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B4W W6E
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(58) Field of search
 UK CL (Edition J) **A4G, B4W**
 INT CL⁴ **A45F, B25B**

(54) **Device for lifting boards**

(57) A hand-held device for lifting a board, such as an 8'x4' sheet or a door or a worktop, comprises support means, eg tines (1), for placing under the edge (5) of a board to be lifted; a body portion (2, 3) attached to the support means (1) and extending upwards therefrom to support the board face; and a handle (4) attached to the upper end of the body portion (2, 3) for lifting the device. The handle (4) may be detachable and adjustable (Figs 3, 4, not shown); the stem (3) may include a non-slip or sucker pad (7, Fig 3A) and may be telescopic, or include a swivel joint (Figs 6, 7, not shown) for carrying a door upstairs. The board top edge may be engaged by an adjustable clip (10, Fig 3D, not shown). The device may be supported on the ground by a pivoted stay (8, Fig 3), and by an adjustable, swivellable lockable foot (13, Fig 10) that enables fitting a door in a frame (Fig 12, not shown).

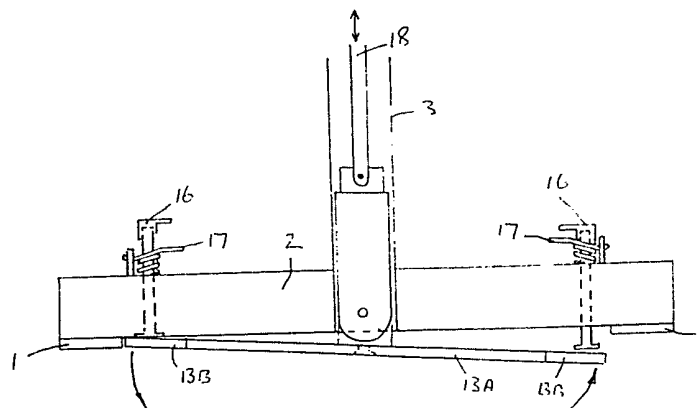
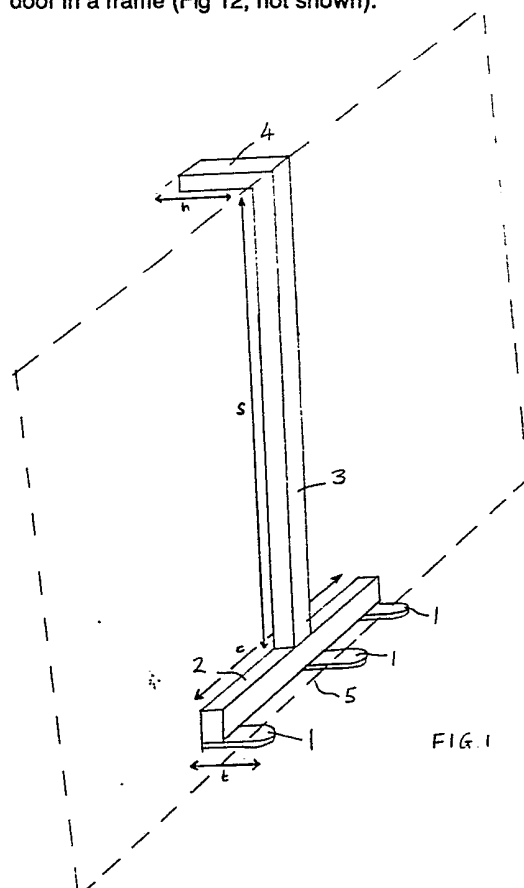


FIG. 10

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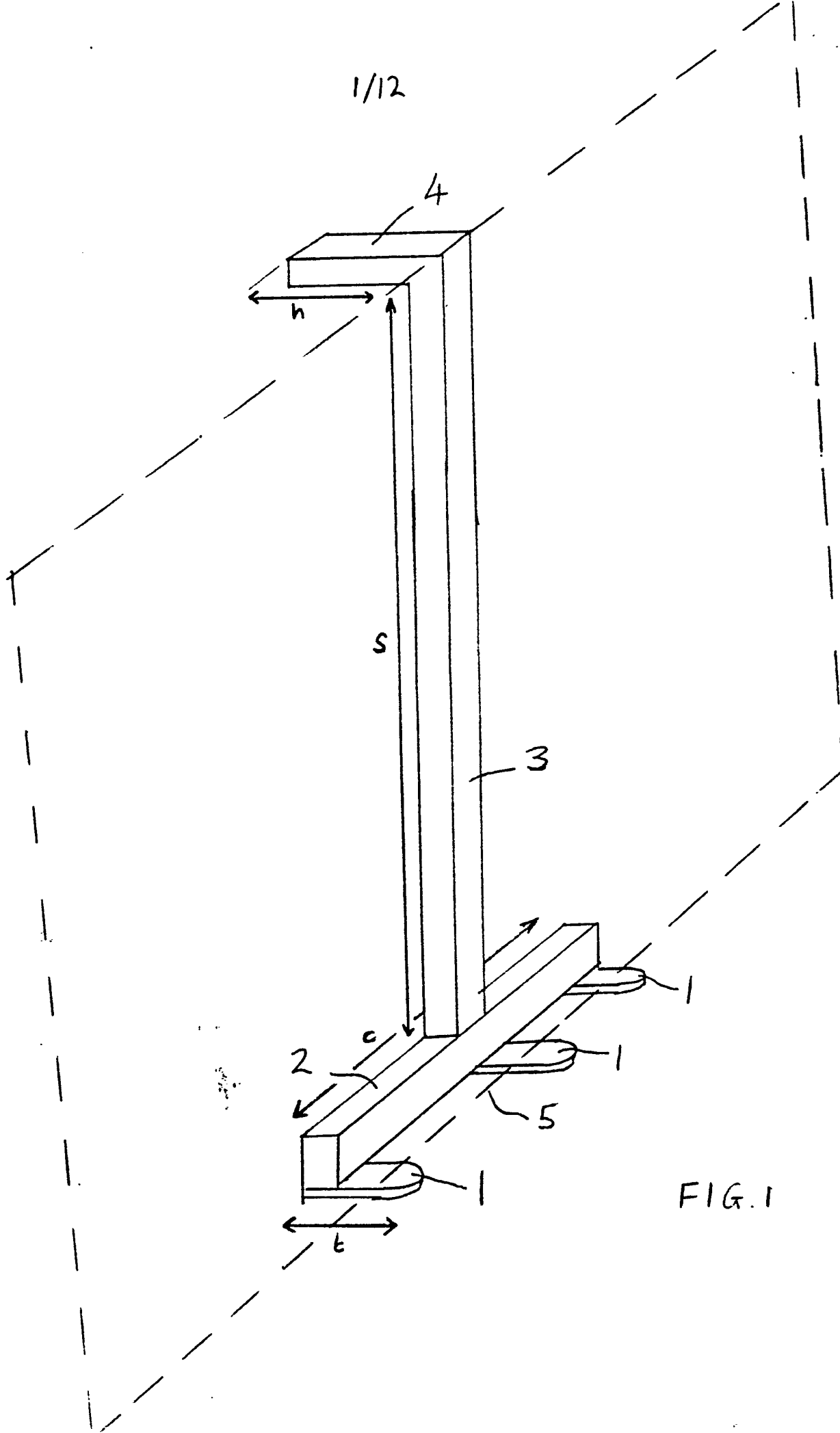


FIG. 2.

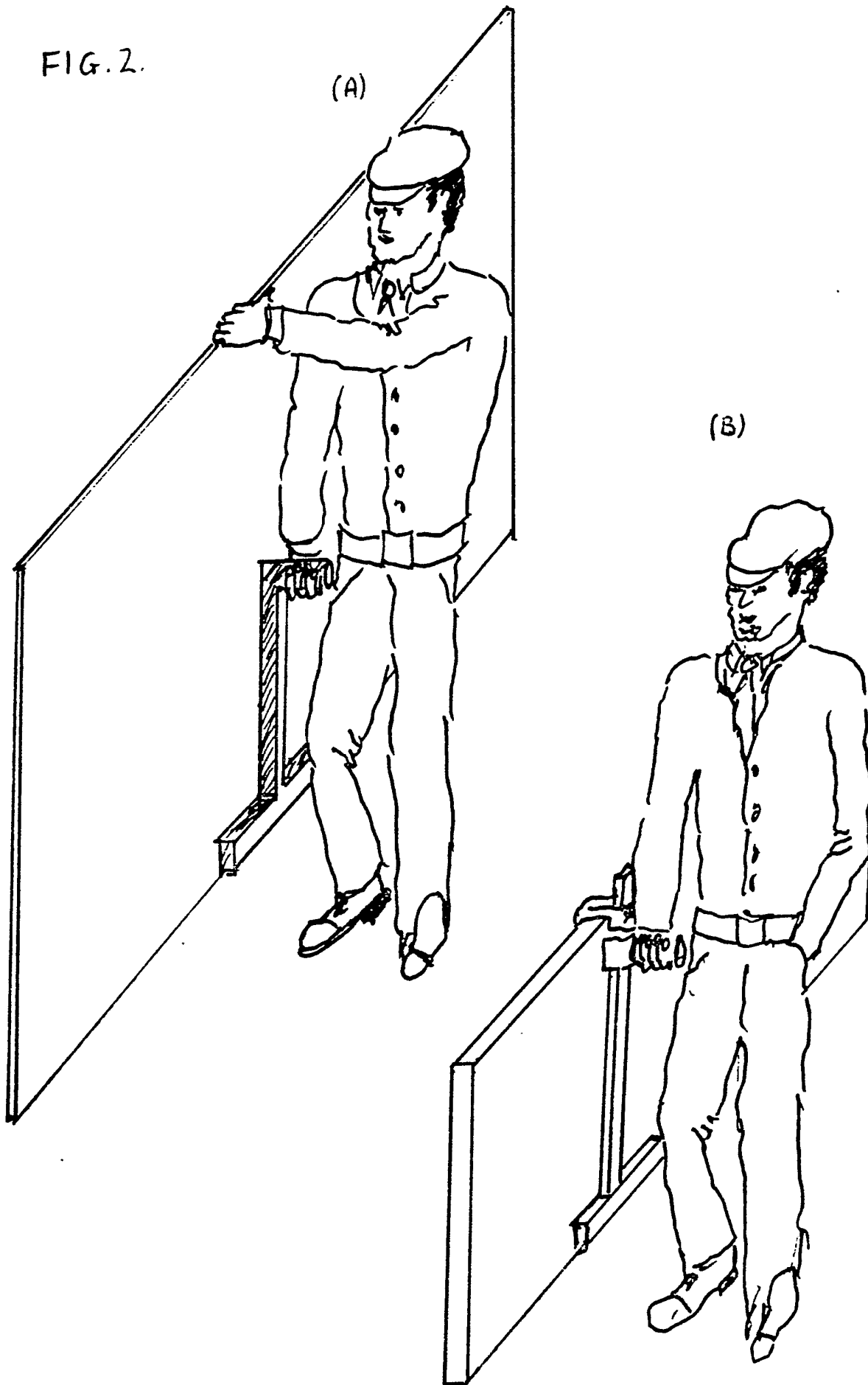
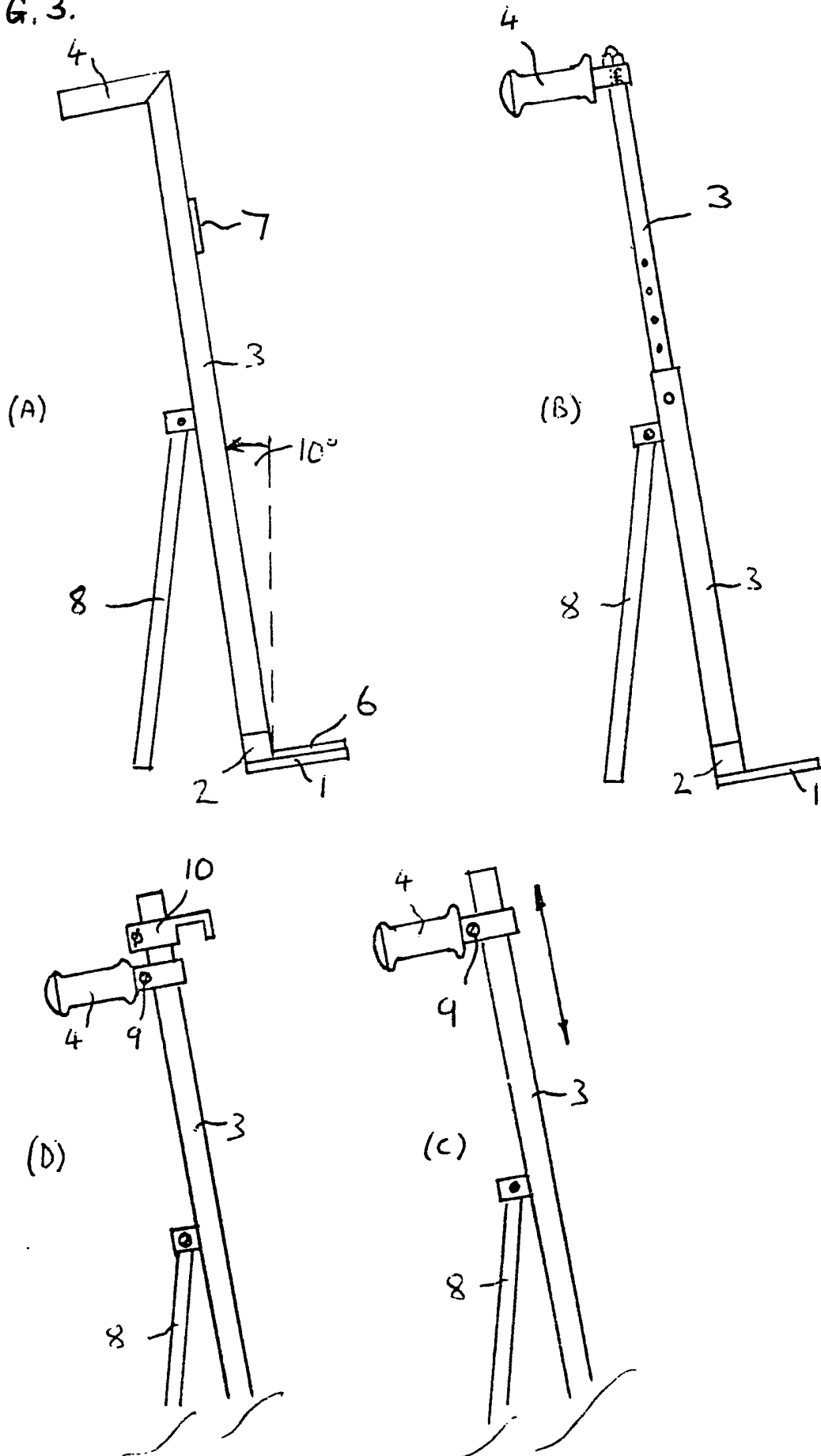


FIG. 3.



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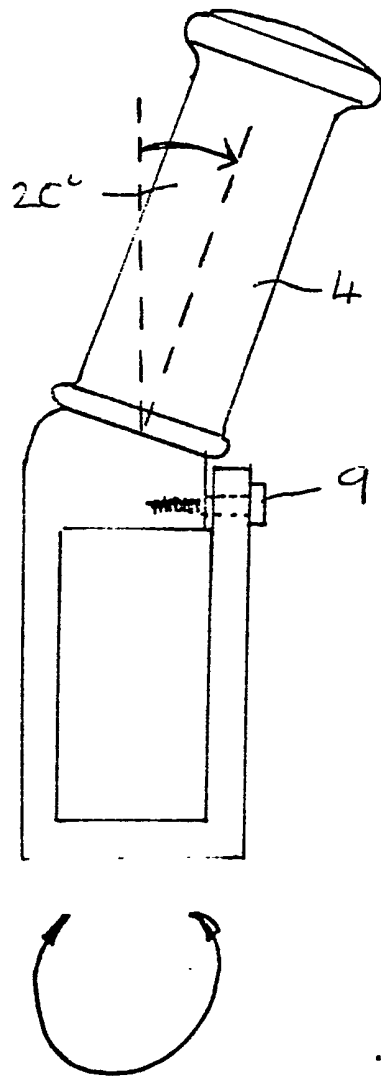
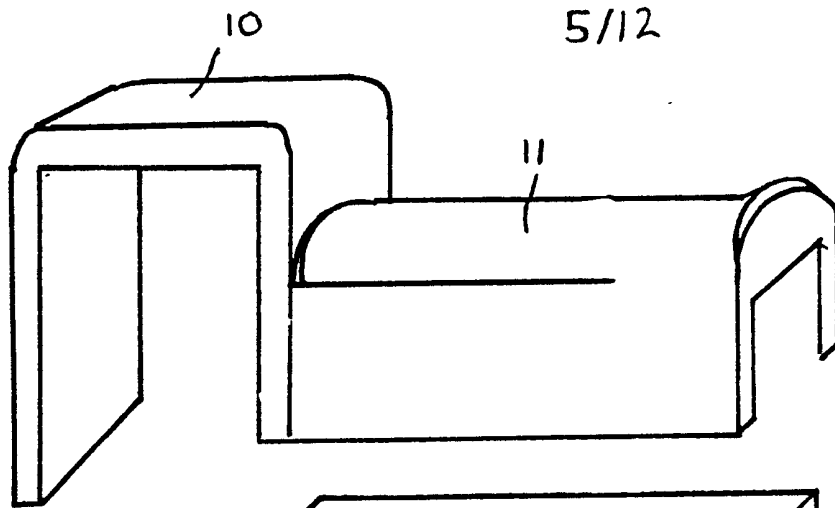


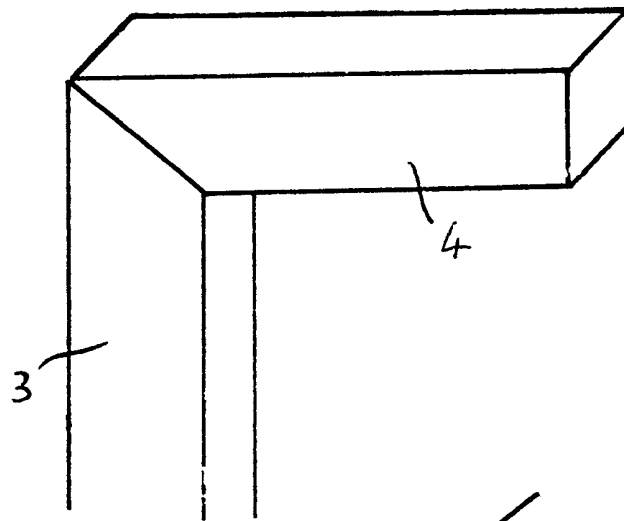
FIG. 4.

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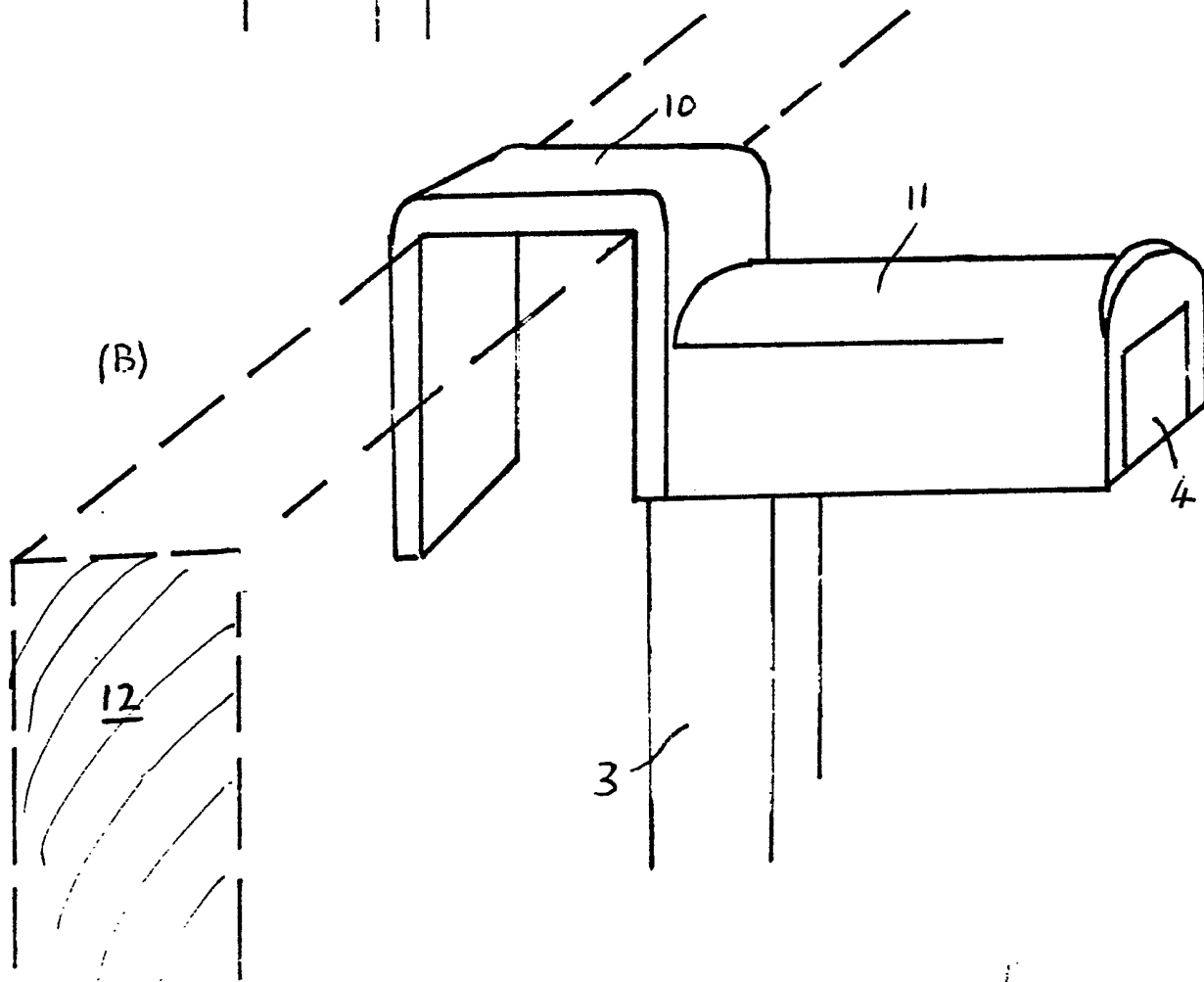
FIG. 5



(A)



(B)



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(A)

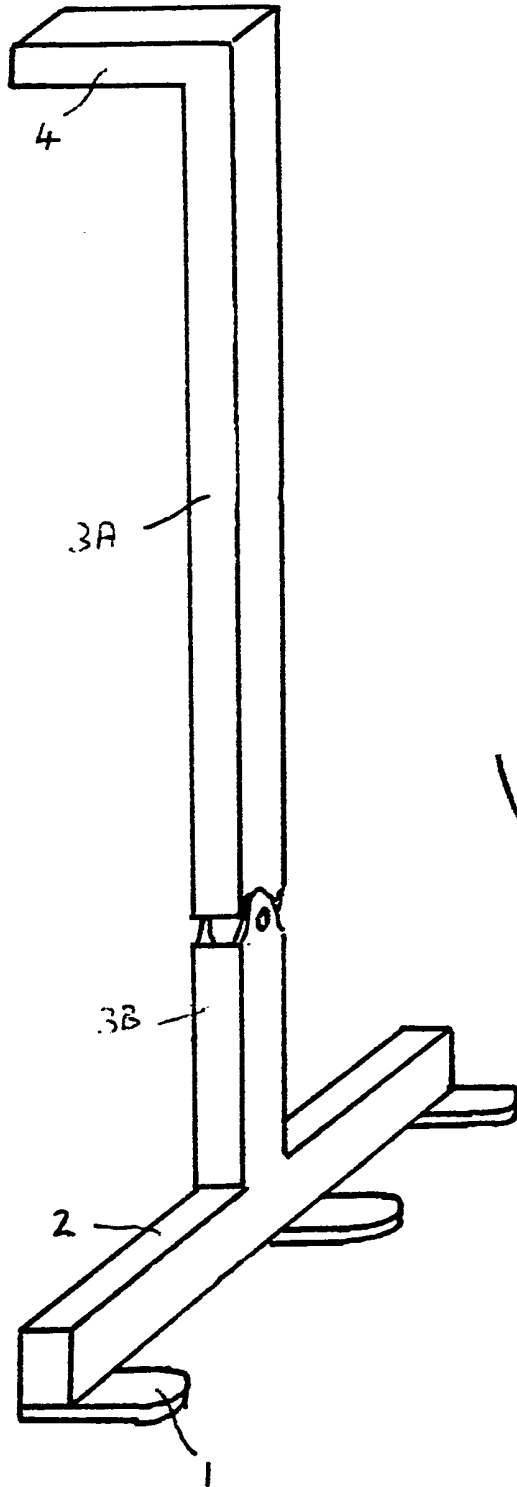
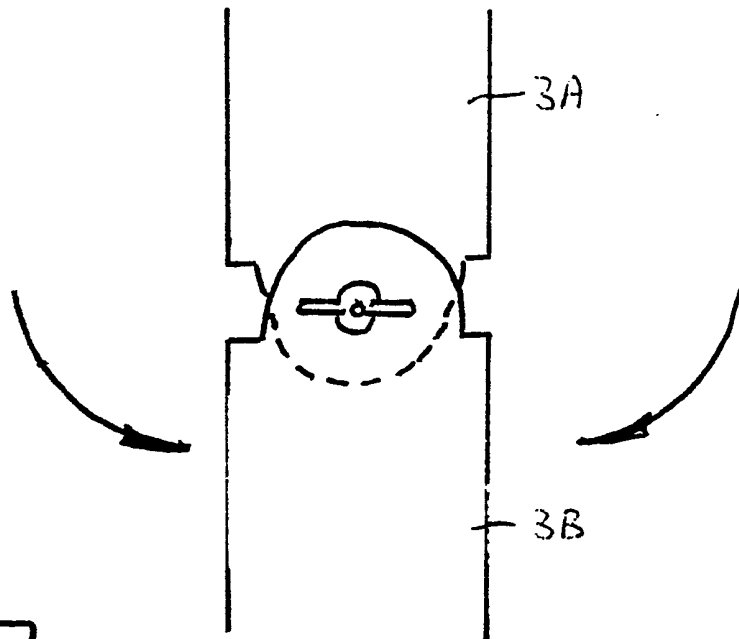


FIG. 6.

(B)



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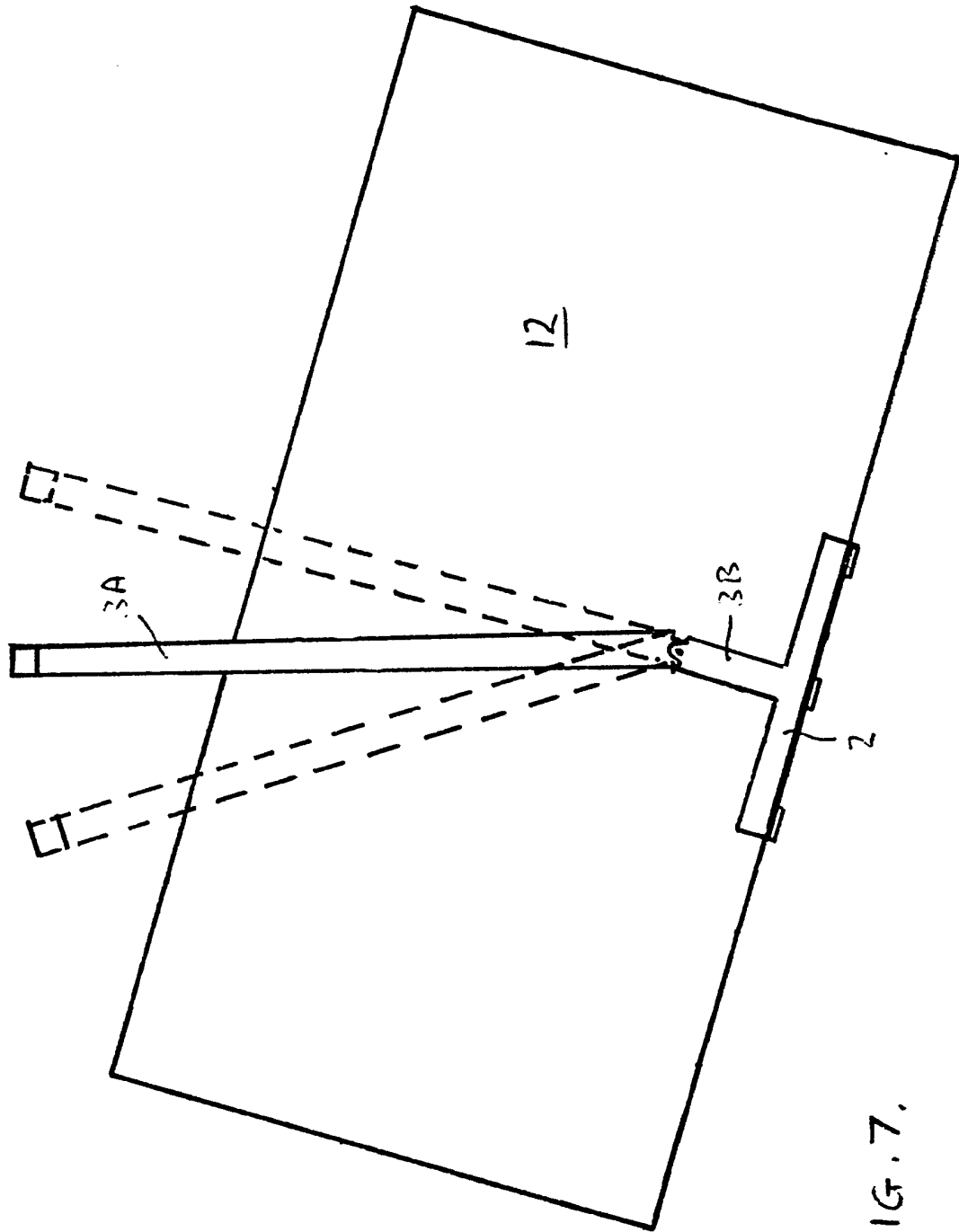


FIG. 7.

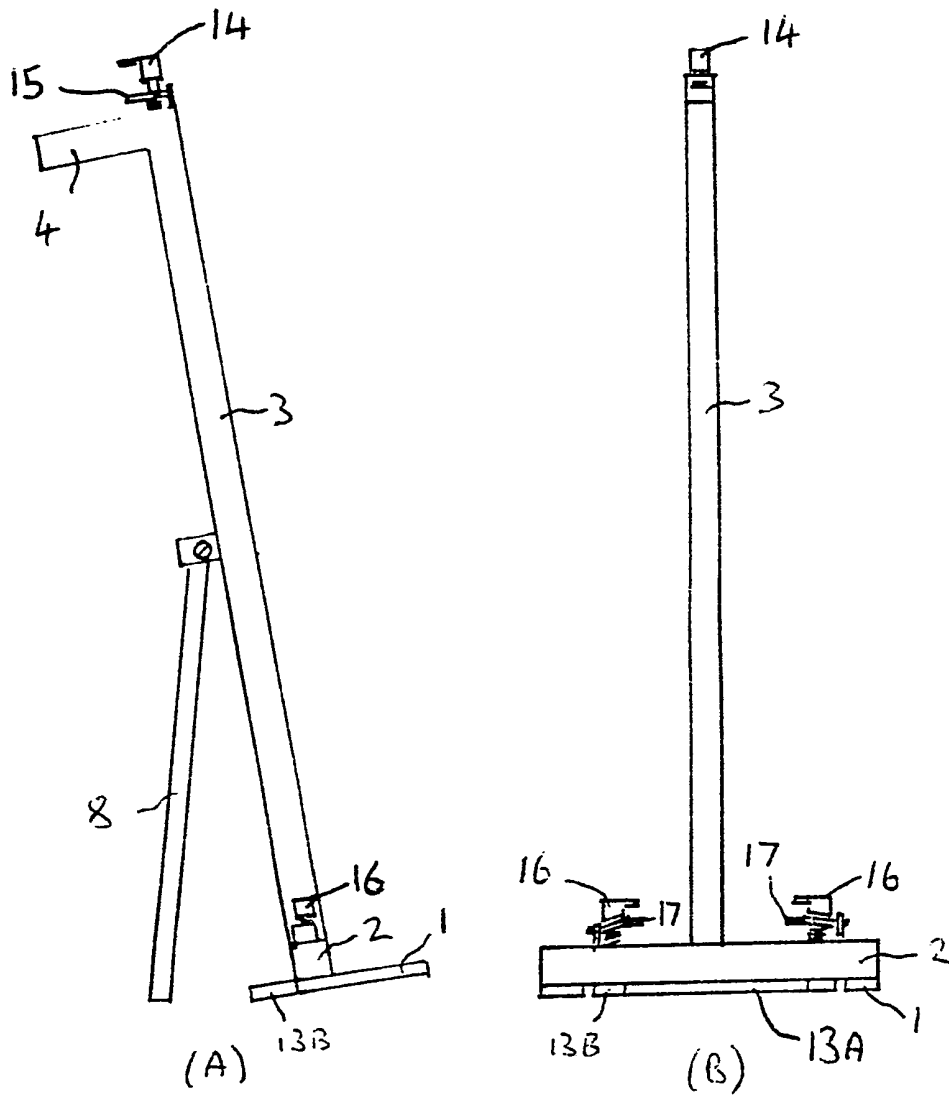
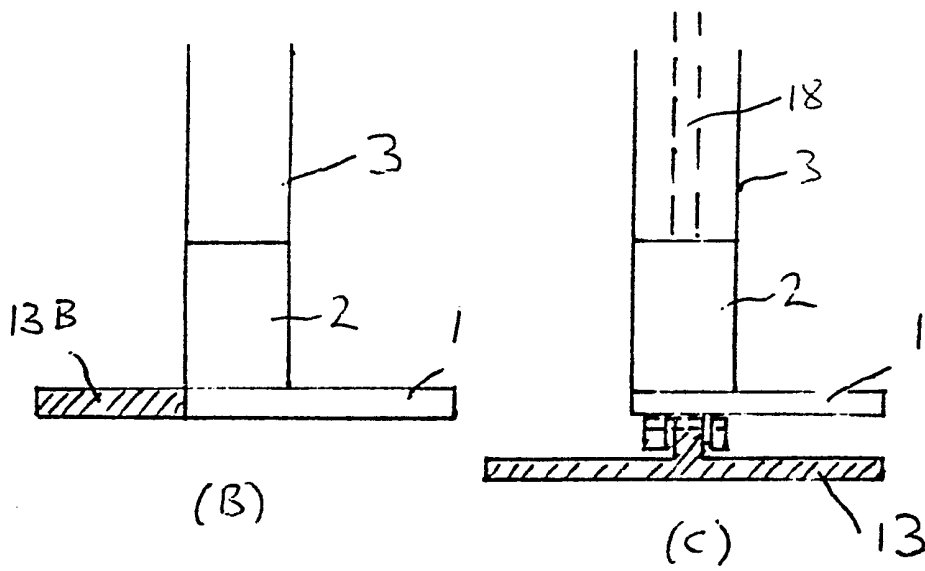
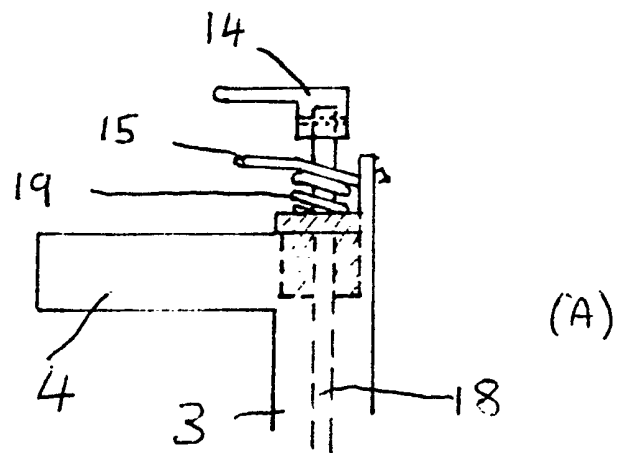


FIG. 8.

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FIG. 9.



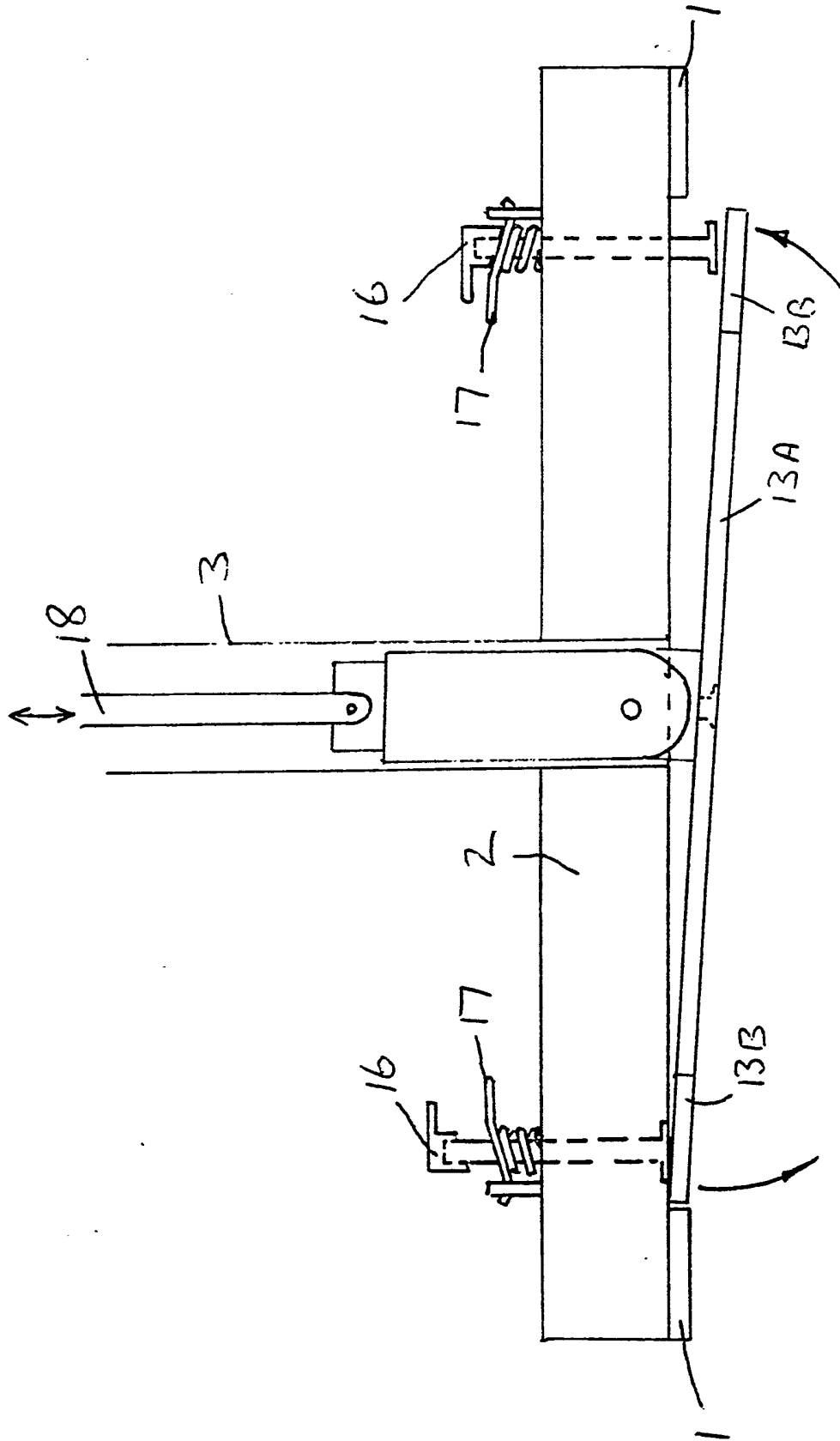
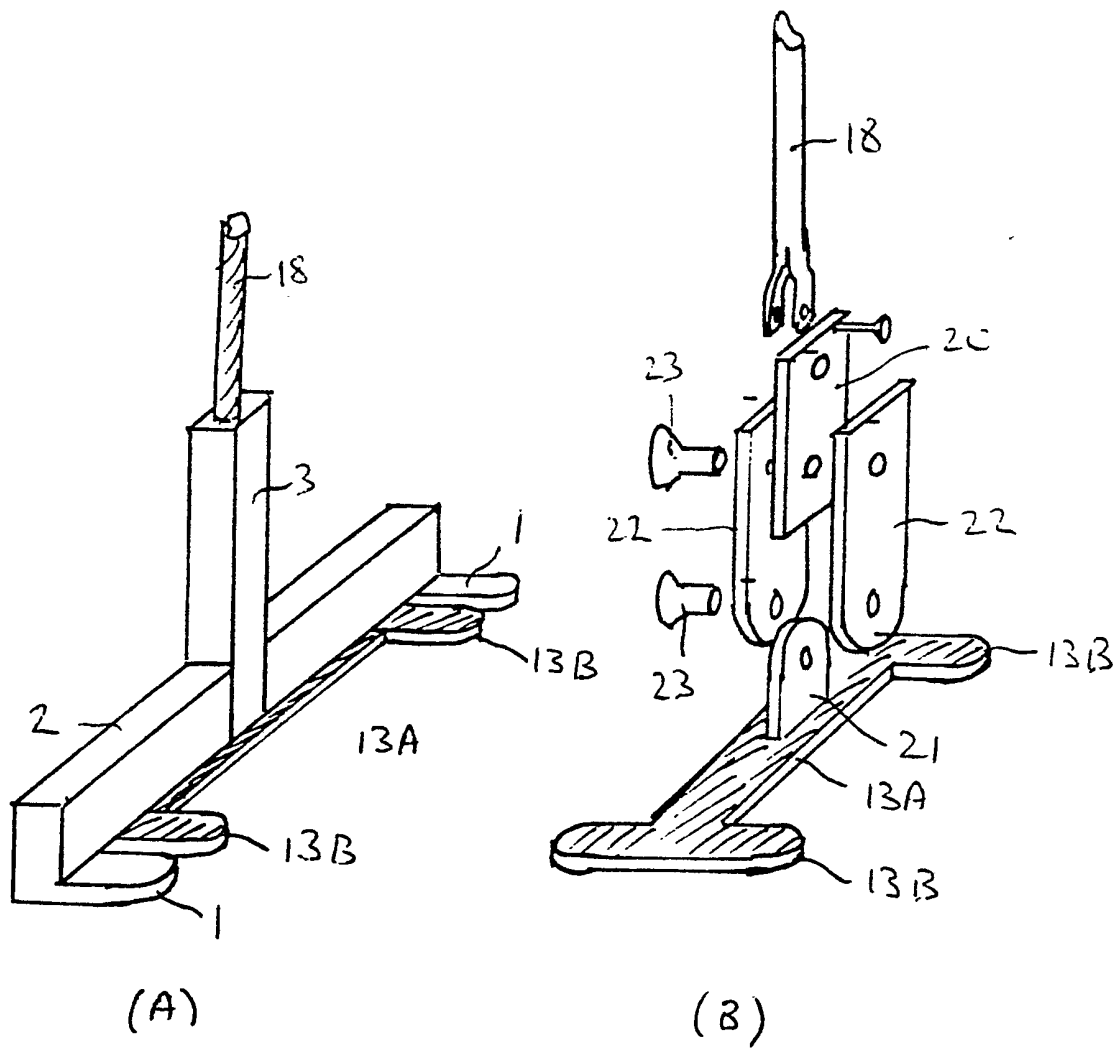
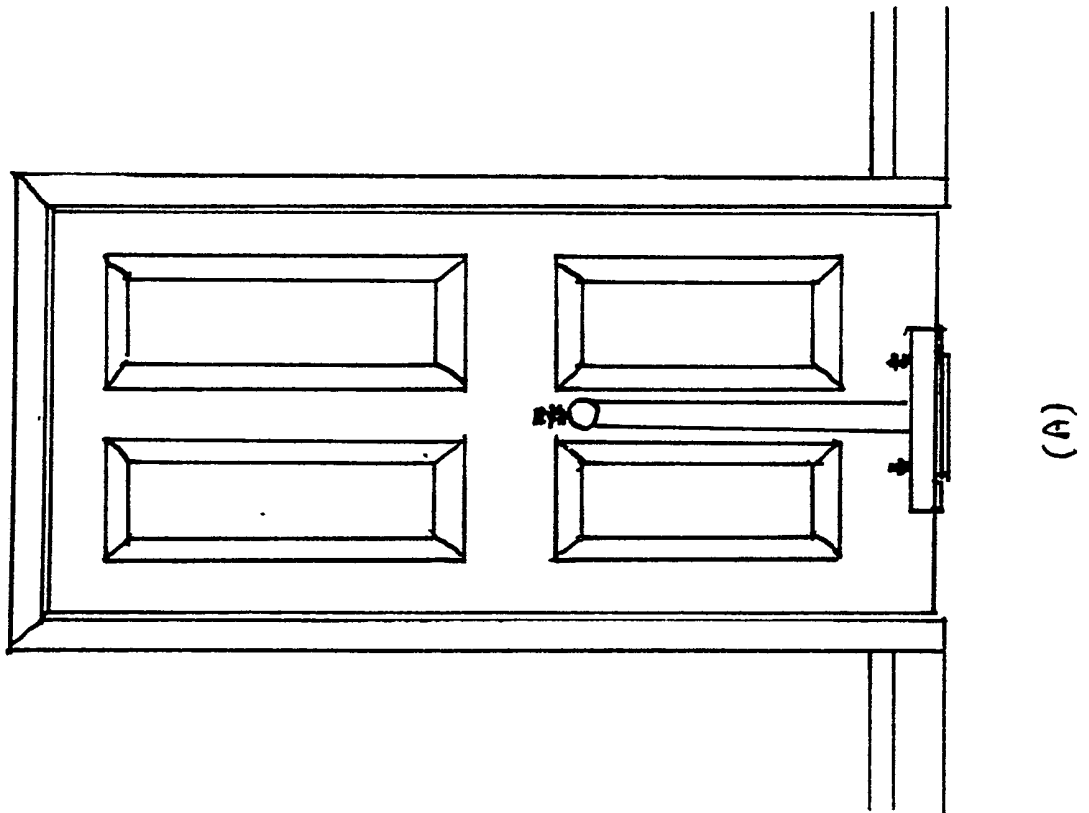
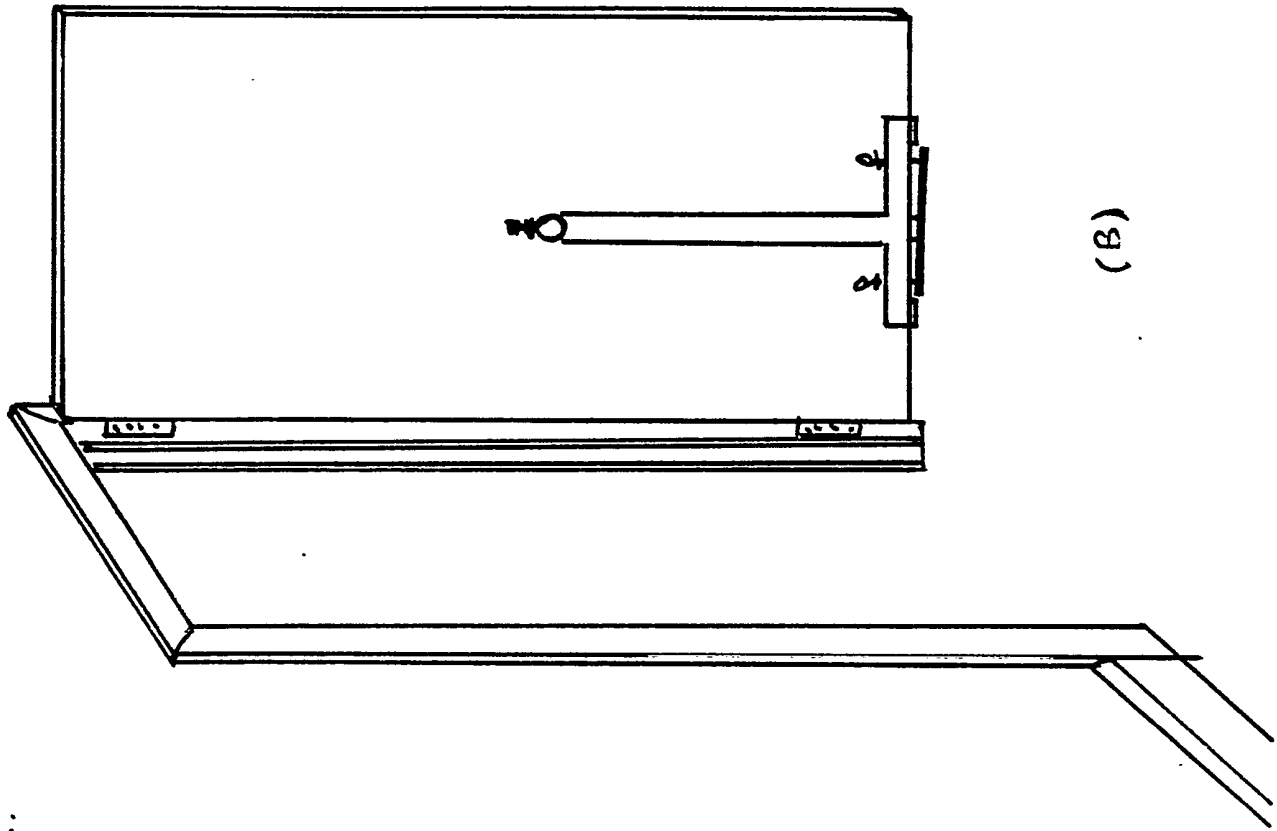


FIG. 11



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FIG. 12.



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DEVICE FOR LIFTING BOARDS

This invention relates to a hand-held device for lifting a board or similar shaped article, particularly doors.

Carpenters and DIY builders frequently need to lift and carry around large boards such as plaster boards, kitchen worktops, 8' x 4' sheets of wood and other similar shaped articles such as doors. Due to their size, and in some cases weight, it is difficult for such boards or articles to be carried by one person. If they can be carried by one person then this needs two hands and usually requires the person to stretch into an awkward position. This means the person does not have a hand free, e.g. for opening doors, and risks sustaining muscle injuries. In addition, the article being carried is liable to be damaged or to damage other items since it is difficult to manoeuvre and must be put down whenever a door needs to be opened or closed.

Although these problems have existed for a long time and are experienced by many carpenters and people undertaking DIY work, the applicant is unaware of any proposals or devices available on the market for overcoming these difficulties.

The present invention aims to alleviate many of these problems by providing a hand-held device for lifting a board or similar shaped article comprising: support means for placing under the edge of the board to be lifted; a body portion attached to the support means and extending upwardly therefrom; and a handle portion attached to the body portion at a position spaced from the support means for gripping and lifting the device by the hand, the arrangement being such that, in use, a board may be lifted in a substantially upright position with one edge resting on the support means and a face lying or leaning against part of the body portion with the handle portion positioned so that it can be freely gripped to lift the device without interference from the board mounted thereon.

Preferred features of the invention will be apparent from the following description and from the subsidiary claims of the specification.

The invention will now be described, merely by way of example, with reference to accompanying drawings, in which:-

Figure 1 is a perspective view of a basic form of a device according to an embodiment of the invention;

Figures 2(A) and (B) illustrate the device being used to carry an 8'x4' sheet and a door;

Figures 3(A) - 3(D) are side views of optional features which may be provided on the device shown in Figure 1;

Figure 4 is a plan view of a handle which may be used in a preferred form of the device shown in Figure 1;

Figures 5(A) and 5(B) are perspective and side views of an alternative form of the optional feature shown in Figure 3(D);

Figures 6(A) is a perspective view of a device such as that shown in Figure 1 with yet a further optional feature and Figure 6(B) is an enlarged view of part of this device;

Figure 7 illustrates the use of the device shown in Figure 6 in carrying a door up a flight of stairs;

Figures 8(A) and 8(B) are side and front views of a preferred embodiment of a device according to the invention;

Figures 9(A), (B) and (C), Figure 10 and Figures 11(A) and (B) show more detailed views of various parts of the device shown in Figure 8; and

Figures 12(A) and (B) illustrate the use of such a device in fitting a door within a door frame.

Figure 1 shows a basic form of an embodiment of the invention. The device shown comprises support means in the form of three tines 1, a body portion

comprising a cross-piece 2 to which the tines 1 are connected and a stem 3 secured to the centre of the cross-piece 2 and a handle portion comprising a hand grip 4 extending from the upper end of the stem 3 of the body portion. The hand grip 4 extends at right angles to the stem 3 in a direction opposite to that in which the tines 1 extend from the cross-piece 2.

In use, a board or other article (shown by dotted lines in Figure 1) is supported on the device with an edge 5 resting on the tines 1 and a face lying adjacent or leaning against the stem 3. The handle grip 4 can then be taken in the hand to lift the device and the board supported thereon. The board should, of course, be positioned so that its centre of gravity lies between the outermost tines and is preferably positioned so that it is evenly balanced on the tines. By positioning the bottom edge 5 of the board slightly away from the cross-piece 2, the board will lean in towards the stem 3 rather than falling away from this when the device is lifted. The board is thus sufficiently securely mounted on the device to be lifted and carried around by holding and lifting the hand grip 4 in one hand. Although this is a very simple device, it is found to provide a remarkably secure means of holding and lifting an article such as a door or a 8' x 6' sheet of wood.

It will be apparent that as the hand grip 4 extends away from the body portion in the opposite direction to the tines 1, it can be freely gripped without interference from the board which rests on the tines 1 and leans towards the stem 3. With an arm extending downwards by his side, the hand grip 4 can be held so that the stem 3 is suspended parallel to the carrier's leg with the cross-piece 2 extending backwards and forwards relative to the carrier. The tines 1 thus extend to the side away from the carrier and the board is supported on one side of the carrier in an upright position with its bottom edge substantially horizontal and extending backwards and forwards of the carrier. Figure 2(A) illustrates the device being used to carry an 8'x4' sheet of wood. In view of the flexibility of this size sheet, it may be necessary to steady the top edge with one hand as shown. Figure 2(B) illustrates the device being used to carry a door. In this case, the device is fitted with a clip for engaging the upper edge

of the door as described below in relation to Figure 3(D). A door mounted on the device in this way can be easily carried with one hand.

The device may conveniently be made from hollow steel sections (one inch square) welded together with tines made from mild steel plate welded to the cross-piece. Typical dimensions of the device with reference to Figure 1 are as follows:

length of hand grip h: 5 inches
length of stem s: 24 inches
width of cross-piece c: 12 inches
length of tines t: 4 inches

A number of modifications and optional or preferred features which can be added to the device are shown in Figures 3(A) - 3(D).

Figure 3(A) shows non-slip pads 6 which may be provided on the upper surfaces of the tines 1 and a further non-slip pad 7 which may be affixed to the stem 3 at a position fairly high up towards the hand grip 4 so as to engage a board when it leans towards the stem 3. These non-slip pads 6 and 7 are preferably 1/4 inch thick rubber blocks or made of a suitable plastics material. With the use of such pads, it has been found that a board can be securely mounted on the device with a minimal angle of lean towards the stem 3. The use of such pads also provides protection for the board where it is supported by or engages the device.

A further optional feature (not shown) would be a suction pad provided in place of the non-slip pad 7. This could be used to provide securement of the board to minimise further the possible danger that it might over-balance and fall away from the stem 3. The suction pad might be a simple sucker against which the face of the board can be pressed or of more sophisticated design having a lever by which suctional engagement with the board can be established and released.

Figure 3(A) also shows a stay 8 which enables the device to be left in a standing position with a board mounted thereon. The stay 8 is pivotably mounted on the stem 3 and preferably provided with an angled end so that

it firmly engages the ground when in the extended position shown in this Figure. The device is then supported with the stem 3 inclined by up to 20 degrees, but preferably about 10 degrees, to the vertical so that a board mounted thereon leans against the stem 3. Assuming that the board is not so tall as to topple over the top of the device, the stay 8 provided a simple and convenient means of propping the device up should the carrier wish to put it down without taking the board off it.

Figure 3(B) shows the device with a telescopic stem 3 which enables the length of the stem to be adjusted. It also shows a hand grip 4 which comprises a moulded plastic grip rather than a plain handle as shown in previous Figures.

Figure 3(C) shows an alternative means for adjusting the effective length of the stem 3 between the cross-piece 2 and the hand grip 4. In this case, the hand grip 4 is slidably mounted on the stem 3 and can be secured in a chosen position by pinch-bolt 9 (see also Figure 4).

Figure 3(D) shows the device with an adjustable clip 10 which can be slid up and down the stem 3 and secured in a selected position by means of a pinch bolt. This can be used to fit over the upper edge of a board carried by the device, e.g. the device may be of a size to conveniently accommodate the width of a standard 30 inch or 32 inch wide door. The door can then be supported with its long edge on the tines 1 and the clip 10 positioned over the opposite edge to secure the door to the device. The clip 10 may be used with either of the length adjustment means shown in Figures 3(B) or 3(C).

Figure 4 is a plan view of an alternative form of hand grip 4. This is similar to the hand grip shown in Figures 3(B) to 3(D) except that the hand grip is angled with respect to the bracket by which it is secured to the stem. It has been found that it is easier and more comfortable to carry the device if the hand grip is angled backwards by up to 45 degrees although an angle of about 20 degrees has been found most convenient. This makes it easier to grip the handle with the palm of the hand behind and passing under the handle with the knuckles facing downwards or

backwards. The hand grip 4 shown in Figure 4 can also be easily inverted so that it is angled backwards when the device is carried in the left hand rather than the right hand.

Figure 5(A) shows an alternative form of clip 10 for fitting over the upper edge of a door mounted on the device. In this case, the clip 10 has a portion 11 which fits over a hand grip 4 of the type shown in Figure 1 so that the clip 10 is held in place when the hand grip 4 is gripped. Figure 5(B) is a partial side view showing the upper edge of a door 12 engaged by this type of clip 10.

Figure 6(A) shows a device with a swivel provided in the stem 3 enabling an upper portion 3A of the stem to be angled with respect to a lower portion 3B. Figure 6(B) is an enlarged view of the swivel provided in the stem. This swivel facility is useful when, for instance, carrying a door 12 up a flight of stairs as the upper portion 3A of the stem can be arranged to extend substantially vertically even though the lower portion is inclined due to the fact that the door 12 has to be inclined to carry it up the stairs. The use of the device in this situation is indicated in Figure 7 which also shows alternative positions of the upper portion 3A of the stem.

Figures 8(A) and 8(B) are side and front views of a preferred embodiment of the device. The device is similar to that shown in Figure 1 but is also provided with a lockable foot mechanism which may be extended from the base of the device for engaging the ground and supporting the remainder of the device in a raised position. This is especially useful for holding a door in place whilst it is being fitted within a door frame.

The foot mechanism comprises a foot 13 having a central portion 13A and tines 13B at its ends. These tines 13B are arranged to fit between the tines 1 of the device as shown in Figure 11(A). They may also extend in both directions from the central portion 13A as shown in Figure 11(B). The foot 13 is connected to a mechanism (described below with reference to Figures 10(A) and 10(B)) which enables it to be raised and lowered with respect to the remainder of the device. A button 14 is provided near the hand grip 4 for lowering the foot 13. When the button 14 is released, the

mechanism is automatically locked to prevent the foot from rising or the device from lowering. A lever 15 is provided to release the mechanism to enable the foot 13 to be raised again or the device lowered. Similar buttons 16 and levers 17 may also be provided on the cross-piece 2 for operation by the carrier's foot to secure the foot 13 in position, especially when it is inclined to the remainder of the device (see Figure 10 and description below).

Figure 9(A) shows the button 14 and lever 15 in more detail. The button 14 is connected to a shaft 18 which passes through the lever 15 and down within the stem 3 of the device. By pushing the button 14 downwards, the shaft 18 is pushed down within the stem 3 and lowers the foot 13. When the button 14 is released, the shaft 18 is locked by the lever 15 which is pushed into frictional engagement with the shaft 18 by a coil spring 19. This prevent the shaft 18 from rising with respect to the stem 3. When the lever 15 is pushed down against the spring 19, the shaft 18 can again be raised or lowered with respect to the stem 3. The frictional engagement between the shaft 18 and lever 15 is simply provided by a hole within the lever through which the shaft passes. When the axis of the hole is inclined to the axis of the shaft 18 (as shown in Figure 9(A)), the edges of the hole engage the shaft. However, when the lever 15 is pushed down, the axis of the hole is aligned with the axis of the shaft so the shaft may freely slide within the hole. As shown in Figure 10(A), the button and lever mechanism provided on the cross-piece 2 are of similar design to that shown in Figure 9(A).

Figure 9(B) is a side view of the device showing both tines 1 and tines 13B resting on the ground. When the button 14 is pressed and the device lifted by the hand grip 4, the device may be lifted above the foot 13 as shown in Figure 9(C).

The foot mechanism is also preferably provided with a swivel enabling the foot 13 to be inclined to the cross-piece 2 of the device as shown in Figure 10. Figure 11(B) shows an exploded view of the swivel mechanism. The lower end of the shaft 18 is connected to a top plate 20. A lower plate 21 is provided on the central portion 13A of the foot for fitting with the

lower end of the stem 3 as shown in Figure 10. The top and lower plates 20 and 21 are sandwiched between two side plates 22 and connected thereto by a pair of pivot pins 23. A front view of the assembled swivel mechanism is shown in Figure 10. The foot 13 can be held in an inclined position with respect to the cross-piece 2 by means of the button 16 and lever mechanisms 17 as illustrated in Figure 10.

The use of the foot mechanism is best illustrated with reference to the fitting of a door within a door frame. The sides of the door are first trimmed to the required size and the door is then mounted in an upright position on the device and positioned, using the device, into the door frame as shown in Figure 12(A). The door is then lifted by lifting the device until the top of the door engages the top door jamb. The button 14 is then pressed to lower the foot 13 to the ground. When the button 14 is released, the foot 13 rests on the ground and the remainder of the device with the door mounted thereon is held clear of the floor. The gaps between the sides of the door and the door frame are then checked to see that they are even. The foot 13 is then locked in position by pressing the foot buttons 16. It will be appreciated that since the foot 13 is able to swivel relative to the remainder of the device, the door can be held in a substantially vertical position even if the ground on which the foot 13 is resting is not horizontal (a common occurrence in older houses). The door is then held in position by the device leaving both hands of the carpenter free to mark the top of the door with a straight edge to show how much wood needs to be trimmed off in order to make a good fit within the door frame. The door can be then lowered by pressing the levers 15 and 17 to release the foot mechanism so that it can be removed for trimming.

When the top and bottom edges of the door have been trimmed to size, the device may be used to hold the door in an open position within the door frame to enable hinges to be fitted as shown in Figure 12(B). The corner of the door adjacent the top hinge can be held in one hand whilst a screw is fitted to hold the hinge in place. The door is then held in place by the device and this hinge even when the floor beneath the door is not level so two hands can be used to fit the remaining screws to the top and bottom hinges. It will be appreciated that as the door is held securely by the

device and is held at the correct height and angle with respect to the ground, the carpenter has both hands free to fit the hinges making this a much easier job to carry out than it would be without the device. The device can also be used when removing or re-fitting an existing door. The device is used to hold the door in place to prevent it swinging and so avoids the danger of the door pulling the hinges away from the door frame as they are being removed or re-fitted.

Other mechanisms for raising and lowering the foot 13 and releasably securing it in position in place of that described above in relation to the drawings will be readily apparent to those skilled in the art.

CLAIMS

1. A hand-held device for lifting a board or similar shaped article comprising: support means for placing under the edge of the board to be lifted; a body portion attached to the support means and extending upwardly therefrom; and a handle portion attached to the body portion at a position spaced from the support means for gripping and lifting the device by hand, the arrangement being such that, in use, a board may be lifted in a substantially upright position with one edge resting on the support means and a face lying or leaning against part of the body portion with the handle portion positioned so that it can be freely gripped to lift the device without interference from the board mounted thereon.
2. A device as claimed in claim 1 in which the support means comprises a plurality of tines on which an edge of a board to be lifted can be supported.
3. A device as claimed in claim 1 or 2 in which the body portion comprises a stem with a cross-piece connected to the lower end thereof, the support means being secured to the cross-piece and the handle portion being secured at or near the upper end of the stem.
4. A device as claimed in claim 1 , 2 or 3 in which the handle portion comprises a hand grip projecting from an upper portion of the body portion.
5. A device as claimed in claims 2, 3 and 4 in which the tines project from the cross-piece in one direction and the hand grip projects from the stem in the opposite direction or at an angle of up to 45 degrees with said opposite direction.
6. A device as claimed in claim 5 in which the hand grip is removably secured to the stem and arranged so that it can be fitted thereto so as to be inclined either forwards or backwards with respect to the said opposite direction.

7. A device as claimed in any preceding claim in which a non-slip surface is provided on the support means for engaging the edge of a board mounted thereon.

8. A device as claimed in claim 1 in which a non-slip surface or a suction device is provided on the body portion for engaging the face of a board mounted thereon.

9. A device as claimed in any preceding claim comprising a support leg pivotably connected to the body portion.

10.A device as claimed in claim 9 in which the leg is arranged to support the device when placed on the ground in a position inclined by up to 20 degrees with the vertical.

11.A device as claimed in any preceding claim comprising adjustment means for adjusting the spacing between the support means and the handle portion.

12.A device as claimed in claim 11 in which the body portion is telescopic.

13.A device as claimed in claim 11 or 12 in which the handle portion is slidably mounted on the body portion and can be releasably secured thereto.

14.A device as claimed in claim 3 or any claim dependent thereon in which the stem is provided with a swivel so that an upper portion of the stem can be inclined to a lower portion thereof.

15.A device as claimed in any preceding claim comprising a clip for engaging the upper edge of a board mounted on the device.

16.A device as claimed in any preceding claim comprising a foot mechanism with a foot portion which may be extended from the base of the device for engaging the ground and supporting the remainder of the device in a raised position.

17.A device as claimed in claim 16 in which the control means are provided adjacent the handle portion for lowering the foot portion and securing it in a lowered position.

18.A device as claimed in claim 17 in which the foot mechanism is provided with a swivel to allow the foot portion to rest on an inclined surface whilst the remainder of the device is in a substantially vertical position.

19.A device as claimed in claim 18 comprising fastening means for releasably securing the foot portion in an inclined position relative to the remainder of the device.

20.A hand-held device for lifting a board or similar shaped article substantially as hereinbefore described with reference to the accompanying drawings.