Oct. 4, 1949. D. I. WEISZ 2,483,862

KNOCK-DOWN SCAFFOLD

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Fig. 1

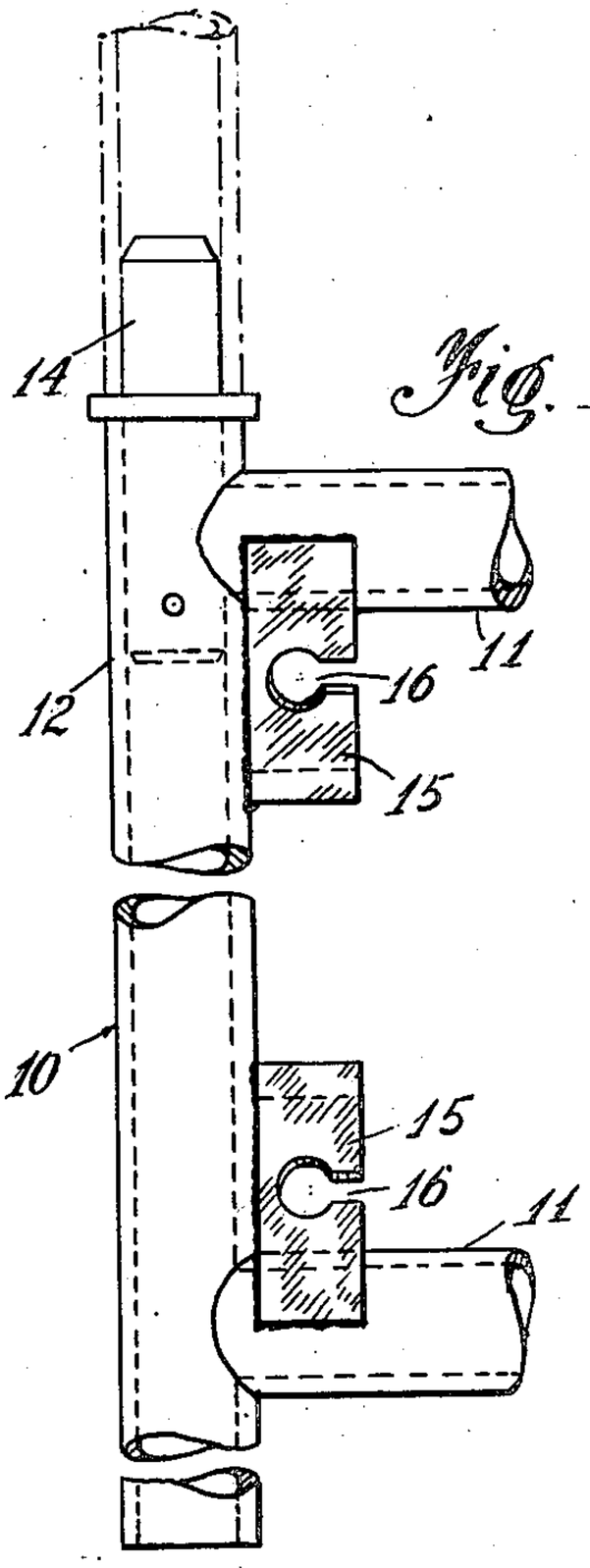


Fig. 2

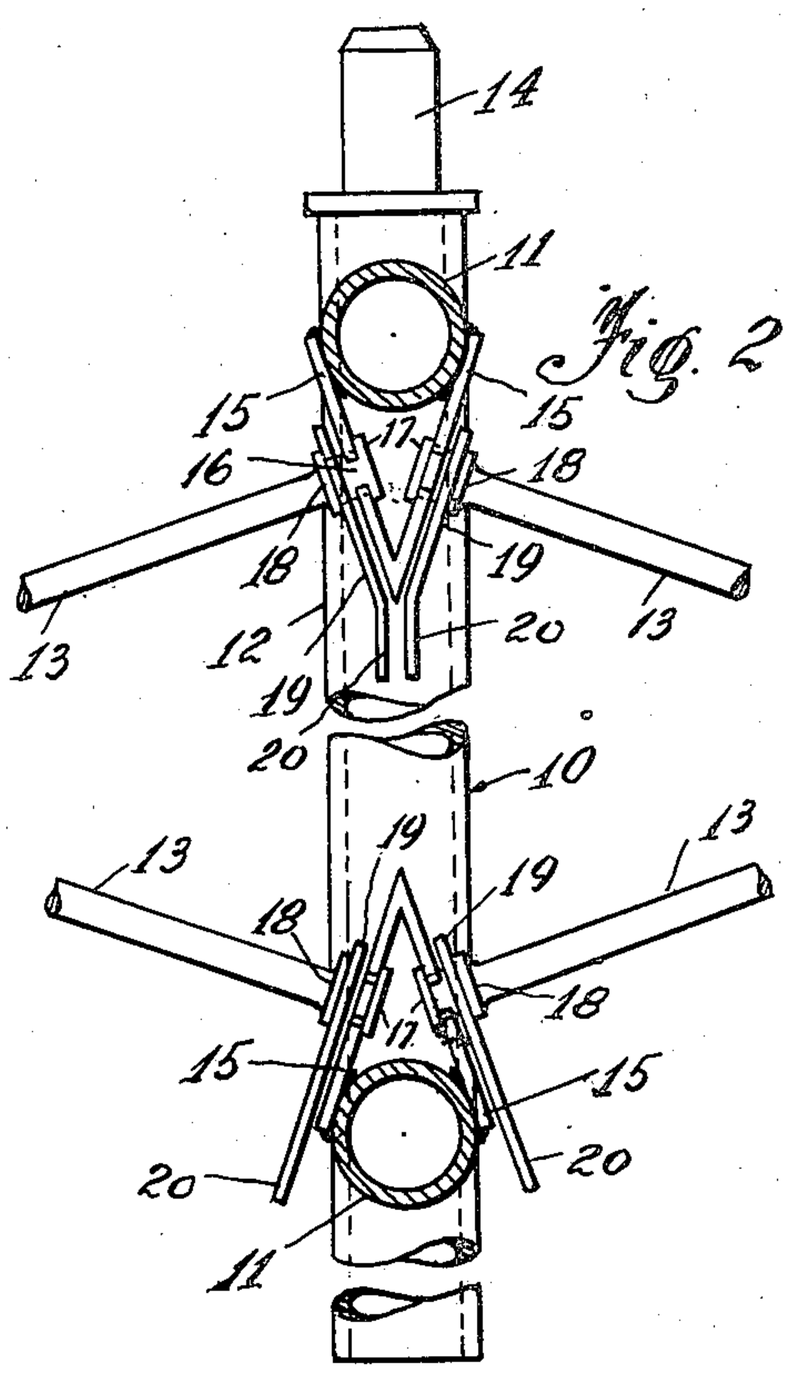


Fig. 3

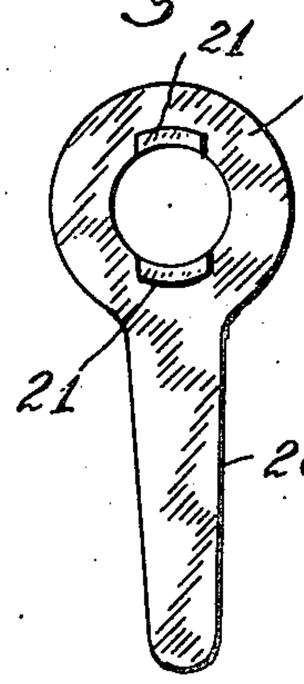


Fig. 4

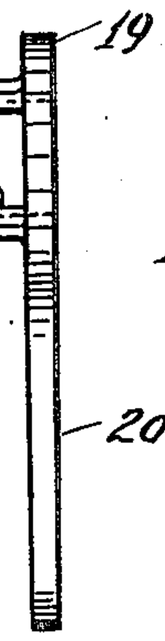


Fig. 5

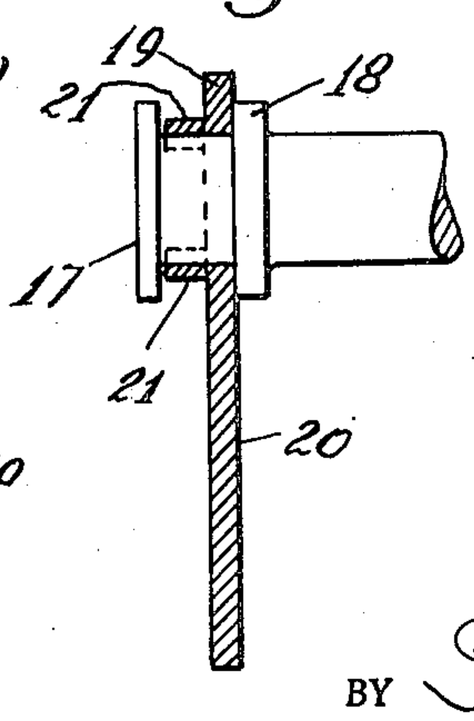
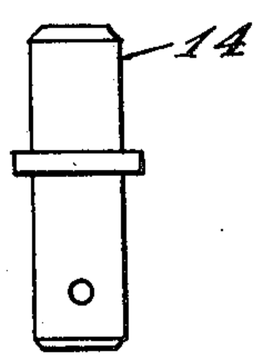


Fig. 6



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KNOCK-DOWN SCAFFOLD

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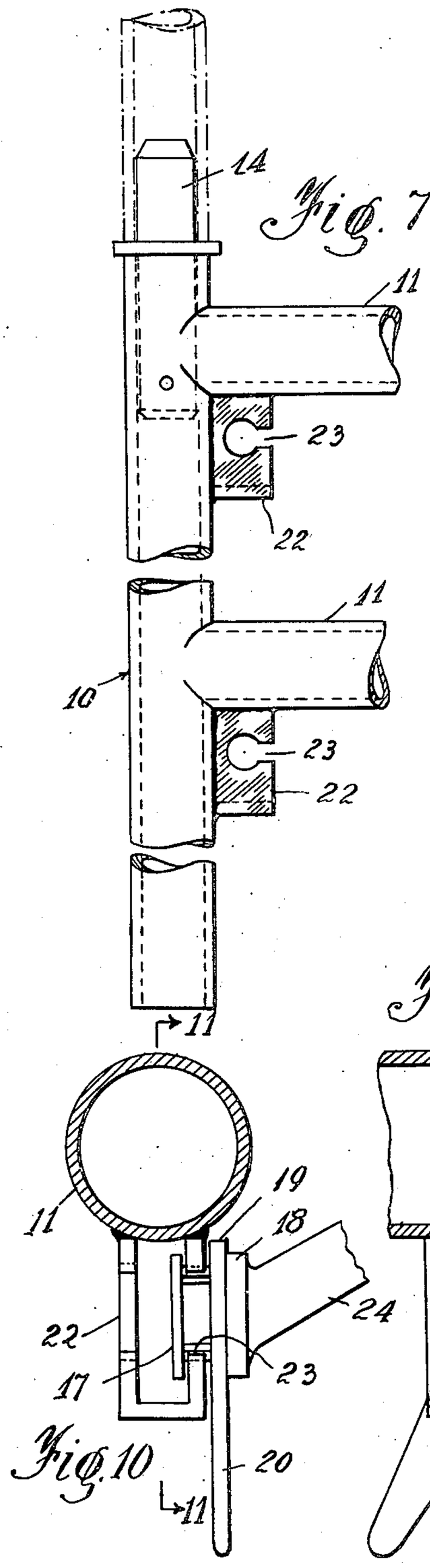

Fig. 7

Fig. 10

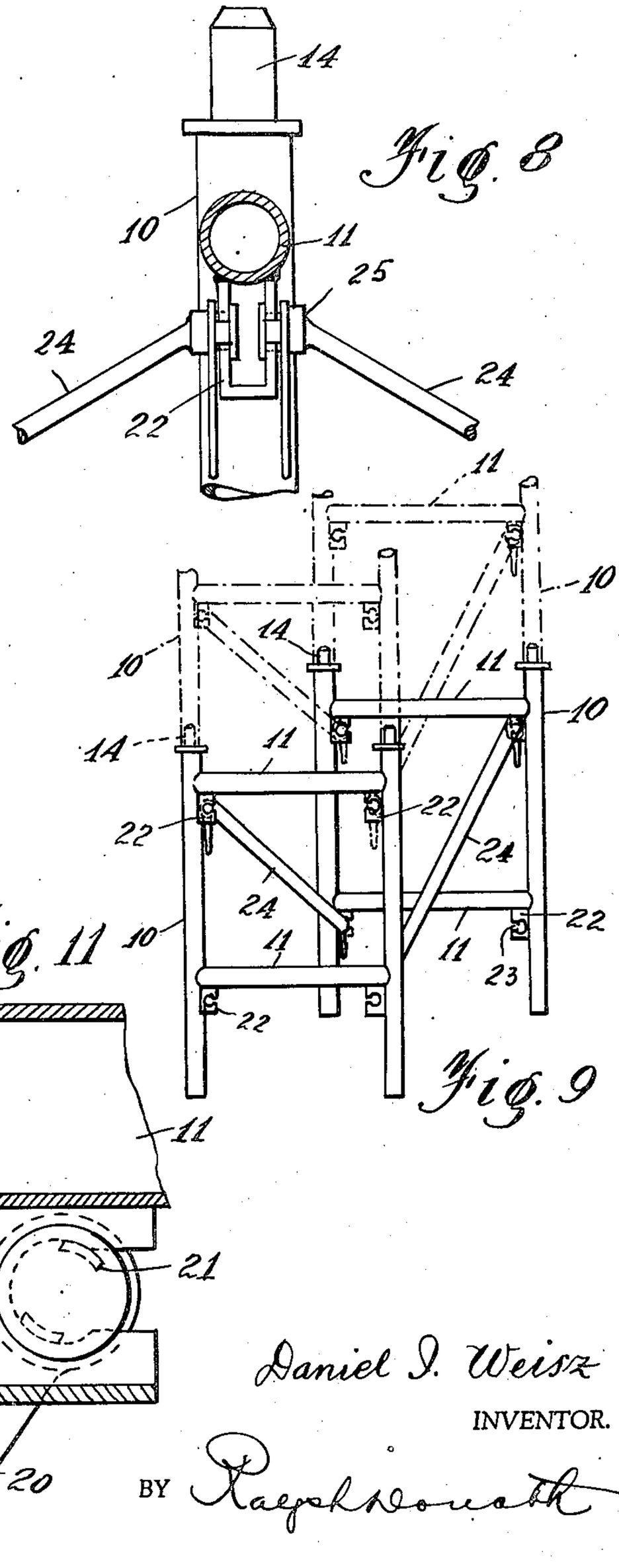

Fig. 8

Fig. 11

Fig. 9

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Patented Oct. 4, 1949

2,483,862

UNITED STATES PATENT OFFICE

2,483,862

KNOCKDOWN SCAFFOLD

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Application June 2, 1948, Serial No. 30,652

9 Claims. (Cl. 304—40)

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This invention relates generally to knock-down scaffolds and, in particular, to an improvement on the connection shown in my Patent No. 2,435,-171 for securing the diagonal braces or stays to the spaced rectangular end frames of such scaffolds in order to form a rigid self-sustaining structure.

Knock-down scaffolds are used extensively but as made prior to the invention covered by my patent aforesaid, they required considerable time and labor as well as the use of tools for erection and dismantling. It is the object of this invention to provide a connection between the braces and end frames even simpler and easier to manipulate than the type shown in said patent.

In a preferred embodiment of the present invention, I provide gusset plates at the junction of the horizontal and vertical members of the end frames. These plates have keyhole slots extending thereinto from an exposed edge, adapted to receive the end of a brace or stay. I also provide the brace with a head at each end and a flange spaced inwardly thereof. Between each head and flange, I rotatably mount a collar having a segmental flange and a handle for turning it. The segmental flange is adapted to enter the restricted outer neck of the keyhole slot when turned to the proper position. When the end of the brace has been positioned in the eye of the slot, rotation of the collar brings the segmental flange into such position that it will not clear of the slot and thereby locks the brace in position.

A complete understanding of the invention may be obtained from the following detailed description and explanation which refer to the accompanying drawings illustrating two preferred embodiments.

In the drawings,

Figure 1 is a partial elevation of one end frame of a scaffold having the invention applied thereto;

Figure 2 is a section through the horizontal members of one end frame showing the ends of diagonal braces secured thereto;

Figure 3 is a front elevation of the locking collar;

Figure 4 is a side elevation thereof;

Figure 5 is an elevation of one end of a brace showing the locking collar thereon in section;

Figure 6 is an elevation of one of the dowels used to connect the end frames when built up one on another;

Figures 7 and 8 are similar to Figures 1 and 2, respectively, showing a slightly different form of connection;

Figure 9 is a perspective view showing a complete section of scaffold equipped with the form of the invention shown in Figures 7 and 8;

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Figure 10 is a view similar to Figure 8 on an enlarged scale; and

Figure 11 is a section taken on the plane of line 11—11 of Figure 10.

Referring now in detail to the drawings and, for the present, to Figures 1 through 6, rectangular end frames 10 are composed of posts 12 and beams 11 welded together. The posts and beams are shown as tubular but may be of any section.

In erecting the scaffold, the end frames are set up on the ground in spaced relation and connected by diagonal braces or stays 13. The braces may also be of any desired section but are shown as tubular. The frames are built up one on another to the desired height, dowels 14 being inserted in the upper ends of the posts of each frame and the lower ends of the posts of the next frame above are disposed thereon. My improved connection between the end frames and braces includes gusset plates 15 welded to the posts and beams in the corners of the frames and having keyhole slots 16 therein. Each slot has a restricted neck adjacent an exposed edge of the plate and an eye spaced from the edge. The width of the neck of the slot is slightly greater than the diameter of the braces 13. As shown in Figure 2, there are two gusset plates in each corner of the frame, the two plates being disposed in the form of a V.

Each brace 13 has a head 17 in the form of a disc welded on each end thereof. A flange 18 is welded at each end of the brace a short distance inwardly of the head. A collar 19 having a manipulating lever or handle 20 is rotatably disposed between each head and flange. The collar 19 has segmental flanges 21 extending laterally thereof. These flanges are of such width that they will pass through the necks of the slots 16. The eyes of the slots have a diameter slightly greater than the outside diameter of the flanges 21. This permits rotation of the collars after they have entered into the eyes of the slots.

It will be apparent from the foregoing that the braces may be quickly and easily connected to the gusset plates. The handles 20 are first turned to horizontal position. This alines the segmental flanges 21 with the necks of the slots 16 and permits them to pass therethrough. When the ends of the braces have thus been brought into the eyes of the slots, the handles 20 are turned down. This centers the braces in the eyes and places the flanges 21 in such relation to the necks of the slots that they cannot be removed. The

braces are thus firmly connected to the end frames and constitute the latter a rigid, self-sustaining structure.

When it is desired to dismantle the scaffold, the end frames may be disconnected and taken down by removing the ends of the braces from the slots in the gusset plates. This is accomplished simply by turning the handles 20 back to horizontal position and withdrawing the ends of the braces through the necks of the slots 16.

Figures 7 through 11 show a slightly different form of gusset plate 22 which is of U-shape, having spaced parallel sides in which keyhole slots 23 are formed. The braces 24 cooperating therewith have angularly disposed ends 25 on which the heads 17, flanges 18 and collars 19 are mounted in the same way as described in detail with reference to Figures 1 through 6, the functioning of the parts is the same in both cases. The only difference is that in Figures 1 through 6, the gusset plates are at an angle and the braces are straight while in Figures 7 through 11, the gusset plates are parallel and the ends of the braces are bent to the angle necessitated by the diagonal relation of the braces to the end frames.

The connection of my invention is characterized by numerous advantages. In the first place, it is simple in construction so it may be manufactured cheaply. It is easy to operate, requiring no skill or experience. The use of tools is entirely obviated. At the same time, the connection is strong and tight and is not likely to be broken accidentally.

The only working part, the locking collar with its operating handle, is permanently united with the brace so that it cannot be detached or misplaced.

Although I have shown and described only two forms of my invention, it will be understood that changes in the details thereof may be made without departing from the spirit of the invention or to the scope of the appended claims.

I claim:

1. A separable connection for securing diagonal braces to the rectangular end frames of a knock-down scaffold, comprising a gusset plate on the end frame having a keyhole slot therein including an eye and a restricted neck, a collar rotatably mounted on the brace, said collar having a portion shaped and dimensioned to enter said neck when turned to one position and be held against removal from said eye when turned to another position and retaining means integral with the brace on each side of the collar whereby the collar is maintained against axial or longitudinal movement.

2. A connection as defined by claim 1 characterized by a pair of gussets in each corner of said frame.

3. A connection as defined by claim 2 characterized by said gussets being disposed at an angle to each other.

4. A connection as defined by claim 1 characterized by said collar having manipulating means extending laterally thereof.

5. A connection as defined by claim 1 characterized by said portion being segmental flanges extending laterally of the collar and spaced diametrically opposite each other, the width of said flanges being less than the width of said neck.

6. A separable connection for securing a brace to an end frame comprising a plate secured to said frame having a keyhole slot extending thereinto from an exposed edge, means rotatable on said brace adapted in one position to enter said slot and in another position to prevent its removal from the slot and retaining means on the brace on each side of said rotatable means whereby the rotatable means is maintained against axial or longitudinal movement.

7. A connection as defined by claim 6 characterized by said rotatable means being permanently mounted on said brace.

8. A connection as defined by claim 6 characterized by said brace having a head at its end, a flange spaced from the end, and said means being a collar between said head and flange.

9. A separable connection for securing diagonal braces to the rectangular end frames of a knock-down scaffold, comprising a pair of gussets in each corner of said frame, said gussets being parallel to each other and having keyhole slots therein including an eye and a restricted neck, a collar rotatably mounted on the brace, said collar having a portion shaped and dimensioned to enter said neck when turned to one position and be held against removal from said eye when turned to another position, and retaining means integral with the brace on each side of the collar whereby the collar is maintained against axial or longitudinal movement.

DANIEL I. WEISZ.

No references cited.