March 11, 1952 L. S. BLACKBURN 2,588,905

SCAFFOLD BRACING

Filed March 7, 1950 2 SHEETS—SHEET 1

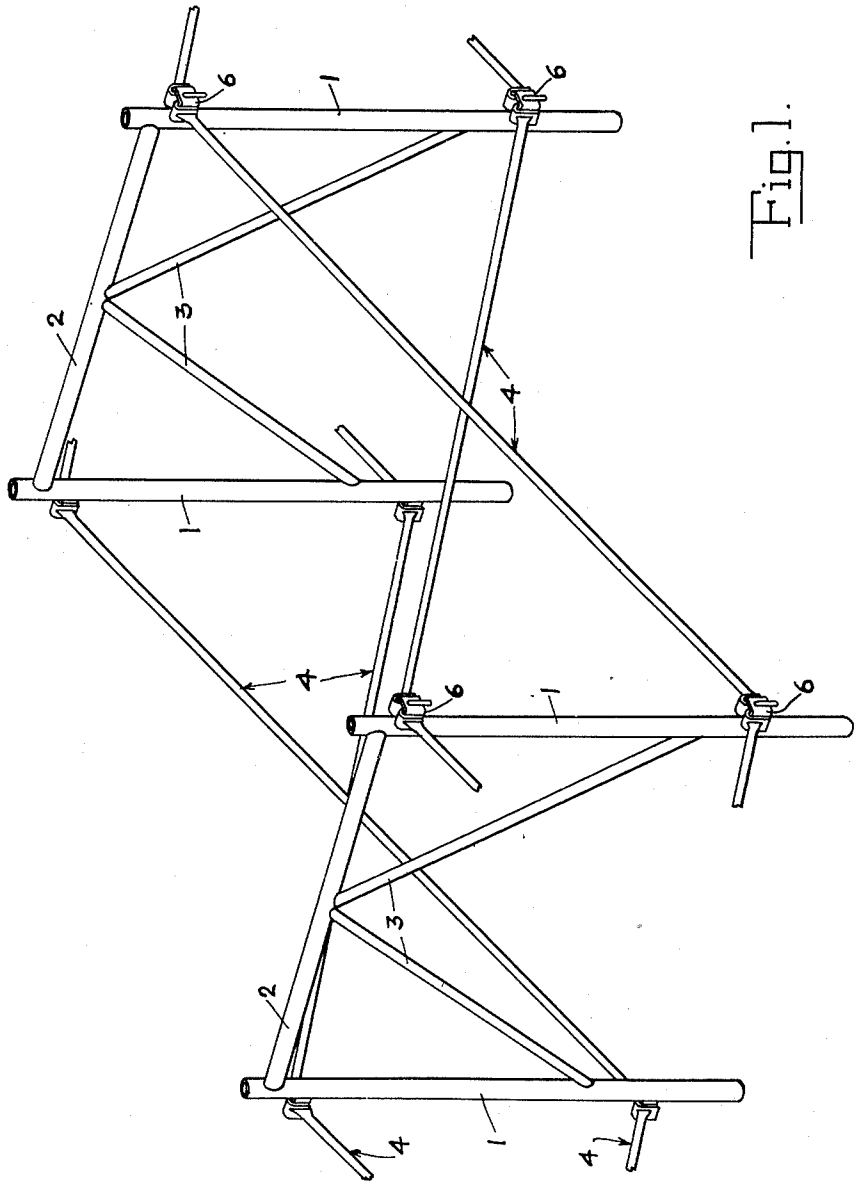


Fig. 1.

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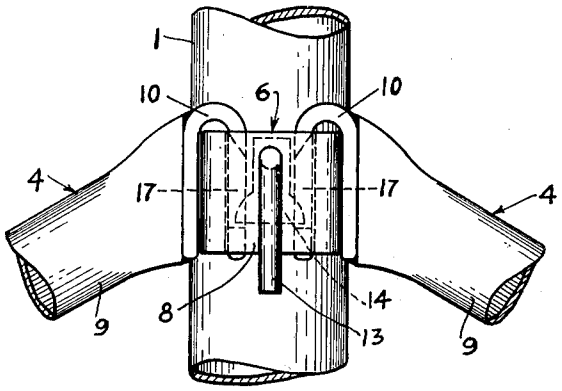


Fig. 2.

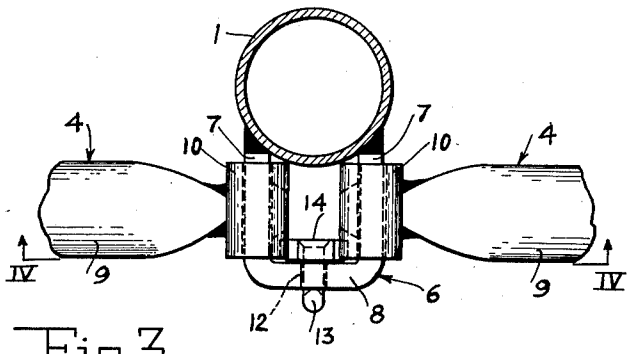


Fig. 3.

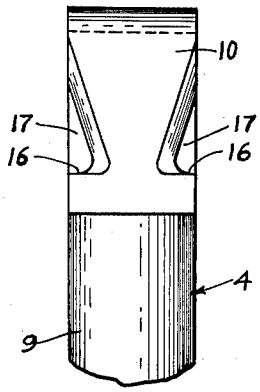


Fig. 5.

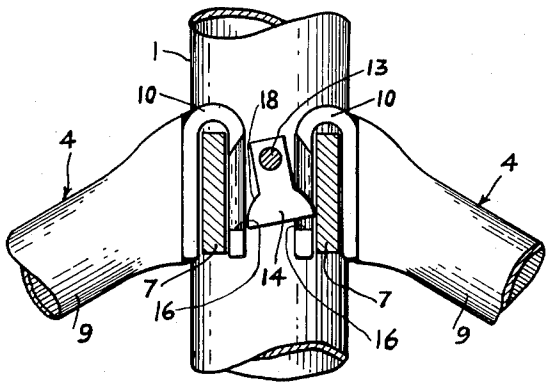


Fig. 4.

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2,588,905

SCAFFOLD BRACING

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6 Claims. (Cl. 304—40)

1

This invention relates to detachable bracing by which the legs of scaffolds and the like are braced in upright position, and it relates more particularly to the prevention of accidental removal of the bracing.

It is among the objects of this invention to provide bracing in which braces are automatically locked in position, in which the locking means operate by gravity, and in which the locking means are pivotally mounted.

According to this invention, the vertical legs to be braced are provided with brackets projecting from their sides. Each bracket has laterally spaced side walls connected at their outer ends by an end wall provided with a hole through it. A pivot pin extends through the hole, and a locking dog is rigidly mounted on the pin between the side walls of the bracket. The dog hangs down between those walls and has lower corners normally spaced a short distance from them. A removable brace extends between each pair of legs and is connected to the sides of the brackets thereon to brace the legs. The brace has at each end a vertical end member that extends down into the adjoining bracket along the inner surface of one of its side walls. The end member is provided with an upwardly facing surface beneath the adjacent lower corner of the dog to lock the brace in the bracket. When it is desired to lift the brace from the bracket, the pin is turned manually to swing the dog away from the end member of the brace.

The invention is illustrated in the accompanying drawings, in which Fig. 1 is an isometric view of a section of a scaffold incorporating my invention; Fig. 2 is an enlarged fragmentary view of a leg and braces and showing the outer end of a bracket; Fig. 3 is a fragmentary plan view of a leg and braces and bracket; Fig. 4 is a vertical section through a bracket, taken on the line IV—IV of Fig. 3, but showing the locking dog swung to one side; and Fig. 5 is an end view of one of the braces.

Referring to Fig. 1 of the drawings, each of a pair of spaced, parallel, prefabricated end frames of any suitable construction has vertical tubular legs 1 that may be rigidly connected at their upper ends by a horizontal cross member 2, upon which wooden planking (not shown) may be placed to form a working platform. Diagonal braces 3 connect the cross member to the lower portions of the legs. When the scaffold is assembled, the end frames are held upright by means of side braces 4 connected to brackets 6

2

welded to the legs near their upper and lower ends. The brackets that are supported by each end frame are in the plane of the frame. As shown in Figs. 2, 3 and 4, each bracket preferably is formed from a flat metal bar which has been bent to form parallel side walls 7 that are integrally connected at their outer ends by an end wall 8. The inner ends of the side walls are welded to the side of the leg.

The braces 4 that are connected to these brackets may be formed from lengths of pipe 9 which have their end portions pinched together. Welded to each end of the pipe is an end member 10 that extends down into the adjoining bracket along the inner surface of one of its side walls. Preferably, each end member is formed by bending a narrow metal plate into inverted U-shape to provide parallel vertical walls spaced apart a distance only slightly greater than the thickness of a side wall of the bracket. With this construction the end member can be slipped down over a bracket side wall, which will therefore be straddled by the end member. This connection of the brace to the bracket prevents any material movement of the brace relative to the bracket in any direction except upward, and therefore provides a fairly rigid bracing arrangement.

In order to lock the braces in the brackets, the end wall 8 of each bracket is provided near its top with a hole 12 extending through it. Rotatably mounted in this hole is a pivot pin 13, on the inner end of which the upper end of a locking dog 14 is rigidly mounted. The dog extends down the inner surface of the ends walls of the bracket and thus hangs between side walls 7. The pin can be locked in the bracket hole by bending the outer end portion of the pin downward along the outer surface of the end wall. This depending portion of the pin also serves as a handle for turning the pin. It also adds its weight to that of the dog to insure that the dog will hang straight down from the pin. As shown in Figs. 2 and 3, the opposite lower corners of the dog are each spaced a short distance from the adjacent side wall of the bracket. This distance is less than the thickness of the wall of the brace end member 10 which extends down into the bracket, but it is not less than half the thickness of that wall, for a reason that soon will become apparent. The lower end of the dog therefore is wide enough for its lower corners to extend part way across upwardly facing surfaces 16 (Figs. 4 and 5), with which the end members inside the bracket are pro-

vided. Consequently, as long as the dog overlies those surfaces, as shown in Fig. 2, the braces cannot be lifted from the bracket. The surfaces 16 can be formed in different ways, such as by having the lower ends of end members 10 project laterally under the dog or by providing the end members with recesses or with notches in their edges. The end members in the drawings are provided with notches 17 in their opposite edges. The lower walls of the notches are substantially horizontal and form the upwardly facing surfaces 16 which the lower corners of the dog overlie. By notching both edges of each end member, either brace can be attached to either side of the bracket.

As indicated above, and as shown in Fig. 2, gravity normally will hold the locking dog in centered position, with its lower corners projecting into the notches 17 in the end members of the adjacent braces. This prevents accidental removal of the braces from the brackets. When it is desired to disconnect the braces from the brackets, the handle portion of the pivot pin 13 is swung to either side to swing one of the lower corners of the dog out of the notch into which its was projecting, as shown in Fig. 4. This allows one of the braces to be lifted from the bracket. The pivot pin then is swung in the opposite direction to remove the other corner of the dog from the notch in the other brace so that that brace likewise can be lifted from the bracket.

The distance between each lower corner of the dog and the adjacent side wall of the bracket has to be at least as great as half the thickness of an end member so that the dog can be swung far enough to either side to remove it from the notches. The upper portion of the dog is reduced in width to prevent it from striking end members 10 and stopping the movement of the dog before its lower corners are withdrawn from the notches. The sides 18 (Fig. 4) of the dog directly above its lower corners preferably converge upwardly so that when a brace end member is inserted in the bracket it will engage one of these inclined surfaces and swing the dog toward the opposite side of the bracket until the dog can swing back by gravity into the notch with which that end member is provided. The same thing happens when the other brace is connected to the bracket.

It will thus be seen that by the use of this bracing the braces are locked in position automatically when connected to the brackets, and can only be removed from the brackets by manually swinging the locking dogs sideways. The locking mechanism operates by gravity, it is of simple construction and there is nothing about it to get out of order.

According to the provisions of the patent statutes, I have explained the principle 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 illlustrated and described.

I claim:

1. The combination with a vertical leg, of bracing comprising a bracket projecting from the side of the leg and having laterally spaced side walls connected at their outer ends by an end wall provided with a hole through it, a pivot pin extending through said hole, a locking dog rigidly mounted on the pin between said side walls and hanging down between them, the dog having lower corners adjacent said side walls but normally spaced therefrom, and removable braces extending in opposite directions from the sides of the bracket, each brace having a vertical end member extending down into the bracket along the inner surface of one of its side walls, said end member being provided with an upwardly facing surface beneath the adjacent lower corner of the dog to lock the brace in the bracket, and said pin being adapted to be turned manually to swing the dog away from said end member so that the brace can be lifted from the bracket.

2. The combination with a vertical leg, of bracing comprising a bracket projecting from the side of the leg and having laterally spaced side walls connected at their outer ends by an end wall provided with a hole through it, a pivot pin extending through said hole, a locking dog rigidly mounted on the pin between said side walls and hanging down between them, the dog having lower corners adjacent said side walls but normally spaced therefrom, and removable braces extending in opposite directions from the sides of the bracket, each brace having a vertical end member extending down into the bracket along the inner surface of one of its side walls, said end member being provided with an upwardly facing surface beneath the adjacent lower corner of the dog to lock the brace in the bracket, and said pin being adapted to be turned manually to swing the dog away from said end member, the portion of the dog above its lower corners being narrower so that when the dog is swung away from said end member there will be enough space above said surface between the dog and the adjacent side wall of the bracket to permit said end member to be lifted from the bracket.

3. The combination with a vertical leg, of bracing comprising a bracket projecting from the side of the leg and having laterally spaced side walls connected at their outer ends by an end wall provided with a hole through it, a pivot pin extending through said hole and having its outer end portion extending downward outside of the bracket to form a handle, a locking dog rigidly mounted on the inner end of the pin and hanging down between said side walls substantially in engagement with the inner surface of said end wall, the dog having lower corners adjacent said side walls but normally spaced therefrom, and removable braces extending in opposite directions from the sides of the bracket, each brace having a vertical end member extending down into the bracket along the inner surface of one of its side walls, said end member being provided with an upwardly facing surface beneath the adjacent lower corner of the dog to lock the brace in the bracket, and said pin handle being adapted to be swung manually to the side to swing the dog away from said end member so that the brace can be lifted from the bracket.

4. The combination with a vertical leg, of bracing comprising a bracket projecting from the side of the leg and having laterally spaced side walls connected at their outer ends by an end wall provided with a hole through it, a pivot pin extending through said hole, a locking dog rigidly mounted on the pin between said side walls and hanging down between them, the dog having lower corners adjacent said side walls but normally spaced therefrom, the portion of the dog directly above said corners being tapered upward to provide inclined sides, and removable braces extending in opposite directions from the sides of the bracket, each brace having a ver-

tical end member extending down into the bracket along the inner surface of one of its side walls, the edge of said end member adjacent the dog being provided with a portion projecting beneath the adjacent lower corner of the dog to lock the brace in the bracket, and said pin being adapted to be turned manually to swing the dog away from said end member portion so that the brace can be lifted from the bracket.

5. The combination with a vertical leg, of bracing comprising a bracket projecting from the side of the leg and having laterally spaced side walls connected at their outer ends by an end wall provided with a hole through it, a pivot pin extending through said hole, a locking dog rigidly mounted on the pin between said side walls and hanging down between them, the dog having lower corners adjacent said side walls but normally spaced therefrom, and removable braces extending in opposite directions from the sides of the bracket, each brace having a vertical end member extending down into the bracket along the inner surface of one of its side walls, the edge of said end member adjacent the dog being provided with a notch receiving the adjacent corner of the dog to lock the brace in the bracket, and said pin being adapted to be turned manually to withdraw the dog from said notch so that the brace can be lifted from the bracket.

6. The combination with a vertical leg, of bracing comprising a bracket projecting from the side of the leg and having laterally spaced side walls connected at their outer ends by an end wall provided with a hole through it, a pivot pin extending through said hole, a locking dog rigidly mounted on the pin between said side walls and hanging down between them, the dog having lower corners adjacent said side walls but normally spaced therefrom, and removable braces extending in opposite directions from the sides of the bracket, each brace including an inverted U-shape member straddling a side wall of the bracket, the portion of said member inside the bracket being provided with an upwardly facing surface beneath the adjacent lower corner of the dog to lock the brace in the bracket, and said pin being adapted to be turned manually to swing the dog away from said surface so that the brace can be lifted from the bracket.

LEROY S. BLACKBURN.

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