Sept. 8, 1970 A. L. CUNNINGHAM 3,527,320

EXTENDABLE SHORING SCAFFOLD

Filed July 19, 1968 2 Sheets-Sheet 1

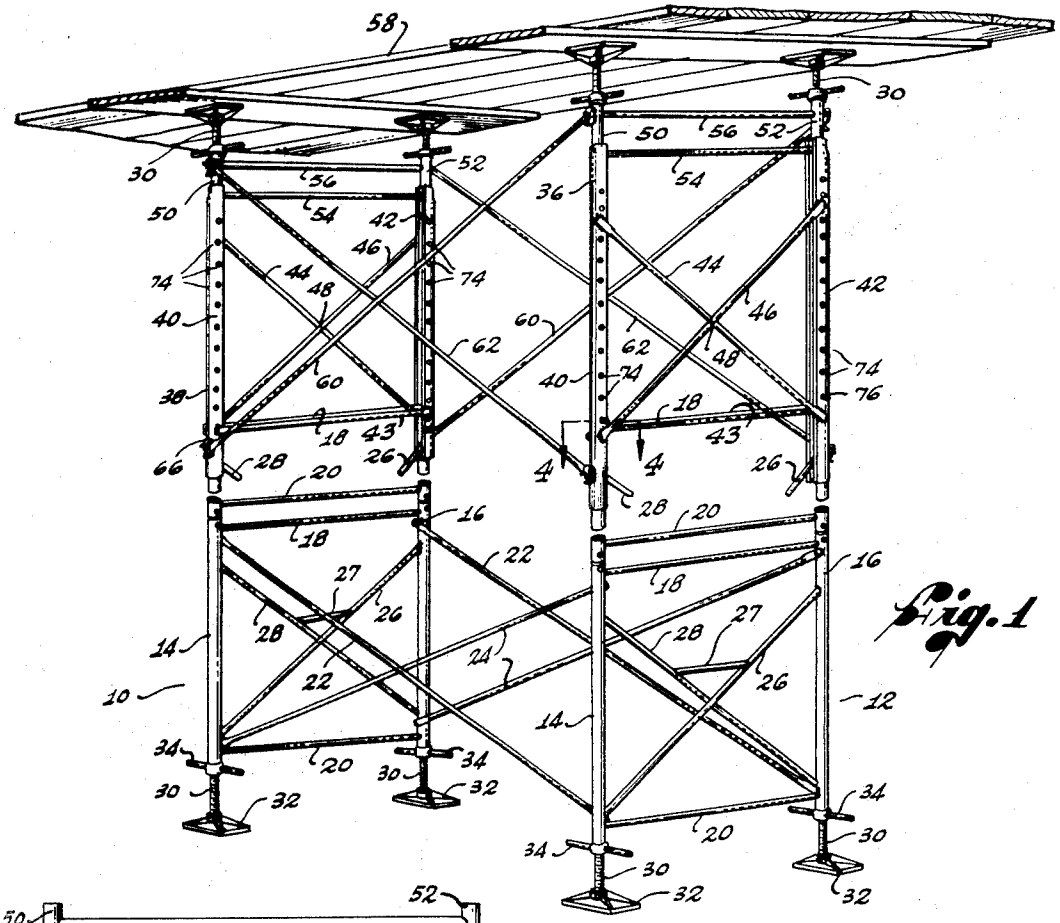


Fig. 1

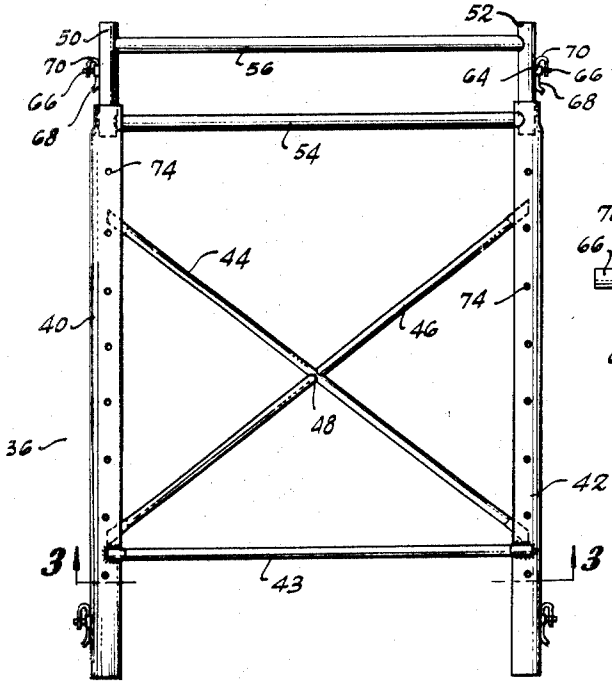


Fig. 2

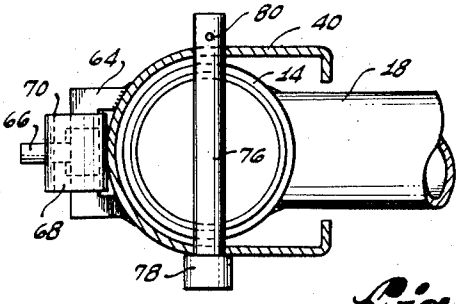


Fig. 4
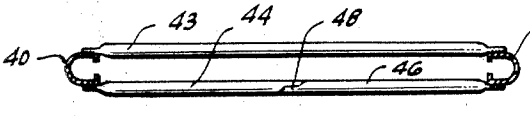


Fig. 3

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EXTENDABLE SHORING SCAFFOLD

Filed July 19, 1968 2 Sheets-Sheet 2

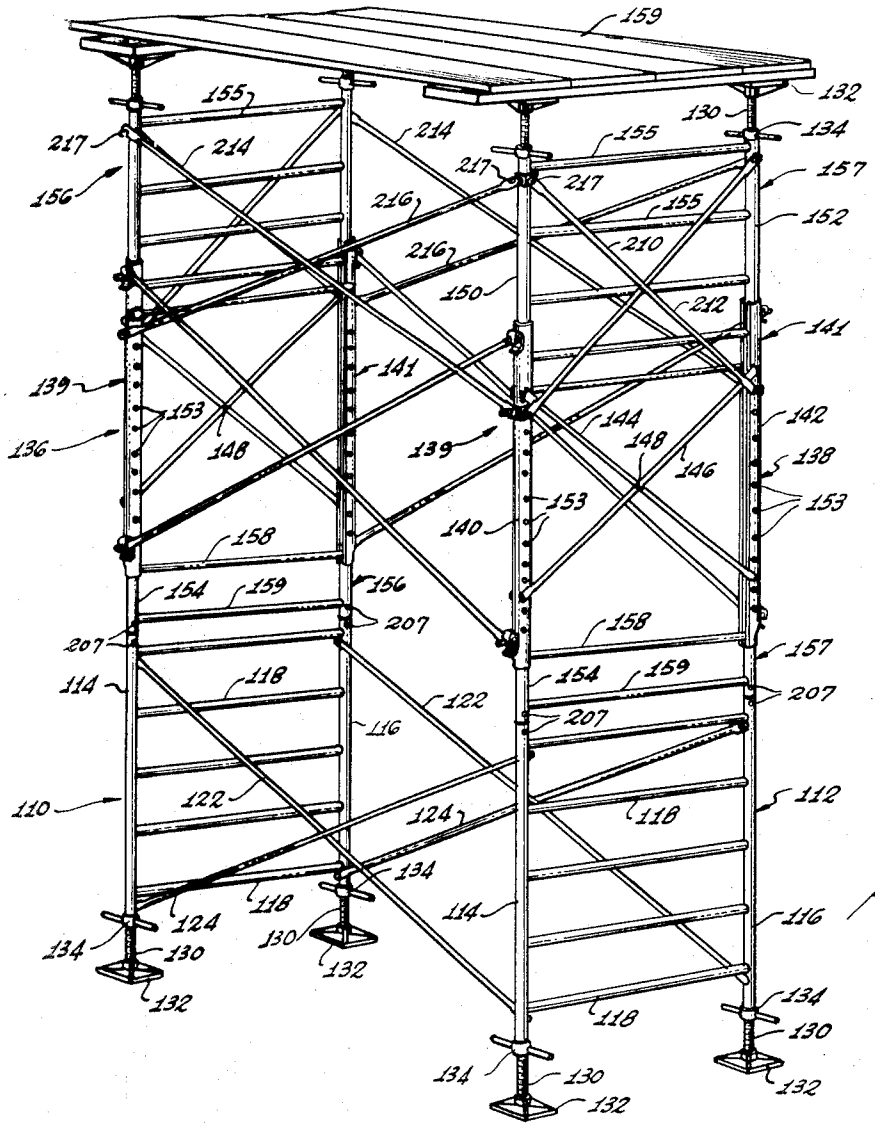


Fig. 5

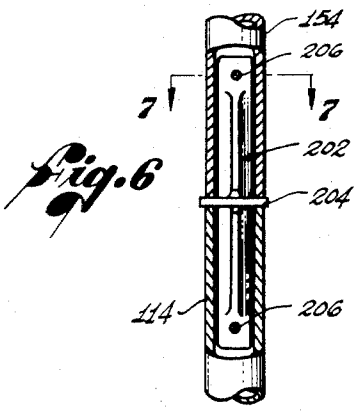


Fig. 6

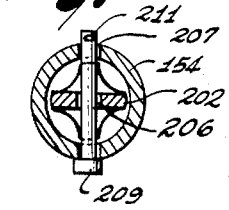


Fig. 7

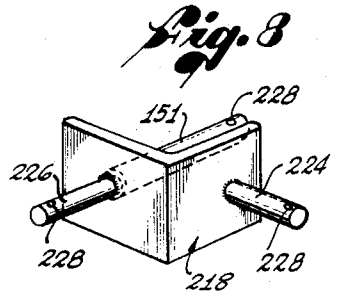


Fig. 8

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3,527,320

EXTENDABLE SHORING SCAFFOLD

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Int. Cl. E04g 1/14
U.S. Cl. 182—178 10 Claims

ABSTRACT OF THE DISCLOSURE

An extendable shoring scaffold comprising a pair of horizontally spaced base frames interconnected by removable bracing members and formed by spaced stanchions with reinforcing struts extending between the stanchions. The base frames may be superimposed upon each other, with an extension frame mounted on each topmost base frame, the extension frames also having horizontally spaced stanchions connected by struts. Either the extension frames or the topmost base frames have at least a portion of their stanchions U-shaped in cross section for telescopically receiving the cooperating stanchions of the adjacent base or extension frame with the reinforcing struts connected to the interior telescoping stanchions being received in the open portions of the U-shaped stanchions which face inwardly toward each other. The frames formed of the U-shaped stanchions have transverse struts attached substantially tangentially thereto so as to clear the struts attached to the interiorly telescoping stanchions. The extension frames are held in their extended positions by pins passing through transversely aligned holes through the walls of the U-shaped stanchions and are braced by standard length cross bracing members connected adjacent the upper ends of the extension frames. Provision is made for leveling and adjusting the frames and their supported structure by means of jack screws.

BACKGROUND OF THE INVENTION

The field of this invention lies within the art of extendable shoring scaffolds.

Extendable shoring scaffolds such as those described in Pats. Nos. 3,190,405 and 3,313,081 have the stanchions of the extension frames telescopically seated within stanchions of the base frames. Each base frame stanchion is provided with spaced holes which receive transversely inserted pins upon which the interiorly telescoping extension frame stanchions rest.

To rigidify the extension frames, removable, standard length cross bracing members extend from the upper ends of the extension frames to the opposite base frames, the cross bracing members being connected to adapter members providing the supporting pins in Pat. No. 3,190,405, and to one of a series of spaced pins on each base member stanchion in Pat. No. 3,313,081. To interconnect the stanchions of the extension frames, horizontal struts are connected adjacent their upper ends. When the extension frames are lowered, the horizontal struts prevent the extension frame stanchions from telescoping beyond where they are connected to the struts and therefore the strut positions must be limited to the upper ends only of the stanchions. When the telescoping extension frames are lowered or raised in both patents, it is necessary to disengage the bottom ends of the cross bracing members from the base frame before moving the extension frames and the cross bracing members.

SUMMARY OF THE INVENTION

The present invention provides an extendable shoring scaffold with extension frames which are also braced by

standard length cross bracing members connected adjacent the top of the extension frame stanchions. In a first embodiment each extension frame has a pair of horizontally spaced stanchions of which at least the lower portions are U-shaped in cross section with inwardly opposed openings. The extension frame stanchions telescope over tubular base frame stanchions which have centrally connected cross struts which are received in the open portions of the U-shaped stanchions as the tubular stanchions telescope therein. To reinforce the extension frames, cross struts are connected substantially tangentially to the U-shaped stanchions, thereby clearing the cross struts on the tubular stanchions. These extension frame cross struts may thereby be placed anywhere along the stanchions, indeed adjacent their lower ends, if desired.

In another embodiment of this invention the U-shaped stanchions are located at the upper portion of the topmost base frames and the extension frames have tubular stanchions telescoping thereinto. The same arrangement of cross struts is used so that the central cross struts on the extenion frames may be located anywhere along their lengths and be received in the open portions of the U-shaped base frame stanchions. The latter again have tangentially connected struts which clear the central struts on the interiorly telescoping stanchions.

Standard length cross bracing members connected adjacent the tops of the extension frames are used in both embodiments. The bottoms of these members connect to rigid pins adjacent the bottoms of the opposite extension frames in the first embodiment and to adapter members including extension frame supporting pins in the other embodiment. In both embodiments the supporting pins extend through transversely aligned holes through the walls of the U-shaped stanchions, the holes being vertically spaced along the lengths of the stanchions to adjust the extended positions of the extension frames.

A further advantage of the first embodiment is that the cross bracing members may remain connected to the extension frames as their positions are adjusted.

The above and other objects and features of this invention will be apparent to those skilled in the art from the following specification and the appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an extendable shoring scaffold according to the present invention;

FIG. 2 is an elevation view of one of the extension frames according to the present invention;

FIG. 3 is a horizontal sectional view on the line 3—3 of FIG. 2;

FIG. 4 is a detail sectional view taken along line 4—4 of FIG. 1;

FIG. 5 is a perspective view of an alternative embodiment of the extendable shoring scaffold of this invention;

FIG. 6 is a detailed broken cross-sectional view of the junction between the base frames of the shoring scaffold of this invention;

FIG. 7 is a sectional view on the line 7—7 of FIG. 6; and

FIG. 8 is a perspective view of an adaptor member for connecting the cross bracing and cross struts of the embodiment of FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The embodiment of the shoring scaffold of the present invention illustrated in FIGS. 1–4 is made up of any desired number of base frames **10** and **12**. Each base frame has a pair of horizontally spaced tubular stanchions **14** and **16** connected at either end by horizontal cross struts **18** and **20** connected to the stanchions substantially centrally thereof, and by a pair of cross struts **26** and **28**

also connected centrally of the stanchions and having a horizontal reinforcing strut **27** between the cross struts. The base frames **10** and **12** at the same level are interconnected by removable cross bracing members **22** and **24**. The base frames may be supported on leveling means in the form of jack screws **30** mounted in base plates **32** with adjusting nuts and handles **34** upon which the stanchions **14** and **16** rest.

A pair of extension frames **36** and **38** are telescopically mounted over the uppermost base frames **12** and **14**. Each extension frame is made up of a pair of horizontally spaced stanchions **40** and **42** which are U-shaped in cross section and have integral upper tubular extensions **50** and **52**. The U-shaped portions of the stanchions **40** and **42**, as shown more clearly in FIG. 3, have their longitudinally open sides disposed inwardly in opposing relation, thus providing opposed slots extending from the bottoms through the major portion of the longitudinal length of the stanchions. The stanchions **40** and **42** are interconnected by a strut **43** and cross struts **44** and **46** connected to their side edges substantially tangentially, as shown in FIG. 3, cross struts **44** and **46** being preferably welded together at their point of intersection **48**. The stanchions **40** and **42** are connected together at tubular members **50** and **52** by cross struts **54** and **56**. The tubular members **50** and **52** mount leveling jack screws **30** in inverted relation to support a platform, concrete form, or the like **58**.

The extension frames **36** and **38** are rigidified by standard length cross bracing members **60** and **62** which extend between the lower end of each stanchion and upper end of the opposite stanchion. The cross bracing members **60** and **62** generally comprise tubular members with flattened end portions having holes therethrough to receive pins **66** which extend outwardly from the stanchions **40** and **42** adjacent the tops and bottoms thereof. As shown in the foregoing figure, latch loops **64** are welded to the outside of the stanchions **40** and **42** and have the pins **66** welded thereto to mount the cross bracing members **60** and **62** thereover. A generally U-shaped, slidable latch **68** is mounted in each latch loop **64** and has a front leg **70** slotted to receive the pin **66** to latch the end of a cross bracing member **60**, **62** thereon.

The stanchions **40** and **42** have pairs of holes **74** spaced longitudinally thereof, the holes in each pair being in transverse alignment so that a pin **76** having a head **78** at one end and a hole **80** at the other end, to receive a cotter pin or the like, may be passed through the pair of holes. The pins **76** support the extension frames with the pins resting on the upper ends of the base frame stanchions **14** and **16**.

The centrally-connected, horizontal struts **18** and cross struts **26** and **28** of the base frame **10** and **12**, within the extension frames **36** and **38**, are received within the slots provided by the inward, open sides of the U-shaped portions of the extension frame stanchions to allow free telescoping movement of the extension frames relative to the base frames on which they are mounted. The tangentially connected cross struts **43**, **44** and **46** on the extension frames are offset thereby to clear the centrally connected struts on the base frames.

The extension frames **36** and **38** may be readily moved to vertically adjusted positions relative to their base frames **10** and **12** by changing the positions of the pins **76** in the extension frames. Since both ends of the cross bracing members **60** and **62** are mounted on the extension frames, this may be accomplished without disconnecting the cross bracing members. In any event, even if the cross bracing members are disconnected to facilitate extension frame adjustment, they may be reconnected to the same points because the construction uses standard length cross bracing members **60** and **62** connected adjacent the tops and bottoms of the extension frames regardless of the distance the extension frames are extended from the base frames on which they are mounted.

Referring now to FIGS. 5 through 8, the shoring scaffold of the alternative embodiment of this invention is made up of any desired number of base frames **110** and **112**. Each base frame has a pair of horizontally spaced tubular stanchions **114** and **116** connected by horizontal cross struts **118**. The base frames **110** and **112** at the same level are interconnected by removable cross bracing members **122** and **124**. The base frames may be supported on levelling means in the form of jackscrews **130** mounted on base plates **132** with adjusting nuts and handles **134**, upon which the stanchions **114** and **116** rest.

A second pair of base frames **136** and **138** are mounted on the uppermost portion of the base frames **112** and **114** by the connector shown in FIG. 6 which may also interconnect the base frames in the first embodiment. Each of the second pair of base frames is made up of a pair of horizontally spaced stanchions **139** and **141** having portions **140** and **142** which are U-shaped in cross section with integral lower tubular extensions **154** and **156** which are interconnected by horizontal cross struts **158** and **159**.

The tubular extensions **154** and **156** are mounted to the base frame stanchions **114** and **116** by means of coupling pins **202** generally +-shaped in cross section with outside measurements only a little less than the interior diameters of the interconnected base frame parts. A central disk **204**, having a greater diameter is interposed between the adjacent ends of the base frames. The ends of the coupling pin **202** are provided with holes **206** which align with holes **207** in the base frames and receive connecting pins **209** which are held in place by cotter pins **211**.

The U-shaped portions **140** and **142** of the stanchions **139** and **141** have their longitudinal open sides disposed inwardly in opposing relationship, thus providing opposed longitudinal slots extending downwardly from their top ends. The stanchions **139** and **141** are further interconnected by cross struts **144** and **146** connected substantially tangentially to the walls of their U-shaped portions, as by welding and also desirably welded together at their point of intersection **148**.

A pair of extension frames **156** and **157** are adjustably mounted at the top of the shore, each extension frame including a pair of horizontally spaced, vertical stanchions **150** and **152**, interconnected by a series of horizontal cross struts **155**. The stanchions **150** and **152** are telescopically received in the U-shaped portions **140**, **142** with their ends resting on supporting pins **151** passing through transversely aligned holes **153** through the opposite walls of the U-shaped portions, the holes **153** being spaced vertically to adjust the extended positions of the extension frames. Cross struts **155** are connected centrally of the stanchions **150**, **152** to be received in the open sides of the U-shaped portions **140**, **142**. Leveling jackscrews **130** with their attendant plates **132** and handles **134**, are mounted at the top and bottom of the shore, the upper plates **132** supporting a platform or concrete form **159**.

The extension frames **156**, **157** are rigidified by vertically diagonal end cross braces **210**, **212** and front and back vertically diagonal cross braces **214**, **216**, all connected to rigid pins **217** adjacent the tops of the extension frames. The bottoms of the cross braces are connected to pins **224**, **226** mounted on L-shaped adapter elements **218** carried by the supporting pins **151** so as to be movable therewith as the positions of the extension frames are adjusted. The ends of pins **151**, **224** and **226** have holes **228** therethrough for cotter pins or the like.

By moving the adapter elements **218** and pins **224**, **226** with the supporting pins **151**, bracing of the extension frames to their top ends can be secured with standard length cross braces regardless of the various extended positions in which the frames may be placed. As the stanchions **150**, **152** telescope in the U-shaped portions **140**, **142**, the cross struts **155** are accommodated in the openings of the U-shaped portions, thereby permitting the

use of strengthening struts across the lower parts of the extension frames.

While certain preferred embodiments of the invention have been specifically illustrated and described, it will be understood that the invention is not limited thereto as many variations will be apparent to those skilled in the art and the invention is to be given its broadest interpretation within the terms of the following claims.

What is claimed is:

1. An extendable shoring scaffold comprising:
a pair of horizontally spaced base frames;
cross bracing members interconnecting said base frames to form a rigid self-supporting structure;
a pair of horizontally spaced extension frames mounted telescopically over said base frames;
means for adjusting the amount of extension of said extension frames above said base frames in fixed steps;
brace attachment pins secured exteriorly to said extension frames adjacent the tops and bottoms thereof; and
vertically diagonal, standard length cross bracing members interconnecting the brace attachment pins adjacent the tops of said extension frames with the brace attachment pins adjacent the bottoms of the opposite extension frames whereby said exension frames are rigidified by connection of said standard length cross bracing members adjacent the tops thereof regardless of the amount of extension of said extension frames above the base frames;
each extension frame comprising interconnected stanchions having inwardly-facing, elongated longitudinal slots therein whereby the central, inwardly opposing regions of said base frames are cleared thereby when the extension frames are telescopically mounted over said base frames.

2. An extendable shoring scaffold as defined in claim 1 wherein said base frames comprise stanchions with cross struts which are permanently affixed substantially centrally between said stanchions so that the elongated longitudinal slots of said extension frames receive said cross struts when the extension frames are mounted over the base frames.

3. An extendable shoring scaffold as defined in claim 1 wherein said stanchions are interconnected by at least one bracing strut, permanently affixed tangentially to the outer sides of the stanchions in each extension frame.

4. An extendable shoring scaffold as defined in claim 1 wherein said interconnection of said stanchions is by a pair of vertically diagonal cross struts permanently affixed at their ends substantially tangenially of the outer surfaces of said stanchions.

5. An extendable shoring scaffold as defined in claim 1 wherein said means for adjusting the amount of extension of said extension frames above said base frames comprise:
pairs of transversely aligned holes within the walls of said stanchions and spaced longitudinally therealong;
and pins for insertion within one of the pairs of holes within each stanchion so that said pins will support said extension frames in telescoping relationship over and on said base frames to provide for adjustable extension of said extension frames in accordance with the longitudinal spacing between the pairs of holes.

6. An extendable shoring scaffold as defined in claim 1 wherein each stanchion is substantially U-shaped in cross section, with the openings of said U's forming the inwardly-facing, elongated slots.

7. An extendable shoring scaffold as defined in claim 1 and further comprising:
upstanding vertical tubular members rigidly mounted on the upper ends of said stanchions and adapted to receive supporting means therein.

8. An extendable shoring scaffold as claimed in claim 7 further comprising at least one generally horizontal cross strut between said tubular members.

9. An extendable shoring scaffold comprising:
a pair of horizontally spaced base frames, each of said base frames comprising a pair of stanchions;
cross bracing members interconnecting said base frames to form a rigid self-supporting structure;
a pair of horizontally spaced extension frames, each extension frame comprising a pair of stanchions telescoping with said base frame stanchions;
means for adjusting the extendable portions of said extension frames in fixed steps;
one of said pairs of extension and base frames having stanchion portions which are U-shaped in cross section and located with the open portions facing each other;
struts interconnecting said U-shaped stanchion portions substantially tangentially thereof;
struts interconnecting the stanchions of the other of said pairs of frames substantially centrally thereof to be received in the open portions of said U-shaped stanchion portions; and
vertically-diagonal, standard length cross bracing members connected adjacent the top ends of the extension frames to rigidify them.

10. An extendable shoring scaffold as defined in claim 9 in which the U-shaped portions are on relatively stationary base frames to provide opposed longitudinal slots extending downwardly from the tops of the base frames; and
the centrally connected struts and their stanchions are on extension frames telescoping into the U-shaped portions of the base frames.

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