June 8, 1965 J. A. ROSS 3,187,706

BOAT FENDING, MOORING AND DOCKING APPARATUS

Filed Nov. 9, 1961 2 Sheets-Sheet 1

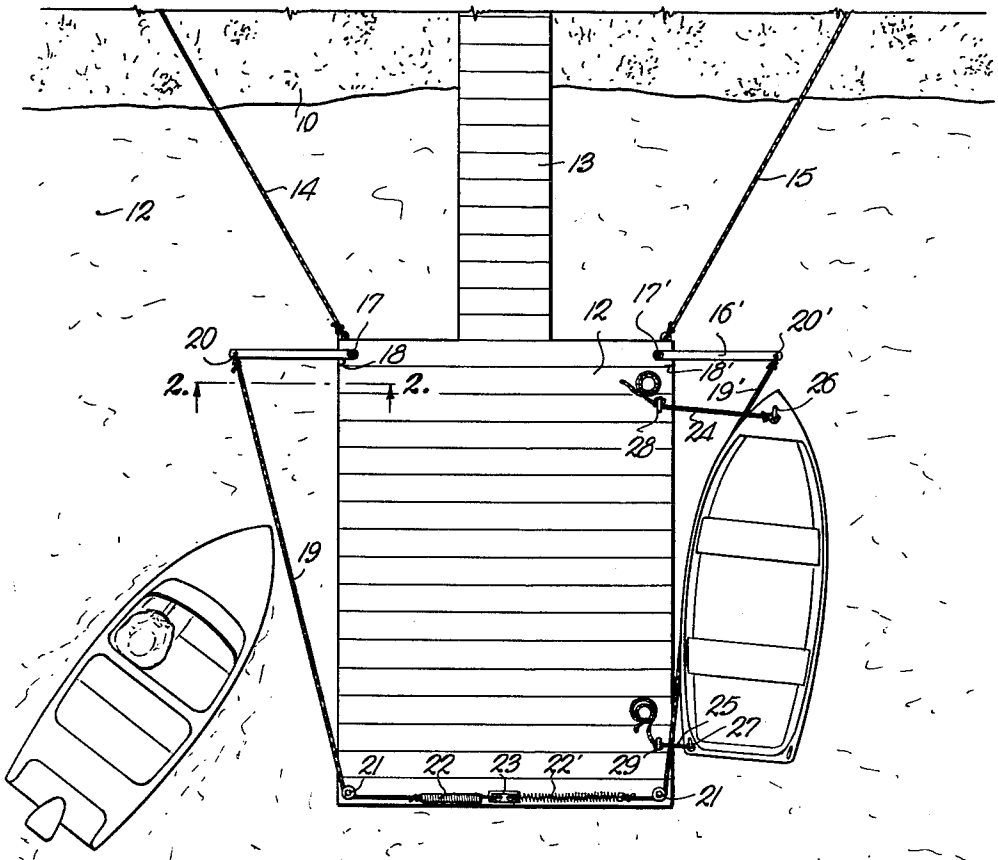


Fig. 1.

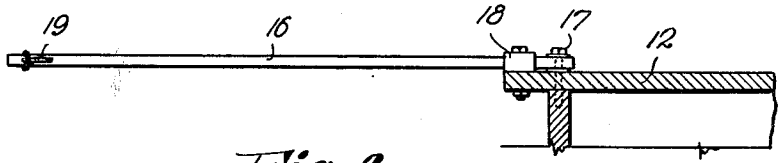


Fig. 2.

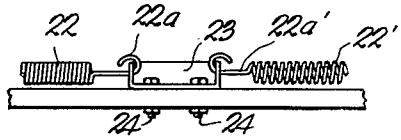


Fig. 3.

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BOAT FENDING, MOORING AND DOCKING APPARATUS

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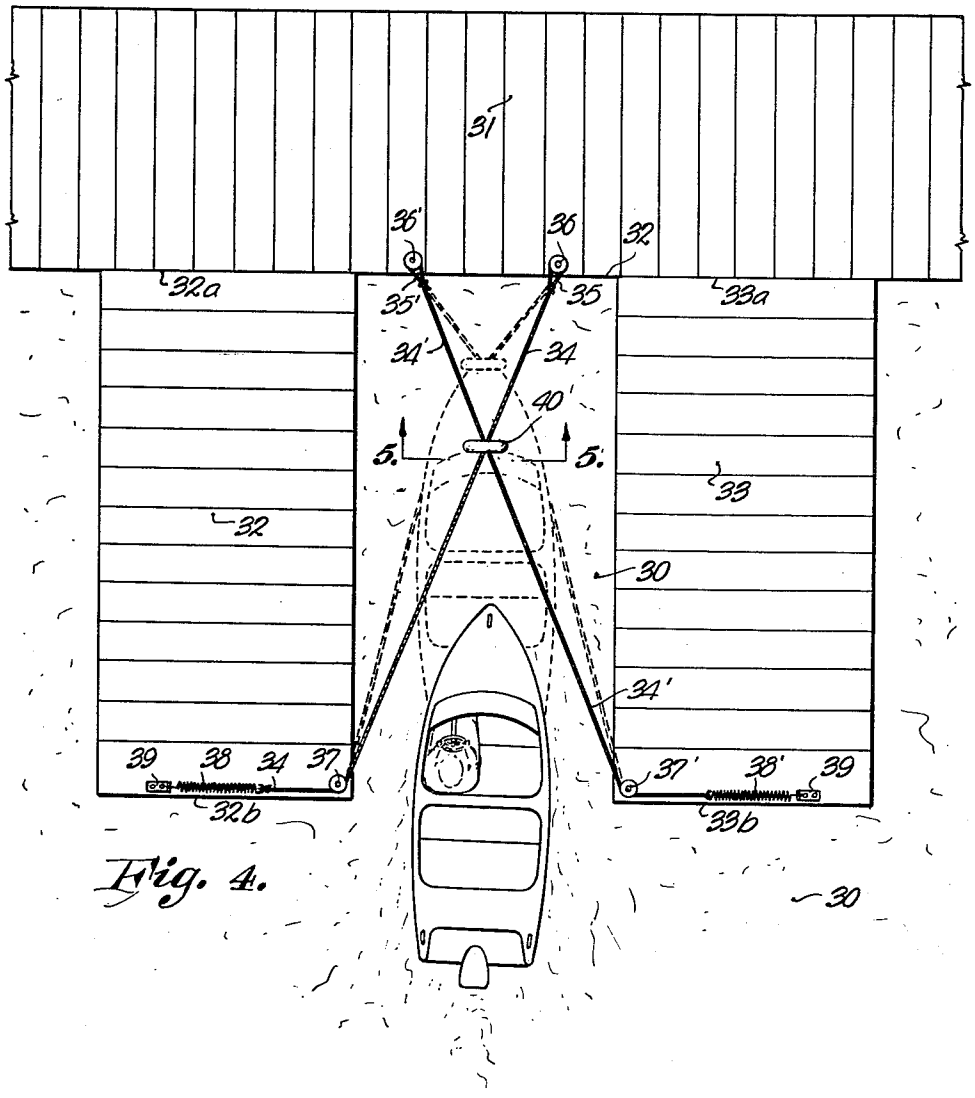


Fig. 4.

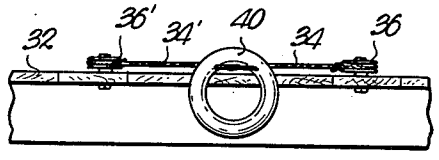


Fig. 5.

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BOAT FENDING, MOORING AND DOCKING APPARATUS

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This invention relates to boat fending, docking and mooring aids and refers more particularly to means and devices which are effective for such several purposes.

An object of the invention is to provide means which may be installed upon a boat pier or dock, either shore connected or not, and which are adapted to guide dock approaching boats into proper mooring relationship to the dock.

Another object of the invention is to provide means installable on boat piers or docking facilities, shore connected or not, which are adapted to continuously position boats in proper relationship to the docking facilities when the boats are tied or attached thereto, such means thereby minimizing need for conventional fender means and other boat positioning pier aids.

Another object of the invention is to provide means for both aiding boats in approaching docking facilities, and continuously positioning boats relative to the docking facilities after tying up thereto.

Another object of the invention is to provide boat fending, docking and mooring means as described which are strong and rugged in long time all weather outdoor operation.

Another object of the invention is to provide boat handling means and devices such as described which are readily installed, cheap to install and maintain, positive in operation, take up a minimum space and wherein all of the parts are readily accessible for checking, replacement or repair.

Another object of the invention is to provide means which may be very quickly installed by relatively unskilled personnel on boat docking facilities which will greatly aid the handling of boats relative to the docking facilities, both in coming up to the said facilities and tying thereto.

Another object of the invention is to provide boat docking aid means which effectively receive and help the approach of boats to the dock, yet which are self-protecting against injury by the boat as it approaches.

Another object of the invention is to provide such boat docking means and facilities as described which may be used on each side or any side of boat docking arrangements and which take up a minimum quantity of space whereby to provide a maximum convenience in handling boats, yet a minimum of trouble.

Still another object of the invention is to provide means which may be installed in a boat well adapted to guide a boat moving into the well into proper mooring relationship therein.

Another object of the invention is to provide means installable in a boat well adapted to continuously position a boat in proper relationship to the boat well when the boat is tied or moored therein, such means minimizing the need for conventional fender means and other boat positioning pier aids.

Another object of the invention is to provide boat fending, docking and mooring means for use in boat wells which are strong and rugged in long-time, all-weather outdoor operations, which are readily installed, cheap to install and maintain, positive in operation, take up a minimum of space and wherein all parts are readily accessible for checking, replacement or repair.

Another object of the invention is to provide boat well guiding, mooring and docking means which may be quickly installed by unskilled help, which are self-protecting against injury by the boat as it moves into the well and which take up a minimum quantity of space whereby to provide a maximum convenience in handling boats, yet a minimum of trouble.

Other and further objects of the invention will appear in the course of the following description thereof.

In the drawings, which form a part of the instant specification and are to be read in conjunction therewith, embodiments of the invention are shown and, in the various views, like numerals are employed to indicate like parts.

FIG. 1 is a plan view from above of a shore connected docking facility with the subject boat fending, docking and mooring means applied thereto.

FIG. 2 is a view taken along the line 2—2 of FIG. 1 in the direction of the arrows.

FIG. 3 is a detail of the connection of the means to the dock at one end thereof, taken at eye-level on the dock looking upwardly in FIG. 1.

FIG. 4 is a plan view from above of the inventive guiding, docking and mooring means applied to a boat well, a boat shown approaching the boat well in full lines with the mooring, etc. apparatus shown in its position at that time in full lines, with the boat engaging the said means shown in dotted lines with the position of the mooring, etc. means at that time shown in dotted lines, as well.

FIG. 5 is a view taken along the line 5—5 of FIG. 4 in the direction of the arrows.

Referring to the figures, at 10 is seen the shore line of a lake or other body of water 11 adapted to receive boats of any type. The particular boats illustrated comprise an outboard motor boat of small conventional type and a skiff, but it should be understood that the instant construction and invention is applicable to any size of boat from the smallest to the largest. A conventional dock structure generally designated 12 may be formed of a decking resting on oil drums or the like in a raft-type dock or on legs embedded in the bottom of the body of water 11 for a fixed dock. A walkway 13 communicates between the deck of the dock 12 and the shore. It should be pointed out that, generally, the height of the dock or raft decking above the water level is generally slightly below the deck levels or gunwale level of the type of boats which are intended to dock there. This is important in the application of the instant construction. Thus, the gunwale level of the skiff on the right in FIG. 1 is slightly above the decking level 12, as is the deck level of the motor boat approaching from the left in FIG. 1. A pair of cables or ropes 14 and 15 may be employed conventionally to secure the dock or brace the same relative to the shore.

All of the previously described environment of the invention is conventional and is not specifically directed to the novelty of the instant invention.

Turning to the apparatus, which, when applied in an environment similar to that described, comprises the instant invention, and referring more particularly to the left-hand side of FIG. 1, an elongate boom, shaft or rod 16 is pivotally mounted at one end by pin or bolt 17 whereby to be rotatable around the said pivot. A stop 18 is provided on the dock decking whereby to stop rotation in a counterclockwise direction in FIG. 1, but permit rotation in a clockwise direction. The boom 16 extends parallel to the decking 12 or substantially parallel thereto. The length of the boom is dependent upon the size and type of boat and length of the said boat which is desired to be moored. The boom should be of strong wood or metal. A cable or rope 19 is fixed at one end thereof to the outer end or adjacent the outer end of the boom 16 at 20 and passes to guide means 21 which is positioned on the edge of the dock and adjacent said edge and preferably

comprises a pulley or sheave or hollowed pin which will retain the rope or cable against upward or downward motion to spring free of the guide means, yet permit the rope or cable to move readily therethrough or therepast. Connected to the other end of rope 19 from that secured to boom 16 are resilient means such as a coil spring 22 which is fixed at its free end to the dock by means of a clip or plate 23 as seen in FIG. 3. Plate 23 is bolted by bolts 24 to the dock decking and may be engaged by a hook 22*a* of the spring.

If the dock structure is two-sided as seen in FIG. 1, the precise mirror image of the construction immediately above-described may be applied thereto. This is shown and the identical parts are numbered the same, but primed. It may be seen that both resilient means 22 and 22' may be fastened to the same securing means 23.

In use of the instant device, reference is first made to the left-hand side of FIG. 1. There is seen the apparatus comprising the fending, docking and mooring means prior to the impact of the boat. The boat comes in at a slow speed to strike with its bow the cable 19 at an acute angle. This impact deflects the boat along the cable 19 parallel to the dock, while spring the cable in closer to the dock and permitting the weight of the boat to carry, against spring 22, the boat up close to the dock whereby the operator can step ashore and tie the boat to suitable cleats by ropes or the like. If the speed of the boat is too great for an optimum approach, the bow of the boat will tend to be deflected outwardly by the cable as it approaches the outer end of the boom at 20. Additionally, if the nose of the boat should actually come up to or strike the boom 16, boom 16 is free to rotate in a clockwise direction, resisting the forward motion with the spring 22 whereby to stop the boat and tend to return it to proper position.

The right-hand side of FIG. 1 shows a moored boat wherein the instant construction provides the complete fending facility whereby to obviate the need for mechanical fenders carried in the boat. The boat is sprung out continually by the cable and spring 22 whereby not to abrade the side of the boat or the side of the dock. Ropes 24 and 25 engage front and rear cleats 26 and 27 on the boat and front and rear cleats 28 and 29 on the dock to provide secure stern and bow engagement. Once the ropes are released, the boat is sprung naturally outwardly from the dock whereby to be readily moved there away from by a motor or force without excessive shoving and struggling against the dock. The boat is naturally positioned so as to be easy to enter and leave.

It should be noted that the structure of FIGS. 1–3, inclusive, may be applied to any type of structure including a boat or ship next to which another boat or ship is to be positioned.

Referring to FIG. 4, at 30 is designated a body of water adapted to receive boats of any type. The particular boat illustrated comprises an outboard motor boat of small conventional type but, it should be understood, that the mooring means illustrated is applicable to any size of boat from the smallest to the largest. A base dock structure 31 has a water facing edge 32 and may be formed of a decking resting on oil drums or the like in a raft-type dock, or on legs embedded in the bottom of the body of water 30 for a fixed dock. A pair of boat well side dock structures 32 and 33 are connected at their inward ends 32*a* and 33*a* to the base dock structure 31 and have their outwardly extending ends 32*b* and 33*b* positioned away therefrom whereby to define the boat well therebetween. The boat well is of any desired width and depth depending upon the type of boat to be received therein.

A first cable means 34 is connected at its inward end 35 to a suitable cleat or fastener 36 on a dock structure 31. Cleat 36 is spaced away from side dock structure 32. Cable means 34 passes over the boat well to a guide means or pulley 37 on the side dock structure 32 adjacent the outer end thereof and also adjacent the boat well. A resilient spring or other resilient means 38 is positioned preferably at the end of cables 34 and connects at one end thereof to the end of the cable and at the other end to any suitable connection 39. The resilient means may be positioned in the cable 34 anywhere intermediate the ends thereof and preferably adjacent one of the ends thereof, most preferably in the position shown.

A second cable means is provided of the same type as cable means 34 and is mounted in the same but opposite fashion, whereby all of the parts thereof will be numbered the same as cable means 34, but primed. The second cable means will not be redescribed as it is the same as cable 34, the first cable means, but opposed thereto. The two cable means 34 and 34' cross in the boat well, preferably adjacent the base dock structure 31. The closer together the cleats 36 and 36' are placed, the closer the juncture of the cables to the base dock structure 31 will be. The juncture must be spaced sufficiently into the boat well to avoid the boat coming thereinto striking the base dock structure if its velocity is relatively high. Also, the mass of the boat and strength of the cables must be taken into account as well as the fitting thereof.

Engaging means 40 are preferably provided to overlie the juncture of the cables whereby to limit the translation of the juncture or separation of the cables by the movement of a boat therebetween as seen in FIG. 4. Such an engaging means may conveniently be an automobile tire or the like or a ring of like resilient strong material.

In use and operation of the modification of the invention shown in FIGS. 4 and 5, with the apparatus in full line showing of FIG. 4, the boat 41 approaches directly into the boat well. One of the great advantages of this system applied to the boat well is that a boat coming in at an angle is deflected, from either side, to a proper center position without striking the walls of the well. As the prow of the boat moves up to the juncture of the cables, depending upon the velocity of the boat, the juncture is translated inwardly with the engaging means 40 moved toward the base dock structure 31. As the momentum of the boat is absorbed in the cable system in springs 38 and 38', the boat comes to a halt and tie up to the cleats on the dock structures as described may be effected. For disembarking, the stern of the boat may be moored closer to one side dock than the other. To move the boat out of the boat well, the moorings are merely cast off and the boat pushed or backed out. While mooring, the cable means prevent the boat striking either of the side dock structures or the end structure and obviate the need for fending means. Indeed, the prow of the boat alone can be moored, if desired, with the cables spacing the boat from the dock side structures.

From the foregoing it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth together with other advantages which are obvious and which are inherent to the structure.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. Apparatus for docking and mooring boats in water relative to the side of a dock structure, the improvement which comprises, in combination, an elongate boom pivotally mounted adjacent one end thereof on the side edge of said dock structure and normally extending out at a substantial angle to the dock structure over the water, stop means on said dock structure on one side of said boom limiting pivotal movement of the free end thereof toward said dock in one direction past a boom position at a substantially normal orientation to said dock, cable means connected to the free end of the boom extending

along the dock side edge and connecting to the side edge of the dock structure on the side of the boom having said stop means and at a relatively shallow angle to and at a point spaced substantially along said dock from said boom connection, and resilient means in said cable intermediate the length thereof between the boom and dock connections, said resilient means of such extendability as to permit pivoting of said boom in a substantial arc around its pivot away from said stop should said boat exert force thereagainst.

2. Apparatus as in claim 1 wherein the portion of the cable means connecting to the dock structure at a position therealong away from said boom is passed around a low friction guide means at a substantial angle to the dock side edge the cable runs along and is thereafter connected to said dock substantially inwardly of said dock side edge, said resilient means positioned in the length of said cable between said low friction guide means and said cable dock connection inboard thereof on the dock.

3. Apparatus as in claim 1 including two boat mooring cleats on the dock side edge the cable runs along between the boom stop and the point along the dock side where the cable reaches said side.

4. Apparatus for docking and mooring boats relative to the sides of a dock structure comprising an elongate rectangular dock structure extending outwardly into a body of water from a shore connection at a substantial angle to said shore, said dock having at least two substantially parallel first and second boat receiving side edges thereof accessible to boats from said body of water and a third outer side edge connecting substantially normal to said first and second side edges' outer ends away from shore, an elongate boom pivotally mounted at one end thereof adjacent the shore end of each of said parallel dock structure edges, stop means on each said dock side edge limiting pivotal motion of each boom toward said third side at a substantial normal angle of each said boom to said dock side edge mounting same, a separate cable means connected at one end thereof adjacent each boom free end and running along each said first and second dock side edge toward said third side edge for a substantial distance over the water and only reaching the respective side edge of the dock structure close to the juncture of same with the third side edge, each length of said cable extending from the boom end to the dock side edge over the water at a relatively shallow angle relative to the dock side edge, a pair of low friction cable guides on said dock one adjacent each offshore end connection of said first and second side edges with said third side edge, the opposite end portions of each said cable away from said boom connection thereof led around one of said guides at a substantial right angle and thereafter connected to said dock structure at a point substantially intermediate the length of the third side edge of said dock structure and closely adjacent same, resilient means in each cable length of such extendability as to permit pivoting of each said boom in a substantial arc around its pivot away from said stop means should a boat exert force against same, each said resilient means positioned in the length of the cable carrying same between said low friction cable guide and said dock connection.

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