

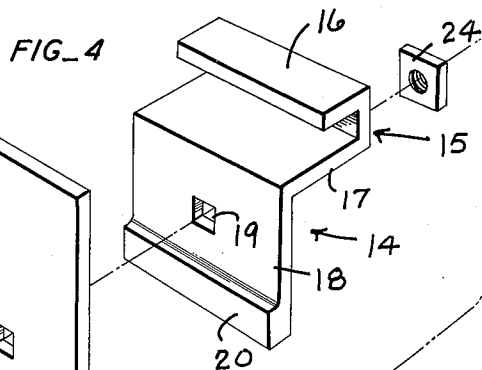
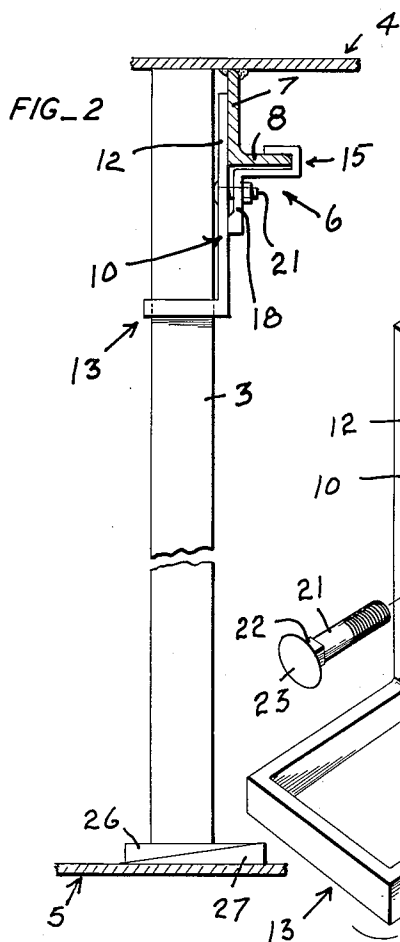
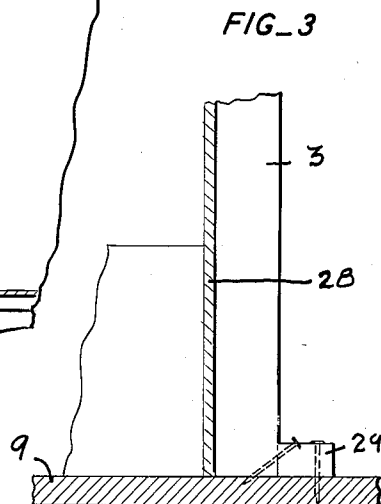
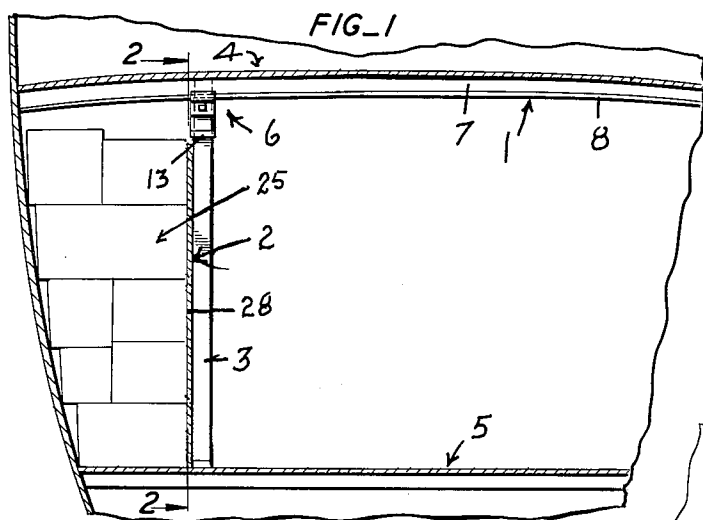
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SHORING CLAMP

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SHORING CLAMP

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This invention relates to a beam shoring clamp, and has for one of its objects the provision of a device adapted for use in positioning and holding studs between decks in a ship, which studs may be in a shoring fence employed in securing cargo.

Another object of the invention is the provision of beam shoring clamps adapted to support studding used in the shoring fences for securing cargo, and which clamps may be removably secured to the beams at any of the points desired along said beams, irrespective of the camber of the latter, for holding the studs at their upper ends when the studs are supported on the deck below said beams.

A still further object of the invention is the provision of a beam shoring clamp that is simple, economical to make and to use, and that is adapted to firmly but releasably grip the horizontal lower flanges of a conventional steel deck supporting beam at any desired point along the latter, and which clamp is provided with means for slidably receiving the upper end of studs used in a shoring fence to support such upper end irrespective of the length of the stud, provided it is of sufficient length to project into said means when supported on a deck below the beam.

The principle involved in the design is to provide positive locking means for the studs of a shoring fence at the points of greatest strain, i.e., at the top of the shoring. The manner in which the studding is secured at the deck level is not here involved. It is important, however, that the beam clamps for the upper ends of the studs be applicable, with equal facility, to any normal condition that is encountered, and that they should not be secured to the studs, as by clamps, nails, screws etc., nor should the lengths of the studs used be critical in order that the clamps be effective.

Other objects and advantages will appear in the description and in the drawings.

In the drawings:

Fig. 1 is a vertical sectional view that is illustrative of a stud in a shoring fence disposed between decks and held at its upper end by a shoring clamp.

Fig. 2 is an enlarged sectional view taken along line 2—2 of Fig. 1 and broken in length.

Fig. 3 is a sectional view of the lower end of a stud where there is a wood ceiling.

Fig. 4 is an exploded view of the beam shoring clamp used at the upper end of each stud.

It is to be understood that Fig. 1 is merely illustrative of one application of the beam shoring clamps, inasmuch as they are equally useful for constructing special storage compartments where and when needed, and for use on transverse framing members for lateral bracing of cargo, explosive magazines, grain shifting boards, and/or feeders, etc. The clamp itself in each instance will be substantially the same.

In detail, Fig. 1 shows a deck supporting beam 1 extending thwartwise of the ship, and a shoring fence 2 that includes a stud 3 extending between deckhead 4 and deck

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5 and which stud is held at its upper end to beam 1 by a shoring clamp 6, the latter being shown in detail in Fig. 4.

The conventional beam 1, as seen in Fig. 2, comprises a vertical, horizontally extending web 7 having a horizontal flange 8 integral therewith along its lower edge. The web 7 is welded along its upper edge to the deckhead 4. The beam 1 and the deckhead have the usual camber.

The beam shoring clamp employed is identical where there is a wooden ceiling such as indicated at 9 in Fig. 3, being understood that the ceiling 9 is normally on a steel deck.

The clamp 6 comprises a vertically disposed and vertically elongated plate 10 that is formed with a rectangular opening 11 approximately centrally between its ends and between its vertical side edges.

The portion 12 of the plate 10 above the opening 11 may be called a clamping jaw, inasmuch as this portion is adapted to be clamped against the face or beam-web side of the beam 1, as seen in Fig. 2.

A lateral projection 13, integral with the lower end of the plate provides a rectangular opening one side of which is the lower end of the plate 10. This projection 13 is adapted to slidably pass therethrough the upper end of stud 3, the latter usually being approximately 4" x 4" in cross sectional contour. Thus the upper end of said stud will be at the same side of the plate 10 as the projection 13, and at the beam-web side of the beam 1.

An element 14 is at the side of the plate 10 opposite to the projection 13, and said element is approximately the same width, from its upper to its lower end, as plate 10 and is formed at its upper end to provide a laterally directed channel portion 15 adapted to receive the flange 8 therein. Thus the open lateral side of the portion 15 will be directed toward the clamping jaw 12, which jaw, as has been noted, is the upper end of plate 10.

The upper side 16 of the channel portion 15 is shorter than the lower side 17 (Fig. 4). By this structure, when the flange 8 is seated against the bottom of the channel 15, the lower side 17 of the channel will terminate fairly close to plate 10, although the upper side 16 does not reach the web 7 of flange 1.

Element 14 has a leg 18 integral therewith that depends from the free edge of the lower side 17 of the channel 15, and this leg is formed with an opening 19 that is adapted to align with the opening 11 in plate 10.

The leg 18 extends a distance below opening 19 and is formed along its lower edge with a foot 20 that projects toward the plate 10.

A carriage bolt 21 is adapted to extended through openings 11, 19 so that its square shank 22 will be held in opening 11 against rotation with the head 22 at the side of plate 10 opposite to element 14. Nut 24 on bolt 21 is adapted to draw the channel portion 15 of element 14 and the jaw 12 of plate 10 tightly against the beam 1, with the flange 8 in said portion 15 and jaw 12 against the beam-web side of the beam. Thus the channel portion 15 forms a clamping jaw that is opposed to jaw 12. The foot 20 functions as a fulcrum about which the channel portion or jaw 15 may swing.

Assume the shoring fencing is to be installed between a steel deckhead 4 and a steel deck 5. After cargo 25 is stowed (Fig. 1) the conventional fence 28 is positioned against it. Studs 3, each with a clamp 6 at its upper end, are positioned adjacent to the beams 1 with jaws 12, 15 of the clamps at opposite sides of each beam with flange 8 of each beam in the jaw 15. Each stud may be moved tightly against the fencing and each clamp is then tightened against the beam that is between the clamping jaws by tightening each nut 24. Counter driven wedges 26, 27 (Fig. 2) extending fore and aft below each stud will function to force the stud against the deck-

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head 4, and will hold the lower end of each stud in position with adequate firmness.

Where there is a wooden ceiling 9 (Fig. 3), cleats 29 may be toenailed to the studs 3 and the cleats nailed to the ceiling at the inboard sides of the studs. The lengths of the studs may vary, provided they extend through the projections 13 of the clamps.

The degree of the camber of the beam is immaterial, since the element 14 is adapted to pivot about the axis of the bolt 21 so that the stud may be held vertical but the element 14 may pivot to follow the flange 8.

By the above system in which the clamping elements 14 are employed, the studs are quickly adjustable to different positions along the beams and may be secured to the beams in adjusted positions of the studs. Also the clamps and studs are quickly removable and no projections are left on the deck or ceiling. Furthermore, the lengths of the posts are not critical, and the clamps may be quickly slipped off the studs.

It is to be understood that the illustrations and descriptions are not intended to be restrictive of the invention, and the claims are intended to cover modifications coming within the scope of the invention.

I claim:

1. A beam shoring clamp comprising: a pair of spaced, opposed clamping jaws movable horizontally toward each other to releasably clamp an overhead beam therebetween, a bolt connecting said jaw for so moving them toward each other and for releasably holding them in a position clamped to such beam, a stud receiving portion rigid with one jaw of said pair having a vertically directed opening formed therein through which the upper end of a stud is adapted to freely pass to support such stud upright on a deck below such beam, the other jaw of said pair being rotatable to different positions on and about the axis of said bolt to enable said other jaw to be positioned at different angles relative to said one jaw, and said one jaw being relatively wide to enable clamping such beam between said jaws when said other jaw is at an angle relative to said one jaw.

2. A beam shoring clamp for clamping to a beam of the type having a horizontally disposed flange with a free laterally directed edge extending longitudinally of the beam at one side thereof, said clamp comprising; a vertically disposed plate one side of which is adapted to engage the side of said beam opposite to the aforesaid free edge thereof and a flange engaging element formed with a laterally directed recess adapted to receive said flange therein along said free edge thereof, said plate and said element having extensions depending therefrom formed with coaxial openings at a point spaced below said beam when said plate and said element are at opposite sides of the latter, a bolt extending through said openings, the lower end of the extension on said element having a laterally projecting foot thereon at a point spaced below said bolt for engagement with the lower extension on said plate to provide a fulcrum about which said flange engaging element is adapted to swing upon tightening said bolt, and means rigid with said plate adapted to hold the upper end of a stud therein in a position alongside the side of said plate that is opposite to said element.

3. A beam shoring clamp for clamping to a beam of the type having a horizontally disposed flange with a

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free laterally directed edge extending longitudinally of the beam at one side thereof, said clamp comprising; a vertically disposed plate one side of which is adapted to engage the side of said beam opposite to the aforesaid free edge thereof and a flange engaging element formed with a laterally directed recess adapted to receive said flange therein along said free edge thereof, said plate and said element having extensions depending therefrom formed with coaxial openings at a point spaced below said beam when said plate and said element are at opposite sides of the latter, a bolt extending through said openings, the lower end of the extension on said element having a laterally projecting foot therein at a point spaced below said bolt for engagement with the lower extension on said plate to provide a fulcrum about which said flange engaging element is adapted to swing upon tightening said bolt, and means rigid with said plate adapted to hold the upper end of a stud therein in a position alongside the side of said plate that is opposite to said element, the said element including the downward extension thereon and the foot at the lower end of the latter being a unit swingable about the axis of said bolt relative to said plate to enable said element to receive said flange irrespective of variations in the camber of said flange relative to vertical.

4. In combination with a deck supporting beam and a deck below said beam, a beam shoring clamp having a pair of opposed clamping jaws between which said beam is positioned, means connected with said jaws and disposed below said beam for tightening said jaws against said beams, a downward extension on and rigid with one jaw of said pair having a lateral projection rigid therewith extending to the side of said one jaw that is opposite to the other jaw of said pair, said projection having a vertically directed opening formed therein and a vertical stud supported on said deck extending at its upper end into said opening.

5. In combination with a deck supporting beam and a deck below said beam, a beam shoring clamp having a pair of opposed clamping jaws between which said beam is positioned, means connected with said jaws and disposed below said beam for tightening said jaws against said beams, a downward extension on and rigid with one jaw of said pair having a lateral projection rigid therewith extending to the side of said one jaw that is opposite to the other jaw of said pair, said projection having a vertically directed opening formed therein and a vertical stud supported on said deck extending at its upper end into said opening, said means connected with said jaws for tightening the latter including a horizontal bolt and said other jaw of said pair being swingable about the axis of said bolt.

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