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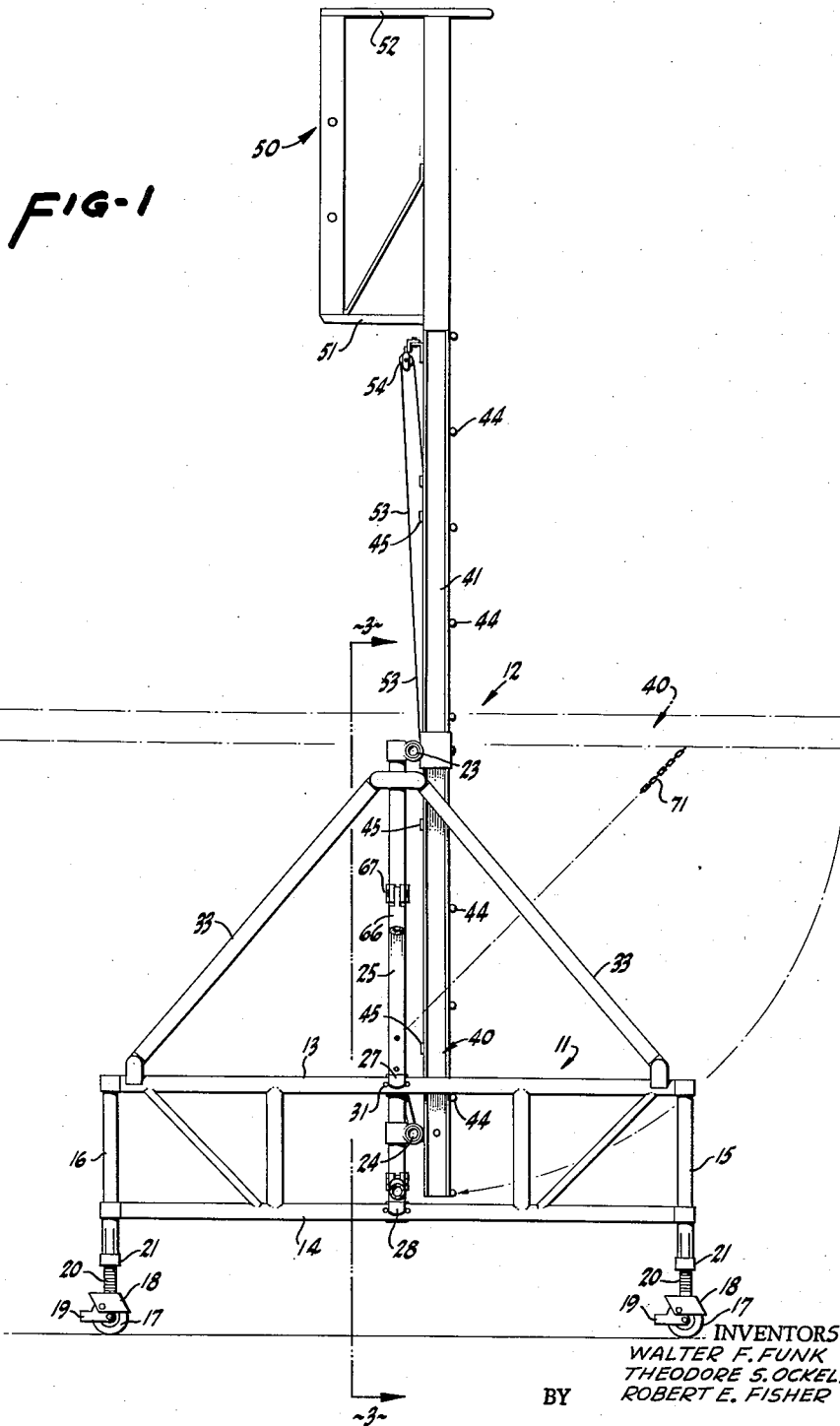
W. F. FUNK ET AL

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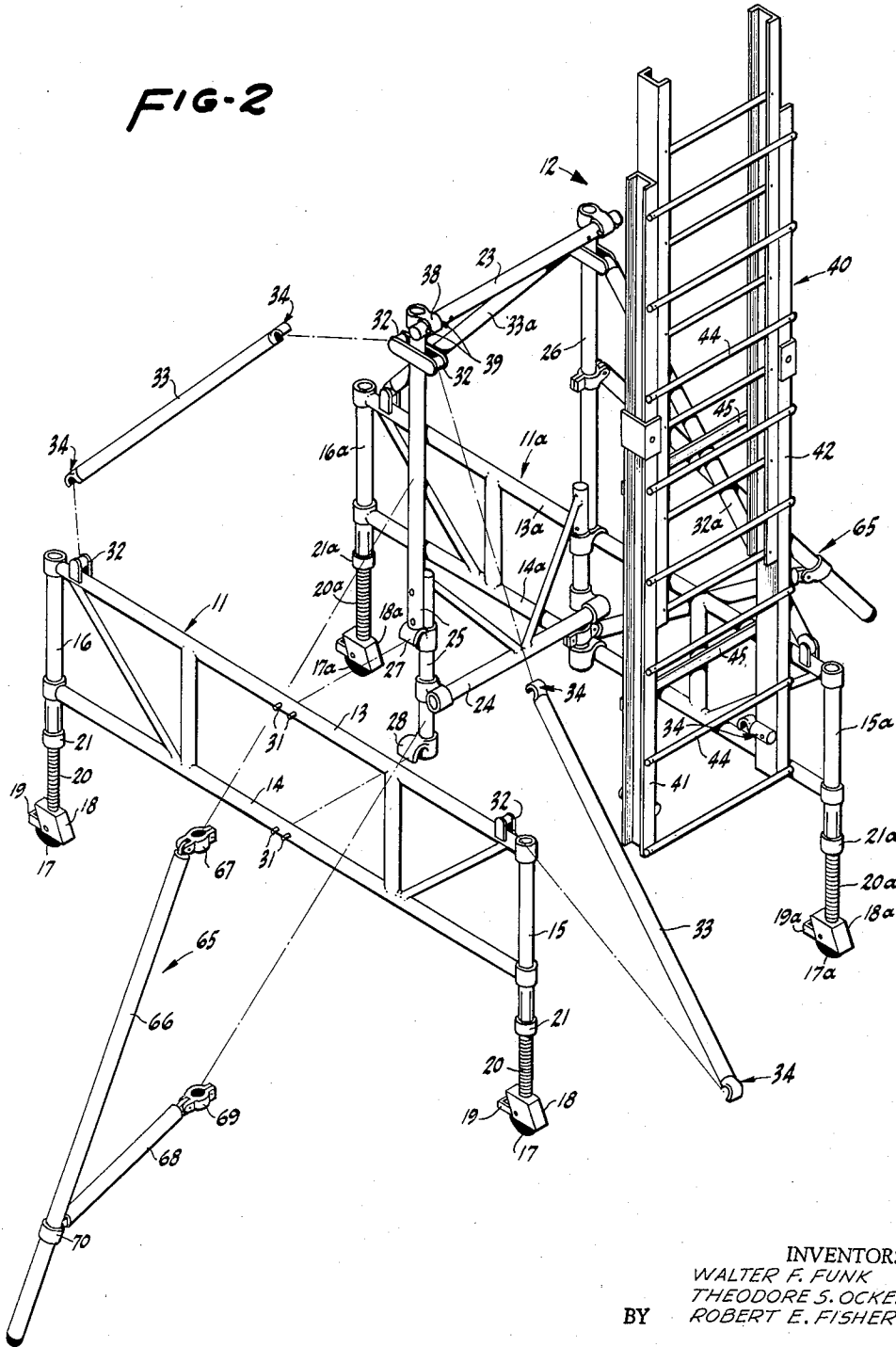
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FIG-2



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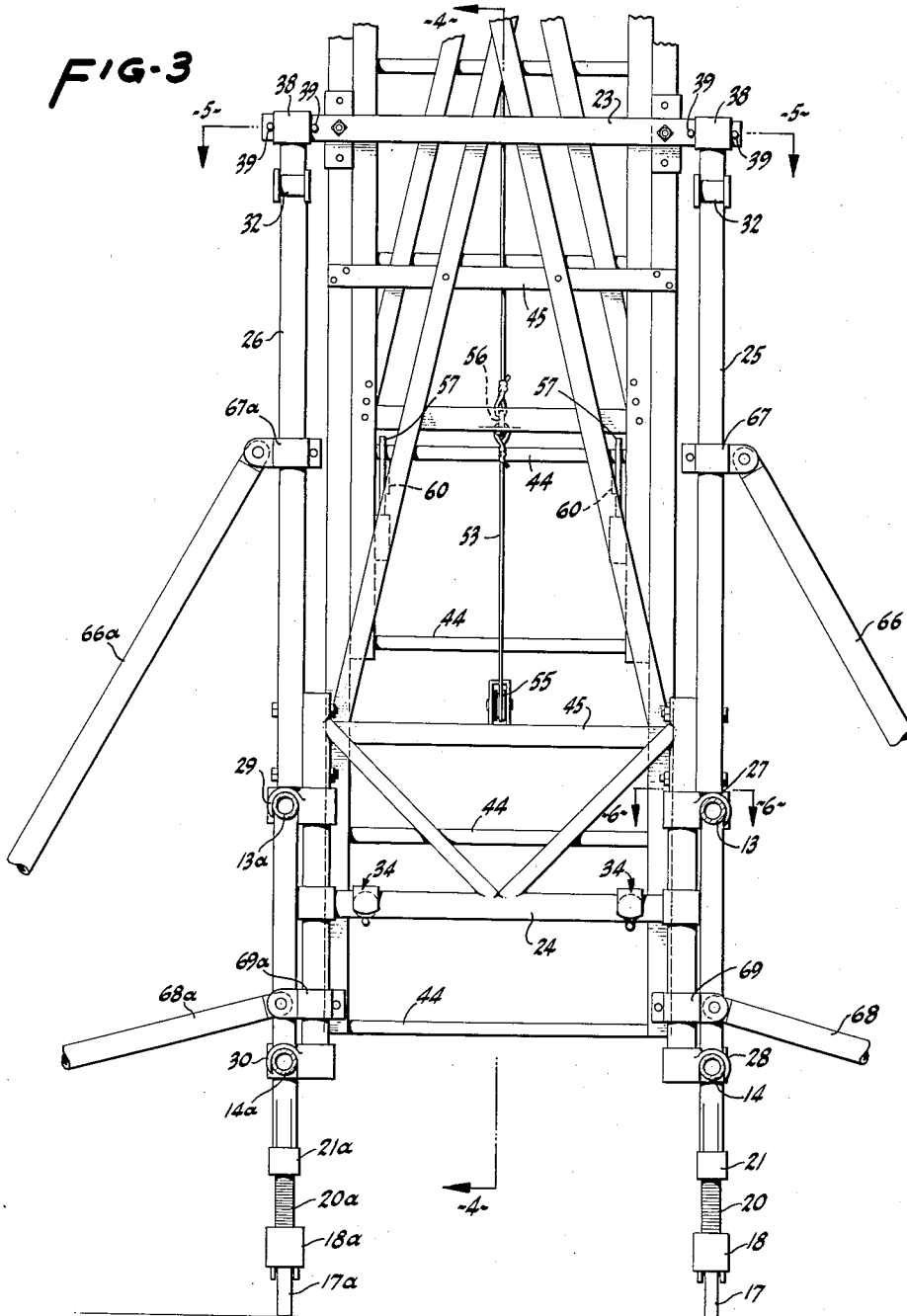
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FIG-3



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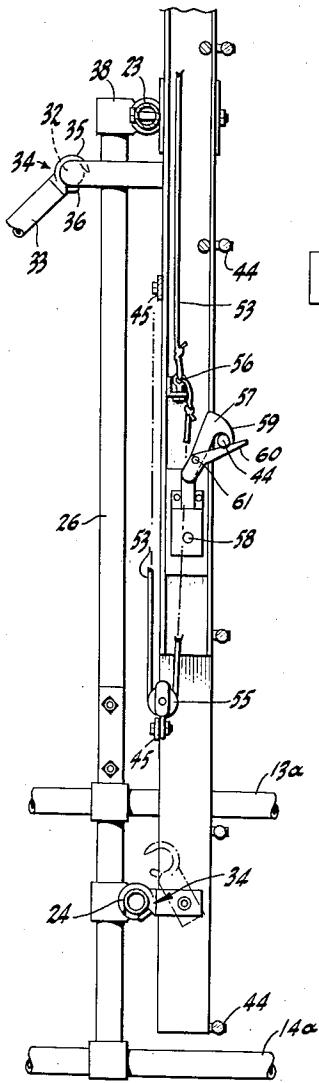


FIG-4

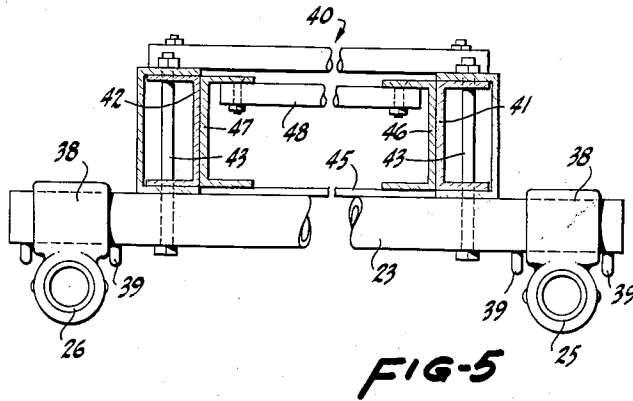


FIG-5

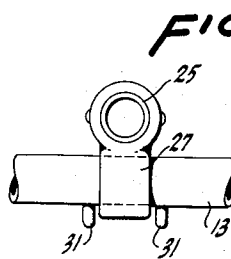


FIG-6

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5 Claims. (Cl. 182—180)

This invention relates to scaffolds, and more particularly to a vertically telescopic and rolling scaffold.

It is a primary object of this invention to provide a scaffold having two side frame members and a ladder support frame detachably mounted upon and between the side frame members, a ladder unit pivotally mounted on the ladder support frame for tilting movement about a horizontal axis so that the scaffold may be moved through doorways or the like, and a platform mounted on the upper end of the ladder unit.

A further object is to provide a scaffold, as above described, with vertically adjustable ground engaging rollers so that the scaffold may be rolled to point of use and adjusted so that the platform is level.

Another object is to provide a scaffold, as set forth above, with a telescopic ladder unit having only two relatively long members to minimize looseness therebetween, and in which the inner ladder member is completely enclosed by the outer ladder member for safety and rigidity.

A further object is to provide a lightweight scaffold comprising only three assemblies which may be erected by only one man, which has no loose parts, and which requires no tools for erection, operation or dismantling.

Another object of the invention is to provide a scaffold as set forth above with outrigger arms adjustable in horizontal and vertical directions to stabilize the scaffold, and which may quickly and easily be moved against the scaffold so that the scaffold may be moved through doorways.

Other objects and advantages will become apparent in the course of the following detailed description.

In the drawings, forming a part of this specification, and in which like parts are designated by like reference numerals throughout the same,

Fig. 1 is a side elevation of a scaffold constructed in accordance with the principles of the invention.

Fig. 2 is an exploded view of the scaffold of Fig. 1.

Fig. 3 is a transverse sectional view, taken on line 3—3 of Fig. 1, with parts shown in elevation.

Fig. 4 is a partial longitudinal sectional view, taken on line 4—4 of Fig. 3, with parts shown in elevation.

Fig. 5 is a sectional view of the ladder assembly, taken on line 5—5 of Fig. 3.

Fig. 6 is a sectional detail, taken on the line 6—6 of Fig. 3.

Referring now to the drawings, wherein for purposes of illustration, is shown a preferred embodiment of the invention, the scaffold, generally indicated by the reference numeral 10, comprises three main components, the two side frames 11 and 11a and the ladder-platform-outrigger assembly 12. These components are preferably and principally constructed of Duralumin tubular and channel members, or the like, so as to combine high strength with lightness in weight, although it is obvious that other materials may be employed, if desired.

The two side frames 11 and 11a are identical, and only the frame 11 need be described, with correspond-

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ing parts of frame 11a being identified by like reference numerals with the subscript "a."

Side frame 11 is generally rectangular in shape, with horizontal top and bottom rails 13 and 14, and end columns 15 and 16. Each column 15 and 16 carries at its lower end a caster wheel, or roller foot, 17, preferably of the type disclosed in more detail in United States Patent No. 2,512,941, issued to W. J. S. Johnson. For the purposes of the present disclosure, it is sufficient to say that the caster wheel 17 is locked against rolling movement by friction brake 18, when the actuating lever 19 is in the position shown in Fig. 1. When the lever 19 is pivoted upwardly from this position, the friction brake 18 will be released so that the wheel is free to roll, in order that the scaffold unit may be rolled from place to place.

Each caster wheel is vertically adjustable relative to the ends of the side frame 11 by an adjustable supporting leg 20 and locking collar 21, of the type disclosed in greater detail in United States Patent No. 2,618,496, issued to W. J. S. Johnson. The legs 20 extend upwardly into the columns 15 and 16.

The ladder-platform-outrigger assembly 12 includes a generally rectangular ladder support frame having upper and lower rails 23 and 24 and opposed vertical columns 25 and 26. Downwardly facing hook members 27 and 28 are rigidly secured to column 25 to engage the rails 13 and 14 of side frame 11, and similar hooks 29 and 30 are rigidly secured to column 26 to engage and rest on rails 13a and 14a of side frame 11a. Outwardly projecting pins 31 on the various side frame rails prevent shifting of the ladder support frame when in hooked engagement with the side frames.

As best seen in Fig. 2, the ladder support frame column 25 and the side frame rail 13 are each provided with rigidly affixed short tubular members 32 to which are connected the diagonal bracing members 33. The bracing members are engaged to the tubular members 32 by means of special locking hooks 34, best illustrated in Fig. 4, and fully described in United States Patent No. 2,665,950, issued to W. J. S. Johnson. Such hooks have a curved portion 35 adapted to encircle the tubular member to which it is applied, with the hook being locked into place by spring-biased pin 36. When it is desired to release the hook from the tubular member 32, the pin 36 is merely pushed inwardly into the hook, and the curved portion 35 is lifted from the tubular member. In this manner, the diagonal bracing members are easily attached and detached without the use of any tools being required.

The upper rail 23 of the ladder support frame is journaled for axial rotation in bearing members 38 carried on the upper ends of columns 25 and 26. Pins 39, projecting outwardly from rail 23, prevent longitudinal displacement of rail 23 in these bearing members.

The telescopic ladder assembly 40 comprises an outer ladder formed from opposed U-shaped channels 41 and 42, each of which is secured to rail 23, as by bolts 43. Rungs 44 extend between and are fastened to the flanges of the channels at one side thereof, at desired vertical spacings, and vertically spaced horizontal bracing members 45 extend between and are fastened to the other flanges of the channels 41 and 42 at the other sides thereof. The outer ladder is provided with the above described locking hooks 34, pivotally mounted on the lower ends of channels 41 and 42, which are adapted to lock onto the lower rail 24 of the ladder support frame when the ladder is in vertical position.

The inner ladder comprises opposed U-shaped channels 46 and 47 having vertically spaced rungs 48 extending therebetween. As seen in Figs. 5 and 6, the inner ladder is fully encompassed by the outer ladder,

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over a major portion of the length of the inner ladder, which greatly increases the safety and rigidity of the structure. Furthermore, by using two relatively long ladder members, rather than a larger number of shorter members, the looseness between the members is minimized.

An enclosed platform unit 50 is carried by the upper end of the inner ladder, and includes a platform 51 and an enclosing safety railing 52.

A hoisting rope 53 is passed around pulleys 54 and 55, both mounted on the outer ladder, with the ends of the rope being fastened to the inner ladder at 56, so that the inner ladder may be raised or lowered. A conventional one-way latching hook 57 is pivotally mounted at 58 on the inner ladder channel 47, so that the inner ladder can be latched at any desired degree of extension. As may be seen in Fig. 4, when the inner ladder is raised, the outer curved portion 59 of the hook will engage a rung 44 and the hook will be pivoted in a counterclockwise direction, until the hook passes over the rung. If the inner ladder is now lowered, the hook will engage the rung and will support the inner ladder therefrom. If it is desired to raise the inner ladder to a high elevation, the inner ladder is pulled further upwardly. The hook guard 60 will be engaged by the rung 44 and will pivot downwardly about pintle 61 on hook 57, allowing the inner ladder to move freely upwardly to a desired latched position, the inner ladder is pulled upwardly until the guard 60 is above the rung 44, and is then lowered. Each time the guard 60 engages a rung 44, the hook 57 will be pivoted about 58 so as to clear the rung, and the inner ladder may be fully closed.

The ladder support frame also carries the two outrigger assemblies 65 and 65a. The outrigger arm 66 is connected to the upper portion of column 25 of the ladder support frame by a split ring clamp 67. A stabilizer arm 68 is connected at one end to the lower end of column 25 by a split ring clamp 69 and is pivotally connected at its other end at 70 to the outrigger arm 66 between its ends. By this arrangement, the clamps 67 and 69 may be loosened, and the outrigger assembly may be pivoted around column 25 as a vertical axis to any desired position. Also, the loosened split ring clamp 67 may be moved upwardly or downwardly on column 25 so that the lower end of the outrigger arm may be vertically adjusted. When the outrigger assembly is adjusted so that the lower end of the outrigger arm is at a desired position, both horizontally and vertically, the clamps 67 and 69 are tightened to hold the outrigger assembly in rigid relation to the ladder support frame. The outrigger assembly 65a mounted on ladder support frame column 26 is identical to that just described.

One of the advantages of the scaffold, as above described, is that it may be easily transported when disassembled. The ladder-platform-outrigger assembly 12 is essentially flat, when the outriggers are swung around to rest against the ladder support frame, and the diagonal braces 33, which may be left attached to the ladder support frame, are pivoted downwardly thereagainst. The two side frame members 11 and 11a are flat and can be stacked upon the ladder-platform-outrigger assembly. Since these units are constructed of a lightweight metal, the entire scaffold may easily be carried by one man.

To assemble the scaffold, the ladder unit is placed on its side and the side frame 11 is slipped into the hooks 27 and 28. The diagonal braces 33 are then locked into place on the side frame to secure the side frame 11 in place. The ladder is then turned over and the other side frame 11a attached and locked in place by the diagonal braces. The entire structure is then raised so that all of the roller feet are on the ground, and the scaffold may now be rolled to the desired point of use. At this point, the roller feet are locked and the scaffold

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is leveled by the adjustable legs. To insure the maximum amount of stability, the outriggers are adjusted to engage the ground at desired points. The inner ladder may then be telescopically raised so that the platform 50 is at a desired height. The scaffold may easily be disassembled in the reverse manner. All of the above operations can easily be performed by a single workman, without the use of any tools whatsoever.

An important advantage of the scaffold is the manner in which it may be moved through doorways or under low overhanging objects. By unlatching the hook 34 holding the bottom of the ladder to the ladder support frame rail 24, the entire ladder and platform unit may be rotated to the horizontal dotted line position of Fig. 1, so that the overall height of the entire scaffold is greatly reduced. Chain 71 is provided to hold the ladder and platform in this horizontal position. The outriggers are also swung flat against the side frames, so as to reduce the overall width of the scaffold. The scaffold may now be easily rolled through standard size doorways. When the scaffold is again at its desired point of use, the ladder is rotated back to vertical position and latched at its bottom end to the ladder support frame.

Another advantage of the scaffold is that by the use of the adjustable legs the side frames can be elevated so that the scaffold can straddle rows of seats on an inclined floor, as in an auditorium, in order that any point on the ceiling may be reached.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred embodiment of the invention, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the attached claims.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A scaffold comprising first and second opposed and spaced apart side frames, a vertically disposed ladder support frame extending between said side frames and detachably secured thereto, means for releasably connecting said ladder support frame to said side frames and forming a vertical bracing support therewith, and a telescopic ladder pivotally mounted between its ends on said ladder support frame for rotation about a horizontal axis.

2. A scaffold as set forth in claim 1 further including a rigid outrigger arm pivotally connected at one end thereof to said ladder support frame for rotation around said frame as a vertical axis, said pivotal connection being vertically adjustable on said ladder support frame, and a rigid stabilizer connected at one end thereof to said ladder support frame and at its other end to said outrigger arm between its ends.

3. A scaffold comprising first and second opposed and spaced apart side frames each having vertically spaced and horizontally extending members, a vertically disposed, generally rectangular ladder support frame extending between said side frames, said ladder support frame having downwardly facing hooks engageable with said side frame members, means for releasably connecting said ladder support frame to said side frames and forming a vertical bracing support therewith, and a telescopic ladder pivotally mounted between its ends on said ladder support frame for rotation about a horizontal axis.

4. A scaffold comprising two opposed and spaced apart side frames each having vertically spaced apart members, a continuously vertically adjustable ground engaging member at each end of each side frame, a vertically disposed, generally rectangular ladder support frame extending between said side frames, said ladder support frame having downwardly facing hooks engageable with said side frame members, means releasably connecting said ladder support frame to said side frames and forming vertical bracing supports, therewith, a telescopic ladder pivotally mounted between its ends on said ladder sup-

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port for rotation about a horizontal axis, and releasable latch means to latch said ladder at predetermined spaced apart telescopically extended positions.

5. A scaffold as set forth in claim 4 further including a rigid outrigger arm pivotally connected at one end thereof to said ladder support frame for rotation around said frame as a vertical axis, said pivotal connection being vertically adjustable on said ladder support frame, and a rigid stabilizer connected at one end thereof to said ladder support frame and at its other end to said outrigger arm between its ends.

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131,442
203,119
532,700
1,155,958
1,921,583
2,085,921
2,310,119
2,499,091
2,586,531
2,665,950
2,872,252

6

References Cited in the file of this patent

UNITED STATES PATENTS

Heffley -----	Sept. 17, 1872
Clark et al. -----	Apr. 30, 1878
Possin -----	Jan. 15, 1895
Rickard -----	Oct. 5, 1915
Reed -----	Aug. 8, 1933
McElheny -----	July 6, 1937
Reinhardt -----	Feb. 2, 1943
Brubaker -----	Feb. 28, 1950
Gordon -----	Feb. 19, 1952
Johnson -----	Jan. 12, 1954
Konkle -----	Feb. 3, 1959