Sept. 13, 1949. E. H. SIMPSON 2,481,885

SCAFFOLD

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Fig. 1.

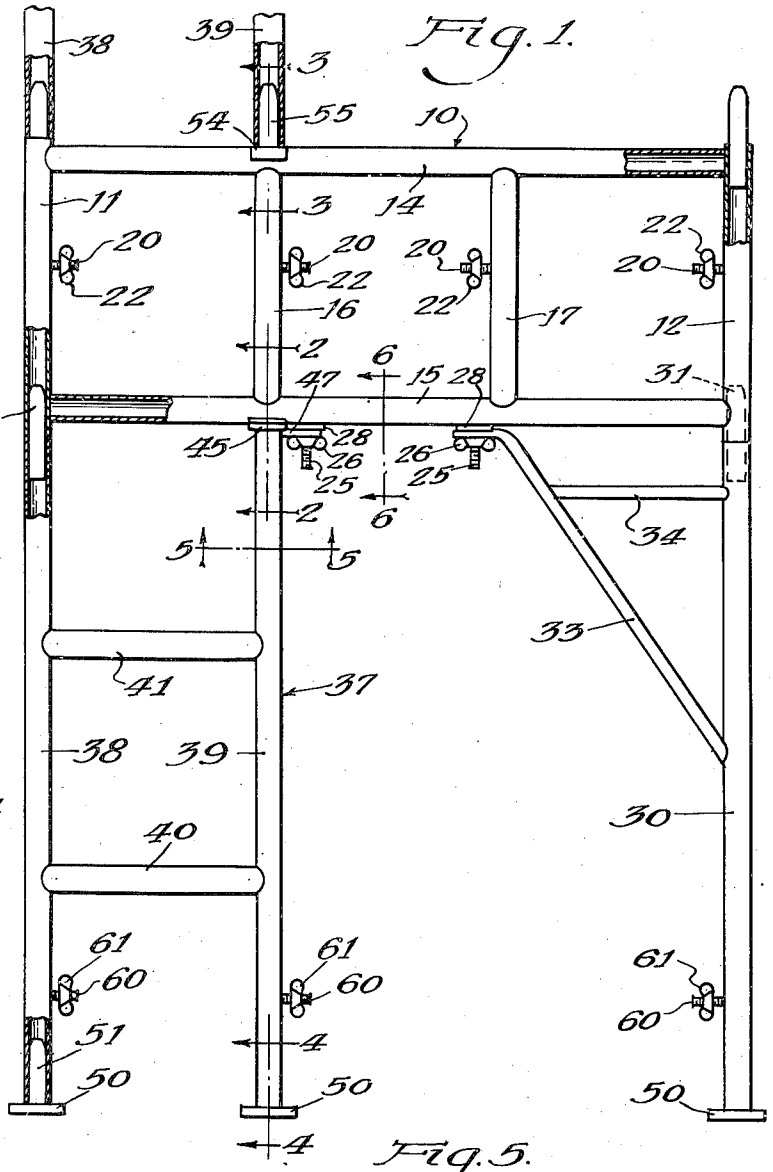


Fig. 2.

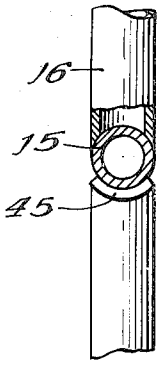
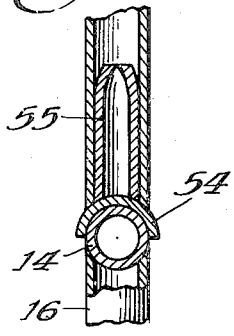


Fig. 3.



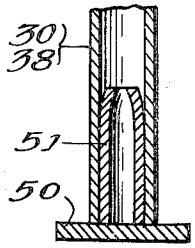


Fig. 4.

Fig. 5.

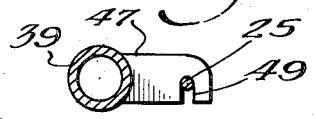
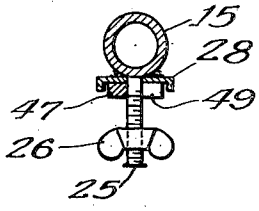


Fig. 6.



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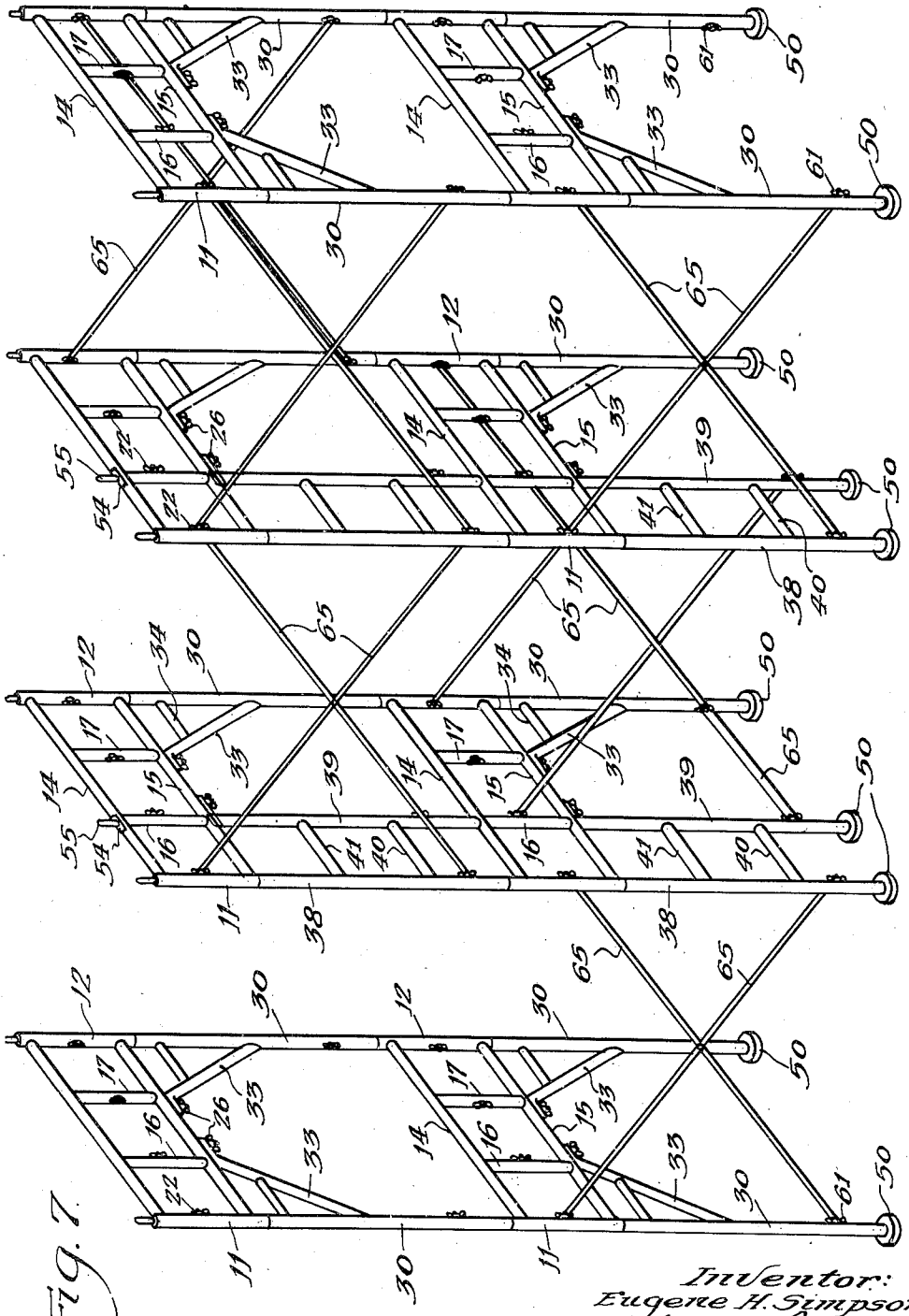


Fig. 7.

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UNITED STATES PATENT OFFICE

2,481,885

SCAFFOLD

Eugene H. Simpson, Whitefish Bay, Wis.

Application February 25, 1946, Serial No. 649,979

2 Claims. (Cl. 304—2)

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This invention relates to scaffolds and more particularly to a combination sectional scaffold and ladder.

In sectional scaffolds heretofore made, the scaffold has been provided with a ladder which is usually secured at the side of the scaffold at right angles to the plane thereof. This construction has been the preferable type due to the cross bracing between the end frames and the inability of the workmen to get inside the scaffold to climb an inside ladder because of the presence of the cross bracing.

One object of the present invention is to provide a scaffold ladder which will be an integral part of the end frame.

Another object is to provide a sectional scaffold having a ladder in which the cross braces do not interfere with the free use of the ladder.

Another object is to provide a scaffold section in which a leg may be replaced by a ladder section.

A further object is to provide a scaffold ladder which will be strong and rigid.

A still further object is to provide a scaffold ladder which cannot become disconnected from the scaffold frame.

Other objects will become apparent upon considering the following specification, which when taken in connection with the accompanying drawings, describe and illustrate one form of the invention.

In the drawings:

Fig. 1 is an elevational view of the scaffold embodying the present invention showing the ladder in place thereon;

Fig. 2 is a cross section taken on the line 2—2 of Fig. 1;

Fig. 3 is a cross section taken on the line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is a cross section on the line 4—4 of Fig. 1, looking in the direction of the arrows;

Fig. 5 is a cross section on the line 5—5 of Fig. 1, looking in the direction of the arrows but with the wing nut removed;

Fig. 6 is a cross section taken on the line 6—6 of Fig. 1, looking in the direction of the arrows; and

Fig. 7 is a perspective view of the scaffold showing the ladder section and cross bracing in place.

Referring to the drawings, and more particularly to Figs. 1 to 6 inclusive, the scaffold comprises an end frame generally designated 10, substantially rectangular in form, having a pair of vertical posts 11 and 12 connected at their upper ends by an upper horizontal support 14 and

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connected at their lower ends by a lower horizontal support 15.

A plurality of vertical shear braces 16 and 17 join the horizontal supports 14 and 15 intermediate the ends, the braces 16 and 17 stiffening and strengthening the frames.

Bolts 20 having wing nuts 22, are permanently fixed to the insides of the posts 11 and 12 at a suitable distance from the top and similar bolts 20 are secured to the inner sides of the shear braces 16 and 17 at the same distance from the top so that the four bolts 20 align. The bolts 20 are preferably welded to the posts 11 and 12 and the shear braces 16 and 17 so as to form a permanent connection therewith.

Bolts 25—25 are formed on the lower side of the lower horizontal support 15 at a point spaced inwardly from the shear braces 16 and 17. The bolts 25 have wing nuts 26 mounted thereon which are normally retained on the bolts 25 by swedging the end of the bolts. U-shaped retainers 28—28 are formed on the lower side of the horizontal support 15 surrounding the bolts 25 to retain the lower section of the end frame.

The lower end of the end frame may include a leg 30 which has a pin 31 formed on the upper end thereof which projects into the post 12 and centers the leg directly in alignment with the post. A diagonal brace 33 is connected to the leg 30 intermediate the ends and is supported by a horizontal brace 34 running between the post and the diagonal brace to form a bracket supporting the leg from the end frame.

The end of the brace 33 is flattened and bent horizontally and provided with a slot (not shown) which engages the bolt 25.

The nut 26 forces the flattened end of the brace 33 into the U-shaped retaining member 28 to secure the brace against removal.

For further details of the leg 30 see the copending application of Lawrence C. Oertle, Senior, and Eugene H. Simpson for "Scaffolds," Serial No. 649,898, dated Feb. 25, 1946, now Patent No. 2,467,688 granted April 19, 1949.

The opposite side of the scaffold section may be provided with a ladder, generally designated 37, which comprises a pair of vertical legs 38 and 39 and a plurality of horizontal rungs 40, 41 joining the legs 38 and 39 and secured integrally therewith. The upper end of the leg 38 has a coupling pin 43 formed thereon which fits snugly within the post 11 to center the leg 38 therewith.

The leg 39 may be formed at its upper end with an arcuate bearing plate 45 which is adapted to

abut the lower horizontal support 15 and transmit stress from above.

A securing plate 47 (Fig. 5) is formed on the inner side of the post 39 and is provided with a slot 49 which is adapted to be rotated onto the bolt 25 to secure the ladder in place, as best seen in Figs. 5 and 6. The plate 47 is secured against turning, when the wing nut 26 is screwed up, by the retainer 28 into which the plate 47 fits.

The bottom of the ladder and the bottom of the post 30 may all be provided with base plates 50 which have pins 51 formed integrally thereon which project into the open tubular ends of the ladder legs 38 and 39 and the leg 30.

On subsequent ladder sections, that is on elevations higher than the lowermost frame, the lower end of post 39 is provided with an arcuate bearing plate 54 which is secured integrally on a pin 55 (Fig. 3), which projects into the end of the leg 39. The arcuate bearing plate 54 transmits the load on the ladder leg 39 to the upper horizontal support 14.

It will be noted that the shear brace 16 is aligned with the leg 39 of the ladder and that if the ladder be placed on the post 12 the shear brace 17 would then align with the ladder leg 39.

It will also be noted that the two horizontal supports 14 and 15 are spaced at proper intervals to form equally spaced rungs on the ladder.

The inner sides of the ladder legs 38 and 39 and the inner side of the leg 30 have bolts 60 formed integrally thereon which are spaced equally from the bottom of the legs. The bolts 60 cooperate with bolts 20 to retain the ends of cross braces 65, the cross braces being retained on the bolts 20 and 60 by wing nuts 22 and 61.

If desired the cross braces 65 may be secured on the bolts 20 and 60 as shown in the co-pending application of Lawrence C. Oertle and Eugene H. Simpson, for "Sectional scaffolds," Serial No. 614,890, filed Sept. 7, 1945.

Operation

To set up the scaffold, the end frames 10 are assembled with suitable legs 30 and, where desired, ladder sections 37 may likewise be used.

The complete section comprising the end frame with suitable legs 30 and/or ladders are set up and connected with suitable cross braces 65.

Where it is desirable to have access to the ladder from outside the scaffold, the cross braces 65 are connected by the bolts 20 located on the shear brace 16 and the leg 39 of the ladder, thus giving free access to the ladder from the outside of the scaffold.

Subsequent sections may be superposed on the lower sections and connected with cross braces, some of which have been omitted from Fig. 7 for the sake of clarity, to form a scaffold to any desired height.

It will be realized that the hereinbefore described invention is to be taken merely as a preferred embodiment of the same and that various changes in size, shape and arrangement of parts may be made without departing from the spirit of the invention or the scope of the subjoined claims.

That which is claimed as new and is desired to be secured by Letters Patent is:

1. In a scaffold of the character described comprising an end frame having a pair of vertical posts separated from each other, a pair of horizontal supports, one of said supports joining said posts adjacent the upper ends thereof, the other said support joining said posts adjacent the lower ends thereof, a bolt on said last mentioned support intermediate the ends thereof, a nut on said bolt, a ladder section comprising a first leg, means on said leg engageable with the lower end of one of said posts to maintain said leg in alignment therewith, a second leg separated from said first leg and engageable with the lower horizontal support, a plurality of ladder rungs joining said legs, means on said second said leg engageable with said bolt between said nut and said other support to retain the ladder section on the frame, and a shear brace joining said horizontal supports.

2. In a scaffold of the character described, an end frame comprising a pair of vertical posts separated from each other, a pair of horizontal supports, one of said supports connecting said posts adjacent the upper end thereof, the other said support connecting said posts adjacent the lower ends thereof, a ladder section comprising a first leg, means on the upper end of said leg engageable within the lower end of one of said posts, with the ladder leg in alignment therewith, a second leg of said ladder engageable with the lower horizontal support, a plurality of ladder rungs joining said legs, a bolt fixed on the lower side of the lower horizontal support, a nut on said bolt, a bracket on the upper end of said second leg engageable with the bolt to retain the ladder assembled with the frame, and a shear brace joining said upper horizontal support with said lower horizontal support.

EUGENE H. SIMPSON.

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