

March 11, 1941.

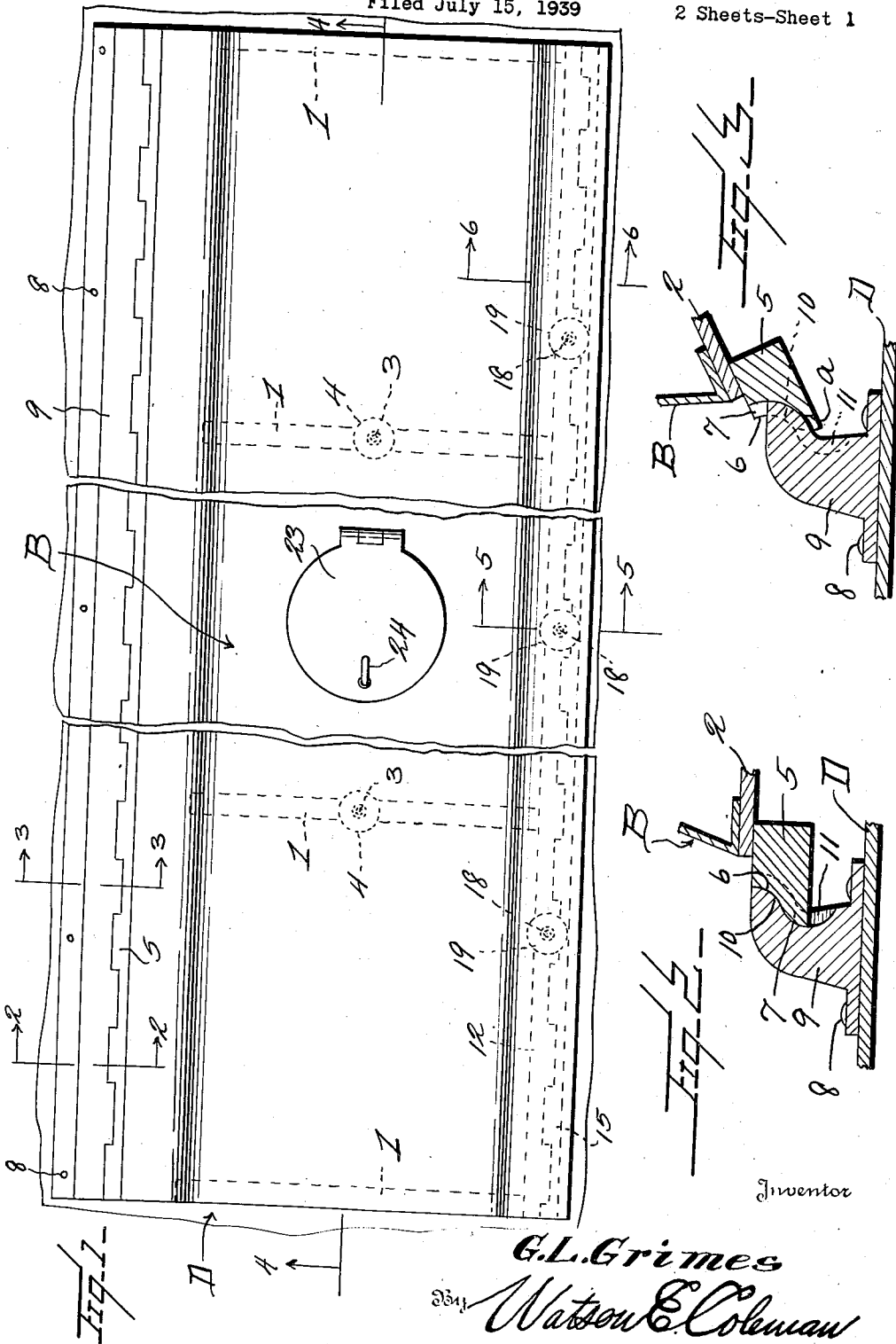
G. L. GRIMES

2,234,404

ESCAPE DEVICE FOR VESSELS

Filed July 15, 1939

2 Sheets-Sheet 1



Inventor

G.L. Grimes

By *Watson E. Coleman*
Attorney

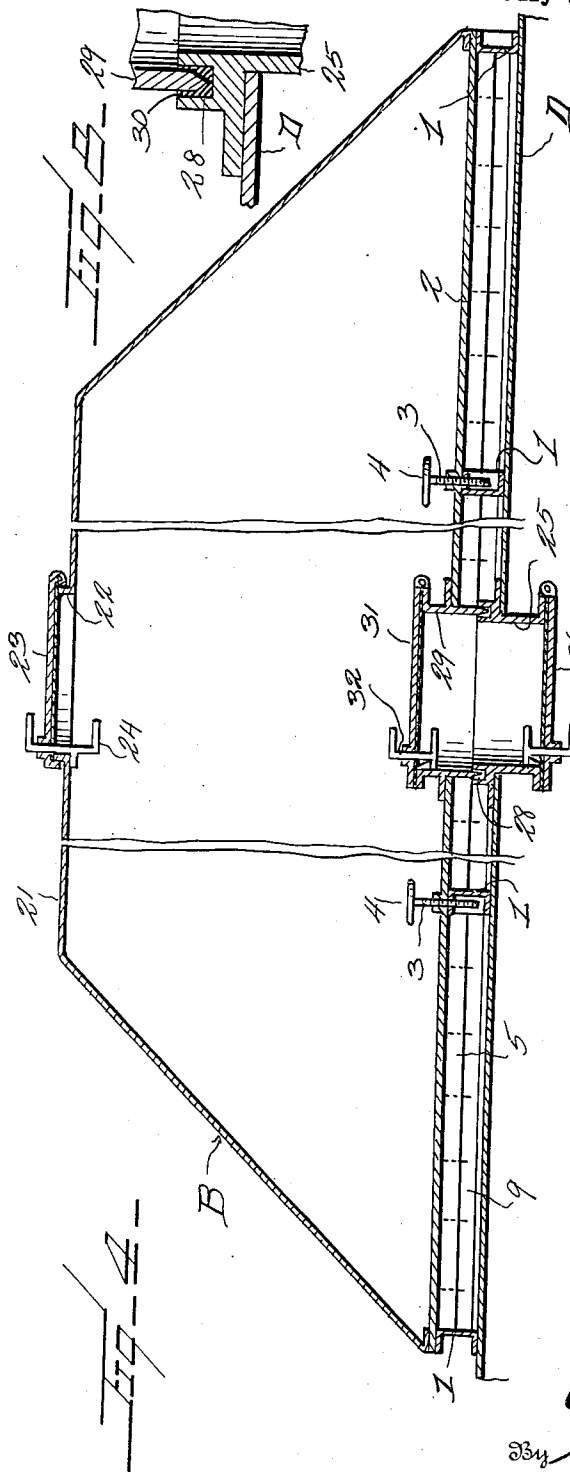
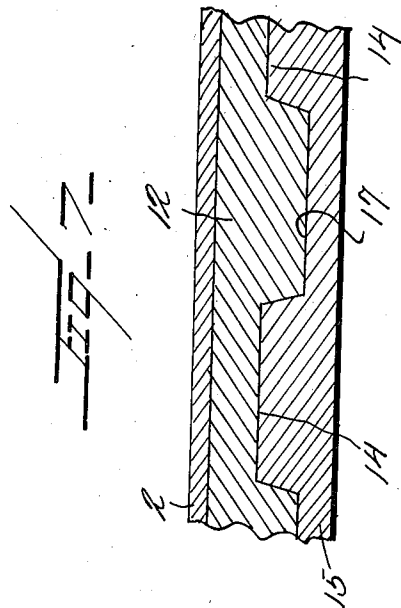
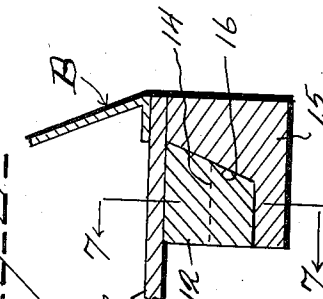
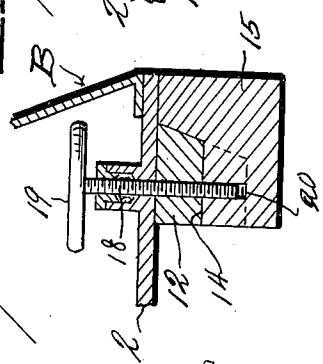
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Inventor

G. L. Grimes
By *Watson E. Coleman*
Attorney

UNITED STATES PATENT OFFICE

2,234,404

ESCAPE DEVICE FOR VESSELS

George L. Grimes, Portsmouth, Va.

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8 Claims. (Cl. 114—16.7)

This invention relates to an escape device for vessels, and it is an object of the invention to provide a device of this kind which provides means whereby persons trapped within a submerged vessel may escape therefrom.

It is also an object of the invention to provide a device of this kind which is particularly adapted to be used in connection with a submarine and wherein is employed a life boat adapted to be releasably mounted upon the deck of the vessel and in a manner whereby persons within the vessel may have access to the life boat before the same is released to rise to the water surface.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved escape device for vessels whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein—

Figure 1 is a fragmentary view in top plan illustrating an escape device constructed in accordance with an embodiment of my invention and in applied position upon the deck of a submarine;

Figure 2 is an enlarged detailed sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is an enlarged detailed sectional view taken substantially on the line 3—3 of Figure 1 with the life boat in a second position;

Figure 4 is a vertical sectional view taken lengthwise of Figure 1 on the line 4—4;

Figure 5 is an enlarged fragmentary detailed sectional view taken substantially on the line 5—5 of Figure 1;

Figure 6 is an enlarged detailed sectional view taken substantially on the line 6—6 of Figure 1;

Figure 7 is a fragmentary longitudinal sectional view taken substantially on the line 7—7 of Figure 6;

Figure 8 is a fragmentary sectional view illustrating in detail the seal connection between the hatches of the life boat and the vessel when the life boat is in locked position upon the deck.

As disclosed in the accompanying drawings, D denotes an upper deck of a submarine or other vessel and upon which is arranged a plurality of sills 1 in parallelism and disposed transversely

of the deck D. These sills are in desired spaced relation and are adapted to have rested thereon a life boat B. This life boat B is of such dimensions as to provide sufficient space to accommodate a crew or other persons aboard the vessel. This boat B is also of such form and configuration as to rise to the surface of the water when the boat B is released while the vessel is in submergence.

As is clearly illustrated in the drawings, the boat B is of an enclosed type and the floor or deck 2 thereof is relatively heavy to provide a means to substantially eliminate the liability of the boat B, when released from the vessel, capsizing. The boat B has threaded through the floor or deck 2 thereof at substantially the transverse center thereof the longitudinally spaced holding down screws or bolts 3 also threaded through the intermediate sill 1. The upper end of these screws 3 or the end portions thereof within the boat B are provided with the enlarged heads 4 to provide means to facilitate turning of the screws 3 both when desired to anchor the boat B upon the deck D or when it is desired to free said screws 3 to release the boat.

Rigidly secured to the under surface of the floor or deck 2 at the port side thereof is a beam 5. This beam 5 is of a length substantially co-extensive with the length of the boat B and projects outwardly beyond the boat B as is clearly indicated in the accompanying drawings. The outer face of the beam 5 is sigmoidal in cross section, as indicated at 6, whereby the lower portion of the beam 5 is provided with an outstanding ledge. At spaced points therealong the face 6 of the beam 5 is provided with the recesses 7 the bottom wall *a* of each of which is also sigmoidal and conforming to the curvature of the face 6 proper.

Riveted, as at 8, or otherwise securely fastened to the deck 2 is a rail 9. This rail 9 is heavy and disposed along the port side of the deck 2. The upper portion of the rail 9 is formed to provide an inwardly directed ledge 10, the outer face of which is also sigmoidal and on a curvature similar to the face 6 of the beam 5 so that in placing the boat B upon the deck of the submarine, and more particularly on the sills 1, the beam 5 will have a rolling contact with the rail 9. This rolling contact, however, is of particular importance and advantage when the boat B is released from the vessel.

The sigmoidal face of the ledge 10 of the rail 9 is also provided therealong with recesses 11, the inner faces of which are also sigmoidal and

on a curvature similar to the sigmoidal face of the ledge 10. The recesses 7 of the beam 5 and the recesses 11 of the rail 9 are so arranged that when the boat B is mounted upon the deck D the beam 5 and the rail 9 will interlock thus effectively holding the boat B against any movement fore and aft with respect to the deck D.

Rigidly secured to the under surface of the floor or deck 2 of the boat B along the starboard side thereof is a beam 12 having its outer side face inwardly and downwardly beveled. This beam 12 has its under portion provided therealong with spaced recesses 14. Welded or otherwise rigidly secured to the deck D and extending along the starboard side thereof is a rail 15. The inner top portion of this rail is provided therealong with a rabbet 16, the bottom wall of which is also provided therealong with the recesses 17. This rabbet 16 together with the recesses 17 thereof are so formed as to snugly receive the beam 12 of the boat B and the recesses 14 and 17 provide means whereby the beam 12 and the rail 15 also interlock and in a manner to provide additional means to hold the applied boat B against longitudinal shifting movement. By having the outer face of the beam 12 inwardly beveled and, of course, the coacting face of the rail 9 on a complementary bevel, it will be readily understood that the coaction between the beam 12 and the rail 15 will offer no hindrance or obstruction to the upward and lateral rolling movement of the boat when released from the deck D nor will any hindrance or obstruction be offered in the mounting of the boat B upon the deck D. To further maintain the boat B in applied position upon the deck D the floor or deck 2 of the boat B along the starboard side thereof has threaded therethrough a plurality of holding down bolts or screws 18. Each of these bolts or screws 18 has its upper end portion extending within the boat B and said end portions are provided with the enlarged heads 19 to facilitate the desired operation of these bolts or screws 18. Each of these screws or bolts 18 threads through the beam 12 and into a properly positioned slot 20 provided in the rail 15.

It is to be particularly noted that when the boat B is anchored to the deck D through the medium of the hold down bolts or screws 3 and 18 there is an open space between the deck D and the floor or deck 2 of the boat B into which water may readily flow. This spacing is provided by the sills 1 and is of particular advantage as it assures a free and quick rising of the boat B when the hold down bolts or screws 3 and 18 are released.

The top wall 21 of the boat B, as herein disclosed, is provided with an entrance or exit opening or hatch 22 adapted to be closed by the watertight door 23. This door 23 in the present embodiment of my invention is of a swinging type and is maintained in effective closed position by the latch 24. This latch 24 is of a type to be operated either from within or without the boat B.

The deck D is provided at a desired point thereon with an escape opening or hatch 25 which is closed by a watertight door 26 herein set forth of a spring type. This door 26 is effectively maintained in closed position by a latch 27. This latch 27 is of a type to be readily operated from within the vessel or within the opening or hatch 25. As is clearly illustrated in Figure 4, this door 26 swings downwardly into open position.

The upper end of the hatch or opening 25 has disposed therearound a channel 28 in which is received the lower depending portion of a hatchway 29 which provides an entrance into the boat B through the floor or deck 2 thereof.

As is particularly illustrated in Figure 8, suitable packing 30, preferably rubber, is placed within the channel 28 which is penetrated by the lower marginal portion of the hatchway 29 whereby a watertight closure is assured when the boat B is mounted upon the deck D.

The upper end of the hatchway 29 is closed by the upwardly swinging watertight door 31 which is normally maintained in effective closed position by the latch 32. This latch 32 is also of a type to be operated either from within the hatchway 29 or within the boat B.

When the vessel is in submergence and escape therefrom is desired, the door 26 is opened after which the door 31 can be readily released and thrown up into open position. The occupants of the vessel can then readily enter within the boat B and when all of the crew or other persons aboard the vessel have been received within the boat B, the door 31 is locked in closed position. The holding screws or bolts 3 are then released after which the screws or bolts 18 are released. After freeing the boat B from the deck D, the boat will readily separate from the rails 9 and 15 and rise to the surface of the water. After coming to the surface, the door 23 can be readily opened after releasing the latch 24.

The manner of initially mounting and locking the boat B upon the deck D is believed to be apparent from the foregoing description without requiring a detailed explanation.

While I have herein particularly set forth my invention as used in connection with a submarine, it is to be understood that it may be employed with other types of vessels without departing from the general principles thereof.

From the foregoing description it is thought to be obvious that an escape device for vessels constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. In combination with the deck of a vessel having a hatch opening and means releasable from within the vessel for closing said opening, spaced parallel rails fixed to said deck, a life boat, beams carried by said boat exteriorly thereof and extending therealong, one of said beams and one of the rails being so constructed and arranged to provide means to allow such beam and rail to interlock upon lateral tilting of the boat for holding the boat to the deck, the second beam and rail being constructed and arranged to provide means to allow the same to interlock, means operable from within the boat for releasably holding the boat to the deck, a hatchway carried by the boat registering with the hatch opening of the deck when the boat is held to the deck of the vessel, releasable means for closing the hatchway of the boat, said boat having an exit

opening, and releasable means for closing said exit opening.

2. In combination, a vessel having a top deck, spaced rails carried by said deck and disposed substantially in parallelism, the inner side face of one of the rails being sigmoidal in cross section to provide an inwardly directed ledge at the upper portion of the rail, an enclosed life boat, beams secured to and extending along the side portions of the boat exteriorly thereof, one of said beams having its outer side face sigmoidal in cross section for coaction with the sigmoidal face of the rail for holding the boat to the deck, means releasable from within the boat for securing the second beam to the second rail, the deck of the vessel having a hatch hole, releasable means for closing said hatch hole, a hatchway carried by the boat registering with the hatch hole of the deck when the boat is mounted upon the deck, releasable means for closing said hatchway, said boat having a normally closed exit.

3. In combination, a vessel having a top deck, spaced rails carried by said deck and disposed substantially in parallelism, the inner side face of one of the rails being sigmoidal in cross section to provide an inwardly directed ledge at the upper portion of the rail, an enclosed life boat, beams secured to and extending along the side portions of the boat exteriorly thereof, one of said beams having its outer side face sigmoidal in cross section for coaction with the sigmoidal face of the rail for holding the boat to the deck, means releasable from within the boat for securing the second beam to the second rail, the deck of the vessel having a hatch hole, releasable means for closing said hatch hole, a hatchway carried by the boat registering with the hatch hole of the deck when the boat is mounted upon the deck, releasable means for closing said hatchway, said boat having a normally closed exit, the rail and beam having sigmoidal faces being provided in such faces with spaced recesses, said recesses being so arranged to provide means to permit such rail and beam to interlock to hold the boat against fore and aft movement.

4. In combination, a vessel having a top deck, spaced rails carried by said deck and disposed substantially in parallelism, the inner side face of one of the rails being sigmoidal in cross section to provide an inwardly directed ledge at the upper portion of the rail, an enclosed life boat, beams secured to and extending along the side portions of the boat exteriorly thereof, one of said beams having its outer side face sigmoidal in cross section for coaction with the sigmoidal face of the rail for holding the boat to the deck, means releasable from within the boat for securing the second beam to the second rail, the deck of the vessel having a hatch hole, releasable means for closing said hatch hole, a hatchway carried by the boat registering with the hatch hole of the deck when the boat is mounted upon the deck, releasable means for closing said hatchway, said boat having a normally closed exit, the second named rail and beam being provided with spaced recesses, said recesses being so arranged to provide means to permit such rail and beam to interlock to hold the boat against fore and aft movement.

5. In combination with the deck of a vessel having a hatch opening and means releasable from within the vessel for closing said opening, spaced elongated rails fixed to said deck, a life

boat, spaced beams extending along said boat exteriorly thereof, one of the rails having an inwardly directed ledge along the upper portion thereof, one of the beams having an outwardly directed ledge extending along the lower portion thereof, the ledge of the beam engaging under the ledge of the rail upon lateral tilting of the boat, the second beam of the boat engaging the second rail from above as the boat is laterally tilted to engage the ledge of the first named beam under the ledge of the first named rail, means operable from within the boat for releasably holding the boat to the rails, a hatchway carried by the boat registering with the hatch opening of the deck when the boat is held to the rails, releasable means for closing the hatchway of the boat, said boat having an exit opening, and releasable means for closing said exit opening.

6. In combination with the deck of a vessel having a hatch opening and means releasable from within the vessel for closing said opening, spaced elongated rails fixed to said deck, a life boat, spaced beams extending along said boat exteriorly thereof, one of the rails having an inwardly directed ledge extending along the upper portion thereof, one of the beams having an outwardly directed ledge extending along the lower portion thereof, the ledge of the beam engaging under the ledge of the rail upon lateral tilting of the boat, the second beam of the boat engaging the second rail from above as the boat is laterally tilted to engage the ledge of the first named beam under the ledge of the first named rail, means operable from within the boat for releasably holding the boat to the rails, a hatchway carried by the boat registering with the hatch opening of the deck when the boat is held to the rails, releasable means for closing the hatchway of the boat, said boat having an exit opening, releasable means for closing said exit opening, and coacting means carried by the rails and beams for holding the boat against movement along the rails.

7. In combination with the deck of a vessel having a hatch opening and means releasable from within the vessel for closing said opening, spaced elongated rails fixed to said deck, a life boat, spaced beams extending along said boat exteriorly thereof, one of the rails having an inwardly directed ledge along the upper portion thereof, one of the beams having an outwardly directed ledge extending along the lower portion thereof, the ledge of the beam engaging under the ledge of the rail upon lateral tilting of the boat, the second beam of the boat engaging the second rail from above as the boat is laterally tilted to engage the ledge of the first named beam under the ledge of the first named rail, means operable from within the boat for releasably holding the boat to the rails, a hatchway carried by the boat registering with the hatch opening of the deck when the boat is held to the rails, releasable means for closing the hatchway of the boat, said boat having an exit opening, and releasable means for closing said exit opening, the second rail being provided with a rabbet along its inner upper portion, the second beam of the boat snugly engaging within said rabbet when the boat is held to the rails.

8. In combination with the deck of a vessel having a hatch opening and means releasable from within the vessel for closing said opening, spaced elongated rails fixed to said deck, a life boat, spaced beams extending along said boat

- exteriorly thereof, one of the rails having an inwardly directed ledge along the upper portion thereof, one of the beams having an outwardly directed ledge extending along the lower portion thereof, the ledge of the beam engaging under the ledge of the rail upon lateral tilting of the boat, the second beam of the boat engaging the second rail from above as the boat is laterally tilted to engage the ledge of the first named beam under the ledge of the first named rail, means operable from within the boat for releasably holding the boat to the rails, a hatchway carried by the boat registering with the hatch opening of the deck when the boat is held to the rails, releasable means for closing the hatchway of the boat, said boat having an exit opening, and releasable means for closing said exit opening, the second rail being provided with a rabbet along its inner upper portion, the second beam of the boat snugly engaging within said rabbet when the boat is held to the rails, the inner side wall of the rabbet being upwardly and outwardly beveled to prevent obstruction to the lateral tilting movement of the boat.

GEORGE L. GRIMES.