

[54] **BUILDERS' STAGING**
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[57] **ABSTRACT**
The invention provides a frame type staging for builders having at least one end frame which incorporates a vertical ladder located nearer to one side than the other and provided with anchor rails between the ladder stiles and the frame uprights, which anchor rails can carry struts or other parts.

5 Claims, 4 Drawing Figures

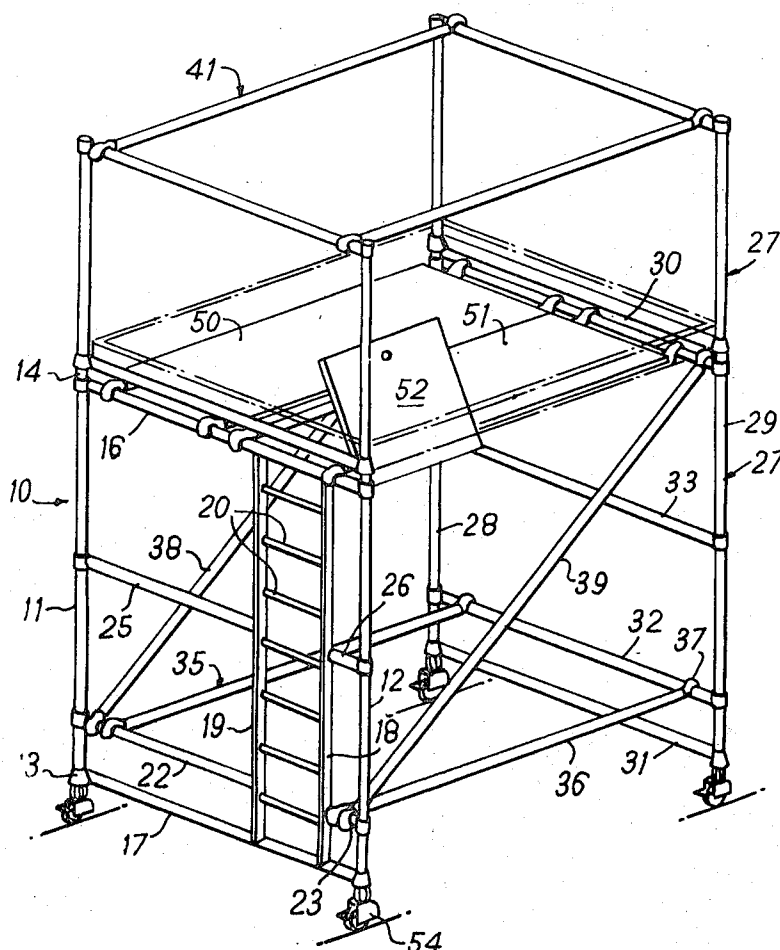
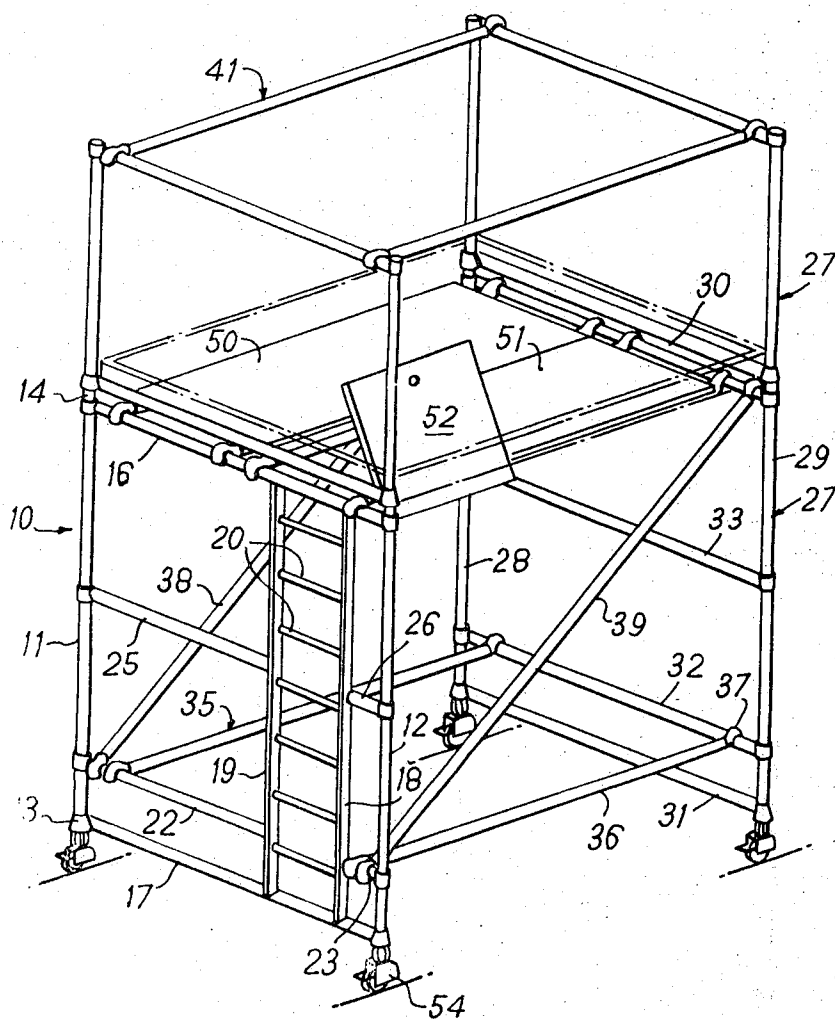
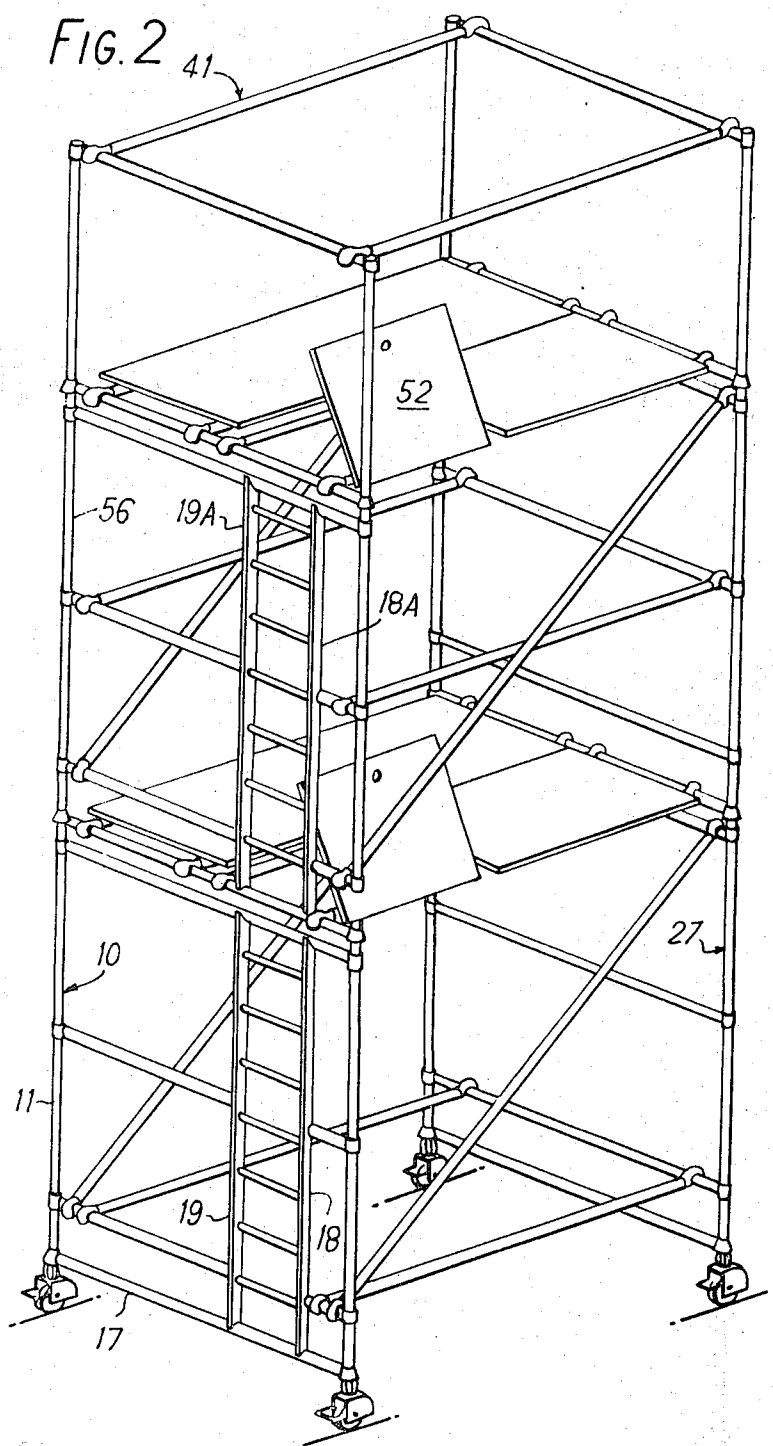
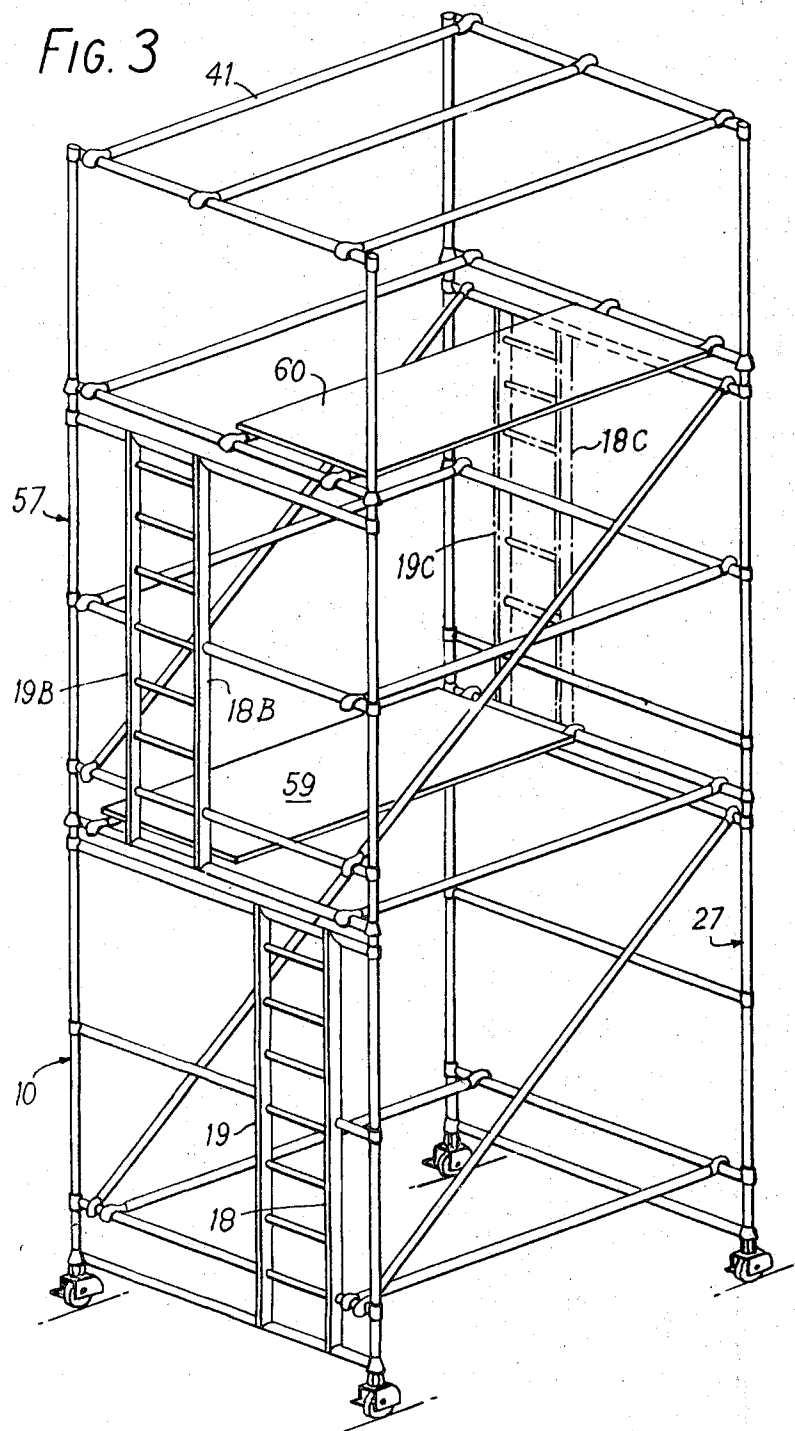
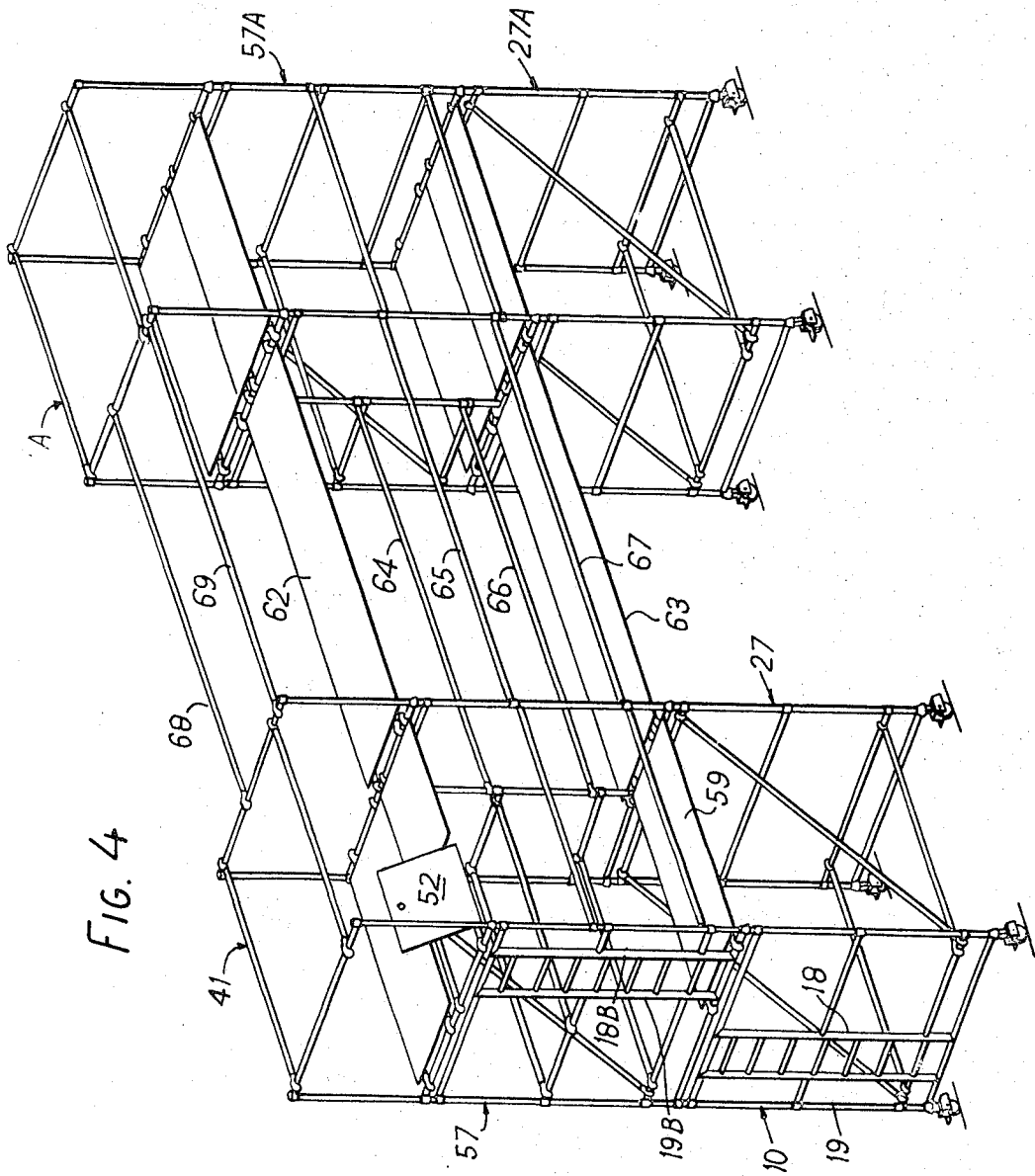


FIG. 1









BUILDERS' STAGING

This invention relates to frame type staging or scaffolding of the kind which can be transported in the form of separate frames with ancillary items such as bars and platforms and can be readily assembled on site into various shapes and sizes to suit the building, aircraft or other structure which the workmen are engaged on.

One form of staging involves units each comprising frames pivotally connected together so as to be collapsible and an example of this type is disclosed in the specification of our U.S. Pat. No. 894,259. These units are usually supplied in a single height.

Another form of staging commonly called "span type" involves separate frames which are usually supplied in various heights to provide greater flexibility in constructional shapes.

In either type it is necessary to provide ladders for the workmen to walk up one unit to the next. While it is possible for a workman to climb up the horizontal bars of the frames this is not acceptable since these bars are usually spaced apart more than one foot e.g. fifteen to seventeen inches whereas it is generally considered necessary for ladders to have the axes of rungs spaced at nine or ten inches apart. It would not be economic to space the horizontal bars of the frames so close together. Accordingly ladders have been provided either as part of the collapsible unit as in specification 894,259 or as separate ladders provided at the top and/or bottom with hooks or like means of attachment to bars of the frames so as to lie within the structure between opposed frames at a suitable angle.

According to the present invention a frame comprises two uprights spaced apart by top and bottom cross-bars, a ladder including two stiles and rungs, the stiles being parallel to the uprights and fixed top and bottom to said cross-bars, the ladder being located nearer to the first of said uprights, than to the other, at least the horizontal anchor bar connecting the ladder to said other upright and located above the bottom cross-bar. Further bars or struts may be provided but these are generally unnecessary because the ladder makes it no longer necessary for a workman to climb up the widely spaced rails.

At least one of the anchor bars may be spaced 9 to 15 inches above the bottom cross-bar so as to be high enough to allow for fixing a toe-board and low enough to serve as an anchor for one end of a diagonal strut which can be detachably fixed to it and to the top cross-bar of the adjacent frame.

The cross-bars may be located at the extreme ends of the uprights.

The further bar may be from 2.5 to 3.5 feet above the bottom cross-bar to serve as a handrail.

The frames with ladders are normally only required at the outside of a staging structure and other frames may consist of similar uprights and cross-bars, an anchor bar and a handrail at the same heights as in the ladder-frame.

The ladder-frame may be fixed to the adjacent frame by means of horizontal connecting bars attached to the anchor bars, and diagonal struts attached at their lower ends to the anchor bars of the ladder-frame and at their top ends to the top cross-bar of the adjacent frame.

A platform may be attached to the lower cross-bars of adjacent frames above a ladder-frame on the oppo-

site side of the frame to the ladder so that a workman can walk up the ladder and step on to the platform.

A constructional form of the invention is illustrated by way of example in the accompanying diagrammatic drawings in FIGS. 1 to 4 are perspective views of stagings made in accordance with the invention.

A ladder-frame 10 comprises two uprights 11, 12 each having a socket 13 at the lower end and a peg or spigot 14 at the upper end. These uprights and all the other parts of the staging are made of aluminium (or aluminium base alloy) or steel tubes. Upper and lower horizontal cross-bars 16, 17 are welded to the extreme ends of the uprights leaving only the spigots 14 protruding.

Two tubular ladder stiles 18, 19 are disposed parallel to the uprights and located in one half of the frame and welded direct (or by special castings) to the cross-bars 16, 17. The stile 18 is near the upright 12 and the stile 19 is spaced widely from the upright 11. The stiles carry rungs 20 at about nine inch intervals.

An anchor bar 22 is located parallel to the cross-bar 17 and about ten to fourteen inches above it and welded to the stile 19 and upright 11. A corresponding anchor bar 23 is located in alignment with the bar 22 and is welded to the stile 18 and upright 12.

A further anchor bar serving also as a handrail 25 is arranged parallel to the cross-bars about 3 feet above the lower cross-bar and is welded to the upright 11 and stile 19. A similar handrail 26 is disposed in alignment with the handrail 25 and is welded to the stile 18 and upright 12.

Another frame 27 has uprights 28, 29, cross-bars 30, 31 and has an anchor bar 32 and handrail 33 at the same heights as the bar 22 and rail 25 but extending across between the uprights i.e., without a ladder intervening. This frame could however have a ladder if desired.

Horizontal connecting bars 35, 36 have spring-catch hooks 37 by which they are fixed on the anchor bars 22, 23, 32. Similarly diagonal struts 38, 39 have their lower ends attached to the anchor bars 22, 23 and their upper ends attached to the upper cross-bar 30.

Platforms 50, 51 can be similarly fixed to the lower cross-bars about each ladder frame and to one side of the ladder so that a workman can step off the ladder on to the platform. Part 52 of the platform 51 is pivoted to move upwards so that a workman can climb up the ladder inside the staging and step on to the fixed part of the platform or on to the adjacent platform 50. The lower ends of the uprights carry castors 54.

In FIG. 2 there is shown a staging 10 upon which is mounted a similar staging unit 56 with the handrail structure 41 on top of unit 56. The connection is made by pegs or spigots such as 14 engaging in sockets such as 13. The stiles of the upper ladder are referenced 18A, 19A and this ladder is directly above ladder 18, 19 forming a continuation of it in the same vertical plane.

FIG. 3 shows a similar staging but in this case the upper frame 57 and its ladder 18B, 19B on the opposite side of the frame compared with ladder 18, 19 of frame 10. Two platforms 59, 60 are provided each having a width less than the width of the frames. The platform 59 is located to one side of the lower ladder 18, 19 at the upper end thereof where the user stands to mount the upper ladder. The platform 60 is at the upper end of the upper ladder to one side thereof. If desired the

upper ladder 18B, 19B can be replaced by a ladder 18C, 19C at the opposite end of the staging to the lower ladder.

FIG. 4 shows a staging apparatus comprising two stagings or towers of which the lefthand one is the same as FIG. 3 and the other is similar (having stagings 27A, 57A and handrails 41) but without ladders although it could have ladders if desired. The two towers are spaced apart and connected together by platforms 62, 63 and by bars 64, 65, 66, 67, 68, 69. The ladders are located at one end of the apparatus. In this case however the ladders 18, 19 and 18B, 19B are on opposite sides of the frames compared with structure of FIG. 3.

The apparatus can of course be expanded in any direction vertically or laterally by using more frames, connecting bars and platforms.

I claim:

1. A staging unit comprising first and second vertical frames, each having two uprights spaced apart and connected together by horizontal cross-bars; one of said cross-bars being fixed to the uprights adjacent their lower ends while the other cross-bar is fixed to the uprights adjacent their upper ends; a vertical ladder consisting of two vertical stiles and rungs fixed to the stiles at frequent intervals, said stiles being fixed to the upper and lower cross-bars of the first of said frames, both of said stiles being located nearer to the first of the two uprights of said first frame than to the other, a first horizontal anchor (23) bar fixed to the first upright and to the adjacent stile thereto near the lower cross-bar, a second horizontal anchor bar (22) fixed to the other upright of the first frame and to the stile adjacent thereto also near the lower cross-bar, said anchor bars being nine to fifteen inches above the lower cross-bars, a third anchor bar (25) fixed to said other upright and to the stile adjacent thereto at a distance of 2.5 to 3.5 feet above the lower cross-bar, a fourth anchor bar (26) in alignment with the third anchor bar, said third and fourth anchor bars being located on opposite sides of the ladder and fixed to the stiles respectively, two frame connecting bars (36, 39) both attached at one end of each to the first anchor bar and attached at their other ends to two cross-bars respectively of the second vertical frame, and two frame connecting bars (35, 38) attached at one end of each to the second anchor bar and attached at their other ends to said two cross-bars respectively of the second vertical frame.

2. A staging suitable for builders comprising at least two stage units, each unit comprising two end frames, and bars connecting the end frames together, each frame having two vertical bars at opposite ends thereof connected together by upper and lower cross-bars, means for locating the lower ends of the vertical bars of the upper frames in alignment with the vertical bars of the lower frames respectively; at least one of said lower frames being a ladder carrying frame, said ladder consisting of two vertical stiles and rungs fixed to the stiles at frequent intervals close enough to be acceptable as a ladder, said stiles being fixed to the upper and lower cross-bars of the ladder carrying frame, both said stiles being located nearer to the first of the two vertical

bars of said frame than to the other of said vertical bars, at least two horizontal anchor bars of said ladder carrying frame in alignment with each other on opposite sides of the ladder and fixed to the vertical bars respectively and fixed to the stiles respectively and located between the upper and lower cross-bars; at least two horizontal platforms disposed side by side at the upper end of the ladder, each platform comprising a pair of bars having hook-like ends detachably connected to two of said cross-bars of opposed frames of one of the units, the hook-like ends at one end of the platform being located on either side of the two stiles while the hook-like ends at the same end of the other platform are both located between the first stile and the vertical bar of the ladder carrying frame which bar is remote from the ladder, one of said platforms having a movable part adjacent to the ladder which can be moved up to enable the user to claim the ladder from inside the staging.

3. A frame as claimed in claim 2 wherein the ladder carrying frame has at least one additional anchor bar such that two of the three anchor bars are on one side of the ladder attached to said vertical bar remote from the ladder and the third being connected to the vertical bar adjacent to the ladder, all parallel to the cross-bars, said third anchor bar and one of the other two anchor bars being located near to the bottom cross-bar.

4. A staging as claimed in claim 2 wherein one of the upper frames has a ladder similar to the ladder of the lower frame and in vertical alignment therewith, and another pair of platforms similar to those at the upper end of the lower ladder but disposed at the upper end of the upper ladder.

5. A staging suitable for builders comprising at least two stage units, each unit comprising two end frames, and bars connecting the end frames together, each frame having two vertical bars at opposite ends thereof connected together by upper and lower cross-bars, means for locating the lower ends of the bars of the upper frames in alignment with the vertical bars of the lower frames respectively; one of said frames of each unit being a ladder-carrying frame; each said ladder comprising two vertical stiles and rungs fixed to the stiles at frequent intervals close enough to be acceptable as a ladder, said stiles being fixed to the upper and lower cross-bars of its frame, both stiles being located nearer to the first of two vertical bars of its frame than to the other of said vertical bars, the two ladders being adjacent opposite sides of the staging, each ladder carrying frame having two horizontal anchor bars in alignment with each other on opposite sides of the adjacent ladder and fixed to the vertical bars respectively and fixed to and located between the upper and lower cross-bars; and two horizontal platforms each having a pair of bars having hook-like ends detachably connected to two of said cross-bars of opposed frames, one platform being located at the upper end of the lower ladder to one side thereof and the other platform being located at the upper end of the upper ladder to one side thereof.

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