

July 15, 1941.

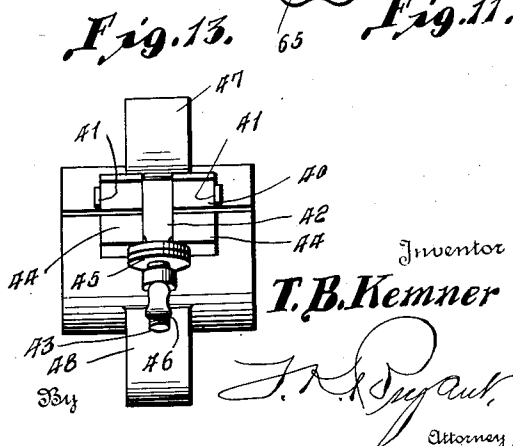
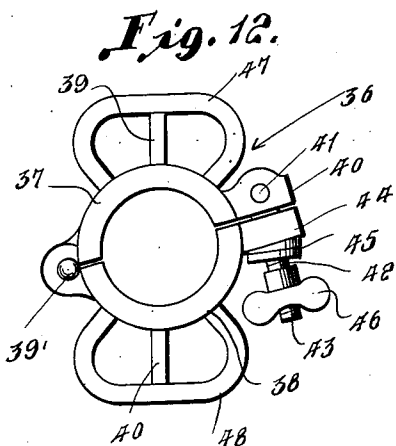
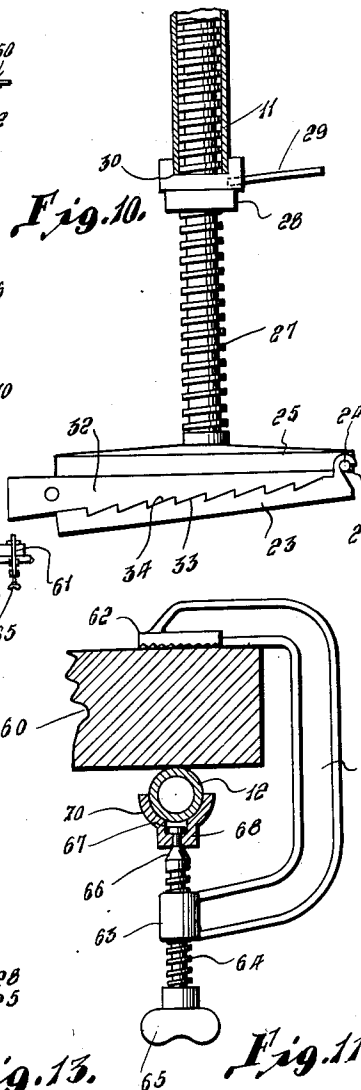
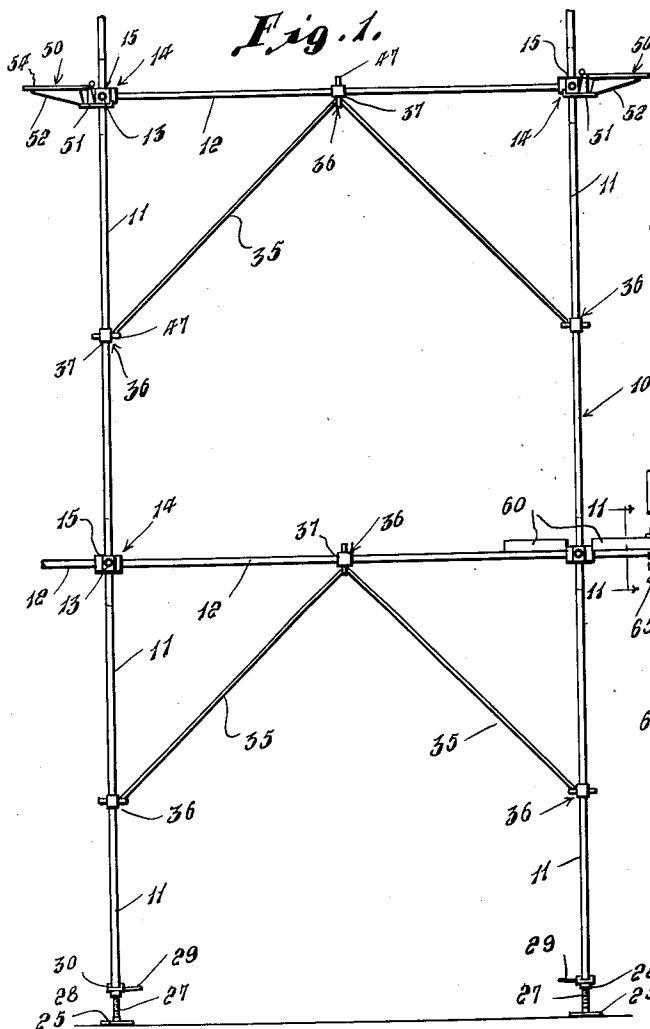
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Filed June 7, 1940

4 Sheets-Sheet 1



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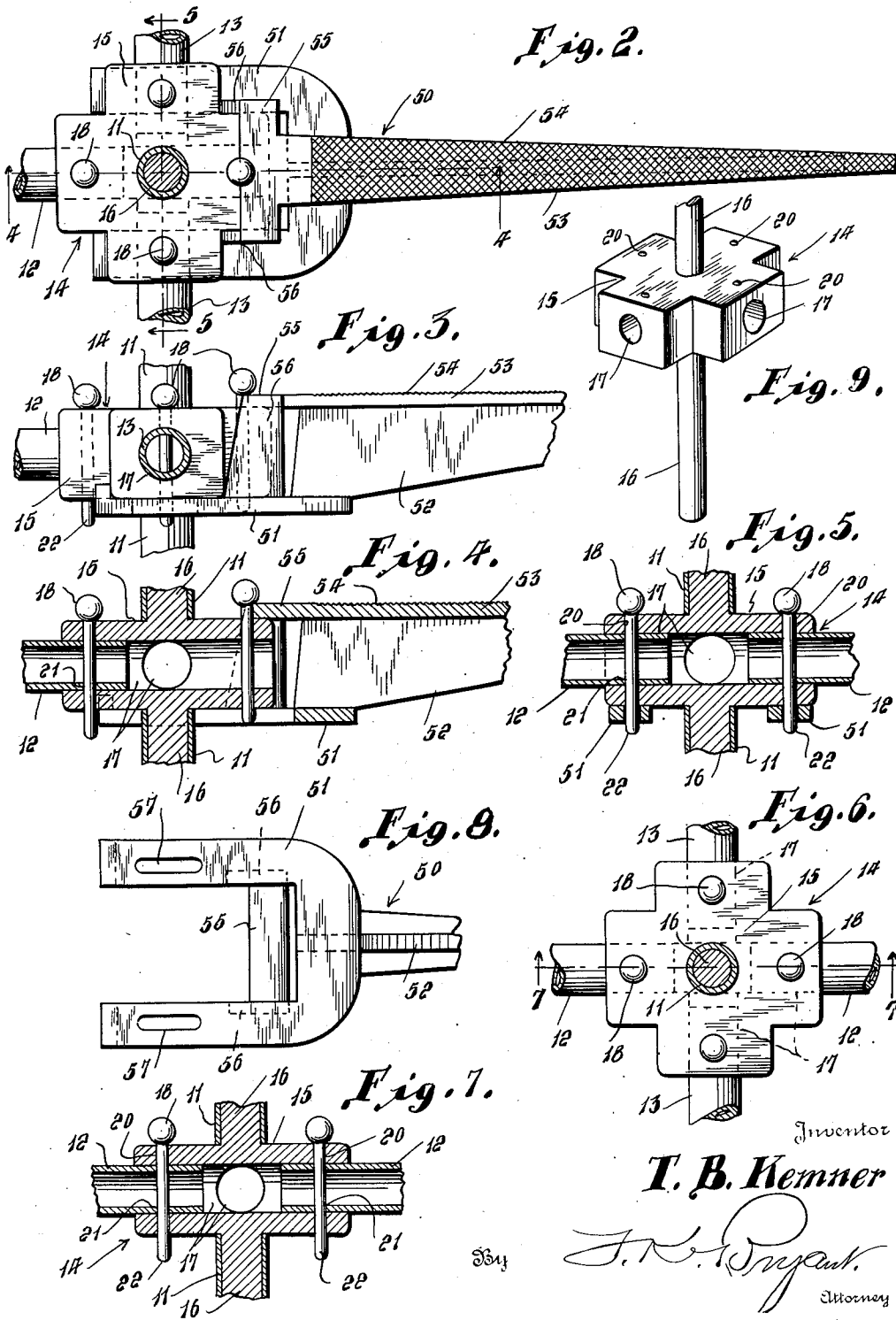
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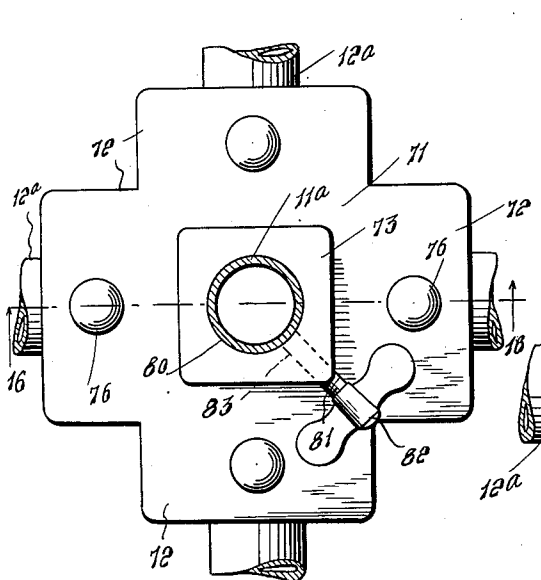


Fig. 14.

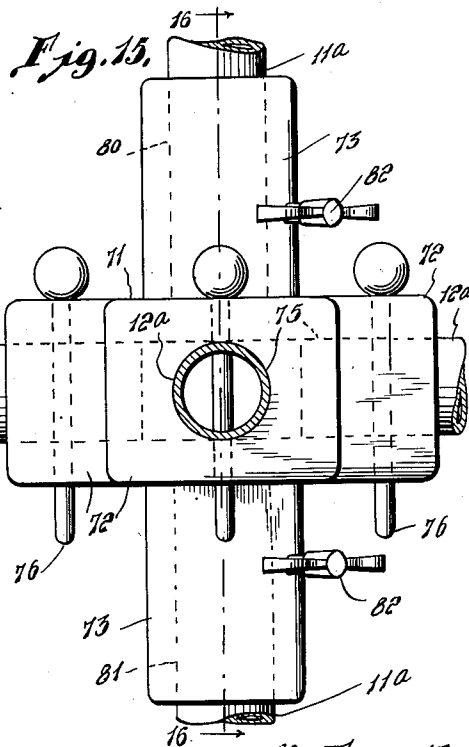


Fig. 15.

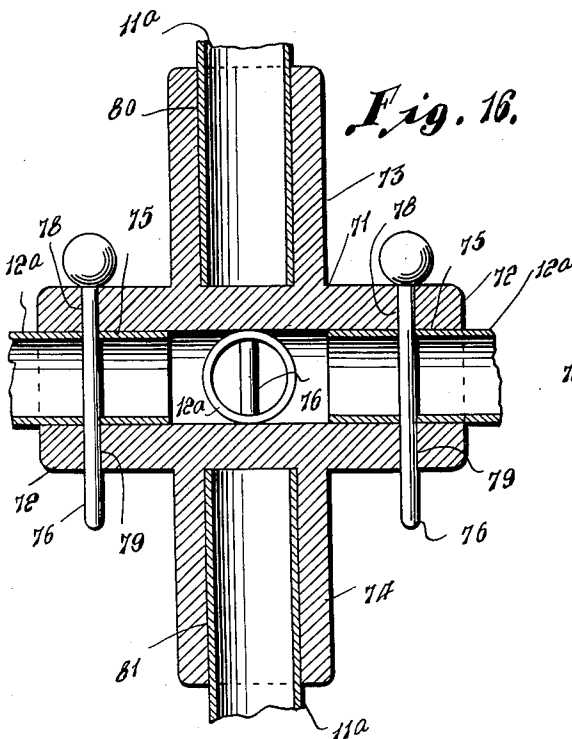


Fig. 16.

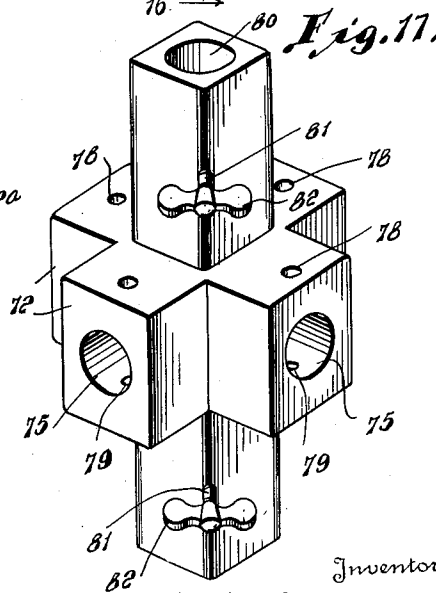


Fig. 17.

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Fig. 18.

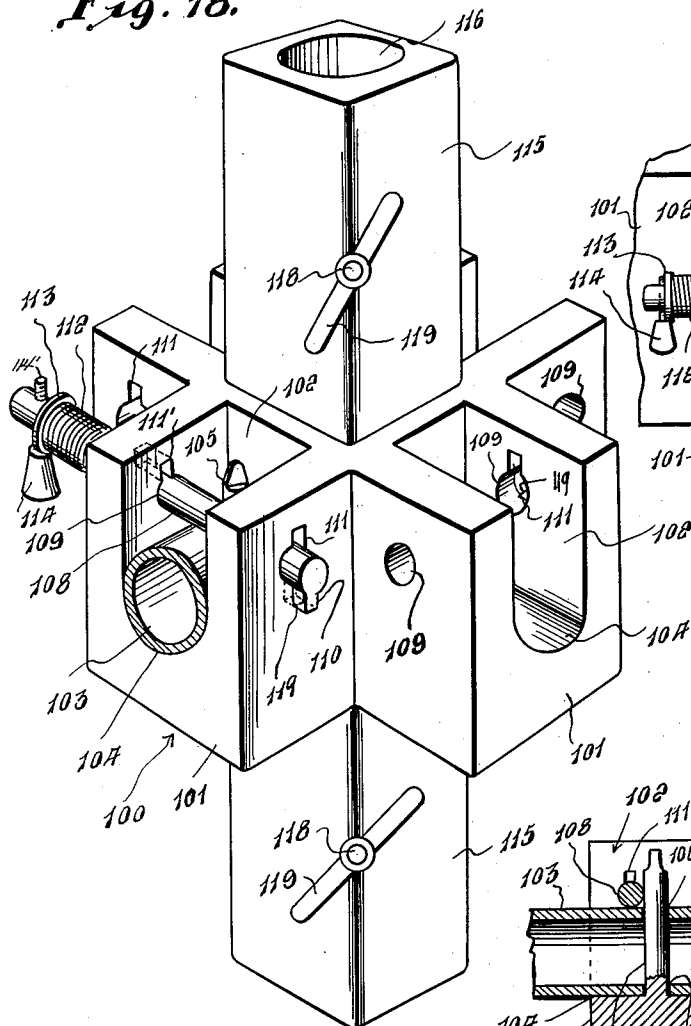


Fig. 19.

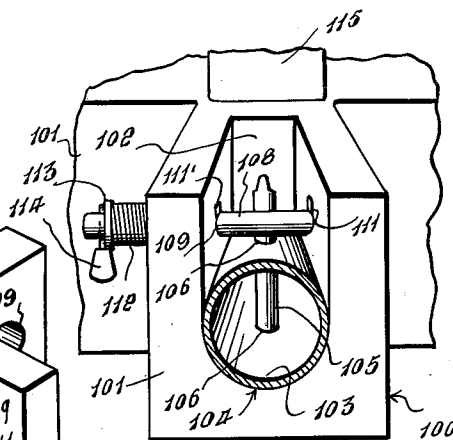


Fig. 20.

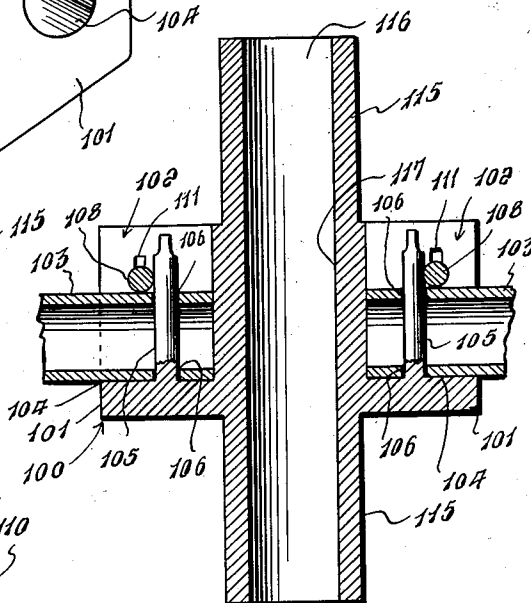
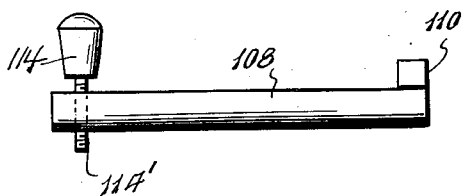


Fig. 21.



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UNITED STATES PATENT OFFICE

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Application June 7, 1940, Serial No. 339,365

1 Claim. (Cl. 304—2)

This invention relates to improvements in scaffolds.

The primary object of the invention is to provide a scaffold which may be easily assembled and which may be quickly knocked down for the purpose of transportation from one location to another.

A further object of the invention is to provide a scaffold of the above mentioned character in which the parts may be adjusted so that all of the runways will be horizontal should the scaffold be erected on an uneven surface.

A still further object of the invention is to provide a scaffold employing a unique runway bracket which may be readily attached or detached from certain connectors forming the framework of the scaffold.

A still further object of the invention is to provide a scaffold formed of tubular metallic frame members having brace bars removably secured in position by multiple bar receiving clamps.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawings, wherein,

Figure 1 is an end elevational view of the scaffold embodying this invention, showing the same completely erected and in position for use;

Figure 2 is a top elevational view greatly enlarged, showing in detail one of the runway brackets employed at the ends and intermediate points on the scaffold;

Figure 3 is a side elevational view of the bracket showing the scaffold bars broken away and the manner in which the bracket is secured to one of the scaffold bar connectors;

Figure 4 is a vertical cross-sectional view taken on line 4—4 of Figure 2, looking in the direction of the arrows and showing in detail one of the connectors and the manner in which the bracket is supported thereon;

Figure 5 is a vertical cross-sectional view taken on line 5—5 of Figure 2, looking in the direction of the arrows, further illustrating in detail one of the connectors;

Figure 6 is a top elevational view of one of the connectors, illustrating the manner in which the tubular scaffold frame bars are connected thereto;

Figure 7 is a vertical cross-sectional view taken on line 7—7 of Figure 6, looking in the direction of the arrows;

Figure 8 is a fragmentary top elevational view of one of the runway brackets, showing the same

detached from its operative position and illustrating the base and seat portion thereof;

Figure 9 is a perspective view of one of the connector bars showing the scaffold frame bars detached therefrom;

Figure 10 is an enlarged side elevational view partly in section of one of the adjustable foot members employed in the scaffold for supporting the vertical frame members;

Figure 11 is a vertical cross-sectional view taken on line 11—11 of Figure 1, looking in the direction of the arrows, showing the manner in which intermediate runways may be connected and clamped to the scaffold;

Figure 12 is a top plan view of one of the truss rod clamps, showing the same removed from the scaffold and greatly enlarged;

Figure 13 is a side elevational view of the truss rod clamp showing the manner in which the same is connected for being removably positioned on the scaffold frame bars;

Figure 14 is a top plan view greatly enlarged showing a modified form of scaffold connecting member with the vertical scaffold bar shown in section;

Figure 15 is a side elevational view greatly enlarged, illustrating the manner in which the modified connector, shown in Figure 14, is clamped in position with one of the horizontal scaffold frame bars shown in section;

Figure 16 is a sectional view taken on line 16—16 on Figures 14 and 15, illustrating in detail the construction of the modified connector;

Figure 17 is a perspective view of the modified connector shown in Figures 14 to 16, illustrating all of the scaffold frame bars removed therefrom;

Figure 18 is a perspective view of a preferred modification of the invention;

Figure 19 is a fragmentary perspective view of the same showing the manner in which the pipes are held in position;

Figure 20 is a vertical cross-sectional view of the form of invention shown in Figure 18, illustrating in detail the manner in which the transverse supporting pipes are securely locked in place; and

Figure 21 is a side elevational view illustrating in detail one of the locking keys employed in locking the pipes in place.

In the drawings, wherein for the purpose of illustrating the invention and wherein like reference characters will be employed to designate like parts throughout the same, attention is directed first to Figures 1 to 14, inclusive, wherein is shown a preferred form of the invention and

wherein the reference character 10 will generally be employed to designate a scaffold completely erected as shown in Figure 1, having vertical frame bars 11 and horizontal end frame bars 12 which may be connected by longitudinal frame bars 13. The frame bars 11, 12 and 13 are formed of predetermined lengths of hollow tubing or if desired, the tubing may be rectangular, triangular or oblong in cross-section.

The frame bars 11, 12 and 13 are connected by connectors 14, clearly shown in detail in Figure 9 and each connector includes a cruciform block 15 having oppositely disposed top and bottom projecting rods 16 and diametrically opposite radial openings 17 in each arm of the cruciform block. In coupling the frame bars 11, 12 and 13, the connector is positioned so that the bars 16 thereof telescope into the adjoining end of the vertical frame bars 11, while the ends of the horizontal frame bars 12 are fitted into the diametrically opposite openings 17 of the block and held therein by locking pins 18 which extend through openings 20 in the cruciform block and pass through correspondingly shaped openings 21 in the ends of the horizontal scaffold frame bars 12. The connecting pins 18 extend beyond the lower surface of the block as at 22 clearly shown in Figures 4, 5 and 7.

Adjustable supporting feet are provided for the vertical scaffold frame members and include base members 23, having formed at one end thereof opposite hinge members 24 to which is hinged a plate 25 by hinge pintles 26. Carried by the upper surface of the hinge plate 25 is a screw threaded shaft 27 having threaded on the upper end a collar 28 provided with an operating handle 29. The extreme upper end of the screw threaded shaft 27 telescopes within the vertical scaffold frame bar 11 so that the lower end of the frame bar 11 will be seated in a recess 30 formed in the collar 28. Rotation of the collar 28 as by means of the handle 29 will raise and lower the frame bar 11 and in the event that the base plate 23 is placed on an uneven surface or slanting floor, a wedge 32 is interposed between the base plate 23 and hinge plate 25 so that the base plate will conform to the uneven surface upon which it rests. Complementary ratchet teeth 33 and 34 are formed on the upper surface of the base plate 23 and lower surface of the wedge plate 32 respectively to prevent slippage of the wedge plate after its final positioning.

Truss bars 35 are provided for bracing the vertical and horizontal scaffold frame bars 11 and 12 and said truss bars are removably held in place by means of separable clamps 36, including hinged sections 37 and 38 secured together by a hinge joint as at 39. The section 37 is provided with a pair of spaced lugs 40 having a transverse pin 41 on which is formed an integral tang 42 having a free threaded end 43. The threaded portion 43 of the tang projects between a pair of spaced lugs 44 formed on the semi-circular section 38 of the clamp 36 and an oblique circular boss 45 surrounds the threaded end of the shank as at 43 for being engaged by a wing nut 46. Oppositely disposed truss rod receiving straps 47 and 48 are formed on the semi-circular clamp members 37 and 38 and said straps are divided by blocks 39 and 40 forming a pair of parallel openings for receiving one or more truss bars 35. The truss bars may be anchored at their ends by means of screws or the like and when the truss bars are supported at their intermediate sections, the truss bars merely loop through

one of the parallel openings formed by the straps 47 and 48. When it is desired to remove one of the truss bar clamps, it is merely necessary to unloosen the wing nut 46 on the screw threaded shank 43 and separate the semi-circular sections 37 and 38 whereby the clamp may be easily removed from the frame bars 11 and 12.

Runway brackets 50 are positioned at spaced intervals on the connector blocks for supporting horizontal runways and each supporting bracket includes a horseshoe-shaped base portion 51 having a laterally projecting web-portion 52 extending longitudinally and at right angles to a supporting surface bar 53 indented as at 54 to present a roughened surface for supporting the runway boards or planks. The inner end of the supporting bar 53 is extended into a T-head 55 which connects the horseshoe-shaped base 51 by means of downwardly extending legs 56 arranged on opposite sides or ends of the T-head 55 and connecting the opposed legs of the horseshoe base 51. One end of the horseshoe-shaped base is provided with elongated slots 57 for receiving the lower free ends of anchoring pins 18 when the bracket 50 is positioned in place on one of the connectors 15.

The brackets 50 for supporting the runways can be positioned on the connectors at the desired locations with respect to the scaffold so that the runway will be adequately supported and in positioning the runway brackets, the T-head 55 is supported on the upper surface of one of the cruciform arms, while the horseshoe-shaped base portion underlies diametrically opposite cruciform arms at right angles to the arm engaged by the T-head. When the bracket has been thus slipped in place, the anchoring pins 18 are passed through the slots 57 as clearly shown in Figure 5.

Should it be desired to place runways at intermediate portions on the scaffold between the vertical frame members 11, the runways 60 are placed across the horizontal frame bars 12 so that the ends will be supported by any two or three horizontal frame bars and the runways are held in place on the horizontal bars by clamping brackets 61, each of which includes a U-shaped frame having a runway engaging foot portion 62 formed on one end thereof and a tubular boss 63 formed on the opposite end. A screw threaded shaft 64 is threaded in the tubular boss 63 and is provided with a thumb piece 65 so that the shaft may be threaded in and out of the boss. The inner end of the boss received screw is reduced as at 66 and is provided with a swivel head 67 which is received in a swivel clamp 68 as shown in Figure 12. The swivelled clamp 68 is provided with a pair of curved jaws 70 for receiving one of the horizontal frame bars 12 and clamping the same in position against the runway 60.

Attention now is directed to Figures 14 to 17 inclusive wherein is shown a modified construction and includes a cruciform connector block 71 having diametrically disposed arms 72 and tubular projections 73 and 74 extending from the top and bottom faces of the cruciform block respectively.

Formed in the arms of the cruciform block are radial bores 75 into which may extend horizontal scaffold frame bars 12a so that a locking pin 76 may pass through transverse openings 78 and 79 and securely lock the ends of the scaffold bars in place. The vertical scaffold bars 11a are received in openings 80 and 81 formed in the tubular extensions 73 and 74 respectively, and said

ends are anchored in place by means of set screws 81 having thumb pieces 82 on the end thereof so that the set screw 81 may be threaded into and out of a threaded opening 83 formed in the tubular extensions 73 and 74.

In the figures shown from 18 to 21 inclusive, the preferred modification comprises a cruciform block 100 having wing extensions 101 provided with vertical slots 102 for receiving the horizontal scaffold supporting pipes 103. The lower wall of the slot 102 is curved as at 104 to conform to the shape of the pipe. The horizontal scaffold pipes 103 are inserted down into slot 102 over locking pins 105, which locking pins pass through openings 106 in the scaffold pipes. The locking pins 105 are firmly and permanently affixed in the lower wall of the wing slots 102.

After the pipes 103 have been placed in position a locking key 108 is moved in back of the pins and is slidably mounted in an opening 109 of one of the side walls of the wing extension 101. The end of each locking key is provided with a projection 110 adapted to enter a keyhole slot 111 in the opposite wing side wall and also to rest within a shallow slot 111' in the inner opposite face of the wing slot 102 so that the end of locking key 108 is flush with the inner face of the side wall and will thereby permit upward removal of the adjacent pipe 103.

The locking key 108 shown in Figure 21 has the handle 114 on one end and the projection 110 on the other end, both projecting from the same side of the key, as shown in Figure 21. The purpose of this form of this key as shown, is that the weight of the handle 114 will tend to hold the projection 110 downward. This key then, in order to lock the device, is inserted in and through the slot with the projection 110 in an upward position and when it is all the way through slot 111 the key is turned so that the projection 110 is downward and the coil spring 112 exerts sufficient tension so that the projection 110 will fit into the shallow recess 119 at the bottom of the slot 111, which recess instead of going all the way through the wing side-wall is cut

into same only one-third to one-half of the thickness of the wing side-wall. This recess obviously holds the key more securely and there is much less danger of the various parts becoming disengaged.

Surrounding the locking key is a coil spring 112 having one end engaging the outer wall of one of the wing extensions while the opposite end bears against a washer 113 held in place on the key 108 by screw threaded shaft 114' of the handle 114 and extending through the extreme free end of the locking key and threaded therein for the purpose of removal.

Extending upwardly and downwardly from the cruciform block 100 are tubular extensions 115 having bores 116 which communicate with a central bore 117 formed in the cruciform block. Locking screws 118 extend into the bores 116 and are threaded intermediate the ends of the tubular extension 115 so that when the vertical standards of the scaffolds are inserted, the set screws may be tightened by means of handles 119.

It is to be understood that the form of the invention herewith shown and described is to be taken as the preferred embodiment of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the sub-joined claim.

What is claimed as new is:

A scaffold comprising vertical and horizontal tubular frame members, cruciform connectors for the frame members, each connector comprising a cruciform block having a central opening, tubular extensions projecting axially of said block, said cruciform block having axially extending slots formed in the wings thereof for receiving the horizontal scaffold pipe members, pins extending through the pipe having one end permanently secured in the floor of the above mentioned slots and a locking key for securing the pipe against displacement having a projection on one end extending through a keyhold slot in one wall of the cruciform wing.

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