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Medlock

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[54] **SELF-ELEVATING SCAFFOLD CONSTRUCTION**

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[52] **U.S. Cl.** **182/141;** 182/132

[51] **Int. Cl.** **E04g 1/18**

[58] **Field of Search** 182/178, 141, 148, 63, 182/129, 132, 118, 119

[56] **References Cited**

UNITED STATES PATENTS

2,846,275	8/1958	Esch	182/141
3,089,599	5/1963	Casella	182/129
3,221,838	12/1965	Brayton	182/178
3,385,400	5/1968	Whitsett	182/179
3,717,220	2/1973	Donker	182/129

FOREIGN PATENTS OR APPLICATIONS

1,430,237	1/1966	France	182/141

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[57] **ABSTRACT**

A pair of upstanding end frames are provided and each end frame includes upper and lower sections guidingly supported from each other for relative vertical movement. The upper sections of the frames include scaffold board support portions and motor structure is operatively connected between the upper and lower sections of each end frame whereby the upper section may be raised and lowered relative to the lower section. The upper and lower sections of each frame further include support portions for removable support from the end section cross members of conventional scaffold frames.

12 Claims, 5 Drawing Figures

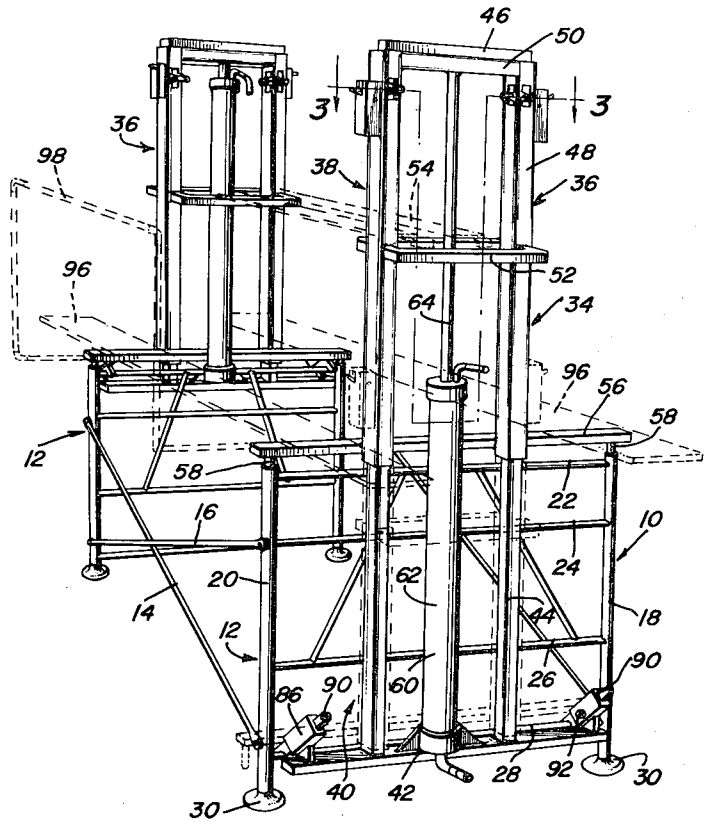


FIG. 1

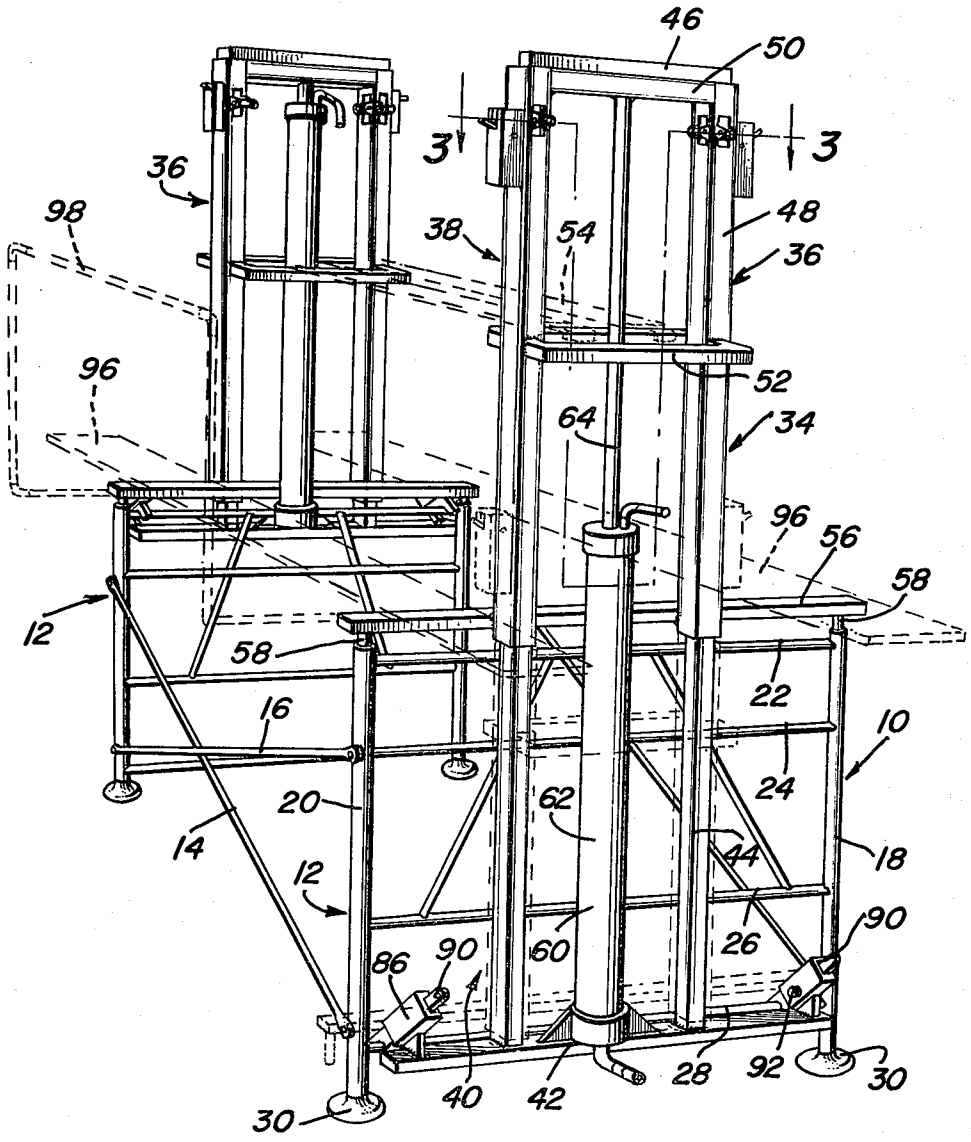

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FIG. 2

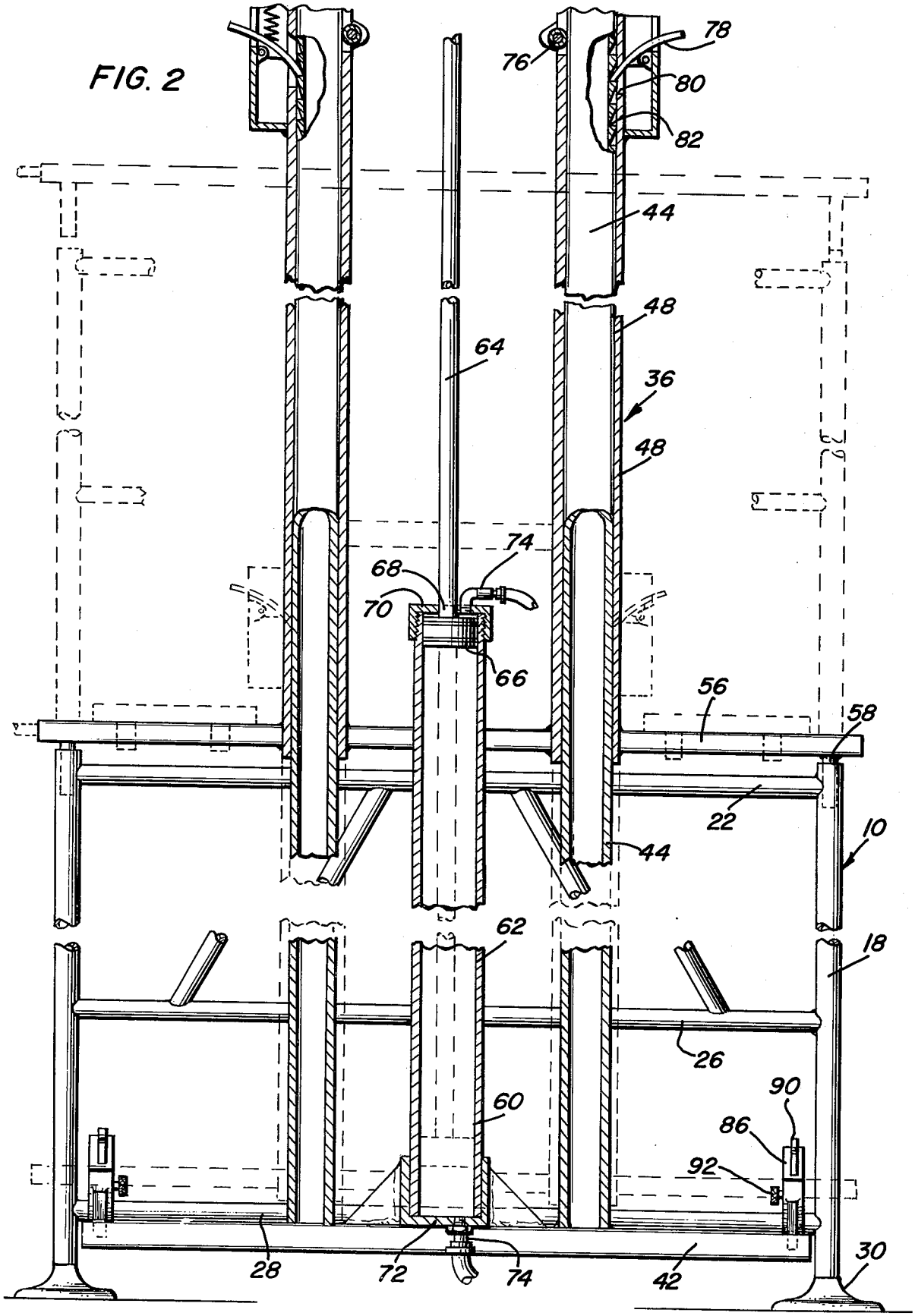

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FIG. 3

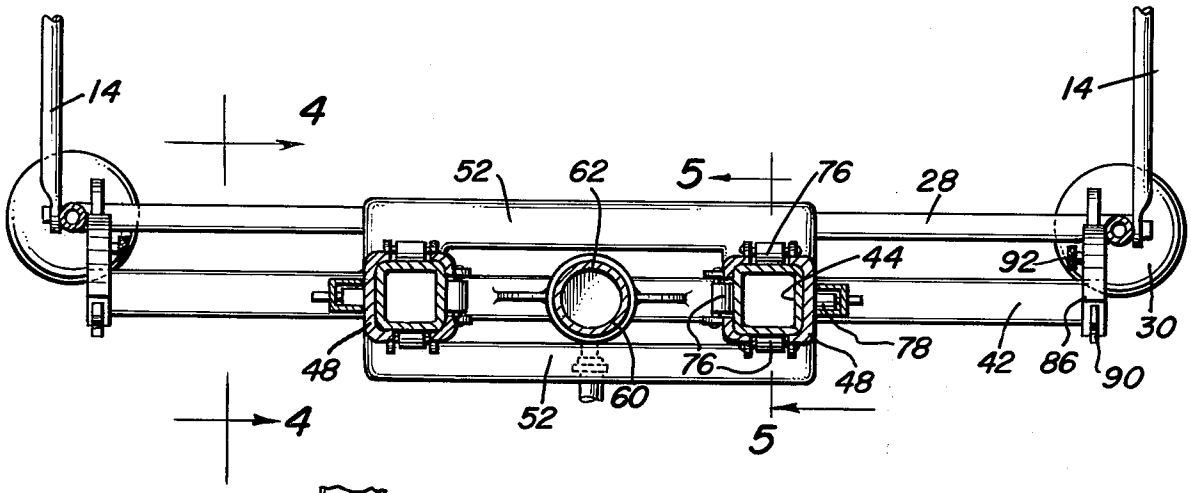


FIG. 4

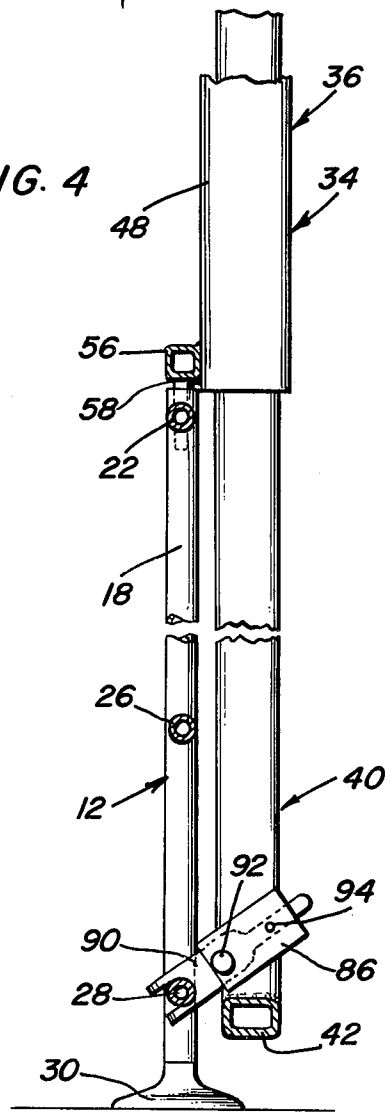
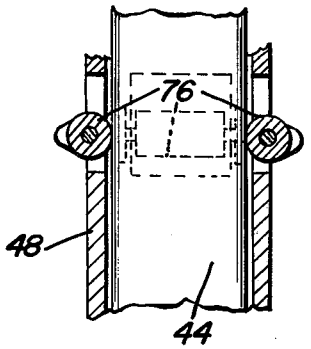


FIG. 5



SELF-ELEVATING SCAFFOLD CONSTRUCTION

BACKGROUND OF THE INVENTION

Conventional scaffold frames are used for many purposes in the construction industry. Quite often these scaffold frames are utilized initially to form a low support for workmen in construction of a wall and as the wall being constructed increases in height additional scaffold sections are added on top of the initial scaffold section. However, conventional scaffold sections include scaffold board supports which are not adjustable in height and a workman constructing a wall through the utilization of conventional scaffolding must perform his work on the wall at various elevations in relation to the portion of the scaffolding upon which he is standing. Thus, the workman will sometimes be working at a level only slightly elevated relative to his feet and at other times be working at an elevation which may be shoulder height or higher. In addition, the scaffolding boards upon which the workman is supported as well as the scaffolding boards upon which his work materials are supported must occasionally be repositioned in height relative to the scaffold section being used.

SUMMARY OF THE INVENTION

The scaffold construction includes end frames each consisting of upper and lower sections which may be raised and lowered relative to each other. The upper sections may be provided with crossed bracing and the upper sections include scaffold board support portions between which scaffolding boards may extend and be supported. In this manner, the scaffold boards supporting a workman and his work materials may be adjustably raised relative to the lower sections of the end frames as the upper sections of the end frames are raised relative to the lower sections. In addition the upper and lower sections include support portions for removable support from the end section cross members of conventional scaffold frames and in this manner if the maximum desired elevation of the scaffold construction is greater than that which may be achieved with the lower sections of the end frames resting on the ground, after the upper sections have been elevated relative to their lower sections almost to their limits of elevation conventional scaffolding construction may be erected between the end frames and the support portions on the upper sections may be lowered into engagement with the erected conventional scaffolding for support therefrom. Then, the lower sections of the end frames may be raised relative to the upper sections and have their support portions engaged with upper cross members of the conventional scaffolding for support therefrom whereby the upper sections of the end frames may again be raised relative to the lower sections in order to further elevate the scaffolding boards supported therefrom.

The main object of this invention is to provide a scaffolding construction which will enable workmen and their materials to be supported at the most advantageous elevation relative to the work being performed by the workmen.

Another object of this invention, in accordance with the immediately preceding object, is to provide a scaffolding construction for supporting the scaffold boards comprising the support for workmen and materials to be used by the workmen in a manner such that the boards may be gradually elevated as the elevation of the work being performed by the workmen increases in height.

Yet another object of this invention is to provide a scaffolding construction which may be utilized efficiently in the erection of and dismantling of conventional scaffolding structures.

A final object of this invention to be specifically enumerated herein is to provide a scaffolding construction in accordance with the preceding objects and which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble-free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of the scaffolding construction of the instant invention in operative association with a conventional scaffolding structure;

FIG. **2** is an enlarged fragmentary vertical sectional view illustrating the manner in which the upper and lower sections of the scaffolding construction are supported from each other for relative vertical movement;

FIG. **3** is a horizontal sectional view taken substantially upon the plane indicated by the section line **3—3** of FIG. **2**;

FIG. **4** is a vertical sectional view taken substantially upon the plane indicated by the section line **4—4** of FIG. **3**; and

FIG. **5** is an enlarged fragmentary vertical sectional view taken substantially upon the plane indicated by the section line **5—5** of FIG. **3.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

The numeral **10** generally designates a conventional form of scaffolding including a pair of upright end sections **12** interconnected by means of crossed bracing members **14** and **16.** Each of the end sections **12** includes a pair of uprights **18** and **20** interconnected by means of vertically spaced horizontal cross members **22, 24, 26** and **28.** The uprights **18** and **20** are tubular and the lower ends thereof are provided with removable feet **30** while the upper ends thereof are open and project slightly above the corresponding cross members **22.**

The conventional scaffolding **10** may be erected in vertically stacked relation with several scaffolding structures stacked on top of each other and suitable connecting members telescoped within and secured between opposing upper and lower ends of the uprights **18** of the stacked scaffolding sections. Further, suitable scaffolding boards may extend between and be supported from the upper cross members **22.** Accordingly, it will be appreciated that scaffolding boards may be placed at spaced elevations throughout the height of a plurality of stacked scaffold constructions **10.**

However, the scaffolding boards may not be positioned at precise elevations nor may they be gradually increased in elevation as a wall being constructed by a

bricklayer or the like increases in height. Thus, although at one point in the construction of a wall the elevation of work may be ideal in relation to the elevation of the workman, the workman must also work at an elevation requiring him to bend over and at other elevations requiring him to work at an elevation of perhaps shoulder height.

The self-elevating scaffold construction of the instant invention is referred to in general by the reference numeral **34** and includes a pair of end frames referred to in general by the reference numerals **36.** Each of the end frames **36** includes an upper section referred to in general by the reference numeral **38** and a lower section referred to in general by the reference numeral **40.**

Each lower section **40** comprises a horizontal base member **42** from which a pair of spaced upright tubular members **44** are supported. The upper ends of the tubular members **44** are interconnected by means of a transverse header member **46** and each upper section **38** includes a pair of upstanding tubular members **48** which are slidingly telescoped over the tubular members **44** and are interconnected at their upper ends by means of a transverse member **50** extending therebetween.

Vertically intermediate portions of the tubular members **48** are interconnected by means of horizontally disposed U-shaped braces **52** for supporting center scaffolding boards **54** and the lower ends of the tubular members **48** are interconnected by means of a lower transverse portion **56** and the opposite ends of the transverse portions **56** project outwardly beyond remote sides of the tubular members **48** and include depending shank portions **58** which are telescopingly receivable downwardly in the upper ends of the uprights **18** and **20** of the conventional scaffolding **10.**

Each of the lower brace members **42** supports the lower end of an upstanding cylinder portion **60** of a fluid motor **62** therefrom and each fluid motor **62** includes an extendable piston rod portion **64** which is carried by a piston **66** slidable in the cylinder portion **60.** The piston rod portion **64** is extendable through a central opening **68** formed in the upper end wall **70** of the cylinder portion **60** and the upper end wall **70** as well as the lower end wall **72** of the cylinder portion **60** has a fluid inlet and outlet fitting **74** secured therethrough by which fluid under pressure may be admitted into either the upper or lower end of the cylinder portion **60** and vented from the other end.

The upper end of the piston rod portion **64** is anchored to the center of the transverse member **50.**

Three sides of each tubular member **48** include rollers **76** journaled therefrom and the rollers **76** are disposed in rolling contact with the outer surfaces of the corresponding sides of the associated inner tubular members **44.** Also, the fourth side of each tubular member **48** includes a pivoted pawl **78** and the pawl **78** is operable through an opening **80** provided therefor in the fourth side of the tubular member **48** and engageable with longitudinally extending rack gear teeth **82** formed on the outer surface of the corresponding wall of the inner tubular member **44.** The pawls **78** and the rack gear teeth **82** are provided to prevent uncontrolled dropping of the tubular members **48** along the tubular members **44.**

From FIGS. **1, 3** and **4** of the drawings it may be seen that each of the transverse base members **42** has a pair of opposite end inclined sleeves **86** supported therefrom and that each sleeve **86** has a forked slide **90** slidably disposed therein. A locking pin **92** is supported from each sleeve **86** and is selectively engageable in a pair of apertures **94** spaced therealong. Each locking pin **92** is projectable through the apertures **94** and into a similar aperture (not shown) formed in the corresponding slide **90** whereby the slide **90** may be locked in the projected position illustrated in FIG. **4** of the drawings or in a retracted position with the forked end of the slide **90** substantially fully received within the sleeve **86.** The forked end of each slide **90** is engageable with the corresponding transverse member **28** in the manner illustrated in FIG. **4** of the drawing or the corresponding upper transverse member **22.** Accordingly, it may be seen that the base member **42** may be supported from the scaffolding end section **12** either at a low elevation adjacent the low transverse brace member **28** or at an upper elevation adjacent the upper transverse brace member **22.**

The upper sections **38** may be provided with crossed bracing (not shown) such as the cross bracing members **14** and **16.** Also, scaffolding boards **96** may extend between and be supported from the transverse portions **56** and the latter may be provided with sockets (not shown) for supporting a railing structure **98.**

In operation, the end frames **36** may be positioned as desired and the tubular members **48** may be provided with cross bracing members such as the cross bracing members **14** and **16.** Then, the upper sections **38** may be raised relative to the lower sections **40** by extension of the piston rod portions **64.** Of course, the boards **54** and **96** will be elevated with the upper sections **38.**

If it is desired to support workmen and their materials at a higher elevation, after the upper sections **38** have been substantially fully raised, the conventional scaffolding **10** may be erected in the manner illustrated in FIG. **1** of the drawings and the upper sections **38** may be further raised so that the upper ends of the conventional scaffolding uprights **18** and **20** may be positioned immediately beneath the shank portions **58.** Then, the upper sections **38** may be lowered to telescope the shank portions **58** downwardly into the upper ends of the uprights **18** and **20** to thus support the upper sections **38** from the end sections **12.** Thereafter, fluid under pressure may be pumped into the upper ends of the cylinder portions **60** to raise the lower base members **42** from the ground, past the positions thereof illustrated in FIGS. **1** and **4** of the drawings and to elevations closely adjacent the upper transverse brace members **22** so that the slides **90** may be extended from the sleeves **86** in order to engage the opposite ends of the upper transverse brace members **22** in the manner in which the slides **90** are engaged with the opposite ends of the lower transverse brace members **28** in FIGS. **1** and **4** of the drawings. After the slides **90** have been extended and locked in position by means of the lockpins **92** so that the lower sections **40** are supported from the opposite ends of the upper transverse brace members **22,** fluid under pressure may be pumped into the lower ends of the cylinder portions **60** to raise the upper sections **38** relative to the upper portions of the conventional scaffolding **10.** Of course, this process may be repeated so that additional conventional scaffolding structures may be stacked on top of the conventional scaffold structure **10** and the scaffolding construction **34** may be actuated to lift itself up along the stacked conventional scaffolding constructions **10.**

Further, the motors **62** may be replaced by electric motor powered or manually powered screw jacks. Also, the sections **38** may be raised by means of lift cables wound on manually or electrically actuated winding members.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. A scaffold construction including a pair of end frames each having upper and lower sections guidingly supported from each other for relative vertical shifting, motor means connected between said upper and lower sections for shifting the latter relative to each other, scaffold board support means carried by said upper sections for supporting the opposite ends of boards extending therebetween, said upper and lower sections including anchor structure for releasable engagement with and support from upper and lower portions of adjacent conventional scaffold end sections, the anchor structure of said lower sections also being provided for releasable engagement with and support from upper portions of adjacent conventional scaffold end sections.

2. The combination of claim **1** wherein said motor means includes an upright fluid cylinder having its upper and lower ends connected to said upper and lower sections, respectively.

3. The combination of claim **2** wherein said fluid cylinder is of the double acting type.

4. A scaffold construction including a pair of end frames each having upper and lower sections guidingly supported from each other for relative vertical shifting, motor means connected between said upper and lower sections for shifting the latter relative to each other, scaffold board support means carried by said upper sections for supporting the opposite ends of boards extending therebetween, each of said lower sections including a lower horizontal member and a pair of first uprights supported at their lower ends from spaced portions of said horizontal member and interconnected at their upper ends by means of a cross member extending therebetween, each of said upper sections including a pair of spaced and interconnected second upstanding tubular uprights telescoped over said first uprights, said scaffold board support means comprising portions of vertically spaced brace means extending between and secured to said tubular uprights.

5. The combination of claim **3** wherein said motor means including an upright fluid cylinder having its upper and lower ends connected to said upper and lower sections, respectively.

6. The combination of claim **5** wherein said fluid cylinder is of the double acting type.

7. The combination of claim **4** wherein said first pair of uprights including longitudinally extending rack teeth and said second pair of uprights including pivoted stop dogs engageable with said teeth in ratchet fashion for preventing uncontrolled dropping of said second uprights relative to said first uprights in the event of failure of said motor means.

8. The combination of claim **7** wherein said upper and lower sections include anchor structure for releasable engagement with and support from upper and lower portions of adjacent conventional scaffold end sections, the anchor structure of said lower sections also being provided for releasable engagement with and support from upper portions of adjacent conventional scaffold end sections.

9. The combination of claim **8** wherein said motor means includes an upright fluid cylinder having its upper and lower ends connected to said upper and lower sections, respectively.

10. The combination of claim **9** wherein said fluid cylinder is of the double acting type.

11. A scaffold construction including a pair of end frames each having upper and lower sections guidingly supported from each other for relative vertical shifting, motor means connected between said upper and lower sections for shifting the latter relative to each other, scaffold board support means carried by said upper sections for supporting the opposite ends of boards extending therebetween, each of said lower sections including a lower elongated horizontal member and a pair of first uprights supported at their lower end portions from longitudinally spaced portions of said horizontal member spaced inwardly of the opposite ends of said horizontal member, each of said upper sections including a pair of spaced uprights guidingly engaged with said first uprights and interconnected at their lower end portions by means of a second lower elongated horizontal member to which the lower end portions of said second uprights are secured at portions spaced therealong and inwardly from the opposite ends of said second horizontal member, the opposite end portions of the horizontal member of said upper section, outwardly of the corresponding uprights, including anchor structure for releasable engagement with and support from the upper portions of adjacent conventional scaffold end sections, the opposite end portions of the horizontal member of the lower section, outwardly of the corresponding uprights, including anchor structure for releasable engagement with and support from the upper and lower portions of adjacent conventional scaffold end sections.

12. The combination of claim **11** wherein said motor means includes an upright fluid cylinder having its upper and lower ends connected to said upper and lower sections, respectively, said fluid cylinder being of the double-acting type.

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