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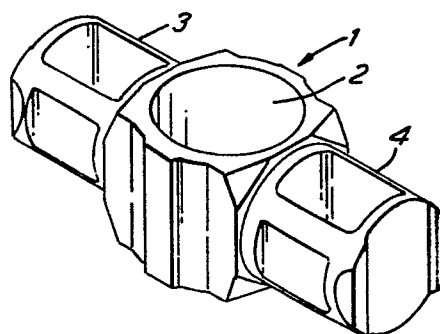
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Scaffolding frame structure.

A scaffolding frame structure comprises a plurality of scaffolding tubes assembled to form a three-dimensional rectangular-sided framework. Tube-end fixtures (1) secure together orthogonally intersecting tubes. These fixtures (1) comprise an eye portion (2), arranged to surround vertical tubes (7, 8), and aligned shank portions (3, 4). One of the shank portions (3) is arranged to support an end of a horizontal tube (11, 27). A tubular stub member (47) disposed on the other shank portion (4) provides mounting means for a bracing tube (39) linking a pair of substantially horizontal tubes (11, 27).

The bracing tubes (39) lie outside the bounds of the framework and thereby permit a working platform (37, 38), secured to respective horizontally extending tubes, to extend across substantially the entire horizontally presented internal surface area of the framework.



: 1 :

SCAFFOLDING FRAME STRUCTURE

This invention relates to scaffolding frame structures.

In our United States Patent No. 4,193,709, there is disclosed a tube-end fixture having an eye, dimensioned to accommodate a scaffolding tube passed therethrough, and a shank, integrally formed therewith, dimensioned to accommodate a hollow scaffolding tube passed thereover; the axes of the two tubes being orthogonal when assembled to the fixture. The said patent also discloses that a single eye can have two or more shanks integrally formed therewith, and this invention makes particular use of a fixture having two shanks. Preferably the two shanks are disposed diametrically opposite one another about a common eye.

The fixture as disclosed in the aforesaid patent is formed by suitably machining a portion cut from a length of extruded alloy material but this invention does not depend upon the use of a fixture formed in the above described manner and fixtures formed by, for example, casting or forging may be used. The important characteristic required of a fixture to be used for the purposes of the present invention is that it be formed with an eye member dimensioned to accommodate a first tube passed therethrough and two shanks dimensioned to accommodate second and third tubes passed thereover, the axes of the second and third tubes being orthogonal to the axis of the first tube. Preferably, the axes of the second and third tubes are coincident.

It is common in the art of scaffolding frame structures to produce rectangular frame sections, each built up of a number of

tubes secured together at intersections. The frame sections are produced in standard dimensions so that several of them may be secured together to form tower structures, for example.

The dimensions of the frame sections have been standardised
5 in the interests of compatibility and it is well known that working platforms can be secured to selected tubes forming part of a tower structure. In the interests of security of the scaffolding structure, it is usual for bracing members to be secured between horizontally extending tubes at different
10 heights, and/or in different vertical planes. Hitherto, such bracing members have been fixed to the selected horizontal tubes within the frame structure and the fact that they frequently run past the edges of working platforms has limited the width of platform that can be used.

15 This invention provides a scaffolding structure in which, by virtue of the use of double-shanked tube end fixtures, the bracing members are mounted externally of the frame structure, thus enabling working platforms of increased width to be used in conjunction with a scaffolding structure of standard dimensions.

20 According to the invention there is provided a scaffolding frame structure comprising a plurality of scaffolding tubes assembled to form a three-dimensional rectangular-sided framework, and wherein orthogonally intersecting tubes are secured together by means of tube-end fixtures; at least
25 one of the rectangular sides being provided with a bracing tube linking a pair of substantially horizontal tubes disposed with their axes in different horizontal and/or vertical planes, the tube-end fixtures securing said pair of tubes to respective vertical tubes, the tube-end fixtures comprising an eye portion
30 arranged to surround said respective vertical tubes, and a pair of aligned shank portions capable of supporting an end of said pair of horizontal tubes; characterised in that one of said shank portions also supports a tubular stub member so as to provide mounting means for said bracing tube outside the bounds
35 of said framework.

In order that the invention may be clearly understood and readily carried into effect, one embodiment thereof will now be described, by way of example only, with reference to the accompanying drawings of which:

5 Figure 1 shows a double-shanked tube-end fixture of a kind suitable for use in a structure according to one example of the invention, and

Figure 2 shows a scaffolding structure in accordance with one example of the invention.

10 Referring now to Figure 1, there is shown a double-shanked tube-end fixture 1 of the kind referred to hereinbefore. The fixture is, in this example, machined from a section cut from a long extruded length of aluminium alloy and consists of a central eye portion 2 and a pair of aligned shanks 3 and 4. In
15 use, it is normal for a vertical scaffolding tube to be passed through the eye 2 and for the fixture to be welded to the tube at the chosen location therealong. The two shanks 3 and 4 thus extend horizontally, shank 3 receiving axially the end of a horizontal scaffolding tube and shank 4 receiving axially a
20 short, collared length of tubing; the short length also extending horizontally and its axis being aligned with that of the horizontal tube received by shank 3.

Referring to Figure 2, there is shown a scaffolding structure made up of frame sections and including four uprights
25 5, 6, 7 and 8. Each upright is made up of three vertical tube sections, for example 5a, 5b and 5c as shown. Double shanked tube-end fixtures of the kind shown in Figure 1 are secured at appropriate locations to the vertical tubes as shown, for example, at 9 and 10. Horizontal tubes 11 through 28 are
30 received axially by the inward facing shanks (such as 3) of the fixtures such as 1. Orthogonally disposed horizontal tubes 29-34 are also provided as shown. It will be observed that, in the embodiment shown, ladder sections 35, 36 are welded to the horizontal tubes 11-13 and 14-16 respectively.

35 Working platforms 37, 38 each consisting of a solid section and a hinged section, are secured in known manner, by means of

bracing hooks such as 49, to selected horizontal tubes such as 14, 25 and 17, 22 and, as can be seen, each platform extends over substantially the whole of the horizontal internal area of the structure. The platforms can extend close to the upright tubes as shown because bracing members 39-46 are secured to stub tubes such as 47 secured to the outward facing shanks (such as 4) of the tube-end fixtures. Previously, as has been mentioned hereinbefore, it has been the practice to mount bracing members such as 39-46 internally of the scaffolding structure (i.e. to the horizontal tubes such as 14 close to their intersection with the uprights) and this has restricted the width of working platforms that could be used in scaffolding towers of standard dimensions.

As mentioned hereinbefore, the use of tube-end fixtures of the specific form shown in Figure 1 and described in detail herein is not essential to the invention. Alternative fixtures, formed for example by casting or forging could be used. As further alternatives double-shanked versions of the fixtures shown in Figures 4 and 5 of the afore-mentioned United States Patent could be used.

Although the tube-end fixture shown in Figure 1 has been described as being used with its eye-member secured to a vertical tube, it could alternatively be employed with its eye-member secured to a horizontal tube and with the shank members extending vertically to co-operate with vertical tubes. In this case, the horizontal tubes would be dimensioned so as to protrude through the eye-members to form the equivalent of stubs such as 47.

Furthermore, although in Figure 2 all of the tube-end fixtures are shown as being doubly shanked, those fixtures provided at locations to which no bracing tubes are to be affixed can, if desired, be singly shanked.

The doubly shanked fixtures can be used, if desired, in association with foot members of conical or any other convenient shape applied to the bases of the vertical scaffolding tubes. Indeed, conical foot members can be pre-formed with diametrically opposite, axially aligned shanks if desired.

CLAIMS

1. A scaffolding frame structure comprising a plurality of scaffolding tubes assembled to form a three-dimensional rectangular-sided framework, and wherein orthogonally intersecting tubes are secured together by means of tube-end fixtures (1); at least one of the rectangular sides being provided with a bracing tube (39) linking a pair of substantially horizontal tubes (11, 27) disposed with their axes in different horizontal and/or vertical planes, the tube-end fixtures (1) securing said pair of tubes (11, 27) to respective vertical tubes (7,8), the tube-end fixtures comprising an eye portion (2) arranged to surround said respective vertical tubes (7,8), and a pair of aligned shank portions (3,4) capable of supporting an end of said pair of horizontal tubes (11, 27) ; characterised in that one of said shank portions (4) also supports a tubular stub member (47) so as to provide mounting means for said bracing tube (39) outside the bounds of said framework.
2. A structure according to Claim 1, wherein said tube-end fixtures (1) are formed by machining sections cut from an extended length of material.
3. A structure according to Claim 1 or 2, wherein there is included a working platform (37, 38), secured to respective horizontally extending tubes (14, 25, 17, 22), and extending across substantially the entire horizontally presented internal surface area of said framework.

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