

Sept. 8, 1959

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2,903,282

PORTABLE SCAFFOLDING

Filed June 27, 1958

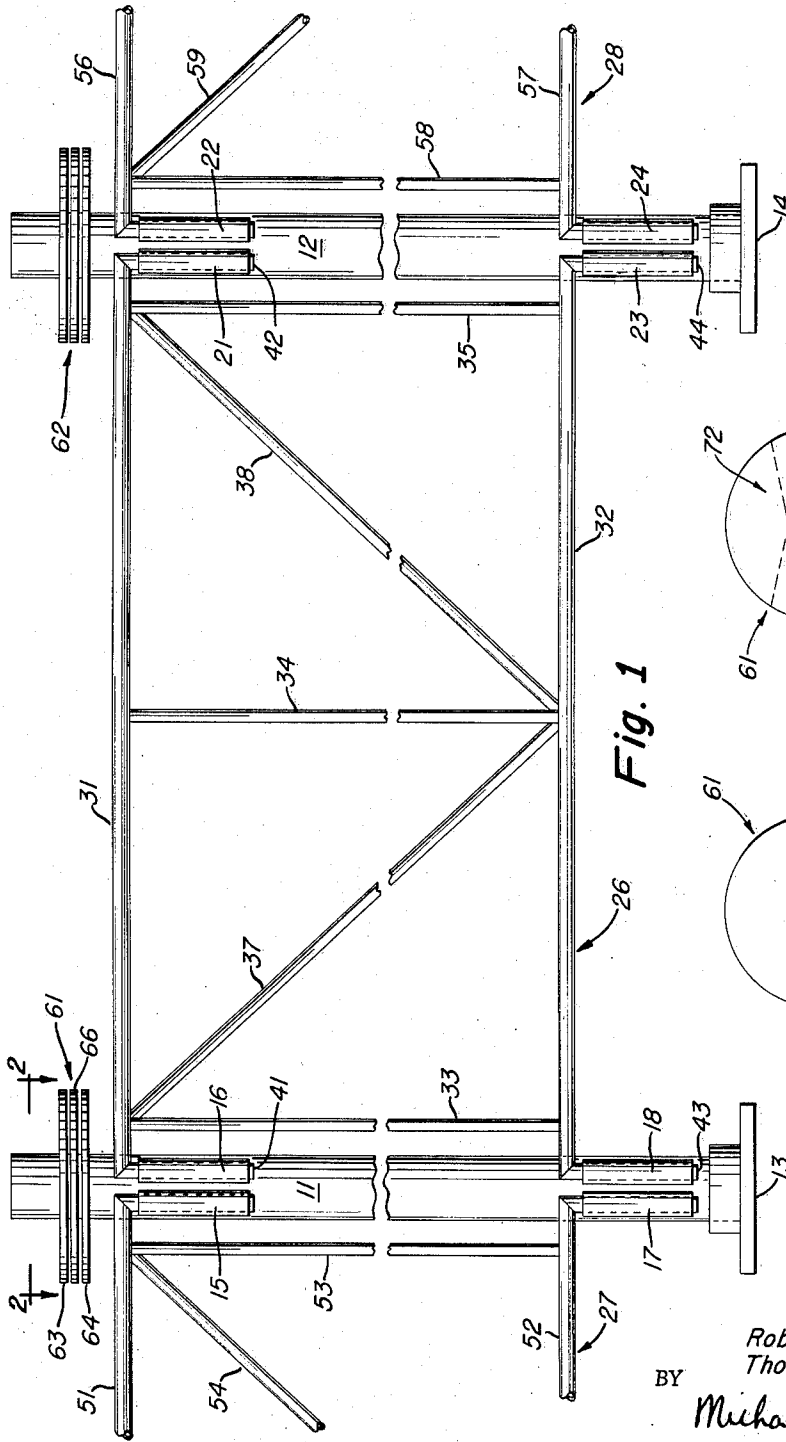


Fig. 1

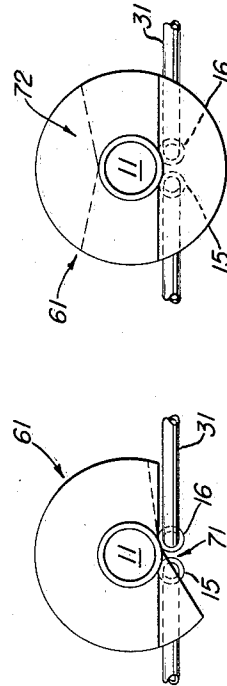


Fig. 2

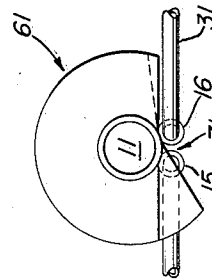


Fig. 3

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Application June 27, 1958, Serial No. 745,119

2 Claims. (Cl. 287—53.5)

This invention relates to scaffolding, particularly demountable scaffolding readily moved from place to place.

It is convenient to have portable scaffolding which is readily demountable into individual pieces or sections. A particularly common type of portable scaffolding utilizes end frames with side frames for bracing purposes. The horizontal bars of the side frames are connected to the posts by means of pin-members fitting into tubular guides positioned on the post. In practice it has been found that the side frames are often accidentally demounted during use with consequent weakening possibly disastrously so of the scaffold.

An object of the invention is a readily demountable scaffolding provided with a simple efficient safety device for preventing accidental separation of the posts and horizontal bracing members. Other objects will become apparent in the course of the detailed description.

Figure 1 shows an elevation view of side frame and parts of two other side frames and posts equipped with the safety device.

Figure 2 is a schematic plan view at 2—2 of the connection in safe position.

Figure 3 is a schematic plan view at 2—2 of the connection in safe-open condition.

The invention is described in connection with the figures which are schematic particularly with respect to the size of the posts and of the safety device. In Figure 1 the sectional scaffolding comprises spaced vertically disposed frames, only the posts 11 and 12 are shown. Posts 11 and 12 are upstanding members generally tubular in construction. The sectional scaffolding may consist of individual post and bracing members but herein sections comprise end frames and side frames. The end frames comprise two vertical upstanding posts such as 11 spaced apart which are usually rigidly connected with horizontal bars or pipes. In the case of individual post construction the rigid connection may be substituted by either frames of the type known as side frames herein or a number of individual demountably connected horizontal braces.

Posts 11 and 12 are provided with bases 13 and 14, respectively. Each post is provided with vertically disposed tubular guides affixed near each end of the post. In this embodiment post 11 is provided with tubular guides 15 and 16 near the upper end thereof and guides 17 and 18 near the lower end. Similarly post 12 is provided with tubular guides 21 and 22 at the upper end and guides 23 and 24 near the lower end. These tubular guides are preferably sections of tubing or pipe welded to the side of the post so as to be vertically disposed with respect to horizontal base line, i.e., the axis of the tubular guides is in the same plane as the vertical axis of the post. The tubular guides are positioned on the side of the post convenient to the direction in which the bracing member is to be connected.

The posts 11 and 12 of the corresponding end frame sections, not shown are maintained in upright position by a side frame 26 and partially shown side frames 27 and

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28. Side frame 26 comprises an upper horizontal brace member 31 and a lower horizontal brace member 32. (These may also be referred to as horizontal bracing members.) The horizontal brace members 31 and 32 are strengthened by the use of three vertical bracing members 33, 34 and 35. Further stiffening is provided in side frame 26 by means of diagonal bracing members 37 and 38. Side frames 27 and 28 are of similar construction. On the other hand the elaborate side frame construction may not be necessary and horizontal bracing members 31 and 32 may be sufficient for the particular structure. Or, three or more horizontal bracing members might be provided. It is to be understood that a tubular guide must be provided on each post for each horizontal member to be demountably (detachably) connected thereto.

Each horizontal brace member 31 and 32 has at each end a pin-member. Brace member 31 has pin-members 41 and 42; bracing member 32 has pin-members 43 and 44. Pin-members 41, etc. are vertically disposed with respect to the horizontal brace member and extend perpendicularly downward from the bracing member. Pin-members 41, etc. are adapted to fit into tubular guides 16, etc. It is preferred that the pin-members be a snug, smooth fit into the guide member. For convenience all guide members 15, etc. are of a standard size and all pin-members 41, etc. are of a standard size.

Side frame 27 is provided with horizontal bracing members 51 and 52, respectively, vertical bracing member 53 and diagonal bracing member 54. End frame 28 is provided with horizontal bracing members 56 and 57, respectively, vertical bracing member 58 and diagonal bracing member 59.

The pin-members are safetied against accidental withdrawal from the tubular guides by a device on the post above the tubular guide and the brace member connected thereto. The safety device may be positioned only over the upper guides on the post as shown at 61 on post 11 and 62 on post 12. Or, when individual horizontal brace members are used it is preferred that the safety device be positioned above each guide providing a connection between a post and a horizontal brace member. In this embodiment since a rigid side frame section is used it is necessary to provide only a safety device above the upper guides on each post to bar accidental withdrawal of pin-members from the guides. Safety device 61 and 62, respectively, comprise three ring-like plate members 63, 64 and 66. These ring-like plate members may also be described as washer members. Members 63, 64 and 66 are positioned concentrically on the post. The members 63, 64 and 66 are preferably of equal diameter; however, member 66 i.e. the middle washer or ring-like plate member may be slightly smaller than the upper member 63 and lower member 64.

Each of the washers 63, 64 and 66 are provided with a cut-away portion as shown in Figures 2 and 3. The cut-away portion extends from the inner periphery to the outer periphery of the washer. The exact size, i.e. area of the cut-away portion is determined by the number of tubular guides to be made safe. In this embodiment where safety device 61 bars withdrawal of two pin-members as shown on post 11 the cut-away portion on washers 63 and 64 is a straight line approximately at the tangent of post 11. The cut-away area of posts 63 and 64 shown as 71 in Figure 3 is aligned over guides 15 and 16. Washers 63 and 64 are rigidly affixed to post 11, preferably by spot welding.

The middle washer 66 is also provided with a cut-away portion designated 72 in Figure 2. This cut-away portion 72 may be of the same configuration as cut-away portion 71 of the upper and lower washers 63 and 64. Preferably cut-away portion 72 is sufficiently smaller

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than cut-away portion 71 that one guide remains safetied, for example, guide 15 in Figure 3 while the other guide is made free for withdrawal of the members, for example, guide 16 in Figure 3. Thus, when cut-away portion 72 of the middle washer 66 is brought into common alignment with the cut-away portions of the upper and lower ring-like members 63 and 64 free entry of a pin-member is afforded to the guide over which the cut-away portions are aligned. By rotating middle washer 66 sufficiently to take the cut-away area 72 out of common alignment accidental withdrawal of a pin-member is barred, for example, as shown in Figure 2.

The upper and lower washer 63 and 64 are in spaced vertical relation such that the middle washer 66 cannot be readily canted and jammed into the space. It is to be understood that upper and lower washers 63 and 64 primarily serve the purpose of hindering accidental rotation of the middle washer 66 into the aligned position. Thus, these upper and lower washers need not be true washers but may be any planar device which serves this same function.

Thus having described the invention, what is claimed is:

1. In a sectional scaffolding of the type comprising upstanding posts, vertically disposed tubular guides affixed near each end of said posts, and horizontal brace members for connecting two adjacent posts, a pin-member at each end of said brace, vertically disposed with respect to said brace and adapted to fit into a guide, thereby detachably connecting said brace and said post, the improvement comprising three ring-like plate members positioned concentrically on each post above a guide, each plate member being provided with a cut-away portion in the outer periphery thereof, two of said plates being rigidly affixed to said post in spaced relation to each other with the cut-away portions thereof aligned over said guide and the third plate being positioned between

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said other plates in rotatable condition about the axis of said post, whereby a pin-member may be inserted into the guide superposed by said plates, when the three cut-away portions are aligned and whereby said pin-member is safe from accidental withdrawal when the cut-away portions are out of common alignment by reason of deliberate partial rotation of said third-plate.

2. In a sectional scaffolding of the type comprising spaced vertically disposed frames having spaced pairs of rigidly connecting upstanding posts provided with a tubular guide affixed near each end of each post, spaced vertically disposed side-frames comprising an upper and a lower horizontal bracing member, said bracing members having at each end a pin-member extending perpendicularly downward from the bracing member and adapted to fit into said tubular guide, thereby providing a readily demountable connection between a post and a side-frame, the improvement comprising three equidiameter washer-members positioned concentrically on each post above said upper guide, each washer having a cut-away portion extending to the outer periphery thereof, the upper and lower washers being rigidly attached to said post with the cut-away areas in alignment over said guide and the middle washer in rotatable condition with relation to said post, said three-washers affording free-entry of a pin-member to said upper guide when all three cut-away portions are aligned over said upper guide and barring withdrawal of said pin-member when said middle washer is rotated out of the common alignment position.

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