

July 18, 1961

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2,992,697

BOAT LADDER

Filed July 25, 1958

2 Sheets-Sheet 1

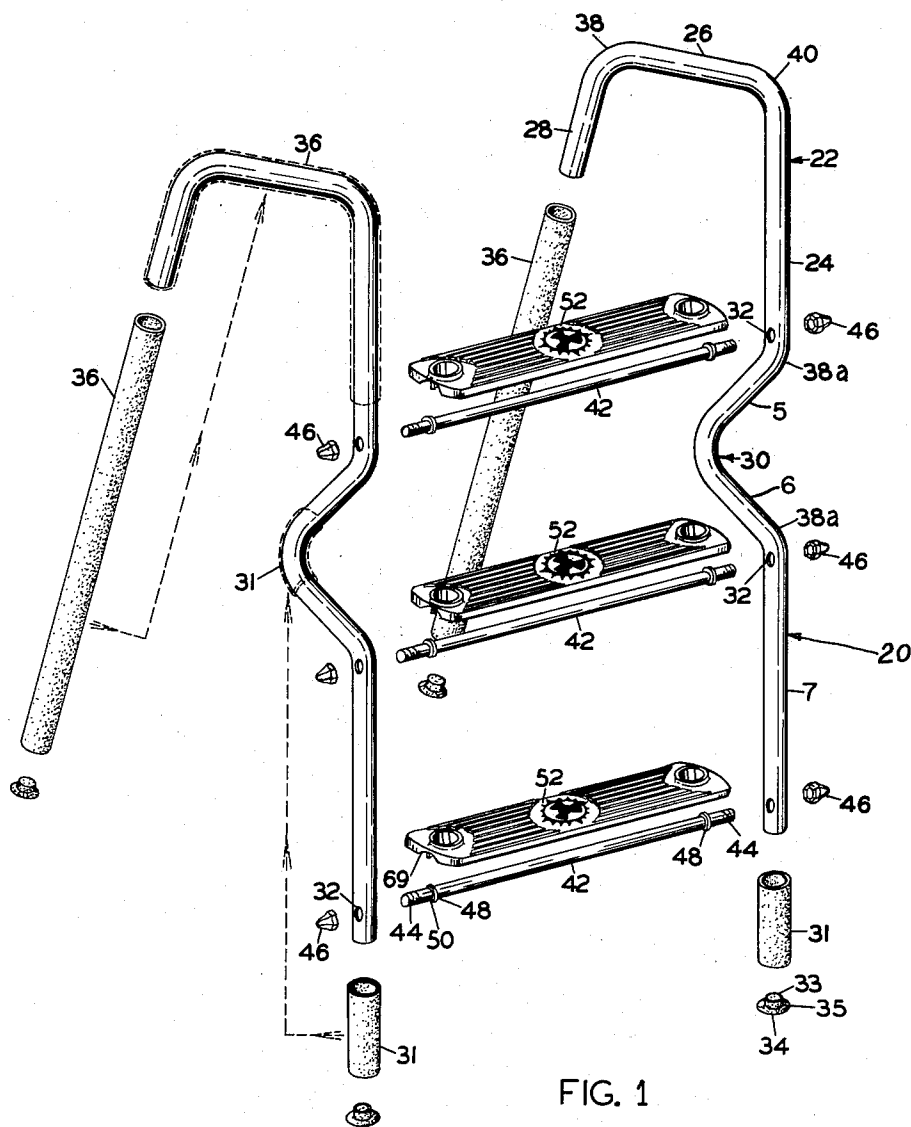


FIG. 1

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2 Sheets-Sheet 2

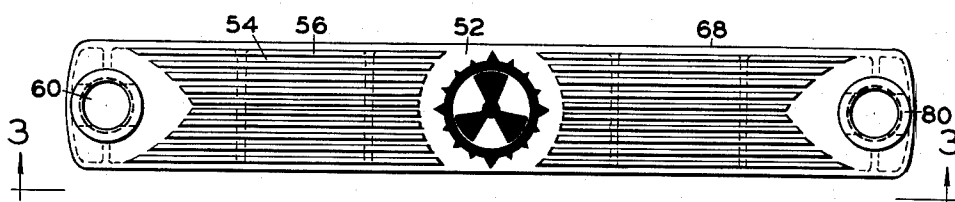


FIG. 2

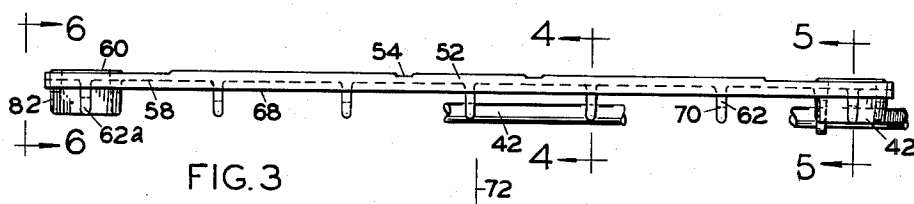


FIG. 3

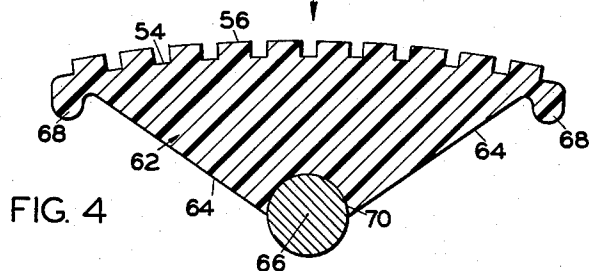


FIG. 4

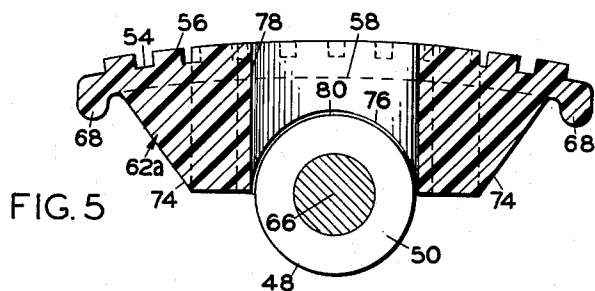


FIG. 5

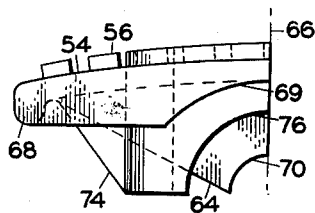


FIG. 6

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BOAT LADDER

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3 Claims. (Cl. 182-206)

This invention relates generally to ladders and more specifically to boat ladders.

Such a boat ladder is particularly useful to provide convenient and safe access to small open vessels or surface craft regardless of whether the entry is attempted from a dock or from the water. Water skiers and boating enthusiasts both will quickly recognize the utility of a boat ladder of this type, the former upon his realizing how easy it is to enter a boat from the water and the latter upon his knowing of its inherently buoyant and safety features.

The boat ladder of the present invention includes a main frame composed of two tubular elements each of which is formed to resemble an oversized walking cane. These elements are interconnected with a series of rungs uniformly spaced along the vertical portion of the walking cane, and accordingly maintain these elements in spaced relationship.

The rungs are preferably made from metallic bar stock and have a small threaded portion at each end. Each rung carries a collar at each end, each collar defining a surface against which the tubular elements are urged by conventional threaded fasteners.

Each rung supports a tread disposed directly thereabove and having an opening at each end through which the tubular elements pass to retain the tread in this position.

The treads have a series of ribs extending outwardly from the upper surface thereof to improve the coefficient of friction of this surface when subjected to extremely wetted conditions.

Each tread has a series of webbed sections extending downwardly from its lower side and forming arcuate surfaces conforming to the peripheral surface of the rung. Thus, it is seen that the weight of an individual when placed upon a tread will be transmitted to the rung at these arcuate surfaces.

A flange extends along the periphery of each tread and serves to strengthen the tread and improve its rigidity.

Upon inserting a cap at each end of the tubular elements, the boat ladder becomes buoyant when assembled since these tubular elements now contain a sealed air space.

With this in mind, a primary object of the present invention is the provision of a boat ladder incorporating safety features to prevent physical harm to an individual while entering a surface craft.

Another object of the present invention is the provision of a boat ladder incorporating an improved tread to protect the exposed feet of the user.

Another object of the present invention is the provision of a boat ladder which is light in weight and buoyant in water.

Still another object of the present invention is the provision of a boat ladder which is inexpensive to manufacture, may be shipped unassembled, and subsequently assembled with a minimum of effort.

Further objects and advantages of the present invention will be apparent from the following description reference being had to the accompanying drawings wherein a preferred form of embodiment of the invention is clearly shown.

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In the drawings:

FIGURE 1 is an exploded perspective view of the present invention;

FIGURE 2 is a plan view of the tread of the present invention;

FIGURE 3 is a side view of the tread of the present invention;

FIGURE 4 is a sectional view taken along line 4-4 of FIGURE 3;

FIGURE 5 is a sectional view taken along line 5-5 of FIGURE 3; and

FIGURE 6 is a partial end view of the tread of the present invention.

Referring to the drawings in more detail, the boat ladder 20 of FIGURE 1 includes two spaced side members 22 which are preferably in the form of tubular elements interconnected in spaced relationship by rungs 42. Treads 52 are disposed over each rung 42 and are retained in this position by tubular elements 22.

Each side member 22 includes an upper vertically extending portion 24, a lower vertically extending portion 7, said portions being substantially axially aligned and joined by a brace of offset portion indicated generally at 30. Brace portion 30 includes an upper section 5 that extends inwardly from the bottom of upper vertically extending portion 24 and it further includes a lower section 6 that extends outwardly from the lower end of upper section 5 to the upper end of lower vertically extending section 7.

The purpose of the brace or offset portion 30 is to maintain side member 22.

Front portion 24 is provided with an offset 30 to maintain front portion 24 in a fixed plane away from a surface craft not shown when the boat ladder assembly 20 is in operational use. Preferably, the contour of offset 30 is U-shaped with its axis of symmetry transversing the axis of side member 22 and lying in the plane defined by portions 24, 26, and 28. Moreover, it is seen in FIGURE 1 that side member 22 extends continuously through offset 30 and enters offset 30 at bends 38A. Other configurations of offset 30 are equally applicable.

Rungs 42 are made from metallic bar stock and have threaded ends 44. A collar 48 is disposed inwardly from each end 44 and is permanently attached to rung 42. Each collar 48 has a surface 50 facing toward each end 44.

During assembly, rung 42 is attached to tubular element 22 by inserting end 44 in aperture 32 of front portion 24. Threaded fasteners 46 are advanced on each threaded end 44 to urge side member 22 against surfaces 50 to maintain elements 22 in spaced relationship.

Tread 52 is formed preferably of plastic material and has an opening 60 at each end through which side members 22 are passed to retain tread 52 in position above each rung 42. Tread 52 has an upper surface 54 and a lower surface 58. Extending upwardly from surface 54 is a plurality of ribs 56 running parallel to the major dimensions of tread 52. Ribs of other configurations may readily be substituted and/or integrated into various artistic designs.

Each tread 52 has a plurality of webbed sections or shoulders 62 and 62A extending transversely and downwardly from surface 58. A webbed section 62A, similar to section 62 is provided at each end of tread 52 and transverses the opening 60.

Each section 62 has ends 64, the extensions of which converge at a point below the center line 66 of rung 42. Joining each end 64 of section 62 is an arcuate surface 70 conforming to the peripheral surface of rung 42. Thus, it is seen that the application of a force 72, for example—the weight of an individual, will be distributed through

sections 62 to rung 42 by way of confronting surface 70 of each section 62.

With particular reference to FIGURE 5, section 62A has a portion 80 removed to provide for opening 60. Inner side 78 confronts the peripheral surface of side member 22 when inserted in opening 60. Section 62A has ends 74 the extensions of which converge at a point below the center line of rung 42 and intersect the axial projection of the center of opening 60.

The annular ring 82 of FIGURE 3 extends downwardly from surface 58, the axis of ring 82 passing through the center line of opening 60. An arcuate segment 76, as shown clearly in FIGURES 5 and 6, is removed to provide clearance for collar 48. Similarly, an arcuate segment 76 is removed to provide clearance for fastener 46, as best shown in FIGURE 5.

The reinforcing flange 68 extends along the periphery of tread 52. The outer surface of flange 68 is a continuation of surfaces 54 and 58 of tread 52. Thus, it is seen that the flange 68 serves to strengthen and stiffen tread 52 to counteract an applied force 72 and any components thereof. An arcuate portion 69 of flange 68 is removed at each end of tread 52 to provide clearance for installing fasteners 46.

A sleeve 31 covers the peripheral surface of offset 30 to provide protection to the finish on the sides of the surface craft when the boat ladder 20 is in position for use. Similarly, sleeve 36 is positioned over back portion 28, top portion 26, and the upper end of front portion 24 likewise to protect the finish of the surface craft.

Caps 34 are inserted in each end of tubular elements 22. Each cap 34 has an annular surface 35 defined by a tubular guide 33 having an outside diameter approximately equal to but not greater than the inside diameter of tubular elements 22. Thus, it is seen that side members 22 contain a substantially sealed inner air space when caps 34 are installed and fasteners 46 are lockingly engaged whereupon the assembled boat ladder 20 of the present invention is buoyant in the water.

The preferred procedure for assembling the boat ladder 20 includes the following steps: (1) Lay two side members 22 on a flat surface with top portion 26 facing the same general direction; (2) Holding tread 52 with its surface 54 facing top portions 26, insert lower ends of front portion 24 of side members 22 through opening 66 and advance tread 52 to a position well above apertures 32 which are nearest top portion 26; (3) Grasping lower ends of front portion 24, apply a force in an outwardly direction; (4) Insert rung 42 in aperture 32 nearest top portion 26; (5) Remove the force applied at lower ends of front portion 24 of side members 22; (6) Engage fasteners 46 loosely to rung 42; (7) Repeat steps 2 to 6 until all treads 52 and rungs 42 are subsequently in place; and (8) Advance fasteners 46 to lockingly engage front portions 24 in spaced relationship.

The installation of sleeve 31 to cover the peripheral surface of offset 30 is accordingly made prior to positioning treads 52 located below offset 30. Sleeve 36 may be installed over the back and top portions at any time. Caps 34 are installed at each end of tubular elements 22 after the boat ladder is assembled.

While the form of embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted all coming within the scope of the claims which follow.

I claim:

1. A ladder comprising, in combination, two spaced vertically disposed side members each of which is provided with a plurality of vertically spaced holes; a plurality of vertically spaced weight supporting rungs each of which includes a central rung portion extending laterally between said side members, a first end extended through a hole in one of said side members and provided with a first outwardly facing shoulder engaging said one side member, and a second end extended through a hole in the other of said side members and provided with a second outwardly facing shoulder engaging said other side member; and a plurality of vertically spaced non-rigid treads, each of said treads including a central tread portion supported on said central rung portion, a first end including an opening through which one of said side members is extended and a second end through which the other of said side members is extended.

2. The ladder construction defined in claim 1 wherein each of said treads includes a plurality of laterally spaced downwardly extended shoulders that engage the central portion of a respective rung.

3. A ladder comprising, in combination, two spaced vertically disposed side members each of which is provided with a plurality of vertically spaced holes; a plurality of vertically spaced weight supporting rungs each of which includes a central rung portion extending laterally between said side members, a first threaded end extended through a hole in one of said side members and provided with a first outwardly facing shoulder engaging said one side member, and a second threaded end extended through a hole in the other of said side members and provided with a second outwardly facing shoulder engaging said other side member; a plurality of vertically spaced non-rigid treads, each of said treads including a central tread portion supported on said central rung portion, a first end including an opening through which one of said side members is extended and a second end through which the other of said side members is extended; a first threaded element on said first threaded end portion for urging said one side member inwardly against said first outwardly facing shoulder; and a second threaded element on said second threaded end portion for urging said other of said side members against said second shoulder.

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