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[54] **MOBILE SCAFFOLD**
 9 Claims, 11 Drawing Figs.

[52] U.S. Cl..... **182/16,**
 182/63, 182/148, 182/131
 [51] Int. Cl..... **E04g 1/22**
 [50] Field of Search..... 182/16, 63,
 141, 148, 178, 132, 129, 14, 13

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ABSTRACT: A mobile scaffold comprises a vehicle-mounted platform that can be elevated to a work position and that forms the roof of the vehicle over the driver's seat when the scaffold is not in use. An upper section telescopes within an intermediate section, which in turn telescopes within a lower section, under the control of a special power-driven cable and pulley system.

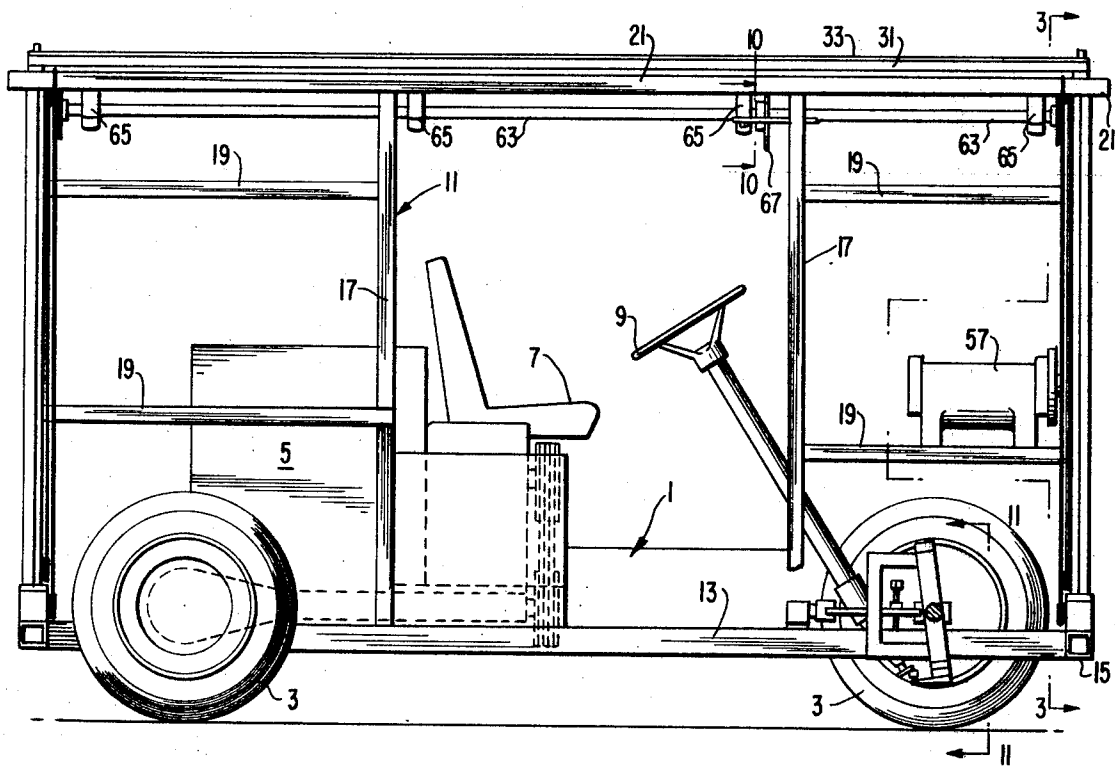


FIG. I

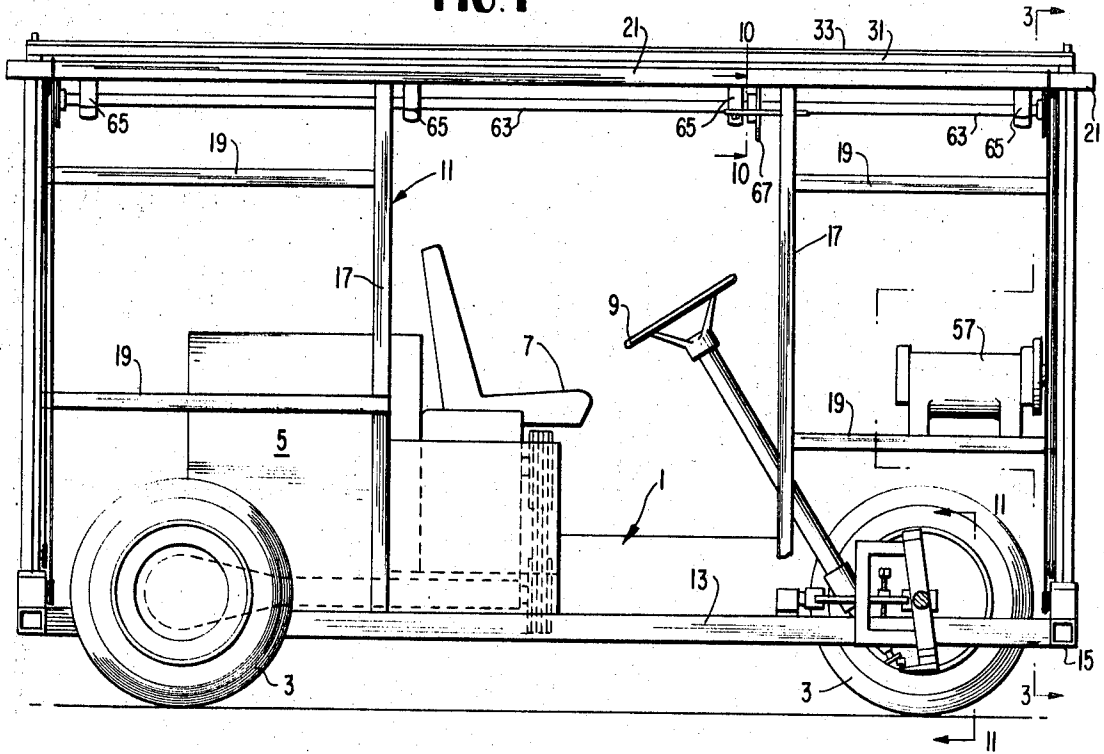


FIG. 2

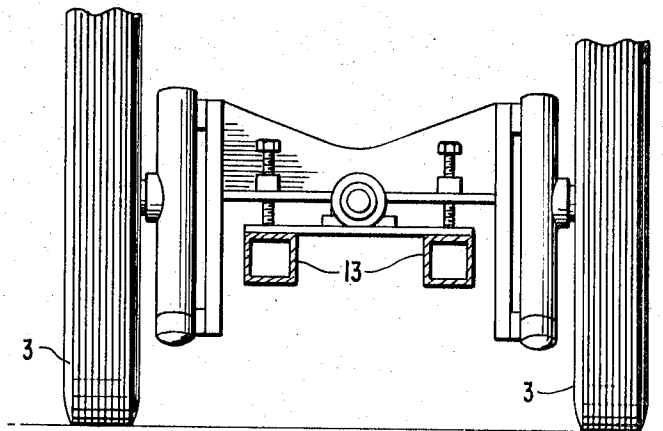
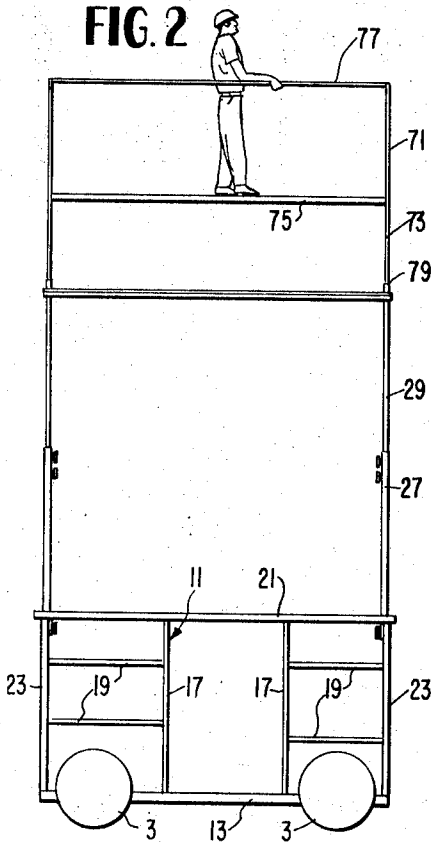


FIG. II

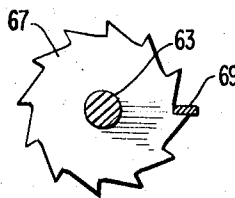


FIG. 10

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FIG. 5

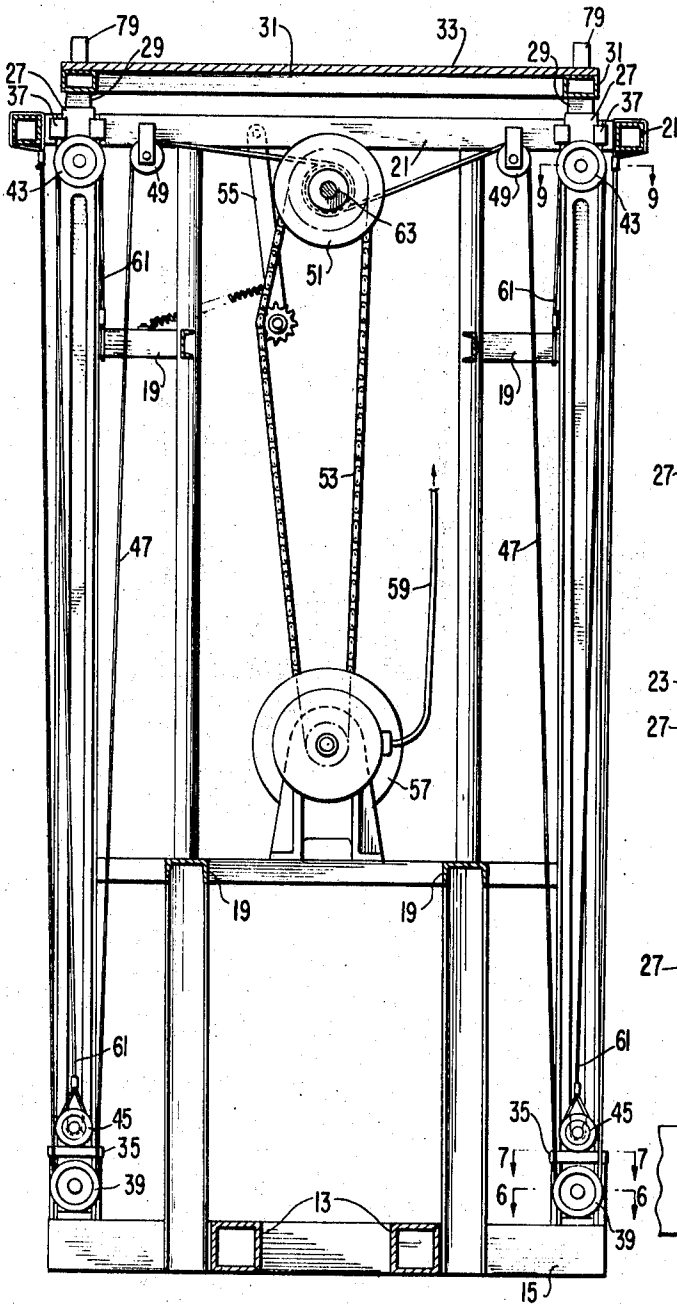
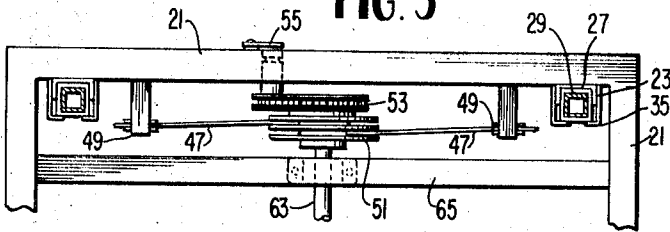


FIG. 3

FIG. 9

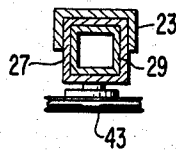


FIG. 8

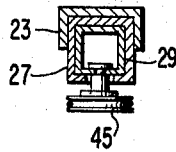


FIG. 7

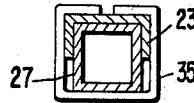


FIG. 6

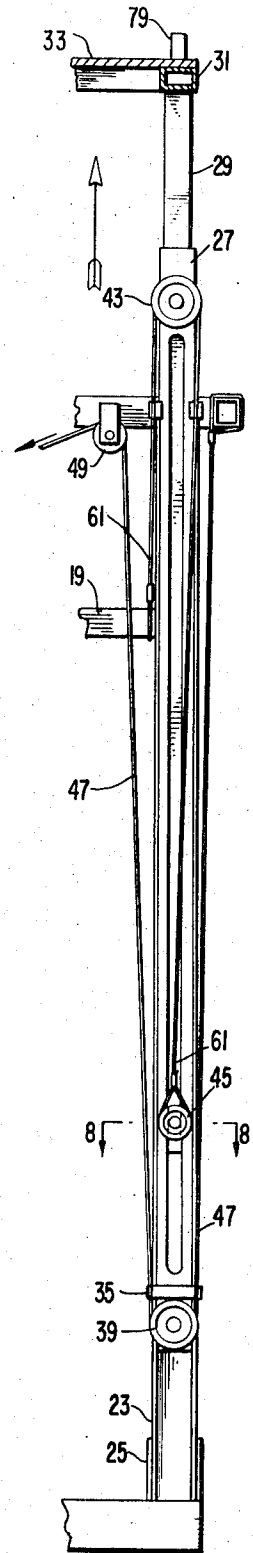
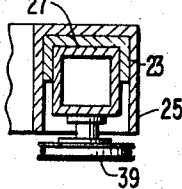


FIG. 4

MOBILE SCAFFOLD

The present invention relates to mobile scaffolds, more particularly of the type in which a platform mounted on a vehicle can be vertically adjusted to provide an elevated work station.

It is an object of the present invention to provide a mobile scaffold that can be constructed by relatively simple conversion of a conventional vehicle.

Another object of the present invention is the provision of a mobile scaffold whose platform can be raised to relatively great heights but which will have a desirably low profile in its lowered position.

Still another object of the present invention is the provision of a mobile scaffold that affords a maximum of protection to the driver.

The present invention also contemplates a mobile scaffold whose platform is of maximum area relative to the size of the vehicle.

The present invention is also concerned with a mobile scaffold which is sturdy and well braced even in its most elevated position.

Finally, it is an object of the present invention to provide a mobile scaffold which will be relatively simple and inexpensive to construct, easy to raise and lower and to operate, maintain, and repair, and which will be rugged and durable in use.

Other objects and advantages of the present invention will become apparent from a consideration of the following description, taken in connection with the accompanying drawings, in which:

FIG. 1 is a side elevational view of a mobile scaffold according to the present invention, in its lowered position;

FIG. 2 is a somewhat simplified view of the structure of FIG. 1, on a reduced scale, showing the mobile scaffold of the present invention in its fully elevated position and with an auxiliary platform in use;

FIG. 3 is an elevational cross-sectional view of one end of the mobile scaffold of the present invention, on the line 3-3 of FIG. 1, showing in detail the elevating mechanism;

FIG. 4 is a fragmentary view of the right side of FIG. 3, with the parts partially elevated;

FIG. 5 is a plan view of a portion of FIG. 3, with the platform removed for clarity;

FIG. 6 is a cross-sectional view on an enlarged scale, taken on the line 6-6 of FIG. 3;

FIG. 7 is a view similar to FIG. 6 but taken on the line 7-7 of FIG. 3;

FIG. 8 is a view similar to FIGS. 6 and 7 but taken on line 8-8 of FIG. 4;

FIG. 9 is a view similar to FIGS. 6-8, but taken on the line 9-9 of FIG. 3;

FIG. 10 is an enlarged fragmentary cross-sectional view taken on the line 10-10 of FIG. 1; and

FIG. 11 is an enlarged fragmentary cross-sectional view taken on the line 11-11 of FIG. 1.

Referring now to the drawings in greater detail, and first with reference to the overall arrangement shown in FIG. 1, it will be seen that a mobile platform according to the present invention comprises a vehicle having a chassis 1 supported for movement on four wheels 3. The chassis carries an engine 5 which may be a conventional automobile engine, which drives through conventional reduction gearing or by pulleys or sprockets or the like a rearwardly extending drive shaft that drives the rear wheels thereby to propel the vehicle. A seat 7 is provided for the operator, behind a steering wheel 9 which actuates a steering mechanism to turn the front wheels 3 thereby to steer the vehicle.

The vehicle supports a rigid frame 11 that substantially defines the volume of the vehicle. Frame 11 comprises a pair of horizontal box beams 13 that extend full length of the vehicle and are parallel to and spaced from each other and disposed between wheels 3. At their ends, box beams support crossbeams 15 that are also parallel to each other and extend endwise beyond the associated beams 13. Frame 11 also comprises rigid uprights 17 that are braced by horizontal braces 19 that extend between them. At its top, frame 11 is comprised

by horizontal upper beams 21 in the form of an open rectangular frame, secured to the tops of uprights 17.

The uprights at the ends of crossbeams 15 are in the form of channels 23. The channels 23 at the front end of the scaffold open rearwardly, while the channels 23 at the rear end of the scaffold open forwardly. Short channel sections 25 surround the lower ends of channels 23 and help brace channels 23 on the overhanging ends of crossbeams 15.

Disposed in channels 23 for vertical sliding movement relative thereto are vertical box beams 27. Box beams 29, in turn, slide within box beams 27. At their upper ends, the box beams 29 are secured to and support a horizontal open rectangular frame 31, which in turn provides support for the edges of a horizontal platform 33 on which workmen may stand.

The box beams 27 are provided adjacent their lower ends with collars 35 which, in the lowermost position of box beams 27 as shown in FIG. 3, rest on the upper ends of short channel sections 25. The upper ends of box beams 27, in turn, are slidably guided within guides 37 fixed to the inner sides of the forward and rear ends of the fixed rectangular frame portion provided by upper beams 21. A pulley 39 is carried by the lower end of each box beam 27 below the collar 35, as best seen in FIG. 6 and at the lower end of FIG. 4. A vertical slot 41 extends most of the length of each box beam 27 through a sidewall thereof. Another pulley 43 is carried by the upper end of each box beam 27 above the upper end of slot 41. Still another pulley 45 is carried by the lower end of box beam 29 and is disposed outside box beam 27 on a shaft that extends through slot 41 (see FIG. 8).

A flexible steel cable 47 is fixed at one end to upper beams 21 and extends downwardly and is reeved about pulley 39, then extends upwardly again as best seen in FIG. 3, and is reeved over a pulley 49 carried by upper beams 21, and thence is wound on a winding drum 51 that rotates about a horizontal axis. A drive chain 53 rotates winding drum 51 and is tightened by a spring-urged chain tightener 55 that depends pivotally from upper beams 21. A motor 57 is carried by frame 11 and may be of any conventional type such as a gasoline engine, and drives chain 53 to rotate winding drum 51. A flexible cable 59 provides a control for motor 57 by a workman standing on the platform 33.

Another flexible steel cable 61 is fixedly secured at one end to one of the braces 19, and extends upwardly and is reeved over pulley 43, then extends downwardly and deadends on pulley 45.

The mechanism shown in FIG. 3 is duplicated in mirror image relationship at the other end of the mobile scaffold. Thus, a view taken on the line A-A of FIG. 1 would be the mirror image of FIG. 3. The mechanism at the rear of the mobile scaffold is driven by the same drive as is shown in FIG. 3, by means of a horizontal shaft 63 that extends lengthwise of the vehicle and is journaled in crosspieces 65 spaced along the length of the vehicle and supported at their ends by the upper beams 21. Shaft 63 carries a ratchet wheel 67 shown in FIG. 1 and in enlarged scale in FIG. 10. A spring-urged dog 69 is pivotally mounted on the adjacent crosspiece 65 and is normally engaged with the teeth of ratchet wheel 67 as seen in FIG. 10, to permit the teeth to ratchet over dog 69 when the platform is rising but to prevent inadvertent lowering of the platform.

As seen in FIG. 2, an auxiliary platform 71 may be mounted on and over the platform 33, in order to achieve still greater elevation of the work station. Auxiliary platform 71 comprises upright legs 73 that support a horizontal floor 75 and a handrail 77. Sockets 79 are provided at the corners of platform 33 for removably receiving the lower ends of legs 73. Thus, the auxiliary platform 71 can be simply lifted off the regular platform 33 when not needed. Of course, sockets 79 could be replaced by pins fitting into hollow lower ends of legs 73.

In operation, motor 57 is actuated to raise platform 33. Drum 51 is rotated clockwise as seen in FIG. 3, to wind up the cables 47. The pulleys 39 are thus raised, and with them the box beams 27 are raised in channels 23 from the FIG. 3 posi-

tion to the FIG. 4 position and beyond. At the same time, the rising of box beams 27 carries the pulleys 43 upward, so that the pulleys 45 are raised twice as fast as the pulleys 43, and the box beams 29 rise, not only relative to channels 23, but also relative to box beams 27. Thus the box beams 29 rise twice as fast as box beams 27. The fully extended position shown in FIG. 2 is soon reached.

When motor 57 is shut off, there is no danger of the platform falling, because dog 69 will engage behind a tooth of ratchet wheel 67 to prevent undesired retrograde movement. To lower the platform, the dog 69 can be manually disengaged by the operator in the drivers seat, and platform 33 can lower under the braking action of motor 57, or under any other desired braking action to slow its descent.

It will be noted that the pulley and cable arrangement described with respect to one corner of the mobile scaffold is duplicated at all four corners. Thus, the platform 33 remains horizontal throughout its rising movement. Moreover, it will be noted that at all times the frame 11 and the platform 33 and the box beams 27 and 29 form a parallel piped skeleton structure, which is accordingly quite strongly braced against racking. In other words, the entire space occupied by the mobile scaffold forms a parallel piped reinforced frame, both in the extended and in the lowered position of the platform, so that the platform is firm and steady in all positions of use. At the same time, maximum working area on platform 33 is provided; while in the lowered position of the platform, the platform provides a roof for the entire vehicle.

It is also to be noted that the right side and the left side of FIG. 3 are virtually mirror images of each other, so that the static and dynamic forces on opposite sides of the vehicle are nicely balanced.

It is particularly to be noted that a number of variations may be made with respect to motor 57 and what it drives. In the first place, motor 57 can be entirely replaced, if desired, by a clutch arrangement to the vehicle drive from engine 5, so that when the drive wheels of the vehicle are unclutched, the winding drum 51 can be rotated. Moreover, it is to be noted that when the scaffold is in its vertically extended working position, the motor 57 is available for other uses. Thus, the drive shaft of motor 57 can be uncoupled from the chain 53 and coupled to other types of devices and working mechanisms which may be useful in connection with or in addition to the operations that are performed by the occupants of the work station on the scaffold. Thus, welders and pipe threaders and other devices can be carried by or operated by the mobile scaffold of the present invention, with only simple modifications.

From a consideration of the foregoing disclosure, therefore, it will be evident that all of the initially recited objects of the present invention have been achieved.

Although the present invention has been described and illustrated in connection with preferred embodiments, it is to be understood that modifications and variations may be resorted to without departing from the spirit of the invention, as those skilled in this art will readily understand. Such modifications and variations are considered to be within the purview and scope of the present invention as defined by the appended claims.

I claim:

1. A mobile scaffold comprising a motor-driven vehicle having a driver's seat and a steering wheel in advance of the driver's seat and steering mechanism for directing the vehicle, the vehicle having a frame including four fixed uprights in the four corners of the vehicle and extending to a height substantially above the driver's seat, a horizontal rectangular platform covering substantially the entire upper side of the vehicle and overlying the driver's seat and the steering wheel, a plurality of elevator assemblies for raising and lowering the horizontal platform, and means carried by the vehicle for operating the elevator assemblies simultaneously thereby to move the platform vertically while maintaining the platform horizontal, the platform in its lowermost position being supported by said

uprights.

2. A mobile scaffold as claimed in claim 8, and an auxiliary platform removably carried by said first-named platform and having a support surface for workmen which is spaced above said first-named platform.

3. A mobile scaffold as claimed in claim 9, said auxiliary platform having downwardly depending legs, and connector means in the corners of said first-named platform with which the lower ends of said legs are detachably interconnectable.

4. A mobile scaffold comprising a vehicle, a horizontal platform covering substantially the entire upper side of the vehicle, a plurality of elevator assemblies supporting the platform at spaced locations, means carried by the vehicle for operating the elevator assemblies simultaneously thereby to move the platform vertically while maintaining the platform horizontal, and an auxiliary platform removably carried by said first-named platform and having a support surface for workmen which is spaced above said first-named platform.

5. A mobile scaffold as claimed in claim 4, the two said platforms being polygonal, said auxiliary platform having downwardly depending legs, and connector means in the corners of said first-named platform with which the lower ends of said legs are detachably interconnectable.

6. A mobile scaffold comprising a vehicle having a fixed frame, a horizontal platform covering substantially the entire upper side of the vehicle, the platform being polygonal, a plurality of elevator assemblies supporting the platform at spaced locations, there being two said elevator assemblies at the front of the vehicle and two said elevator assemblies at the rear of the vehicle, a first winding drum common to said two elevator assemblies at the front of the vehicle, a second winding drum common to said two elevator assemblies at the rear of the vehicle, said winding drums being coaxial, a shaft extending lengthwise of the vehicle and interconnecting said winding drums for conjoint rotation, means to rotate the shaft to drive the winding drums, a flexible cable for actuating each elevator assembly, said flexible cables being oppositely wound in pairs about their associated winding drums, so that rotation of the winding drum simultaneously winds or unwinds all of the cables, each said elevator assembly comprising an upright member supporting a corner of the platform and mounted for vertical movement on and relative to the fixed frame, pulley means carried by said upright members, said flexible cables being reeved about said pulley means and secured to said fixed frame so that upon rotation of said drums, said upright members will move vertically to move the platform vertically relative to the fixed frame, further upright members carried by and movable vertically relative to the first-mentioned upright members, further pulley means carried by said first-named upright members, and further flexible cables secured at one end to the fixed frame and at the other end to said further upright members and reeved about said further pulley means for moving said further upright members vertically faster than said first-named upright members upon rotation of said drums.

7. A mobile scaffold as claimed in claim 6, said fixed frame comprising four fixed uprights at four corners of said vehicle, said first-mentioned upright members being vertically slidable relative to said fixed uprights, said vehicle having a driver's seat thereon with a steering wheel in advance thereof and steering mechanism for directing the vehicle, said fixed uprights extending a substantial distance above the driver's seat, said platform being supported by said fixed uprights in the lowermost position of said platform.

8. A mobile scaffold as claimed in claim 7, and an auxiliary platform removably carried by said first-named platform and having a support surface for workmen which is spaced above said first-named platform.

9. A mobile scaffold as claimed in claim 8, the two said platforms being polygonal, said auxiliary platform having downwardly depending legs, and connector means in the corners of said first-named platform with which the lower ends of said legs are detachably interconnectable.