Jan. 14, 1969 G. E. DONALDSON 3,421,327

DOCK HINGE

Filed June 6, 1966

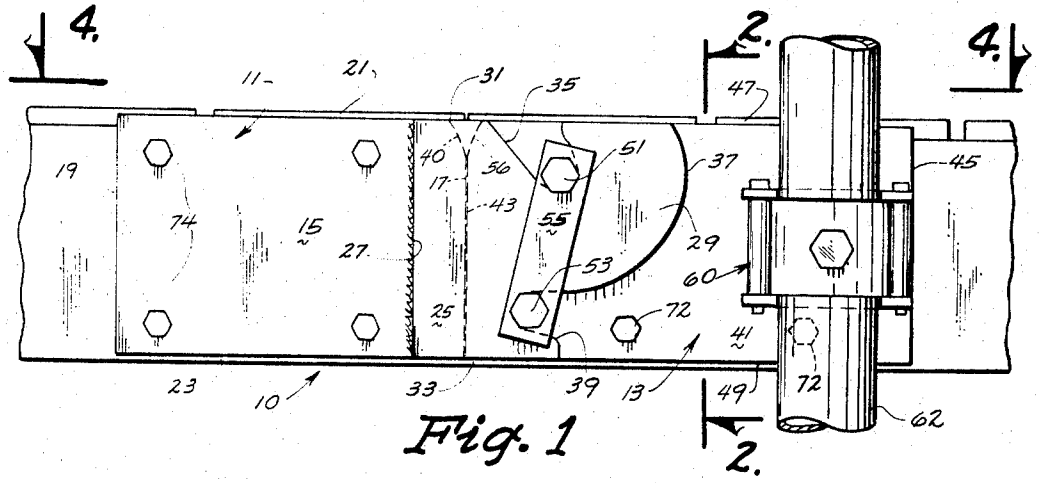


Fig. 1

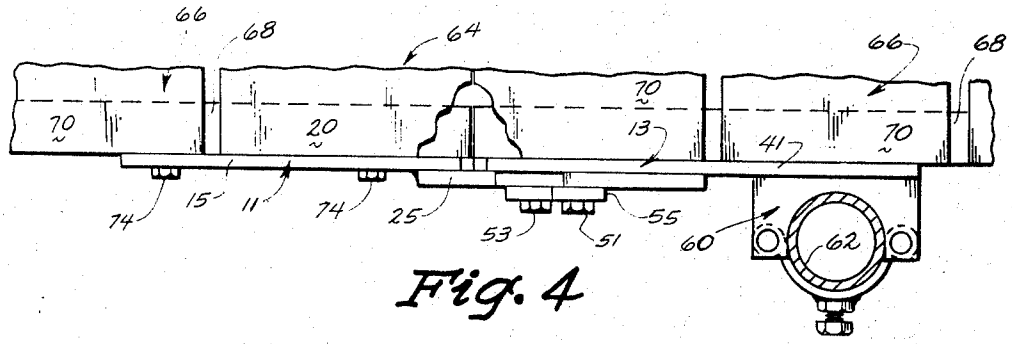


Fig. 4

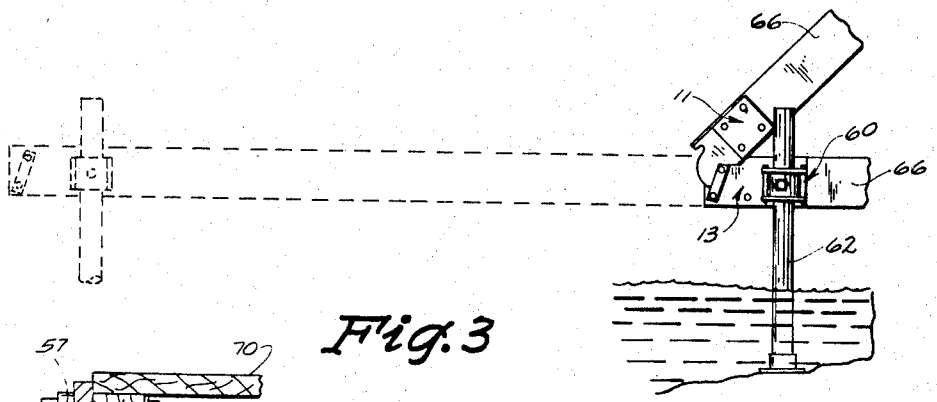


Fig. 3

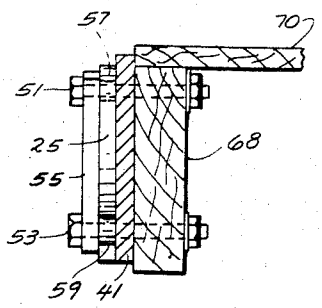


Fig. 2

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DOCK HINGE

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ABSTRACT OF THE DISCLOSURE

A hinge for use with boat docks or the like comprising first and second hinge sections which are secured to the ends of first and second support members. The hinge sections are detachably secured together by pivoting one of the hinge sections with respect to the other hinge section whereby a pair of posts on one of the hinge sections will be received by a pair of slots on the other hinge section.

The construction of portable docks comprised of several dock sections has long been a problem. Usually, the docks of this type are used by persons only during the summer months and must be placed in the water in the spring and removed therefrom before the winter months. The problems existing with these portable docks is the difficulty in the assembly and disassembly thereof. The vast majority of the present portable docks requires several persons and special equipment to assemble and disassemble them and quite frequently require that the people enter the water to accomplish the same. Additionally, the portable docks presently available are not stable in that they tend to "sway" or "give" when persons walk thereupon and also quite frequently become disconnected during times of turbulent water caused by storms or winds.

Therefore, it is a principal object of this invention to provide a new and improved hinge device.

A further object of this invention is to provide a hinge especially well adapted for use with a portable dock.

A further object of this invention is to provide a dock hinge which permits quick assembly and disassembly of a portable dock.

A further object of this invention is to provide a hinge for a dock which lends stability and strength to the dock.

A further object of this invention is to provide a hinge for a dock which permits the assembly and disassembly thereof without entering the water.

A further object of this invention is to provide a hinge for a dock which is economical of manufacture, durable in use and refined in appearance.

These and other objects will be apparent to those skilled in the art.

This invention consists in the construction, arrangements, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in the claims, and illustrated in the accompanying drawings in which:

FIG. 1 is a side view of the hinge assembled on a pair of abutting dock sections;

FIG. 2 is a sectional view of the device as seen on line 2—2 of FIG. 1;

FIG. 3 is a side view illustrating the assembly of a portable dock utilizing the hinge of this invention; and

FIG. 4 is a top view of the device as seen on line 4—4 of FIG. 1 with portions of the dock cut away to more fully illustrate the invention.

The hinge of this invention is generally referred to by the reference numeral **10** and is comprised of hinge sections **11** and **13**.

Hinge section **11** consists of a flat plate **15** having opposite ends **17** and **19** and top and bottom edges **21** and **23**. A plate **25** is secured to one side of plate **15** adjacent end **17** by welding or the like and consists of a rearward end **27**, forward end **29**, top **31** and bottom **33**. A slot **35** extends downwardly and forwardly into plate **25** from its upper end. The forward end **29** of plate **25** is provided with a cam surface **37** as seen in the drawings. A substantially horizontal slot **39** extends rearwardly into plate **25** from the lower forward end thereof as best seen in FIG. 1. Plate **15** is provided with a cut out portion **40** at its upper forward end (FIG. 1).

Hinge section **13** is comprised of a plate **41** having opposite ends **43** and **45**, and top and bottom edges **47** and **49**. A pair of spaced apart bolt members **51** and **53** extend through plate **41** adjacent end **43**. As best seen in FIG. 2, bolt members **51** and **53** extend through a retainer bar **55** and bearing elements **57** and **59** are mounted on bolt members **51** and **53** between bar **55** and plate **41** to maintain bar **55** in a spaced relationship with plate **41**. Plate **41** is provided with a cut out portion **56** at the upper portion of end **43**.

The hinge sections **11** and **13** are detachably secured together by maneuvering hinge section **11** so that slot **35** receives bearing element **57** therein. Hinge section **11** is then pivoted with respect to hinge section **13** as seen in FIG. 3. As hinge section **11** is pivoted as described above, cam surface **37** engages bearing element **59** and moves over the same. The engagement of cam surface **37** with bearing element **59** prevents the sections **11** and **13** from becoming disconnected during the movement of hinge sections **11** and **13** and transfers a portion of the weight of hinge section **11** to the other bolt member. The pivotal movement as described above is continued until bearing element **59** is received by slot **39**. When bearing element **59** engages the inner end of slot **39**, the ends **17** and **43** of plates **15** and **41** respectively are also in abutting engagement with each other to add stability to the hinge **10**.

The numeral **60** generally designates a clamp means which is secured to plate **41** adjacent end **45** which is adapted to detachably receive a dock leg **62** therein.

It can be appreciated that hinge section **11** cannot be disconnected from hinge section **13** until hinge section **11** has been pivoted more than 90° with respect to hinge section **13**.

The dock is generally designated by the reference numeral **64** and is comprised of a plurality of dock sections **66**. Each of the dock sections consist of spaced apart stringers **68** (only one of which is shown in the drawings) having flooring **70** extending between the upper ends thereof. When hinge **10** is utilized in the dock environment, a first dock section **66** would be anchored to the shore by any convenient means and supported by posts **62**. A hinge section **13** would previously have been secured to the outer ends of each of the stringers **68** by means of bolts **72** so that end **43** of hinge section **13** terminates in the same plane as the outer end of the stringer. A hinge section **11** would have previously been secured to the inner end of the dock section by bolt **74**. The second dock section is carried out onto the first dock section in an inverted manner as best illustrated in FIG. 3. The rearward end of the second dock section is raised with respect to its forward end to facilitate bearing elements **57** on each of the hinge sections **13** being received by slots **35** in each of the hinge sections **11**. When this has been accomplished, the second dock section is pivoted until it assumes the horizontal position as illustrated by broken lines in FIG. 3. In a horizontal position, the registering ends of the stringers abut and the ends **17** and **43** of plates **15** and **41** also abut. This abutting relationship prevents

the second dock section from pivoting below a horizontal position so that the person assembling the dock can then walk out to the outer end of the second dock section and install the supporting legs **62** thereon.

It can be appreciated that a hinge has been described herein which is especially well adapted for use in the portable dock environment. The dock can be assembled quickly and easily without the person ever entering the water. The abutting relationship of the hinge sections **11** and **13** as well as the abutting relationship of the respective stringers adds to the stability of the dock thereby preventing any "give" or "sway" in the structure. The cutout portions **40** and **56** in plates **15** and **41** respectively permit the hinge sections to be pivoted with respect to each other into their abutting relationship. It can also be appreciated that no portion of the hinge **10** projects above the plane of the flooring of the dock. This feature prevents any likelihood of a person inadvertently stumbling over the same. As previously described, the hinge sections can only be disassembled by pivoting hinge section **11** more than 90° with respect to hinge section **13**. Such a structural feature prevents the dock sections from becoming disconnected during times of turbulent water.

Thus it can be seen that the device accomplishes at least all of its stated objectives.

Some changes may be made in the construction and arrangement of my dock hinge without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. In a hinge,

a first hinge section having first and second ends, and top and bottom side edges,

said first hinge section having an angularly disposed first slot formed therein extending downwardly and towards its said first end from its top side edge,

said first hinge section having a second slot formed therein extending thereinto from its first end,

a second hinge section having an end portion,

first and second spaced apart post means secured to said second hinge section adjacent said end portion and extending transversely therefrom,

said first post means on said second hinge section adapted to be pivotally received by said first slot in said first hinge section,

said second post means on said second hinge section adapted to be received by said second slot in said first section,

said first and second hinge sections being adapted to be pivotally detachably secured together by causing said first post to be received by said first slot and pivoting said first and second hinge sections with respect to each other whereby said second post means will be received by said second slot.

2. The hinge of claim **1** wherein said first hinge section is provided with a cam surface at said one end between said first and second slots, said cam surface slidably engaging said second post means when said first and second hinge sections are pivoted with respect to each other.

3. The hinge of claim **1** wherein said first and second hinge sections are in an aligned and abutting end-to-end relationship when said first and second post means are received by said first and second slots respectively.

4. The hinge of claim **1** wherein a retaining bar member is mounted on said first and second post means and extends therebetween, said retaining bar member being in a spaced relationship with respect to said second hinge section, said retaining bar being positioned laterally of said first hinge section when said first and second post means are received by said first and second slots respectively.

5. The hinge of claim **1** wherein a first hinge section is secured to a dock section adjacent each of its sides at one end thereof and a second hinge section is secured to said dock section adjacent each of its sides at the other end thereof.

6. In a dock structure,

an elongated first dock section comprised of spaced apart first and second stringer members having a floor means extending therebetween, each of said first and second stringer members having opposite sides and opposite ends,

an elongated second dock section comprised of spaced apart third and fourth stringer members having a floor means extending therebetween, each of said third and fourth stringer members having opposite sides and opposite ends,

a first hinge section secured to each of said first and second stringer members at one end thereof adjacent one side thereof,

a second hinge section secured to each of said third and fourth stringer members at one end thereof adjacent one side thereof,

each of said first hinge sections having first and second ends and top and bottom side edges,

each of said first hinge sections having one of its ends extending beyond said one end of said first and second stringer members,

each of said first hinge sections having an angularly disposed first slot formed therein extending thereinto from its top side edge outwardly of said one end of said first and second stringer members, said first slot extending towards said one end of said first hinge section,

each of said first hinge sections having a second slot formed therein extending thereinto from its said one end, each of said first hinge sections having an arcuate cam surface at its said one end between said first and second slots,

each of said second hinge sections having spaced apart first and second post means secured thereto and extending transversely therefrom,

said first post means on each of said second hinge sections adapted to be pivotally received by said first slots in each of said first hinge sections respectively,

said second post means on each of said second hinge sections adapted to be received by said second slots in each of said first hinge sections respectively,

said first and second dock sections being adapted to be pivotally detachably secured together by causing said first posts to be received by said first slots and pivoting said first and second dock sections with respect to each other whereby said second posts will be received by said second slots, said cam surfaces slidably engaging said second posts when said first and second dock sections are pivoted with respect to each other.

7. The dock structure of claim **6** wherein each of said first hinge sections includes a base plate secured to said first and second stringer members, said base plate having an end terminating in the same plane as said one end of the stringer members associated therewith, a plate member secured to said base plate laterally thereof and extending beyond said one end of said first and second stringer members, said first and second slots being formed in said plate member, each of said second hinge members including a plate portion secured to said third and fourth stringer members, said first and second posts extending transversely from said plate portion, said plate portion having an end terminating in the same plane as the stringer member associated therewith, said one end of said base plate and said plate portion being in an aligned and abutting relationship when said first and second dock sections are detachably secured together.

8. The dock structure of claim **7** wherein a retaining bar member is secured to said first and second posts and extends therebetween, said retaining bar member being in a spaced relationship with respect to said plate portion, said plate member of said first hinge section being received

between said plate portion and said retaining bar member when said first and second dock sections are detachably secured together.

9. The dock structure of claim **6** wherein a clamp means is secured to each of said second hinge sections adapted to detachably receive a dock supporting leg, said clamp means including an arcuate bracket having first and second ends which is operatively pivotally secured at one of its ends to said second hinge section about a vertical axis, said bracket being detachably secured at its other end to said second hinge section, said bracket being pivotal with respect to said second hinge section whereby said leg can be positioned between said bracket and said second hinge section, said bracket partially embracing said leg and having means thereon limiting movement of said leg with respect thereto.

10. The dock structure of claim **6** wherein each of said second hinge sections have top and bottom side edges and

first and second ends, said first and second post means being secured to said second hinge section intermediate its ends so that said first, second, third, and fourth stringer members have abutting ends when said first and second dock sections are detachably secured together.

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5—331; 16—147, 166, 156, 172; 211—99, 148; 182—222