

July 2, 1963

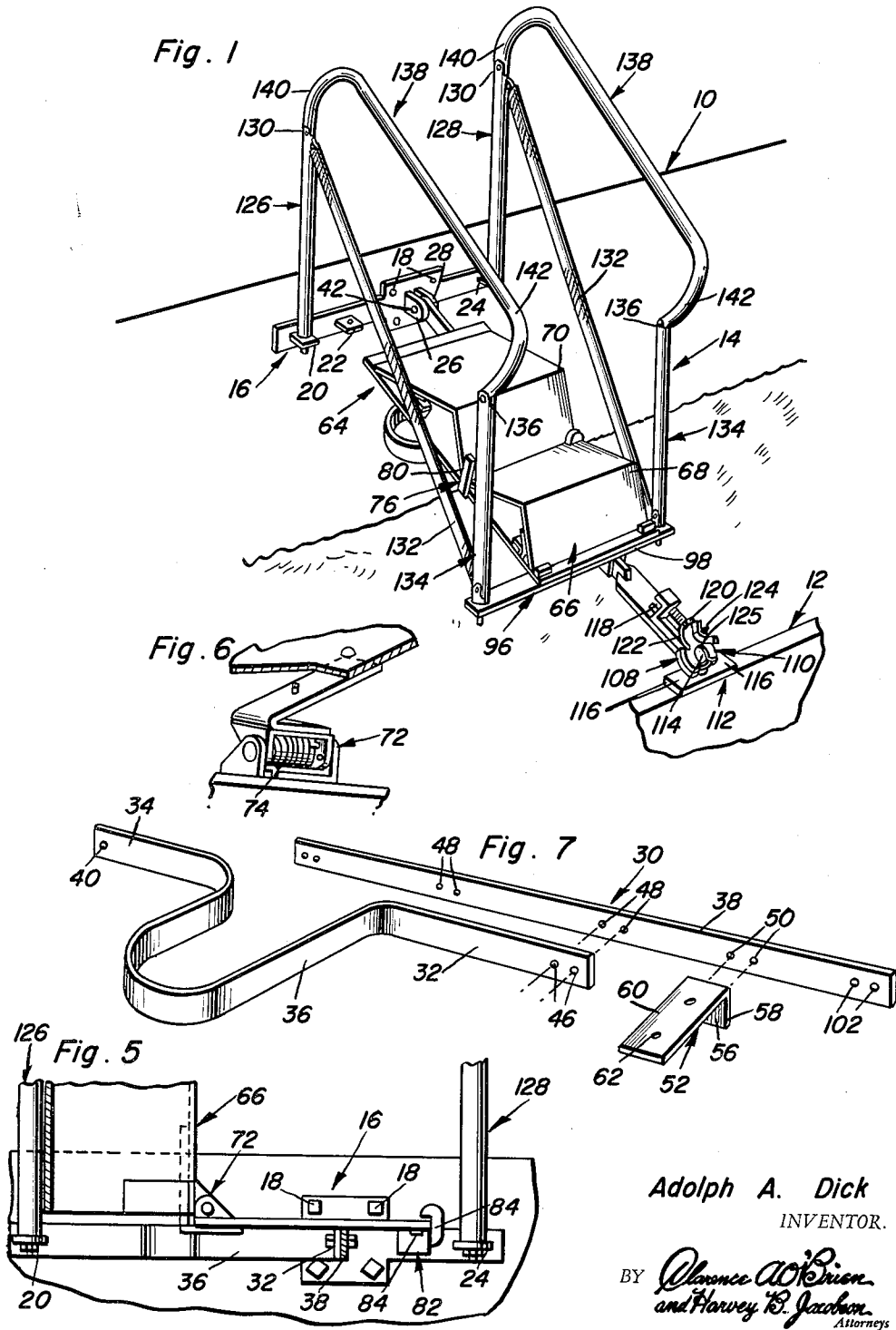
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3,095,848

BOAT MOORING APPARATUS AND BOARDING RAMP THEREFOR

Filed Dec. 27, 1961

4 Sheets-Sheet 1



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Fig. 2

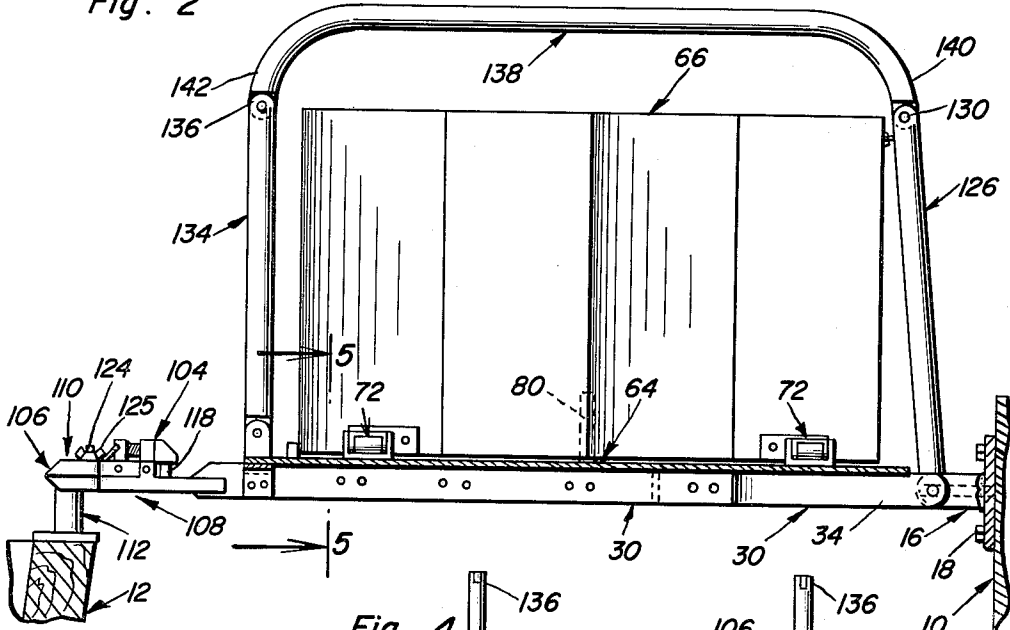


Fig. 3

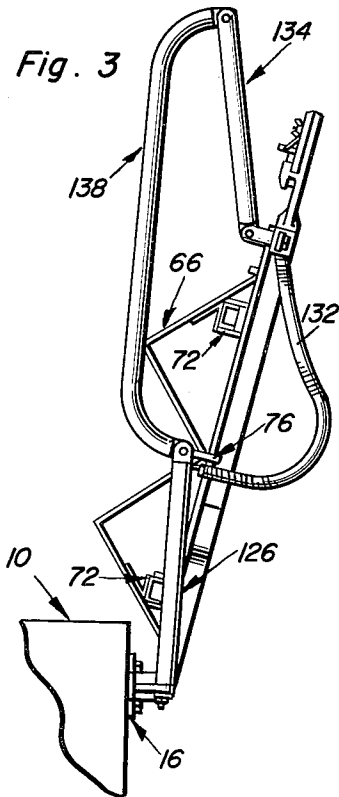
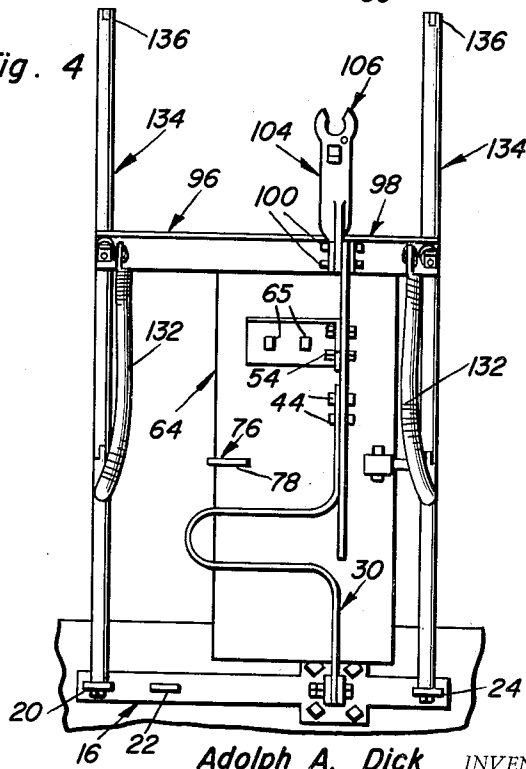


Fig. 4



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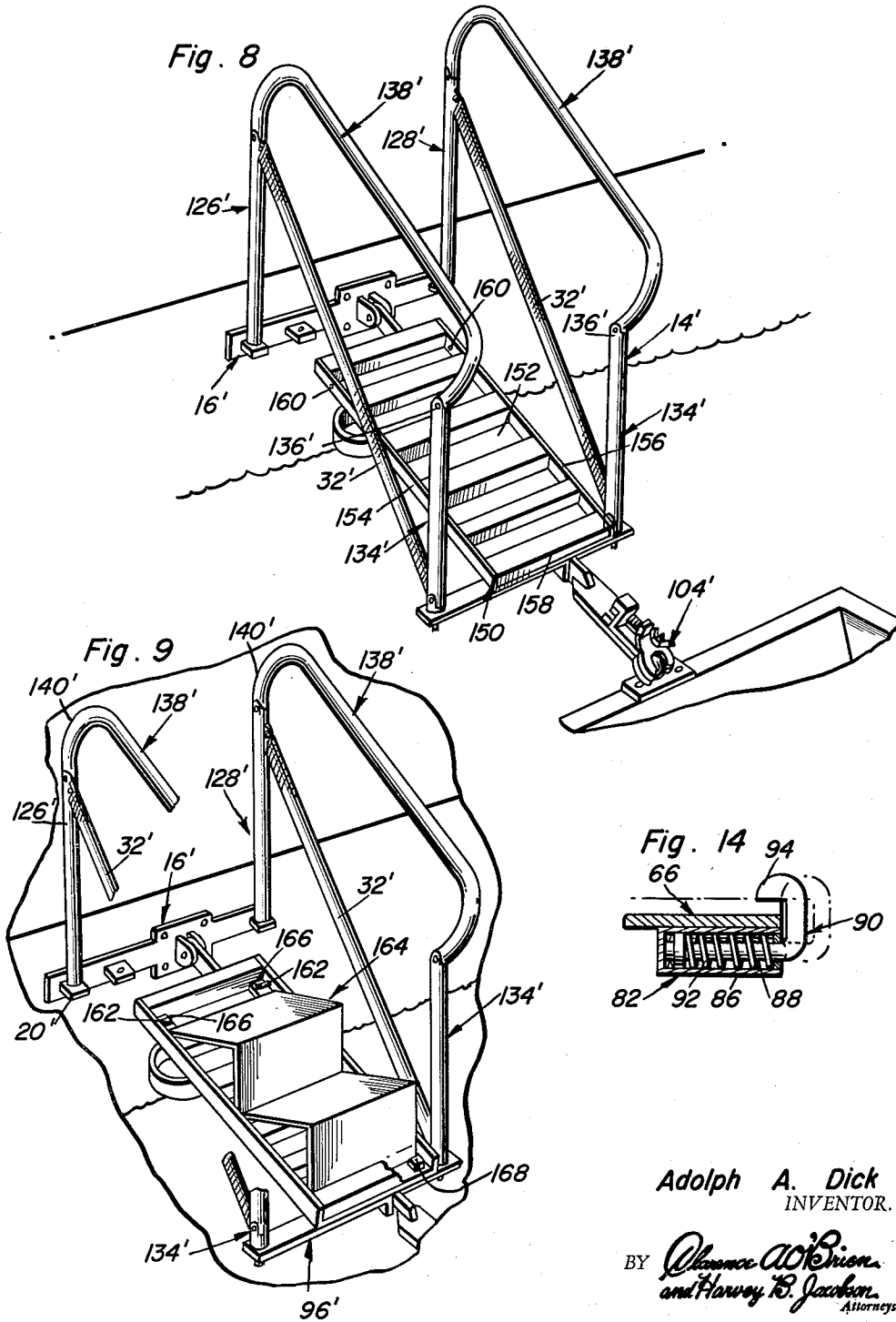
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4 Sheets—Sheet 3



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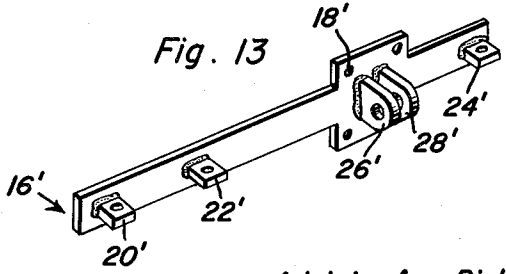
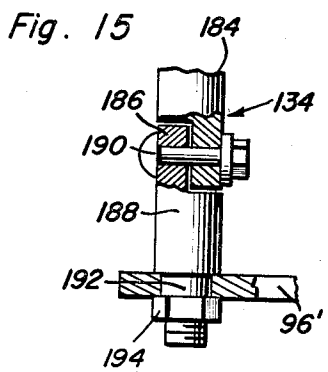
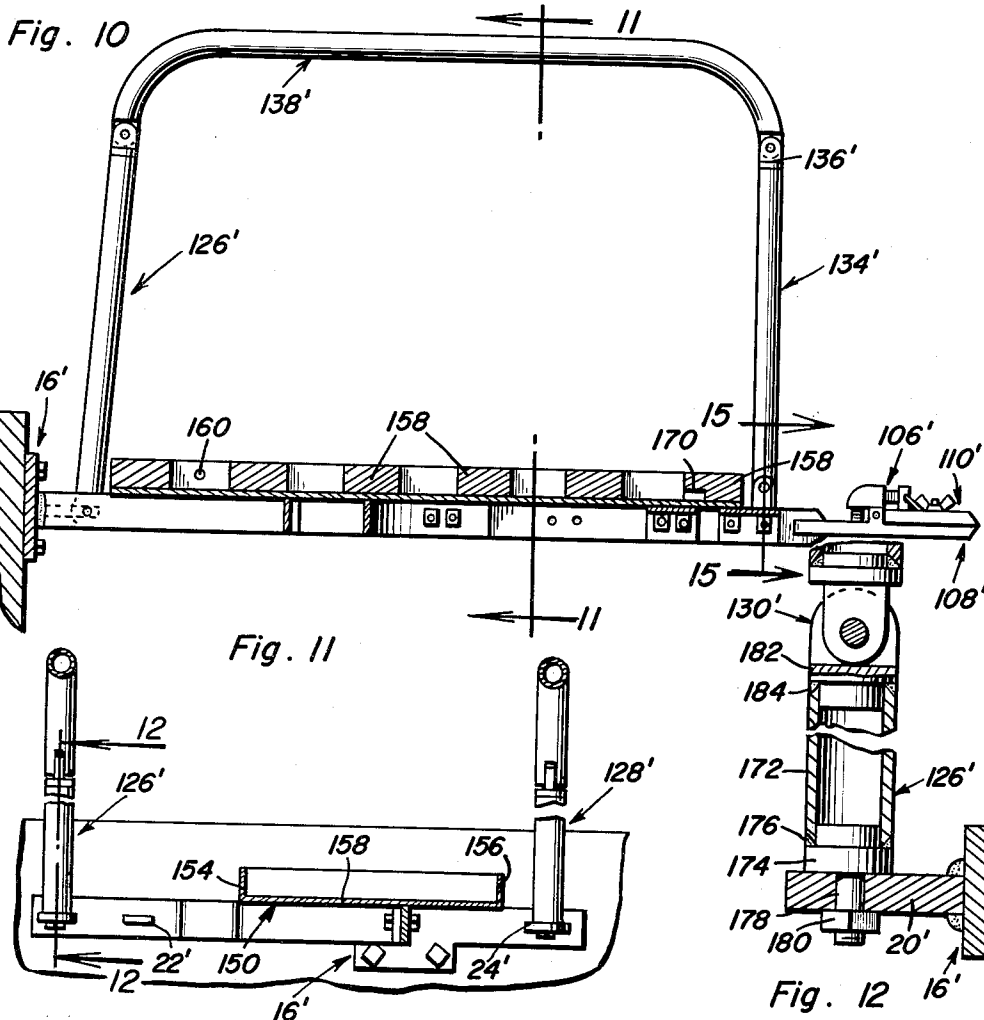
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BOAT MOORING APPARATUS AND BOARDING RAMP THEREFOR

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4 Sheets-Sheet 4



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3,095,848

BOAT MOORING APPARATUS AND BOARDING RAMP THEREFOR

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10 Claims. (Cl. 114-230)

This invention relates to a novel and useful mooring apparatus and boarding ramp therefor and has been specifically designed to provide a means whereby a boat may be moored to a dock while simultaneously providing a boarding ramp for supporting persons crossing from the dock to the boat.

The mooring apparatus of the instant invention includes a main frame having opposite end portions and upper and lower sides and mounting means is provided for pivotally securing one end of the main frame to a mooring structure such as a dock for movement about a horizontally disposed transversely extending axis. Means is carried by the other end of the main frame for swivel connection to a mooring cleat or similar fixture carried by a boat and accordingly, the boat may be raised relative to the mooring structure or dock and the swivel connection of the mooring apparatus with the boat will enable the boat to pitch fore and aft as well as to opposite sides.

The mooring apparatus of the instant invention includes a boarding ramp which is secured to the main frame of the mooring apparatus and the boarding ramp may be substantially planar or may assume the configuration of a stair assembly including a plurality of steps in the event one end of the main frame is disposed considerably lower than the other end thereof.

The main frame of the mooring apparatus is longitudinally extendible and includes means resiliently urging the main frame to an intermediate position between extended and retracted positions. In this manner, the shock of a boat being moved by heavy seas is absorbed to a great extent by the mooring apparatus and in this manner the strain on the moored boat is reduced.

The main object of this invention is to provide a boat mooring apparatus and boarding ramp therefor which may be used either singly or in pairs to moor a boat to a mooring structure such as a dock in a manner whereby the rise and fall of the water in which the boat is positioned will be automatically compensated for within predetermined extremes.

A further object of this invention is to provide a boat mooring apparatus having a boarding ramp including a retractable stair assembly whereby when the boarding ramp is disposed at an extreme angle the stair assembly may be moved to an operative position to assist persons boarding and departing from the boat.

Still another object of this invention is to provide a mooring apparatus including a railing assembly whereby persons using the boarding ramp may steady themselves while moving from the dock to the boat.

Still another object of this invention, in accordance with the preceding objects is to provide a mooring apparatus which is retractable and which may be pivoted to an out-of-the-way position on the dock in order that boats may move alongside the dock without interference from the boat mooring apparatus.

Another object of this invention is to provide a boat mooring apparatus which will be permanently secured to a mooring structure such as a dock and which may be quickly engaged with and removed from engagement with a boat.

Still another object of this invention, in accordance with the immediately preceding object, is to provide a boat mooring apparatus including means for swivel connection with a boat which is constructed in a manner

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whereby the connection between the mooring apparatus and the boat will be semi-automatic.

A final object to be specifically enumerated herein is to provide a boat mooring apparatus in accordance with the preceding objects which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a view in perspective of the boat mooring apparatus of the instant invention being utilized to secure a boat to a mooring structure such as a dock, parts of the dock and the boat being broken away;

FIGURE 2 is an enlarged longitudinal vertical sectional view taken substantially upon a plane passing through the longitudinal centerline of the boat mooring apparatus illustrated in FIGURE 1 and with the mooring apparatus in a substantially horizontally disposed position;

FIGURE 3 is a side elevational view of the boat mooring apparatus showing the manner in which it may be pivoted upwardly at its free end to a retracted position;

FIGURE 4 is a front elevational view of the mooring apparatus disposed in the retracted position;

FIGURE 5 is a fragmentary transverse vertical sectional view taken substantially upon the plane indicated by the section line 5-5 of FIGURE 2 and on somewhat of an enlarged scale;

FIGURE 6 is a fragmentary perspective view showing the manner in which the stair structure or assembly is pivotally secured to the boarding ramp of the boat mooring apparatus;

FIGURE 7 is an exploded perspective view of the main frame of the boat mooring apparatus;

FIGURE 8 is a perspective view similar to that of FIGURE 1 showing a modified form of boat mooring apparatus;

FIGURE 9 is a perspective view of the modified form of boat mooring apparatus illustrated in FIGURE 8 with parts thereof being broken away and a stair assembly shown mounted thereon;

FIGURE 10 is a longitudinal vertical sectional view similar to that of FIGURE 2 but showing the modified form of boat mooring apparatus;

FIGURE 11 is a transverse vertical sectional view taken substantially upon the plane indicated by the section line 11-11 of FIGURE 10 with parts of the modified form of boat mooring apparatus being broken away;

FIGURE 12 is an enlarged fragmentary longitudinal vertical sectional view taken substantially upon the plane indicated by the section line 12-12 of FIGURE 11;

FIGURE 13 is a perspective view of the mounting bracket of the modified form of boat mooring apparatus which is used to mount the mooring apparatus on a mooring structure such as a dock;

FIGURE 14 is a fragmentary enlarged sectional view showing the manner in which the stair assembly of the boat mooring apparatus illustrated in FIGURE 1 may be removably secured in an operative position; and

FIGURE 15 is an enlarged fragmentary sectional view taken substantially upon the plane indicated by the section line 15-15 of FIGURE 10.

Referring now more specifically to the drawings the numeral 10 generally designates a mooring structure such as a dock and the reference numeral 12 generally designates a boat which is moored to the dock 10 by means of the boat mooring apparatus of the instant invention.

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The boat mooring apparatus is generally referred to by the reference numeral 14 and as can best be seen from FIGURES 1, 4 and 7 of the drawings the boat mooring apparatus 14 includes a mounting bracket generally referred to by the reference numeral 16 which is secured to the side of the dock 10 in any convenient manner such as by fasteners 18. The mounting bracket 16 includes a plurality of generally horizontally disposed and laterally outwardly projecting mounting flanges 20, 22 and 24 and a pair of apertured mounting ears 26 and 28 which also project outwardly of the mounting bracket 16.

A main frame generally referred to by the reference numeral 30 is provided and includes two substantially rigid opposite and longitudinally extending flange portions 32 and 34 and an intermediate and resilient substantially U-shaped and laterally opening intermediate portion 36. The free ends of the intermediate portion 36 are formed integrally with the adjacent ends of the end portions 32 and 34 and it will be noted that the rigid end portion 32 includes an elongated and substantially straight extendible member 38. The end portion 34 is apertured as at 40 and is secured between the apertured flanges 26 and 28 by means of a pivot pin 42.

The extendible member 38 is secured to the end portion 32 by means of suitable fasteners 44 secured through the pair of apertures 46 formed through the end portion 40 and a corresponding one of the plurality of pairs of apertures 48 formed in the extendible member 38. In addition, it will be noted that the extendible member 38 has a pair of apertures 50 formed therein to which an L-shaped mounting bracket generally referred to by the reference numeral 52 is secured by means of fasteners 54 secured through the aligned apertures 56 formed in the flange 58 of the L-shaped bracket 52 and the apertures 50. The flange 60 of the L-shaped bracket 52 is apertured as at 62 and is secured to a boarding ramp generally referred to by the reference numeral 64 by means of fasteners 65. It will be noted therefore that the boarding ramp 64 is secured to only one of the end portions of the main frame and that the boarding ramp 64 is disposed in overlying sliding contacting relation with the intermediate portion 36 and the end portion 34 of the main frame 30.

A stair assembly generally referred to by the reference numeral 66 and including a pair of steps 68 and 70 is pivotally secured to the boarding ramp 64 by means of hinge assemblies 72 and may be pivoted from the operative position overlying the boarding ramp 64 illustrated in FIGURE 1 of the drawings and the upstanding position illustrated in FIGURE 2 of the drawings disposed at one side of the main frame 30.

Each of the hinge assemblies 72 includes a spring 74, see FIGURE 6 for normally resiliently urging the stair assembly 66 to the retracted position. The boarding ramp 64 includes an L-shaped abutment bracket 76 which is secured to the boarding ramp 64 in any convenient manner such as by welding 78. The upstanding leg 80 of the bracket 76 is utilized to engage the stair assembly 66 and to define its uppermost retracted position disposed at one side of the main frame 30. Additionally, it will be noted that a latch assembly generally referred to by the reference numeral 82 is secured to the boarding ramp 64 by means of fasteners 84 and that the latch assembly includes a cylindrical body portion 86 in which there is disposed the shank portion 88 of an L-shaped latch generally referred to by the reference numeral 90. The latch 90 is urged toward the retracted locked position illustrated in solid lines in FIGURE 14 by means of a compression spring 92 and the free end portion of the latch 90 includes a curved cam surface 94 for engagement by the corresponding side of the stair assembly 66 for retaining the latter in the operative position illustrated in FIGURE 1 of the drawings. If it is desired to raise the stair assembly 66 to the inoperative position illustrated in FIGURE 2 of the drawings, the latch 90 is urged outwardly against the compression spring 92 whereupon the stair

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assembly 66 will then be free to be raised and disposed in abutting relation with the upstanding leg 80 of the abutment bracket 76.

A pair of generally inverted U-shaped end frame members 96 and 98 are secured to opposite sides of the free end of the extendible member 38 by means of fasteners 100 secured through aligned apertures (not shown) formed in the confronting downturned ends of the members 96 and 98 and the apertures 102 formed in the free end of the extendible member 38.

One end of a mooring arm generally referred to by the reference numeral 104 is also secured between the confronting downturned end portions of the end frame members 96 and 98 and includes a releasable ball socket assembly generally referred to by the reference numeral 106 on its free end similar to that disclosed in U.S. Patent No. 2,920,597. The ball socket assembly comprises a rigid bifurcated plate end portion generally referred to by the reference numeral 108 and a movable bifurcated plate end portion generally referred to by the reference numeral 110. The end portion 110 is mounted for pivotal movement relative to the end portion 108 and the end portions 108 and 110 define semi-spherical recesses which open toward one another. A mooring cleat generally referred to by the reference numeral 112 is provided with a ball member 114 and is secured to the boat 12 by means of fasteners 116. The ball member 114 may be releasably engaged between the end portions 108 and 110 and it will be noted that a spring 118 is provided for resiliently urging the movable end portion 110 into engagement with the end portion 108. In addition, a latch member 120 is provided for releasably retaining the end portion 110 in a closed position. A push rod 122 is connected between the latch member 120 and opens through the end portion 110 between the furcations thereof for engagement by the ball 114 in order to move the latch member 120 to a released position upon engagement with the ball member. A threaded shank carried by the end portion 108 projects upwardly through a bore formed in the end portion 110 and the threaded shank 124 is engaged by means of a wing nut 125 for positively retaining the end portion 110 in a closed position snugly embracing the ball 114 between the end portion 110 and the end portion 108, see FIGURE 1.

A pair of upstanding railing standards generally referred to by the reference numerals 126 and 128 are secured to the flanges 20 and 24 respectively at their lower ends and each includes a bifurcated upper end portion 130. An expansion spring 132 is secured between the upper end of each of the standards 126 and 128 and the free end of the main frame 30 which normally resiliently urge the free end of the main frame 30 toward an upwardly inclined retracted position such as that illustrated in FIGURE 3 of the drawings. However, it will be noted from FIGURE 3 of the drawings that the expansion springs 132 are utilized merely to raise the free end of the frame 30 initially whereupon it must thereafter be raised manually.

The remote ends of the end frame members 96 and 98 each have the lower end of an upstanding railing support generally referred to by the reference numeral 134 pivotally secured thereto and each of the upstanding railing supports 134 includes a bifurcated upper end portion 136. A pair of generally inverted U-shaped railing members generally referred to by the reference numerals 138 each include a pair of depending leg members 140 and 142 and the lower ends of the leg members 140 and 142 are pivotally secured to the corresponding bifurcated end portions 130 and 136 respectively. It will be noted that inasmuch as the railing members 138 are U-shaped there is no possibility of the angular disposition of the leg members 140 or 142 and the standards and supports 128 and 134 enabling a hand or finger to be caught between these articulated members, see FIGURE 3.

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With attention now directed to FIGURES 8 through 12 of the drawings there will be seen a modified form of boat mooring apparatus generally referred to by the reference numeral 14'. The boat mooring apparatus 14' is quite similar to the mooring apparatus 14 and parts of the boat mooring apparatus 14' similar to the boat mooring apparatus 14 are designated by numerals corresponding to those given the similar portions of the boat mooring apparatus 14.

The main difference between the boat mooring apparatus 14 and the apparatus 14' is that the apparatus 14' includes a boarding ramp generally referred to by the reference numeral 150. The boarding ramp 150 is substantially U-shaped in transverse cross section and includes a bottom 152 and a pair of upstanding sides 154 and 156. A plurality of tread members 158 are secured in overlying relation to the bottom 152 and between the upstanding sides 154 and 156 and are spaced longitudinally of the boarding ramp 150.

The sides 154 and 156 are apertured as at 160 for the reception of pins 162 which may be utilized to secure the stair assembly 164 to the boarding ramp 150. The stair assembly 164 includes a pair of mounting ear portions 166 over which the pins 162 are disposed when inserted through apertures 160 and the lower end of the stair assembly 164 includes a pair of mounting ears 168 which are removably receivable in the recesses 170 formed in the lowermost tread member 158, see FIGURES 9 and 10.

As can best be seen from FIGURE 12 of the drawings the upstanding railing standards 126' and 128' each comprise a tubular member 172 which is provided with a lower end plug 174 which is rigidly secured to the lower end of the tubular member 172 in any convenient manner such as by welding 176. The end plug 174 includes a threaded shank portion 178 which is secured through the corresponding support flange by means of a fastener 180. An upper end plug 182 is secured to the upper end of the tubular member 172 in any convenient manner such as by welding 184 and the bifurcated end portion 130' is formed on the upper end plug 182.

It may be seen from FIGURES 8-14 that the railing supports 134' of the boat mooring apparatus 14' each include an upper section 184 on which the bifurcated upper end portion 136' is formed. The lower end of the upper section 184 is pivotally secured to the apertured upper end 186 of the lower section 188 by means of pivot fastener 190 for rotation about an axis extending transversely of said upper and lower sections. The lower end of the lower section 188 includes a shank portion 192 rotatably secured through the corresponding end of the end frame member 96' by means of fastener 194 for rotation about the longitudinal axis of said lower section 188. It will be noted that the railing supports 134 are similar and secured to the end frame member 96 in a like manner.

It may thus be seen that herein described is a boat mooring apparatus including a boarding ramp which may be conveniently used with little effort to efficiently moor a boat to a mooring structure such as a dock.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A boat mooring apparatus and boarding ramp therefor comprising a main frame having opposite ends and upper and lower sides, mounting means adapted to be secured to a mooring structure and having one end of said main frame pivotally secured thereto for movement about a horizontally disposed transversely extending axis,

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mooring means carried by the other end of said frame adapted to be swivelly secured to a boat, said main frame being longitudinally extendible and including means resiliently urging said main frame to an intermediate position between extended and retracted positions, a boarding ramp, means securing said boarding ramp to the upper side of said main frame, a stair assembly, means securing one side of said stair assembly to the upper surface of said boarding ramp for swinging movement about an axis extending along one side of said boarding ramp.

2. The combination of claim 1 including means releasably securing said stair assembly in an operative position overlying and extending along said boarding ramp.

3. The combination of claim 2 including abutment means carried by said boarding ramp engageable with and for defining a limit position for said stairway in an upstanding inoperative position along one side of said boarding ramp.

4. A boat mooring apparatus and boarding ramp therefor comprising a main frame having opposite ends and upper and lower sides, mounting means adapted to be secured to a mooring structure and having one end of said main frame pivotally secured thereto for movement about a horizontally disposed transversely extending axis, mooring means carried by the other end of said frame adapted to be swivelly secured to a boat, said main frame being longitudinally extendible and including means resiliently urging said main frame to an intermediate position between extended and retracted positions, at least one upstanding railing standard carried by said mounting means and disposed at one side of said main frame, an upstanding railing support pivotally secured at its lower end to said other end of said frame for movement about a horizontally disposed axis, and a railing member extending between and pivotally secured at opposite end portions to the upper end portions of said railing standard and said railing support.

5. The combination of claim 4 wherein said railing member is substantially inverted U-shaped and includes a pair of generally parallel leg members interconnected at their upper ends by means of a bight portion, said railing member being pivotally secured to said railing standard and said railing support at the lower ends of said leg members.

6. A boat mooring apparatus and boarding ramp therefor comprising a main frame having opposite ends and upper and lower sides, mounting means adapted to be secured to a mooring structure and having one end of said main frame pivotally secured thereto for movement about a horizontally disposed transversely extending axis, mooring means carried by the other end of said frame adapted to be swivelly secured to a boat, said main frame being longitudinally extendible and including means resiliently urging said main frame to an intermediate position between extended and retracted positions, said main frame including a pair of substantially rigid end portions interconnected by means of a resilient laterally opening U-shaped mid-portion.

7. A boat mooring apparatus and boarding ramp therefor comprising a main frame having opposite ends and upper and lower sides, mounting means adapted to be secured to a mooring structure and having one end of said main frame pivotally secured thereto for movement about a horizontally disposed transversely extending axis, mooring means carried by the other end of said frame adapted to be swivelly secured to a boat, said main frame being longitudinally extendible and including means resiliently urging said main frame to an intermediate position between extended and retracted positions, at least one upstanding railing standard carried by said mounting means and disposed at one side of said main frame, an upstanding railing support pivotally secured at its lower end to said other end of said frame for movement about

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a horizontally disposed axis, and a railing member extending between and pivotally secured at opposite end portions to the upper end portions of said railing standard and support, and an expansion spring secured between the upper end of said standard and said other end of said main frame.

8. A boat mooring apparatus and boarding ramp therefor comprising a main frame having opposite end portions and upper and lower sides, mounting means adapted to be secured to a mooring structure and having one end of said main frame pivotally secured thereto for movement about a horizontally disposed transversely extending axis, mooring means carried by the other end of said frame adapted to be swivelly secured to a boat, said main frame being longitudinally extendible and including means resiliently urging said main frame to an intermediate position between extended and retracted positions, a boarding ramp, means securing said boarding ramp to the upper side of said main frame, said boarding ramp being fixedly secured to one of said end portions and disposed in overlying sliding contacting relation with the other end portion of said main frame.

9. A boat mooring apparatus and boarding ramp therefor comprising a main frame having opposite ends and upper and lower sides, mounting means adapted to be secured to a mooring structure and having one end of said main frame pivotally secured thereto for movement about a horizontally disposed transversely extending axis,

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mooring means carried by the other end of said frame adapted to be swivelly secured to a boat, said main frame being longitudinally extendible and including means resiliently urging said main frame to an intermediate position between extended and retracted positions, said means carried by said other end of said frame comprising ball socket defining means, a ball mooring bracket adapted to be secured to a boat, said ball mooring bracket including a ball portion releasably and swivelly engageable with said ball socket defining means, said main frame including a pair of substantially rigid end portions interconnected by means of a resilient laterally opening U-shaped mid-portion.

10. The combination of claim 9 including a boarding ramp, means securing said boarding ramp to the upper side of said main frame, said boarding ramp being fixedly secured to one of said rigid end portions and disposed in overlying sliding contacting relation with the other rigid end portion and the resilient U-shaped mid-portion of said main frame.

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