

June 23, 1970

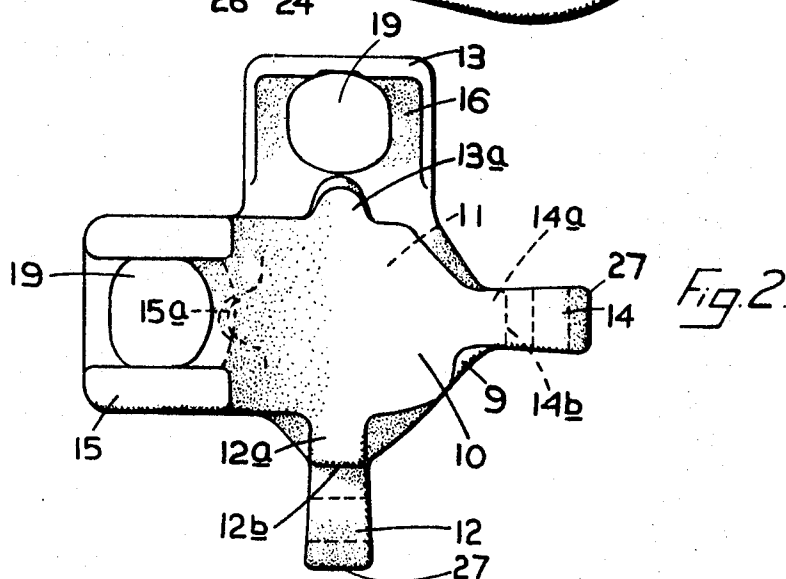
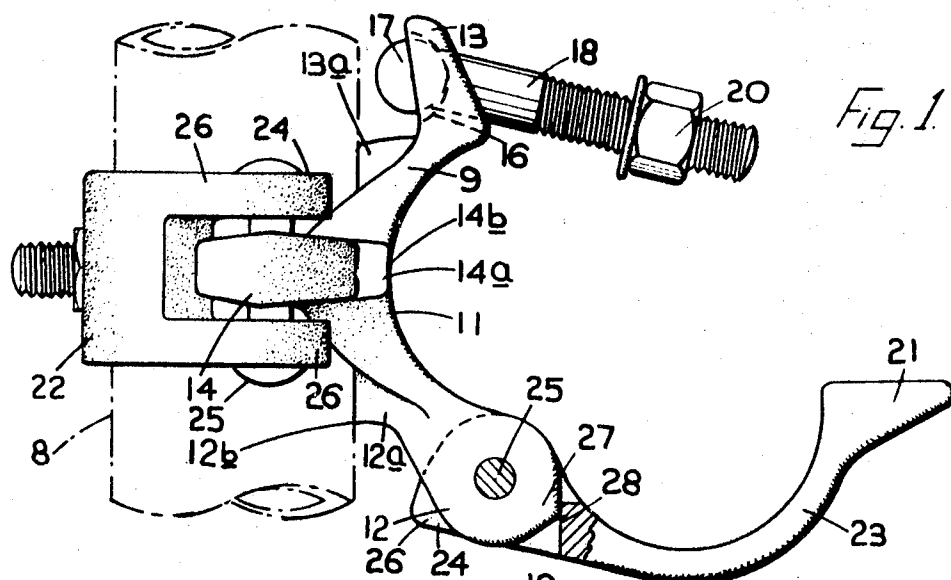
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3,516,695

SCAFFOLD COUPLINGS

Filed March 4, 1968

2 Sheets-Sheet 1



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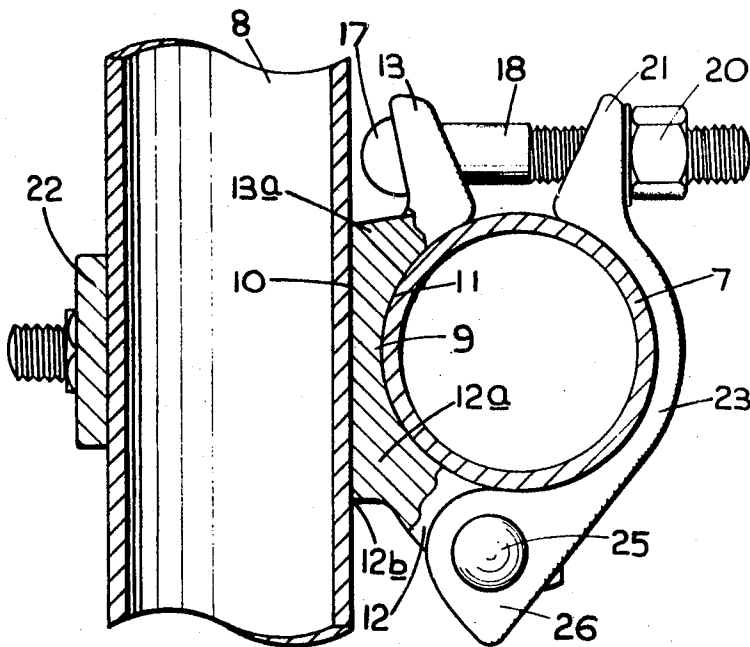


Fig. 3

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3,516,695

SCAFFOLD COUPLINGS

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U.S. Cl. 287—54

3 Claims

ABSTRACT OF THE DISCLOSURE

A scaffold coupling for securing a non-vertical, e.g. horizontal scaffold tube to a vertical scaffold tube, with the body of the coupling having a downwardly directed sharp edge which deforms and locks into the surface metal of the vertical scaffold tube, to lock the coupling against downward movement on the vertical tube.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to scaffold couplings for securing a non-vertical, e.g. horizontal scaffold tube to a vertical or substantially vertical supporting tube, e.g. an upright tube of a scaffolding structure, which coupling is of the kind, herein called the kind specified, comprising a central body having two oppositely directed concavely curved seatings and a pair of curved clamping jaws, each connected at opposite ends to the central body, each jaw coacting with one of the two seatings in clamping one of the two tubes to be connected.

One of the most common arrangements in couplings of the kind specified is that in which the two seatings are mutually perpendicular so as to secure the two tubes at right angles to one another and in such an arrangement the central body is formed as a one piece member, for example as a forging.

Description of the prior art

In couplings of the kind specified, reliance is placed wholly on the frictional engagement between the coupling and the vertical or substantially vertical supporting tube in transmitting thereto the weight of the load transmitted from the horizontal or other non-vertical tube to be supported, and this imposes a relatively low limit on the weight which can safely be supported by the coupling without the serious danger that the coupling may slip down the vertical or substantially vertical tube.

For instance in the case of a standard 2" diameter upright tube, the maximum permissible loading of a coupler having a one piece body for supporting a horizontal tube is at present about 650 kilos.

The present invention has for its object the provision of an improved form of scaffold coupling of the kind specified, in which a substantially greater load can be supported through a given size of coupling from the vertical or substantially vertical tube, without risk of the coupling slipping down the tube.

SUMMARY OF THE INVENTION

According to the present invention, the central body adjacent at least one of the two seatings, namely that which in situ is in clamping engagement with the vertical or substantially vertical tube, is formed at the in situ lower side of the vertical tube engaging seating with a sharp downwardly presented edge which in situ is disposed below the lower edge of the jaw clamping said vertical tube, said edge being in or intersecting with a plane containing the axis of the vertical tube, which plane also passes

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through the medial part of the central body, the arrangement being such that with increase in the loading of the horizontal or other supported tube the coupling rocks very slightly relative to the vertical tube in a direction such that the sharp edge can deform slightly the surface metal of the vertical tube to engage positively therewith, and thus provide a positive engagement in addition to a frictional engagement with the vertical tube.

Preferably, the sharp edge is constituted by a sharp corner of concave configuration, which engages along its length with the adjacent side of the vertical tube, and extends in a direction perpendicular to the length of the tube.

Preferably, the sharp edge is constituted by a part of the adjacent seating, so as to form a local extension of the seating.

Advantageously, the sharp edge is constituted by an adjacent portion of a clamping jaw securing lug.

The invention may be applied to the particular form of scaffold coupling which is the subject of our prior patent application No. 688,602, filed Dec. 6, 1967.

BRIEF DESCRIPTION OF THE DRAWINGS

One embodiment of the present invention as so applied is illustrated in the accompanying drawings, wherein:

FIG. 1 is a side elevation of one form of scaffold coupling embodying the invention, one of the jaws being depicted in the closed position and the other in the open position.

FIG. 2 is a plan view of the central body of the coupling depicted in FIG. 1.

FIG. 3 is a cross sectional view of the coupler depicted in FIG. 1, shown in its final clamping position.

Referring to the drawings, the coupling scaffold there illustrated is adapted to secure a horizontal tube 7 to a vertical scaffold tube 8, and comprises a central body 9 of generally circular configuration peripherally, and embodying on each of its two sides two mutually perpendicular concave circular seatings 10, 11.

The circular periphery of the body has integrally formed therewith, two pairs of lugs 12, 13, 14, 15, one of the two lugs 12, 14 in each pair being of generally rectangular form in cross section, with the other lugs 13, 15 of each pair being formed on one side with a shallow part-circular bearing recess 16, which provides a bearing for the circular section head 17 of a T-shape clamping bolt 18, which head 17 has a diameter more than twice the depth of the recess 16, so that only a minor portion of the bolt head is received within the recess and the associated lug 13, 15 is made of depth sufficient merely to provide this recess 16 of the above shallow depth.

Each recessed lug 13, 15 is formed with an elongated hole 19 through which the clamping bolt 17 passes, the free end portion of the clamping bolt carrying a nut 20 for engaging with the free end portion 21 of arcuate shaped jaw 22, 23, the other end 24 of which is hinged by pin 25, one to each of the rectangular section lugs 12, 14.

The said hinged end 24 of each jaw 22, 23, is forked so that the two arms 26 of the fork extend on opposite sides of the lug 12, 14, and the free end 27 of each lug 12, 14 is adapted as shown in FIG. 1 to engage with the metal of the jaw at position 28 between the inner ends of the two arms 26 to limit the opening movement of each jaw. This latter feature is of practical importance in that with one half of the coupling secured first, as is customary for the vertically extending or upright tube 8, the jaw of the other half of the coupling can be supported by the provision of this last mentioned feature in a substantially horizontal position to provide a rest for a horizontal tube 7 before this is finally clamped by such jaw in position.

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The central body 9 is formed integrally during the forging operation with two pairs of lug reinforcing portions 12a, 13a, 14a, 15a, each extending from the central body in the direction of and adjacent to the two pairs of lugs 12, 13, 14, 15, respectively.

Each pair of reinforcing portions 12a, 13a, adjacent to the one pair of lugs 12, 13, constitute tube engaging extensions of seating 10, which coacts with the jaw 22 secured by means of the other pair of lugs 14, 15, while reinforcing portions 14a, 15a, adjacent to the pair of lugs 14, 15, constitute tube engaging extensions of seating 11, which coacts with the jaw 23 secured by means of the pair of lugs 12, 13.

One of the reinforcing portions in each pair, namely 12a, 14a, which are adjacent each jaw hinging lug 12, 14, are formed at the side of the adjacent seating 10, 11, respectively with an outer sharp edge or corner 12b, 14b, of sharp right angle configuration in cross section, and of substantially straight configuration as viewed in FIG. 2, but curved about the axis of curvature of the adjacent seating, so as to engage with the vertical scaffold tube 8 engaged by such seating.

Thus, as shown in FIG. 3, in utilising the coupler to secure a horizontal tube 7 to an upright tube 8, the coupler would in accordance with normal practice be clamped first to the upright tube 8 by engaging seating 10 and corresponding jaw 22 in clamping engagement with the upright tube with the coupler in a position in which the other jaw 23 for securing the horizontal tube 7 is, as is customary, in a position for supporting the horizontal tube in a position ready for clamping. With the parts so disposed, the said edge 12b of reinforcing portion 12 in engagement with upright tube 8, is directed downwardly of the tube.

Thus, when the horizontal tube 7 is secured and loaded, the weight which is applied to the coupling 9 at a position to the side of upright tube 8 nearest to tube 7, will cause the coupling to rock very slightly relative to tube 8, in a clockwise direction as viewed in FIG. 3, causing edge 12b to bite slightly into the adjacent surface metal of tube 8 and thus provide a positive grip in addition to a friction grip between the coupling and tube 8, whereby a substantially greater load can be supported without risk of the coupling slipping down the upright tube 8.

It is believed that where the upright tube 8 is of the customary 5 cm. external diameter, the load which can safely be carried by the illustrated coupler without danger of slip, can be increased from the present figure of about 650 kilos to about 800 kilos.

What I claim is:

1. A scaffold coupling for securing a horizontal cylindrical tube to a vertical supporting cylindrical tube,

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comprising a one-piece rigid central body which extends between the two tubes, with opposite sides of the one-piece body forming two oppositely directed mutually perpendicular concavely curved part-cylindrical seatings, each of curvature corresponding to that of the peripheries of their respective tubes, and a pair of clamping jaws, each connected at opposite ends to the central body, each jaw coacting with one of the two seatings in clamping one of the two tubes to be connected, the lower end of that part-cylindrical seating which in situ is in clamping engagement with the vertical tube forming a sharp downwardly presented vertical tube engaging edge which intersects with a vertical plane passing through the medial part of the central body and containing the axis of curvature of the vertical tube seating, said edge in situ being disposed at a horizontal level which is below that of the underside of the vertical tube jaw and spaced below the horizontal median plane through said latter jaw by a distance which is less than the distance as measured in said vertical plane between the axis of curvature of the horizontal tube and the vertical tube seating, the arrangement being such that with increase in the loading of the horizontal tube the coupling rocks very slightly relative to the vertical tube in a direction such that the sharp edge can deform slightly the surface metal of the vertical tube to engage positively therewith, and thus provide a positive engagement in addition to a frictional engagement with the vertical tube.

2. A scaffold coupling according to claim 1, characterised in that the sharp edge is constituted by a right angle corner of concave configuration, one face of which engages with the adjacent side of the vertical tube, and the other face of which extends in a direction perpendicular to the length of the tube.

3. A scaffold coupling according to claim 1, characterised in that the sharp edge is constituted by an adjacent portion of a clamping jaw securing lug.

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