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Nyman

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[54] **SCAFFOLD STRUCTURE**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 400,613, Sept. 25, 1973, abandoned, which is a continuation of Ser. No. 89,344, Nov. 13, 1970, Pat. No. 3,770,902.

[52] **U.S. Cl.** **182/103;** 182/214

[51] **Int. Cl.²** **E06C 7/16**

[58] **Field of Search** 182/102, 103, 122, 214

[56] **References Cited**

UNITED STATES PATENTS

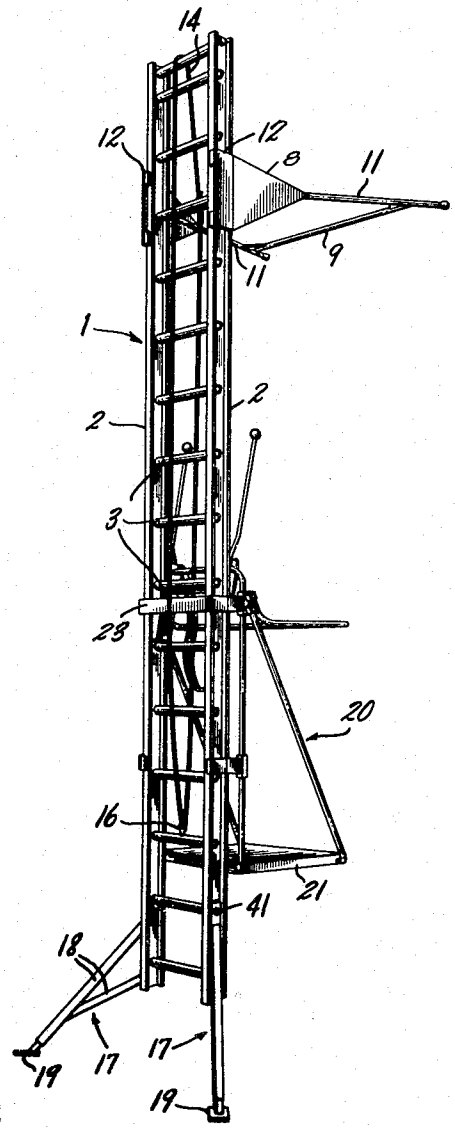
800,896	10/1905	Biehler	182/214 X
837,006	11/1906	Spaull et al.	182/103
843,989	2/1907	Bauer	182/214 X
1,800,792	4/1931	Hansen	182/214
1,969,628	8/1934	Skeenes	182/103 X
2,245,661	6/1941	Fieroh	182/122 X
3,490,558	1/1970	Foley	182/103

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[57] **ABSTRACT**

A scaffold structure comprising a ladder assembly that is maintained in a substantially vertical orientation during use by means of two arms extending outwardly from two support members and that are mounted on the support members for sliding movement along substantially the whole length of the support members and legs mounted at the bottom of the support members. The scaffold structure also comprises a vertically positionable platform assembly connected to the ladder assembly for vertical movement therealong and connected to the assembly by means of connecting members disposed about the outboard side of the support members for sliding movement along the support members.

18 Claims, 3 Drawing Figures



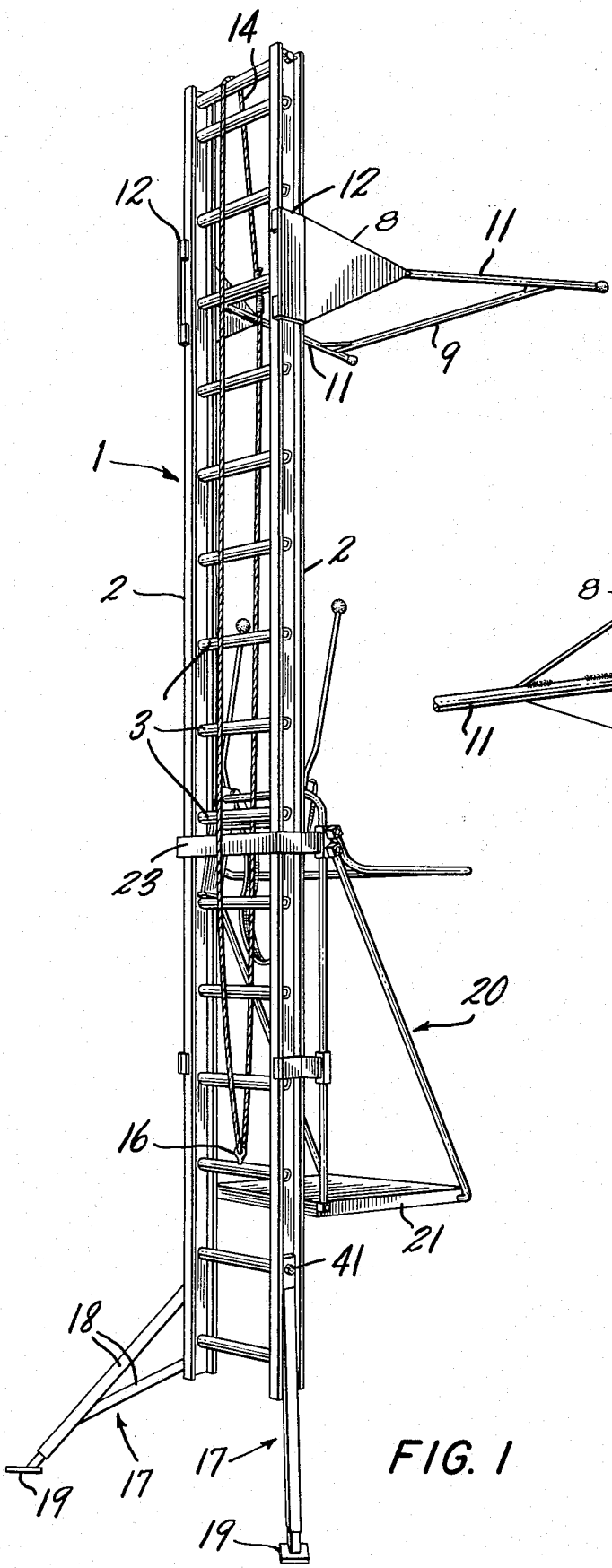

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FIG. 1

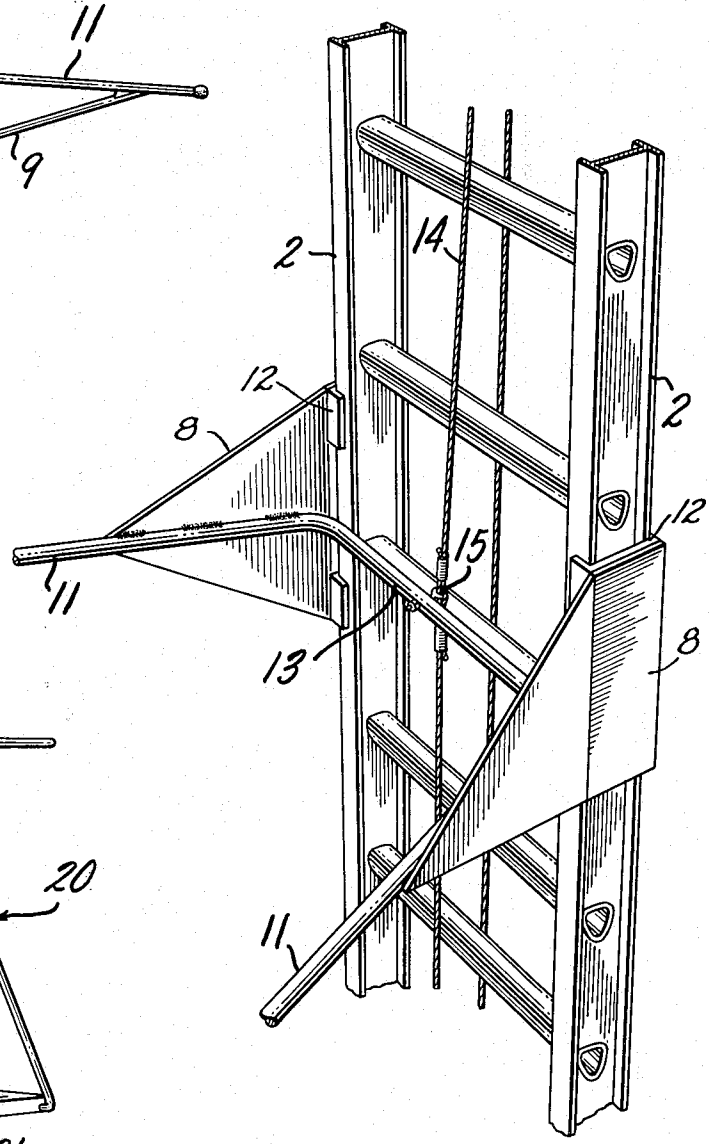

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FIG. 2

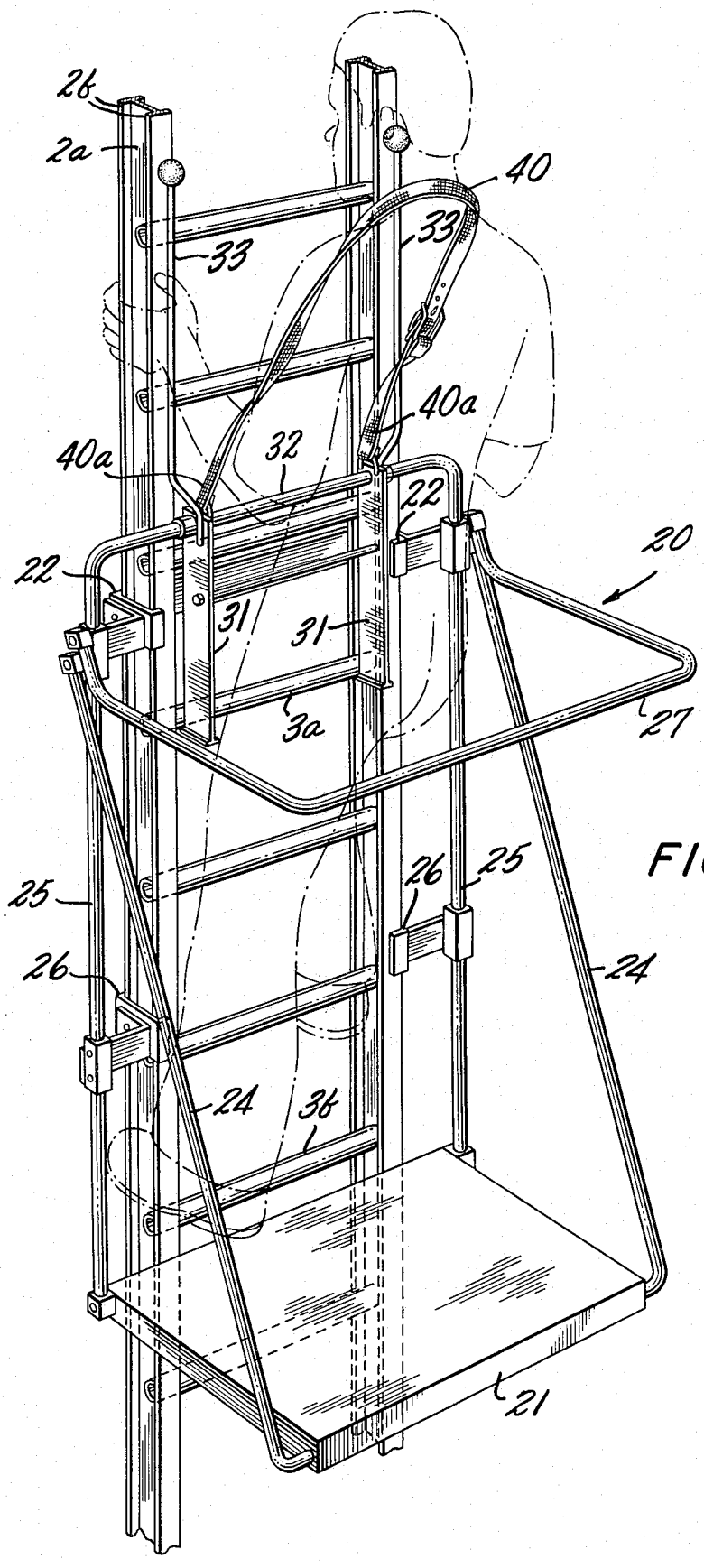


FIG. 3

SCAFFOLD STRUCTURE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of the U.S. Patent application Ser. No. 400,613 filed on Sept. 25, 1973 and now abandoned, which is a continuation of the U.S. patent application Ser. No. 89,344, filed on Nov. 13, 1970 and now U.S. Pat. No. 3,770,902.

BACKGROUND OF THE INVENTION

The present invention relates to a scaffold structure comprising a ladder assembly and a platform assembly.

Known scaffold structures for use in exterior work, such as painting, have many disadvantages. One of these disadvantages is that the securing of the scaffold structures, against buildings or where stress forces are encountered, offer great difficulties which have not been overcome satisfactorily by the known structures. In addition, a simple and uncomplicated anchoring of the platform has not been provided. Furthermore, the prior art scaffold structures do not provide an easy and convenient vertical adjustment of the platform assembly or of the various structural members that are used to orient the ladder assembly in a substantially vertical direction.

SUMMARY OF THE INVENTION

Therefore, it is an object of the present invention to eliminate the disadvantages of the prior art scaffold structures by providing a reliable and simple scaffold structure having an equally reliable and simple vertically adjustable platform assembly.

Another object of the present invention is to provide a simple means for mounting the platform assembly to the ladder assembly for movement along the length of the ladder assembly.

A further object of the present invention is to provide a simple structure for maintaining the ladder assembly in a substantially vertical orientation and a simple and reliable structure for connecting this structure to the ladder assembly so that it is slidable therealong.

Still another object of the present invention is to provide structure for effecting the longitudinal movement of the structure for maintaining the ladder assembly in a substantially vertical orientation along the length of the ladder assembly.

A still further object of the present invention is to provide an apparatus for locking the platform assembly to the ladder assembly to keep it in a working position and for easily and simply releasing it for movement to another working position.

In accordance with the objects of the present invention, a scaffold structure is provided comprising a ladder assembly having a pair of juxtaposed and spaced apart elongated support members, a plurality of rungs interconnecting the support members at a plurality of longitudinal spaced-apart locations and means connected to the support members for maintaining the ladder assembly in a substantially vertical orientation during use wherein the support members extend in a generally vertical direction. The means for maintaining the ladder assembly in a substantially vertical orientation comprises two arms extending outwardly from the support members and lying in a plane generally perpendicular to that of the support members, means mounting the arm on the support members for sliding movement

along substantially the whole length of the support members and manually actuatable means for effecting movement of the arms along the length of the support members. The means mounting the arms on the support members comprises a pair of connecting members each disposed about and slidable along the outboard side of one of the support members and connected to one of the arms and a connecting rod interconnecting both connecting members.

The scaffold structure also comprises a vertically positionable platform assembly movably connected to the ladder assembly for vertical movement therealong and defining therewith a scaffold structure. The vertically positionable platform assembly comprises a base portion extending outwardly from the support members in the same direction as the arms and dimensioned to accommodate thereon a standing person when the ladder assembly is vertically orientated, means movably connecting the platform assembly to the ladder assembly for movement therealong, locking means connected to the platform assembly and coacting with the rungs for releasably locking the platform assembly in a predetermined working position along the ladder assembly and means engagable with a person ascending or descending the ladder assembly for effecting corresponding vertical ascending or descending movement of the platform assembly along the support members. As a result of this structure, a platform assembly may be vertically moved or positioned along the ladder assembly by the ascending or descending movement of a person along the ladder assembly.

The locking means comprises a pair of pivotally mounted locking members manually pivotable towards the ladder assembly to releasably bear against and engage with a common one of the rungs to lock the platform assembly in the working position and manually pivotable away from the ladder assembly to disengage the locking members from the common rung to thereby permit movement of the platform assembly along the support members. A connecting rod interconnects the pair of locking connectors and mounts them for pivotal movement together as integral unit and a pair of manually actuatable levers are each connected to one of the locking members and movable away from the ladder assembly to releasably engage both locking members with a common rung and movable towards the ladder assembly to disengage locking members from the rung.

The means movably connecting the platform assembly to the ladder assembly for movement therealong comprises at least one pair of connecting members each disposed about the outboard side of one of the support members for sliding movement therealong and a connecting rod for connecting the pair of connecting members together.

Each of the support members has either an I-shaped cross-section or a channel in the outboard side having a web portion and two flange portions. Each pair of connecting members has a generally C-shaped cross-section configured to closely fit about the outboard portions of both flange portions. The manually actuatable means for effecting movement of the arms along the length of the support members comprises a closed loop of cord looped around the plurality of rungs and connected at one portion to the connecting rod interconnecting the pair of connecting members connected to the arms.

Having in mind the above and other objects that will be obvious from an understanding of the disclosure, the present invention comprises the combination and arrangement of parts illustrated in the presently preferred embodiment of the present invention which are hereinafter set forth in sufficient detail to enable those persons skilled in the art to clearly understand the function, operation, construction, and advantages of it when read in with with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of the whole scaffold structure in accordance with the present invention;

FIG. **2** is perspective view of the upper part of the scaffold structure in accordance with the present invention; and

FIG. **3** is perspective view of the platform assembly movably connected to the ladder assembly according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the drawings, ladder assembly **1** has a pair of juxtaposed and spaced apart elongated support members **2** and a plurality of rungs **3** interconnecting these support members **2** at a plurality of longitudinally spaced apart locations. The ladder assembly is preferably made from light metal and the rungs consist of round or square tubes preferably having an outer corrugated cross-section to prevent slipping when in use. The support members **2** have a channel therein on the outboard side thereof and they preferably comprise beams having an I-shaped cross-section having a web-portion **2***a* and two flange portions **2***b*.

The ladder assembly **1** is maintained in a substantially vertical orientation during use wherein the support members **2** extend in a generally vertical direction by means of two arms **11** extending outwardly from the support members **2** and lying in a plane generally perpendicular to that of the support members **2.** The arms abut against a wall or similar structure during use of the scaffold assembly. The arms **11** are mounted on the support members **2** for sliding movement along substantially the whole length of the support members by a pair of connecting members **12** having a C-shaped cross-section and configured to closely fit about the outboard side of the support members **2.** The connecting members **12** are disposed about and slidable along the outboard side of the support members **2** and are connected to the arms by members **8.** A connecting rod **13,** shown in FIG. **2,** interconnects both connecting members **12** and another interconnecting rod **9** interconnects the arms **11** to provide further stabilization of the arms **11.** Manually actuatable means for effecting movement of the arms **11** along the length of the support members **2** comprises a closed loop of cord **14** looped around a plurality of rungs **3** and connected at one end portion at connector **15** to the connecting rod **13.** The operator of the scaffold structure can lower or raise the arms **11** by pulling the rope or cord **14** at the side of the ladder assembly from which the arms project or the opposite side, respectively.

The means maintaining the ladder assembly in the vertical orientation further comprises two legs **17** bracing the lower portion of the ladder assembly **1** and fastened to the outboard side of the lower end of the support members **2** by the nut and bolt assembly **41.** The legs **17** each consists of two metal tubes **18** and by feet **19.** The legs **17** projects sideways and preferably away from the building or wall upon which arms **11** rests during use.

Connected to the ladder assembly is a vertically positionable platform assembly **20.** The platform assembly is connected to the ladder assembly **1** for vertical movement therealong to define with the ladder assembly the scaffold structure. The platform assembly is movably connected to the ladder assembly by means of two pairs of connecting members **22** and **26.** Each connecting member is disposed about the outboard side of one of the support members **2** for sliding movement therealong. The connecting members have a C-shaped cross-section and are configured to closely fit about the outboard portion of the support member **2.** The connecting members **22** are interconnected by a connecting rod **23.** The pairs of connecting members **22** and **26** on each support member are connected together by means of rods **25.** The rods **25** terminate at base portion **21** which is connected to both rods **25** and another pair of connecting rods **24** provide further support. Rods **25** are also connected to connecting members **22.** The connecting members **22** are also interconnected by an arcuate connecting rod **27** which is pivotally mounted at connecting members **22** in order to enable the user of the scaffold structure to conveniently leave and enter the platform assembly **20** by raising and lowering the arcuate connecting rod **27.**

The platform assembly **20** is also provided with locking means which coact with the rungs **3** for releasably locking the platform assembly **20** in a predetermined working position along the ladder assembly. The locking means comprises a pair of pivotally mounted locking members **31** pivotally mounted on connecting rod **32** to move therewith as an integral unit. The locking members **31** are pivotable towards the ladder assembly to a locking position wherein they engage with a common one of the rungs **3***a* to lock the platform assembly in the working position and manually pivotable away from the ladder assembly to an unlocking position wherein they disengage the locking members **31** from common rung **3***a* to thereby permit movement of the platform assembly along the support members **2.** As seen in the drawings, the bottom ends of the locking members **31** have substantially flat end faces which are pivotable to rest upon and bear against a common one of the rungs **3** to engage therewith when the locking members are pivoted to their locking position. A pair of manually actuatable levers **33** are each connected to one of the locking members **31** and are movable away from the ladder assembly to releasably engage both locking members with a common rung **3***a* and movable toward the ladder assembly to disengage the locking members from the rung **3***a*. The levers are positioned at the level of the breast region of a person standing on the base portion to enable the person to easily reach and move the levers **33** to pivot the locking members **31.**

The platform assembly **20** also has means engagable with a person ascending or descending the ladder assembly **1** for effecting corresponding vertical ascending or descending movement of the platform assembly **20** along the support members **2** when the locking members **31** are disengaged from the common rung **3***a*. This means comprises a strap member **40** having two end portions **40***a* connected to the rod **32.** The strap is posi-

tioned relative to the base portion to fit around the back of the neck and shoulder of a person both facing the ladder assembly and standing on the rung 3*b* of the ladder assembly located adjacent to the base portion as shown in FIG. 3.

The operation of the scaffold structure in accordance with the present invention will now be explained. The scaffold structure is placed in the position shown in FIG. 1 with the arms 11 abutting against a building or wall. The cord or rope 14 is pulled from either side of the ladder assembly 1 to raise or lower the arms to a desired height so that it safely abuts against a wall or building. The operator then raises the arcuate connecting rod 27 and enters the platform assembly 20. The operator then places the strap 40 around his neck and climbs on to rung 3*b* as shown in FIG. 3. He then disengages the locking members 31 from rung 3*a* by use of the manually actuatable levers 33 thereby releasing the platform assembly for slidable movement along the support members 2. The operator then climbs on the rungs 3 until he reaches the desired height for the platform assembly and then pivots the levers 33 away from the ladder assembly to engage the locking members 31 on a common rung thereby locking the platform assembly in the desired working position. The operator is then able to remove the strap from the back of his neck and be supported by the base 21, to accomplish his appointed task.

While preferred embodiments of the invention have been shown by way of example in the drawings, it will be understood that the invention is in no way limited to these embodiments.

What I claim is:

1. A scaffold structure comprising: a ladder assembly having a pair of juxtaposed and spaced-apart elongated support members, a plurality of rungs interconnecting said support members at a plurality of longitudinally spaced-apart locations, and means connected to said support members for maintaining said ladder assembly in a substantially vertical orientation during use so that said support members extend in a generally vertical direction comprising two arms extending outwardly from said support members and lying in a plane generally perpendicular to that of said support members, means mounting said arms on said support members for sliding movement along substantially the whole length of said support members comprising a first pair of connecting members each disposed about and slidable along the outboard side of respective ones of said support members and connected to one of said arms and means including a connecting rod interconnecting both connecting members, and manually actuatable means for effecting movement of said arms along the length of said support members; and a vertically positionable platform assembly movably connected to said ladder assembly for vertical movement therealong and defining therewith a scaffold structure, said platform assembly comprising a base portion extending outwardly from said support members in the same direction as said arms and dimensioned to accommodate thereon a standing person when said ladder assembly is vertically orientated, means movably connecting said platform asembly to said ladder assembly for movement therealong, locking means connected to said platform assembly and coacting with said rungs for releasably locking said platform assembly in a predetermined working position along said ladder assembly and comprising a pair of pivotally mounted locking members having at one end substantially flat end faces and means mounting said locking members for manual pivotal movement to a locking position wherein said flat end faces rest upon and bear against a common one of said rungs to thereby releasably lock said platform assembly in said working position and to an unlocking position wherein said flat end faces are free of said rungs to thereby permit movement of said platform assembly along said support members, and means engageable with a person ascending or descending said ladder assembly for effecting corresponding vertical ascending or descending movement of said platform assembly along said support members; whereby said platform assembly may be vertically moved and positioned along said ladder assembly by the ascending or descending movement of a person along said ladder assembly.

2. A scaffold structure according to claim 1; wherein said locing means includes a connecting rod interconnecting said pair of locking members and mounting same for pivotal movement together as an integral unit and a pair of manually actuatable levers each connected to one of said locking members and pivotally movable away from said ladder assembly to effect pivotal movement of said locking members into said locking position and pivotally movable towards said ladder assembly to effect pivotal movement of said locking members to said unlocking position.

3. A scaffold structure according to claim 2, wherein said levers are positioned at the level of the breast region of a person standing on said base portion to enable the person to easily reach and move said levers to pivot said locking members.

4. A scaffold structure according to claim 1; wherein said means engagable with a person comprises a strap member connected to and depending from said platform assembly and positioned relative to said base portion to fit around the back of the neck and shoulder of a person both facing said ladder assembly and standing on the rung of the ladder assembly located adjacent said base portion.

5. A scaffold structure according to claim 4; wherein said strap member has two end portions respectively connected to and suspended between said pair of locking members.

6. A scaffold structure according to claim 1; wherein said means movably connecting said platform assembly to said ladder assembly includes means including at least one second pair of connecting members each disposed about and slidable along the outboard side of respective ones of said support members, connecting rod interconnecting said second pair of connecting members and wherein said platform assembly includes a plurality of connecting bars interconnecting said base portion to said second pair of connecting members.

7. A scaffold structure according to claim 6; wherein said support members each have an I-shaped cross-section having a web portion and two flange portions and wherein each pair of connecting members have a generally C-shaped cross-section configured to closely fit about the outboard portion of both flange portions.

8. A scaffold structure according to claim 1; wherein said manually actuatable means comprises a closed loop or cord looped around a plurality of rungs and connected at one portion to said connecting rod.

9. A scaffold structure according to claim 1; wherein said support members each have means defining a

channel in the outboard side thereof and wherein said first pair of connecting members have a generally C-shaped cross-section configured to closely fit about the outboard side of said support members.

10. A scaffold structure comprising: a ladder assembly having a pair of juxtaposed and spaced-apart elongated support members, a plurality of rungs interconnecting said support members at a plurality of longitudinally spaced-apart locations, and means connected to said support members for maintaining said ladder assembly in a substantially vertical orientation during use so that said support members extend in a generally vertical direction; and a vertically positionable platform assembly movably connected to said ladder assembly for vertical movement therealong and defining therewith a scaffold structure, said platform assembly comprising a base portion extending outwardly from said support members and dimensioned to accommodate thereon a standing person when said ladder assembly is vertically orientated, means movably connecting said platform assembly to said ladder assembly for movement therealong comprising at least one first pair of connecting members each disposed about the outboard side of one of said support members for sliding movement therealong and a first connecting rod connecting said first pair of connecting members together, locking means connected to said platform assembly and coacting with said rungs for releasably locking said platform assembly in a predetermined working position along said ladder assembly and comprising a pair of pivotally mounted locking members having at one end substantially flat end faces and means mounting said locking members for manual pivotal movement to a locking position wherein said flat end faces rest upon and bear against a common one of said rungs to thereby releasably lock said platform assembly in said working position and to an unlocking position wherein said flat end faces are free of said rungs to thereby permit movement of siad platform assembly along said support members, and means engageable with a person ascending or descending said ladder assembly for effecting corresponding vertical ascending or descending movement of said platform assembly along said support members; whereby said platform assembly may be vertically moved and positioned along said ladder assembly by the ascending or descending movement of a person along said ladder assembly.

11. A scaffold structure according to claim **10**; wherein said locking means includes a connecting rod interconnecting said pair of locking members and mounting same for pivotal movement together as an integral unit and a pair of manually actuatable levers each connected to one of said locking members and pivotally movable away from said ladder assembly to effect pivotal movement of said locking members into said locking position and pivotally movable towards said ladder assembly to effective pivotal movable towards said ladder assembly to effect pivotal movement of said locking member to said unlocking position.

12. A scaffold structure according to claim **11**, wherein said levers are positioned at the level of the breast region of a person standing on said base portion to enable the person to easily reach and move said levers to pivot said locking members.

13. A scaffold structure according to claim **10**; wherein said means engageable with a person comprises a strap member connected to and depending from said platform assembly and positioned relative to said base portion to fit around the back of the neck and shoulder of a person both facing said ladder assembly and standing on the rung of the ladder assembly located adjacent said base portion.

14. A scaffold structure according to claim **13**; wherein said strap member has two end portions respectively connected to and suspended between said pair of locking members.

15. A scaffold structure according to claim **10**; wherein said means for maintaining said ladder assembly in a substantially vertical orientation comprises two arms extending outwardly from said support members in the same direction as said base portion and lying in a plane generally perpendicular to that of said support members, means mounting said arms on said support members for sliding movement along substantially the whole length of said support members comprising a second pair of connecting members each disposed about and slidable along the outboard side of one of said support members and connected to one of said arms, means including a connecting rod interconnecting both connecting members and manually actuatable means for effecting movement of said arms along the length of said support members.

16. A scaffold structure according to claim **15**; wherein said support members each have an I-shaped cross-section having a web portion and two flange portions and wherein each pair of connecting members have a generally C-shaped cross-section configured to closely fit about the outboard portion of both flange portions.

17. A scaffold structure according to claim **15**; wherein said manually actuatable means comprises a closed loop of cord looped around a plurality of rungs and connected at one portion to said connecting rod.

18. A scaffold structure according to claim **10**; wherein said support members each have means defining a channel in the outboard side thereof and wherein said first pair of connecting members have a generally C-shaped cross-section configured to closely fit about the outboard side of said support members.

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