

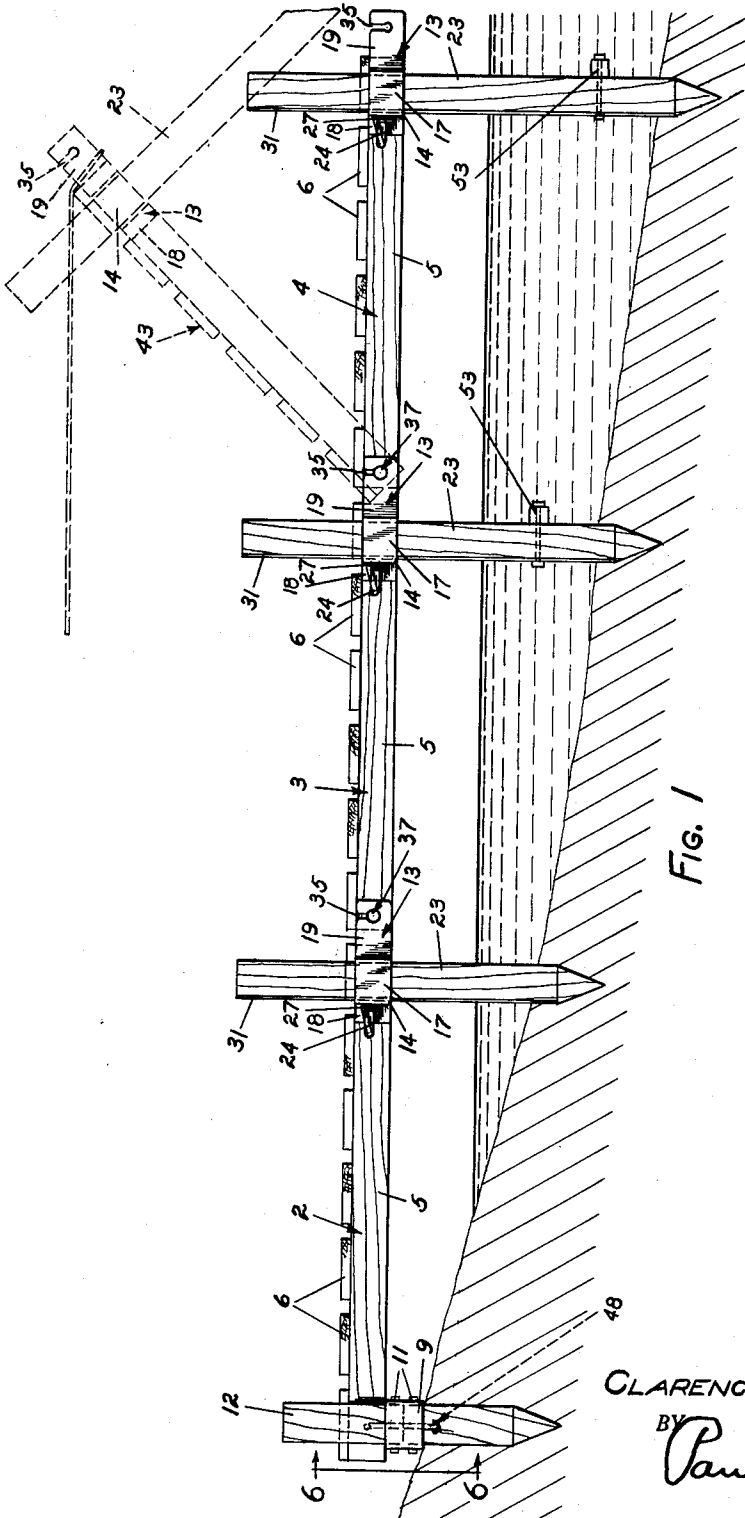
Nov. 18, 1952

C. T. HOLSTEN
PORTABLE LANDING DOCK

2,618,124

Filed Feb. 18, 1948

3 Sheets-Sheet 1



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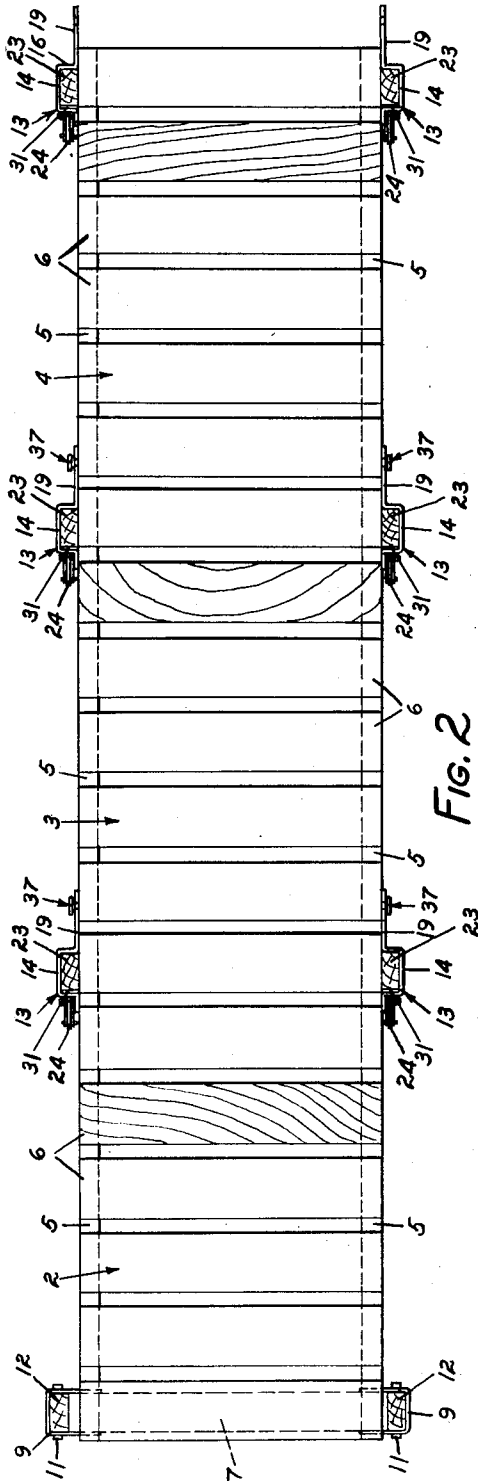
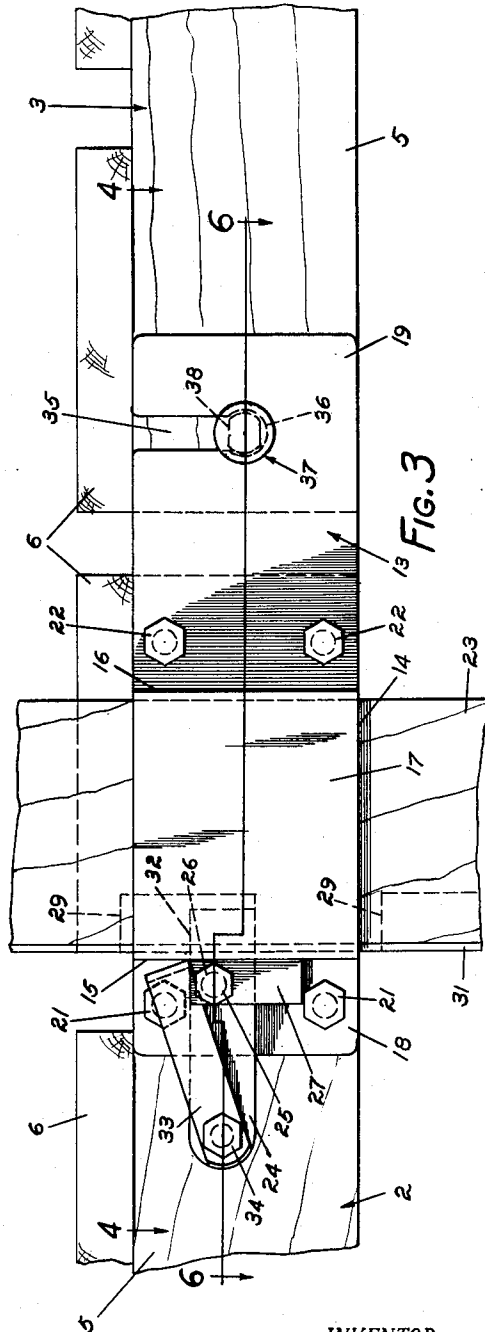
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2,618,124

PORTABLE LANDING DOCK

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Application February 18, 1948, Serial No. 9,182

11 Claims. (Cl. 61—48)

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This invention relates to new and useful improvements in portable landing docks. It is well known that landing docks such as are used at lake resorts and other places where boats may be moored, usually meet with destruction if left in the lake through the winter, caused by the ice breaking in the spring. The force exerted upon the supporting structure or uprights of a dock by a large body of ice when such body of ice begins to shift or move about relative to the shore line, which frequently happens in the spring when the ice thaws away from the shore line, may be so great that it will destroy or wreck almost any form of supporting structure for a dock.

It has therefore been found necessary, particularly at fishing resorts, that the docks be so constructed that they may be taken down in the fall and stored away during the winter months to save them from the destructive forces of the ice, and it is the purpose of the present invention to provide a simple and inexpensive structure or landing dock which is so constructed that it may readily and quickly be erected and extended outwardly into the lake any desired distance, and which may be as readily taken down in the fall, at the close of the boating season and packed away in a comparatively small storage space.

A further object of the invention is to provide a portable dock comprising a plurality of sections adapted to be interconnected to provide a composite dock of any desired length, the connections between said sections being such that a single person may erect the dock without walking in the water. In other words, the dock may be erected by positioning and anchoring the first or initial section, and thereafter successively erecting additional sections and extending the dock out into the lake the desired distance, the first erected dock sections being used by the person to walk back and forth on until the dock has been extended the desired distance out into the lake.

A further object is to provide a novel coupling device for coupling together the sections of the dock and whereby said sections are not likely to become disengaged from one another once they have been properly positioned on their supports.

A further object is to provide an inexpensive portable dock comprising a plurality of sections adapted to be connected together in endwise relation by a unique coupling device without the use of tools, except perhaps a mallet or heavy hammer for driving the supporting posts into

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the ground, means being provided for locking the coupling devices to their respective posts at any desired height with relation to the surface of the water.

Other objects of the invention reside in the specific construction of the coupling device whereby once the supporting posts have been driven into the bottom of the lake and the dock sections have been positioned thereon, should the level of the water in the lake rise to the extent that it would be desirable to elevate the dock, such elevation of the dock sections may readily be accomplished by manipulation of the latch means carried on the coupling members, and which also serve to secure the dock sections against relative downward movement on their respective supporting posts, such vertical adjustment of the dock sections upon their supporting posts being possible without dismantling the dock sections; in the pivotal connections provided between adjacent dock sections, whereby the operation of successively erecting the dock sections or dismantling them is greatly facilitated; and in the provision of a portable dock of this general type which is extremely simple and inexpensive in construction, whereby it readily lends itself for manufacture in quantity production at low cost.

Other objects of the invention will appear from the following description and the accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown, as various changes may be made within the scope of the claims which follow.

In the drawings:

Figure 1 is an elevational view of my improved dock showing in dotted lines the manner of erecting additional sections, the dotted lines also indicating how the sections are swung upwardly when it is desired to dismantle or take down the dock;

Figure 2 is a plan view of Figure 1;

Figure 3 is an enlarged detail view showing a side portion of the dock with the coupling device operatively connecting together the ends of adjacent dock sections, and also showing the latch means provided on the coupling devices for securing the dock sections in position upon their upright supporting posts.

Figure 4 is a sectional plan view on the line 4—4 of Figure 3;

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Figure 5 is a detail sectional view on the line 5—5 of Figure 4;

Figure 6 is a sectional plan view on the line 6—6 of Figure 3;

Figure 7 is a view showing the horizontal supporting member provided between the two anchor stakes or supports of the shore end of the first section of the dock; and

Figure 8 is a view similar to Figure 5 showing the position of the latch members when in unlocked position to permit the dock section to be moved upwardly on the post, or to permit the post to be moved downwardly on the coupling member.

The novel dock herein disclosed and as best shown in Figures 1 and 2, comprises a plurality of sections identified by the numerals 2, 3 and 4, which may be substantially alike in construction. Each section comprises a pair of spaced side rails 5 to which the dock boards 6 are secured in spaced relation in the usual manner. The boards 6 may be nailed to the side rails 5 in such a manner as to provide integral dock sections which may readily be transported from one place to another and stacked one on top of another when not in use.

The shore section 2 of the dock to be erected is shown having one end supported upon a suitable cross member, generally designated by the numeral 7. This member may be in the form of a single timber, or it may be composed of two relatively smaller timbers 8 secured together in flatwise relation, as shown in Figure 7. Suitable brackets 9 are secured to the ends of the cross member 7 by such means as bolts 11, and each has a box-shaped end 9 which extend outwardly from the ends of the cross member 7 and cooperate therewith to provide sockets for receiving upright posts 12 which may be driven into the ground adjacent to the water's edge, as shown in Figure 1, to provide a support for one end of the shore section 2.

An important feature of the present invention resides in the construction of the means provided for coupling together the various sections of the dock, and whereby the sections may be readily and quickly coupled together to extend the dock to any desired length, and also whereby the sections may be readily detached from one another, as when the dock as a whole is to be dismantled or taken down for winter storage, or for other purposes.

As best shown in Figures 3 to 6, inclusive, a coupling member, generally designated by the numeral 13, is shown made from sheet metal to provide a box-like portion 14 having end walls 15 and 16, an outside wall 17, and end portions 18 and 19. The end portions 18 and 19 are adapted to be seated against the side rails 5 of the dock section, and are secured thereto by suitable bolts 21 and 22, shown in Figures 3 to 6, inclusive.

The wall portions 15, 16 and 17 of each coupling member 13 cooperate with the adjacent or outer faces of the side rail 5 to provide rectangular sockets or guides corresponding in size and shape to the box-like guides provided at the ends of the cross member 7, whereby a suitable supporting post 23 may be slidably supported therein, as will be understood by reference to Figure 1.

The upright supporting posts 23 may vary in length, depending upon the inclination of the bottom of the lake, as shown in Figure 1, and are adapted to be driven into the lake bottom, as shown, a distance sufficient to provide a substantial support for the dock.

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Means is provided for locking the dock sections to the upright supporting posts 23 whereby they may be retained thereon at any desired elevation with respect to the level of the water. The means provided for thus securing the dock sections in adjusted position on the supporting members 23 is best shown in Figures 3 to 6, and includes a pair of latch members 24, shown pivoted on bolts 25 supported in apertures 26 provided in lug 27 which, for economy, may be struck from the walls 15 of their respective coupling members 14, as best illustrated in Figure 6, whereby an opening 28 is provided in the wall 15 of each coupling member 13, as shown. The latch members 24, as hereinbefore stated, are pivoted on their respective pivot bolts 25, and each has one end adapted to traverse the opening 28 in the adjacent wall 15 of its coupling member 13, to thereby project into one of a plurality of sockets 29 provided in the adjacent edges of the uprights 23, as clearly illustrated in Figures 4, 5 and 6. Each upright may be provided with a metallic wear strip or facing plate 31 to reinforce the edges of the sockets 29, as will be understood.

When the weight of the dock sections are supported upon the uprights 23, the latch member 24 of each coupling member 13 will be in the position shown in full lines in Figure 5. When so positioned, it will be noted the upper edge 32 of the latch member is engaged with the upper wall of the opening 28 in the wall 15 of the coupling member, whereby the end portion of the latch member received in the socket 29 cannot swing upwardly, thereby securing the deck section against downward movement on the upright posts 23.

Each latch member 24 has a yoke shaped member 33 pivoted thereto by a suitable pivot bolt 34, and is normally positioned as shown in full lines in Figures 3 and 5, whereby the relative up and down movement of the dock sections with respect to the supporting posts 23 is limited to the up and down clearance or play provided in the sockets 29 for the end of the latch member, as will be understood by reference to Figure 5. The extending end portion 19 of each coupling member is shown provided with a vertically disposed slot 35 which is open at its top, and terminates at its lower end in an enlarged opening 36, shown in full lines in Figure 5, and dotted lines in Figure 3. Shouldered studs, generally designated by the numeral 37, are secured to the adjacent ends of the side rails 5 of the next dock section 3, as clearly shown in Figures 3 and 4. These studs constitute, in effect, the heads of bolts 39, received in apertures provided in the side rails 5, and to which they are secured by nuts 41.

Each stud 37 has an enlarged portion 38 which is elongated in a direction transversely of the axis of the bolt shank 39, as best shown in Figures 3 and 5. The small or vertical dimension of the enlarged portion 38 of each stud 37 is substantially equal to or slightly less than the diameter of the bolt portion 39 of each stud, and the long or horizontal dimension of each portion 33 slightly less than the diameter of the enlarged opening 36 provided at the bottom of each slot 35. It will thus be noted by reference to Figure 3, that the studs 37 are secured to their respective side rails of each dock section with their long dimension of their enlarged portions 38 being disposed lengthwise of the side rails 5.

When attaching a second dock section to one previously erected as, for example, dock section 2, the section to be added will be raised to an up-

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right position, with the stud ends of its side rails being at the bottom, whereby the long dimension of the enlarged portions 38 of its studs 37 may be received in the slots 35, as indicated in dotted lines in Figure 5. When the studs 37 engage the bottoms of the enlarged openings 36 of the slots 35, the added dock section may be tilted forwardly, as indicated at 43 in Figure 1, and gradually lowered to its horizontal position, whereby the lower ends of the supporting posts 23 will engage the bottom of the lake to be driven partially into the mud or sand at the lake bottom, as shown in Figure 1.

To thus couple together successive dock sections, the supporting posts 23 of each dock section are inserted in the sockets provided in the coupling members 13 of said section, and the latch locking elements 33 then positioned as shown in full lines in Figure 5, whereby the outer ends of the latch members 24 cannot swing upwardly to permit the posts to become disengaged from the coupling members 13, when lowering the dock section to its horizontal operative position, indicated in Figure 1. In other words, when lowering a dock section into position, as indicated at 43 in Figure 1, the supporting posts 23 of said dock section will be suspended from the outer end of the dock section as a result of the upper walls 44 of the sockets 29 engaging the adjacent ends of the latch members 24, and because the latch members are locked against relative pivotal movement by the yokes 33 engaging the walls 45 of the coupling members, as shown in full lines in Figure 5.

When the dock section has been lowered to its horizontal position, as shown in full lines in Figure 1, the yoke-shaped members 33 are swung to their inoperative positions, indicated at 45 in Figure 5, whereupon the dock section may readily be moved upwardly on the posts or uprights 23, as the latch members 24 are then free to be swung upwardly, when the dock and supporting posts are relatively moved in opposite directions, as indicated by the arrows in Figure 8. This permits the upright posts 23 to be driven into the mud or sand to the proper depth, and the end of the dock section supported thereon may then be quickly adjusted to the proper elevation by manipulation of the latch members 24. In Figure 8, the latch member 24 is shown in the position assumed when the dock is relatively moved upwardly on the post 23, or which position may also be assumed when the post 23 is moved or driven downwardly relative to the dock.

Referring again to the first section 2 of the dock, the upright supporting posts 12 thereof may be provided with horizontally disposed apertures 46 adapted to register with aligned apertures 47 provided in the box-like guides or brackets 9 of the cross member 7, whereby bolts may be inserted through the walls of the brackets 9 and their supporting posts 12 to thereby support the adjacent end of the dock upon the posts. The cross member 7 may be supported directly upon the ground, or upon stones placed on the ground in lieu of anchoring the brackets 9 to the posts 12 by the insertion of bolts through the aligned openings 46 and 47 provided in the posts 12 and brackets 9, respectively.

Suitable hook elements 48 are shown having their upper horizontal end portions 49 received in apertures provided in the side rails 5, and their vertical portions are received in apertures provided in the cross rail 7. The apertures provided in the cross rail 7 are preferably slightly larger than

the vertical shanks of the hook elements 48 whereby the latter may move freely up and down therein, should the water level reach the dock sections, or in the event large waves splash against the dock and tend to lift it from its moorings. The lower ends of the hook elements are threaded as shown in 51 to receive suitable nuts 52 which prevent the hook elements from becoming disengaged from the cross member 7, as will be understood by reference to Figure 7.

In the operation of erecting the novel dock herein disclosed, the short upright or shore posts 12 are driven into the ground with the posts passing through the box-shaped guides 9 of the cross member 7, as shown in Figure 7. When the cross member 7 is placed in substantially a horizontal position on the ground, the brackets 9 at the ends thereof form guides for supporting the posts 12, as they are driven into the ground.

The hook elements 48, shown in Figure 7, are then inserted through the apertures provided in the adjacent ends of the side rails 5 of dock section 2, and the vertical portions of the hook elements are then inserted through suitable apertures provided in the cross member 7. A pair of uprights or supporting members 23 are then inserted through the guides provided in the coupling members 13 secured to the side rails of dock section 2 at the outer end of the dock section, and are adjusted to a position therein whereby when the lower ends of the posts engage the bottom of the lake, the outer end of the dock will be disposed at an elevation above the shore end of the dock. The posts 23 at the outer end of dock section 2 may then be driven into the mud or sand at the bottom of the lake and the outer end of the dock section elevated to the desired height by manipulation of the latch members 24, as hereinbefore described.

Nuts 52 are shown secured to the lower ends of the hook element 48 to prevent said elements from accidentally withdrawing from the cross member 7, should the water level rise to an elevation which might tend to lift the dock from its normal position on its support 9, or in the event a large wave should tend to lift the dock.

Dock section 3 is next prepared for erection which is accomplished by inserting a pair of supporting posts 23 in its coupling members 13, and then upending said section and inserting its studs 37 in the vertically disposed slots 35 of dock section 2, as shown in dotted lines in Figure 5. A light weight rope may then be attached to the outer end of dock section 3 whereupon it may be lowered to its horizontal position by a person standing on dock section 2, until its supporting posts engage the bottom of the lake. The posts of dock section 3 may then be driven into the mud at the bottom of the lake in a manner similar to the posts at the opposite end thereof, after which the outer end of dock section 3 may be similarly vertically adjusted on its supporting posts 23 by manipulation of the latch members 24, as hereinbefore described.

The above operation is repeated with each dock section, whereby it will be noted that the dock may be extended out into the lake any desired distance. Docks of this type designed for lake dwellers or vacationists may be made comparatively light in weight. Each section may be made about four feet long and perhaps three feet wide whereby the sections may readily be handled by one person.

The coupling members 13 provided at the outer ends of the dock sections make it possible for a

single person to expeditiously erect a dock without stepping into the water. The dock sections are successively erected starting from the cross member 7 at the shore line, and as each successive dock section is erected, it provides a substantial support for one or more individuals whereby the erected sections may be used to walk upon by the persons erecting the dock, which greatly facilitates the operation.

When the lake season terminates and it is desired to dismantle the dock, such action may readily be accomplished by simply attaching a rope to the outer end of the last or outermost section and upwardly swinging it to substantially the dotted line position shown at 42 in Figure 5, after which it may readily be lifted out of engagement with the next successive dock section and carried up on shore where the upright supports 23 are disengaged from the dock section to facilitate storage. This operation is repeated until all sections have been dismantled.

There may be instances where the upright posts may have a tendency to resist upward pulling from the bottom of the lake when the time comes to dismantle the dock. In such cases it may be necessary to use other means for withdrawing the posts. In some instances suitable cross members 53 may be suitably secured between the uprights 23, particularly if the water is deep which may require rather long supports. These cross members are secured to the supports or posts before being lowered into the water whereby they do not complicate erection or dismantling of the dock.

It will be apparent to those skilled in the art that I have accomplished at least the principal objects of my invention and it will also be apparent to those skilled in the art that the embodiments herein described may be variously changed and modified without departing from the spirit of the invention, and that the invention is capable of uses and has advantages not herein specifically described; hence it will be appreciated that the herein disclosed embodiments are illustrative only, and that my invention is not limited thereto.

I claim as my invention:

1. A portable dock comprising a plurality of sections each comprising side rails having deck forming panels secured thereto, said sections being arranged in endwise relation to provide a composite dock of any desired length, a pair of coupling members attached to one end of each dock section one at each side thereof for coupling together said sections, upright supporting posts vertically slidable within said coupling members each having one edge provided with a plurality of vertically spaced sockets, latch members carried by the coupling members and engageable with the sockets in said posts to secure the coupling members thereto, and means operable in conjunction with the latch members whereby the dock sections may be vertically adjusted upon said posts to properly space the dock from the water level.

2. A portable dock comprising a plurality of sections each comprising side rails having deck forming panels secured thereto, said sections being arranged in endwise relation to provide a composite dock of any desired length, transverse means adjacent to the shore line for supporting one end of one of said dock sections, a pair of coupling members secured one to each side of the outer end of said first section, sockets in said coupling members for receiving a pair of upright posts adapted to engage the bottom of the lake to provide a support for the outer end of said first

dock section, and pivoted elements carried by said coupling members adapted to interlock with spaced notches in said upright posts thereby to support the outer end of the dock section against downward movement on said posts.

3. In a dock of the class described, a plurality of sections each comprising spaced side rails having deck portions secured thereto, means adjacent to the shore line for supporting one end of one of said dock sections, a pair of coupling members secured to the outer ends of the side rails of said first dock section, said coupling members having sockets therein for receiving a pair of upright posts adapted to engage the bottom of the lake to provide a support for the outer end of said first dock section, latch members pivoted to said coupling members adapted to interlock with spaced notches in said upright posts to support the outer end of the dock section against downward movement on said posts, and means for connecting a second dock section to said coupling members.

4. In a dock of the class described, a plurality of sections each comprising rails having deck forming panels secured thereto, means for anchoring one end of one dock section to the shore, opposed coupling members secured to the outer end of each dock section and each having a vertically disposed guide opening therein, upright supporting posts adapted to be received in said guide openings, each post having a plurality of spaced notches in a side thereof spaced apart lengthwise of the post, a latch member pivoted to each coupling member and adapted to interlock with the notches in said posts to prevent relative downward movement of the dock sections on said posts, means for locking the latch members in position to secure the coupling members against up or down movement on said posts, and means whereby the latch members may be positioned to permit the dock sections to be vertically adjusted upon the supporting posts to vary the distance between the top of the dock and the water level.

5. In a dock of the class described, a plurality of sections each having spaced rails to which suitable deck forming panels are secured, means for anchoring one end of one of said sections to the shore, opposed coupling members secured to the side rails of each dock section adjacent the outer ends thereof, each coupling member having a vertically disposed guide opening therein, upright supporting posts adapted to be received in said guide openings, a latch member pivoted to each coupling member and adapted to interlock with means on the upright posts to support the dock section on said posts above the lake level, each coupling member having one end projecting beyond its respective side rail and having a vertical slot therein, and outwardly projecting studs secured to the opposite ends of the rails of each section, the studs of one rail section being adapted to be received in the slots provided in the projecting ends of the coupling members of an adjacent dock section, whereby one end of each dock section is supported upon upright posts while the opposite end thereof is supported upon an adjacent dock section.

6. A coupling member of the class described comprising plate portions adapted to be seated against the side rails of a dock section and having means for securing them thereto, said coupling member being formed of sheet metal and having an offset portion between said plate portions cooperating with the adjacent side face of

the side rail to form a rectangular guide opening adapted to receive a supporting post, one of said plate portions having a slot therein adapted to receive a stud secured to the side rail of an adjacent dock section, whereby the end of said adjacent dock section may be pivotally supported on said coupling member, and latch means carried by the coupling member for securing it to a post received in the guide opening provided in the coupling member.

7. A coupling member of the class described comprising plate portions adapted to be seated against the side rail of a dock section and having means for securing them thereto, said coupling member being formed of sheet metal and having an offset portion between said plate portions cooperating with the adjacent side face of the side rail to form a rectangular guide opening adapted to receive a supporting post, one of said plate portions, being relatively longer than the other and having a vertically disposed slot therein which is open at its top, said slot being adapted to receive a stud secured to the side rail of an adjacent dock section whereby the end of said adjacent dock section may be pivotally supported on the coupling member of an adjacent dock section, and a latch member carried by the coupling for securing it to a post received in said guide opening, thereby to secure the coupling member to said post.

8. A portable dock for watercraft comprising a rectangular dock section having sides and ends, a pair of supporting legs adjacent one end of said dock section said legs projecting substantially normal to the plane of the dock and one of said legs being adjacent each side edge thereof, pivot connection means for connecting successive dock sections together with the pivot axis substantially in the plane of the dock and transversely to the length of the dock section, including separable pivot elements fastened on opposite ends of the dock sections adjacent each side of said section and in a position thereon so that the separable pivot elements on one dock section will interlock to form a hinge point with the separable pivot elements of the next dock section, when two successive rectangular dock sections are brought together in end-to-end relationship, and a latch member pivoted on each side of said dock section at one end thereof receivable in vertically spaced notches in said supporting legs for supporting the dock section against relative downward movement thereon.

9. The apparatus of claim 8 characterized by said hinge joints adapted to be engaged only when one dock section is swung to a plane out of the plane of the next section and then become inseparable when the dock sections are in substantial planar alignment.

10. A section of portable dock for watercraft comprising a rectangular panel having greater length than width and defined by side edges, a near-shore end and an off-shore end, a pair of legs positioned normal to the land and substantially uniformly adjacent the off-shore end, one leg being at each side edge of the panel, means

for adjustably clamping the legs to the panel whereby the projection of the leg in a direction normal to the panel may be varied to suit bed contour of the area in which the dock is situated, a hinge coupling for joining successive dock sections comprising a pair of hinge elements one adjacent each side edge of the dock on the near shore end of the dock and a pair of hinge elements adjacent each side edge of the dock and adjacent the off-shore end thereof, the hinge elements on the off-shore end of the dock cooperating with the hinge elements of the near-shore end of another successive dock section to form a hinge coupling between successive sections, latch members pivoted to said panel and receivable in vertically spaced notches in said legs for supporting the panel against relative downward movement thereon, and means for securing said latch members against pivotal movement thereby to lock the panel against relative up or down movement on said legs.

11. A section of portable dock for watercraft comprising a rectangular panel having greater length than width and defined by side edges, a near-shore end and an off-shore end, a pair of legs positioned normal to the land and substantially uniformly adjacent the off-shore end, one leg being at each side edge of the panel, means for adjustably clamping the legs to the panel whereby the projection of the leg in a direction normal to the panel may be varied to suit bed contour of the area in which the dock is situated, a hinge coupling for joining successive dock sections comprising a pair of hinge elements one adjacent each side edge of the dock on the near-shore end of the dock and a pair of hinge elements adjacent each side edge of the dock and adjacent the off-shore end thereof, the hinge elements on the off-shore end of the dock cooperating with the hinge elements of the near-shore end of another successive dock section to form a hinge coupling between successive sections, the hinge elements being shaped so as to engage and couple to form a hinge joint when successive dock sections are moved substantially out of planar alignment and interlock to prevent separation one from the other when said dock sections are moved substantially into planar alignment, latch members pivoted to said panel and receivable in vertically spaced notches in said legs for supporting the panel against relative downward movement thereon, and means for securing said latch members against pivotal movement thereby to lock the panel against relative up or down movement on said legs.

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