June 21, 1955 L. O. DAHLSTROM 2,711,002

WALER STRUCTURES FOR FORMS, SHEETINGS, COFFERDAMS AND THE LIKE AND COMBINED WALER AND CLAMPING BRACKETS FOR USE THEREIN

Filed Nov. 5, 1952 2 Sheets-Sheet 1

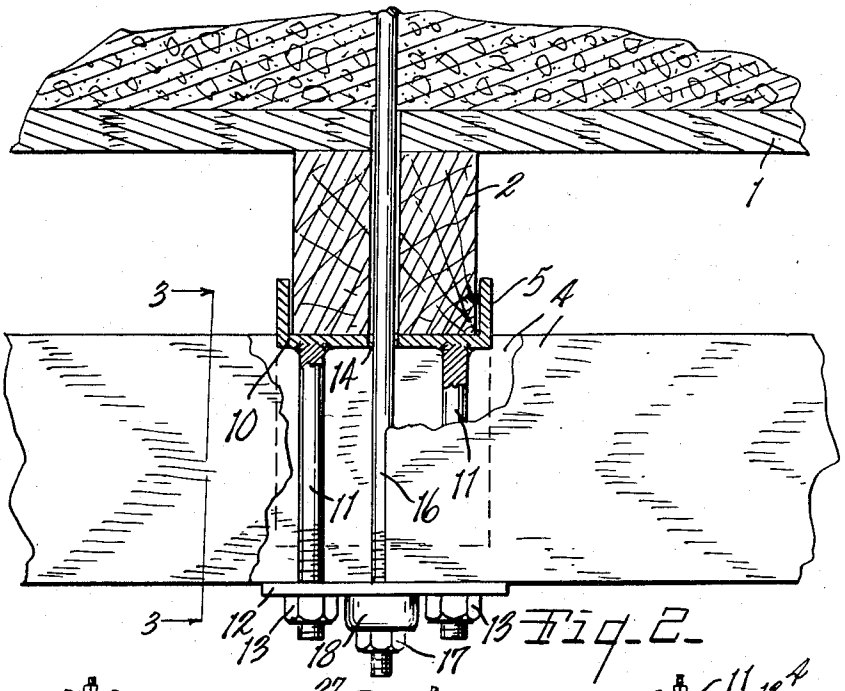


Fig. 2.

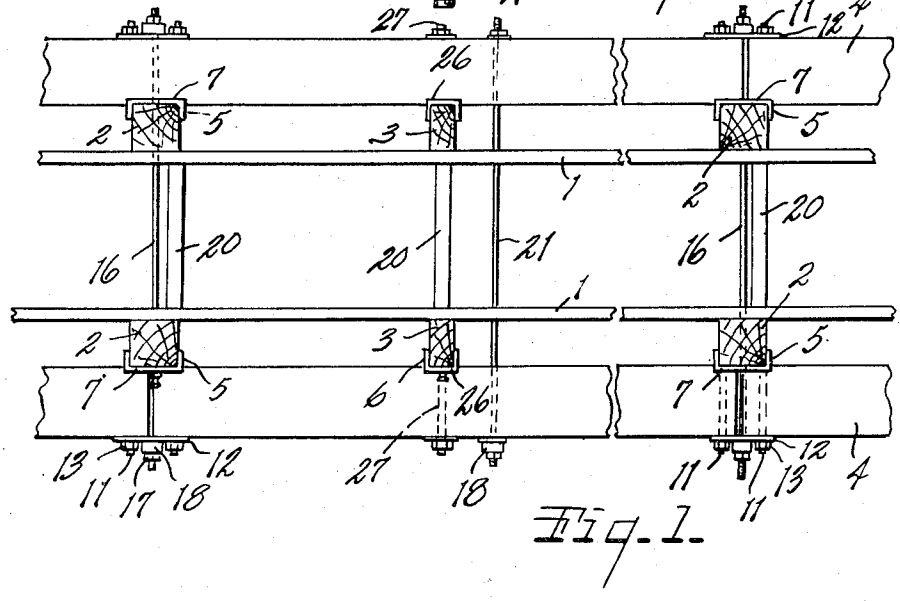


Fig. 1.

INVENTOR.
Louis O. Dahlstrom
BY
Attorney.

June 21, 1955 L. O. DAHLSTROM 2,711,002

WALER STRUCTURES FOR FORMS, SHEETINGS, COFFERDAMS AND THE LIKE AND COMBINED WALER AND CLAMPING BRACKETS FOR USE THEREIN

Filed Nov. 5, 1952 2 Sheets-Sheet 2

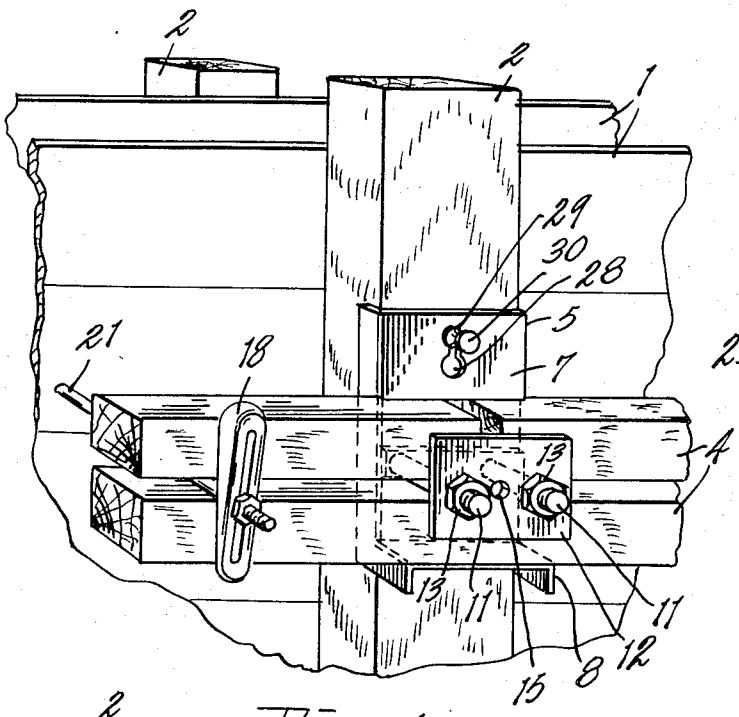


Fig. 4.

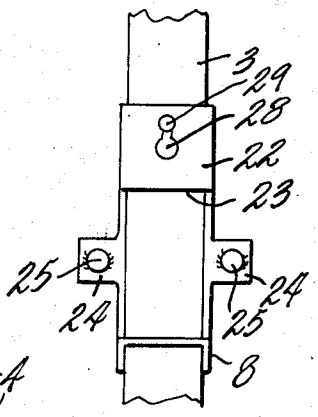


Fig. 5.

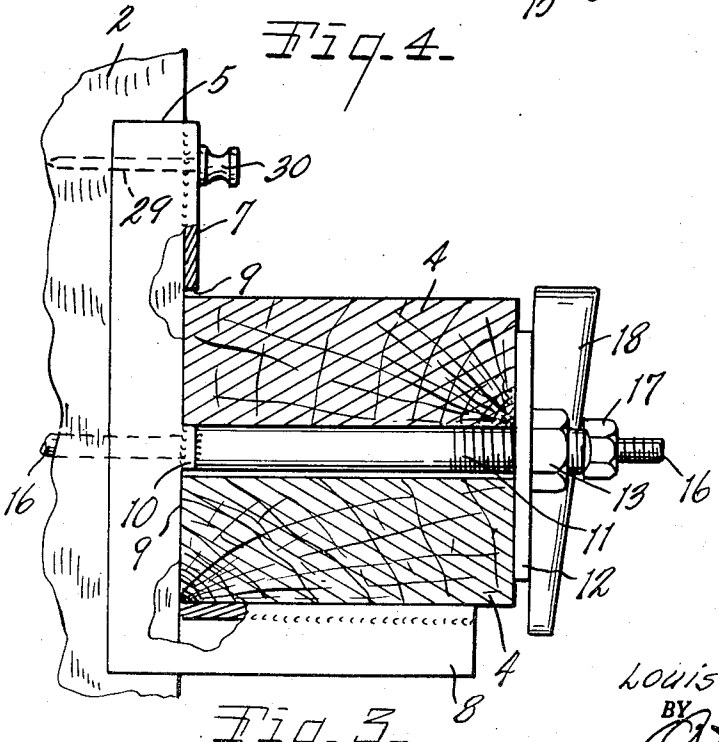


Fig. 3.

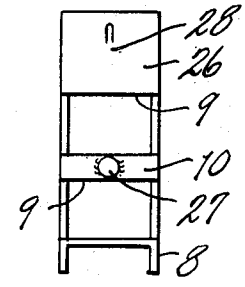


Fig. 6.

INVENTOR.
Louis O. Dahlstrom
BY
Otis A. Earl
Attorney.

United States Patent Office 2,711,002 Patented June 21, 1955

2,711,002

WALER STRUCTURES FOR FORMS, SHEETINGS, COFFERDAMS AND THE LIKE AND COMBINED WALER AND CLAMPING BRACKETS FOR USE THEREIN

Louis O. Dahlstrom, Benton Harbor, Mich.

Application November 5, 1952, Serial No. 318,875

18 Claims. (Cl. 25—131)

This invention relates to improvements in waler structures for forms, sheetings, trenches, cofferdams and the like and combined waler and clamping brackets for use therein.

The main objects of this invention are:

First, to provide a wall structure of the type described which may be quickly erected and eliminates the use of spikes and nails in securing the waler timbers in position.

Second, to provide a structure of this character in which the walls are very effectively supported and braced and may be quickly erected and quickly knocked down and the materials used repeatedly.

Third, to provide a combined waler bracket and clamp member which forms an effective support for the connected parts and is adapted for use with timber of varying dimensions and is adjustable to compensate for shrinkage thereof.

Fourth, to provide a waler bracket and clamp member in which the waler members are clamped into direct contact with the uprights with which they are associated thereby providing a wood to wood clamping engagement.

Fifth, to provide a combined waler bracket and clamp member with which a form tie rod may be associated to provide an effective connection for the tie rod to the upright and ends of aligned waler members associated therewith and supported by the bracket member.

Sixth, to provide a combined bracket and clamp member which has a wide range of adaptation in the structures in which they are used.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary plan view of a form embodying my invention and in which the combined waler bracket and clamp members of my invention are incorporated.

Fig. 2 is an enlarged fragmentary view partially in horizontal section with parts being broken away to disclose structural details.

Fig. 3 is an enlarged fragmentary view partially in vertical section on a line corresponding to 3—3 of Fig. 2.

Fig. 4 is a fragmentary front perspective view.

Fig. 5 is a fragmentary elevational view of a modified form or embodiment of my waler bracket and clamp mounted upon an upright.

Fig. 6 is a front elevational view of a further modification or embodiment of my waler bracket and clamp.

In the accompanying 1, 1 represents the walls of a form, 2 and 3 represent uprights or studding on the outside of the walls. The uprights 2 may be 4 x 4's and the uprights 3 as 2 x 4's as is quite common practice in large forms. It will be understood, of course, that any desired timbers may be used for this purpose. However, the uprights 2 and 3 are illustrated as interspaced as that results in a saving of material and is usually a satisfactory arrangement when my invention is embodied in the form.

The wale or waler members 4 are disposed in aligned pairs. I use the term waler in this application as that is the generally used term in the industry to which my invention relates.

In the structure illustrated I employ two forms of my combined waler bracket and clamp member designated generally by the numerals 5 and 6. The members 5 being particularly well adapted for use in securing the ends of aligned walers to the uprights 2 while the combined bracket and clamp members 6 are designed for use on intermediate uprights 3.

My improved waler bracket and clamp member 5, as illustrated in the drawing, comprises the base member 7 of rearwardly facing channel section and provided at its lower end with forwardly projecting waler supporting arm 8 also desirably of downwardly facing channel section. The base member has transverse vertically spaced slot-like openings 9 therein, these openings being spaced to provide a cross piece 10. Horizontally spaced clamping rods 11 project forwardly from this cross piece to receive the clamping plate 12, the rod being threaded to receive the clamping nuts 13. The base plate is provided with an opening 14 while the clamping plate has an opening 15 aligned therewith to receive a tie rod 16.

The waler members 4 are arranged in vertically spaced aligned pairs, as is illustrated, with adjacent ends of the lower waler resting upon the forwardly projecting arms of the bracket member and the upper waler members resting upon the clamping rods 11.

The inner edges of the waler members are disposed in slot-like openings 9 in directly supported engagement with the outer side of the upright 2. The adjacent ends of the waler are commonly somewhat spaced as is illustrated although they might be in abutting relation as they are disposed in planes above and below the planes of the clamping rods 11 and the tie rods 16. The tie rods have threaded ends receiving the nuts 17 which serve as abutments for the clamping wedges 18 which permits very effective clamping. The clamping wedges may be used if desired with the nuts 13 on the clamping rods 11. Suitable spreaders conventionally shown at 20 are disposed between the walls preferably in alignment with the uprights 2 and 3. Tie rods 21 are disposed between the uprights as may be desired and provided with wedge type clamping members 18.

In the embodiment shown in Fig. 5 the base member 22 has a vertically elongated opening 23 therein, the cross piece 10 of the embodiment of Figs. 1 to 4 inclusive being omitted. The flanges of the base member are provided with laterally projecting ear-like portions 24 to which the clamping rods 25 are secured.

In the embodiment shown in Fig. 6 the base member 26 is provided with a single clamping rod 27. All the embodiments are provided with keyhole slots 28 adapted to be engaged with a hanger nail 29 which, is illustrated, is provided with a grooved head 30 facilitating its withdrawal. In use, after the form wall has been erected with the uprights positioned thereon, the waler bracket and clamp members are mounted in suitable position on the uprights by engaging them with hanger nails.

It will be understood that in practice the waler brackets are vertically spaced according to the requirements of the desired waler assembly. I have not illustrated such vertical spaced relation as such vertical spacing is commonly practiced in the art. I have not illustrated other adaptations of my invention, that is, adaptations to other types of structures as it is believed that this disclosure will enable those skilled in the art to embody or adapt the same as may be desired.

In the wall structure illustrated the bracket members 6 are employed between the bracket members 5 which are used to support and connect the ends of the waler members. The single clamping rod 27 is provided with a clamping plate 31 with which the clamping nut 32 coacts.

The combined waler bracket and clamp of my invention greatly expediates the erection of the form or wall and the disassembly thereof. The timbers used as walers are not split or injured as is likely the case where they are nailed to some other part and the structure is very much stronger than that resulting from nailing the parts together. The waler timbers may be repeatedly used or may be used for other purposes after having been used as walers.

I have not attempted to illustrate or describe certain modifications in the combined bracket and clamp members of my invention as it is believed that this disclosure will enable those skilled in the art to embody or adapt my invention as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a combination with a wall structure having an upright on the outer side thereof, of a combined waler bracket and clamp member comprising a base of inwardly facing channel section disposed on the outer side of the upright and having vertically spaced waler member receiving slots therein and having a forwardly projecting waler supporting arm at its lower end and a pair of horizontally spaced threaded rods disposed between said slots in said base and in spaced relation to said supporting arm, a clamping plate disposed on said rods, said rods being provided with said clamping nuts, said base and clamping plate having aligned tie rod openings, aligned pairs of vertically spaced waler members, the lower waler members being disposed on said bracket arm and the upper waler members of the pair being disposed above said clamp rods, the inner edges of said waler members being disposed in said slots in said base in supported engagement with said upright, said clamping plate being clamped upon the outer edges of the waler members, and a tie rod disposed through the upright and the openings in said base member and clamping plate and provided with adjustable clamping means at the outer side of and in supported engagement with said clamping plate.

2. In combination with a wall structure having an upright on the outer side thereof, of a combined waler bracket and clamp member comprising a base of inwardly facing channel section disposed on the outer side of the upright and having vertically spaced waler member receiving slots therein and having a forwardly projecting waler supporting arm at its lower end and a pair of horizontally spaced threaded rods disposed between said slots in said base and in spaced relation to said supporting arm, a clamping plate disposed on said rods, said rods being provided with said clamping nuts, aligned pairs of vertically spaced waler members, the lower waler members being disposed on said bracket arm and the upper waler members of the pair being disposed above said clamp rods, the inner edges of said waler members being disposed in said slots in said base in supported engagement with said upright, said clamping plate being clamped upon the outer edges of the waler members.

3. In combination with a wall structure having an upright on the outer side thereof, of a combined waler bracket and clamp member comprising a base disposed on the outer side of the upright and having vertically spaced waler member receiving openings therein and having a forwardly projecting waler supporting arm below said openings and forwardly projecting clamp rods disposed between said openings in said base and in spaced relation to said supporting arm, a clamping plate disposed on the ends of said rods, said rods being provided with adjustable clamping means at the outer side of said clamping plate, said base and clamping plate having aligned tie rod openings, aligned pairs of vertically spaced waler members, the lower waler members being disposed on said bracket arm and the upper waler members of the pair being disposed above said clamp rods, the inner edges of said waler members being disposed in said openings in said base in supported engagement with said upright, said clamping plate being clamped upon the outer sides of the waler members, and a tie rod disposed through the upright and the openings in said base member and clamping plate and provided with adjustable clamping means at the outer side of and in supported engagement with said clamping plate.

4. In combination with a wall structure having an upright on the outer side thereof, of a combined waler bracket and clamp member comprising a base disposed on the outer side of the upright and having vertically spaced waler member receiving openings therein and having a forwardly projecting waler supporting arm below said openings and forwardly projecting clamp rods disposed between said openings in said base and in spaced relation to said supporting arm, a clamping plate disposed on the ends of said rods, said rods being provided with adjustable clamping means at the outer side of said clamping plate, aligned pairs of vertically spaced waler members, the lower waler members being disposed on said bracket arm and the upper waler members of the pair being disposed above said clamp rods, the inner edges of said waler members being disposed in said openings in said base in supported engagement with said upright, said clamping plate being clamped upon the outer sides of the waler members.

5. In combination with an upright, of a combined waler bracket and clamp member comprising a base disposed on the outer side of the upright and having a forwardly projecting waler supporting arm and a forwardly projecting clamp rod disposed above and in spaced relation to said supporting arm, said rod being provided with adjustable waler clamping means, said base having a tie rod opening, aligned waler members, disposed on said bracket arm, said waler members being clamped upon said bracket by said clamping means with their inner edges in contacting supported engagement with said upright, and a tie rod disposed through said bracket base member and clampingly connected to said waler members.

6. In combination with an upright of a combined waler bracket and clamp member comprising an upright engaging base having a waler member receiving opening therein and having a forwardly projecting waler supporting arm below said opening and a forwardly projecting clamp rod disposed above and in spaced relation to said supporting arm, a clamping plate disposed on said rod, said rod being provided with adjustable clamping means at the outer side of said clamping plate, said base and clamping plate having aligned tie rod openings, a waler member disposed on said bracket arm with its inner edge disposed in supported engagement with said upright, said clamping plate being clamped upon the outer side of the waler member, and a tie rod disposed through the openings in said base member and clamping plate and provided with adjustable clamping means at the outer side of and in supported engagement with said clamping plate.

7. In combination with an upright, a combined waler bracket and clamp member comprising a base mounted on the upright and having a forwardly projecting waler supporting arm and a forwardly projecting clamp rod disposed above and in spaced relation to said supporting arm, said rod being provided with adjustable waler clamping means, said base having a tie rod opening, a waler member disposed on said bracket arm and clamped upon said bracket by said clamping means and a tie rod disposed through said bracket base member and clampingly connected to said waler member.

8. A combined waler bracket and clamp member comprising a base of inwardly facing channel section adapted to be disposed on an upright of a form wall or the like and having vertically spaced waler member receiving slots

therein and having a forwardly projecting waler supporting arm at its lower end and a pair of horizontally aligned spaced threaded rods disposed between said slots in said base and in spaced relation above said supporting arm, and a clamping plate adjustably supported by said rods, said rods being provided with clamping nuts, said base and clamping plate having aligned tie rod openings.

9. A combined waler bracket and clamp member comprising a base of inwardly facing channel section adapted to be disposed on an upright of a form wall or the like and having vertically spaced waler member receiving slots therein and having a forwardly projecting waler supporting arm at its lower end and a pair of horizontally aligned spaced threaded rods disposed between said slots in said base and in spaced relation above said supporting arm, and a clamping plate adjustably supported by said rods, said rods being provided with clamping nuts.

10. A combined waler bracket comprising a base adapted to be engaged with a support and having a forwardly projecting waler supporting arm and a forwardly projecting clamping rod spaced above said supporting arm, and a clamping plate adjustably supported by said rod, said rod being provided with a clamping nut, said base and clamping plate having aligned tie rod openings.

11. A combined waler bracket and clamp member comprising a base of inwardly facing channel section adapted to be disposed on an upright of wall or the like and having a keyhole slot therein to receive a suspending element on the upright, and a forwardly projecting waler supporting arm and a clamp rod disposed above and in spaced relation to said supporting arm, and adapted to receive a whaler clamping element.

12. The combination with an upright, of a combined waler bracket and clamp member comprising a base disposed on the face side of the upright and having a forwardly projecting waler supporting arm, there being a transverse opening through the base above said arm adapted to receive a waler, said bracket having a forwardly projecting clamping rod disposed in vertically spaced relation to said supporting arm, said clamping rod being provided with adjustable waler clamping means, and aligned waler members disposed on said bracket arm with portions of their inner edges within said opening and in supported contacting engagement with said upright, said waler members being clamped upon said upright by said clamping means on said rod.

13. The combination with an upright, of a combined waler bracket and clamp member comprising a base disposed on the front face of the upright and having a forwardly projecting waler supporting arm and a transverse opening therethrough above said arm, said bracket having a forwardly projecting clamping rod disposed in vertically spaced relation to said supporting arm, a clamping plate disposed on said rod, said rod being provided with adjustable clamping means at the outside of said clamping plate, and a waler member disposed on said bracket arm with its inner edge in said opening in said

base in contacting supported engagement with said upright, said clamping plate being clamped upon the outer side of the waler member to clamp the inner side of the waler member against said upright.

14. The combination with an upright, of a combined waler bracket and clamp member comprising a base mounted on the face of said upright and having a forwardly projecting waler supporting arm and a transverse waler receiving opening therein above said arm, a forwardly projecting rod disposed in spaced relation to said supporting arm, said rod being provided with adjustable waler clamping means, and a waler member disposed on said bracket arm with its inner edge within said opening in supported contacting engagement with said upright and clamped thereagainst by said clamping means.

15. The combination with an upright, a combined waler bracket and clamp member comprising a base disposed on the face of the upright and having transverse openings therethrough, said bracket having a forwardly projecting clamping rod fixedly connected thereto between said openings, said rod being provided with adjustable waler clamping means, and waler members disposed in said openings in contacting supported engagement with said upright and supportedly clamped upon said upright by said clamping means.

16. A combined waler bracket and clamp member comprising a base adapted to be positioned on the front face of a support and having a forwardly projecting waler supporting arm, said base having a waler receiving opening therein above said arm, said bracket having a forwardly projecting clamping rod fixedly connected thereto and spaced above said supporting arm, and a clamping plate adjustably supported by said rod, said rod being provided with a clamping nut.

17. A combined waler bracket and clamp member comprising a base adapted to be positioned on the front face of a support and having a forwardly projecting waler supporting arm, said base having a waler receiving opening therein above said arm, said bracket having a forwardly projecting clamping rod fixedly connected thereto and spaced above said supporting arm, and adjustable waler clamping means on said rod.

18. A combined waler bracket and clamp member comprising a base adapted to be positioned on the front face of a support and having a forwardly projecting waler supporting arm and a waler receiving opening above said arm, a pair of laterally spaced rods fixedly connected to said base, said base having waler receiving openings above and below said rods, and adjustable waler clamping means carried by said rods.

References Cited in the file of this patent

UNITED STATES PATENTS

1,629,899	Wustholz	May 24, 1927
2,126,251	Gaetke	Aug. 9, 1938
2,452,203	Luppino	Oct. 26, 1948