July 9, 1963 R. H. LAIRD 3,096,623

SMALL BOAT DOCK

Filed Nov. 9, 1960 2 Sheets-Sheet 1

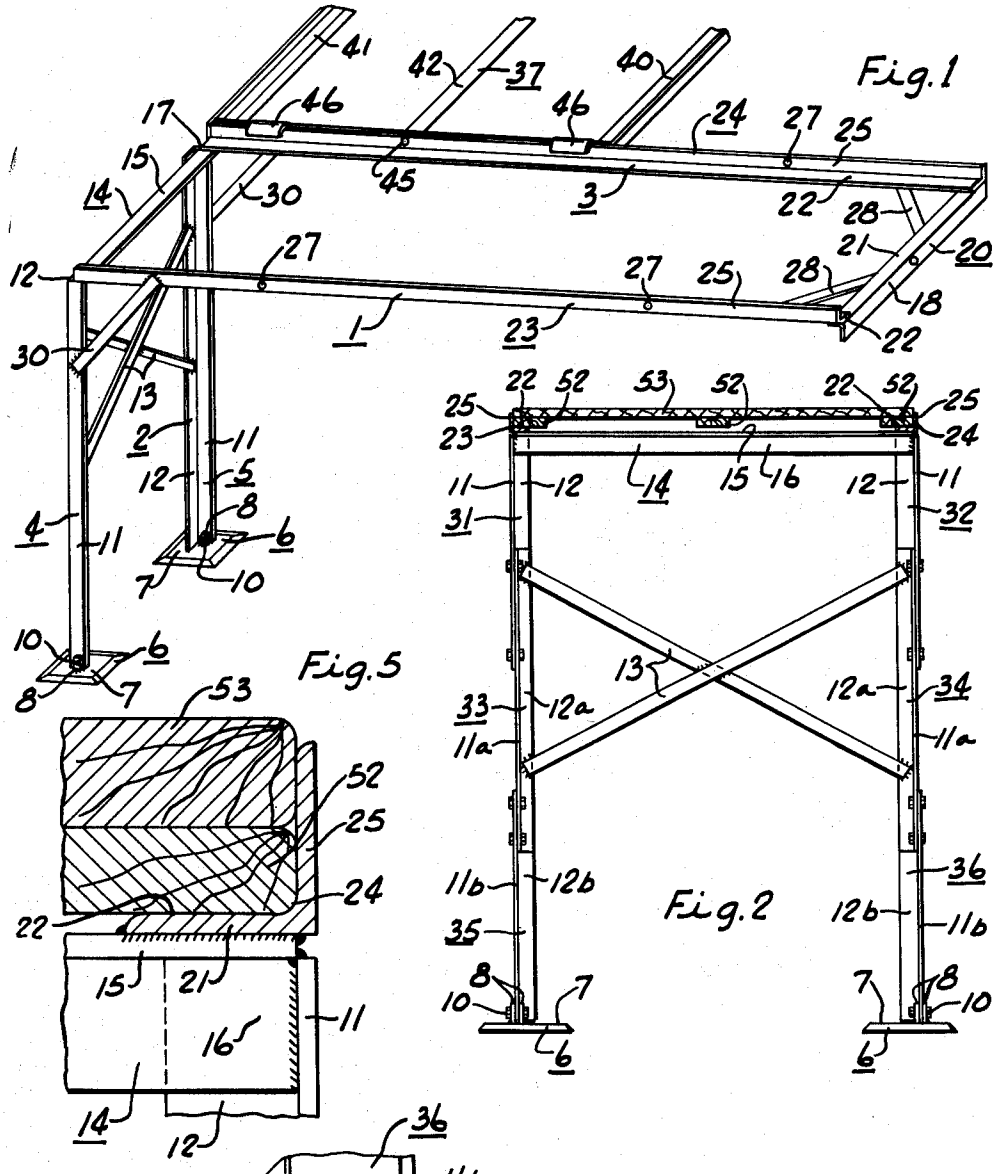


Fig. 1

Fig. 5

Fig. 2

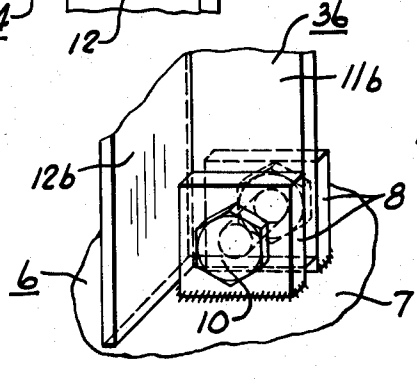


Fig. 7

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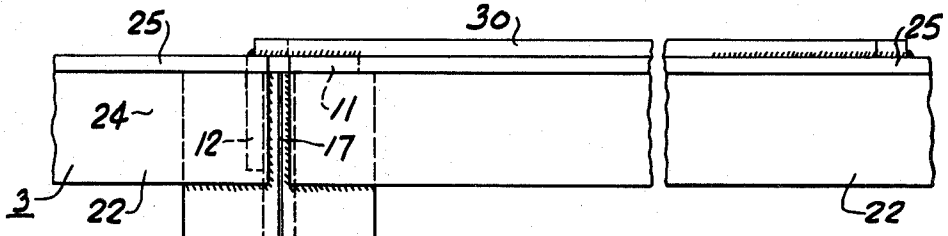
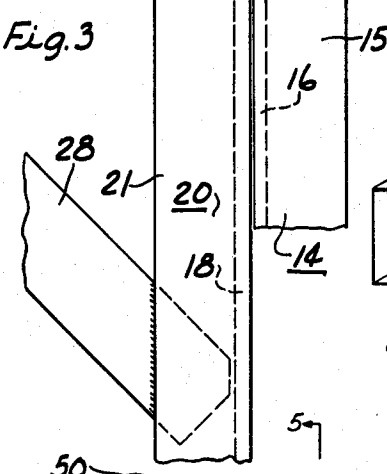


Fig. 3



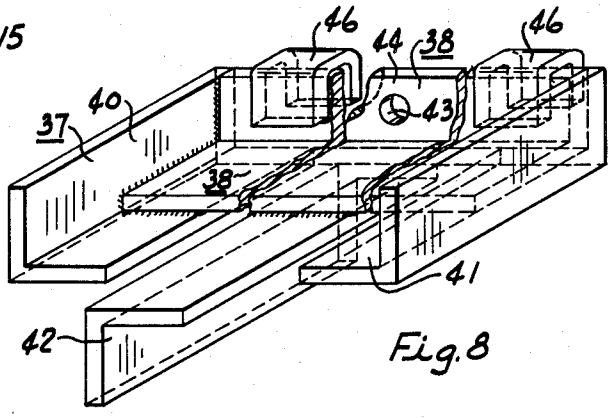


Fig. 8

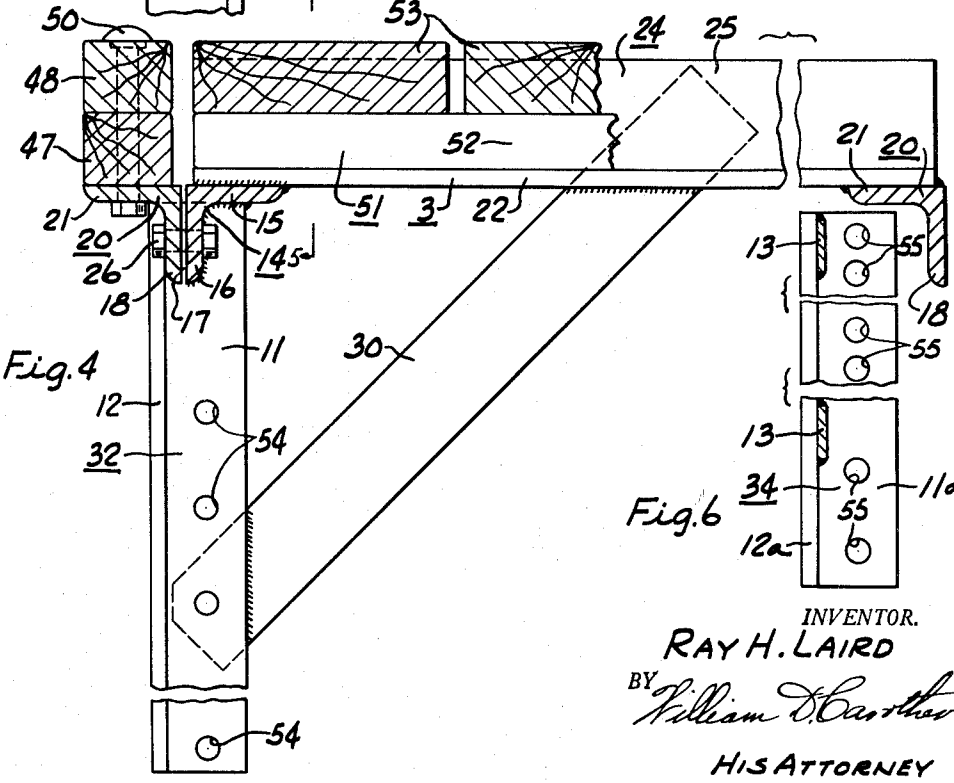


Fig. 4

Fig. 6

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United States Patent Office

3,096,623
Patented July 9, 1963

3,096,623

SMALL BOAT DOCK

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Filed Nov. 9, 1960, Ser. No. 68,253
6 Claims. (Cl. 61—48)

This invention relates generally to docks for small boats on a lake shore and more particularly to a sectionalized dock structure.

A private dock for small boats and other activities along a lake shore must have several attributes. It must be able to withstand the usual waves and storms. It must withstand the hard blows. To do this it must have sufficient weight, yet it should not be too heavy for the average owner or he cannot or should not attempt to lift or put the dock in or out. Docks have been made to completely disassemble which is fine for shipment and storage but is difficult for the owner to reassemble.

Another problem is in the use of a horse type leg assembly having four feet and a cross brace in the water. This is a strong structure but is too heavy for some to handle. It is a complicated structure hard to paint and expensive to build and difficult to clean and service. These docks which disassemble are hard to keep track of. These parts and bolts get lost and disarranged from one season to another.

The principal object of this invention is the provision of a simplified dock that is lighter in weight than most docks of this class yet is sufficiently sturdy to withstand wind, waves and storms but is not too heavy to handle without disassembly of all parts.

Another object is the provision of a sectionalized dock each section having an integral leg stand and deck frame the latter of which interlocks with the next succeeding stand. This type of dock section insures positive alignment of a series of sections making up the dock because the whole of the width of the dock is used to make the alignment of adjacent dock sections.

Another object is the provision of an improved dock structure made in multiple sections each having a leg stand and a deck frame the free end of the latter interlocking with leg stand of the next adjacent dock section without the use of bolts or other assembly means. The interlocking parts are snug and frequently need a hammer to drive them in or out of position. If the lock joint loosens with use a single bolt will hold the adjacent sections rigidly in place.

Another object is the provision of a simplified dock structure that is economical to build and maintain as by cleaning and painting without the heavy weight and completed structure to contend with.

Another object is the provision of an improved dock section provided with a stand and frame for one deck section of the dock, the stand comprising two legs with cross bracing and a foot at the bottom of each leg and a sill connecting the top of each leg. The deck frame having rails connected to the stand with their free ends connected by a second sill that locks into legs of the next stand. Thus each dock section includes a deck frame made integral with a stand. After the deck has been removed by dragging it out of the frame, the rigid frame is merely raised by lifting the free end to detach the sill from the adjacent stand and walk the two legs back toward shore by swinging the frame. The weight of the frame and integral stand is approximately seventy-two pounds which is considerably lighter than the usual horse type stand structure.

Another object is the provision of dock section having a stand and connected frame which is readily manipulated and stored with the feet extending upwardly and the longest legs of the deepest water being the first out of the water and on the bottom of the pile and the last dock section on the top of the pile being that which has the shortest stand and the frame of which connects to the shore. This automatically regulates the sequence of installation for the next season.

Another object is the provision of a stand for a dock section having two legs each with a foot and their intermediate portions provided with diagonal cross braces and their tops connected by a sill. If the legs are of a single piece of pipe, square tubing or angle iron then each stand must have legs of different lengths to accommodate different water depths. If these pieces are telescoped as with different sizes of pipe, square tubing or angle irons then each leg may be in two parts adjustable as to height and secured together by bolts to make them integral to accommodate the depth of the water. If the upper leg sections which are integral with the frame, as by bolting or welding, are of standard size and the cross braced leg structure is of standard size then a leg extension may be employed between the feet and the braced section which would be a larger pipe section, square tube section or angle iron. Once the adjustable legs are made the proper length and are bolted together to make them integral, they may never need readjustment.

One of the most important objects is the provision of the interlocking sill that attaches each section of the dock to the next adjacent dock section or stand except the last section which has a U-shaped stand and the free end of its frame rests on the shore. This same interlocking sill is employed to also hook on a pair of steps on the end or side of the dock. Or a lateral section of dock to form an L is also provided with an interlocking sill to support the free end of the frame to the rails of the outermost section. If a T-shaped dock is desired, a lateral section from each side of the outermost dock section may be hooked in place. Thus the whole of the dock is sectionalized and need only be bumped with a hammer or board to unhook each section at a time. The rails of a continuous series of frame sections form a continuous track on which the deck sections are slid in place. The last and the first of these sections are held in place by a sill that is removable by hooking the same in place in the same manner as the next consecutive frame sill would be hooked. This sill has built up stops flush with the deck. Steps from the end of the dock to the lake bottom are hooked in the same manner. Thus it is an important object of this invention to provide a dock that can be taken apart or installed in sections by a hammer.

Other objects and advantages appear hereinafter in the following description and claims.

The accompanying drawing shows for the purpose of exemplification without limiting this invention or the claims hereto, certain practical embodiments illustrating the principles of this invention, wherein:

FIG. 1 is a view in perspective of a complete dock section with a lateral section forming an L.

FIG. 2 is a view in elevation of a stand with adjustable legs and the rails and deck in section.

FIG. 3 is an enlarged partial plan view of adjacent dock sections over one leg.

FIG. 4 is an enlarged partial view in section of an end of dock sections over one leg.

FIG. 5 is an enlarged sectional view taken on the line 5—5 of FIG. 4.

FIG. 6 is an enlarged vertical sectional view of the braced leg portion of a stand, parts being broken away.

FIG. 7 is an enlarged perspective view of a foot and leg extension.

FIG. 8 is a perspective view of a laterally connected dock section.

Referring to FIG. 1 the dock section 1 is shown to in-

clude a leg stand 2 and a deck frame 3. The leg stand 2 comprises the legs 4 and 5 each having a foot 6 attached to the bottom thereof. The foot 6 is an upwardly dished plate 7 having spaced parallel ears 8 extending from the upper surface of the plate 7. A dished plate 7 of this character will more readily embed and hold in the sand and stony shore but a flat plate will suffice. The ears 8 are provided with aligned holes to receive the bolts 10 which pass through the parallel flanges 11 of the legs 4 and 5. The hole in the flanges 11 to receive the bolts 10 are so spaced that the bottom edge of each leg has clearance from the top surface of the plate 7. These holes are also spaced so that the leg flanges 12, which lie in a common plane, are spaced from the ears 8 to provide clearance. With clearance from the plate 7 and the ears 8 the foot 6 will have the action of an ankle relative to the leg. This permits the foot to be disposed with the surface of the sloping sand while the legs remain vertical.

In FIG. 1 the legs 4 and 5 are single integral members. They are braced by the cross brace members 13 which are welded at their ends to the inner faces of the flange 12 and are welded to each other where they cross as indicated on the drawing. This cross bracing holds the legs rigidly parallel with each other.

The upper ends of the legs forming the stand 2 are connected together by the leg sill 14 which is preferably welded to the flanges 11 and extends therebetween. The under side of top flange 15 of the leg sill 14 lies above the top surface of the flanges 11 as shown in FIG. 5 and the outer face of the flange 16 on the leg sill 14 is spaced from the inner face of the leg flange 12 to form a pocket 17 for removably receiving the vertical flange 18 of the second or free end sill 20 the horizontal flange 21 of which is secured to the lower horizontal flange 22 at the free end of the rails 23 and 24. The pocket 17 has just sufficient clearance to receive the interlocking flange 18 which provides excellent alignment of consecutive dock sections. The rails 23 and 24 at the stand end are secured, preferably by welding to the top surface of the horizontal flange 15 of the first sill 14 as shown in FIG. 4. Each of these connections may be bolted to secure the parts together but it is preferable to weld these parts and form an integral structure that cannot be taken apart and will always fit the next consecutive section to produce proper alignment of the consecutive dock structures resulting in a straight dock edge alignment.

The pocket 17 and the pre-positioning of the leg sill 14 permits the free end sill 20 to rest on top of the flanges 12 and maintain the top surfaces of the flanges 22 of the rails 23 and 24 in the same plane, and smooth for the reception of a wood deck or the like boxed in by the vertical rail flanges 25. These deck sections may equal the length of each frame 3 or they may be of shorter dimension being more or less multiples of a frame to reduce their weight. These deck sections may be fastened to one rail to prevent their being displaced from the frame by wind or waves.

To insure the interlocking of the second sill 20 in the pocket 17 aligned holes may be provided in the first and second sills to receive a tie bolt 26 thus securing consecutive dock sections together. These aligned holes are preferably in the center of these sills. Thus adjacent sections are securely interlocked with the use of but one bolt.

If hub rails are needed on the dock they may be provided by merely bolting a half wood post to the legs or by bolting a board to the vertical flange 25 of the rails. The holes 27 may be used for this purpose.

As shown in FIG. 1 the free end of the frame 3 is provided with the free end corner diagonal braces 28 connecting the second or free end sill 20 from the under side of the horizontal flange 21 to the under side of the rail flanges 22. This maintains the frame 3 square.

The stand 2 is braced at right angles to the rails 23 and 24 by means of the diagonal leg braces 30 which are preferably secured to the outer flush surfaces of the leg parallel flanges 11 and the vertical rail flanges 25.

To standardize the leg stands 2 it is preferable to construct them in two or even three parts as shown in FIG. 2. Here the top part with the legs 31 and 32 having flanges 11 and 12 as previously described are directly secured to the first or leg sill 14 to form the pocket 17. The leg section 32 is also illustrated in FIG. 4 and is preferably made from one and three-quarter inch angle iron and may be suitably cut to twenty inches in length. These leg parts have a series of nine holes in the flange 11 with two inch spacing starting one-half inch from the bottom edge.

The leg parts 31 and 32 are a pair as shown in FIG. 2. The leg parts 33 and 34 form the intermediate portion of the legs in FIG. 2 and are connected by the welded cross bracing members 13. These are likewise a pair of leg parts and the leg 34 is shown in FIG. 6 wherein the corresponding flange 11*a* and 12*a* are the counterparts of the flanges 11 and 12 of the legs 31 and 32, the latter telescoping or encompassing over the legs 33 and 34 as shown in FIG. 2. The legs 33 and 34 have the braces 13 on them in flange surfaces 12*a* so as not to interfere with the relative movement of the legs 31 and 32 over the legs 33 and 34. The flanges 11*a* of the latter leg parts are provided with four holes adjacent their tops, the uppermost of which is one-half inch from the top, the second one inch from the first, the third being three inches from the second and the fourth being one inch from the third. With the holes in flange 11 being at two inch intervals the holes in flanges 11*a* provide a double bolt arrangement at one inch elevation increments for adjustment. The bottom of these leg parts 33 and 34 have one hole one inch above the bottom edge as do the legs 4 and 5, and the leg extensions 35 and 36 to receive the ankle bolts 10. A second hole four inches from the bottom of the leg parts 33 and 34 matches similarly spaced holes in the tops of the leg extensions 35 and 36 shown in FIG. 7 for the purpose of bolting the bottom of the leg parts 33 and 34 to the top of the leg extensions 35 and 36.

The leg extensions 35 and 36 are shown to be eighteen inches long. If it is desired to have a higher stand than that capable of adjustment with the parts shown the length of the leg extensions 35 and 36 may be increased in that portion between their securing holes.

Referring to FIGS. 1 and 8 the laterally extending steps or dock section 37 is usually forty-eight inches wide whereas the dock normal to shore is thirty-six inches wide. The holes 27 as shown in the rail flanges 25 are positioned approximately twenty-four inches from the end of the dock. This positions the hole 27 midway of the lateral dock sections 37 which comprises the sill member 38 connected at its ends to the rail members 40 and 41. An intermediate and inverted rail member 42 is employed in the forty-eight inch dock which is likewise welded to the sill 38. A hole 43 is provided in the vertical flange 44 of the sill 38 to match with the hole 27 for receiving the bolt 45 to lock the sill 38 with the flange 25 of the rail 24 as shown in FIG. 1. The flange 44 of the sill 38 is provided with two inverted U-shaped members that form the hooks 46 adjacent each end of the sill. These hooks are welded to the sill flange 44 and extend back over the flange to hang on the flange 25 of the rail 24 as shown in FIG. 1. Thus with the bolt 45 and the hooks 46 to the end of the lateral dock section 37 is supported from a section 1 of the dock leading from the shore.

The hooks 46 may also be used as the connecting or anchoring means from the free end of the frame to the next adjacent leg stand in place of inverting the second sill. Thus the structure of FIGS. 1 and 8 have multiple applications for joining together different docks from sections as well as later sections or steps and the like.

As shown in FIG. 4 the second or free end sill 20 at the left end of the dock section has bolted thereto two thicknesses of wood 47 and 48 held in place by the car-

riage bolts **50**. The deck section **51** on the dock frame **3** is composed of three under runners **52** and variable width transverse tread boards **53**. This deck **51** may merely rest on the top surface of the flanges **22** of the rails **23** and **24** with clearance between each tread board and between their ends and the vertical flanges **25** of the side rails **23** and **24**.

The leg sections shown in FIG. 4 are the upper leg sections **31** and **32** tied together with a leg sill **14**. The flanges **11** of these leg sections are preferably provided with nine holes **54** starting one-half inch from the bottom and evenly spaced two inches apart which in combination with the intermediate leg sections **33** and **34** provide inch elevation adjustments. The legs **33** and **34** as shown in FIG. 6 each preferably have a total of six holes as shown at **55**. The first of these holes is one-half inch from the top and the second is one inch from the first holes. After a spacing of three inches the third and fourth holes are spaced one inch apart. This combination of holes **55** in legs **33** and **34** provide one inch variation with the holes **54** in legs **31** and **33**. Adjacent the bottoms of legs **33** and **34** are the fifth and sixth holes three inches apart and one inch from the lower edge. These holes match the two holes in each of the extension legs **35** and **36** which are provided with two mating holes at the top of these legs **35** and **36** and one hole at the bottom to receive the foot hold **10**. This structure permits the adjustment of the leg sections to be made at the upper end only and then it is usually above the surface of the water. Thus the intermediate legs **33** and **34** may also be used to carry the foot bolt **10** if the lower legs **35** and **36** are not employed. If the legs are to be very short then the upper legs **31** and **32** could be used with the foot **6** bolted to the bottom thereof.

I claim:

1. A dock structure made up of a series of sections each section consisting of a rectangular deck frame having a matched pair of horizontally disposed parallel angle rails with their coplanar horizontal flanges inturned toward each other and their vertical parallel flanges coextensive and turned upwardly, a matched pair of horizontally disposed parallel angle sills transversely of said rails and having their vertical parallel flanges coextensive and turned downwardly and their horizontal coplanar flanges inturned toward each other, the ends of the top horizontal coplanar flange surfaces of said sills secured to the ends of the bottom horizontal coplanar flange surfaces of said rails and completing said rectangular deck frame, a matched pair of vertically disposed parallel angle legs having their coplanar flanges inturned toward each other and their parallel flanges coextensive, the top edges of said parallel leg flanges secured to both end edges of the inner surfaces of both flanges of one of said sills and providing support for the frame, the inner surface of the coplanar leg flanges being spaced from the extreme portions of the outer vertical sill flange surface and defining therewith a pair of pockets, said other sill being the free end sill of the dock section, and said pockets having a width and breadth receiving the end and inner and outer depending vertical flange surfaces of said free end sill on the next consecutive dock section and retaining the outer vertical flange surfaces of adjacent sills in continuous transverse contact to maintain alignment of adjacent dock sections, the free end sill of said consecutive dock section supported directly on the top edge of said coplanar leg flanges, and the inner flange surfaces of said coplanar and parallel rail flanges of adjacent dock sections disposed to form a continuous upwardly open cradle to receive a deck.

2. The dock structure of claim 1 which also includes a diagonal corner brace integrally secured between each of said horizontal coplanar rail flanges and said horizontal flange of said free end sill, and a diagonal corner brace integrally secured between each of said parallel leg flanges and said corresponding parallel rail flanges.

3. The dock structure of claim 1 which also includes diagonal cross braces integrally secured between said coplanar leg flanges.

4. The dock structure of claim 1 which also includes a foot secured to the bottom of each leg.

5. The dock structure of claim 1 which also includes a series of matched openings in said parallel leg flanges of said first leg section, and a second matched pair of vertically disposed parallel angle legs having their coplanar flanges inturned toward each other and their parallel flanges coextensive with each other, diagonal cross braces integrally secured between said coplanar flanges of said second matched pair of angle legs and provide a second leg section slidable within said first leg section, said parallel flanges of said second matched pair of legs having a series of openings matched with those in said first pair of matched legs, and bolt means to secure in said matched openings of said legs to vary the elevation of said deck frame.

6. The dock structure of claim 5 which also includes a third matched pair of angle legs having their coplanar flanges inturned toward each other and their parallel flanges having a series of openings matched with those in said second pair of matched legs, and bolt means to secure in said matched openings of said second and third pair of legs to vary the elevation of said deck frame.

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