted to fit into a confined space such as a motor vehicle, and various additional configurations are illustrated in Figs 5 to 7. It will be noted that some of the boxes 1 can be omitted if desired, to form storage voids 30 as in Fig. 6. Shorter or longer units 2, 3 can be provided corresponding to an integral number of boxes, to accommodate wheel arches for example. In addition intermediate units 40, similar to the base units 2, can be provided between the top and bottom units, again secured to the posts 30. Where there is insufficient space to accommodate a single-width base unit an intermediate unit 40 can additionally be supported by a pair of short legs 50 as shown in Figs 7 and 8. The leg may again be fixed into one of the passages 24 and is provided with a bottom flange 51 for fastening down to a floor.

Referring back to Fig. 3, it will be noted that the units 2 and 3 contain internal transversely extending slots 29. When the unit is mounted on the top of a relatively low rack it can be used as an additional storage tray. Transverse dividers can be inserted into the slots 29 to form shallow storage compartments for small components. Alternatively the top unit 3 can be mounted upside down to provide a flat top.

If desired, a number of racks can be linked to form longer storage racks which are a multiple of the units 2, 3 in length. One way of achieving this is to replace the spacers 34 (Fig. 3) with link plates 60 of the kind illustrated in Fig. 9. The plates are of elongate shape and include a spaced pair of holes 61 and 62 at opposite ends, which receive the posts 30 of adjacent racks. Generally at least four such plates 60 will be required to join each pair of racks.

It will be appreciated that the features disclosed

herein may be present in any feasible combination. Whilst the above description lays emphasis on those areas which, in combination, are believed to be new, protection is claimed for any inventive combination of the features disclosed herein.

Claims

1. A storage rack characterised by:
 - a set of plastics boxes (1) which are formed with passages (16) extending substantially vertically therethrough;
 - at least two generally planar units (2, 3) disposed one above another with said boxes positioned therebetween; and
 - a set of posts (30) which connect said planar units and which are inserted through the passages in the boxes.
2. A storage rack according to Claim 1, in which said generally planar units (2, 3) are moulded of plastics.
3. A storage rack according to Claim 1 or 2, in which said boxes (1) are arranged in at least two rows and at least two columns.
4. A storage rack according to Claim 3, in which said posts (30) are inserted through the outermost passages at opposite ends of the rack.
5. A storage rack according to Claim 4, in which further passages are provided with locating pegs (32) inserted into adjacent upper and lower ends of aligned passages.
6. A storage rack according to Claim 5, in which said pegs have flanges (33) part-way along their length.
7. A storage rack according to Claim 6, in which the posts carry spacers (34) between each pair of boxes in a column.
8. A storage rack according to any preceding claim, in which an intermediate generally planar unit (40) is disposed between two rows of boxes with the posts passing therethrough.
9. A storage rack according to any preceding claim, in which said generally planar units (2, 3, 40) comprise a base wall (20) surrounded by a shallow side wall (21).
10. A pair of storage racks according to any preceding claim and posts of each rack are inserted through linking elements (60) to connect said racks together.

PMAL

Fig 1

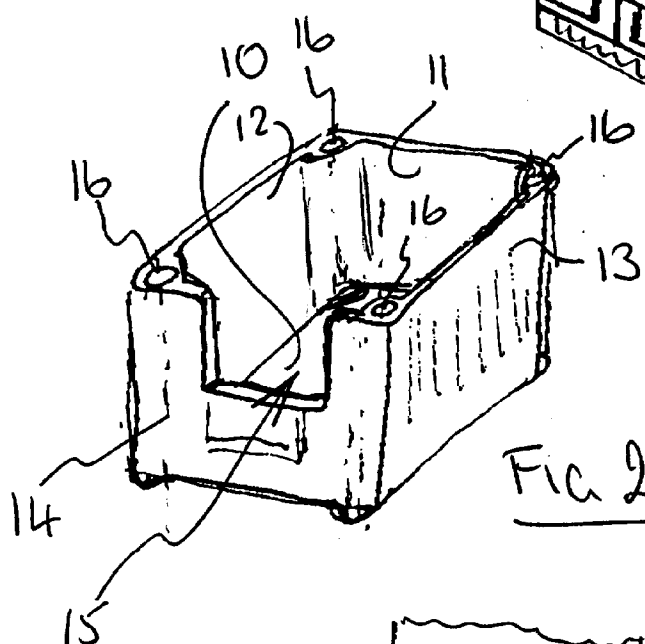
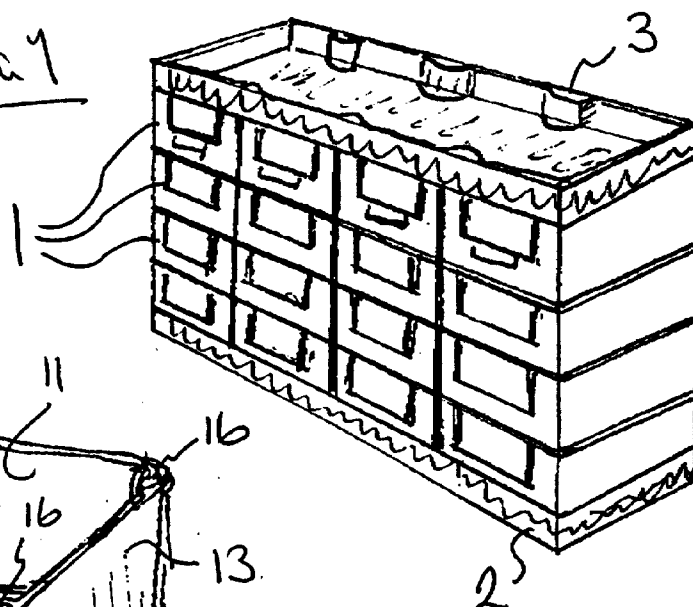


Fig 2

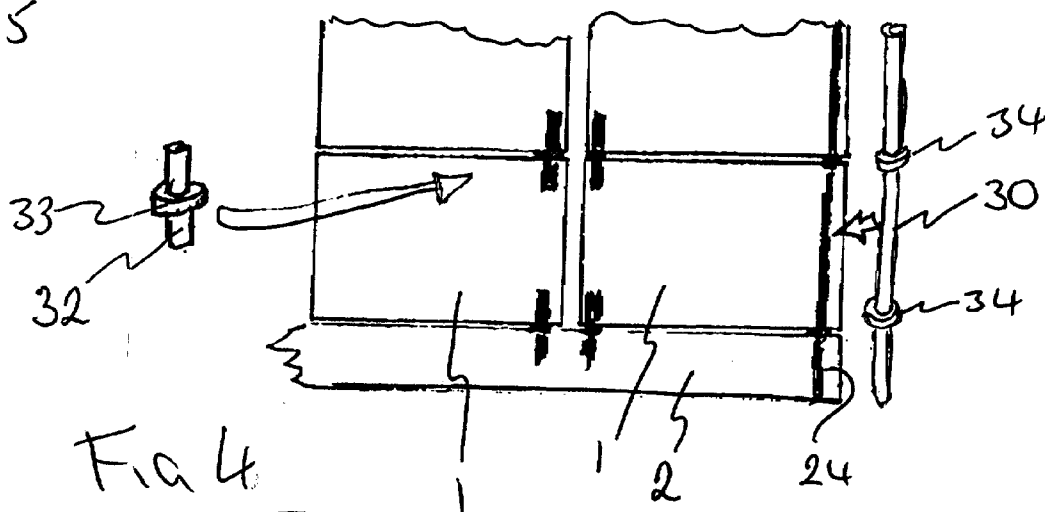
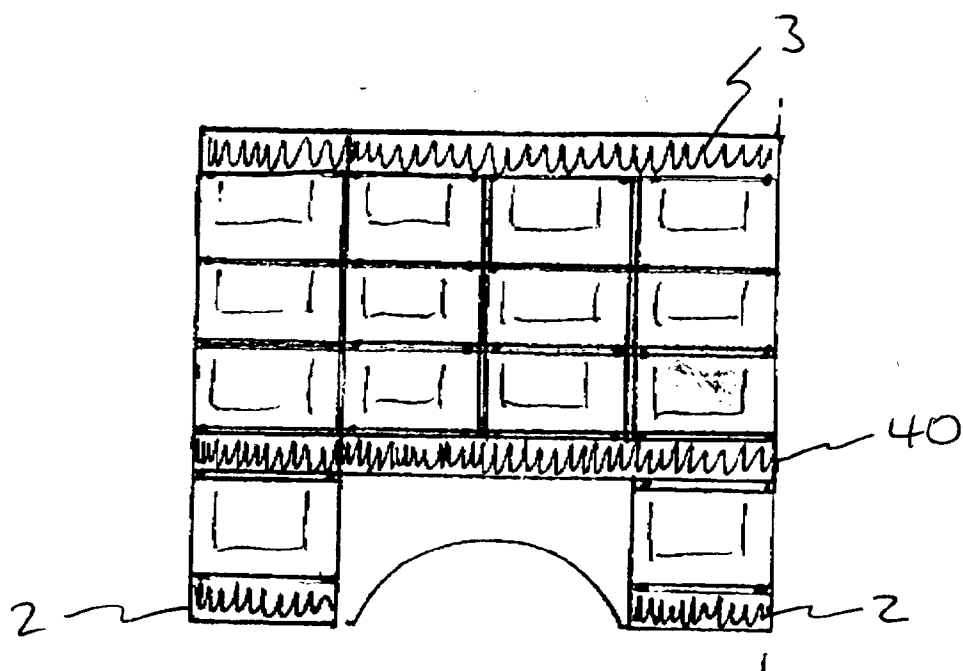
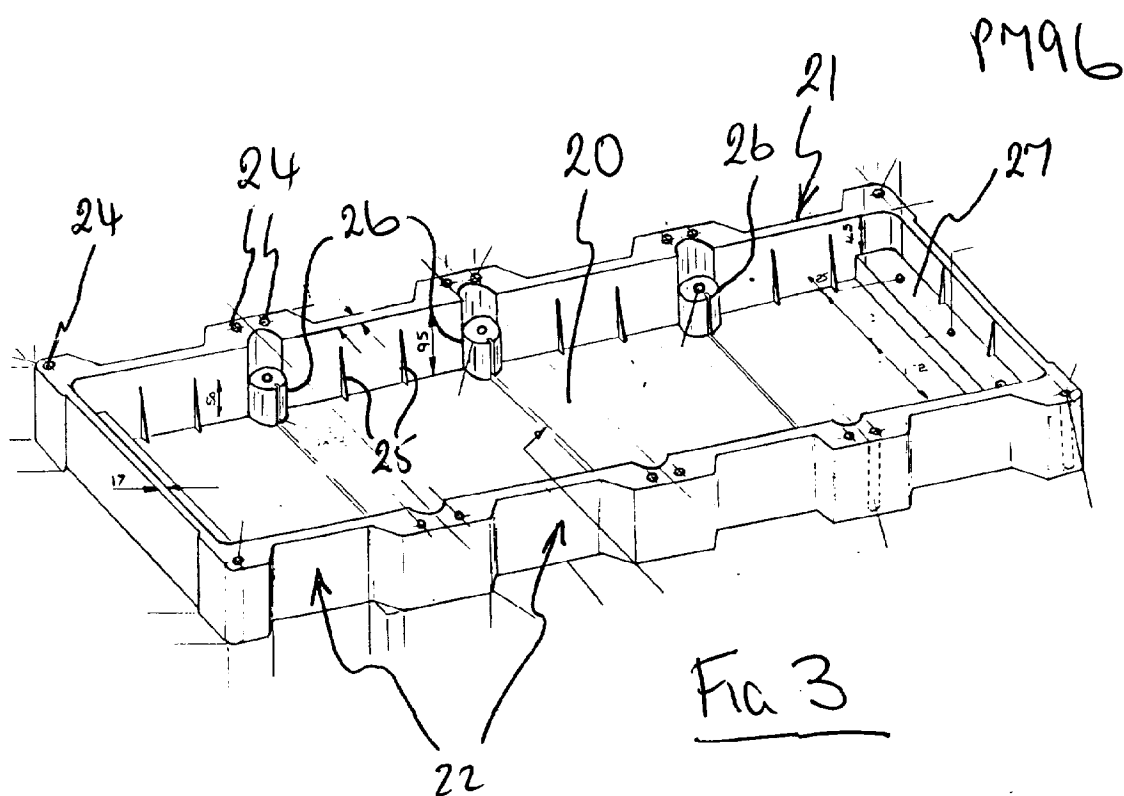


Fig 4



PM916

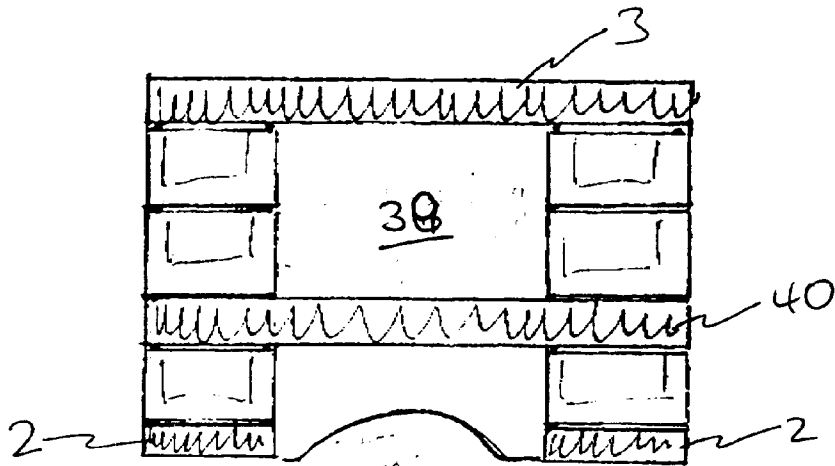


Fig 6

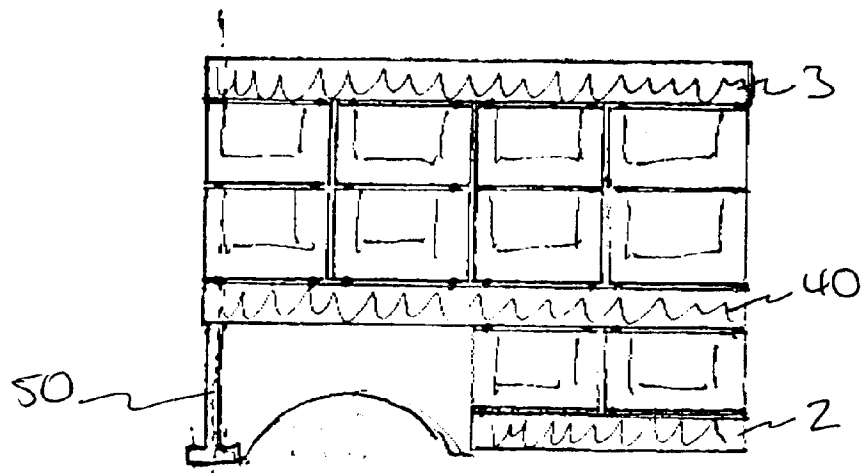


Fig 7

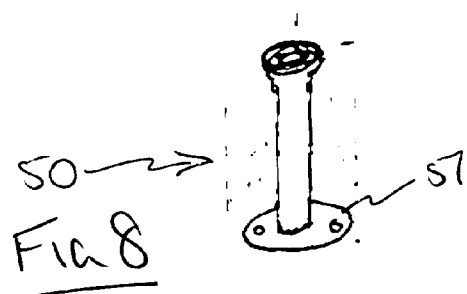


Fig 8

Fig 9

