Jan. 27, 1948. D. I. WEISZ 2,435,171

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Filed June 19, 1946 3 Sheets-Sheet 1

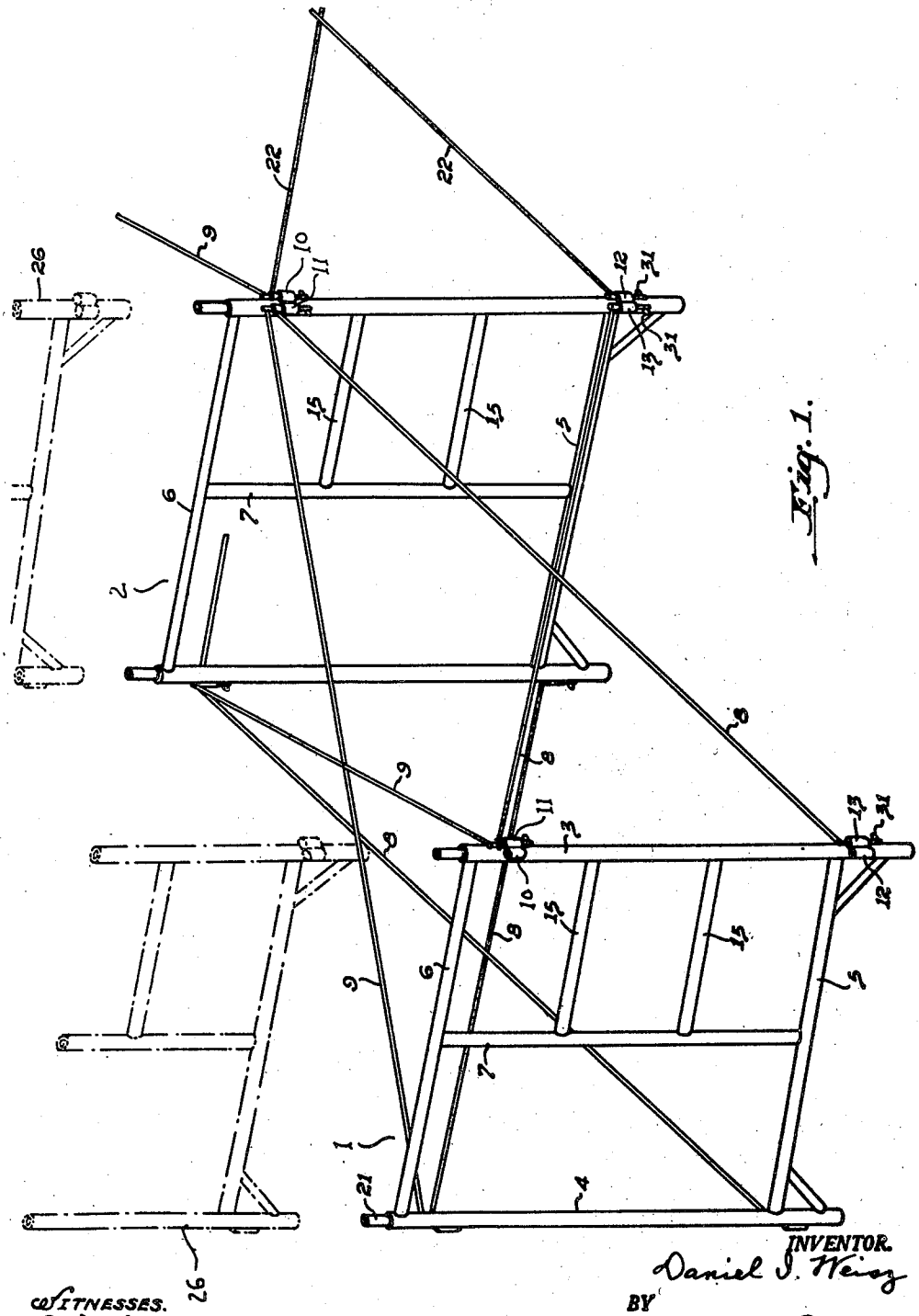


Fig. 1.

INVENTOR.
Daniel I. Weisz
BY
Brown, Critchlow, Flick & Peckham
his ATTORNETS.

WITNESSES.
E. J. Maloney.
E. O. Johns

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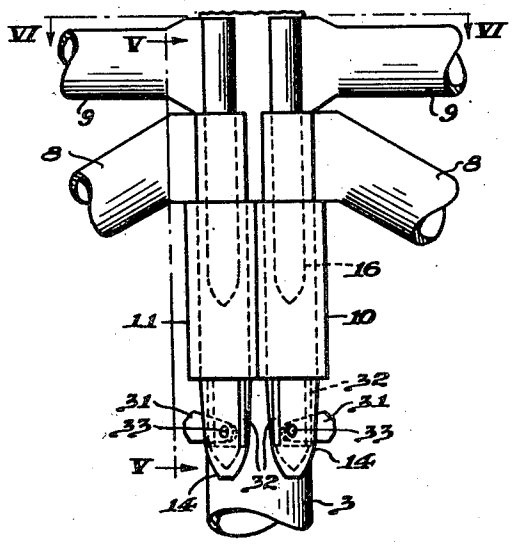


Fig. 4.

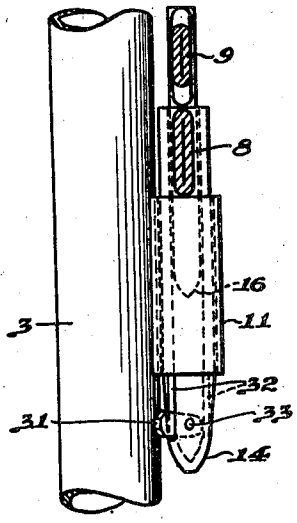


Fig. 5.

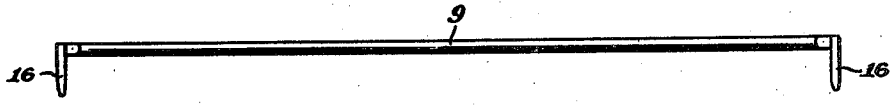


Fig. 3.

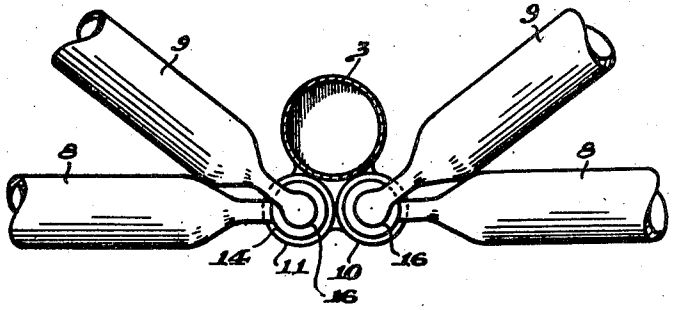


Fig. 6.

WITNESSES:
E. J. Maloney.
E. O. Johns

INVENTOR
Daniel I. Weisz

BY
Brown, Critchlow, Flick & Peckham
ATTORNEYS.

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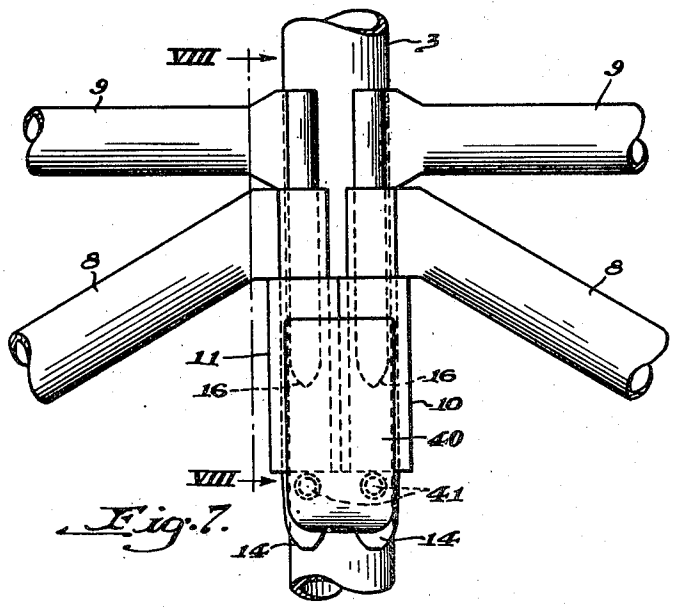


Fig. 7.

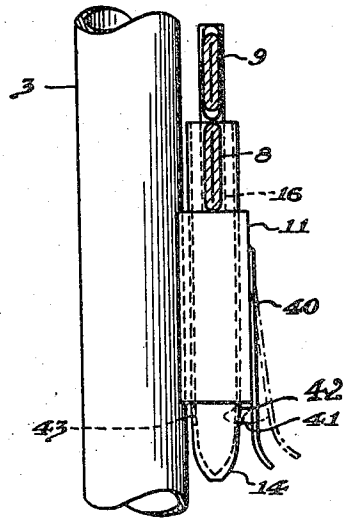


Fig. 8.

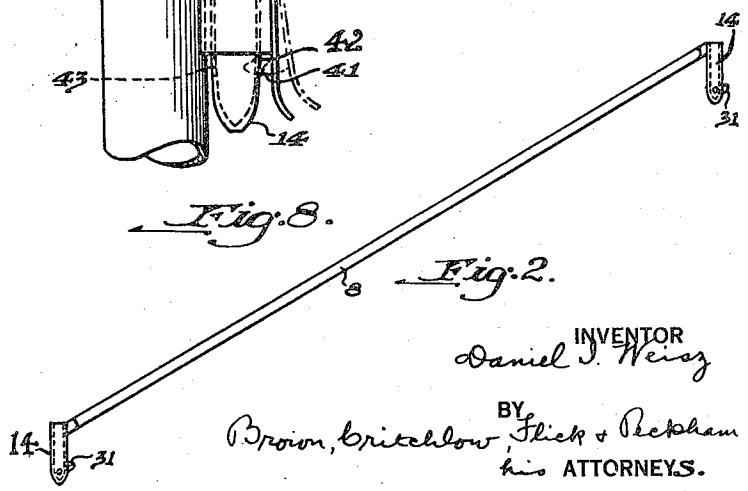


Fig. 2.

WITNESSES:
E. J. Maloney.
E. O. Johns

INVENTOR
Daniel I. Weisz

BY Brown, Critchlow, Flick & Peckham
his ATTORNEYS.

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2,435,171

UNITED STATES PATENT OFFICE

2,435,171

SCAFFOLD

Daniel I. Weisz, Zelienople, Pa., assignor to Universal Fittings & Scaffolding Company, Zelienople, Pa., a corporation of Pennsylvania

Application June 19, 1946, Serial No. 677,837

13 Claims. (Cl. 304—2)

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This invention relates to scaffolds, and more particularly to those that are assembled in any desired length and height from prefabricated units.

Scaffolds of this character heretofore have been formed from unitary end frames detachably connected together in upright position by side braces. The braces have been connected to the end frames by means of bolts and nuts, usually wing nuts. Over a period of time during which the units are assembled and disassembled many times, the nuts become lost and the threads on the bolts rust and become damaged so that valuable time is lost in connecting the braces to the end frames.

It is among the objects of this invention to provide a scaffold which can be quickly assembled or taken down with little effort, which does not require the use of tools to connect the side braces to its end frames, which does not require the use of separate fastening members to attach the side braces to the end frames, and in which the side braces are automatically locked in place as the scaffold is assembled.

According to this invention, a pair of spaced parallel end frames are held upright by side braces to form a scaffold. Each end frame has a pair of legs which are connected near their upper ends by a horizontal brace that supports one end of scaffold planking.

Two types of side braces may be employed, one being inclined and the other extending horizontally. The ends of some of the side braces project downwardly into vertical sleeves rigidly mounted on the legs. Means may be provided for automatically, but releasably, locking the ends of those braces in the sleeves as they are inserted therein. The rest of the side braces are provided with downwardly projecting ends which fit into sockets formed in the end portions of the first type. The braces in the sleeves may be locked therein by gravity or spring actuated latches which can be retracted manually when it is desired to disconnect the side braces from the end frames.

The preferred embodiment of my invention is illustrated in the accompanying drawings in which Fig. 1 is a perspective view of my scaffold; Figs. 2 and 3 are side views of the inclined and horizontal side braces, respectively; Fig. 4 is an enlarged fragmentary detail showing the end portions of the side braces mounted in the leg sleeves; Fig. 5 is a section along the line V—V of Fig. 4; Fig. 6 is a top view along the line VII—VII of Fig. 4; Fig. 7 is a fragmentary side view of the sleeves and the side brace mounted therein showing a modification of the invention; and Fig. 8 is a view along line VIII—VIII of Fig. 7.

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Referring to Fig. 1 of the drawings, a pair of spaced parallel end frames 1 and 2 each have vertical tubular legs 3 and 4 rigidly connected together at their lower ends by horizontal braces 5 and at their upper ends by horizontal braces 6 upon which planking (not shown) is placed to form a working platform. Vertical braces 7 connect braces 5 and 6 near their central portions and additional horizontal braces 15 extend between legs 3 and braces 7 so that planking can be placed thereon to form a plurality of stepped working platforms in one pair of end frames. Thus, as seen in Fig. 1, there are four different working levels. Braces 15 also provide a ladder for scaling the scaffold. The portion of the end frames between braces 7 and legs 4 is open so that planking can be placed on the section of horizontal braces 5 in that portion to form a passageway therethrough to facilitate the working.

When the scaffold is assembled, the end frames are held upright by means of tubular side braces 8 and 9. Side braces 8 are inclined between the legs of one end frame and the legs of the other end frame, and side braces 9 extend horizontally between diagonally opposite legs of the end frames. Diagonal side braces 9, in addition to strengthening the scaffold, also function to maintain the spaced parallelism of the end frames and keep the scaffold truly squared. In order to connect the inclined side braces to the legs, a pair of vertical sleeves 10 and 11 are welded to each end frame leg near its top, and other pairs of sleeves 12 and 13 are similarly attached to these legs near their bottoms. Preferably, the axes of all of the sleeves at either side of the scaffold lie in a common plane parallel to that side. The ends of inclined side braces 8 project downwardly to form plugs 14 (Fig. 2) which extend into the adjoining sleeves as shown in Fig. 4. These plugs are formed from short sections of pipe the lower ends of which are compressed to taper them. Horizontal side braces 9 are held in the position described by pin and socket connections. That is, the downwardly projecting ends of these braces are formed by pins 16 (Fig. 3) that are inserted in the sockets formed by the upper ends of the hollow plugs 14.

The scaffold is quickly and easily assembled by inserting the vertical ends of the inclined side braces in sleeves 11 and 13, and inserting the vertical ends of the horizontal side braces in the tubular upper ends of plugs 14. No tools or separate fastening members are used. The particu-

lar arrangement of the side braces shown in Fig. 1 is satisfactory, but other arrangements can be used. For example, some of the side braces can be omitted, or braces 9 can be made shorter and be employed for connecting legs on the same side of the scaffold instead of diagonally opposite legs. Also, the ends of the horizontal braces might be made like plugs 14 and inserted in the sleeves, and the inclined braces provided with ends that would plug into those plugs.

It is usually necessary to increase either the height or length of such a scaffold in order to provide different working levels or lengths. This may be accomplished with the present scaffold by connecting to the sleeves 10 and 12 of end frame 2 inclined side braces 22, like braces 8, which also are connected to similar sleeves on another end frame (not shown) spaced from end frame 2. Of course, another end frame can be connected in like manner to end frame 1. In this way the scaffold can be made any desired length. To increase the height of the scaffold, short pipe sections 21 are rigidly mounted in the upper ends of the tubular legs 3 and 4 from which they project a short distance for insertion in the lower ends of the tubular legs of additional end frames 26, shown in dotted lines in Fig. 1, that may be superimposed on end frames 1 and 2. S.de braces then can be added, as desired, to brace end frames 26 and to make the structure rigid.

Another feature of this invention is the provision of means for automatically retaining plugs 14 in the sleeves so that they can not be separated accidentally. Referring to Figs. 4 and 5, this preferably is accomplished by means of narrow latches 31 which project laterally from vertical slots 32 in the portions of plugs 14 projecting below the sleeves. The inner ends of these latches are pivotally mounted on pins 33 that are secured in the side walls of the plugs near the lower ends of the slots. The slots are long enough to permit a workman to swing the latches up into the plugs when it is desired to dismantle the scaffold, so that the plugs can be lifted from the sleeves without interference from the latches. When the plugs are inserted in the sleeves, the latches, being top heavy, swing down out of the slots to operative position below the sleeves. To prevent a latch from falling into the slot in the adjacent plug, the slots in each plug preferably are disposed in a vertical plane intersecting the side of the scaffold at about a 45° angle. It will be apparent that a latch can swing out of either slot in the surrounding plug.

An alternate way of releasably locking the plugs in the sleeves is illustrated in Figs. 7 and 8 where the latches or locking members are carried by the sleeves rather than by the side braces 8. As there shown, a wide leaf spring 40 has its upper end attached to both sleeves, such as by welding, while its lower free end extends below the lower ends of the sleeves. Fastened to the inner face of the spring below the sleeves is a pair of pins 41, one below each sleeve. These pins project into openings 42 formed in the sides of plugs 14 and thereby retain the plugs in the sleeves. When it becomes time to dismantle the scaffold, the lower out-turned end of the spring is pulled outwardly by a workman to withdraw the pins from the plugs. The plugs then can be lifted from the sleeves by raising inclined braces 8. Additional openings 43 are formed in the plugs diametrically opposite to openings 42 so that the inclined side braces can be used interchangeably on either side of the scaffolding, as will be apparent from Fig. 1. When plugs 14 are inserted in the sleeves, the tapered lower ends of the plugs engage the pins and press them outwardly against the resistance of the leaf spring until the pins snap into plug openings 42.

According to the provisions of the patent statutes, I have explained the principle and construction of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, and side braces for holding said frames upright, the ends of each side brace projecting downwardly and being removably disposed in a pair of said sleeves, whereby pairs of telescoping members are formed, and a spring connected to one of each pair of said members and releasably engaging the other member to hold them together.

2. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeve members rigidly mounted on the sides of the legs, side brace members for holding said frames upright, the cnds of each side brace member projecting downwardly and being removably disposed in a pair of said sleeve members, and releasable means mounted on one of said members and retaining said downwardly projecting ends in the sleeve members, said releasable means automatically moving into retaining position when said brace ends are disposed in said sleeve members.

3. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, side braces for holding said frames upright, the ends of each side brace projecting downwardly and being removably disposed in a pair of said sleeves, and retractable spring biased means mounted on said sleeves for retaining said downwardly projecting ends in the sleeves.

4. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, side braces for holding said frames upright, the ends of each side brace projecting downwardly and being removably disposed in a pair of said sleeves, and a retractable leaf spring having one end attached to a sleeve and carrying means at its other end for retaining said downwardly projecting ends in the sleeves.

5. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, side braces for holding said frames upright, the ends of each side brace projecting downwardly and being removably disposed in a pair of said sleeves, said brace ends being provided with transverse openings, a leaf spring having one end

attached to a sleeve, and a pin mounted on the opposite end of the spring and projecting into said opening in the adjacent side brace end to retain the latter in the surrounding sleeve, said pin being removable from said opening when the spring is flexed.

6. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, side braces for holding said frames upright, the ends of said side braces projecting downwardly through said sleeves and being provided below the sleeves with transverse openings, a leaf spring having one end attached to a sleeve and the opposite end extending below said sleeve, and a pin mounted on said opposite end and projecting into said transverse opening in the adjacent side brace end to retain the latter in the surrounding sleeve, said pin being removable from said opening when the spring is flexed.

7. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, side braces for holding said frames upright, the ends of each side brace projecting downwardly through a pair of said sleeves and being provided below the sleeves with transverse slots extending therethrough, and a latch mounted in each of said downwardly projecting ends and adapted to project laterally from its slots below the adjacent sleeve to lock the brace in the sleeve.

8. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, side braces for holding said frames upright, the ends of each side brace projecting downwardly through a pair of said sleeves and being provided below the sleeves with transverse slots extending therethrough, and a latch pivotally mounted in each slot and adapted to swing out below the overlying sleeve to lock the brace in the sleeve.

9. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, side braces for holding said frames upright, the ends of each side brace projecting downwardly through a pair of said sleeves and being provided below the sleeves with transverse slots extending therethrough, and a latch pivotally mounted at its lower end in each slot, the upper end of each latch being adapted to swing out of the slot and downwardly by gravity to position the latch below the sleeve above it to lock the brace in the sleeve.

10. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, side braces for holding said frames upright, the ends of each side brace projecting downwardly through a pair of said sleeves, and retractable means permanently connected to the ends of the braces below the sleeves for releasably locking the braces in the sleeves.

11. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, and side braces for holding said frames upright, the ends of each side brace projecting downwardly and being removably disposed in a pair of said sleeves, said side brace ends being provided with openings extending downwardly therein, and additional side braces having downwardly extending ends projecting into said openings.

12. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, inclined side braces for holding said frames upright, the ends of each side brace projecting downwardly and being removably disposed in a pair of said sleeves, said side brace ends being provided with openings extending downwardly therein, and horizontal side braces having downwardly extending ends projecting into said openings.

13. A scaffold comprising a pair of spaced parallel end frames each having a pair of legs connected near their upper ends by a horizontal brace adapted to support scaffold planking, vertical sleeves rigidly mounted on the sides of the legs, inclined side braces for holding said frames upright, the ends of each side brace being formed as hollow vertical plugs and removably disposed in a pair of said sleeves, and horizontal side braces having ends formed as vertical pins removably projecting into said hollow plugs.

DANIEL I. WEISZ.

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