

April 11, 1939.

H. S. GOINS

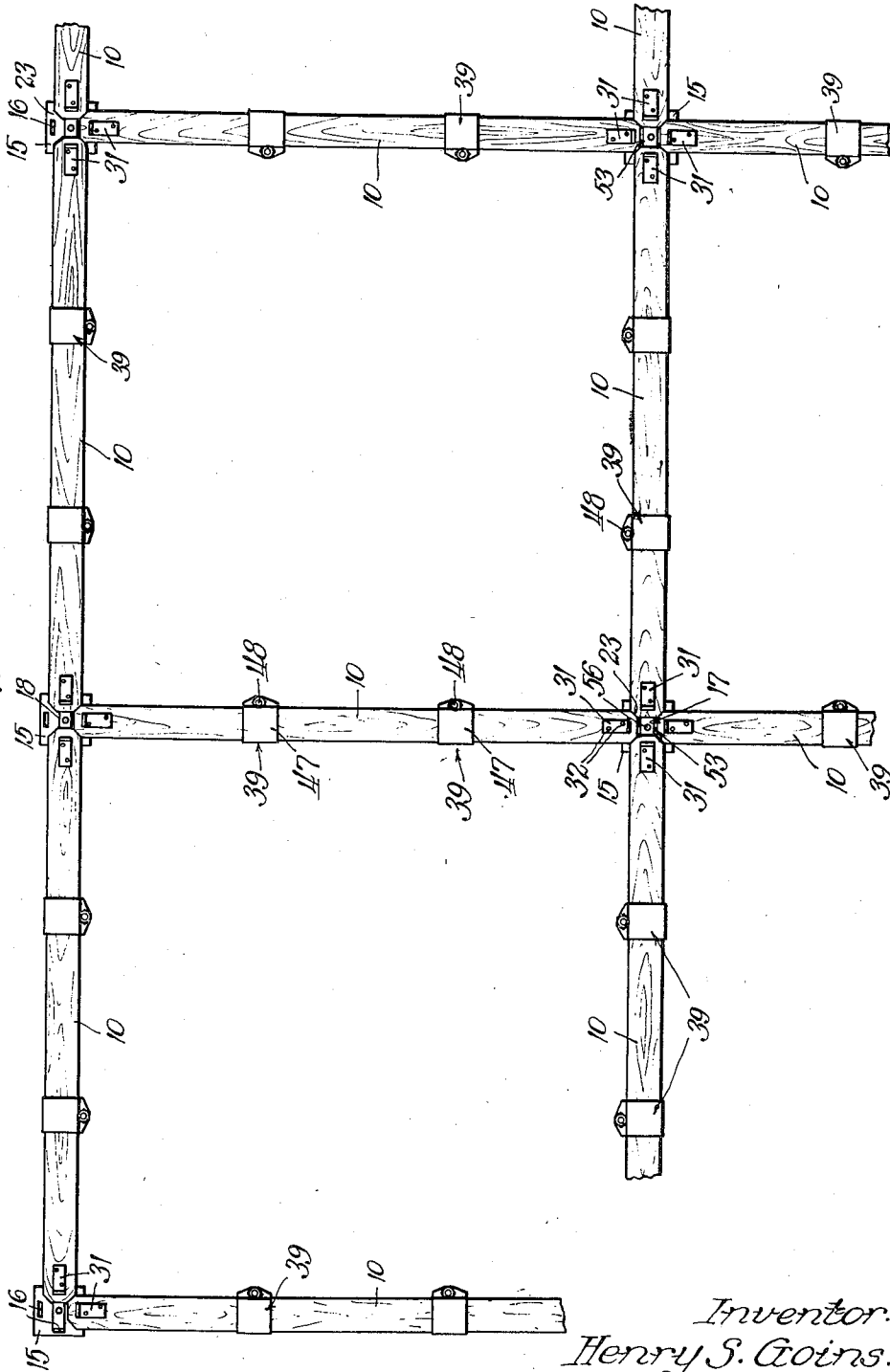
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SCAFFOLD

Filed April 4, 1938

3 Sheets-Sheet 1

Fig. 1.



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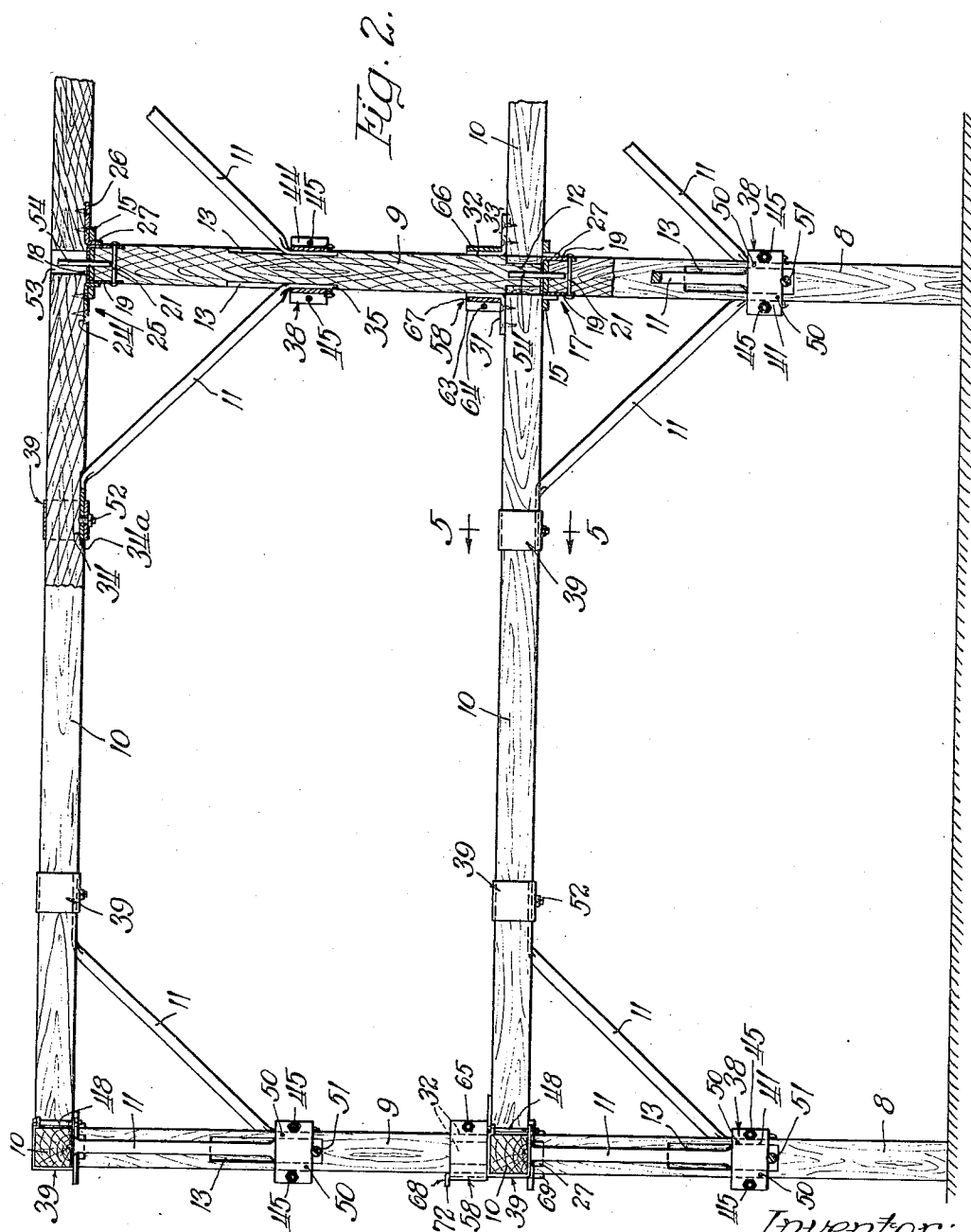
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

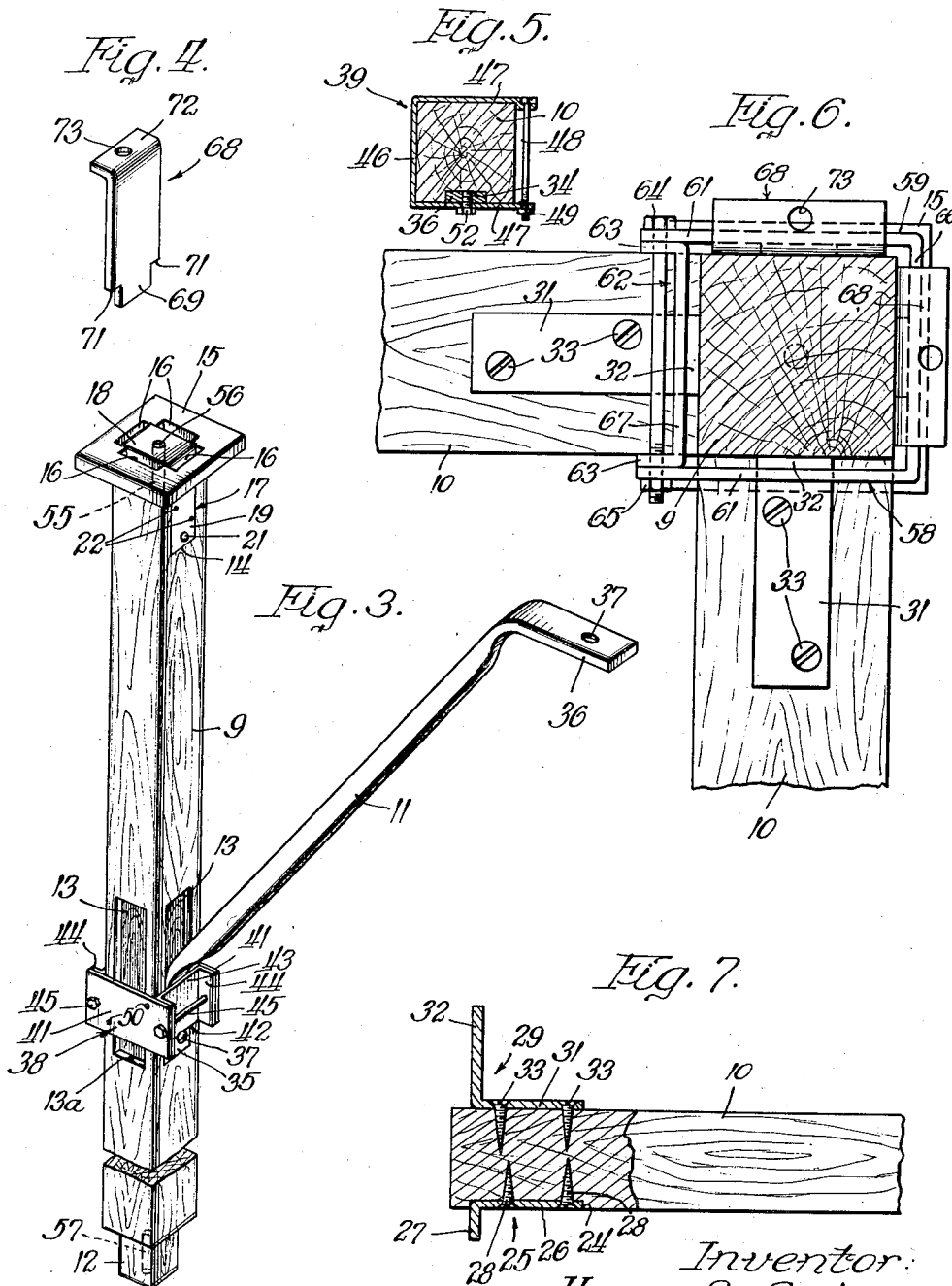


Fig. 7.

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UNITED STATES PATENT OFFICE

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SCAFFOLD

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Application April 4, 1938, Serial No. 199,773

11 Claims. (Cl. 304—2)

My invention relates to scaffolds, and is more particularly concerned with self-supporting scaffolding adapted to rest upon the ground, or other floor surface, as distinguished from suspended scaffolding.

The question of providing scaffolding for various operations in and about buildings such, for example, as in decorating, presents numerous problems. Probably, the most important of these problems is the provision of scaffolding which will enable the decorating of the vertical side walls to be carried on conveniently and expeditiously regardless of the vertical and longitudinal extent of the walls, as well as the provision of scaffolding which will permit the ceiling to be cleaned or decorated.

My invention aims toward a solution of the above problems by providing an improved portable adjustable scaffold for supporting a platform or series of platforms, the component parts of the scaffold being easily and quickly assembled or disassembled and, when assembled, being firmly braced and rigidly secured together. The invention further aims to provide an improved form of self-supporting sectional scaffold adapted to rest upon the ground, or other floor surface, as a point of support, which scaffold may be extended to any desired height or length, however great, by adding further sections. The scaffold of the invention also embodies the feature of being extendable in any one of four different directions, while the scaffold may be extended in height by a workman upon the platform of a section.

Other features and advantage of my invention reside in certain novel combinations and arrangements of parts as will hereinafter be more fully set forth and claimed.

In describing my invention, reference is had to the accompanying drawings wherein I have illustrated the preferred embodiment of my invention, and in which:

Figure 1 is a fragmentary plan view of a scaffold embodying the principles of the present invention;

Figure 2 is a view, partly in side elevation, and partly in vertical section, of the device of Figure 1;

Figure 3 is a perspective view of one of the vertical posts and braces employed in the scaffold;

Figure 4 is a perspective view of a filler plate employed in connection with one of the upper section vertical posts;

Figure 5 is a vertical sectional view through a brace clamp and one of the horizontally extending beams of the scaffold, this view being taken sub-

stantially along the plane of the line 5—5 of Figure 2;

Figure 6 is a fragmentary view, partly in plan and partly in longitudinal section showing a foot clamp securing the horizontal beams and a vertical post together, and

Figure 7 is a fragmentary view, partly in side elevation and partly in vertical section, showing the means for connecting the horizontal beams to the vertical posts.

Referring now in detail to the drawings, it will be observed that the scaffold comprises essentially the vertical base posts 8, the upper vertical section posts 9, the horizontal beams 10, and the diagonal braces 11, securing together of which in the manner hereinafter described forms the sectional scaffold of the present invention.

Preferably posts 8 and 9 are formed of well-seasoned timber, although any other suitable or preferred material may be employed. Post 8 has a ground engaging area equal to its cross-sectional area, while post 9 has a reduced portion or tongue 12 projecting from the lower end thereof, this tongue having a length substantially equal to the thickness of beams 10. Intermediate their ends, each of the posts is provided with vertically extending recesses 13, there being one of these recesses in each of the four faces of the post for a purpose which will hereinafter appear. In addition to recesses 13, two of the opposite faces of the posts are provided with vertical recesses 14, extending inwardly of the posts from their upper ends.

Each post, on its upper face, supports a flat substantially square cap plate 15, preferably formed of hardened sheet steel of appreciable thickness. This plate is provided with four slots 16 extending therethrough, one slot each being arranged to extend parallel to one face each of the post, and with the inner defining edge of the slots disposed substantially in the plane of the outer surface of the post faces. The cap is secured to the post by means of a substantially U-shaped strap 17, which has its transverse portion 18 seating on the cap and its legs 19 extending through two of the cap slots 16 and engaging in the recesses 14. The depth of recesses 14 is equal to the thickness of strap 17, so that the outer surface of the strap legs will be disposed substantially in the plane of the outer surface of the post faces. A rivet 21 extends entirely through the post and strap legs to secure the strap to the post. The strap may, additionally, be secured to the post by the screws 22 threaded through the strap legs and into the post.

Caps 15 receive and support the horizontal

beams 10, which are also preferably formed of well-seasoned timber. At their opposite ends, the beams are tapered inwardly for a relatively short distance, as indicated at 23. Immediately inwardly of such tapered portions, the under surface of each beam is provided at its opposite ends, with longitudinally extending recesses 24 for the reception of stay members 25, which are also preferably formed of metal. Each member 25 has legs 26 and 27 disposed at right angles to each other, the leg 26 preferably being appreciably longer than the leg 27, as shown. Leg 26 is received and has a snug fit in the recess 24, and has its outer surface disposed substantially flush with the under surface of the beam. Screws 28, passing through leg 26 into beam 10, serve to secure member 25 to the beam. Leg 27 is adapted to engage in slot 16 of the cap plate, and its length is such that it passes through said slot for only a relatively short distance. On its upper surface, each end of the beam is also provided with a second stay member 29, also preferably formed of metal. Member 29 has legs 31 and 32 of equal length, and disposed at right angles to each other. Leg 31 of the stay seats on the upper surface of the beam and screws 33 passing therethrough into the beam secure it thereto. The purpose of stay member 29 will hereinafter appear. In addition to recesses 24, the under surface of the beam is provided with a pair of longitudinally extending recesses 34, these recesses being spaced from each other and from recesses 24. Recesses 34 are adapted to receive one end of the diagonal brace members 11.

Each brace member 11 is also preferably formed of a suitable metal. The intermediate portion of the member is substantially square in cross-section, while its opposite ends are disposed at an angle thereto, and flattened, as shown. End 36 is preferably slightly longer than end 35, and both ends are provided with a threaded aperture or hole 37. End 35 is adapted to be received in one of the recesses 13 in posts 8 or 9, while end 36 is adapted to be received in one of the recesses 34 in beams 10. Preferably, the thickness of ends 35 and 36 is equal to the depth of recesses 13 and 34, respectively, so that they will lie flush with the surface of such posts and beams. A clamp 38 secures end 35 in recess 13, while a clamp 39 secures end 36 in recess 34.

Clamp 38 comprises a pair of transversely extending flat metal plates 41 disposed in abutting engagement with two opposite faces of posts 8 or 9. Each end of plates 41 extends transversely beyond the posts for a relatively short distance and between such extended portions of the plates are disposed substantially U-shaped plates 42. The transverse portion 43 of these latter plates abuts the outer surface of posts 8 or 9, while the legs 44 of the plates are disposed to abut the extended portions of the plate 41. Bolts 45 extending through plates 41 and the legs 44 of plates 42, serve to secure the plates together and to tighten them about the post. Screws 50 extending through the plates 41 and threading into the posts maintain the clamp 38 in the position shown with respect to recesses 13.

Clamp 39 is in the form of a U-shaped metal strap having a transverse portion 46 and legs 47. Transverse portion 46 of the clamp is disposed in abutting engagement with one of the vertical faces of the beam 10, while the legs 47 engage the upper and lower surfaces of the beam. The free ends of the legs extend beyond the beam for a short distance, and such extended portions of

the clamp are provided with openings for the passage of a bolt 48 therethrough. A nut 49 threaded on the bolt serves to tighten the clamp about the beam. Preferably, the extreme outer end of upper leg 47 is bent downwardly and outwardly as shown so that the upper surface of the bolt head on bolt 48 will be disposed in substantially the plane of the outer surface of said leg.

It may be stated that the clamps 38 and 39 are intended to remain at all times on the posts 8 or 9 and the beams 10, respectively. When it is desired to erect a section of the scaffold, four of the base posts 8 are first erected and arranged in space relationship in the form of a parallelogram, as shown in Figure 1 of the drawings. Beams 10 are then seated upon the cap plates, the legs 27 of beam stays 25 being engaged in appropriate slots 16 in each of the caps. The width and thickness of legs 27 are substantially equal to the length and width of slots 16 so that they engage therein with a relatively snug fit. Next, the ends 35 and 36 of braces 11 are engaged in the recesses 13 and 34, respectively, the end 35 of the brace being slid into recess 13 behind the plates 42 of clamp 38. It will be observed that end 35 engages face 13a of recess 13, while end 36 engages face 34a of recess 34. Clamps 39 are normally disposed inwardly of beams 10 and out of engagement with recesses 34. After the end 36 of the braces is disposed in the recesses the clamp is slid thereover and the nut 49 tightened on bolt 48. When confined within recess 13 by clamp 38, the end 35 of brace 11 is restrained against upward movement with respect to the post and clamp by a cap screw 51 threaded into opening 37 of end 35, the clamp 38 abutting such screw. Longitudinal movement of clamp 39 is restrained by a cap screw 52 passing through an opening in the lower leg 47 thereof and threading into opening 37 in end 36 of the brace.

The four posts 8, and associated beams 10 and braces 11, constitute one base section of the scaffold. From Figure 1, it will be observed that, by erecting additional posts 8 and connecting additional beams 10 with appropriate slots 16 in cap plate 15, additional base sections may be connected to the first base section. And, by reason of the use of cap plates 15, these additional base sections may be extended in any one of four different directions away from the first base section. Also, it will be noted that use of cap 15 in conjunction with the stays 25, which have their leg 26 disposed flush with the undersurface of beam 10, assures that the beams of the first and any additional sections, will have their upper surfaces disposed in substantially the same plane, throughout the area of the scaffold. That is, there will be no step-up, or drop-down from the platforms of one section to another. The boards disposed on and forming the platform on the beams of a multi-section scaffold will, therefore, all lie in substantially the same plane over the entire area of the scaffold, thereby facilitating movement of material over the platforms.

By reason of the tapered ends 23 of beams 10, four of the beams may be connected to one cap plate. The termination of the four beams upon the cap plate defines, in effect, a substantially square opening 53. In erecting additional upper sections upon the base sections of the scaffold, the posts 9 are employed, and such posts have the tongues 12 engaging in the opening 53 defined by the beams 10. A pin 54, has one end disposed in an axial bore 55 in post 8 and passes through an opening 56 in cap securing strap 17.

When the tongue 12 of post 9 is inserted into opening 53, the opposite end of this pin engages in an axial bore 57 in such tongue and provides a connection between posts 8 and 9. The tongue 12 is of such width and thickness as to provide for a relatively snug fit in opening 53, while stays 29 are so disposed on the beams 10 as to have their legs 32 abut the post 9. Such stays, in conjunction with the pin 54 and the snug fit of the post in opening 53, therefore, serve to support the post in an upright position until such time as the stays can be clamped to the post.

Legs 32 of stays 29 are clamped to the post 9 by the stay foot clamps 58. As best shown in Figure 6, each of these clamps comprises a substantially U-shaped strap 59 encircling three sides of the post, the free ends of the legs 61 of the strap being extended for a relatively short distance beyond the fourth side of the post. Between the extended portions of legs 61 is disposed a second U-shaped strap 62, having legs 63. Both of the straps are preferably formed of a suitable metal, and the legs thereof are each provided with an opening for the reception of a bolt 64 having a nut 65 threaded on one end thereof. Clamp 58 is normally always carried by post 9 and disposed inwardly of the end thereof.

After post 9 is mounted upon post 8, and with the legs 32 of stays 29 in abutting engagement with post 9, the clamp is slipped downwardly along the post to engage over the legs 32. Where there are four beams meeting on a cap plate, the legs 32 of two of the beam stays 29 will be confined between opposite sides of the post and the legs 61 of strap 59, while the legs 32 of the other two beam stays 29 will be clamped between opposite sides of the post and the transverse portions 66 and 67, respectively, of the straps 59 and 62. Tightening of nut 65 will secure the posts 8 and 9 and the four beams 10 rigidly together, as a unit.

Where there are only two beams seating upon the cap plate, as will occur at the outer end of a scaffold section, as shown in Figure 6, filler plates 68 are employed to engage in two of the openings 16 of the cap plate. Each of these plates 68 is preferably formed of suitable metal, and is provided with a depending tongue 69 forming shoulders 71. Tongue 69 is adapted to engage in the slots 16 of plate 15 with a relatively snug fit, while shoulders 71 of the filler plate seat on the cap plate 15. Preferably, the length of tongue 69 is such that it extends for a relatively short distance below plate 15 when engaged in slot 16, and it has direct bearing engagement against posts 8 or 9, as a brace. A right angle flange 72 having a finger opening 73 is provided on plates 68 to facilitate insertion and removal of the tongue 69 into and from the slots 16. When plates 68 are employed, the clamp 58 is first slipped downwardly over the legs 32 of the two beam stays 29, after which the plates 68 may be slipped downwardly between strap 59 and post 9 and have their tongue engaged in slots 16. Plates 68, of course, take the place of the two legs 32 of the absent beam stays 25 and 29 and provide a filler member between strap 59 and post 9 so that the strap may effectively be tightened about the stays of the two beams resting upon cap plate 15.

In each case, when mounting post 9 upon post 8, tongue 12 of the post is engaged with pin 54 and the foot clamp 58 is then slid downwardly over the stay member 29. This foot clamp, in conjunction with stays 29, will support the post

in a substantially upright position until the beams 10 are connected thereto.

After the posts 9 have been erected and secured upon posts 8 in the manner above described, beams 10 and braces 11 may be secured to the upper ends of posts 9 in the manner in which such braces and beams have been described as being connected to posts 8. By further employing posts 9, beams 10, and braces 11, additional upper sections may be erected upon the upper section just described, and to whatever height desired. It will be apparent, therefore, that the scaffold of the present invention may sectionally be extended in height and length to any desired or required degree, as well as being extended in any one of four different directions. The beams 10 employed as the uppermost section of the scaffold do not have the stay members 29 connected thereto, so that a level platform over the entire area of the upper section may be secured.

While a preferred embodiment of my invention has been illustrated and described, by way of example, it will be obvious that changes may be made therein within the spirit and scope of the invention and, therefore, I do not limit my invention to the form herein disclosed, excepting so far as it may so be limited in the appended claims.

I claim:

1. A sectional scaffold adapted to be extended in length by the addition of sections thereto comprising a first section having a plurality of vertical posts spaced apart in parallelogrammatic form, a flat metal plate of uniform thickness seating on the upper surface of each post and of sufficient area to project outwardly beyond each vertical face of the post, said plate having a plurality of slots extending through its projecting portions, each slot extending parallel to a marginal edge of the plate and having its inner defining edge disposed in substantially the plane of a vertical face of the post, horizontal platform supporting beams extended between said posts, the ends of said beams seating on the plate on the posts and terminating inwardly of a plane defined by the adjacent vertical face of the post, and means carried by said beams and securing them to said plates, said means comprising a depending member extended through a slot in the plate and disposed to abut the post below the plate.

2. A sectional scaffold adapted to be increased in height by the addition of sections thereto comprising a base section including a plurality of vertical posts spaced apart in parallelogrammatic form, a plate seating on the upper surface of each of said posts, horizontal platform supporting beams extended between said posts and seating on said plates, depending members carried on the under surface of each of said beams and connecting said beams to said plates, upper section vertical posts axially superposed on each of said base posts, upwardly projecting members carried by the upper surface of said beams and disposed to abut said upper section posts, and clamp means securing said last named members to said upper section posts.

3. A multi-sectional scaffolding adapted to be increased in height and length by the addition of sections thereto, comprising vertically disposed base posts, each of said posts being adapted to receive and support at least four horizontal beams whereby the scaffolding may be extended in any one of four different directions, said beams having their ends tapered whereby the termination of four beams on a post will define a sub-

stantially square opening disposed substantially centrally of the post, upper section posts adapted to be superposed on said base posts, a tongue extending from the lower end of each of said upper section vertical posts and engageable in the opening defined by said horizontal beams, and communicating axial bores formed in said base posts and the tongue of said upper section posts, and a pin disposed in said bores and providing a connection between said posts.

4. A sectional scaffolding adapted to be increased in height by the addition of sections thereto comprising a base section including a plurality of posts spaced apart in parallelogrammatic form, a cap plate seating on the upper end of each of said posts, each of said plates having a plurality of slots formed therein, horizontal beams extending between said posts, means carried by said beams and engaging in certain of said slots in said cap plates, upper section vertical posts superposed on said base posts, means carried by the beams and abutting said upper section posts, filler plates engaging in other slots in said cap plates and abutting said upper section posts, and means clamping said last-named means and said filler plates to said upper section posts.

5. A sectional scaffolding adapted to be increased in height by the addition of sections thereto, comprising a base section including a plurality of posts spaced apart in parallelogrammatic form, a cap plate seating on the upper end of each of said posts, each of said plates having a plurality of slots formed therein, horizontal beams extending between said posts, means carried by said beams engaging in certain of said slots in said cap plates, upper section vertical posts seating on said base posts, means carried by the beams and abutting said upper section posts, clamp means normally carried by said upper section posts and slidable translationally with respect thereto to embrace said last-named means, filler plates disposed in abutting engagement with said upper section posts and slidable translationally with respect thereto and between said clamp means and said posts to engage other slots in said cap plates, and means for tightening said clamp means about said filler plate and the means carried by said beams whereby said beams and said upper section vertical posts will all rigidly be secured together as a unit.

6. A scaffold section comprising at least four posts spaced apart to define the perimeter of a square, a plate seating upon the upper end of each of said posts, each of said plates having a plurality of slots therein, U-shaped straps securing said plates to said posts, said straps having their transverse portion seating on said plates and the legs thereof extended through certain slots in the plates to abut the posts therebelow, horizontal beams extending between and supported by said posts, and means carried by said beams and engaging in certain of the slots in said plates to secure said beams thereto.

7. A scaffold section comprising at least four vertical posts spaced apart in parallelogrammatic form, horizontal beams extending between and supported by said posts, both said posts and said beams being provided with recesses, diagonal brace members extending between said beams and posts and having their opposite ends disposed respectively in a recess in said beams and

in said posts, clamp means carried by both said beams and posts and securing said brace members thereto, and means restraining movement of said clamp means with respect to said beams and posts.

8. A scaffold section comprising at least four vertical posts spaced apart in parallelogrammatic form, horizontal beams extending between and supported by said posts, both said posts and said beams being provided with recesses, diagonal brace members extending between said beams and posts and having their opposite ends disposed respectively in a recess in said beams and in said posts, the opposite ends of said brace members being provided with openings, clamp means carried by both said beams and posts and securing said brace members thereto, and means threading into the openings in the ends of said brace members and operative to restrain movement of said clamp means with respect to said beams and posts.

9. A structure intended for use in sectional scaffolding comprising in combination a post substantially square in cross-section, a flat metal plate seated on the upper end of said post and projecting outwardly beyond each of the faces thereof, the projecting portions of said plate having slots formed therein, an inverted substantially U-shaped strap having its transverse portion seating on the upper surface of said plate and its legs extended through two of the slots in said plate into abutting engagement with two of the post faces below the plate, and means securing said strap legs to said post.

10. A structure intended for use in sectional scaffolding comprising in combination a post substantially square in cross-section, said post having two of its opposed faces provided with a recess extending axially inwardly from the upper end thereof, a flat metal plate seated on the upper surface of said post above said recess and projecting outwardly beyond each of the faces of said post, the projecting portions of said plate having slots formed therein, an inverted substantially U-shaped strap having its transverse portion seating on the upper surface of said plate and its legs extended through two of the slots in said plate and engaging in the recesses in said post below said plate, and a bolt extended through said post and securing said strap legs in said recesses.

11. A structure intended for use in sectional scaffolding comprising in combination a post substantially square in cross-section, said post having two of its opposed faces provided with a recess extending axially inwardly from the upper end thereof and a tongue of reduced cross-section extending axially from the lower end of the post, a flat metal plate seated on the upper surface of said post above said recesses and projecting outwardly beyond each of the faces of said post, the projecting portions of said plate having slots formed therein, an inverted substantially U-shaped strap having its transverse portion seating on the upper surface of said plate and its legs extended through two of the slots in said plate and engaging in the recesses in said post below said plate, and a bolt extended through said post and securing said strap legs in said recesses.

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