Oct. 18, 1960 C. F. BANKER 2,956,531

MOORING DEVICE

Filed Jan. 6, 1959 3 Sheets-Sheet 1

FIG. 1.

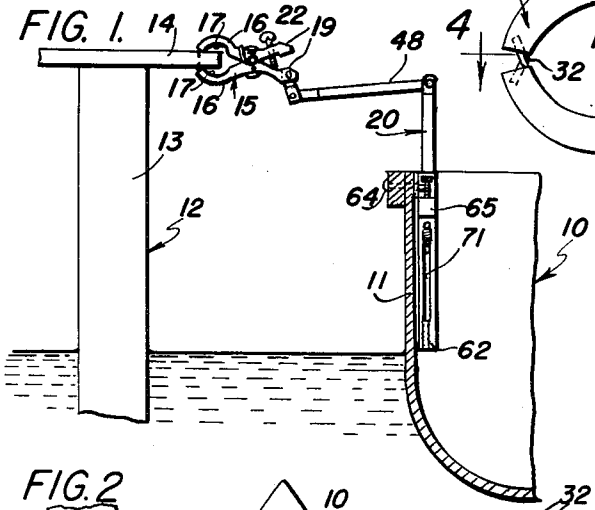


FIG. 3.

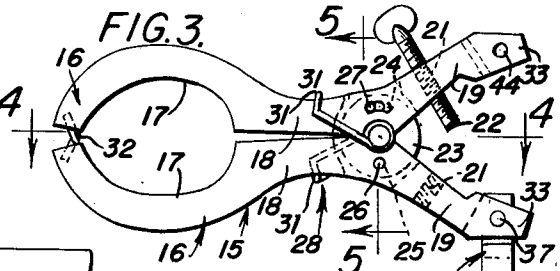


FIG. 6.

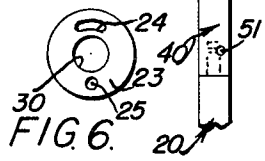


FIG. 2

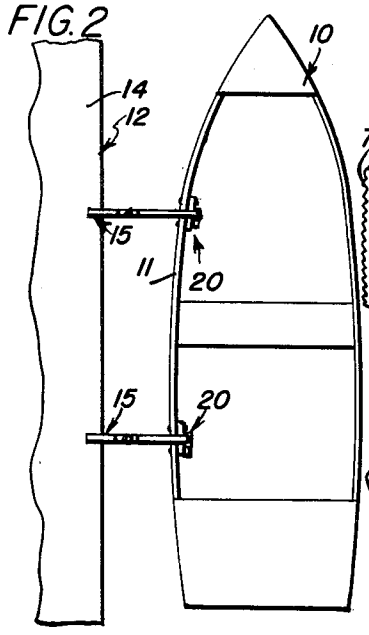


FIG. 4.

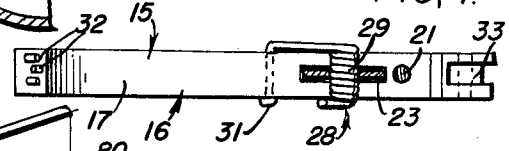


FIG. 17.

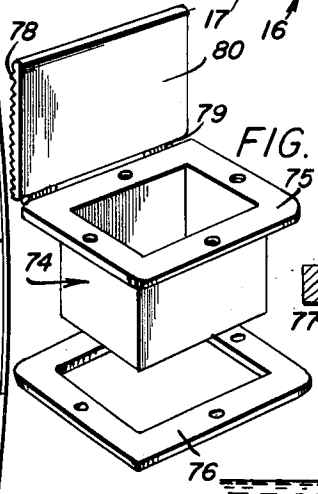


FIG. 16.

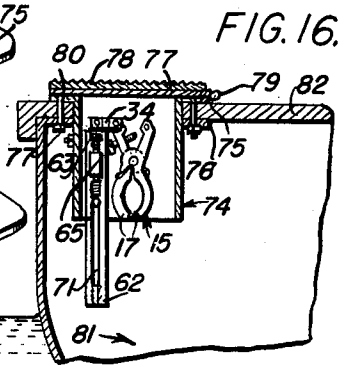
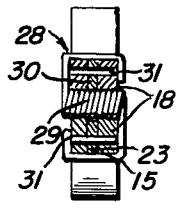


FIG. 5.



INVENTOR.
CHARLES F. BANKER
BY Victor J. Evans & Co.
ATTORNEYS

Oct. 18, 1960 C. F. BANKER 2,956,531

MOORING DEVICE

Filed Jan. 6, 1959 3 Sheets-Sheet 2

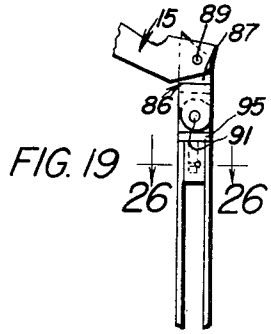


FIG. 19

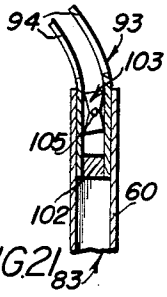
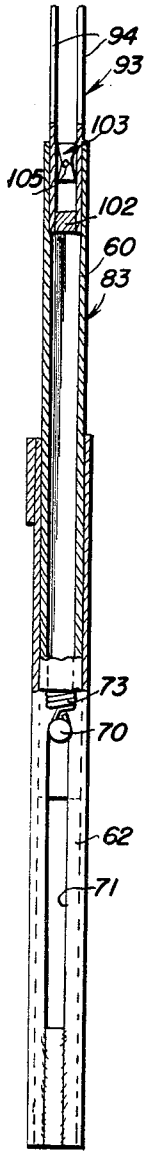


FIG. 21



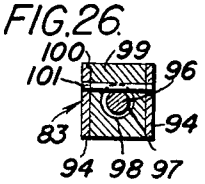


FIG. 26

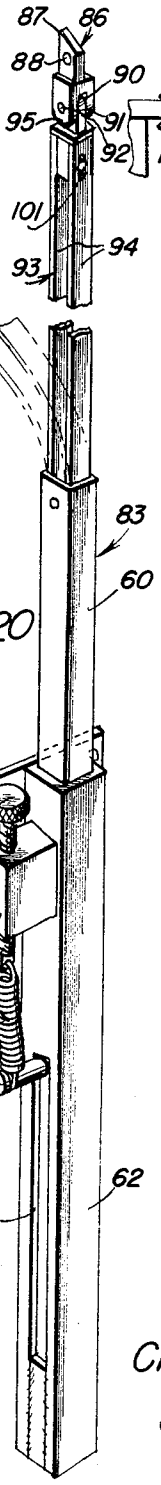


FIG. 20

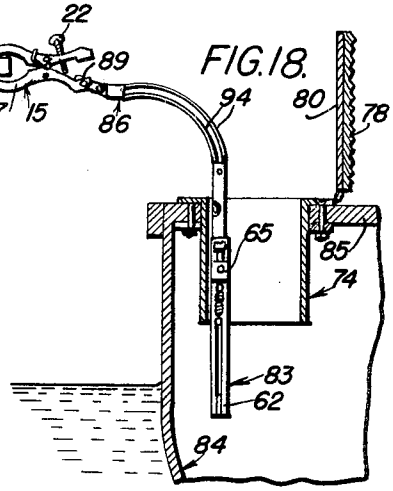


FIG. 18

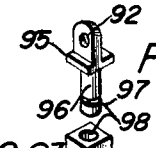


FIG. 23

FIG. 22

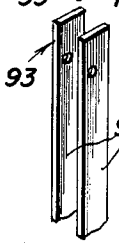


FIG. 24

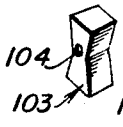


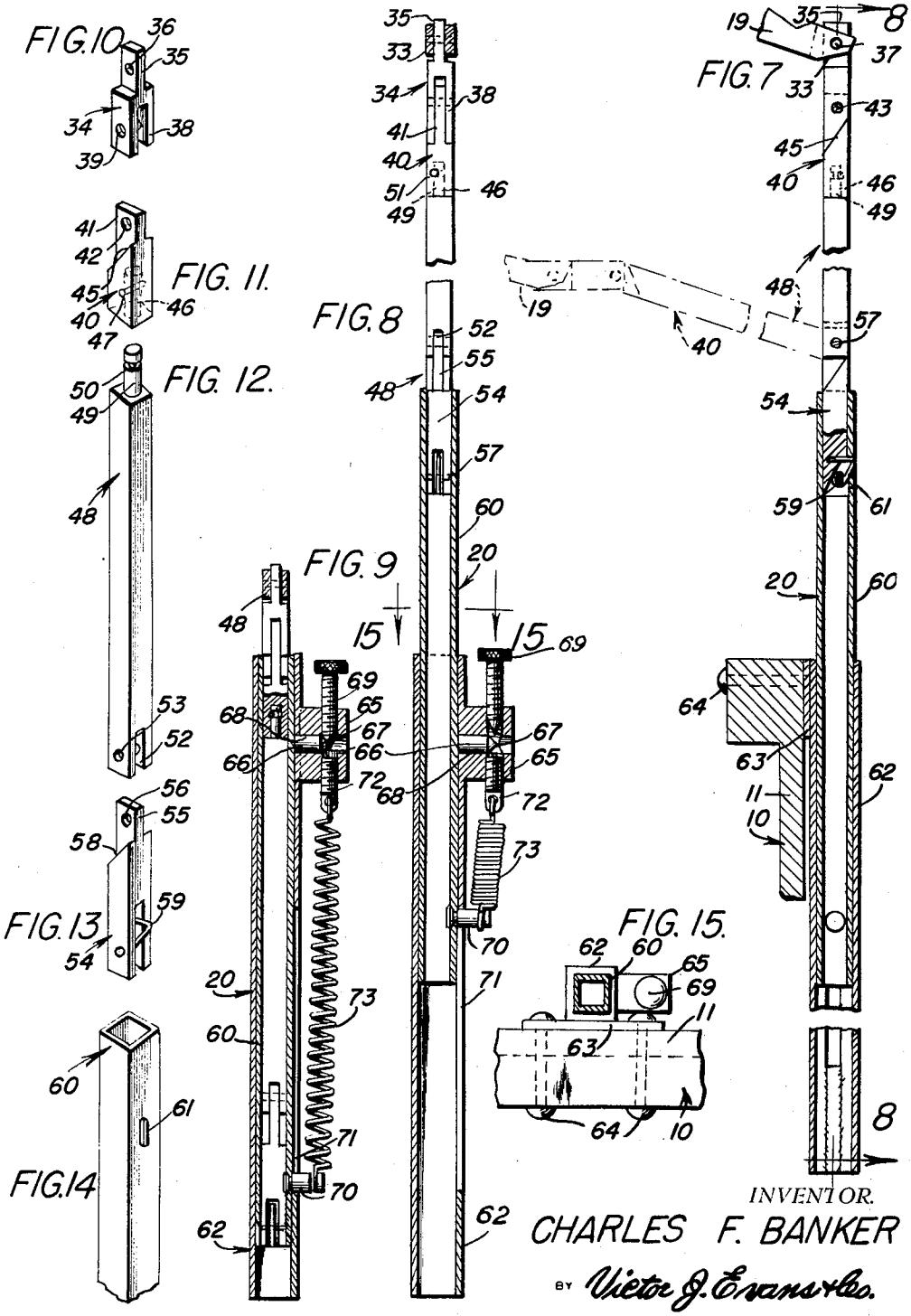
FIG. 25

INVENTOR.
CHARLES F. BANKER
BY Victor J. Evans & Co.
ATTORNEYS

Oct. 18, 1960 C. F. BANKER 2,956,531

MOORING DEVICE

Filed Jan. 6, 1959 3 Sheets-Sheet 3



United States Patent Office 2,956,531
Patented Oct. 18, 1960

2,956,531

MOORING DEVICE

Charles F. Banker, 719 South St., Racine, Wis.

Filed Jan. 6, 1959, Ser. No. 785,240

7 Claims. (Cl. 114—230)

This invention relates to a mooring device.

The object of the invention is to provide a mooring device which is especially suitable for use in mooring small craft, boats or the like to a stationary support such as a pier or other supporting structure.

Another object of the invention is to provide a mooring device for use with boats, wherein the mooring device will serve to retain the boats in the proper position alongside a pier or other structure and wherein the mooring device will permit the necessary amount of movement of the boat as for example when the boat rocks back and forth or moves up and down due to changing tide conditions, waves or the like.

Another object of the invention is to provide a mooring device which can be conveniently stored in an out-of-the-way position in the boat when it is not being used or when it is not required.

A further object of the invention is to provide a mooring device which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

Figure 1 is a fragmentary sectional view illustrating the mooring device of the present invention.

Figure 2 is a plan view of the assembly of Figure 1.

Figure 3 is an enlarged elevational view illustrating one of the clamps.

Figure 4 is a sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a sectional view taken on the line 5—5 of Figure 3.

Figure 6 is a plan view illustrating the washer or disc for use with the clamp of Figure 3.

Figure 7 is an elevational view illustrating one of the holding members, with parts broken away and in section.

Figure 8 is a sectional view taken on the line 8—8 of Figure 7.

Figure 9 is a fragmentary sectional view illustrating certain constructional details of the holding member.

Figures 10–14 are perspective views illustrating the members which constitute or make up one of the holding members.

Figure 15 is a sectional view taken on the line 15—15 of Figure 8.

Figure 16 is a fragmentary sectional view illustrating a modification, wherein the parts are shown stored away when not being used.

Figure 17 is a perspective view illustrating certain constructional details of the device of Figure 16.

Figure 18 is a view similar to Figure 1, but illustrating a modification.

Figure 19 is an enlarged sectional view illustrating the holding member of Figure 18.

Figure 20 is a perspective view of the holding member of Figures 18 and 19.

Figure 21 is a fragmentary view illustrating the locking device for the holding member of Figures 18–20.

Figures 22–25 are perspective views illustrating the members which constitute or make up the holding member of Figures 18–21.

Figure 26 is a sectional view taken on the line 26—26 of Figure 19.

Referring in detail to the drawings, and more particularly to Figures 1–15 of the drawings, the numeral 10 indicates a portion of a conventional boat which includes a wall portion 11, and the numeral 12 indicates an anchoring member such as a pier which includes an upright post 13 and a top member 14.

As shown in Figure 2 for example there is provided two holding members which are each indicated by the numeral 20, and the holding members 20 have clamps 15 connected thereto whereby a boat such as the boat 10 can be moored to the structure 12 when the boat is not being used.

As shown in Figure 3, each clamp 15 includes a pair of jaws 16 which are mounted for movement towards and away from each other, and each jaw 16 includes a curved end portion 17, an intermediate straight portion 18, and an offset end section 19. The end sections 19 are provided with threaded openings 21, and a screw member 22 is arranged in engagement with one of the openings 21 as shown in the drawings, the screw member 22 functioning as a stop so as to limit opening movement of the jaws 16.

The numeral 23 indicates a washer or disc which is connected to the pair of jaws 16, and the washer 23 is provided with an opening 25 and a slot 24 whereby pins 26 and 27 can be extended through the jaws and through the opening 25 and slot 24 so as to provide a pivot mounting between the pair of jaws 16. The jaws 16 are connected together by means of a spring member 28 which includes a coil portion 29 that extends through the opening 30 in the washer 23, and end portions 31 of the spring member 28 are arranged in engagement with the jaws 16 for normally urging the jaws 16 into closed position. Teeth or prongs 32 are carried by the jaws 16 for engagement with a member such as the member 14 so that a more firm grip will be provided by the mooring device of the present invention.

The ends of the jaws 16 are bifurcated or cut away as at 33, and each holding member 20 includes a first member 34 which has a portion 35 that is adapted to be pivotally connected to one of the bifurcated portions 33 by means of a pivot pin 37 which extends through openings 44 in the ends of the jaws, and the pin 37 is also adapted to extend through a registering opening 36 in an end 35 of the member 34. The first member 34 is also provided with a bifurcated portion 38 as well as openings 39, and the numeral 40 indicates a second member which has a portion 41 that is adapted to be pivotally connected to the bifurcated portion 38 by means of a pin 43, the pin 43 extending through registering openings 39 and 42. The pin 37 extends through the openings 44 in the end of the proper jaw 16 and through the opening 36 in the portion 35.

Each holding member 20 further includes a third member 48 which includes a reduced diameter end portion 49 that projects into a socket 46 in the second member 40, and the member 40 is provided with inclined surfaces 45. The member 40 is also provided with an opening 47 whereby a pin such as the pin 51 can be extended through the opening 47 and into engagement with a groove 50 on the end portion 49 so as to maintain the members 40 and 48 connected together. However, this construction permits relative rotation between the members 40 and 48 so that even though the boat is moored

to the structure 12, the boat can move slightly so as to prevent breakage or damage to the parts.

The lower end of the member 48 is bifurcated as indicated by the numeral 52, and there is also provided registering openings 53 in the lower end of the member 48. The numeral 54 indicates a fourth member which has an end portion 55 projecting into the bifurcated end 52, and the portion 55 is provided with an opening 56 that registers with the opening 53 whereby a pin such as the pivot pin 57 can be extended through the registering openings 53 and 56. The member 54 is provided with beveled or inclined surfaces 58, and the member 54 also carries a spring latch 59, for a purpose to be later described, Figure 13.

As shown in Figure 14 there is further provided a fifth member which is indicated generally by the numeral 60, and the member 60 is provided with a slot 61 for selectively or at times receiving the spring latch 59 of the member 54. The numeral 62 indicates a sixth member which telescopically or slidably receives the fifth member 60, and the members 60 and 62 are hollow. A means is provided for securing the housing or member 62 to the boat 10, and this means comprises a plate 63 which is secured as by welding to the member 62, and the plate 63 is connected or fastened to the boat 10 in any suitable manner, as for example by means of securing elements 64.

There is further provided a block 65 which is secured as by welding to the outer surface of the sixth member 62, Figures 8 and 9, and a pin 66 is movably or slidably mounted in a bore 68 of the block 65. The outer end of the pin 66 is tapered or pointed as at 67, and the inner end of the pin 66 is mounted for movement into and out of frictional locking engagement with the member 60. The pin 66 is slidably mounted in the bore 68 of the block 65. The numeral 69 indicates a setscrew which is adjustably connected to the block 65, and the lower end of the setscrew 69 is mounted for movement into and out of engagement with the tapered end 67 of the pin 66. Thus, by raising the setscrew 69, the lower end of the setscrew 69 will move clear of the tapered end 67 of the pin 66 so that the inner end of the pin 66 will not wedge or cam against the member 60. However, by tightening or adjusting the setscrew 69 downward in the block 65, the lower end of the setscrew 69 will move against the tapered end 67 of the pin 66 so as to force the inner end of the pin 66 against the outer surface of the member 60 whereby the members 60 and 62 will be maintained immobile in their adjusted or desired positions until the setscrew 69 is loosened.

There is further provided a pin member 70 which is connected to the lower portion of the member 60, and a slot 71 in the member 62 provides clearance so that the pin member 70 is free to travel through the slot 71 in the member 62. A securing element or bolt 72 depends from the block 65 and is connected thereto, and a coil spring 73 has its upper end connected to the securing element 72, while the lower end of the coil spring 73 is connected to the pin member 70. It will be seen that when the setscrew 69 is loosened so as to free the pin 66 from camming against the member 60, the coil spring 73 can function as a return spring so as to have a tendency to telescope the members 60 and 62 together.

Referring now to Figures 16 and 17 of the drawings, there is illustrated a modification which can be used for mooring larger boats, and in Figures 16 and 17 the numeral 74 indicates a hollow housing which is connected to the deck 82 of a boat 81. The housing 74 includes an upper flange 75, and as shown in the drawings, a rectangular bracket 76 is provided, and suitable securing elements such as the bolts 77 extend through the flange 75 and through the deck 82 and into engagement with the bracket 76 whereby the housing 74 will be maintained connected in its proper position. A cover 80 is hingedly connected to the housing 74 by means of a hinge 79, and the cover 80 is provided with a rubber tread 78. When the mooring device is not being used, it can be moved to folded or collapsed position as shown in Figure 16 and the rubber tread 78 on the cover 80 will prevent a person from slipping thereon. However, when it is desired to moor the boat 81, the cover 80 can be swung open on the hinge 79 so that the holding device can be removed from the housing 74 and then the clamp 15 can be engaged with a member such as the member 14 so as to properly moor the boat. In Figure 16 the plate 63 is secured to the housing 74 as shown in the drawings.

Referring now to Figures 18–26 of the drawings, there is illustrated a further modification wherein a mooring device is provided for a boat 84 of the type having a deck 85. The mooring device includes at least one holding member which is indicated by the numeral 83, and when the holding member 83 is not being used, it can be conveniently stored or moved to a folded position and placed within a housing such as the housing 74. The holding member 83 includes a first member 86 which has a portion 87 pivotally connected to a bifurcated portion 33 of the clamp 15 by means of a pivot pin 89 which extends through an opening 88. The first member 86 is provided with a bifurcated portion 90, and there is provided a second member 93 which has a portion 92 pivotally connected to the bifurcated portion 90 by means of a pivot pin 91. The second member 93 includes a pair of spring strips 94 which can be flexed from the solid line position shown in Figure 20 to the dotted line position shown in Figure 20. The numeral 95 indicates a flange above a swivel pin 96, Figure 22, and the pin 96 is provided with an annular groove 97, the pin 96 extending into a socket 98 which is formed in a block 99 that is adapted to be mounted between the upper ends of the spring strips 94. An opening 100 in the block 99 receives a pin 101, and the pin 101 is adapted to engage in groove 97 so as to prevent accidental disengagement of the pin 96 from the block 99. However, this arrangement permits a swivel movement or motion to take place between the pin 96 and block 99 so that the necessary amount of motion of the boat can take place when the boat is moored so that damage or breakage of the parts will be prevented. A block 102 is mounted between the lower ends of the spring strips 94, and the numeral 103 indicates a cam or wedge which is movably mounted in the upper end of a member 60 which is similar to the member 60 previously described. The cam or wedge 103 is provided with an opening 104 whereby a pin 105 can be extended through the opening 104 and into engagement with the upper portion of the member 60. The cam 103 is constructed so that when the spring strips 94 are flexed or bent, the cam 103 will exert a locking action so that further movement of the spring strips 94 into or out of the member 60 is prevented. However, when the spring strips 94 are in a vertical position as shown in solid lines in Figure 20, the cam 103 permits the spring strips to be moved in or out of the member 60. Thus, the cam 103 eliminates the necessity of using a latch such as the previously described latch 59.

From the foregoing, it is apparent that there has been provided a mooring device which is especially suitable for mooring boats such as the boats shown in the drawings. When using the device shown in Figures 1–15, a boat such as the boat 10 can be readily moored to a structure such as the structure 12. When the boat 10 is to be moored, the holding members 20 can be moved to extended positions, as for example as shown in Figure 1 and the clamps 15 can engage the top member 14 of the structure 12. The clamps 15 include the jaws 16 which have teeth 32 that will bite into the member 14 so as to maintain the boat 10 moored alongside the member 12. The spring member 28 helps maintain the jaws 16 in closed position, and when the clamp is to be released, the jaws 16 can be moved to open position so as to compress the spring member 28. The spring member 28 includes a coil portion 29 which extends through the opening 30 in the

washer 23, and the washer 23 provides a pivotal or rotary connection between the pair of jaws 16. The pins 26 and 27 provide stop members which help limit swinging movement of the pair of jaws. Also, the setscrew 22 can be adjusted in its opening 21 so that the amount of opening movement permitted by the jaws 16 can be changed or controlled as desired.

Each jaw 16 has a bifurcated end portion 33 and one of these bifurcated end portions 33 is pivotally connected to the portion 35 of the member 34 by means of the pivot pin 37. The member 34 is connected to the member 40 as previously stated, and the pin portion 49 of the member 48 is swivelly connected to the member 40 as shown in the drawings. This construction as well as the other pivots and swivel connections permits the boat 10 to ride up and down with the waves or move slightly while it is being moored or held adjacent the member 12 wherein there will be no damage or breakage of the parts due to the amount of play provided between the various members of the holding device.

The member 54 carries the spring latch 59 which can selectively project through the slot 61 in the member 60 so that with the latch 59 extending through the slot 61, the members 60 and 54 will be held immobile in this particular position. However, by manually pushing the spring latch 59 inwardly and out of engagement with the slot 61, the members 54 and 60 can move relative to each other.

Furthermore, the members 60 and 62 are maintained in a stationary position with respect to each other when desired, due to the provision of the pin 66 and its associated parts. Thus, as described previously by screwing down on the set screw 69, the outer tapered end 67 of the pin 66 will be engaged by the lower pointed end of the setscrew 69 so as to force the inner end of the pin 66 against the outer surface of the member 60 whereby further shifting movement of the member 60 with respect to the member 62 is prevented. However, when the setscrew 69 is loosened, the coil spring 73 can move the parts from the position shown in Figure 9 to the position shown in Figure 8. This arrangement permits the device to be moved to a collapsed or compact position when it is not being used, and when the device is being used, it can be moved to the extended position shown in Figure 8 with ease and rapidity. Furthermore, the pivot pin such as the pivot pin 57 permits the member 48 to pivot from the solid line position of Figure 7 to the dotted line position of Figure 7 as desired.

Due to the provision of the various pivot and swivel joints, it will be seen that a certain amount of freedom of movement of the boat is permissible even while it is moored alongside a pier or the like. Since there are two of the holding devices 20, it will be seen that the boat will be held steady in the desired position.

In the arrangement shown in Figures 16 and 17, the mooring dtvice can be folded into the housing 74 when it is not being used, and the plate 63 can be used for securing the device to the housing 74. The housing 74 may be connected to the boat deck 82, and the cover 80 extends over the device as shown in the drawings. The cover 80 can be conveniently swung open when the holding device is to be moved to extended or operative position.

In the arrangement shown in Figures 18–26, the housing 74 again provides a convenient storage chamber for the holding device when the same is not needed, and the holding device 83 functions in substantially the same manner as the previously described holding device 20. However, the holding device 83 includes the member 93 which consists of a pair of spring strips 94 that can flex or bend as shown in solid and dotted lines in Figure 20 so as to permit the boat to move somewhat while being moored. The cam 103 functions as a latch or lock, and when the spring strips 94 are bent as shown in Figure 21, the cam 103 will prevent up-and-down movement of

the spring strips 94 in the member 60. However, when the spring strips 94 are moved to a vertical position as for example as shown in Figure 19, these spring strips can be extended or retracted from the member 60 so that these parts can be moved to different adjusted positions. The spring 73 in these views serves the same purpose as previously described in connection with Figures 1–15.

It is to be noted that the holding member 83 includes a swivel connection by way of the pin 96 which rotatably fits in the socket 98 of the block 99, and the pin 101 engages the groove 97 of the pin 96 so as to prevent accidental disengagement of the pin 96 from the socket 98. Similarly, the pin 91 provides a pivot connection as does the pin 89 so that the holding member will permit the necessary or desired amount of movement.

The parts can be made of any suitable material and in different shapes or sizes.

It is to be understood that a plurality of the holding devices 83 can be used as required or desired, for mooring a particular boat in place.

The member 103 functions as a self-locking dog. The parts are preferably made of rust resistant material.

The member 22 can be used for locking the jaws 16 in place, and the washer 23 maintains the jaws in their proper alined position. The member 34 and its associated parts define a knuckle joint, while the member 49 forms part of a swivel type knuckle joint. The members 94 may be made of spring steel.

Thus, it will be seen that there has been provided a semi-rigid, semi-automatic boat dock tie which will serve to secure a boat to a dock in such a manner as to prevent damage to the boat by rubbing or scraping against the dock and wherein a person will be able to leave or enter the boat easily and safely. The device shown in Figures 1–15 can be used on row boats, utility boats and runabouts, while the device shown in Figures 18–26 can be used on larger runabouts, sports boats, and cruisers although it can also be used on cabin cruisers or the like.

The holding device of Figures 1–15 can be mounted adjacent to the side rail of the boat or through the deck, while the device of Figures 18–26 is adapted to be used on larger and deeper boats and is preferably mounted through the deck such as the deck 85. On such boats, a frame or housing 74 with a cover 80 is provided, and this cover 80 may be corrugated or provided with a tread 78 for use as a foot plate in entering or leaving the boat. The boat dock tie is adapted to be installed inside of this housing and it is only necessary to lift the cover 80 and release the needle valve screw 69 which in turn automatically lifts the clamp approximately six inches above the deck. The parts may then be telescoped out and extended over the edge of the boat so that the user can secure the clamp to the side of the dock or to a post, or to the stringers under the dock. The spring steel arm of the device 83, when extended over the edge of the boat, automatically locks itself by the use of the self-locking dog 103. The jointed arm of the member 20, when telescoped out, automatically locks itself by the use of the stop spring or latch 59.

The boat dock tie of the present invention is compact when telescoped down into the boat, but it is easily accessible when approaching the dock. It will fit practically any kind of dock since the jaws of the clamp 15 will open to the desired width. The teeth 32 located in the jaws of the clamp are installed at such an angle that the harder the strain, the deeper the teeth will penetrate the wood dock. If the boat is to be left at the dock for any length of time, the teeth in the clamp should be sunk more deeply into the wood docks by stepping on the top of the clamp and then tightening the setscrew 22 to thereby lock the jaws of the clamp so that they will not open.

The clamp 15 is attached to the spring steel arm of the device 83 with a knuckle joint 86 and a swivel joint 96 and these various joints permit the clamp to be at-

tached to the dock at practically any angle. The spring steel arm of the device 83, or the jointed arm of the device 20, compensate for any up and down motion of the boat, but they are semi-rigid in that they will not allow the boat to move horizontally which makes it impossible for the boat to touch the dock at any point so as to prevent damage to the boat by rubbing or scraping. However, the boat is held firmly to the dock so that there will be no danger of the boat skidding sidewise from under a person entering or leaving the boat.

The boat is preferably equipped with two boat dock ties, one near the back and one near the front as shown in Figure 2 for example.

Minor changes in shape, size and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

I claim:

1. In a boat mooring device, a clamp including a pair of pivotally mounted jaws, a holding device pivotally connected to said clamp and including a pair of members pivotally connected together, a third member rotatably connected at one end to one of said pair of members, a fourth member pivotally connected at one end to the opposite end of said third member, a fifth and sixth member being telescopically connected together and said fifth member being telescopically connected to the opposite end of said fourth member and said members providing a vertically disposed mooring device.

2. The structure as defined in claim 1, and further including teeth connected to said jaws.

3. The structure as defined in claim 1, and further including a spring member for urging said jaws to closed position.

4. In a mooring device for a boat including a wall portion, said mooring device comprising a clamp including a pair of pivotally mounted jaws, the ends of said jaws being bifurcated, a holding device comprising a first member having a portion thereof pivotally connected to a bifurcated end of a jaw, a second member pivotally connected to said first member, a third member rotatably connected to said second member, a fourth member pivotally connected to said third member, a latch carried by said fourth member, a fifth member slidably receiving said fourth member, said fifth member being provided with a slot for selectively receiving said latch, a sixth member telescopically receiving said fifth member, a plate for securing said sixth member to the wall portion of said boat, a block secured to the outer surface of said sixth member, a pin slidably mounted in said block and having an outer tapered end, the other end of said pin being mounted for movement into and out of frictional engagement with said fifth member, a setscrew adjustably connected to said block and mounted for movement into and out of engagement with the tapered end of said pin, a securing element depending from said block, a pin member having one end connected to said fifth member, there being a slot in said sixth member for the slidable projection therethrough of said pin member, and a coil spring having its upper end connected to said securing element and its lower end connected to said pin member.

5. In a mooring device for a boat including a wall portion, said mooring device comprising a clamp including a pair of pivotally mounted jaws, the ends of said jaws being bifurcated, a holding device comprising a first member having a portion thereof pivotally connected to a bifurcated end of a jaw, a second member pivotally connected to said first member, a third member rotatably connected to said second member, a fourth member pivotally connected to said third member, a latch carried by said fourth member, a fifth member slidably receiving said fourth member, said fifth member being provided with a slot for selectively receiving said latch, a sixth member telescopically receiving said fifth member, a plate for securing said sixth member to the wall portion of said boat, a block secured to the outer surface of said sixth member, a pin slidably mounted in said block and having an outer tapered end, the other end of said pin being mounted for movement into and out of frictional engagement with said fifth member, a setscrew adjustably connected to said block and mounted for movement into and out of engagement with the tapered end of said pin, a securing element depending from said block, a pin member having one end connected to said fifth member, there being a slot in said sixth member for the slidable projection therethrough of said pin member, a coil spring having its upper end connected to said securing element and its lower end connected to said pin member, each of the jaws of said clamp including a curved end portion, an intermediate straight portion and an offset end section, teeth carried by said jaws, a circular washer connected to said jaws and provided with a central opening, a spring member having a coil portion extending through the opening in said washer and said spring member having its ends engaging said jaws, and a screw member connected to one of the jaws.

6. In a mooring device for a boat including a deck, a clamp including a pair of pivotally mounted jaws, teeth connected to said jaws, a spring member for urging said jaws to closed position, a vertically disposed holding device pivotally connected to said clamp and including a pair of members pivotally connected together, a third member rotatably connected at one end to one of said pair of members, a fourth member pivotally connected at one end to the opposite end of said third member, a fifth and sixth member telescopically connected together and said fifth member being telescopically connected to the opposite end of said fourth member, and a housing connected to the boat deck for at times receiving the clamp and holding device, and a cover hingedly connected to said housing.

7. In a mooring device for a boat including a deck, a clamp including a pair of pivotally mounted jaws, teeth carried by said jaws, a spring member for urging said jaws to closed position, a vertically disposed holding device pivotally connected to said clamp and including a pair of members pivotally connected together, a third member rotatably connected at one end to one of said pair of members, a fourth member pivotally connected at one end to the opposite end of said third member, a fifth and sixth member telescopically connected together and said fifth member being telescopically connected to the opposite end of said fourth member, said fourth member including a pair of spaced apart spring strips, a self-locking dog mounted in said fifth member for coaction with said spring strips, and a housing connected to the boat deck for at times receiving the clamp and holding device, and a cover mounted for movement into and out of opened and closed relation with respect to said housing.

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