P. FULL.

SHIP'S LADDER.

APPLICATION FILED JUNE 20, 1919.

1,349,125. Patented Aug. 10, 1920.

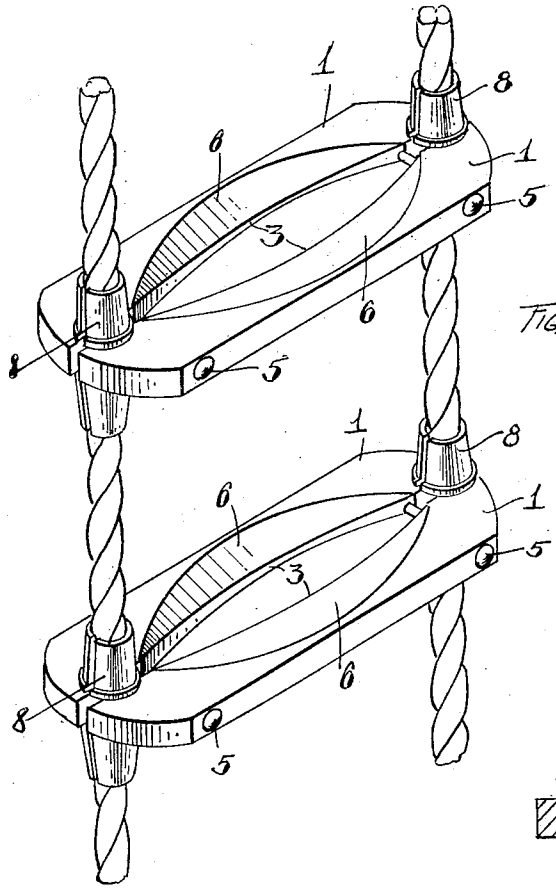


FIG. 1

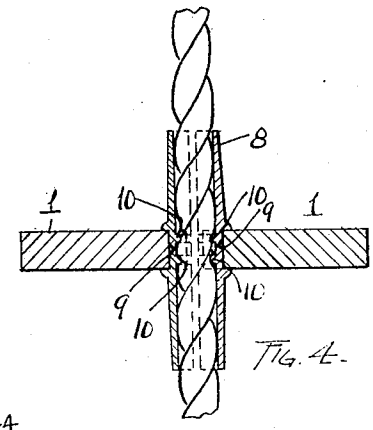


FIG. 4.

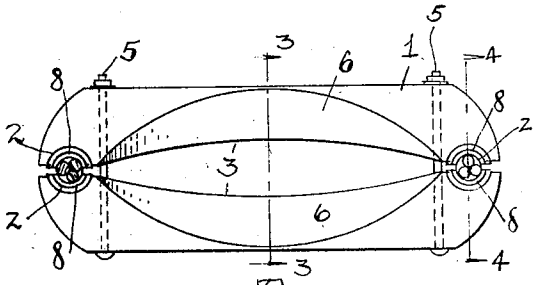


FIG. 2

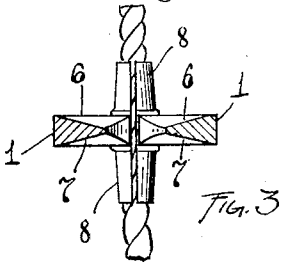


FIG. 3

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SHIP'S LADDER.

1,349,125. Specification of Letters Patent. Patented Aug. 10, 1920.

Application filed June 20, 1919. Serial No. 305,658.

To all whom it may concern:

Be it known that I, PETER FULL, a citizen of the United States, and a resident of Vermilion, county of Erie, and State of Ohio, have invented a new and useful Improvement in Ships' Ladders, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates to ship's ladder of the type in which a series of steps are suitably supported and carried by flexible members, such as ropes or cables which form the sides of the ladder. The present improvements relate particularly to the hereinafter described novel means for clamping the steps in position upon the ropes or cables. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Figure 1 is a view in perspective of a section of my improved ladder; Fig. 2 is a plan view of one of the steps; Fig. 3 is a vertical transverse section on the line 3—3, in Fig. 2; and Fig. 4 is a transverse section on the line 4—4, Fig. 2.

Ships' ladders are ordinarily made by threading two ropes through suitable holes in boards and then fastening the boards at desired points along the lengths of the ropes. The constructions in general use, however, are not entirely satisfactory. My improved ladder involves a new and relatively inexpensive means for securely clamping steps to the ropes at the desired points by the use of simple and convenient means.

Each of the steps of my improved ladder consists of two plate-like members 1, each of which is provided with semi-circular correspondingly positioned recesses 2 adjacent to either end and with a semi-oval shaped opening or recess 3 along the center of the same side. In addition to the recess described above, each plate-like board is provided with transverse openings therethrough for receiving bolts 5 for clamping the two members together. Furthermore, each of the boards has its upper and lower surfaces 6 and 7 curved and converging inwardly so that a depression is formed in the center of the step, which is constructed of the two cooperative sections, for the purpose of affording a hold for the shoe, and thus assisting the user to maintain himself upon the steps of the ladder. An additional advantage secured by the oval-shaped recesses in the steps is that each of the steps constitutes a hand-hold and the user can secure a firm grip on the steps as he uses them by grabbing the narrowed and cut-away portions of the centers of the steps.

The means for clamping the steps upon the rope consists of two semi-cylindrical clamps or members 8, which are used in pairs, one being set into each of the recesses 2 adjacent to the ends of the steps. These members 8 are provided with encircling grooves 9 adapted to snugly receive therein the boards which constitute the steps, and are also provided with inwardly extending shoulders 10.

In assembling a ladder the ropes or cables 11 are first laid out in parallel positions and the boards 1, with the clamps 8, already positioned in the recesses, are then brought against opposite sides of the ropes and pressed firmly against the ropes and secured in that position by means of the transversely extending bolts 5. In this way, not only is a considerable clamping action placed upon the rope by the cylindrical inner surfaces of the clamping members 8, but also the shoulders 10 are pressed firmly into the rope itself, sufficiently to engage therewith and provide a positive and mechanical lock between the clamp and the ropes. The bolts 5 also hold the boards in secure engagement with the clamps and hence at fixed points along the rope by reason of the tongue and groove engagement between the boards 2 and the recesses 9 in the outer surface of the clamps.

The present construction provides not only a better and more secure type of ship's ladder, but one which can be very readily assembled or dis-assembled for the replacement of wornout or broken steps, and one in which the placing of the steps can be changed or adjusted as may be desired.

Other modes of applying the principle of my invention may be employed instead of

the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a ship's ladder, the combination of flexible cables, two coöperative step plates mounted on opposite sides of said cables, coöperative cable-indenting and engaging members carried by said plates, and adjustable means adapted to lock said plates and members together in firm engagement with said cables.

2. In a ship's ladder, the combination of flexible cables, two coöperative step plates mounted on opposite sides of said cables, semi-cylindrical cable-engaging clamps removably carried by said plates and provided with means adapted to grip said cables, and means adapted to lock said plates and clamps together in firm engagement with said cables.

3. In a ship's ladder, the combination of flexible cables, two coöperative step plates mounted on opposite sides of said cables, semi-cylindrical cable-engaging clamps removably carried by said plates, and means adapted to lock said plates and clamps together in firm engagement with said cables, said clamps and plates being interengaged when fastened together against said cables.

4. In a ship's ladder, the combination of flexible cables, two coöperative step plates mounted on opposite sides of said cables, coöperative cable-engaging members carried by said plates, and said plates having corresponding recesses on their adjacent sides and being beveled inwardly toward such recesses and means adapted to lock said plates and members together and in firm engagement.

5. As an article of manufacture, a step for a ladder comprising two coöperative plates having corresponding recesses on their adjacent sides and being beveled inwardly toward such recesses.

6. As an article of manufacture, a step in a ladder having a central longitudinally extending concave depression formed in its upper face to form a foot-hold, substantially as described.

Signed by me this 16th day of June, 1919.

PETER FULL.