Aug. 25, 1942. A. F. POLLMAN 2,294,240

SCAFFOLDING

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Fig. 1.

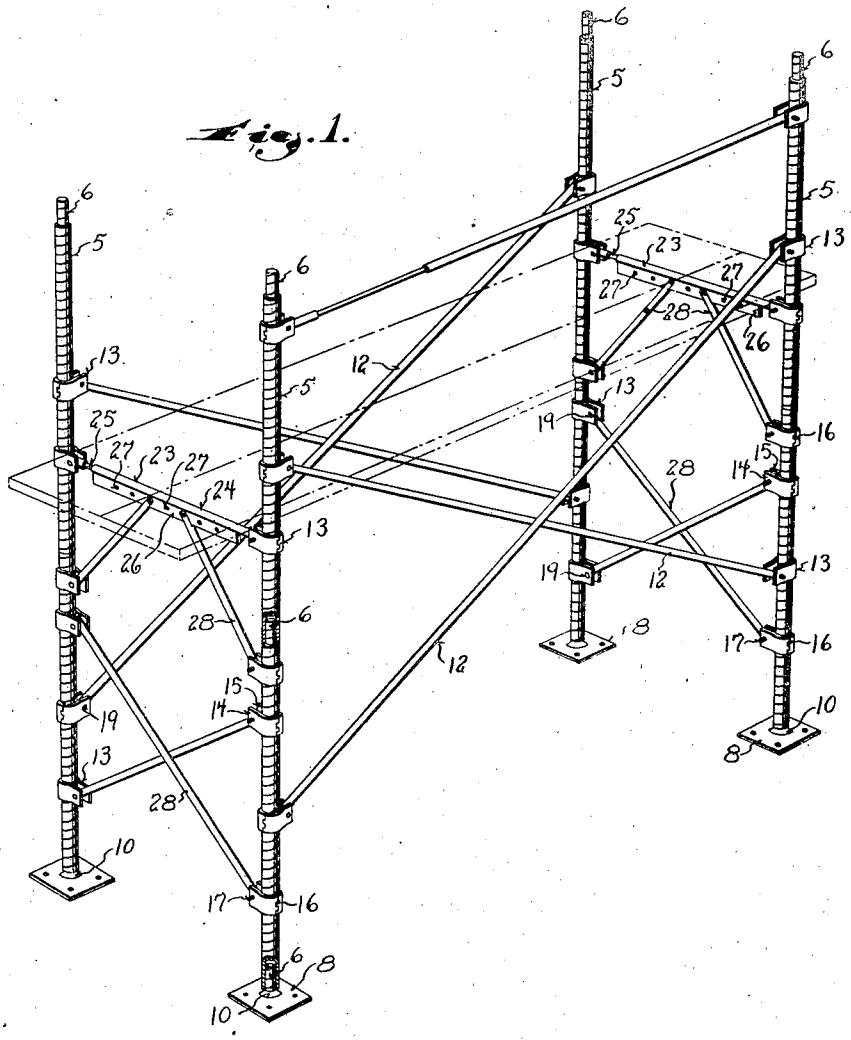
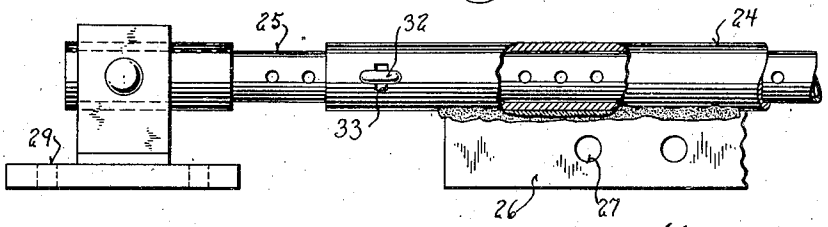


Fig. 2.



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Fig. 3.

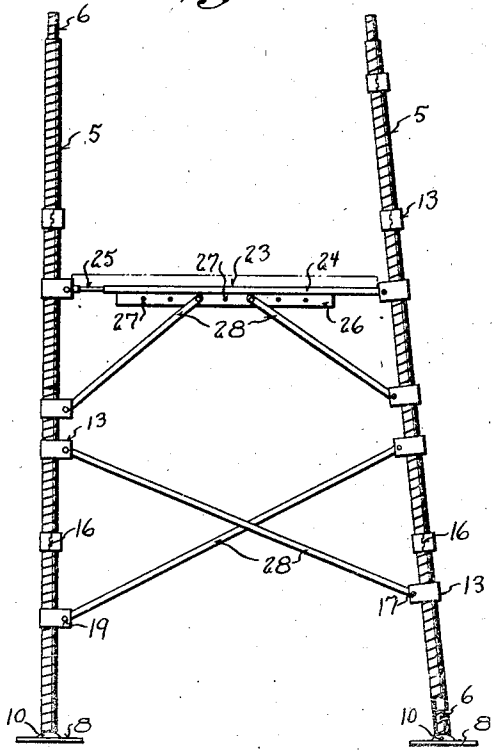


Fig. 4.

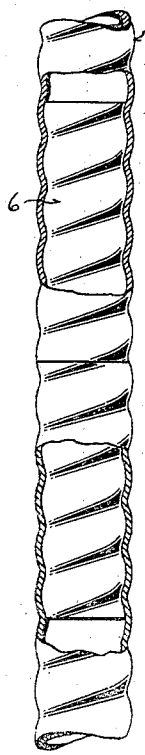


Fig. 5.

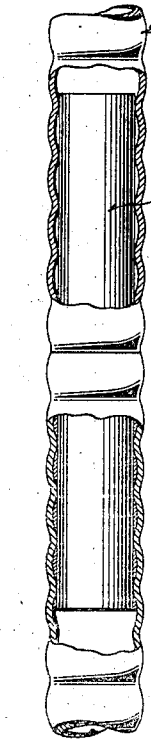
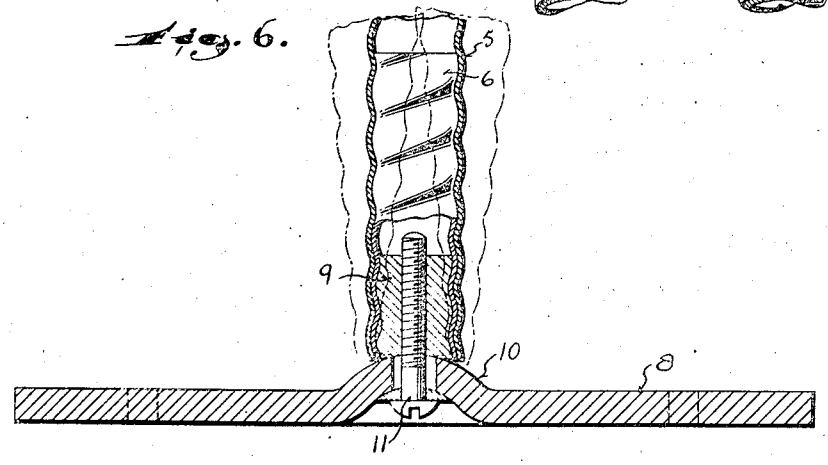


Fig. 6.



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Fig. 7.

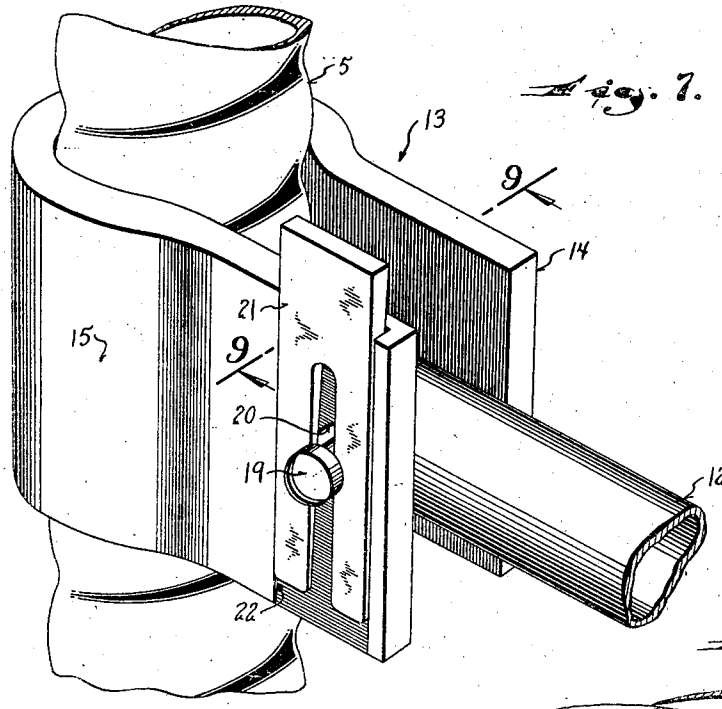


Fig. 9.

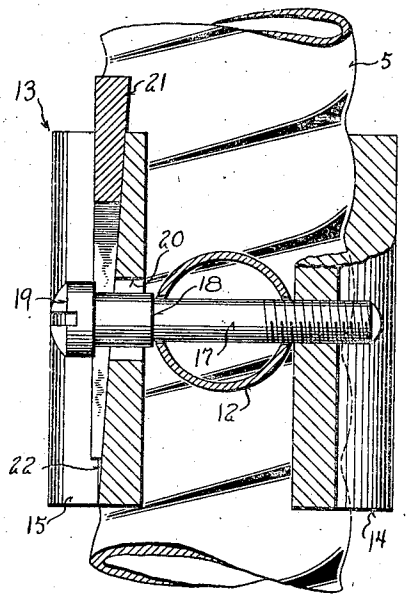
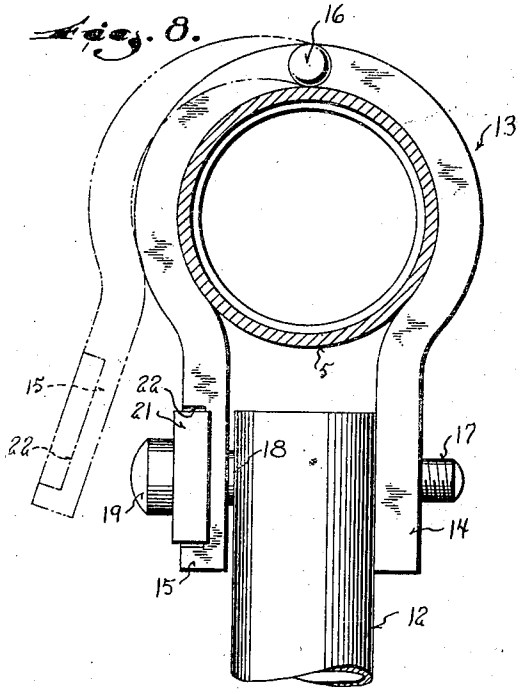


Fig. 8.



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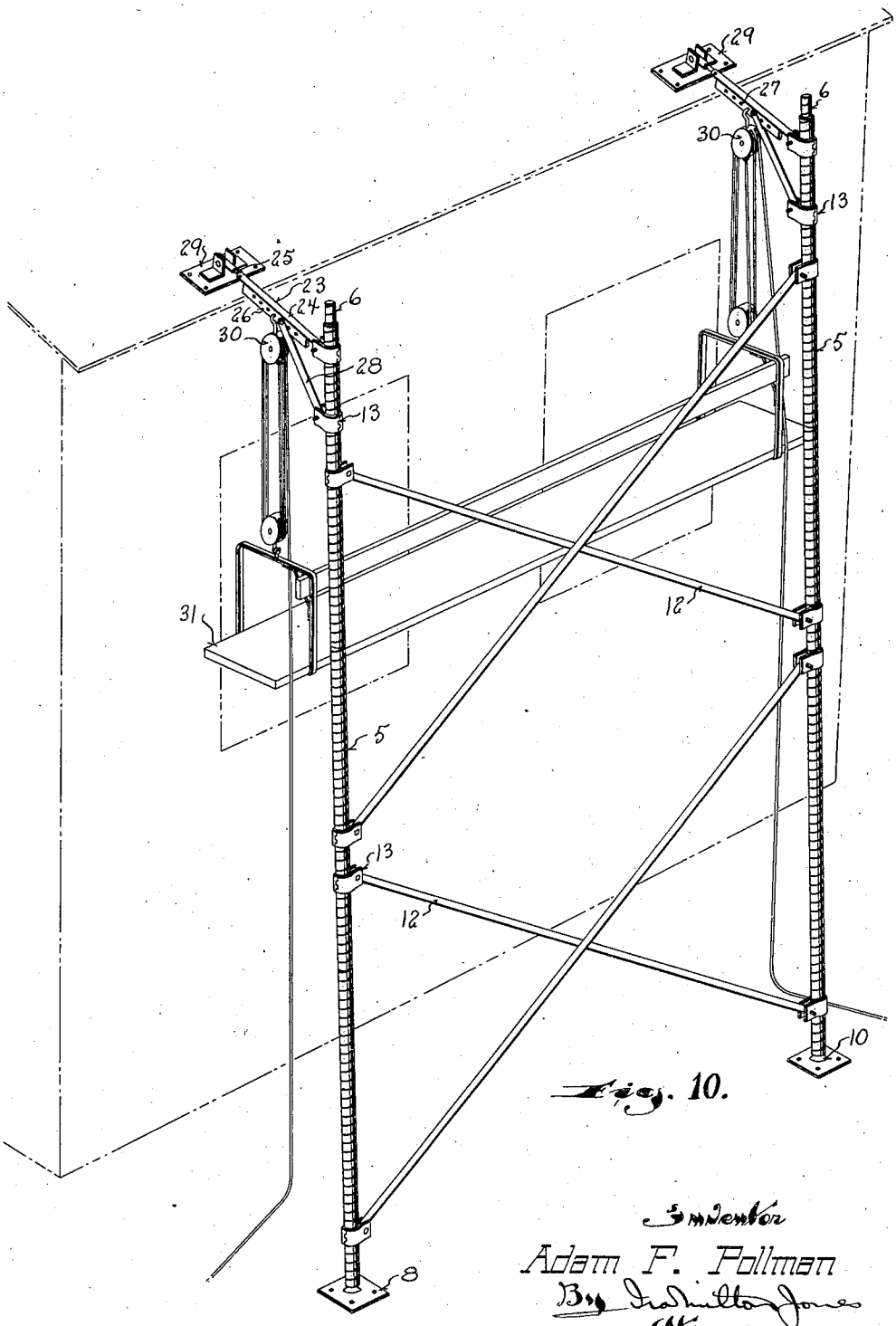


Fig. 10.

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UNITED STATES PATENT OFFICE

2,294,240

SCAFFOLDING

Adam F. Pollman, Milwaukee, Wis.

Application August 7, 1939, Serial No. 288,842

12 Claims. (Cl. 304—2)

This invention relates to scaffolding, and refers particularly to sectional scaffolding of the type shown in the Patent to Uecker, No. 2,043,498, dated June 9, 1936.

Since the advent of the aforesaid Uecker patent, sectional scaffolding of this type has found wide-spread use. Not only is it employed in the building trades during the erection, repairing and painting of buildings, but for many other purposes. The erection of temporary bleachers and towers for special purposes are some of these other uses.

The popularity of this type of scaffolding is due primarily to the ease with which it may be erected and disassembled, its rigidity when in place, and its comparatively light weight.

The scaffolding of the Uecker patent, however, has a very serious disadvantage in that the corner posts or uprights must all be on substantially the same level. This is a serious limitation, notwithstanding the fact that adjustable feet are provided for the uprights, as the adjustment afforded by these extensible foot sections is necessarily limited.

Another disadvantage of the type of scaffolding represented by the Uecker patent is that it does not permit the uprights to be set at an angle to each other, which is desirable particularly when the scaffold is built to substantial heights.

With these and other deficiencies of past scaffolding in mind, the present invention contemplates the provision of scaffolding so designed that each upright is entirely independent of the other uprights thus permitting the same to be set directly on the supporting surface regardless of its contour.

A further object of this invention is to provide scaffolding which is so designed that the uprights may be inclined toward each other at any desired angle to provide increased rigidity and lessen the possibility of tipping when the scaffolding is carried to substantial heights.

Clamps have been used heretofore for connecting braces to uprights of scaffolding, but the constructions heretofore in use have been objectionable and impractical for the reason that the clamps had to be threaded over the ends of the uprights.

It is therefore another object of this invention to provide a novel clamp for quickly detachably securing the braces to the uprights in a manner affording the same degree of rigidity as though the braces were welded to the uprights.

Another object of this invention is to provide scaffolding wherein the uprights consist of corrugated lengths of tubing, and wherein the clamps used to attach the braces to the uprights have inner surfaces shaped to conform to the contour of the tubing so that when the clamps are in position, they are securely locked against movement longitudinally with respect to the uprights.

Another object of this invention is to provide plank supporting cross members of adjustable length to accommodate different spacings between the uprights.

Still another object of this invention is to provide scaffolding which is so designed as to permit the same to be used alongside of a building to support a swinging scaffold thereby obviating the need for more than two uprights.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

The accompanying drawings illustrate several complete examples of the physical embodiment of the invention constructed in accordance with the best modes so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a perspective view illustrating a section of scaffolding constructed in accordance with this invention;

Figure 2 is a view in side elevation of one of the cross members which may be used for supporting planking and for connecting the uprights to the side of the building;

Figure 3 is a view of a section of scaffolding, illustrating the manner in which the uprights may be inclined toward each other to add to the rigidity of the structure;

Figure 4 is an enlarged detail view illustrating the manner in which two adjacent lengths of upright are connected;

Figure 5 is a view similar to Figure 4, illustrating a slightly modified manner of connecting the lengths of upright;

Figure 6 is a sectional view through the lower end portion of one of the uprights, illustrating the manner in which the base plate is connected thereto;

Figure 7 is an enlarged perspective view illustrating the construction of the clamps by which the braces are secured to the uprights;

Figure 8 is a cross sectional view through an upright above one of the clamps;

Figure 9 is a detail sectional view taken through Figure 7 on the plane of the line 9—9; and

Figure 10 is a perspective view illustrating another modified embodiment of the invention.

Referring now particularly to the accompanying drawings in which like numerals indicate like parts, the numeral 5 designates the uprights of the scaffolding. These uprights comprise lengths of spirally corrugated tubing joined end on end as the height of the scaffolding requires. A dowel construction shown in Figures 4 and 5 serves to join the adjacent ends of the lengths of tubing.

The preferred form of dowel, as shown in Figure 4, consists of a spirally corrugated pin 6 welded or otherwise secured to the end of one length of tubing and arranged to be threaded into the open end of the adjacent length of tubing. If desired, a smooth pin 7, as shown in Figure 5, may be employed. In this instance, one end of the pin is welded in one section, and its other end merely slides into the open end of the other section.

The lowermost section of each upright has a base plate 8 connected thereto. The manner in which the base plate is attached is shown in Figure 6, and as illustrated therein, the upright has a degree of relative swivel motion with respect to the base plate. This connection consists of a plug 9 secured in the lower end of the upright and resting on an upwardly bulged projection 10 on the center of the base plate. A screw 11 extending through a hole in this bulged portion and threaded into the plug 9 holds the parts together.

The uprights may be arranged in parallel relationship, as shown in Figure 1, or each unit, that is, one front and one rear upright, may be arranged in the manner shown in Figure 3 wherein the front uprights are inclined toward the top of the rear uprights. In each instance, the uprights are rigidly connected by diagonal braces 12.

These braces are of different fixed lengths, and where the uprights are set at an angle to each other, it is only necessary to vary the angle at which the braces are set to accommodate the decreasing distance between the uprights.

The ends of the braces are rigidly secured to the uprights by clamps 13. These clamps are quickly applied to the uprights and remain permanently connected to the ends of the braces. As best shown in Figures 7, 8 and 9, each clamp consists of two complementary hingedly connected sections 14 and 15, hingedly connected as at 16. The hingedly connected end portions of the clamp sections are curved to fit the curvature of the tubular uprights, and their inner walls are shaped to correspond to the contour of the spiral corrugations in the uprights. Consequently, when the clamps are in position, they are securely held against moving longitudinally with respect to the uprights.

The outer ends of the clamp sections are spaced apart a distance to receive the braces 12 therebetween. These braces are preferably formed of lengths of tubing, and the distance between the free ends of the clamp sections when the clamp is in place on an upright is greater than the outside diameter thereof so as to enable the clamp sections to be drawn together to securely grip the upright.

The clamp sections 14 are permanently connected to the ends of the braces by special screws 17 which pass through holes in the ends of the braces and thread into the clamp sections 14. Shoulders 18 on the outer ends of the screws bear against the sides of the braces to thereby clamp the braces to the clamp sections 14.

Outwardly of the shoulders 18, the screws have enlarged heads 19, and the clamp sections 15 have holes 20 of a size to permit the heads 19 to pass therethrough. Hence, the clamp sections 15 may be swung to and from their clamping positions to enable the clamps to be applied to the uprights at any point along their length without necessitating threading the same over the ends of the uprights.

The clamp sections 15 are held in their operative clamping positions by wedges 21 driven between the heads 19 of the screws and the adjacent outer faces of the clamp sections. The wedges, as best shown in Figure 7, are bifurcated to embrace the shanks of the screws, and to insure the wedges having flat surface to surface contact with the heads 19 of the screws, the outer faces of the clamp sections 15 have channels 22 formed therein to receive the wedges, the bottoms of which are inclined to correspond to the angle of the wedge.

In view of the clearance between the inner faces of the clamp sections 15 and the sides of the braces, it is possible to draw the clamp sections firmly together so that the grip of the clamps on the uprights and their attachment to the braces is as secure as though the braces were welded to the uprights.

This manner of attaching the braces to the uprights also has the advantage of enabling the braces to be set at any angle with relation to the uprights for the braces swing freely about the attaching screws 17.

The same clamp structure is utilized to attach the ends of plank supporting cross members 23 to the uprights. These plank supporting cross members, to accommodate different distances between the uprights, are extensible, consisting of outer tubular sections 24 and inner sections 25 slidable therein. A clamp 13 is attached to the outer end of each of these sections.

The outer tubular section of each plank supporting cross member also has a flange 26 welded radially thereto and extending substantially along the length thereof. This flange has a plurality of holes 27 along the length thereof by which diagonal braces 28 are connected to the plank supporting cross members. The lower ends of these diagonal braces have clamps 13 attached thereto by which they are connected to the uprights.

The same cross member construction is also utilized to support a swinging scaffold, in the manner shown in Figure 10. In this instance, one end of the cross member has a roof plate 29 connected thereto by which it may be secured to the roof or any other portion of the building to thereby hold the upper end of the upright at a desired distance from the side of the building.

The holes in the depending flange 26 provide means by which a block and tackle 30 may be suspended, which in turn supports the swinging scaffold 31, as clearly shown in Figure 10.

Any suitable means may be employed for securing the telescoped sections of the cross members 23 at fixed positions of adjustment; but it

is preferable to provide the inner section 25 with a plurality of holes extending diametrically therethrough into which a pin 32 received in a hole 33 in the outer section passes.

From the foregoing description taken in connection with the accompanying drawings, it will be readily apparent that this invention provides scaffolding which is equally as rigid as the type having welded end units, and which is considerably more flexible from the standpoint of application; and in addition, lends itself more readily to storage and transportation.

What I claim as my invention is:

1. A scaffold comprising: tubular uprights having transverse corrugations extending along substantially the entire length of the uprights to reinforce the same, said corrugations being provided by deforming the walls of the tubular uprights to thereby insure substantially uniform wall thickness for the uprights; cross braces; and clamps attached to the ends of the braces having their inner surfaces shaped to conform to the corrugated surface of the tubular uprights whereby the clamps may be locked about the tubular uprights at any point along their length.

2. In a scaffolding of the character described: uprights consisting of lengths of tubing having transverse corrugations extending along substantially the entire length of the uprights to reinforce the same, said corrugations being provided by deforming the walls of the tubular uprights to thereby insure substantially uniform wall thickness for the uprights; clamps securable to the uprights at any point along their length, said clamps comprising complementary hingedly connected sections adapted to embrace the uprights and having inner walls shaped to conform to the corrugated surface of the uprights so that the clamps are positively held against movement longitudinally of the uprights in either direction in any position on the uprights; means for drawing the outer free end portions of the hingedly connected sections together to securely attach the clamps to the uprights; and lateral members connected to said clamps.

3. In scaffolding of the character described: uprights consisting of lengths of transversely corrugated tubing; clamps securable to the uprights at any point along their length, said clamps comprising complementary hingedly connected sections adapted to embrace the uprights and having inner walls shaped to conform to the corrugations thereof so that the clamps are positively held against movement longitudinally of the uprights when in position; means for drawing the outer free end portions of the hingedly connected sections together to securely attach the clamps to the uprights; and lateral members connected to said clamps by the same means which draws the clamp sections together.

4. A scaffold comprising at least four uprights: diagonal braces connecting said uprights to form a rigid structure, said braces being of fixed lengths and by their angularity determining the spacing between the uprights; clamps on the ends of the diagonal braces arranged to grip the uprights at any point along their length; plank supporting cross members, each comprising two sections telescoped one within the other; and other clamps at the outer ends of said cross members adapted to grip the uprights at any point along their length whereby said cross members are adjustable independently of the diagonal braces.

5. A scaffold comprising at least four uprights: diagonal braces connecting said uprights to form a rigid structure, said braces being of fixed lengths and by their angularity determining the spacing between the uprights; clamps on the ends of the diagonal braces arranged to grip the uprights at any point along their length; plank supporting cross members, each comprising two sections telescoped one within the other; other clamps at the outer ends of said cross members adapted to grip the uprights at any point along their length; diagonal braces connected to said plank supporting cross members at one end; and clamps at the opposite ends of said diagonal braces securable to the uprights at any point along their length, all of said clamps being independent of each other to permit adjustment of the cross members and their diagonal braces independently of said first named diagonal braces which connect the uprights.

6. A scaffold of the character described comprising: at least four uprights arranged in two end units, the uprights of each end unit being inclined toward each other toward the top; diagonal braces of fixed lengths; clamps on the ends of said diagonal braces gripping the uprights to hold the same rigidly in proper spaced relation, said clamps being securable to the uprights at any point along their length so that braces of fixed lengths may be used to hold the uprights in proper relationship and at any desired inclination to each other; and plank supporting cross members entirely independent of said diagonal braces, each comprising telescoped sections joining the uprights of each end unit.

7. In scaffolding of the character described: an upright; a brace for the upright; a clamp for connecting the brace to the upright comprising, complementary hingedly connected sections having their hingedly connected end portions shaped to embrace the upright, and their outer free end portions extending substantially parallel to each other to receive the adjacent end of the brace therebetween; means for rigidly securing the brace to one clamp section while the other clamp section is free to swing on its hinge connection therewith to enable the clamp to be engaged about the upright; and means connected with the same means which secures said one clamp section to the brace for drawing said other clamp section toward the first named clamp section to cause the same to securely grip the upright.

8. In scaffolding of the character described: an upright; a brace for the upright; a clamp for connecting the brace to the upright comprising, complementary hingedly connected sections having their hingedly connected end portions shaped to embrace the upright, and their outer free end portions extending substantially parallel to each other to receive the adjacent end of the brace therebetween; means for rigidly securing the brace to one clamp section while the other clamp section is free to swing on its hinge connection therewith to enable the clamp to be engaged about the upright; and a wedge engageable between an abutment on the means which secures one clamp section to the brace and the other clamp section for drawing said other clamp section toward the side of the brace to securely grip the upright.

9. In scaffolding having uprights and braces: clamps for securing the braces to the uprights comprising, hingedly connected sections having their hingedly connected end portions shaped to embrace the uprights, and their outer free end portions spaced apart a distance to receive the

braces therebetween when the clamps are engaged about the uprights; clamping screws for securing one section of each clamp to a brace while the other clamp section is left free for swinging movement to enable the clamps to be engaged about the uprights; heads on the screws; and wedges positionable between the heads and the adjacent surfaces of the loose second named clamp sections to draw the same toward the braces and securely grip the uprights.

10. In scaffolding of the character described: spaced uprights comprising lengths of spirally corrugated tubing joined end to end; clamps gripping the uprights, said clamps each comprising complementary sections adapted to embrace the uprights and having inner surfaces shaped to conform to the contour of the uprights; means for drawing said clamp sections together to cause them to securely grip the uprights; and cross members connected to the clamps by which the uprights are rigidly joined.

11. A scaffold comprising: tubular uprights having transverse corrugations extending along substantially the entire length of the uprights to reinforce the same, said corrugations being provided by deforming the walls of the tubular uprights to thereby insure substantially uniform wall thickness for the uprights; and means for detachably holding said uprights in end-to-end relationship coaxially with one another.

12. A scaffold comprising: tubular uprights having spirally arranged corrugations extending substantially continuously along the entire length of the uprights to reinforce the same, said corrugations being provided by deforming the walls of the tubular uprights to thereby insure substantially uniform wall thickness for the uprights; and means for detachably holding said uprights in end-to-end relationship coaxially with one another.

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