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BLOCK FOR BRACING SHIPS IN DRYDOCK

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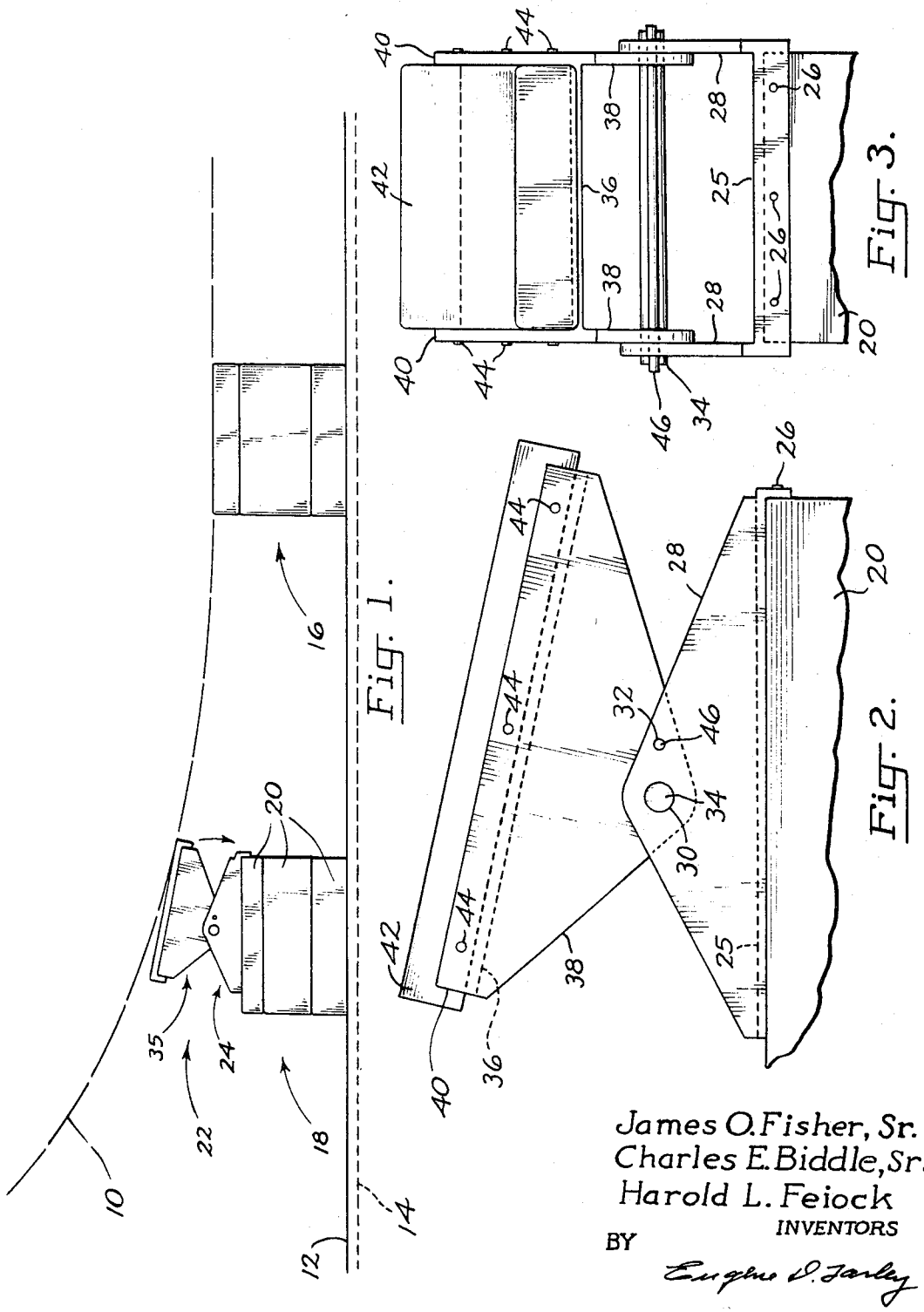


Fig. 1.

Fig. 2.

Fig. 3.

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BLOCK FOR BRACING SHIPS IN DRYDOCK

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ABSTRACT OF THE DISCLOSURE

The lapped flanges of a base member and hull contact member are connected together by a pivot pin and a shear pin. The base member is adapted to be secured to a support block and the hull contact member supports a crush plate. The shear pin is adapted to shear under the weight of a ship, to allow the hull contact member to pivot to the plane of the ship's hull.

This invention relates to adjustable blocks for bracing ships in drydock.

In a drydock operation, it is conventional practice to locate spaced keel blocks along the length of the keel for supporting the weight of the ship as the water is pumped from the drydock. Two rows of spaced brace blocks also are positioned on the floor of the drydock, one row on each side of the keel blocks. The brace blocks are spaced laterally from the keel blocks a sufficient distance to place them beneath the curved portion of the ship's hull. They support but little of the load, having as their principal function bracing the ship so that it does not tilt when the water is removed completely from the drydock.

The conventional brace block assembly comprises merely a stack of superimposed wooden blocks mounted on a cable drive which moves them to the desired location beneath the ship. Since the blocks are rectangular in shape, it is necessary to adjust them to fit the hull contour. This normally is accomplished simply by placing wedges between the rearward ends of the adjacent blocks thus tilting the blocks until the planar surface of the uppermost block roughly conforms to the angle of the hull. This procedure obviously is laborious, inaccurate, costly and unsafe.

Summary of the invention

Broadly, the ship brace block of the present invention includes pivotally interconnected base and hull contact members secured together temporarily in a predetermined position of angular adjustment by means capable of being sheared by the weight of the ship, whereby to allow the hull contact member to pivot to the plane of the ship's hull.

It is the general purpose of the present invention to provide an adjustable block for bracing ships in drydock which adjusts itself automatically to the contour of the ship and which safely and efficiently braces the ship in its drydocked position.

The manner in which the foregoing and other objects of this invention are accomplished will be apparent from the accompanying specification and claims, considered together with the drawings, wherein:

FIG. 1 is a schematic view of a drydocked ship illustrating the manner of applying the presently described adjustable brace block;

FIG. 2 is a view in side elevation of the block; and

FIG. 3 is a view in front elevation of the block.

FIG. 1 illustrates the hull **10** of a ship in a drydock **12**, the floor of which is provided with spaced transverse chain drives indicated schematically at **14**. The ship is supported on a plurality of keel blocks **16** which comprise wood blocks stacked one on the other to the desired elevation.

The ship is balanced and braced on a plurality of composite brace block assemblies indicated generally at **18**. These are connected to a chain, rope, or cable drive **14** in known manner and are adjustable laterally to the desired hull position.

Each composite brace block assembly includes a plurality of rectangular wood blocks **20** stacked one on top of the other to the desired elevation. The uppermost wood block **20** supports an adjustable brace block component, indicated generally at **22**; which is the subject matter of the present invention.

Brace block **22** includes a base **24** which may comprise a flat plate **25** having its forward end bent down at substantially right angles so that it overlaps the forward corner of upper wood block **20**, where it is secured by means of nails **26**.

A pair of parellel, spaced support plates **28** extend upwardly from the side edges of base plate **24** in a plane substantially normal to the hull of the ship. The plates are provided with central openings **30** and forward opening **32**.

Openings **30** are aligned with each other and provide bearings for receiving a pivot pin **34** by means of which a hull contact member **35** pivotally is mounted on the base.

The hull contact member comprises a base plate **36** from the lateral side edges of which depend a pair of spaced, parallel support plates **38**. These lap support plates **28** and are provided with openings which register, respectively, with openings **30, 32** in the latter.

Base plate **36** also is provided with upwardly extending flanges **40** which, together with the plate, provide a channel-shaped member dimensioned to receive a crush pad **42**. The crush pad has for its function providing a suitable surface for contacting the ship's hull. It comprises a block of wood having a thickness greater than the height of flanges **40** and dimensioned for insertion in the channel-shaped member, where it is held in place by means of nails **44**.

Shear pin means are provided for interengaging hull contact member **35** and base **24** in relative positions such that the contact member assumes a position which approximately conforms to the contour of the ship's hull when the brace block assembly is in its working position.

In the illustrated form of the invention, the shear pin means comprises a wooden dowel pin **46** dimensioned for reception in registering openings **32**. The shear pin supports the hull contact member with crushed pad **42** in substantially its proper position. When the weight of the ship is applied, it shears pin **46** with the result that the contact member shifts position to conform exactly to the contour of the hull, as shown by the dotted line FIG. 1.

The manner of use of the herein described brace block assembly is as follows:

When a ship is to be drydocked, it is located with reference to keel blocks **16** in the usual manner. Brace block assemblies **18** are run beneath the sides of the ship, one series on each side, by means of drive chains **14**. Each brace block **22** is set to the angle illustrated in FIGS. 1 and 2 by the insertion of shear pin **46** through the registering shear pin openings in plates **28, 38**.

As the water is removed from the drydock, the keel of the vessel rests on keel blocks **16**, which support most of the weight. Upon continuing removal of the water, the ship tilts sufficiently to engage the brace blocks. As pressure is applied to the latter, shear pins **46** are cut through, with the result that the brace blocks assume the angle of the ship's hull.

In this manner the brace blocks may be applied accurately and safely without the necessity of wedging

superimposed wooden blocks to appropriate angles. In addition, possible damage to the ship's hull is eliminated, since the only contact between the brace blocks and the hull is through yieldable wooden crush pads **42**. All metal to metal contact thus is eliminated.

It is to be understood that the form of our invention herein shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of our invention or the scope of the subjoined claims.

Having thus described our invention, we claim:

1. An adjustable block for bracing ships in drydock comprising

(a) a base,

(b) hull contact means having an upper surface adapted to bear against the arcuate hull of the ship,

(c) pivot means arranged on the base with its axis substantially aligned with the ship and pivotally mounting the hull contact means at a selected position of angular adjustment wherein the plane of the upper surface of the hull contact means substantially conforms to the plane of the adjacent ship hull surface,

(d) shear pin means interengaging the base and hull contact means for maintaining the upper surface of the hull contact means at an angle approximately conforming to the plane of the adjacent ship hull surface as the ship is lowered on the block in the drydock, the strength of the shear pin means being predetermined to shear as the weight of the ship is applied, permitting angular adjustment of the hull contact means to conform to the plane of the adjacent hull surface.

2. The adjustable block of claim **1** wherein the base is adapted to rest on a support block having a forward corner and wherein the base includes a flat plate adapted to rest on the upper surface of the support block, the plate having a forward depending flange dimensioned to overlie the corner, and securing means for securing the flange to the base plate.

3. An adjustable block for bracing ships in drydock comprising

(a) a base including a pair of spaced, parallel, upwardly extending plates,

(b) hull contact means having an upper surface adapted to bear against the arcuate hull of the ship and including a pair of spaced, parallel, downwardly extending plates arranged to lap the upwardly extending plates of the base,

(c) a pivot pin penetrating the lapped plates with its axis substantially aligned with the ship and pivotally mounting the hull contact means at a selected position of angular adjustment wherein the plane of the upper surface of the hull contact means substantially conforms to the plane of the adjacent ship hull surface, and

(d) a shear pin also penetrating the lapped plates and having a shear strength predetermined to permit shearing of the pin as the weight of the ship is applied, permitting automatic adjustment of the brace block means to conform to the contour of the ship's hull.

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