Aug. 10, 1948. P. A. WYEN 2,446,972

ADJUSTABLE SCAFFOLD STRUCTURE

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FIG. 1

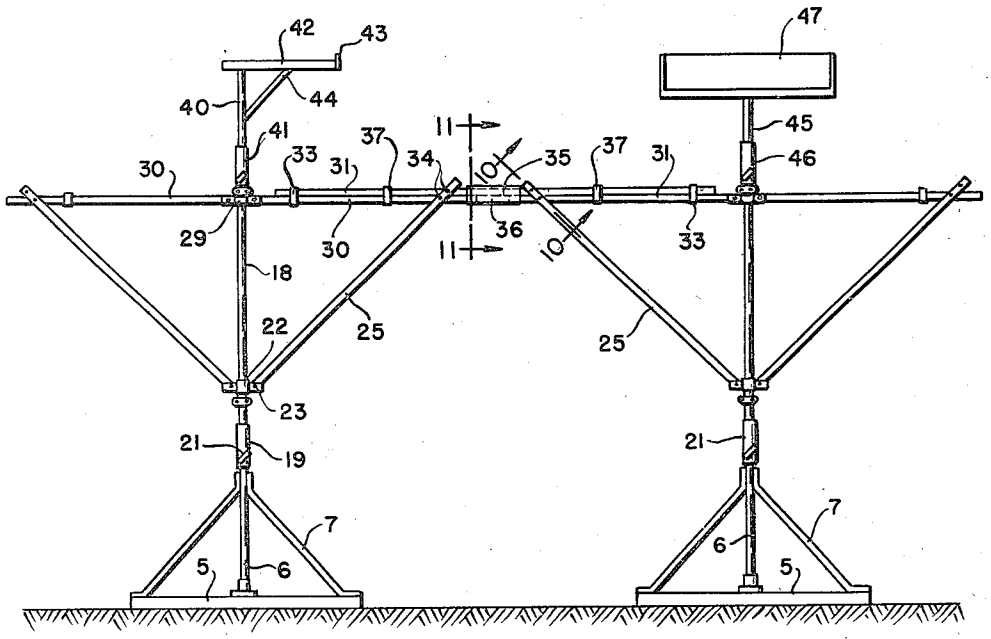
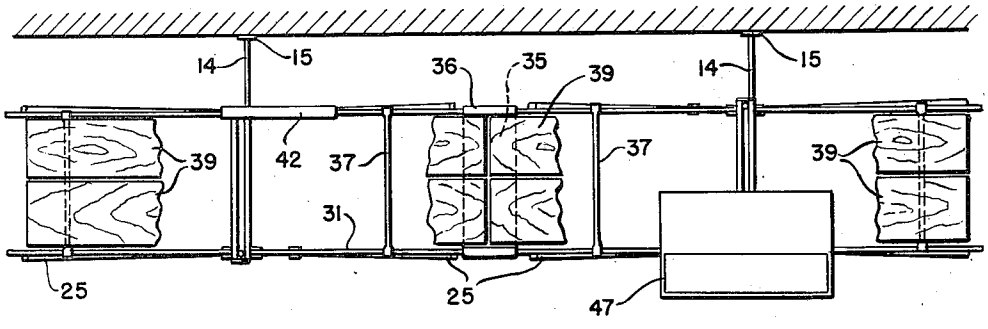


FIG. 2



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FIG. 3

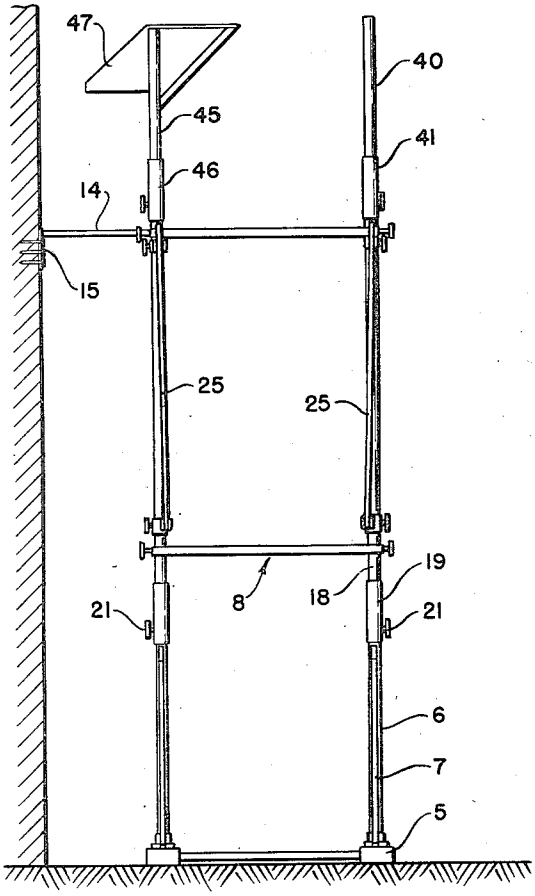


FIG. 4

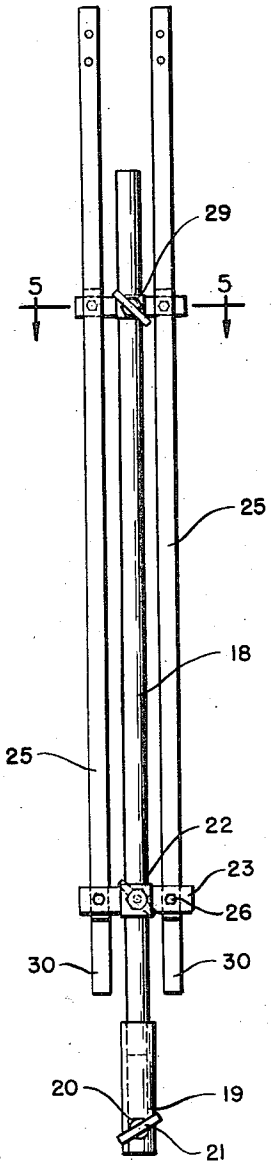
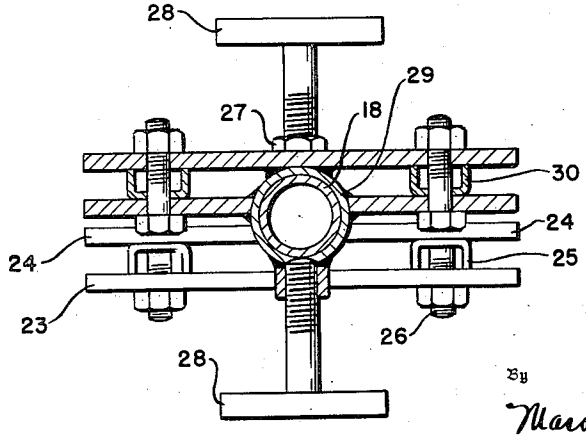


FIG. 5



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FIG. 6

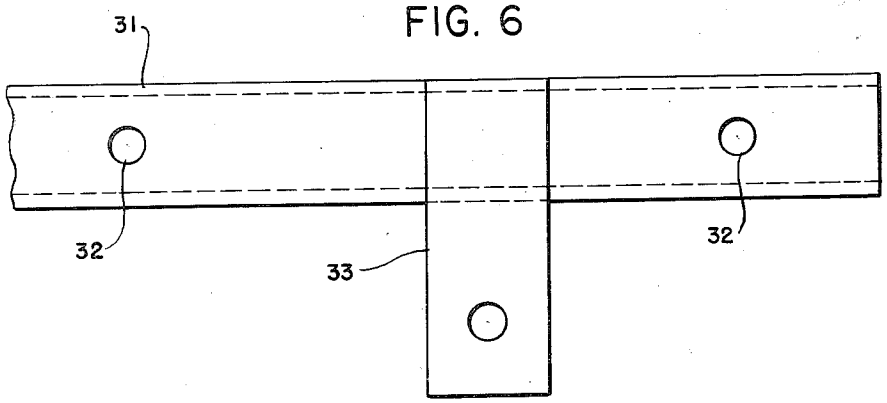


FIG. 8

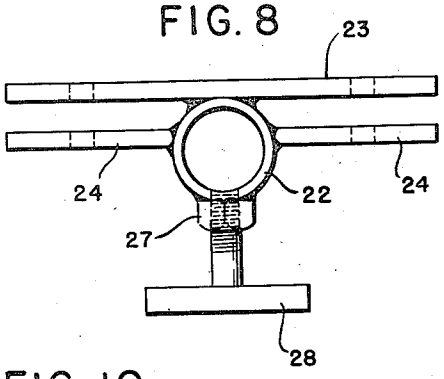


FIG. 7

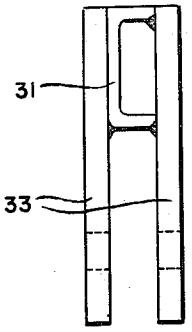


FIG. 10

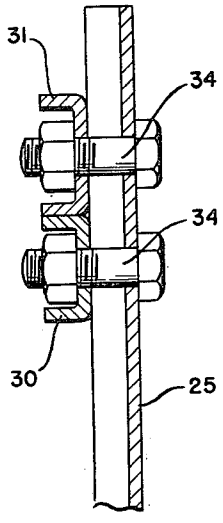
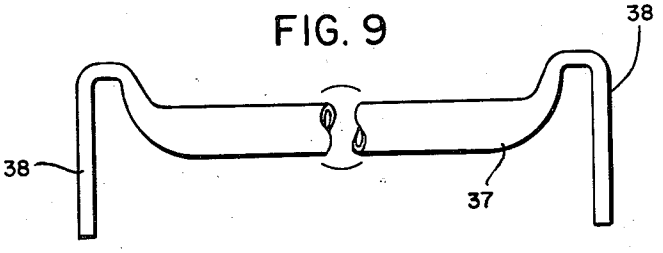


FIG. 9



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FIG. 11

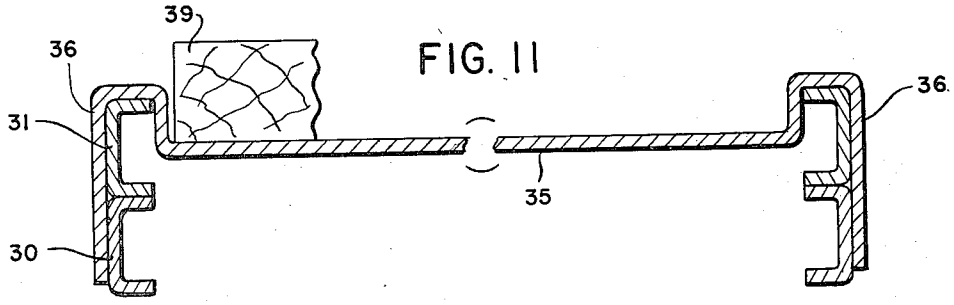


FIG. 12

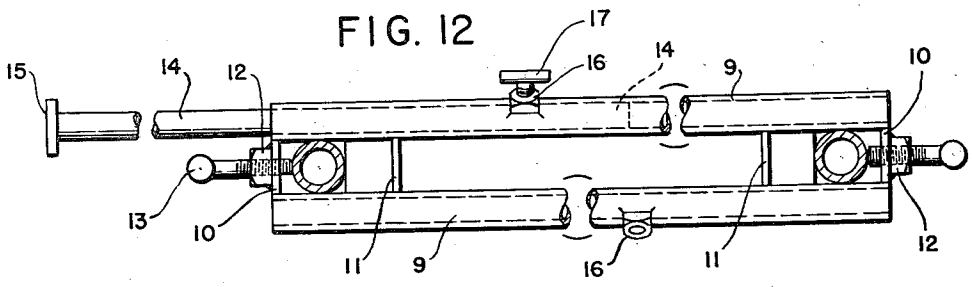


FIG. 13

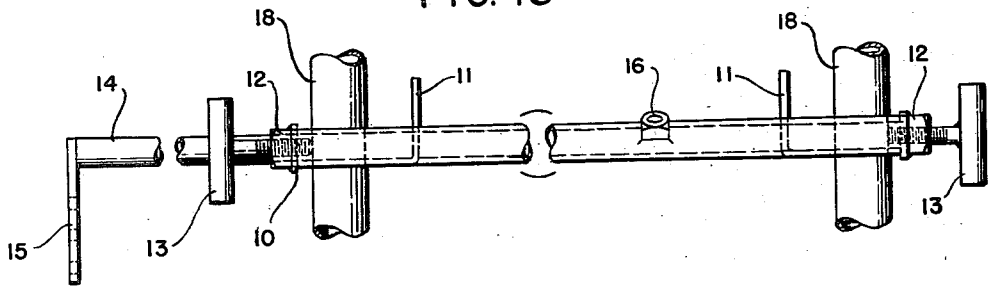
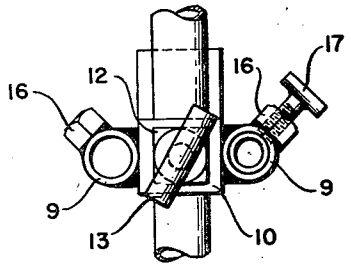


FIG. 14



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UNITED STATES PATENT OFFICE

2,446,972

ADJUSTABLE SCAFFOLD STRUCTURE

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Application September 11, 1946, Serial No. 696,082

11 Claims. (Cl. 304—10)

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The invention relates generally to scaffold structures and primarily seeks to provide a novel adjustable scaffold structure which is simple and sturdy and capable of being assembled and disassembled with ease.

An object of the invention is to provide a scaffold structure of the character stated which is composed of a multiple of units adapted to be assembled in cooperative relation to provide a complete scaffold structure of just the right size and form necessary to fit the intended use, certain of said units being readily collapsible for compact transportation and handling.

Another object of the invention is to provide a scaffold structure of the character stated including novel means for assembling the component parts thereof in a manner for providing a scaffolding which is as high and as wide as may be desired, novel means also being included for effecting attachment of the scaffolding to a wall of a building.

Another object of the invention is to provide a scaffold structure of the character stated in which the supporting strength is so distributed that planking of relatively light weight can effectively be used thereon, without necessity of overlapping portions of said planking.

Another object of the invention is to provide a novel scaffold structure of the character stated in which means is provided for adapting the scaffolding to use for operations over a house gable or a sloping roof of a barn or the like.

Another object of the invention is to provide in a scaffold structure of the character stated, novel means for forming a work bench.

Another object of the invention is to provide in a scaffold structure of the character stated, a novel tool support and mounting therefor.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims, and the several views illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a face view showing a section of scaffolding embodying the invention.

Figure 2 is a plan view of the parts shown in Figure 1.

Figure 3 is an end view of the scaffolding shown in Figure 1.

Figure 4 is a detail face view showing one unit of the scaffolding in the folded or collapsed condition.

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Figure 5 is a horizontal section taken on the line 5—5 on Figure 4.

Figure 6 is a detail fragmentary side view of one of the connector channel members.

Figure 7 is an end view of the part shown in Figure 6.

Figure 8 is an enlarged detail plan view of one of the adjustable collars.

Figure 9 is an enlarged side elevation of one of the cross members.

Figure 10 is an enlarged fragmentary vertical cross section taken on the line 10—10 on Figure 1.

Figure 11 is an enlarged fragmentary vertical cross section taken on the line 11—11 on Figure 1.

Figure 12 is an enlarged plan view illustrating one of the cross connectors.

Figure 13 is an enlarged detail side view of the connector shown in Figure 12.

Figure 14 is an end elevation of the connector shown in Figure 12.

In the example of embodiment of the invention herein disclosed, there are included base units upon which the upwardly extended adjustable and foldable or collapsible units are supported. Each base unit comprises a base member 5 to which is secured an uprightly disposed standard 6 which is suitably braced as at 7 in its upright position on the member 5.

The improved scaffolding structure may be assembled in various sizes and shapes to suit the demands of a particular job, and in a small scaffolding structure, four base units may be employed with the base members 5 thereof disposed parallel the building wall with the units arranged in two laterally spaced, transversely disposed sets, each set of the standards 6, after extension units are telescoped thereover, being secured together by a connector generally designated 8.

Each of the connector units generally designated 8 and shown in detail in Figures 12, 13 and 14 of the drawings includes two parallel tubes 9 which are welded together in parallel spaced relation with end pieces 10 therebetween. Angle pieces 11 spaced inwardly from the respective end pieces 10 also are welded between the tubes. Nuts 12 are welded to the end pieces 10, and clamp screws 13 are threaded through the nuts and into the space between the end pieces and the adjacent portions of the angle pieces for clamping the connector member end tightly on the upright of the scaffold. A rod 14 is slidably mounted in one of the tubes 9 and projects from the end thereof directed toward the wall adjacent to which the scaffolding is being erected, and

said rod is provided with an angle bent end portion 15 which may be anchored in any suitable manner to the wall. It will be apparent by reference to Figures 12 to 14 that the tubes 9 also have nuts 16 welded thereto, and clamp screws 17 are threaded through said nuts to serve as clamping means for securing the rod 14 in the selected one of the tubes.

In erecting the scaffolding, a suitable number of extension units are mounted upon each standard base, and said extension units have provision for supporting planking thereon and for being connected together in rigidly assembled relation to provide a scaffolding structure of just the right height and width. Each extension unit comprises a tubular standard 18 having a larger tube length 19 fitted over and welded to the lower end thereof to form a mounting socket dimensioned to telescope over the upper end of the respective base standard 6. It is to be understood also that in the erecting of the scaffolding, a multiple of extension units may be mounted one upon another to provide the desired height of scaffolding. A nut 20 is welded to each socket tube length 19 and a clamp screw 21 threaded through said nut engages in clamping contact with the base standard 6 or tubular standard 18 for securing the assembly.

A collar 22 encircles each extension unit standard 18 above the lower end thereof and has a face plate 23 welded to one side thereof, intermediate plates 24 also being welded to said collar in position for projecting in parallel spaced relation to the respective ends of the plate 23 to form pivot ears between which brace channel members 25 are pivoted as at 26. A nut 27 is welded to each collar 22, and a clamp screw 28 threaded through the nut may be engaged with the respective tubular standard 18 for securing the collar in proper adjusted position on said standard. A similar collar unit generally designated 29 is adjustably mounted on each tubular standard 18 below the upper end thereof, and it is to be understood that the collar units on a given tubular standard 18 have the side secured face plates thereof reversely directed so that the pivot ears provided by said face plates and the cooperating intermediate plates do not lie in the same plane. Channel members 30 are pivoted to the pivot ears of the collar unit 29, and when extended horizontally in the manner clearly illustrated in Figure 1 of the drawings, said channel members comprise horizontal supports for the planking supporting devices soon to be described.

When the scaffolding units are arranged in the manner illustrated in Figures 1 and 2 of the drawings, the extended ends of the channel members 30 of adjacent units are disposed in closely spaced relation. A connector channel member 31 rests upon and extends across the space between two adjacent, horizontally extended channel members 30, and each said channel member is apertured as at 32 and has plates 33 welded to the sides thereof in position for extending below the channel member and straddling the underlying channel members 30 in the manner clearly illustrated in Figure 1. See also Figures 6 and 7. The assembly of the diagonally extended brace channel members 25, the horizontally extended channel members 30 and the overlying connector members 31 are secured by bolts 34 fashioned through selected registering apertures in said channel members.

It is to be understood that as many of the connector units illustrated in Figures 12, 13 and 14 as may be desired may be connected between the cooperating sets of upwardly extending tubular standards 18 for holding the scaffolding structure in rigid assembly. As previously described the space between the end piece 10 and the adjacent angle piece 11 at each end of one of the connector units will receive a tubular standard portion 18 between them in position for having the respective screw 13 tightly secure the connector member on said standard.

In order to provide for proper supporting of the planking at proper levels on the scaffolding a cross plate 35 is secured across the connected units in the manner illustrated in Figures 1 and 2 of the drawings. The cross plates 35 are formed to include inverted U-shaped ends 36 which fit over the channel members 31 and 30 and embrace the same in a manner for securing the extension units against twisting movement about their upright centers. A multiple of cross members 37 cooperate with the plates 35 and one of said cross members is shown in detail in Figure 9. Each cross member has inverted U-shaped end portions 38 which extend over and embrace the channel members 31 and 30 in the manner clearly illustrated in Figure 1 for assisting the cross plate 35 in preventing twisting of the extension units. The main body portions of the plates 35 and cross members 37 serve as transverse supports for the planking 39 which lies parallel the wall before which the scaffolding is erected. Because of the nature of the supports provided by the planking, lighter than conventional planking can be used, and by resting the ends of the planking in abutting relation on the relatively wide cross plates 35 it is possible to avoid the overlapping of planking. Overlapping of the planking is obviously undesirable because of the danger of workmen tripping over the overlapped portions thereof. In Figure 4 of the drawings, one of the extension units is shown in the folded or collapsed condition. It will be apparent that by reason of the adjustable mounting of the pivot collars on the tubular standards 18, and the arrangement of the pivot ears in individual plane sets, it is possible to swing the support channel members 30 downwardly and the brace channel members 25 upwardly in parallel relation without interference. It will be apparent by reference to Figure 5 of the drawings that the support channels 30 lie in a plane at one side of the axis of the respective standard 18, and the brace channels 25 lie in a plane at the opposite side of the axis of said standard when the scaffolding is collapsed in the manner illustrated in Figures 4 and 5. The adjustable mounting of the pivot collars also make it possible to adjust the elevation upon which each run of planking is to be mounted.

It should also be apparent that the angular relation of the brace channel members 25 also makes it possible to swing cooperating pairs of the extension units 90° about their mounting centers to cause the supporting channel members 30 at one side of the respective standards to project over inclined roof or gable portions.

The invention also comprehends the provision of special tubular standards 40 having socket tubes 41 telescoped over and welded to the lower ends thereof to form sockets for receiving the upper ends of selected extension tube standards 18. Each of the special standards 40 carries a horizontal arm 42 having an upwardly angled end portion 43 and being braced on the standard as at 44. One such special unit 40, 42 may be employed to support a hoisting device at an upper

portion of the scaffolding, or two such units may be employed to form a support for planking disposed to form a work bench for workmen on the scaffolding.

Another special unit may be provided comprising a special standard 45 having a socket tube 46 welded at the lower end thereon to provide a socket for receiving the upper end of a selected tubular standard 18. The special standard 45 may serve as a support for a tool receptacle 47 suitably spaced and dimensioned to conveniently support the tools of workmen using the scaffolding so as to make it unnecessary for them to make frequent trips to the ground to procure necessary tools.

In the foregoing description there is disclosed a simple scaffolding structure composed of a selective number of simple units which may be readily assembled and disassembled for transport by a single individual, if desired. The scaffolding structure is exceedingly simple in form but is very sturdy and can be readily adjusted to provide a scaffolding of just the right height and width and which has its planking disposed at just the right levels.

While one form of the invention has been shown for purposes of illustration, it is to be clearly understood that various changes in the details of construction and arrangement of parts may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. Scaffolding comprising at least four base units and four upright extension units, each said base unit including an upright support standard, and each said extension unit including an extension standard having removable telescopic socket connection with a base standard, an upper collar and a lower collar on each extension standard, two support members extending horizontally in longitudinal alignment from each upper collar, two brace members extending diagonally upwardly from each lower collar and secured in bracing relation to the support members on the same standard, said base and extension units being arranged in sets of two units each aligned transversely with respect to a wall before which the scaffolding is erected and with the support members of each set arranged parallel and in longitudinal alignment with those of the adjacent set, means rigidly securing all said units in rigid assembly, and means traversing said parallel support members for supporting planking thereon.

2. Scaffolding as defined in claim 1 in which the planking supporting means includes a wide cross plate traversing the adjacent ends of the horizontal support members of the two sets of extension units and having inverted U-shaped end portions straddling the longitudinally aligned adjacent support member ends in a manner for bridging any gap between said ends and preventing turning of the upright extension units about the centers of their standards.

3. Scaffolding as defined in claim 1 in which the planking supporting means comprises a plurality of cross members traversing the horizontal support members and including inverted U-shaped end portions straddling and embracing said support members.

4. Scaffolding as defined in claim 1 in which the planking supporting means comprises a plurality of cross members traversing the horizontal support members and including inverted U-shaped end portions straddling and embracing said support members, at least one said cross member comprising a wide plate whereon to receive planking in end abutting relation and having inverted U-shaped end portions straddling the longitudinally aligned adjacent support member ends in a manner for bridging any gap between said ends and preventing turning of the upright extension units about the centers of their standards.

5. Scaffolding as defined in claim 1 in which the means for securing the units in rigid assembly includes a plurality of cross members extending transversely between units of a set and each comprising a pair of tubes assembled in rigid parallel spaced relation with means at each end of and between said tubes for encircling a unit standard, means for clamping each said encircling means to a unit standard, a rod slidable in and projecting from a selected end of one tube and having means at its extended end for anchor attachment to a wall, and means for securing said rod at a selected degree of projection from the tube in which it is mounted.

6. Scaffolding as defined in claim 1 in which each extension unit has provision at top and bottom for interfitting assembly with the standard of another extension unit or a base unit.

7. Scaffolding as defined in claim 1 in which there are included connector members one overlying the adjacent ends of each two longitudinally aligned horizontal support members of the cooperating sets of units, each said connector member having plates secured thereon in position for straddling the support members, and means for securing the connector members to the brace members.

8. Scaffolding as defined in claim 1 in which there are included connector members one overlying the adjacent ends of each two longitudinally aligned horizontal support members of the cooperating set of units, each said connector member having plates secured thereon in position for straddling the support members, and means for securing the connector members in rigid assembly on the scaffolding, said connector members extending over a considerable length of the support members so as to enable the spacing of the unit sets variable distances apart.

9. In scaffolding of the character described, an upright extension unit having a standard, a socket at the lower end of the standard in which the upper end of a similar standard of another unit is receivable, a lower collar adjustably mounted on the standard, an upper collar adjustably mounted on the standard, two support members pivoted at ends thereof on the upper collar and swingable between a collapsed position generally parallel the standard to an operative horizontal position with said two support members extending in opposite directions, and two brace members pivoted at ends thereof on the lower collar and swingable between a collapsed position generally parallel the standard to an operative position in which they extend diagonally upwardly for bracing contact with the support members, and means for securing the support members and the brace members in said operative position.

10. Scaffold unit structure as defined in claim 9 in which each collar has a set of ears to which the support or brace members are pivoted, the ears on one collar being disposed in a plane in spaced parallel relation to the plane in which the ears of the other collar are disposed, thereby to permit the support and brace members to be swung

downwardly and upwardly respectively without interference with each other.

11. In a scaffolding structure a support unit comprising a standard having a socket at its lower end for telescopically receiving a supporting standard for swingably and removably mounting said unit, a horizontal arm at its upper end terminating in an upright end portion, and means bracing said arm on the standard, said unit being usable individually as a hoist support, or in combination with another unit constructed and mounted in like manner as supporting means for a work bench formed by supporting planking across the two arms.

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