Sept. 16, 1969 E. J. HOLL 3,466,874

EARTH SHORING MEANS

Filed Oct. 6, 1967

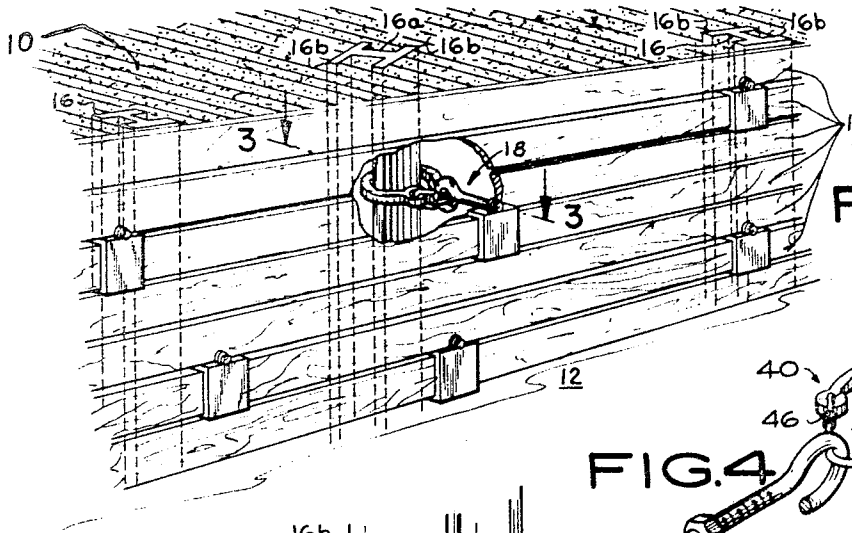


FIG. 1

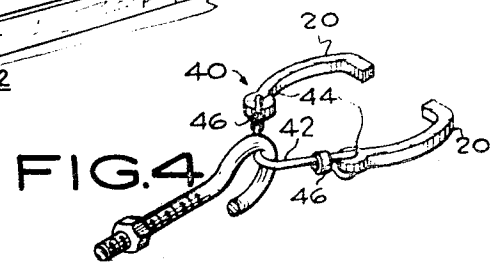


FIG. 4

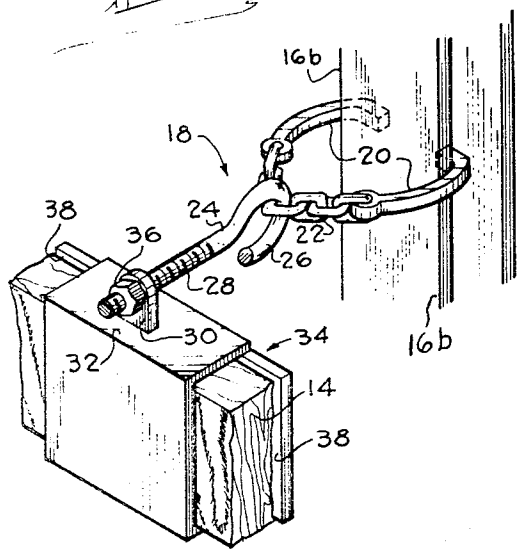


FIG. 2

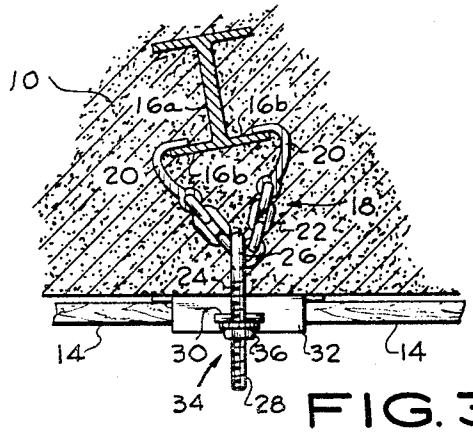


FIG. 3

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EARTH SHORING MEANS

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U.S. Cl. 61—39 2 Claims

ABSTRACT OF THE DISCLOSURE

Opposing hooks have outer-end hook portions engaging rear surfaces of oppositely extending coplanar flanges of an upright stanchion, said hooks extending about the edges of said flanges and having their inner ends spaced apart between and spaced from front surfaces of said stanchions and a related, horizontal sheeting element; the hook's inner ends being interconnected by a distortable connection, and tension means being connected between an intermediate part of said distortable connection and tightenable to prevent dislodgement of said hook portions from their engagement with said rear, flange surfaces.

Related application

In some embodiments of this invention, use may be made of the invention disclosed and claimed in my copending application, Ser. No. 627,542, filed Mar. 31, 1967.

Background of the invention

Means for supporting earth against collapse during or after making an excavation have commonly included a substantially straight row of spaced stanchions with a wall of planks or metal sheeting placed either in back of the stanchions between the latter and excavated earth or in front of the stanchions. In the latter arrangement means have been provided for fastening the planks to the stanchions, usually by using a special form of clamp for securing the planks to a flange of each stanchion.

When the stanchions are driven into the earth, however, as an initial step in forming the excavation, it is practically impossible to drive them in good alignment with their flanges substantially in a common vertical plane parallel to the plane of the planks to be applied to the front faces of the stanchions. Usually, one or more of the stanchions are rearward relatively to other stanchions which are in line and/or are cocked with their flanges extending angularly rather than in parallelism with the planks to be subsequently applied.

The principal object of this invention is to provide improved, simple, economical, yet very effective means for securing shoring planks to such a malaligned and/or cocked stanchion.

The drawing

FIG. 1 is a perspective, front view of a shoring wall of planks disposed in front of plural stanchions with a connector according to a first preferred embodiment of this invention holding planking in place in relation to a malaligned, cocked stanchion.

FIG. 2 is a perspective view of the connector shown in FIG. 1.

FIG. 3 is a horizontal, sectional view substantially on the line 3—3 of FIG. 1.

FIG. 4 is a perspective view of a second embodiment.

Details of the disclosed embodiments

In FIG. 1, earth **10** defining an excavation having a floor **12**, is held against collapsing inwardly by planks or sheeting **14** secured by suitable means to the inner faces of aligned upright beams or stanchions **16**. The

mentioned securing means may be slidable clips as disclosed in said copending application or may be a modified form of such slidable clips as disclosed herein. Other suitable securing means may, of course be used.

This invention relates to means for securely connecting the planks or sheeting to a non-aligned or cocked beam or stanchion such as is shown at **16***a*.

The first embodiment of this invention, shown at **18** in FIGS. 1, 2, and 3, is most clearly illustrated in the two latter figures. This, or any other embodiment of this invention, may be applied to a malaligned stanchion at as many vertically spaced points thereon as the judgment of the user dictates.

The first embodiment comprises a pair of strong, metal hooks **20**, interconnected by a sturdy chain **22**, and a bolt **24**, through the eye head **26** of which the chain extends.

The two hooks engage about and in back of adjacent flanges **16***b* of the stanchion **16***a*. The stanchions are shown as H beams although I beams or stanchions of other cross sectional shapes may be employed.

According to a preferred way of connecting the connector **18** to a plank **14**, a threaded end **28** of the bolt **24** extends through a suitable bolt hole in an integral lug **30** of a horizontal wall **32** of a sturdy clip **34**, slidably carried upon a plank **14**. A nut **36** is tightened on the bolt **24**, against the lug **30** to tension the bolt, chain and hooks between the stanchion flanges **16***b* and the lug **30**.

Except for the lug **30**, the clip **34** is similar to a clip shown in said copending application, and may be used, also, for securing planks to properly aligned stanchions in the same manner as set forth in said copending application. If the slidable clip is to be used only with reference to malaligned and/or cocked stanchions, the clip need not be provided with the extensions **38** shown in the drawing. Also, the lug **30** may be provided with a bolt receiving slot rather than a bolt hole so that the bolt may be associated with said lug without removing the nut **36** from the bolt.

It will be seen that tensioning of the parts of the connector by tightening of the nut **36** serves to enhance the engagement of the hooks **20** in back of the flanges **16***b* and serves also to hold a related plank against bending inwardly from the weight of the shored earth.

A connector **40**, shown as a second embodiment in FIG. 4, differs from the first embodiment chiefly in that a cable **42** is substituted for the chain **22**. The ends of the cable are extended through eyes **44** of the hooks **20**, then folded back and fixed to the remainder of the cable by clamps **46** or their equivalent. The bolt **24** may be connected to a clip such as clip **34** (FIG. 2) on a related plank to hold the latter in place against the shored earth, or the connector may be connected to a plank or planks by any suitable means.

It should be observed that tensioning of the connectors causes the two hooks to engage separately and firmly in back of two side flanges of a cocked and/or malaligned stanchion. As such tensioning is effective at the connection between the hooks, the tension, together with the engagement of the hooks with said flanges, causes the hook ends continuously to tend to move inwardly toward each other so that there is no tendency for the hooks to move outwardly to become disengaged from a related stanchion.

Those familiar with the subject art will realize that the novel concepts disclosed herein may be employed in other ways without departing from the invention.

I claim:

1. Earth shoring means comprising plural, flanged, stanchions of suitably strong metal, set firmly, approximately vertically, in the earth, spaced in an approximately straight row, each of said stanchions having oppositely extending, coplanar flanges with substantially flat rear surfaces extending approximately in a common vertical plane,

and said flanges of the plural stanchions having front surfaces facing and relatively close to open areas from which the earth has been excavated; approximately horizontal, elongate sheeting elements disposed in an approximately vertical plane at said open area in spaced relationship to said front surfaces; and plural fastening assemblies for tensionably connecting said sheeting elements to said stanchions; each of said fastening assemblies comprising a pair of opposed, spaced rigid, hook members disposed with inwardly facing hook portions at their outer ends in engagement with said rear surfaces, with intermediate portions extending about the edges of said flanges, and with inner ends of said hook members disposed between and spaced from said front surfaces and said sheeting elements and spaced from each other to an extent less than the combined width of said opposed flanges; a distortable connection, interconnecting said inner ends of the hook members; and adjustable tensioning means interconnecting an intermediate part of said distortable connection and an adjacent one of said sheeting elements; whereby tightened adjustment of said tensioning means tightens said distortable connection and prevents dislodgement of said hook portions from their engagement with said rear surfaces of said flanges.

2. Earth shoring means according to claim 1, further including a clip, retained upon and slidable along a related sheeting element; and said tensioning means comprising a bolt, connected at one of its ends to said distortable connector, and having its other end threaded and extending through a portion of said clip, and a nut threaded onto and tightenable on said threaded end to establish tension between said related sheeting element and a related stanchion.

References Cited

UNITED STATES PATENTS

60,758	1/1867	Lewis	294—85
1,894,895	1/1933	Steele et al.	294—85 X
3,084,893	4/1963	Ruth	248—228
3,155,206	11/1964	Booth	61—39 X
3,201,167	8/1965	Wampler	294—106 X

FOREIGN PATENTS

37,858	9/1923	Norway.

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52—484; 248—228; 294—85, 106