

PATENT SPECIFICATION

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(54) SCAFFOLDING FRAMEWORK

(71) We, TOWER SCAFFOLDING (BRISTOL) LIMITED, a British Company, of Days Road, Bristol 2, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates to scaffolding frameworks and to poles for such frameworks.

Scaffolding clamps are conventionally used to connect scaffolding members together and mutually at right angles to one another so that the members form a framework to support working platforms. These clamps must ensure that the framework is rigid and should be simple to use. On building sites, loose scaffolding clamps, which are expensive to replace, are often lost and, because of increasing labour costs, it is becoming more expensive to fit these loose clamps on site. Various scaffolding systems have been proposed which do away with loose clamps but there is still a need for a system which is readily adaptable to give different heights for cross-members and which is easy to assemble and take apart.

According to the present invention there is provided a scaffolding framework of horizontal and vertical scaffolding poles wherein horizontal and vertical poles are joined together by scaffolding joints each comprising a pair of vertically disposed cheek plates spaced from one another and secured to an end of a horizontal scaffolding pole, said plates being secured to said end on opposite sides thereof and projecting beyond said end to form a vertical channel which receives an intermediate part of the adjoining vertical pole, one or both said plates being provided with a downwardly open recess which is spaced from the horizontal pole

end and which engages over a lug on the adjoining vertical pole and the channel being such that when the horizontal pole is lifted to disengage it from the lug or lugs the intermediate part of the adjoining vertical pole can be disengaged by movement in a horizontal direction.

Also according to the present invention there is provided a scaffolding pole for use in such a framework, said pole having at one or both ends a pair of spaced cheek plates secured thereto on opposite sides thereof, and projecting beyond said end to form a channel for receiving an intermediate part of a second scaffolding pole in a sideways direction to the second pole, the second pole being at right angles to the first pole, one or both cheek plates having in one edge and spaced from said end a recess adapted to receive a lug on said second pole whereby the cheek plate(s) and thus the first pole may be supported and held by the lug(s) when the first pole is horizontal and the second is vertical and the poles are assembled together.

In the framework, the vertical poles are preferably provided with a plurality of lugs at intervals along the length thereof for locating the horizontal poles at a variety of different heights. Advantageously, the downwardly open recess comprises a downwardly open vertical slot in the lower edge of one or both cheek plates and the lug or lugs on the vertical pole comprise projecting fins which are a close fit in said vertical slots. The lugs may, for example, be of rectangular or of inverted T-shaped elevation. The cheek plates can be shaped to receive a second horizontal pole at an angle to the first horizontal pole with each plate having a downwardly hooked portion which forms a jaw to receive a second horizontal pole at right angles to the first. Then, clamping means may be provided to

clamp said second pole in position at said angle to the first. The clamping means may comprise a plate mounted between said cheek plates and a screw-threaded bolt threadedly mounted in an aperture in said plate and operable to clamp said second horizontal pole in said jaw. The cheek plates are preferably welded to the end of the horizontal scaffolding pole.

10 An example of the invention will now be particularly described with reference to the accompanying drawings, in which:

Figure 1 shows part of a horizontal cross-member scaffolding pole for a scaffolding framework;

Figure 2 is an end elevation of the part of the pole shown in Figure 1;

Figure 3 is a plan view of the pole of Figure 1 as seen from below; and

20 Figure 4 is an elevation of a vertical scaffolding pole for use with the pole of Figures 1 to 3.

Referring firstly to Figures 1 to 3, the horizontal cross-member scaffolding pole comprises a tube 10, two cheek plates 12 welded one to each side of the tube adjacent the end thereof to define a channel therebetween, a transverse plate 14 welded between the cheek plates and a bolt 16 screwed into a threaded aperture in the plate 14. Each of the cheek plates has a projecting portion 18 which is bent to fit closely against the periphery of the tube 10 and is welded along its edges to the tube. In this embodiment, the weld seams are spaced well apart. The main part of the plates 12 from which the portions 18 project each have a smoothly curved edge extending from an end of the projection 18 to one end of a recess in the form of an elongated slot 20. The slot 20 is substantially rectangular and it extends substantially perpendicularly to the axis of the tube 10 as seen in Figure 1.

45 The plate 14 is welded to a hooked portion 22 of each cheek plate, the portion 22 of the plate being spaced from the portion 18 by an opening 24. Each opening 24 has a curved end 26 against which a horizontal scaffolding pole at right angles to the cross-member can be pressed by the scaffolding bolt 16. The mouth of the opening through which a scaffolding pole can be inserted into the opening is wider than the diameter of curvature of the end 26, thus simplifying insertion of the scaffolding pole into the opening. The curved end 26 is off-set with respect to the mouth of the opening 24 so that any scaffolding pole inserted into the opening must move through a curve before it reaches the end 26 thereof.

The horizontal cross-member is identical at each end and can be used in a scaffolding framework with the vertical

scaffolding pole shown in Figure 4. The vertical scaffolding pole of Figure 4 comprises a tube 30 and two lugs in the form of rectangular shear blocks 32 with a longer dimension in the vertical direction, the lugs being welded at their ends to the tube 30. The tops of the shear blocks 32 are coplanar.

In use, two of the vertical scaffolding poles are spaced apart a distance equal to the distance between the slots 20 at opposite ends of the horizontal cross-member. Then, the cheek plates 12 of each end of the cross-member are pushed over a tube 30 with one cheek plate on each side of the tube. The slots 20 are located above the shear blocks 32 at this stage. The cross-member is then lowered so that the shear blocks 32 fit snugly into the slots in the cheek plates 12, the cross-member thus being held in a horizontal position. The tube 30 has pairs of shear blocks at predetermined positions along its length so that the cross-member can be supported at any height predetermined by the position of the shear blocks.

Another set of horizontal and vertical poles can be connected together as described above and positioned adjacent to the first set, so that the axes of curvature of the ends 26 of openings 24 of cheek plates 12 of adjacent horizontal poles are aligned. Then further horizontal scaffolding poles, mutually at right angles to the tubes 10 and 30, can be received in adjacent openings 24 and secured in the openings by the bolts 16. The bolts 16, when tightened, bear directly on the horizontal pole in the openings 24 and prevent the horizontal poles from sliding longitudinally in the openings.

By connecting further scaffolding poles to the vertical poles and by fixing further horizontal poles thereto, it is thus possible to erect a complete scaffolding framework. Since the slots 20 in the cheek plates 12 fit snugly over the shear blocks 32, the plates cannot rock on the blocks 32 and the erected framework can therefore be extremely rigid.

Although the vertical scaffolding member has been shown with a rectangular shear block secured thereto, this may be replaced by an inverted T-shaped lug welded to the tube 30. Also, the cheek plates 12 may be formed from a single sheet of metal folded over the tube 10 and welded thereto. The weld seams along the adjacent edges of the portions 18 then are no longer necessary.

WHAT WE CLAIM IS:—

1. A scaffolding framework of horizontal and vertical scaffolding poles wherein horizontal and vertical poles are joined together by scaffolding joints each com-



clamp said second pole in position at said angle to the first. The clamping means may comprise a plate mounted between said cheek plates and a screw-threaded bolt threadedly mounted in an aperture in said plate and operable to clamp said second horizontal pole in said jaw. The cheek plates are preferably welded to the end of the horizontal scaffolding pole.

An example of the invention will now be particularly described with reference to the accompanying drawings, in which:

Figure 1 shows part of a horizontal cross-member scaffolding pole for a scaffolding framework;

Figure 2 is an end elevation of the part of the pole shown in Figure 1;

Figure 3 is a plan view of the pole of Figure 1 as seen from below; and

Figure 4 is an elevation of a vertical scaffolding pole for use with the pole of Figures 1 to 3.

Referring firstly to Figures 1 to 3, the horizontal cross-member scaffolding pole comprises a tube 10, two cheek plates 12 welded one to each side of the tube adjacent the end thereof to define a channel therebetween, a transverse plate 14 welded between the cheek plates and a bolt 16 screwed into a threaded aperture in the plate 14. Each of the cheek plates has a projecting portion 18 which is bent to fit closely against the periphery of the tube 10 and is welded along its edges to the tube. In this embodiment, the weld seams are spaced well apart. The main part of the plates 12 from which the portions 18 project each have a smoothly curved edge extending from an end of the projection 18 to one end of a recess in the form of an elongated slot 20. The slot 20 is substantially rectangular and it extends substantially perpendicularly to the axis of the tube 10 as seen in Figure 1.

The plate 14 is welded to a hooked portion 22 of each cheek plate, the portion 22 of the plate being spaced from the portion 18 by an opening 24. Each opening 24 has a curved end 26 against which a horizontal scaffolding pole at right angles to the cross-member can be pressed by the scaffolding bolt 16. The mouth of the opening through which a scaffolding pole can be inserted into the opening is wider than the diameter of curvature of the end 26, thus simplifying insertion of the scaffolding pole into the opening. The curved end 26 is off-set with respect to the mouth of the opening 24 so that any scaffolding pole inserted into the opening must move through a curve before it reaches the end 26 thereof.

The horizontal cross-member is identical at each end and can be used in a scaffolding framework with the vertical

scaffolding pole shown in Figure 4. The vertical scaffolding pole of Figure 4 comprises a tube 30 and two lugs in the form of rectangular shear blocks 32 with a longer dimension in the vertical direction, the lugs being welded at their ends to the tube 30. The tops of the shear blocks 32 are coplanar.

In use, two of the vertical scaffolding poles are spaced apart a distance equal to the distance between the slots 20 at opposite ends of the horizontal cross-member. Then, the cheek plates 12 of each end of the cross-member are pushed over a tube 30 with one cheek plate on each side of the tube. The slots 20 are located above the shear blocks 32 at this stage. The cross-member is then lowered so that the shear blocks 32 fit snugly into the slots in the cheek plates 12, the cross-member thus being held in a horizontal position. The tube 30 has pairs of shear blocks at predetermined positions along its length so that the cross-member can be supported at any height predetermined by the position of the shear blocks.

Another set of horizontal and vertical poles can be connected together as described above and positioned adjacent to the first set, so that the axes of curvature of the ends 26 of openings 24 of cheek plates 12 of adjacent horizontal poles are aligned. Then further horizontal scaffolding poles, mutually at right angles to the tubes 10 and 30, can be received in adjacent openings 24 and secured in the openings by the bolts 16. The bolts 16, when tightened, bear directly on the horizontal pole in the openings 24 and prevent the horizontal poles from sliding longitudinally in the openings.

By connecting further scaffolding poles to the vertical poles and by fixing further horizontal poles thereto, it is thus possible to erect a complete scaffolding framework. Since the slots 20 in the cheek plates 12 fit snugly over the shear blocks 32, the plates cannot rock on the blocks 32 and the erected framework can therefore be extremely rigid.

Although the vertical scaffolding member has been shown with a rectangular shear block secured thereto, this may be replaced by an inverted T-shaped lug welded to the tube 30. Also, the cheek plates 12 may be formed from a single sheet of metal folded over the tube 10 and welded thereto. The weld seams along the adjacent edges of the portions 18 then are no longer necessary.

WHAT WE CLAIM IS:—

1. A scaffolding framework of horizontal and vertical scaffolding poles wherein horizontal and vertical poles are joined together by scaffolding joints each com-



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- prising a pair of vertically disposed cheek plates spaced from one another and secured to an end of a horizontal scaffolding pole, said plates being secured to said end on opposite sides thereof and projecting beyond said end to form a vertical channel which receives an intermediate part of the adjoining vertical pole, one or both said plates being provided with a downwardly open recess which is spaced from the horizontal pole end and which engages over a lug on the adjoining vertical pole and the channel being such that when the horizontal pole is lifted to disengage it from the lug or lugs the intermediate part of the adjoining vertical pole can be disengaged by movement in a horizontal direction.
2. A scaffolding framework according to claim 1, wherein the vertical poles are provided with a plurality of lugs at intervals along the length thereof for locating the horizontal poles at a variety of different heights.
3. A scaffolding framework according to claims 1 or 2, wherein the cheek plates are shaped to receive a second horizontal pole at an angle to the first horizontal pole and clamping means are provided to clamp said second pole in position at said angle to the first.
4. A scaffolding framework according to claim 3, wherein each cheek plate is provided with a downwardly hooked portion which forms a jaw to receive a second horizontal pole at right angles to the first.
5. A scaffolding framework according to claim 4, wherein the clamping means comprise a plate mounted between said cheek plates and a screw-threaded bolt threadedly mounted in an aperture in said plate and operable to clamp said second horizontal pole in said jaw.
6. A scaffolding framework according to any preceding claim, wherein the downwardly open recess comprises a downwardly open vertical slot in the lower edge of one or both cheek plates and the lug or lugs on the vertical pole comprise projecting fin(s) which are a close fit in said vertical slot(s).
7. A scaffolding framework according to claim 6, wherein the or each lug is of rectangular elevation with a longer dimension in the vertical direction.
8. A scaffolding framework according to claim 6, wherein the or each lug is of inverted T-shaped elevation.
9. A scaffolding framework according to any one of the preceding claims, wherein the cheek plates are welded to the end of the horizontal scaffolding pole.
10. A scaffolding pole for use in a scaffolding framework as claimed in claim 1, said pole having at one or both ends a pair of spaced cheek plates secured thereto on opposite sides thereof, and projecting beyond said end to form a channel for receiving an intermediate part of a second scaffolding pole in a sideways direction to the second pole, the second pole being at right angles to the first pole, one or both cheek plates having in one edge and spaced from said end a recess adapted to receive a lug on said second pole whereby the cheek plate(s) and thus the first pole may be supported and held by the lug(s) when the first pole is horizontal and the second is vertical and the poles are assembled together.
11. A pole according to claim 10, wherein said recess comprises an open ended slot formed in an edge of one or both cheek plates, said slot or slots being adapted to fit over a projecting fin or fins formed on said second pole.
12. A pole according to claim 10 or 11, wherein the cheek plates are shaped to receive a third scaffolding pole at an angle to the first and second poles, and means are provided to clamp said third pole in position relative to said first and second poles.
13. A pole according to claim 12, wherein each cheek plate is provided with a hooked portion which forms a jaw to receive said third pole at right angles to said first and second poles.
14. A pole according to claim 13, wherein the clamping means comprise a plate mounted between said cheek plates and a screw-threaded bolt threadedly engaged in an aperture in said plate and operable to clamp said third pole in said jaw.
15. A pole according to any one of claims 10 to 14, wherein the cheek plates are welded to the pole.
16. A scaffolding system comprising poles according to any one of claims 10 to 15 and poles having lugs thereon which are adapted to mate with said recesses of the first poles.
17. A scaffolding framework according to claim 1, wherein the horizontal and vertical members are joined by joints substantially as hereinbefore described with reference to the accompanying drawings.
18. A scaffolding pole according to claim 10, substantially as hereinbefore described with reference to the accompanying drawings.

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