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(54) **Improvements in or relating to an access platform**

(57) An access platform is disclosed which comprises a support, a pivotal frame (6) pivotally mounted to the support and at least one retaining element. The frame (6) is movable between a substantially horizontal storage position and a substantially vertical operational position and the at least one retaining element is provided to retain the frame in said operational position. A platform unit (14) is also provided which is configured to engage the frame (6) when the frame is in its operational position in order that the frame (6) should adopt an elevated position relative to the support.

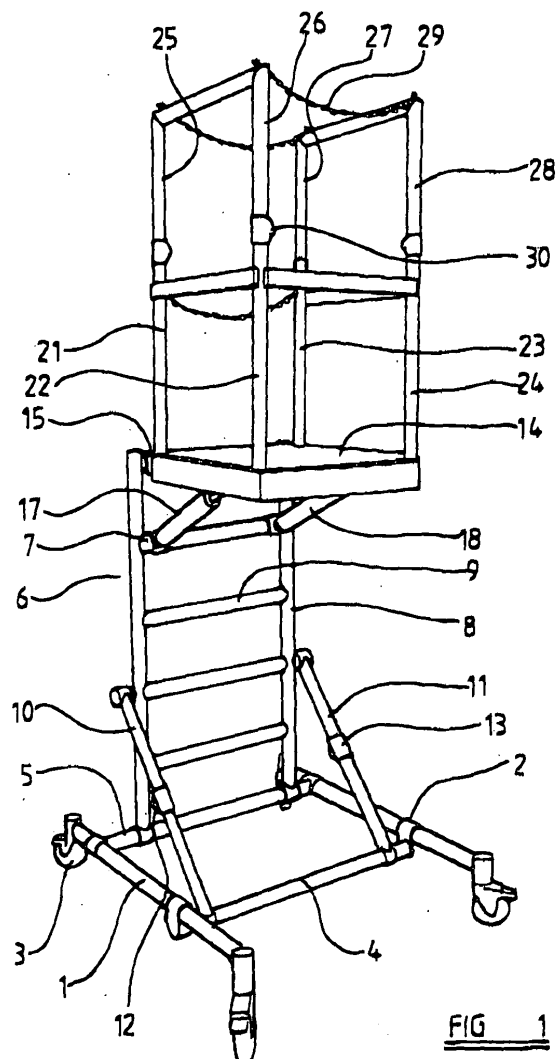


FIG 1

Description

[0001] THE PRESENT INVENTION relates to an access platform, and more particularly relates to an access platform to provide low level access.

[0002] There is a requirement for a low level access platform that is easy to transport, easy to assemble and easy to use.

[0003] The present invention seeks to provide an improved low level access platform.

[0004] According to this invention there is provided an access platform, the access platform comprising a support, a pivotable frame pivotally mounted to the support and moveable between a substantially horizontal storage position and a substantially vertical operational position, at least one retaining element being provided to retain the frame in said operational position, a platform unit being provided, the platform unit being configured to engage the frame when the frame is in said operational position so as to adopt an elevated position relative to said support, wherein, the or each said retaining element comprises a hinged strut pivotally connected at one end to the frame and pivotally connected at its other end to the support.

[0005] Preferably, said frame comprises a pair of substantially parallel stiles and at least one cross-member extending between the stiles.

[0006] Advantageously, said frame is a ladder frame comprising a plurality of said cross-members in the form of rungs.

[0007] Preferably, the or each said strut is connected to the frame at a point intermediate the ends of the stiles.

[0008] Advantageously, a single said retaining element is provided, the retaining element being pivotally connected to one of the or each said cross-members of the frame.

[0009] Conveniently, the platform unit is provided with posts at its four corners.

[0010] Preferably, said post are fixed to the platform unit.

[0011] Advantageously, supplementary posts are provided which are engageable with the fixed posts to form a guard on the platform.

[0012] Conveniently, the posts are removable from the platform unit.

[0013] Preferably, the platform unit is provided with releasable fastening elements configured to engage releasably rungs of the ladder frame to mount the platform unit to the ladder frame in a substantially horizontal position.

[0014] Advantageously, one side edge of the platform unit is provided with a plurality of clamping hooks to engage a selective rung of the ladder frame, and struts are provided connected to the underside of the platform unit which are provided with engagement elements to engage another rung of the ladder frame.

[0015] Conveniently, the struts are pivotally mounted to the underside of the platform and are provided with

clamping hooks to engage the said rung of the ladder frame.

[0016] Preferably, the platform has a second frame in addition to said pivotable frame, the second frame being a ladder frame comprising a pair of substantially parallel stiles and a plurality of rungs, wherein both of said frames are pivotally mounted to said support.

[0017] Advantageously, said platform unit is pivotally connected to both of said frames.

[0018] Conveniently, said frames are configured such that said platform remains substantially horizontal as said frame is moved between its storage position and its operational position.

[0019] In order that the invention may be more readily understood, and so that further features thereof may be appreciated, embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings in which:

FIGURE 1 is a perspective view of an access platform in accordance with a first embodiment of the invention in an assembled condition,

FIGURE 2 is a view of the access platform in a collapsed condition,

FIGURE 3 is a perspective view showing the access platform in one erect position,

FIGURE 4 is a perspective view showing the platform in an alternate position,

FIGURE 5 shows part of the platform when collapsed,

FIGURE 6 shows part of the platform being erected,

FIGURE 7 shows the part of the platform illustrated in Figure 6 when fully erect,

FIGURE 8 shows components of the platform in a collapsed condition,

FIGURE 9 is a perspective view of an access platform in accordance with a second embodiment of the invention, illustrating the platform in an assembled condition,

FIGURE 10 is another perspective view of the access platform illustrated in Figure 9, showing one part in an alternate position,

FIGURE 11 is a view corresponding generally to that of Figure 9, but illustrating the access platform in an intermediate position during collapse thereof,

FIGURE 12 is a perspective view showing the access platform in a partially-collapsed condition,

FIGURE 13 is a perspective view showing the access platform illustrated in Figure 12 with its guard rails removed, and

FIGURE 14 is a view corresponding generally to that of Figure 13, illustrating the access platform in a fully collapsed condition with the guard rails placed thereupon.

[0020] Referring initially to Figure 1 of the accompanying drawings the access platform of the first embodiment comprises two spaced-apart base rails 1, 2, each end of each base rail being provided with a respective castor 3. Intermediate their ends the base rails are interconnected by a transverse element 4 which is pivotally connected to the base rails 1, 2. Adjacent one end the base rails 1, 2 are interconnected by a further transverse element 5, the further transverse element 5 again being pivotally connected to the base rails 1, 2.

[0021] The further transverse element 5 effectively forms the lower-most rung of a ladder frame 6, the ladder frame 6 having two stiles 7, 8 interconnected by transverse cross members, such as the rung 9. The ladder frame 6 is pivotally mounted, by virtue of the pivotal mounting of the further transverse member 5 and may be moved, as will become clear from the following description, from the vertical or substantially vertical operational position illustrated in Figure 1 to a horizontal or substantially horizontal storage position as illustrated in Figure 2.

[0022] Two hinged struts 10, 11 are provided, each hinged strut having a hinge 12, 13 at a centrally located position. One end of each hinged strut is connected to the first transverse member 4, and the other end of each hinged strut is pivotally connected to a respective stile 7, 8 of the ladder frame 6 at a point intermediate the ends of the stile.

[0023] The hinged struts are of such a length that they may be locked in a linear position when the ladder frame 6 is vertical. The struts may be unlocked and folded about their hinges to permit the ladder frame 6 to move to a horizontal position as shown in Figure 2. The hinges may pass over-dead-centre, or may be provided with locking sleeves. The hinges may be provided with a sprung locking catch. The struts act as retaining elements to retain the frame in the vertical operational position.

[0024] A square platform unit 14 is provided. One edge of the platform unit is provided with two clamping hooks, 15, 16 which can clampingly engage a rung of the ladder frame. The platform is provided with two locating struts 17, 18 which are pivotally connected to the under-surface of the platform and which terminate with clamping hooks 19, 20 which again can engage a rung of the ladder frame 6.

[0025] The platform may be mounted in position on the ladder frame with the clamping hooks 15, 16 provided on the platform engaged in the upper-most rung, and

the clamping hooks 19, 20 provided on the strut 17, 18 engaging the next adjacent rung. The platform is thus maintained in a horizontal position.

[0026] At each corner of the platform unit there is a fixed upstanding post 21, 22, 23, 24. Four supplementary posts 25, 26, 27, 28 are provided which may be mounted in the upper-most ends of the fixed posts. In this embodiment the four supplementary posts are provided as two pairs of posts, each pair of posts being interconnected by a cross-piece. The ends of the posts which are not interconnected by the cross-piece are each pivotally connected by an appropriate hinge to one end of a fixed upstanding post. The two posts, with the cross-piece, are thus of "n" form and may hinge from a lower retracted position to an upper extended position. The pairs of supplementary posts are interconnected by two chains 29.

[0027] It is to be appreciated that the platform may be mounted at alternate positions on the ladder frame, being positioned somewhat lower than the position illustrated in Figure 1. Figures 3 and 4 illustrate by way of example, such alternate positions.

[0028] The platform 14 extends over the area surrounded by the four castors 3 and thus the platform is stable. The castors may be provided with brakes to lock the castors firmly in position to prevent the platform from moving inadvertently.

[0029] When the platform is to be transported or stored, initially the entire platform 14 and the associated fixed posts 21-24 is removed from the ladder frame 6. The hinged struts 10, 11 are released so that the hinges 12, 13 may be hinged and the ladder frame 6 is then lowered to a horizontal position. The supplementary posts 25, 26, 27, 28 are hinged down relative to the fixed posts 21, 22, 23, 24 by the hinges 30. The platform may then be re-mounted on appropriate rungs of the ladder frame, using the clamping hooks so that the entire unit is compact and may be easily transported, as illustrated in Figure 8.

[0030] Whilst the invention has been described above with reference to one specific embodiment, it is to be appreciated that many modifications may be effected without departing from the scope of the invention.

[0031] Whilst, in the described embodiment, the platform is releasably connected to the ladder frame, it is envisaged that in one alternative embodiment the platform may be securely fixed to the frame which, in this embodiment, need not be a ladder frame. It is envisaged, therefore, that a range of platforms may be provided, each with a frame of a different size, but with the platform permanently mounted to the frame. The platform may be pivotally mounted to the frame, so as to be able to swing relative to the frame as the frame itself is moved from the vertical or upright position to the lower or horizontal position. This will become clear from the following description of the second illustrated embodiment of the invention.

[0032] Referring now to Figure 9 of the accompanying

drawings, an access platform of the second embodiment of the present invention, again comprises two spaced-apart base rails 41, 42, each end of each base rail being provided with a respective castor 43. Intermediate their ends, the base rails 41, 42 are interconnected by a transverse element 44 which is pivotally connected to the base rails 41, 42 so as to extend therebetween at a level below the plane in which the base rails 41, 42 themselves are located. Adjacent one end, the base rails 41, 42 are also interconnected by a further transverse element 45 which may again be pivotally connected to the base rails 41, 42 but which in the particular arrangement illustrated in Figure 9 is rigidly connected to the base rails 41, 42.

[0033] A pivotal support frame 46 is connected to and extends upwardly from the transverse element 45. The frame 46 comprises a pair of substantially parallel stiles 47, 48 which are interconnected near their upper ends by a transverse cross member 49. The lowermost end of each stile 47, 48 is, in the embodiment illustrated in Figure 9, pivotally mounted to the transverse element 45 such that the frame 46 is pivotally mounted to the support defined by the base rails 41, 42 and may be moved, as will become clear from the following description, from the substantially vertical operational position illustrated in Figure 9 to a substantially horizontal storage position illustrated in Figure 12. However, in an arrangement where the transverse element 45 is itself pivotally connected to the base rails 41, 42, then the stiles 47, 48 can simply be rigidly connected to the transverse element 45.

[0034] A hinged strut 50 is provided which has a hinge 51 at a centrally-located position. One end of the hinged strut 50 is connected to the first transverse member 44, and the other end of the hinged strut 50 is pivotally connected to the cross member 40 of the frame 46 at a point between the two stiles 47, 48.

[0035] The hinged strut 50 is of such a length that it may be locked in a linear or substantially linear position when the frame 46 is substantially vertical. The strut 50 may be locked and folded about its hinge 51 to permit the frame 6 to move to a horizontal position as shown in Figures 11 and 12. The hinge 51 may pass over-dead-centre or may be provided with a locking sleeve. The hinge 51 may be provided with a sprung locking patch. It should therefore be apparent that the strut 50 acts as a retaining element to retain the frame 6 in the substantially vertical operational position illustrated in Figure 9.

[0036] In this embodiment of the access platform, a further frame 52 is provided which takes the form of a ladder frame comprising a pair of parallel stiles 53, 54 which are interconnected by a plurality of transverse cross members such as rungs 55, 56. The two stiles 53, 54 of the further frame 52 are connected to the first transverse element 44 and hence the ladder frame 52 is also pivotally mounted and so can be moved, as will become clear, from the substantially vertical operational position illustrated in Figure 1 to a substantially horizon-

tal storage position as illustrated in Figure 12.

[0037] It should be appreciated that the first frame 46 and the ladder frame 52 are configured so that when they each adopt their respective vertical positions illustrated in Figure 9, the upper ends of the stiles are all spaced above the plane of the base rails 41, 42 by substantially the same distance. Because the first transverse member 44 extends below the base rails 41, 42, whereas the further transverse member 45 extends between the base rails 41, 42, this means that the stiles 53, 54 of the ladder frame 52 are slightly longer than the stiles 47, 48 of the first frame 46.

[0038] A square platform unit 57 is provided which is pivotally connected along one edge to the uppermost ends of the stiles 47, 48 of the first frame 46. The platform unit 57 is pivotally connected, along the opposite edge, to the uppermost ends of the stiles 53, 54 of the ladder frame 52.

[0039] At each corner of the platform unit 57, there is an outwardly-directed sleeve or socket 58. Each sleeve or socket 58 slidably and releasably receives the lowermost end of a respective upstanding post 59, 60, 61, 62. In this embodiment, the four upstanding posts 59, 60, 61, 62 are provided as two pairs of posts, each pair of posts being interconnected by an upper cross-piece 63, 64 and a lower cross-piece 65, 66. The posts 59, 62, which are not interconnected by the aforementioned cross-pieces are interconnected by a guard frame 67 which comprises a pair of horizontal members and a substantially vertical bracing member therebetween.

[0040] As illustrated most clearly in Figure 10, the other two upstanding posts, 60, 61 which are not interconnected by cross-members 63, 64, 65 or 66 can be selectively interconnected via an openable gate 68 which takes the form of a frame which is pivotally connected to one of the upstanding posts 60 and which is releasably connectable (via an open sleeve or bracket 69) to the other upstanding posts 61. It will be seen that the openable gate 68 is provided to selectively interconnect the two upstanding posts which are located on either side of the ladder frame 52. This means that the ladder frame 52 can provide a convenient access ladder to the raised platform 57. A person can simply access the platform 57 by climbing up the ladder frame 52 and then, when the person is standing on the platform 57, the gate 68 can be closed.

[0041] In the same way as in the previously-described embodiment of Figures 1 to 8, it should be appreciated that the platform 57 of this embodiment again extends over the area surrounded by the four castors 43 thus ensuring that the complete access platform is stable. The castors 43 may be provided with brakes to lock the castors into position to prevent the platform from moving inadvertently.

[0042] When the platform is to be transported or stored, the hinged strut 50 is initially released so that the hinge 51 may be hinged and the first frame 46 and the ladder frame 52 are then both lowered towards re-

spective substantially horizontal storage positions.

[0043] Figure 11 illustrates the hinge strut 50 being hinged in this manner and it will be seen that as the frames 46, 52 move towards their substantially horizontal positions, the platform unit 57 remains substantially horizontal.

[0044] FIGURE 12 illustrates the access platform in a position in which the strut 50 has been folded completely in two about its hinge 51. In this position, it will be seen that the stiles 47, 48 of the first support frame 46 lie within the base rails 41, 42 and the cross member 49 lies substantially adjacent the first transverse element 44. The platform 57 lies on top of the substantially horizontal ladder frame 52. It will therefore be appreciated that the platform unit 57 has been lowered from its raised position illustrated in Figures 9 and 10 to a position in which it is spaced only a few inches above the ground.

[0045] When the platform has been folded down to the configuration illustrated in Figure 12, the two pairs of up-standing posts 59, 60 and 61, 62 can then be lifted upwards so that their lower ends become disengaged from the respective sleeves or sockets 58. In this way, the two pairs of posts become completely disengaged from the platform unit 57 (as illustrated in Figure 13) and can then simply be placed on top of the folded structure as illustrated in Figure 14 so that all components of the access platform adopt a very low profile configuration which is suitable for storage or easy transport of the arrangement.

[0046] In another modification of the invention the platform is slidably connected to the frame and is thus permanently attached to the frame, thus minimising the risk of the frame and the platform inadvertently becoming separated. The frame may thus be slid between predetermined positions, the frame being held in a predetermined position by means of a securing element such as a bolt or pin which may pass through co-aligned apertures formed in the platform and in the frame.

[0047] In the present Specification "comprises" means "includes or consists of" and "comprising" means "including or consisting of".

[0048] The features disclosed in the foregoing description, or the following Claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

Claims

1. An access platform, the access platform comprising a support, a pivotable frame pivotally mounted to the support and moveable between a substantially horizontal storage position and a substantially vertical operational position, at least one retaining ele-

ment being provided to retain the frame in said operational position, a platform unit being provided, the platform unit being configured to engage the frame when the frame is in said operational position so as to adopt an elevated position relative to said support.

2. A platform according to claim 1, wherein said frame comprises a pair of substantially parallel stiles and at least one cross-member extending between the stiles.
3. A platform according to claim 2, wherein said frame is a ladder frame comprising a plurality of said cross-members in the form of rungs.
4. A platform according to any preceding claim, wherein the or each said retaining element comprises a hinged strut pivotally connected at one end to the frame and pivotally connected at its other end to the support.
5. A platform according to claim 4, wherein the or each said strut is connected to the frame at a point intermediate the ends of the stiles.
6. A platform according to claim 4, wherein a single said retaining element is provided, the retaining element being pivotally connected to one of the or each said cross-members of the frame.
7. A platform according to any preceding claim, wherein the platform unit is provided with posts at its four corners.
8. A platform according to claim 7, wherein said posts are fixed to the platform unit.
9. A platform according to claim 8, wherein supplementary posts are provided which are engageable with the fixed posts to form a guard on the platform.
10. A platform according to claim 7, wherein the posts are removable from the platform unit.
11. A platform according to claim 3 or any preceding claim dependant thereon, wherein the platform unit is provided with releasable fastening elements configured to engage releasably rungs of the ladder frame to mount the platform unit to the ladder frame in a substantially horizontal position.
12. A platform according to claim 11, wherein one side edge of the platform unit is provided with a plurality of clamping hooks to engage a selective rung of the ladder frame, and struts are provided connected to the underside of the platform unit which are provided with engagement elements to engage another

rung of the ladder frame.

13. A platform according to claim 12, wherein the struts are pivotally mounted to the underside of the platform and are provided with clamping hooks to engage the said rung of the ladder frame. 5
14. A platform according to claim 2, having a second frame in addition to said pivotable frame, the second frame being a ladder frame comprising a pair of substantially parallel stiles and a plurality of rungs, wherein both of said frames are pivotally mounted to said support. 10
15. A platform according to claim 14, wherein said platform unit is pivotally connected to both of said frames. 15

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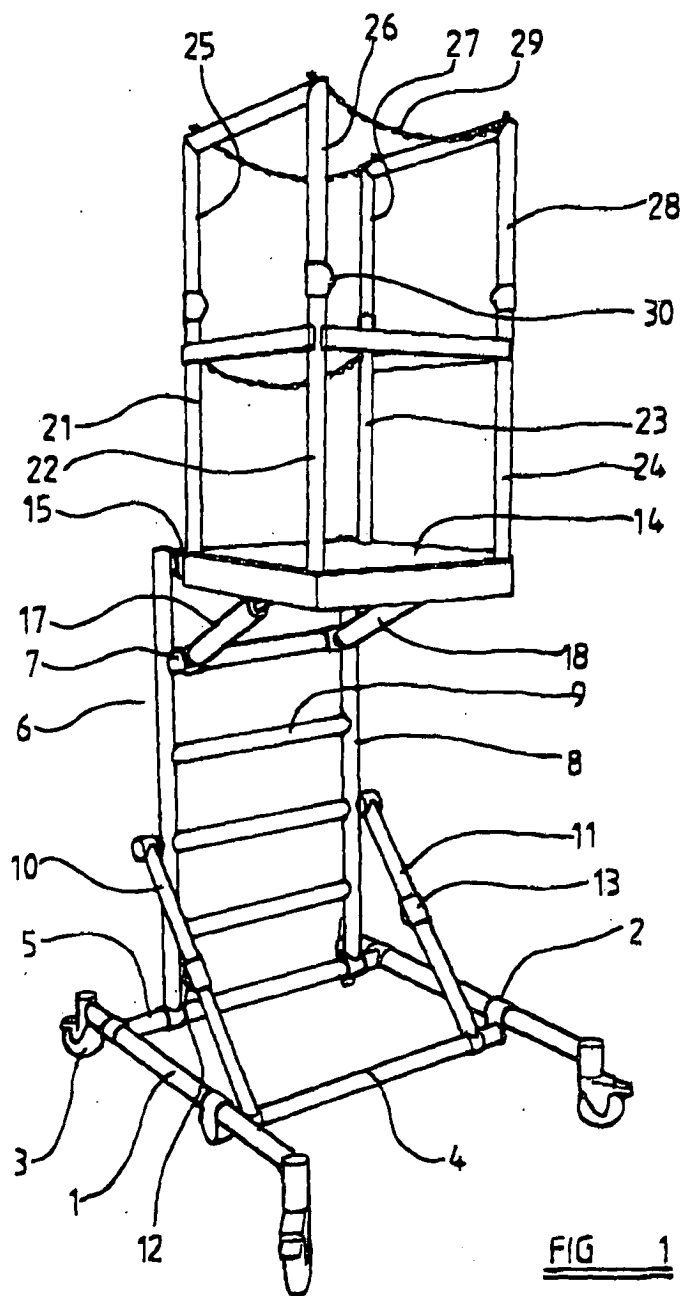
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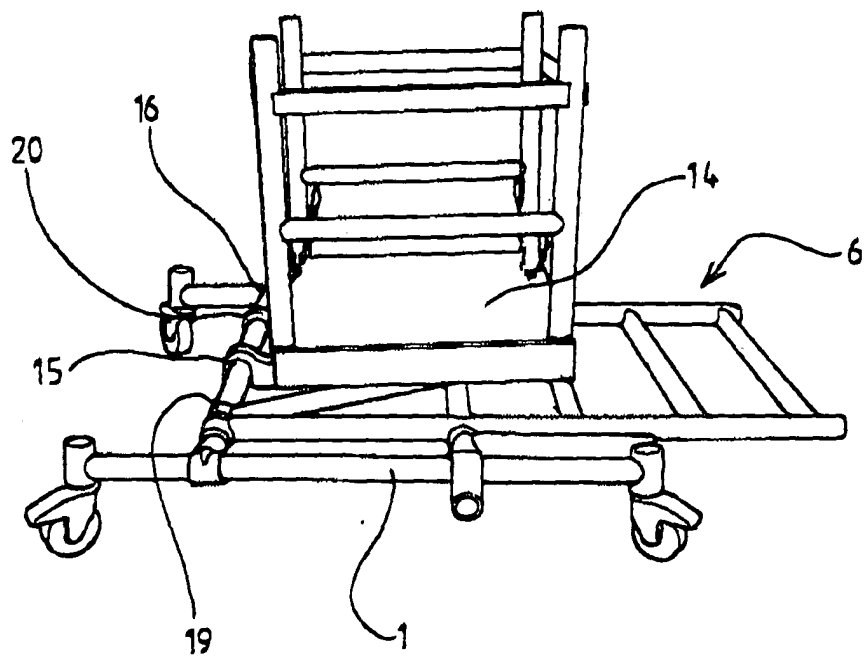


FIG 2

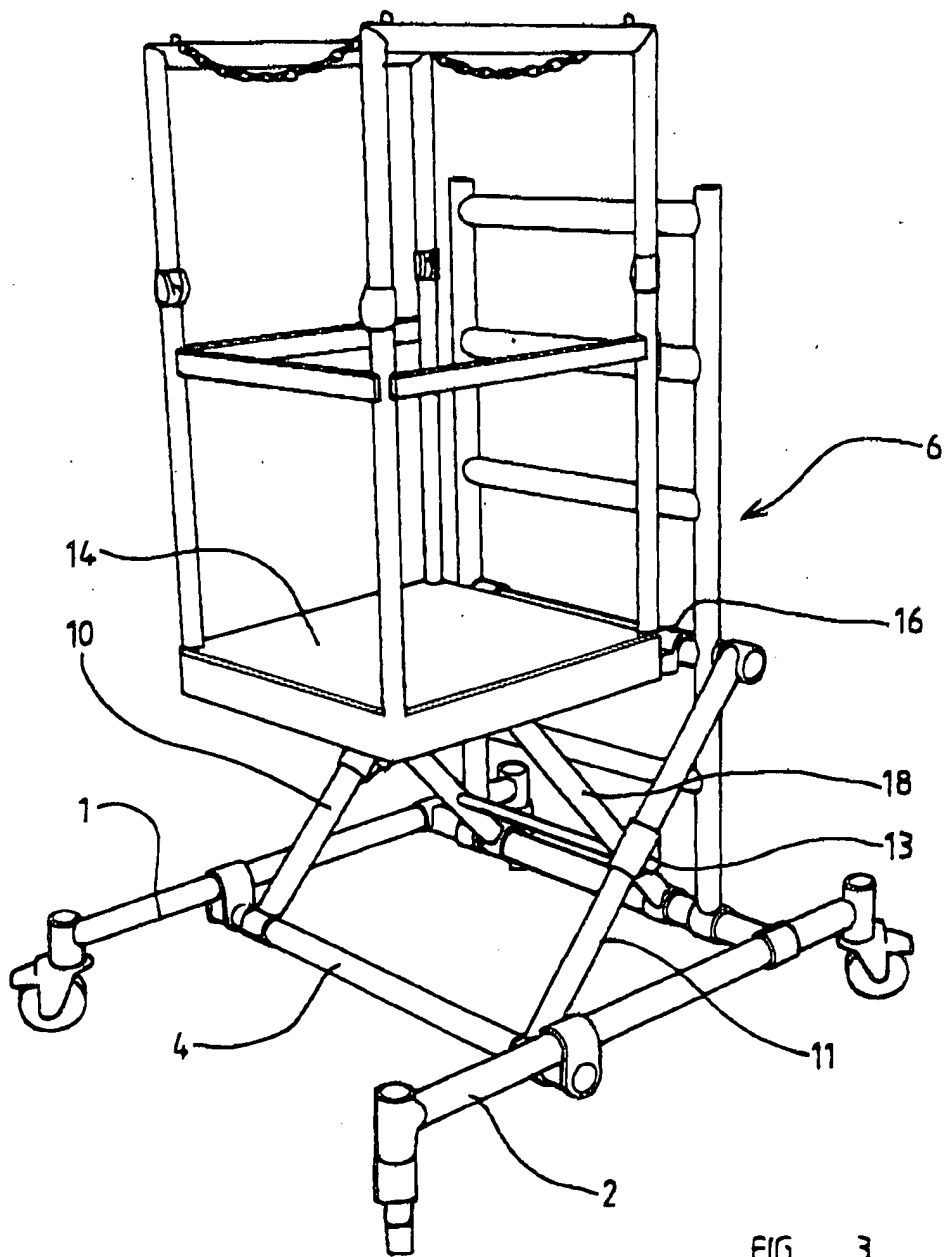
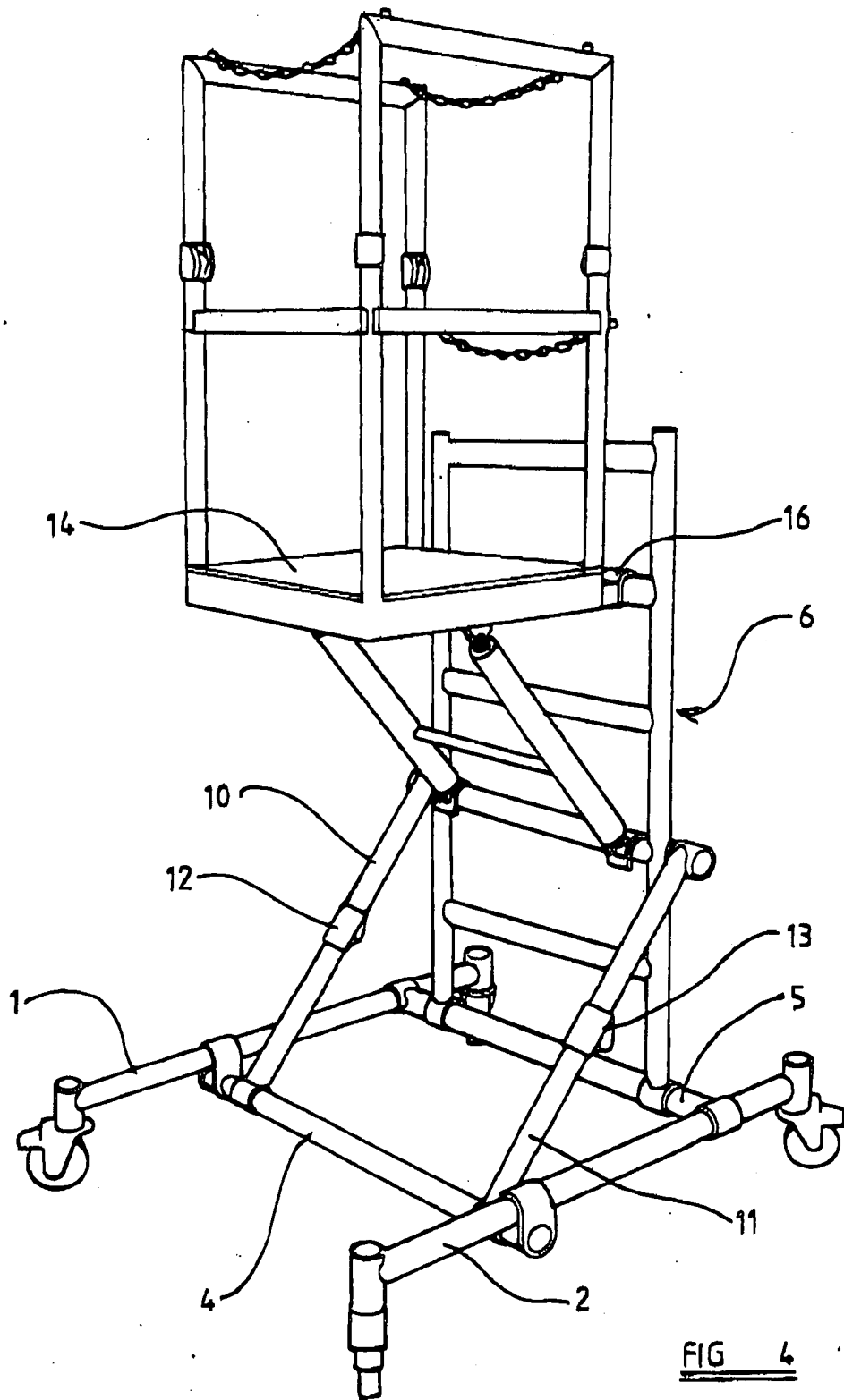


FIG 3



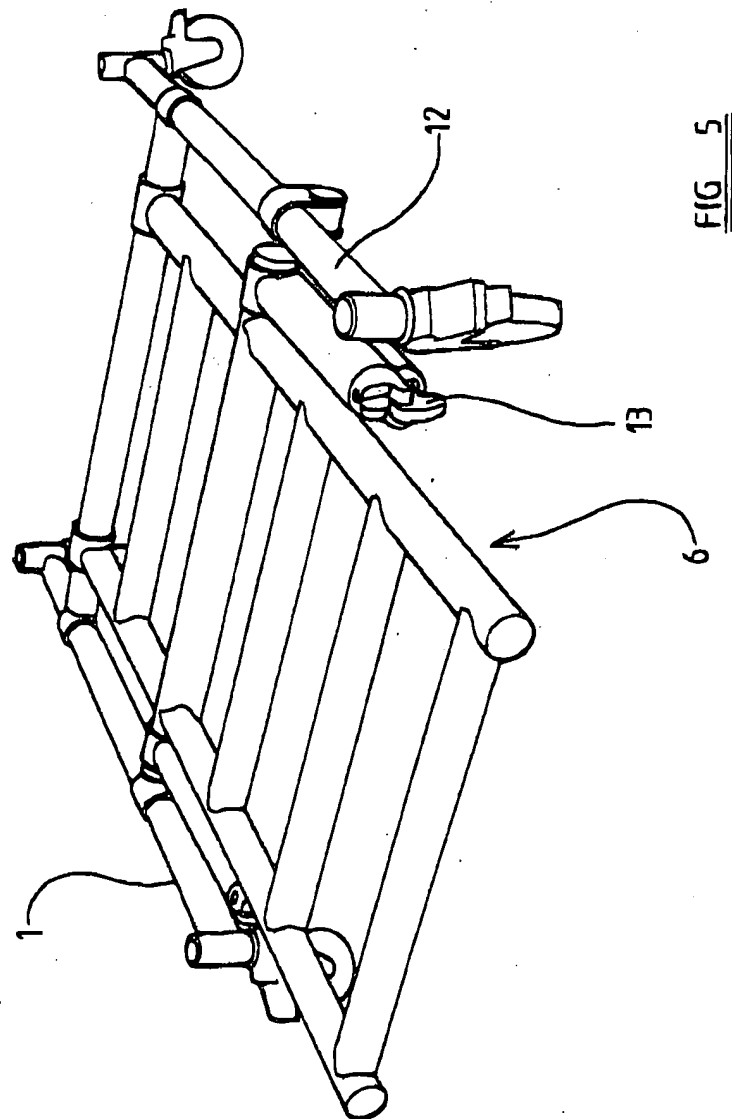
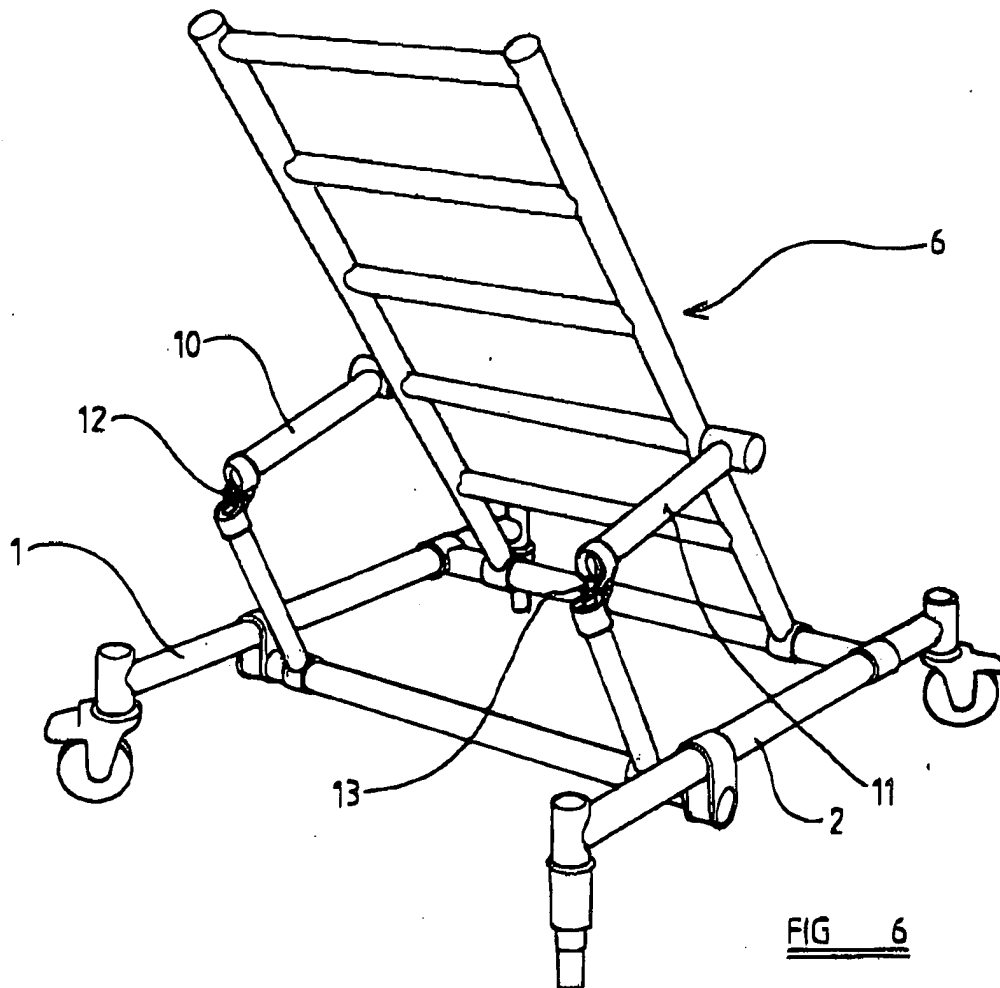
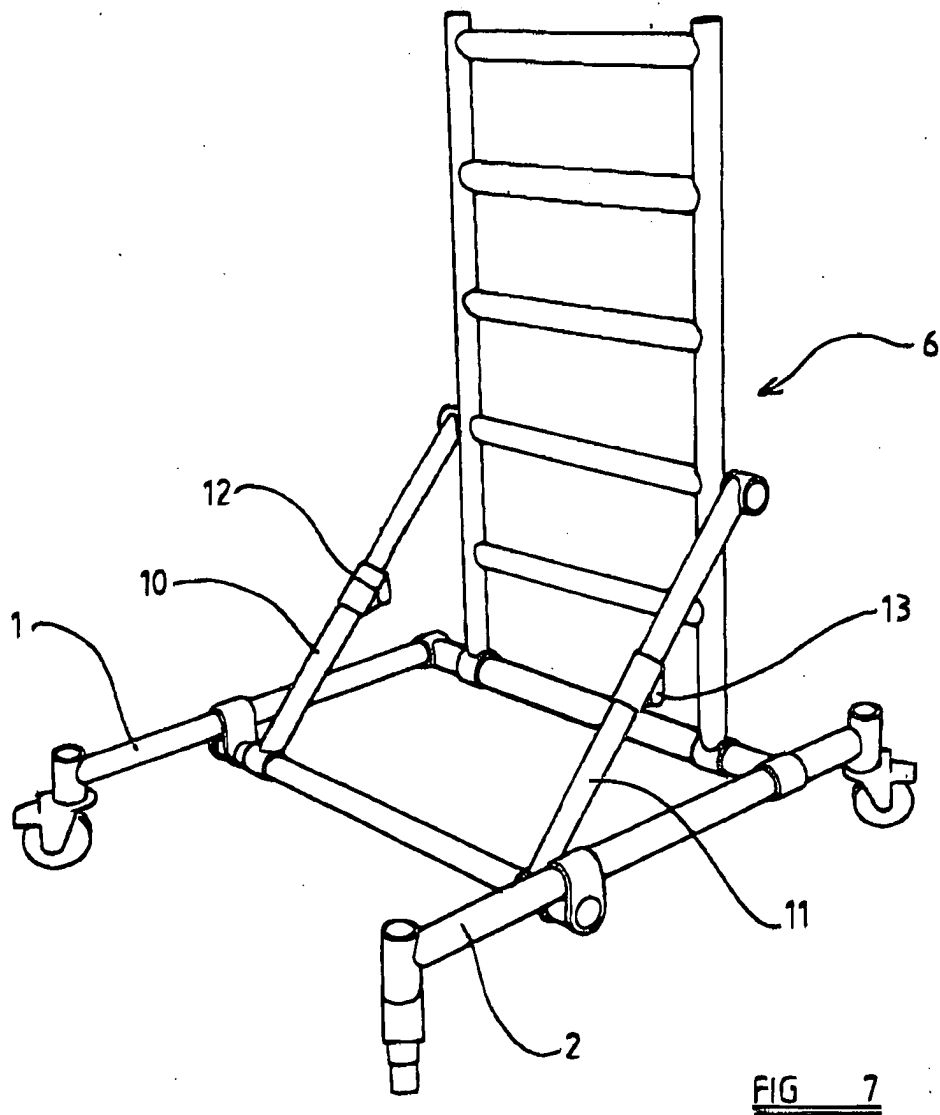


FIG 5





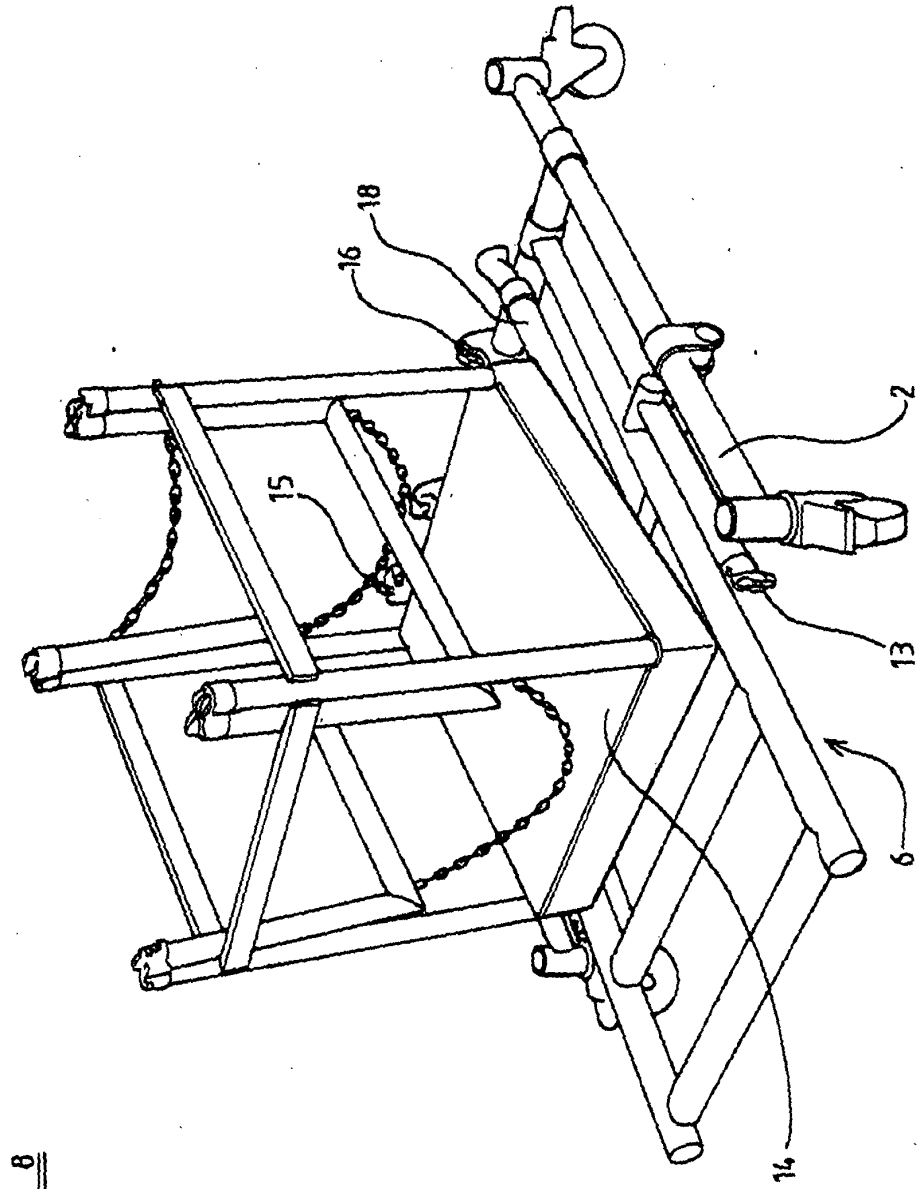
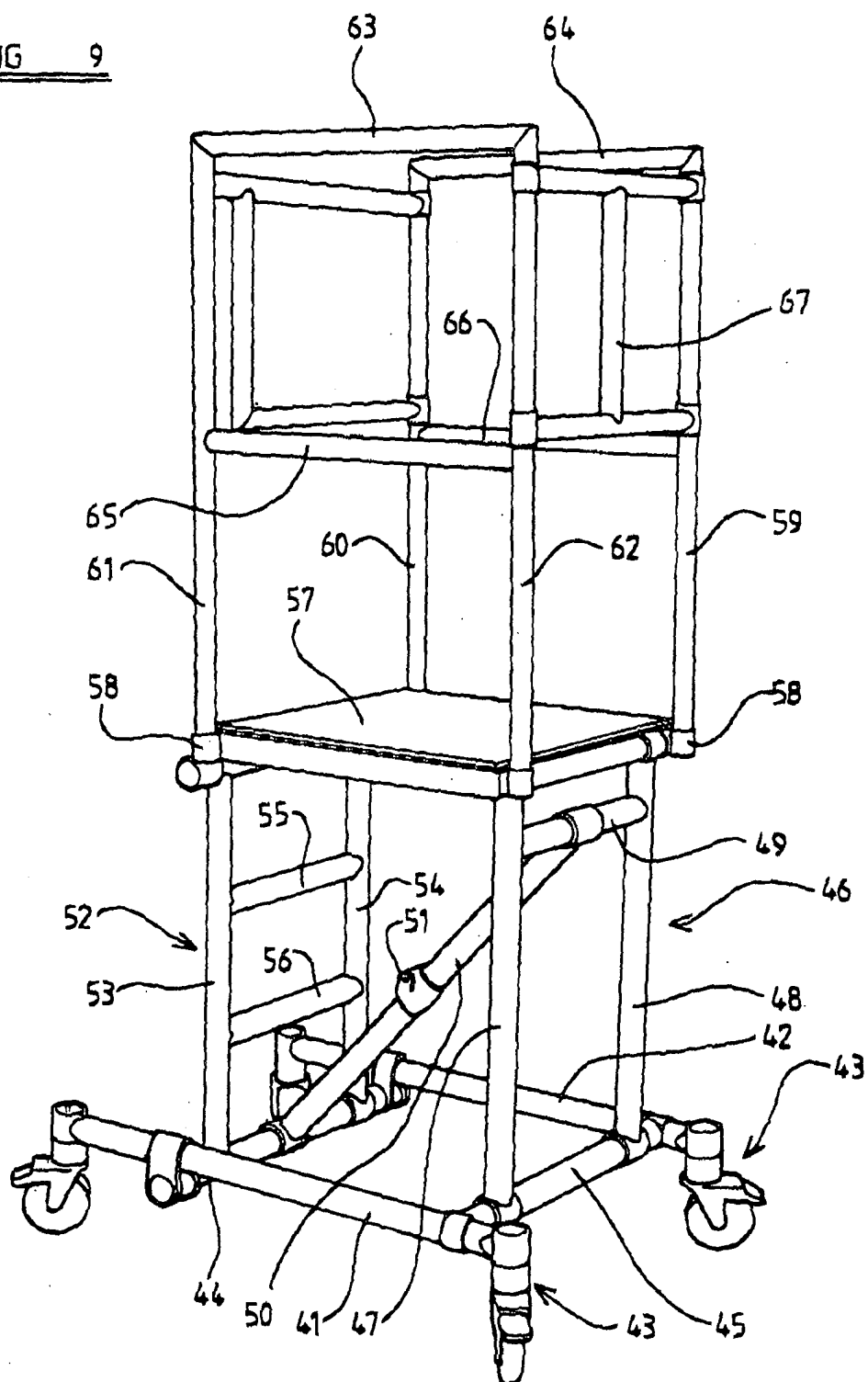


FIG. 8

FIG 9



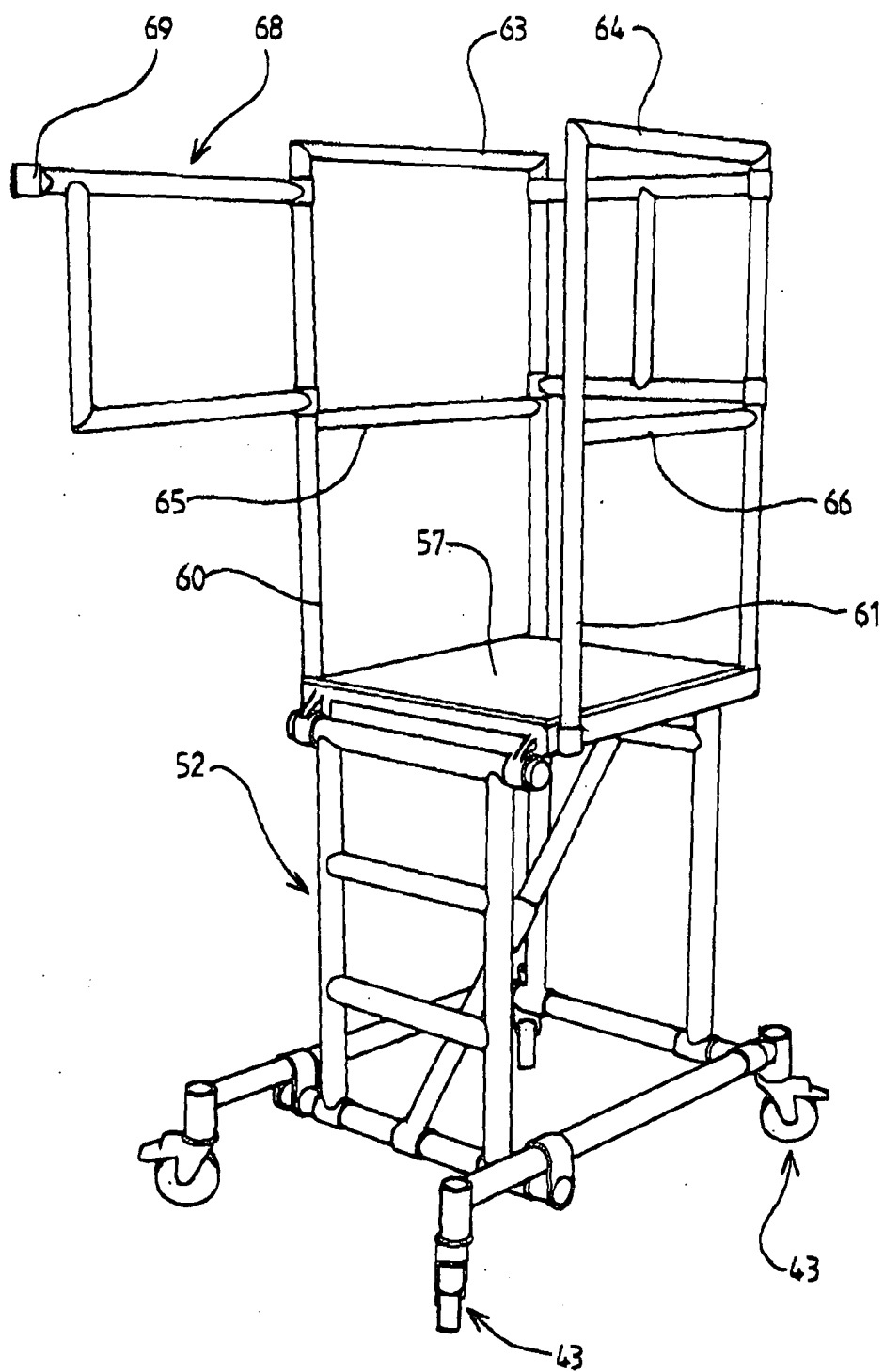
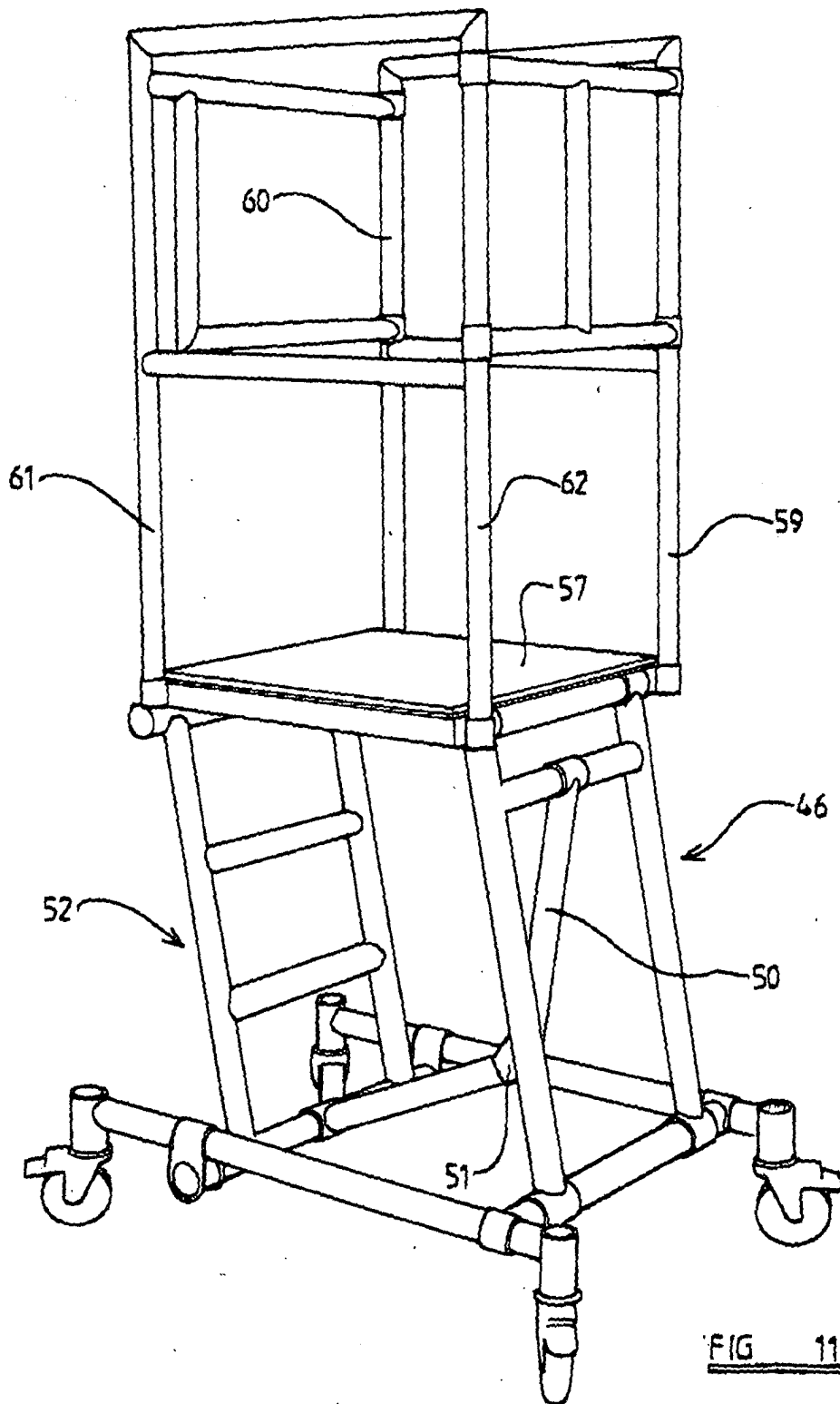


FIG 10



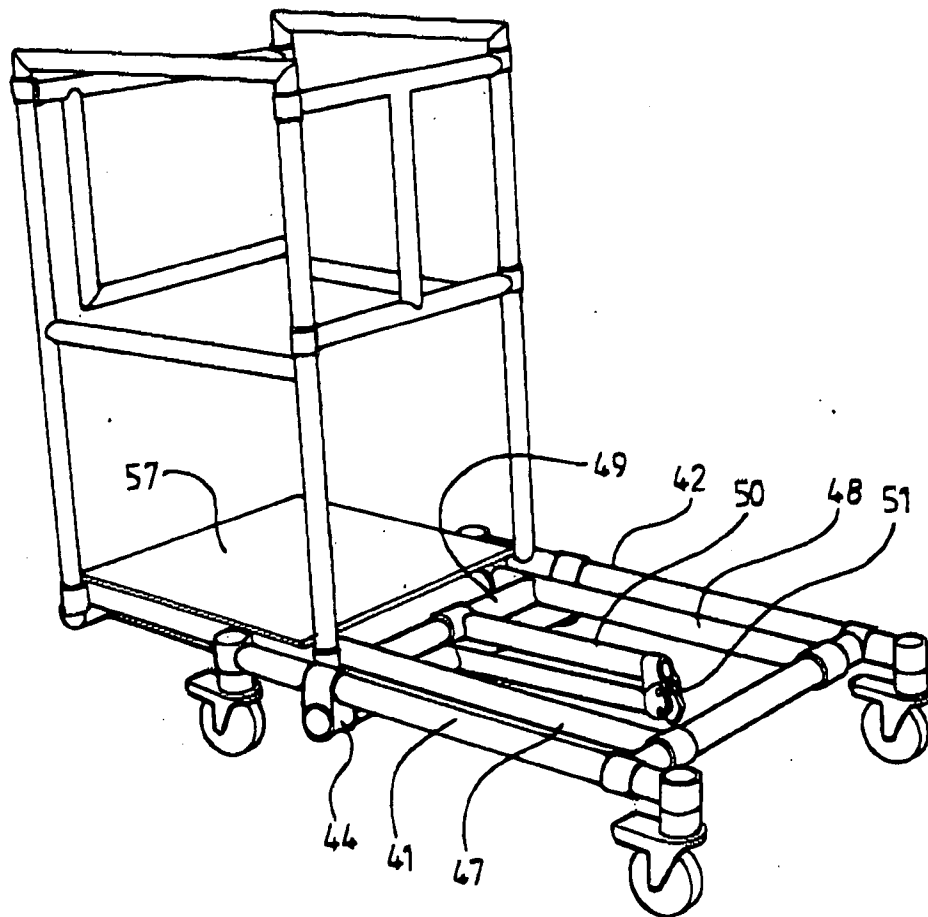


FIG 12

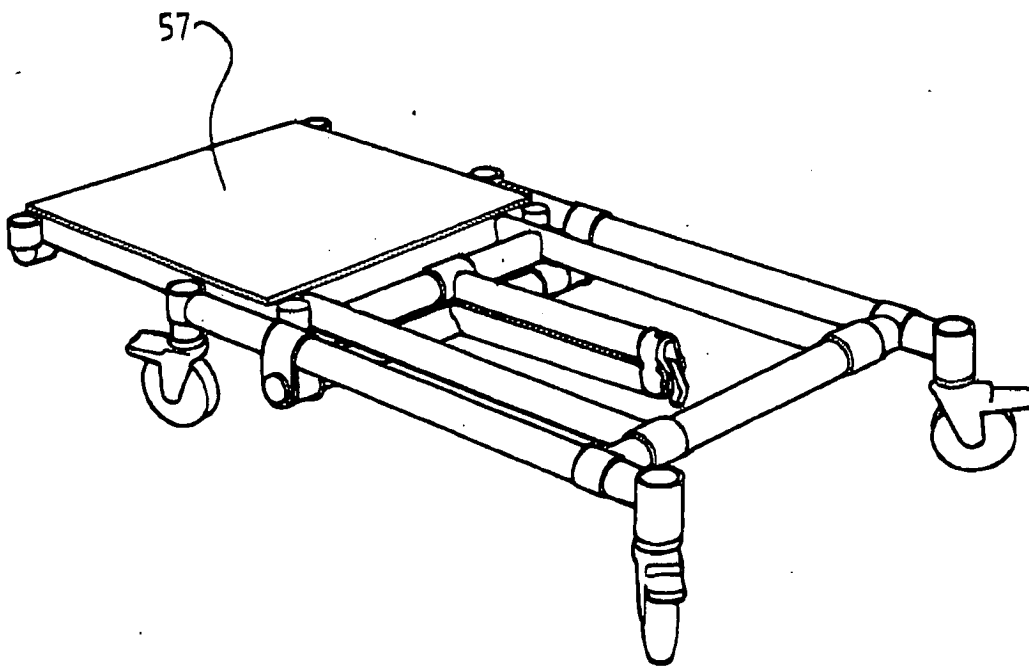


FIG 13

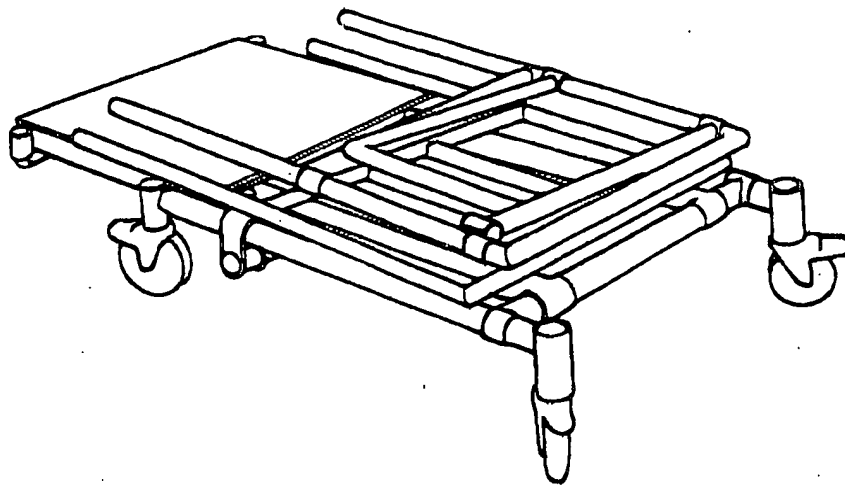


FIG 14