LADDER FOR BOAT DOCK, SEAWALL, OR THE LIKE

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

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ABSTRACT OF THE DISCLOSURE

A ladder is pivotally connected to a boat dock, seawall or like structure and overhangs the water. The ladder is rotatable to and from a storage position in which the ladder is horizontal and alongside the structure to a vertical position in which the ladder projects downwardly from its pivot axis toward the water. A releasable locking mechanism secures the ladder in either of the two positions.

This invention relates to a ladder for a boat dock, seawall or the like.

It is an object of this invention to provide a ladder that is pivotally mounted on a boat dock, seawall or the like and overhangs the water, and wherein the ladder may be selectively rotated to alternate positions about its pivot axis and secured in those positions. In one position, the ladder is substantially vertical so that it may be used by persons entering into or alighting from the water or a boat. In another position, the ladder is rotated from the vertical position to a substantially horizontal position adjacent to the upper edge of the dock or seawall and at which the ladder may be stored. There may be more than one storage position and the two storage positions may each be one-hundred-eighty degrees apart.

It is a further object of this invention to provide a combination of the type stated in which the arrangement for securing the ladder in a storage position is of a type that permits ready release thereof upon application of a moderate force on the ladder remote from its pivot axis. Because of such an arrangement when the ladder is in a storage position, a person in the water may pull on the ladder to release it and allow it to swing downwardly to its vertical position. The person may then use the ladder to climb out of the water. If the storage position of the ladder is too high above the water level to permit it to be grasped by a person in the water, a rope may be attached to the ladder to enable it to be pulled downwardly from its storage position. Thus, the device of the present invention results in a ladder that may be mounted on a seawall or dock and has the additional advantage of serving as a rescue ladder for persons in the water.

The attainment of the above and further objects of this invention will be apparent from the following description taken in conjunction with the accompanying drawing forming a part thereof.

In the drawing:

FIG. 1 is a perspective view of a ladder shown mounted on a seawall in accordance with the present invention, the ladder being shown in one of its storage positions;

FIG. 2 is a fragmentary front-elevation view, on an enlarged scale, of the structure of FIG. 1 but showing the ladder in its vertical or operative position;

FIG. 3 is a fragmentary section view taken along line 3-3 of FIG. 2;

FIG. 4 is a fragmentary top plan view of a portion of the structure of FIG. 3;

FIGS. 5, 6 and 7 are fragmentary sectional views, on enlarged scales, taken along lines 5-5, 6-6 and 7-7, respectively, of FIG. 2; and

FIG. 8 is a fragmentary front elevation view, partially broken away and in section, of a modified form of the invention.

Referring now in more detail to the drawing, a ladder 1 is shown pivotally mounted on a structure 2 with which it is used by a mounting assembly 3. By way of example but not of limitation, the structure 2 is a seawall and the ladder 1 is mounted in overhanging relation to the water w.

The mounting assembly 3 comprises an angle-shaped bracket 5 having a horizontal leg that rests on top of the seawall 2 and a vertical leg 6 that abuts the outward face 7 of the seawall 2. An angle-shaped clamp 9 abuts the top and inboard faces of the seawall 2 and has bolts 10, 11 passing therethrough and into threaded holes 12, 13 in the bracket 5. By drawing up tightly on the bolts 10, 11, the bracket 5 may be secured to the seawall 2 without the necessity of drilling into the concrete of the seawall. However, the bracket 5 is designed for mounting on a dock having wooden planking. For this purpose, the bracket 5 has holes 15 through which heavy screws or bolts may pass for mounting the bracket 5 onto the dock, in which case the clamp 9 and bolts 10, 11 are not used.

Integrally formed on the outboard face 17 of the vertical leg 6 is a trunnion 18 having upper and lower cylindrical bearing surfaces 20, 21 that are joined by vertical flat surfaces 22, 23. A pivot plate 25 has a large boss 26 with a cylindrical bore 27 that opens at the inboard face 29 of the pivot plate 25 and is sized for telescoping engagement with the trunnion 18 so that the pivot plate 25 is rotatable on the bearing surfaces 20, 21. A bolt and nut assembly 31 passes centrally through the boss 26 and trunnion 18 to secure the pivot plate 25 onto the bracket leg 6 so that the plate may rotate about the axis of the bolt 31.

A clamp 32 may be used to secure the ladder 1 to the pivot plate 25 so that its pivot axis passes through the ladder. The clamp 32 may be an elongated plate that is integrally formed with two spaced inwardly extending blocks 33, 34 that each have a V-groove 35 for receiving one of the rungs 37 of the ladder 1. Generally, the rung received will be the uppermost rung 37a of the ladder. The outboard face of the pivot plate 25 also has similar blocks 36, 38, each having a V-groove 39 opening toward the V-grooves 35 and receiving the ladder rung 37a. Bolt and nut assemblies 41 may pass through the spaced parallel side members 42, 43 of the ladder 1 and through the pivot plate 25 and clamp 32 to retain the ladder rigidly on the pivot plate 25. Alternatively, the bolt and nut assemblies 41 may pass through the ladder rung 37a and through the blocks 33, 34, 36, 38. In any event, the upper edge of the clamp 32 may serve as a foot support when using the ladder.

When not in use, the ladder 1 may be stored in the horizontal position shown in FIG. 1 wherein the opposite ends of the ladder are adjacent to the seawall. The ladder may also be stored in a like position that is one-hundred-eighty degrees from the position shown in FIG. 1.

For this purpose, the pivot plate 25 has a small boss 45 that is radially outwardly of the longitudinal axis of the bolt 31. As best seen in FIG. 6, this boss 45 has a bore that opens at the face 29 and receives a locking pin 46 which is biased by a spring 47 toward the bracket leg 6. The locking pin 46 has a substantial length thereof that projects outwardly of the outer face of the boss 45 so that the locking pin 46 may be grasped for manipulation thereof. Formed in the face 17 are shallow recesses 49, 50 which are one-hundred-eighty degrees apart and are each the same radial distance from the pivot axis of the ladder as is the lock pin 46.
When the ladder is rotated to either horizontal storage position, the lock pin 46 will snap into the recess 49 or 50, the ladder will swing downwardly to its vertical or operative position shown in FIGS. 2-7. When the lock pin 46 comes into alignment with a hole 51 in the bracket leg 6, the pin 46 will snap thereinto and retain the ladder in the operative position. The ladder may now be used. The hole 51 is, of course, centered on the same circle as are the recesses 49, 50 and is ninety degrees from each. To return the ladder to either storage position, the lock pin 46 is grasped and axially shifted to retract it from the hole 51, thereby permitting the ladder to be rotated.

If desired, a rope 53 may be secured near the lower end of the ladder and hang downwardly into the water w. If the ladder is in a storage position and a person is in distress in the water, the person may pull on the rope 53 to dislodge the lock pin 46 from one of the recesses 49 or 50 allowing the ladder to swing downwardly so that it then may be used by the person to climb out of the water.

In some instances it may be desirable to be able to lock non-releasably the ladder in its storage position to prevent use of the ladder by unauthorized persons. For this purpose, a modified form of the invention is shown in FIG. 8 wherein the boss 26 may have two aligned holes 55, 56 which open at the bore 27 but which are offset from the pivot bolt 31. When the ladder is in a storage position, as in FIG. 8, there is clearance between the holes 55, 56 across the bore 27 due to the presence of the flat surface 23. A like clearance is provided due to the flat surface 22 when the ladder is in the storage position that is one-hundred-eighty degrees from that shown in FIG. 8. In either case, one leg 57 of a bicycle type padlock shackle may be inserted through both holes 55, 56 and the lock mechanism 58 of the lock may be secured to both legs of the shackle in the usual manner. If an attempt is made to move the ladder to its operative position, the leg 57 will obstruct the rotation of the pivot plate 25 as the leg 57 abuts the trunnion 18.

The precise constructions herein shown are illustrative of the principles of the invention. What is considered new and sought to be secured by Letters Patent is:

1. In combination with a structure that is in a body of water and projects upwardly therefrom, a ladder, means for pivotally mounting the ladder on said structure for rotation about the pivot axis to and from positions wherein the ladder overhangs the water, one of said positions being an operative position in which the ladder extends downwardly from the pivot axis toward the water and another of said positions being a storage position in which the opposite ends of the ladder are alongside of said structure, and means for releasably locking the ladder in each position, said means for releasably locking the ladder in the storage position being operable to release the ladder therefrom upon application of a predetermined torque on the ladder.

2. Means for mounting a ladder on a support, said means comprising bracket means for attachment to the support, a plate, means for attaching the plate to the bracket, cooperating bearing means on the plate and bracket for rotatably mounting the plate on said support, means for clamping a ladder to the plate for rotation therewith such that the axis of rotation of the plate passes between the opposite sides of the ladder, and cooperating means on the bracket and plate for releasably locking the plate in selected positions of rotations relative to said bracket, said clamping means and plate having cooperating channel portions that open toward each other for receiving a rung of a ladder.

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