United States Patent

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[54] **SCAFFOLDING**
6 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **182/179**
[51] **Int. Cl.** **E04g 1/08**
[50] **Field of Search** 182/179, 178; 287/53.5; 52/638

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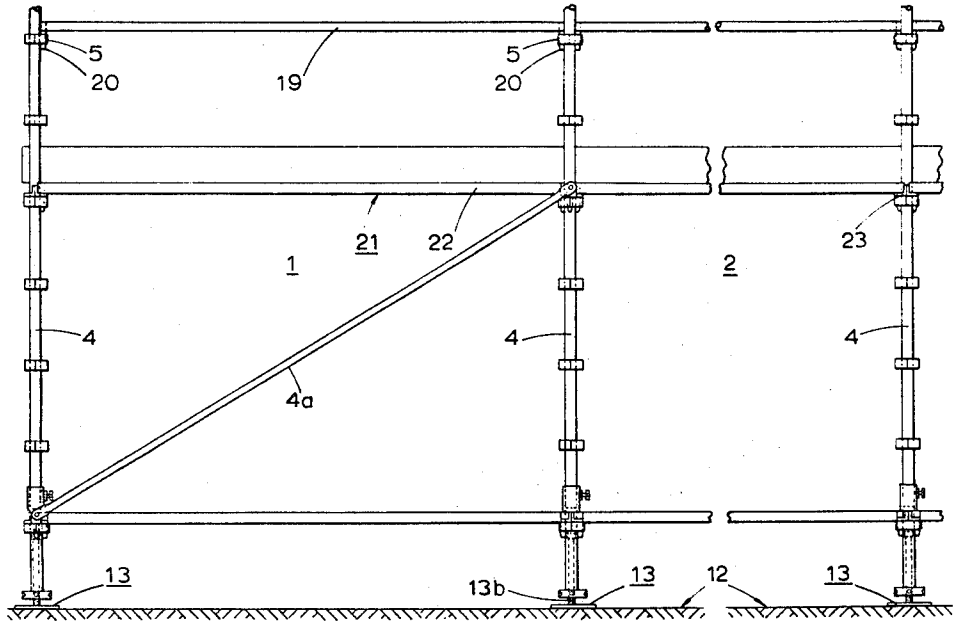
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ABSTRACT: This invention relates in general to scaffolding and like structures and is particularly concerned with a unit scaffolding framework. The invention provides a unit scaffolding framework with four vertical tubular standards. Clamps are spaced along the standards. Each clamp has two shaped members held together against resilient opposition by a bolt passing through the standard to which the clamp is attached. Baseplates are adjustably mounted in relation to the lower ends of respective standards. A horizontal ledger is connected with two of the standards by the clamps. A diagonal bracing tube is connected with two of the standards so as to lie in a plane parallel to a wall or a site of a wall to be built. A cross-bracing tube is connected with two of the standards so as to lie in a plane transverse to the wall or wall site. A horizontal transom of inverted T-cross section is connected with two of the standards so as to lie perpendicularly to the wall or wall site. A further horizontal transom of inverted T-cross section is similarly connected with the other two of the standards. Horizontal platform boards are laid on, and extending between, the two transoms to form platforms for workmen.



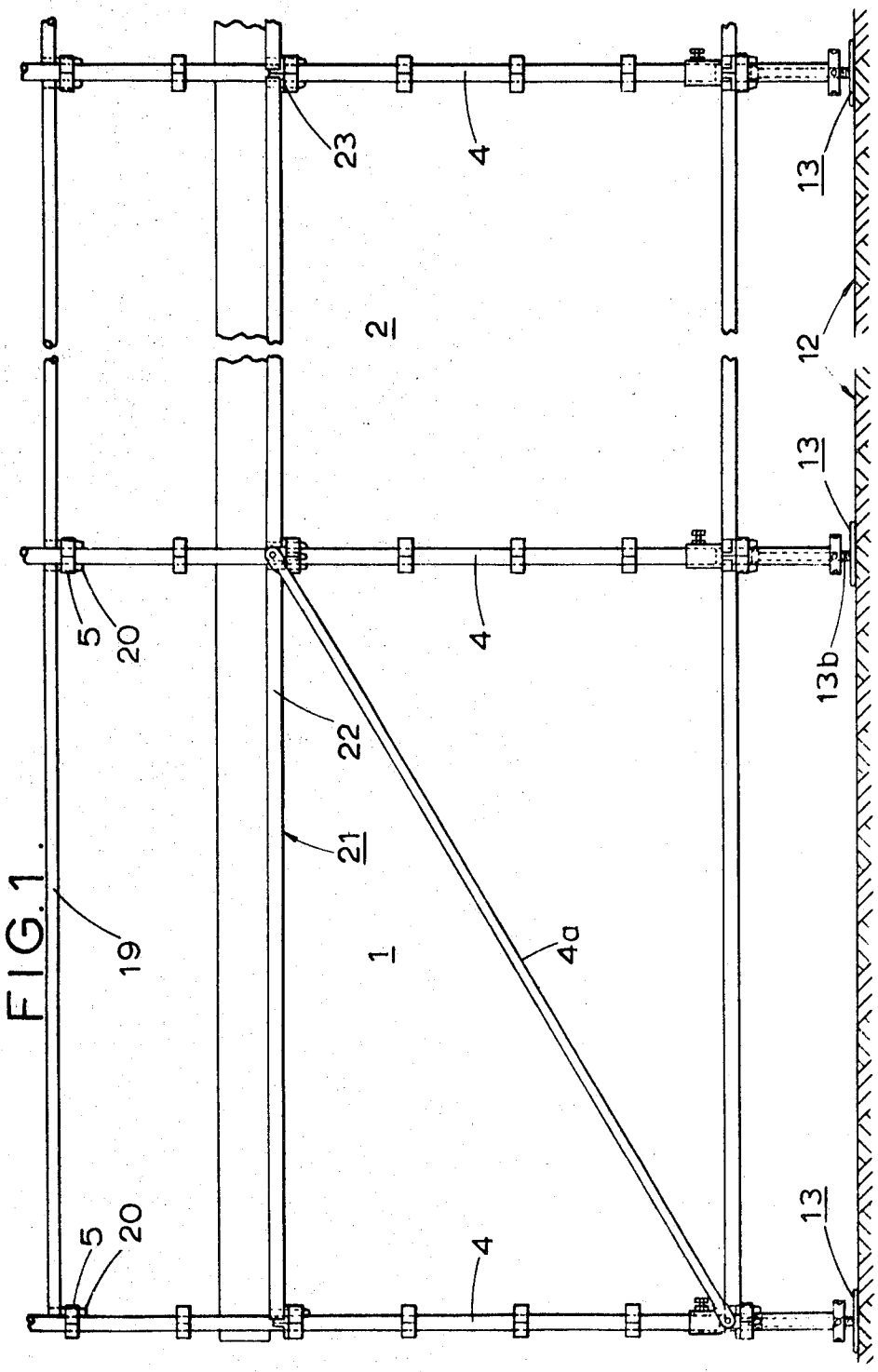
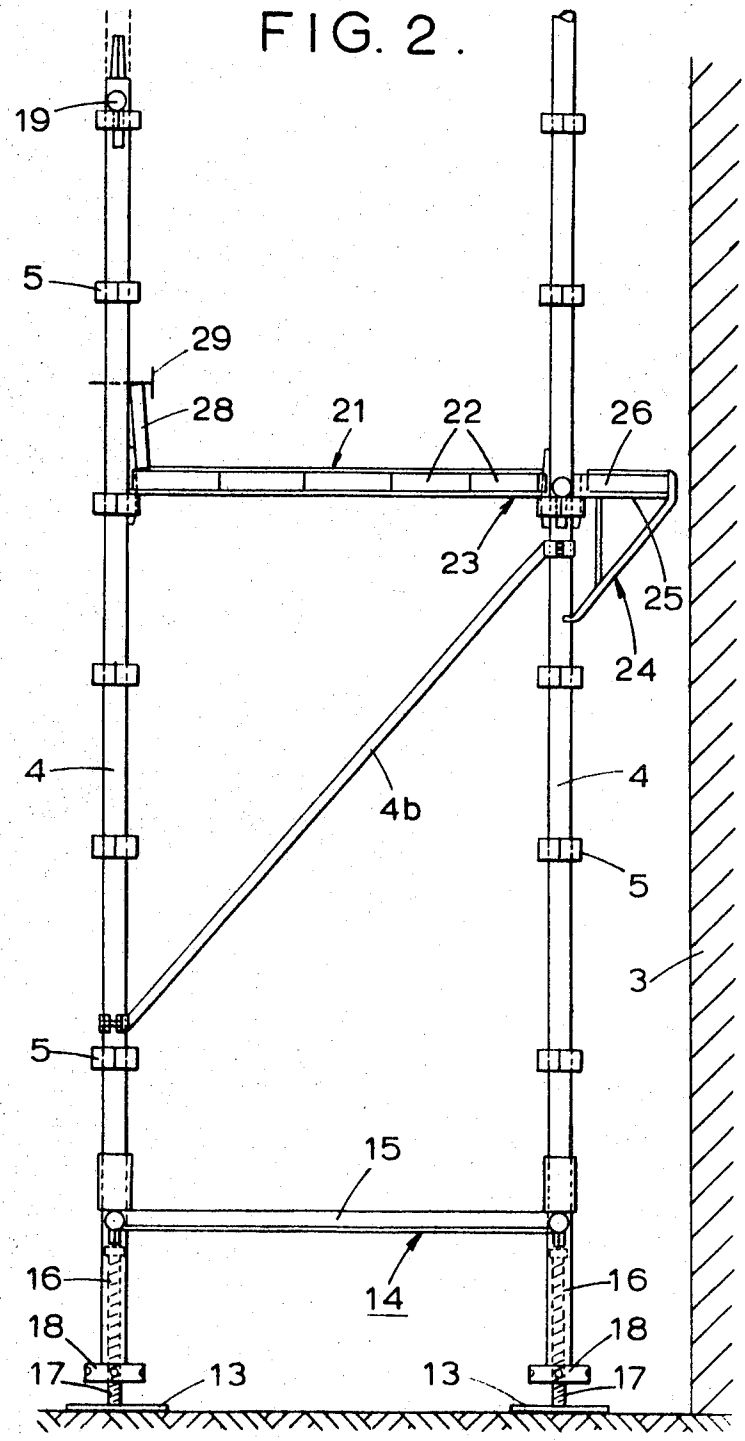


FIG. 1.

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FIG. 2.



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FIG. 3.

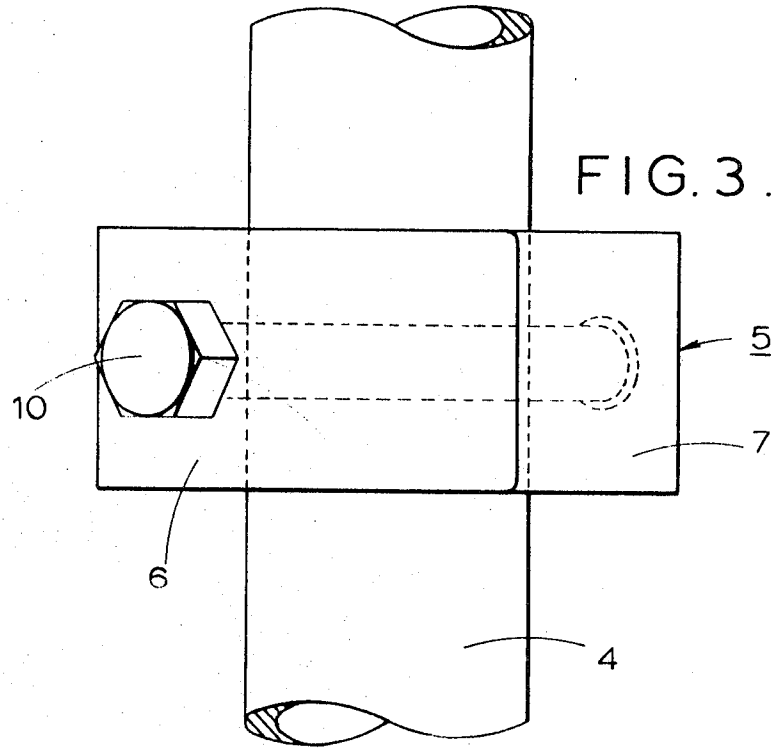
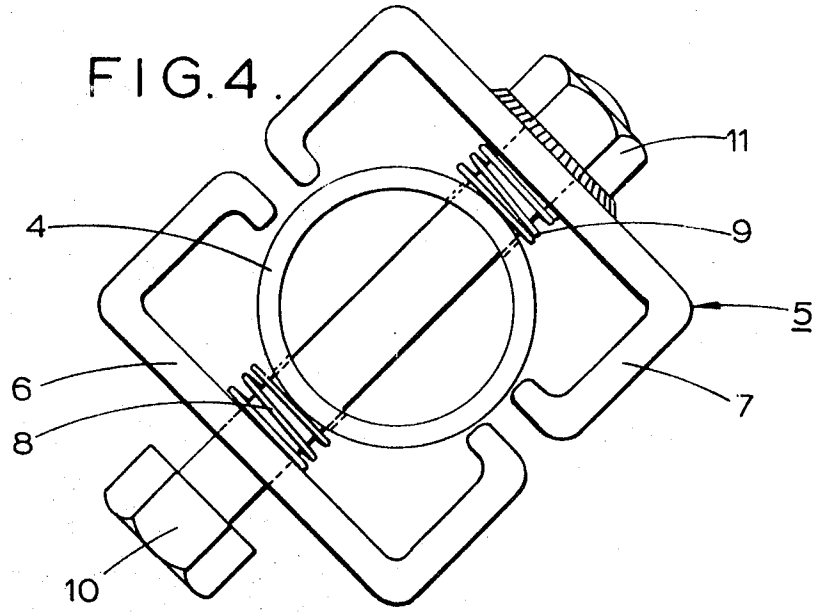


FIG. 4.



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SCAFFOLDING

BACKGROUND OF THE INVENTION

Scaffolding is in common use in the erection and repair of buildings to enable workmen to stand and move at levels of the work higher than the ground. Such scaffolding generally comprises a plurality of steel tubes fixed together as a skeleton framework with the aid of couplers. Hitherto, for the construction or repair of a wall, for example, the tubes in the skeleton framework have comprised vertical standards and horizontal ledgers have generally been arranged in two groups located substantially in two separate planes parallel to the wall or the site of the wall, against which the scaffolding was constructed. The horizontal transoms have interconnected the standards and ledgers of the two planes, such transoms being perpendicular to the two planes. Putlogs were used for fixing into the wall where appropriate to retain the scaffolding in the desired position. Horizontal boards were laid on the transoms and putlogs providing platforms for the workmen.

It is an object of the present invention to devise a unit scaffolding framework which is readily prefabricated and which may be moved to a desired position on a building site to provide a safe working area for the workmen, such framework being readily capable of connection with a similar framework for the purpose of producing a more complex scaffolding structure.

BRIEF SUMMARY OF THE INVENTION

According to one aspect of the present invention, there is provided a unit scaffolding framework comprising, in combination, four vertical tubular standards having clamps spaced therealong, each clamp comprising two shaped members held together against resilient opposition by a bolt passing through the respective standard, baseplates adjustably mounted in relation to the lower ends of respective standards, a horizontal ledger connected with two of the standards by the clamps at the chosen position for the ledger, a diagonal bracing tube connected with two of the standards so as to lie in a plane parallel to a wall or a site of a wall to be built and a crossbracing tube connected with two of the standards so as to lie in a plane transverse to said wall or wall site, a horizontal transom of inverted T-cross section connected with two of the standards so as to lie perpendicularly to said wall or wall site, a further horizontal transom of inverted T-cross section similarly connected with the other two of the standards, and horizontal platform boards laid on, and extending between the two transoms to form a platform for workmen.

The horizontal ledgers may serve not only to maintain the four standards at the desired spacing and in parallel relationship, but also to form handrails for the safety of the workmen in use. Such handrails would be provided on that side of the framework remote from the wall or the wall site, as the case may be. It will be appreciated that end handrails may also be provided perpendicularly to the wall or the wall site, where required.

If desired, at least one horizontal base frame may be connected with the four vertical standards by appropriate use of the clamps thereon. The or each base frame serves to impart rigidity to the completed unit scaffolding framework to ensure the safety of workmen thereon. The base frames also enable the whole unit framework to be lifted and moved by crane when required, without distortion of the unit framework.

It will be appreciated that, when a first unit scaffolding framework has been erected, further frameworks may be constructed adjacent to and connected with such first framework. Each further framework need include only two vertical standards, the two other standards necessary for stability forming part of the first framework.

According to another aspect of the present invention, therefore, there is provided an auxiliary unit scaffolding framework for erection with one unit scaffolding framework as set forth above, the auxiliary unit scaffolding framework comprising, in combination, two vertical tubular standards having clamps

therealong, each clamp comprising two shaped members held together against resilient opposition by a bolt passing through the respective standard, baseplates, adjustably mounted in relation to the lower ends of respective standards, horizontal ledgers each connected at one end with one of the standards by the clamp at the chosen position for the ledger, the other end of the ledger being adapted to be connected with one of the standards of said one unit scaffolding framework, a diagonal bracing tube connected at one end with one of the standards and being adapted to be connected at the other end with one of the standards of said one unit scaffolding framework so as to lie in a plane parallel to a wall or a site of a wall to be built and a crossbracing tube connected with the two standards so as to lie in a plane transverse to said wall or wall site, a horizontal transom of inverted T-cross section connected with the two standards so as to lie perpendicularly to said wall or wall site at a location corresponding to a horizontal transom of said one unit scaffolding framework whereby horizontal platform boards may be laid on, and extend between, the two transoms to form a further platform for workmen.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevation of a unit scaffolding framework and an auxiliary unit scaffolding framework,

FIG. 2 is an end elevation of the structure shown in FIG. 1,

FIG. 3 is an elevation of a clip used in the structure of FIGS. 1 and 2, and

FIG. 4 is a plan of the clip shown in FIG. 3.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring firstly to FIGS. 1 and 2, there is shown a unit scaffolding framework 1 to which is attached an auxiliary framework 2. As shown in FIG. 2, the scaffolding frameworks are located close to a wall 3.

The scaffolding framework 1 comprises in combination, four vertical tubular standards 4, only three of which may be seen in FIGS. 1 and 2. Each framework also has a diagonal brace 4*a* and a cross brace 4*b*. Each standard has horizontal apertures for positioning clamps 5, one of which is shown more clearly in FIGS. 3 and 4 applied to a standard 4. Each clamp comprises two shaped members 6 and 7 held together, against resilient opposition supplied by springs 8 and 9, by a bolt 10 passing through the aperture in the standard 4. A nut 11 cooperating with the bolt 10 is welded to the shaped member 7. Thus, when the bolt 10 is tightened, the shaped members are clamped on to the standard 4, whilst they are urged away from the standard by the springs 8 and 9 upon loosening the nut and bolt.

Each standard rests upon the ground 12 through the intermediary of a respective baseplate 13 which is adjustable in the manner described hereinafter. In the embodiment shown, the baseplates 13 form an adjustable part of a base frame 14 from which the standards 4 extend. The base frame 14 serves as a secure adjustable foundation for the standards and helps to retain the standards at their correct spacing. The base frame comprises a horizontal, rigid framework 15 and two tubular legs 16. The base plates are inserted into the respective legs 16. To enable the completed unit scaffolding framework to be set up with the standards 4 as nearly vertical as possible, the baseplates 13 are adjustably mountable in relation to the lower ends of the tubular legs 16. A fine adjustment of the height of the standard above the ground is produced by means of a screw-threaded post 17 affixed to the center of the baseplate 13. By turning a threaded collar 18 in relation to the standard, a gradual adjustment is made. The adjustable baseplate just described is particularly useful in situations where low transoms cannot be used. For example when the unit scaffolding framework is erected on a pavement, the base frame 14 may be dispensed with and the adjustable baseplates are then inserted into the lower ends of the standards 4.

Adjustable base legs can be used instead of the base frame and base legs. Each such leg includes a vertical socket in which the lower end of one of the standards can be fitted. A locking pin may be passed through a selected pair of aligned holes in the socket to form a stop limiting downward movement of the tubular standard inserted in the socket. This provides a coarse adjustment of height. A screw-threaded lower leg member screws into the lower end of the socket to provide a fine adjustment of height. This lower leg has a foot plate at the bottom.

A horizontal ledger **19** is connected to the two standards **4** remote from the wall **3**. The ledger **19** has downwardly depending spigots **20** at its ends for insertion in, and clamping by, appropriate clamps **5**. The ledger assists in maintaining the correct spacing of the two standards, and serves also as a handrail for workmen standing on a platform **21** located some 3 feet above the ledger. The platform **21** comprises horizontal boards **22** laid between the resting upon two horizontal transoms **23** of inverted T-cross section. A foot or toe board **28** is located by the standards **4** remote from the wall **3** and is held by clips **29**. Each transom is connected, in a similar fashion to the ledger **19**, to two of the standards **4**, but is disposed perpendicularly to the wall **3**. The adjustability of the baseplate ensures that the platform **21** is as nearly horizontal as possible.

The horizontal ledger and the vertical standards are preferably steel tubes of 1 29/32 inches outside diameter by No. 8 British gauge to impart the necessary rigidity and stability to the framework. For ease of assembly and of storage, the ledgers **19** and standards **4** are preferably of certain appropriate lengths, whereby a multiplicity of different parts is avoided. For example, the standards **4** may be supplied in five lengths and the ledgers **19** in two lengths.

The inverted T-cross section transoms **23** can be fabricated from two angle-section steel bars welded together, the welded limbs forming the upright of the T.

Each bar is provided with a double headed fork at each end for connection where desired with the vertical standards **4** by means of the clamps **5**. It will be seen that where two inverted T-cross section transoms are fixed to standards so that the two transoms are parallel, the duck boards **22** may be laid on the facing parts of the crossbars of the two T-cross sections and are then prevented from undergoing undesired longitudinal movement by the uprights of the T-cross sections. A sufficient number of boards is laid to provide an adequate and safe platform for workmen and their materials. The boards are preferably of standard cross section and supplied in two standard lengths.

To extend a platform either towards or away from the wall or wall-site, a pair of hop-up brackets **24** may be used. Each bracket is fixable to a standard **4** at a desired location and may have the form of an angle-bracket. Two such brackets are fixed to standards so that the brackets are parallel and have horizontal upper limbs **25**. Such limbs may have a length sufficient to accommodate a board **26**, as shown, or to accommodate two or three boards in side-by-side relationship. The appropriate number of boards is laid on the two brackets **24** at the same level as the boards **22** forming the main part of the platform **21**. In this way, the area of the platform is increased, and the workmen may move closer to the wall, for example, to assist them in the building operations.

Two or more unit scaffolding frameworks may be disposed in end-to-end relationship along a wall or a site for a wall. To ensure that the platform supported by the two frameworks are continuous at a right angle corner and thereby to reduce or prevent accidents to the workmen, an adjustable connecting plate is used.

This connecting corner plate is an inverted channel approximately 8 inches wide with 2 inch lips extending downwardly from the lateral edges thereof. The upper side of the channel is corrugated, dimpled, or otherwise roughened to avoid the danger of workmen slipping thereon. A locking device extends downwardly from the center of the channel, and the arrangement is such that the channel may be placed over the ledger and adjacent end transom of the two unit scaffolding frameworks, whereafter the locking device is tightened to affix the channel to the transoms. If desired, a plurality of locking devices may be used. This simple channel arrangement provides a connection at platform level between two aligned unit scaffolding frameworks.

A connecting corner plate can be adjustable to provide a platform between two unit scaffolding frameworks which are themselves angularly disposed, beside a curve in a wall, for example. This plate consists of two sheet steel sections joined together by bolts passing through fishplate holes in the sections. Edges of the sections remote from the join therebetween are bent through 90° out of the plane of the section to form lips. The lips may be engaged over the adjacent end transoms of the two unit scaffolding frameworks, and the two sections thereafter adjusted in relation to each other to prevent movement of the corner plate with respect to the frameworks. The fishplate holes allow such adjustment. The bolts are thereafter tightened to hold the sections in the adjusted position. The fishplate holes also allow the two lips to be angularly disposed relative to each other.

If desired, at least two tie fittings having end forks may be used to fix two adjacent unit scaffolding frameworks together and prevent relative movement thereof.

What we claim is:

1. A Unit scaffolding framework comprising, in combination, four vertical tubular standards having clamps spaced therealong, each clamp comprising two shaped members held together against resilient opposition by a bolt passing through the respective standard, base plates adjustably mounted in relation to the lower ends of respective standards, a horizontal ledger connected with two of the standards by the clamps at the chosen position for the ledger, a diagonal bracing tube connected with two of the standards so as to lie in a plane parallel to a wall or a site of a wall to be built and a crossbracing tube connected with two of the standards so as to lie in a plane transverse to said wall or wall site, a horizontal transom of inverted T-cross section connected with two of the standards so as to lie perpendicularly to said wall or wall site, a further horizontal transom of inverted T-cross section similarly connected with the other two of the standards, and horizontal platform boards laid on, and extending between, the two transoms to form platform for workmen.

2. A unit scaffolding framework according to claim **1**, further comprising at least one horizontal base frame connected with the four standards by clamps at the chosen position for the base frame.

3. A unit scaffolding framework according to claim **2**, further comprising two brackets removably disposed in parallel relationship by clamps on two of the standards for supporting at least one scaffolding board.

4. A unit scaffolding framework according to claim **2**, wherein each clamp is shaped to provide four apertures between the shaped members and the associated standard for reception and clamping of lugs, spigots or the like of components of the frameworks.

5. A unit scaffolding framework according to claim **2**, herein each baseplate carries an upstanding post formed with a series of apertures for reception of a locking pin, the post being adapted to be inserted in the lower end of the standard.

6. An auxiliary unit scaffolding framework for erection with one unit scaffolding framework according to claim **1**, the auxiliary unit scaffolding framework comprising, in combination, two vertical tubular standards having clamps spaced therealong, each clamp comprising two shaped members held together against resilient opposition by a bolt passing through the respective standard, baseplates adjustably mounted in relation to the lower ends of respective standards, horizontal ledgers each connected at one end with one of the standards by the clamps at the chosen position for the ledger, the other end of the ledger being adapted to be connected with one of the standards of said one unit scaffolding framework, a

diagonal bracing tube connected at one end with one of the standards and being adapted to be connected at the other end with one of the standards of said one unit scaffolding framework so as to lie in a plane parallel to a wall or a site of a wall to be built and a diagonal crossbracing tube connected with the two standards so as to lie in a plane transverse to said wall or wall site, a horizontal transom of inverted T-cross section connected with the two standards so as to lie perpendicularly to said wall or wall site at a location corresponding to a horizontal transom of said one unit scaffolding framework whereby horizontal platform boards may be laid on, and extend between, the two transoms to form a further platform for workmen.