

Dec. 14, 1965

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3,222,874

STRUCTURAL FRAMEWORK FOR BOAT PIERS

Filed Feb. 12, 1962

4 Sheets-Sheet 1

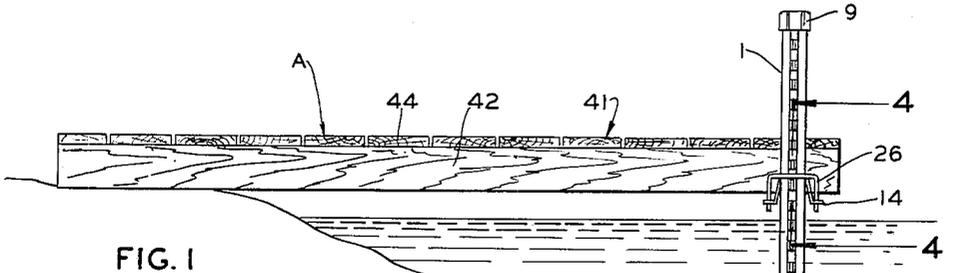


FIG. 1

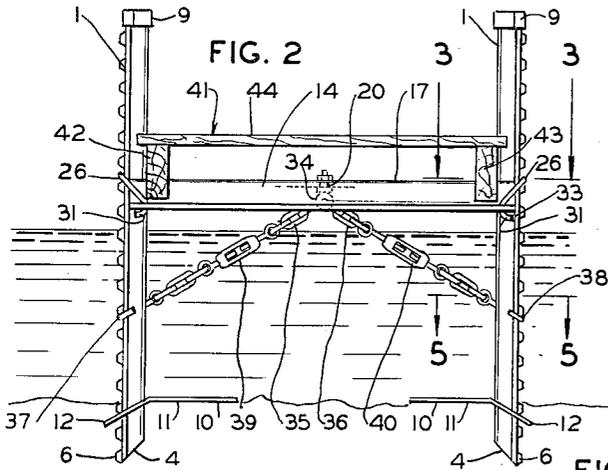


FIG. 2

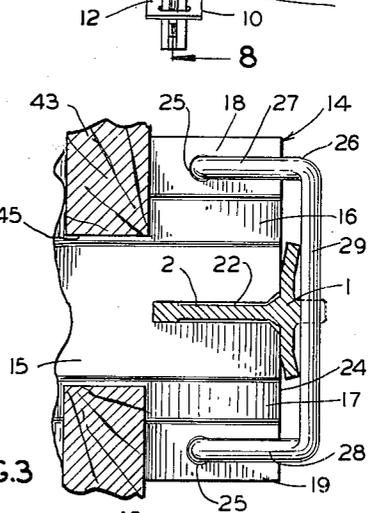


FIG. 3

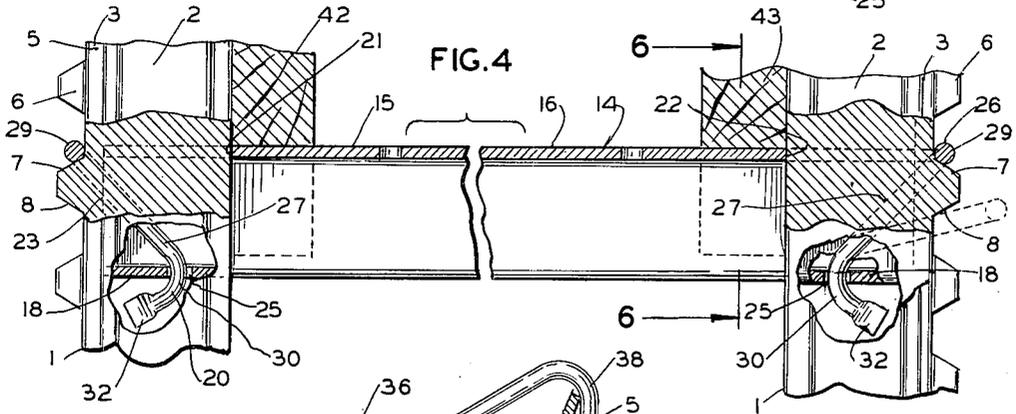


FIG. 4

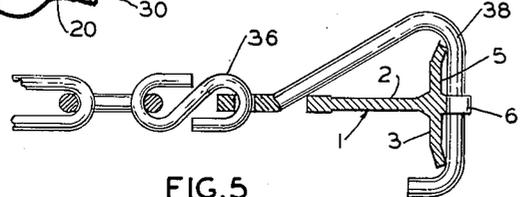


FIG. 5

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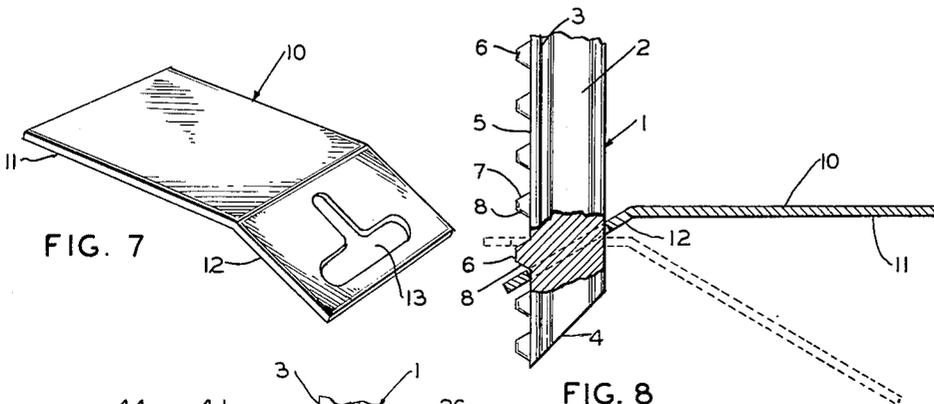


FIG. 7

FIG. 8

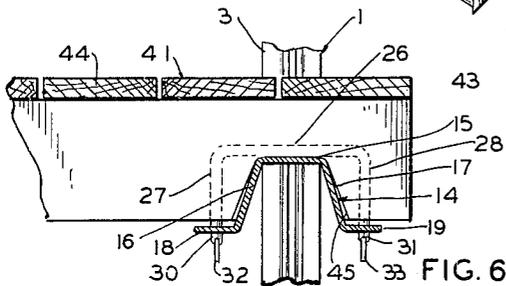


FIG. 6

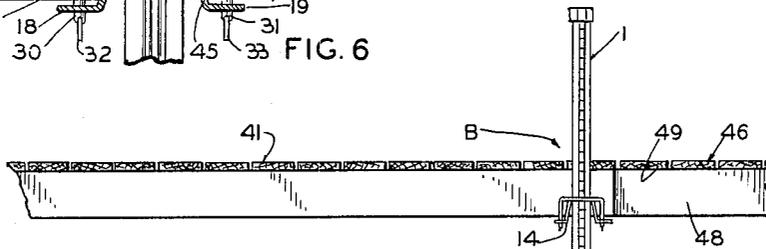


FIG. 9

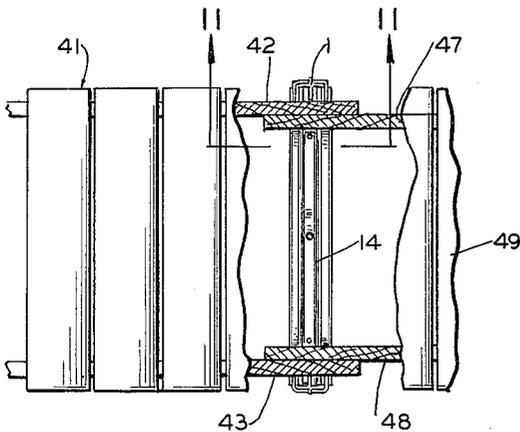


FIG. 10

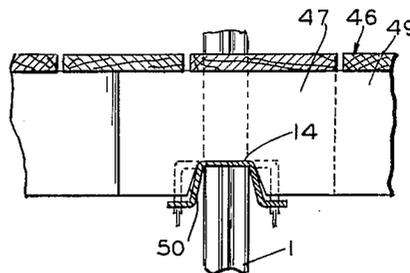


FIG. 11

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STRUCTURAL FRAMEWORK FOR BOAT PIERS

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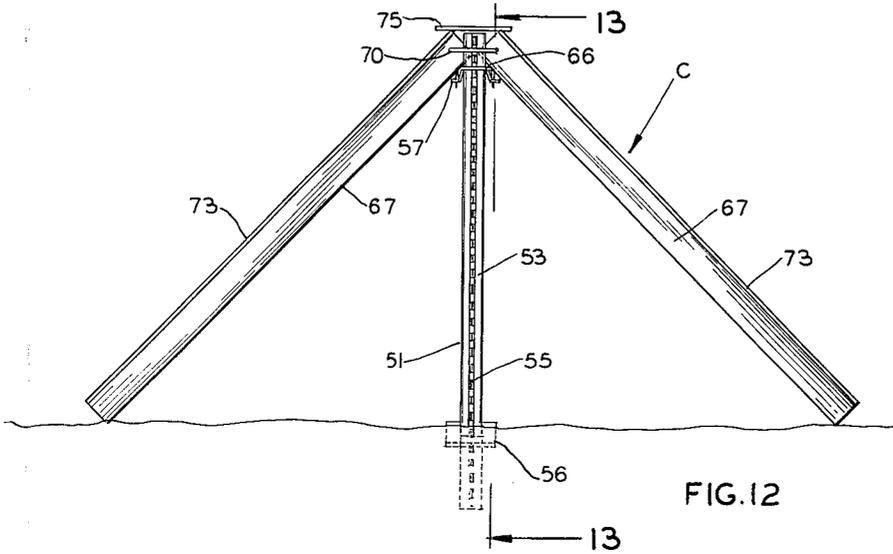


FIG. 12

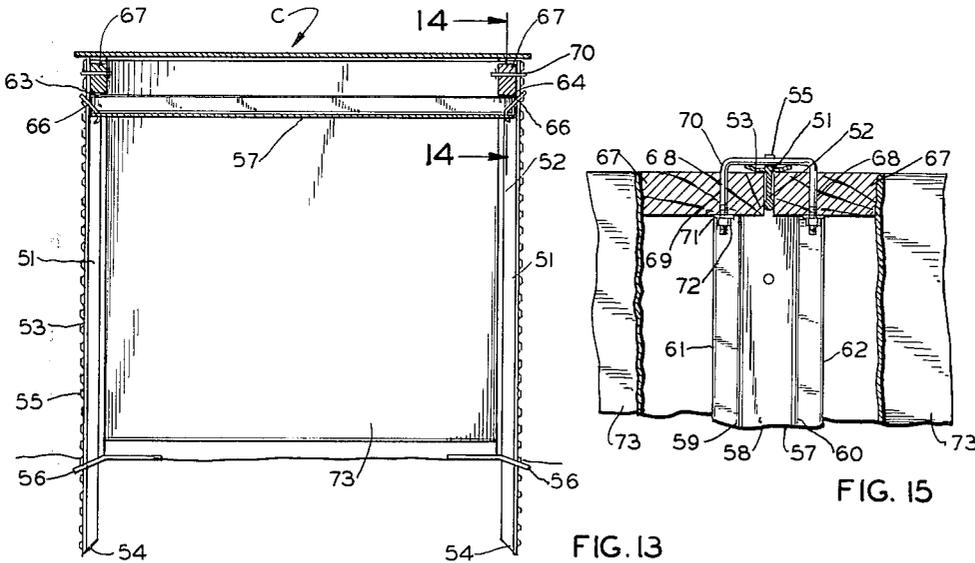


FIG. 13

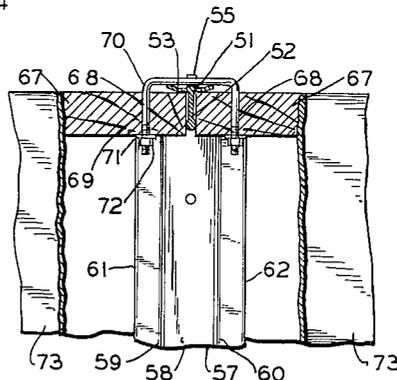


FIG. 15

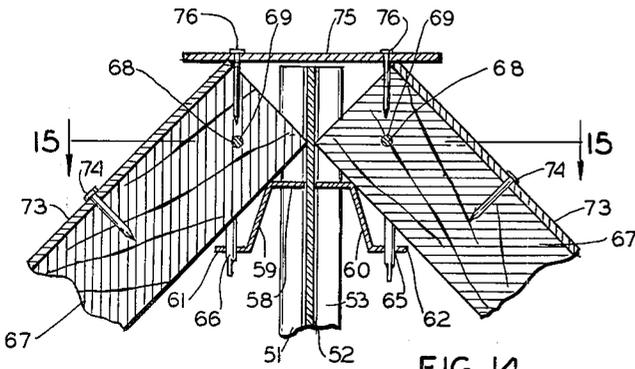


FIG. 14

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STRUCTURAL FRAMEWORK FOR BOAT PIERS

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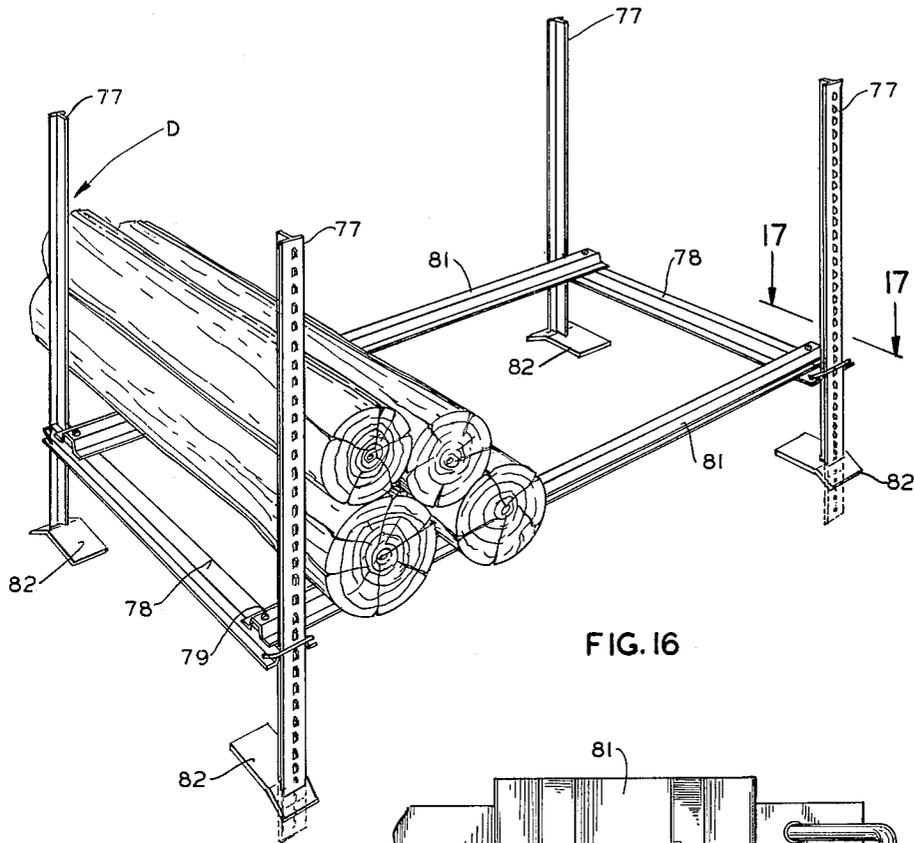


FIG. 16

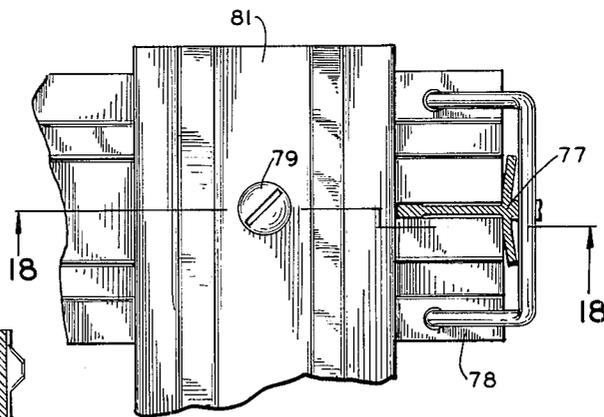


FIG. 17

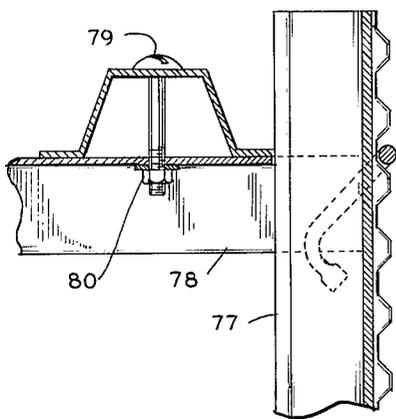


FIG. 18

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3,222,874
STRUCTURAL FRAMEWORK FOR BOAT PIERS
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Filed Feb. 12, 1962, Ser. No. 172,437
8 Claims. (Cl. 61-48)

This invention relates, in general, to structural framework and, more particularly, to improved frame-forming members which can be easily assembled and disassembled to form various types of outdoor structures, such as boat piers, storage huts, and the like.

In suburban rural and resort areas, it is frequently necessary to provide various types of outdoor structures which are relatively inexpensive, and can be quickly assembled or disassembled. One example of such structure is a boat dock or pier. For instance, in resort areas which are adjacent to a body of water, such as a river or lake, there is, of course, a great deal of boating and therefore, it is necessary to utilize some sort of boat dock or pier in conjunction with motor boats, sail boats, and the like. Many boat-users will travel from place to place and, therefore, cannot always find permanent or established facilities of this type and, therefore, need some type of portable structure which can be set up in a relatively short time so that it can be used for a few days or weeks at one place but can be dismantled quickly when the user desires to move to another place.

This problem not only relates to the need of the itinerant sportsman but also is significant for the owner of riparian property who may, and usually is, interested in some form of boating. Permanent piers with driven piling and heavy timbers are extremely expensive and must be constantly maintained. The greatest damage occurs over the winter season when such installations are subject to the forces of wind, storms, and freezing water. For this reason, it would be highly desirable to provide a boat pier which can be easily dismantled each fall and stored away on shore during the winter season.

Another example of an outdoor structure of the type stated in a storage rack for firewood. This is a need which may be encountered by suburban home owners who keep a supply of cordwood for fireplace use. Many communities require that cordwood be stacked in an elevated rectilinear pile to prevent rodents from nesting or taking cover therein. Therefore, it is desirable to employ some type of easily erected storage rack for this purpose.

In rural areas farmers often need a lean-to or shed which can be quickly and sturdily built in a field or barnlot to provide shelter for domestic animals or for small farm machinery. Such shelters may be used for periods of comparatively short duration and it may be necessary from time to time to dismantle such a structure to move it to another place.

It is, therefore, the primary object of the present invention to provide a structural framework and the structural members therefor which can be rapidly assembled or disassembled with a minimum of labor.

It is another object of the present invention to provide a framework which can be used as a boat dock or pier or similar outdoor structure that can be easily and quickly set up or taken down irrespective of the topographical characteristics of the area in which it is being set up.

It is a further object of the present invention to provide a structural framework that is self-locking in the assembled condition.

It is an additional object of the present invention to provide a boat dock or pier that is capable of being adjusted to various heights as the water level changes from time to time.

It is also an object of the present invention to provide a boat dock or pier of the type stated that is sturdy in construction and yet relatively light in weight so as to be readily portable.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings:

FIG. 1 is a side elevational view of a single-section boat dock or pier constructed in accordance with and embodying the present invention;

FIG. 2 is a front elevational view of the boat dock or pier;

FIG. 3 is a fragmentary sectional view taken along line 3-3 of FIG. 2;

FIG. 4 is a fragmentary sectional view taken along line 4-4 of FIG. 1;

FIG. 5 is a fragmentary sectional view taken along line 5-5 of FIG. 2;

FIG. 6 is a fragmentary sectional view taken along line 6-6 of FIG. 4;

FIG. 7 is a perspective view of the foot plate forming a part of the present invention;

FIG. 8 is a fragmentary sectional view taken along line 8-8 of FIG. 1 and showing the various positions of the foot plate forming a part of the present invention;

FIG. 9 is a side elevational view of a multiple-section dock or pier constructed in accordance with and embodying the present invention;

FIG. 10 is a top plan view, partly broken away and in section of the structure shown in FIG. 9;

FIG. 11 is a fragmentary sectional view taken along line 11-11 of FIG. 10;

FIG. 12 is an end elevational view of a lean-to or shelter constructed in accordance with and embodying the present invention;

FIG. 13 is a fragmentary sectional view taken along line 13-13 of FIG. 12;

FIG. 14 is a fragmentary sectional view taken along line 14-14 of FIG. 13;

FIG. 15 is a fragmentary sectional view taken along line 15-15 of FIG. 14;

FIG. 16 is a perspective view of a cordwood storage rack constructed in accordance with and embodying the present invention;

FIG. 17 is a fragmentary sectional view taken along line 17-17 of FIG. 16; and

FIG. 18 is a fragmentary sectional view taken along line 18-18 of FIG. 17.

Referring now in more detail and by reference characters to the drawings which illustrate practical embodiments of the present invention, A designates a portable boat pier utilizing a structural framework embodying the present invention and comprising two identical uprights or posts or pilings 1, preferably formed of steel or the like, being somewhat T-shaped in cross-section, and each integrally including a web 2, flange 3, and a lower somewhat sharpened end 4. The forwardly presented face 5 of the flange 3 is integrally provided with a series of uniformly spaced studs 6 each having oblique top and bottom faces 7, 8. The upper ends of the pilings 1 are

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preferably provided with relatively heavy removable cap members 9, molded from rubber, polyethylene or similar resilient material, all as can best be seen in FIGS. 1 and 2.

Provided for selectable positionable attachment to the lower portion of the pilings 1 are foot plates, or ground plates 10, which consist of a flat bearing-portion 11 and an angularly extending flange 12. The flange 12 is provided with a somewhat T-shaped aperture 13 which is sized for loose-fitting slidable engagement around the pilings 1 and will clear the studs 6 when in the position shown in dotted lines in FIG. 8. Thus, each foot plate 10 can be manually slid up or down on the piling 1 to any desired position of vertical adjustment and, when released, will swing down so that the bearing-portion 11 will swing below the position shown in dotted lines in FIG. 8. In this latter position, the foot plate will hang upon one of the studs 6 while the piling is being driven, but when the bearing-portion 11 comes against the lake or river bottom, a few more driving strokes will cause the foot plate 10 to swing up to the position shown in full lines in FIG. 8, thereby stopping the piling at a selected depth and affording a substantial area of load-bearing surface. It will, of course, be understood that two such pilings or posts 1, are driven in spaced parallel relation at a suitable distance out from the shore and ordinarily these pilings 1 should be as nearly vertical as possible. Of course, within reasonable limits these pilings 1 can be inclined away from true vertical position if, for topographical or other reasons, this should be desirable.

Provided for vertically adjustable disposition between the two driven pilings 1 is a cross-beam 14, preferably formed from an inverted somewhat U-shaped channel section having a flat upper web 15, two downwardly and outwardly extending side walls 16, 17, and two outwardly extending flanges 18, 19. The web 15 is provided with an aperture 20 which is preferably located midway between the ends of the cross-beam 14 and at each of its transverse ends the web 15 is centrally slotted to provide clearance recesses 21, 22, for slidably engaging the webs 2. The recesses 21, 22, are deep enough to allow end faces 23, 24, to abut against the inwardly presented faces of the flanges 3. Adjacent each end, the flanges 17, 19, are provided with pairs of apertures 25 for accommodating U-shaped hanger elements 26. Each of the hanger elements 26 is rockably mounted in the aligned pairs of apertures 25 and each is provided with leg portions 27, 28, which are connected by a transversely extending bight portion 29. The legs 27, 28, are respectively provided with downwardly extending arcuate arms 30, 31, which extend loosely through the apertures 25 and, after being inserted therein, are upset to form enlarged heads 32, 33. Referring to FIGS. 2, 3, and 4, it can be seen that the bight portion 29 of each of the hanger elements 26 will extend over the studs 6 when the leg portions 27, 28, are swung outwardly. At the desired position, the hanger elements 26 are allowed to pivot within the apertures 25, thereby permitting abutting engagement of the lower surface of the bight portion 29 with the upper faces 7 of a selected stud 6. The hanger elements 26 will then be swung upwardly from the position shown in full lines in FIG. 4. The downward component of force provided by the weight of the cross-beam 14 will always maintain the cross-beam 14 rigidly secured in such selected position. If it is desired to elevate or lower the cross-beam 14 in relation to its position on the pilings 1, the cross-beam 14 is merely raised permitting the hanger elements 26 to fall until the leg portions 27, 28, are in the horizontal position, that is, the position shown in the broken lines in FIG. 4.

An eye-bolt 34 is bolted or otherwise rigidly secured to the center aperture 20 for preferably, but not necessarily, retaining the ends of lengths of chain 35, 36. The chains 35, 36, are provided at their outer ends with somewhat U-shaped hooks 37, 38, that are adapted to engage the

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lower faces 8 of the studs 6 substantially as shown in FIG. 2. The chains 35, 36, are, moreover, provided intermediate their ends with turn buckles 39, 40, for varying their effective length and thereby maintaining tension on each of the chains 35, 36.

Provided for disposition upon the cross-beam 14 is a deck assembly 41 which comprises a pair of spaced parallel stringers 42, 43. Mounted on the upper surfaces of the stringers 42, 43, and extending the entire length thereof, is a plurality of wooden planks 44. The stringers 42, 43, are provided at one of their transverse ends with U-shaped notches 45 which are sized so that the deck assembly 41 may be securely positioned over the cross-beam 14.

The boat dock or pier A can easily and rapidly be assembled at any convenient location at the edge of a suitable body of water. The foot plate or ground plate 10 is positioned on each of the pilings 1, at least three or four notches above the bottom end to provide a length of the pilings that can be driven into the lake or river bed, as previously described. The cross-beam 14 is then attached to the pilings 1 in the manner described above at any desired vertical position thereon. Further, the U-shaped notches 45 in the stringers 42, 43, are disposed over the cross-beam 14 in supportive engagement. The other end of the deck assembly 41 is placed in supportive position upon the ground or bank, substantially as shown in FIG. 1. The support chains 35, 36, are then connected to the eye-bolt 34 at the desired vertical position on the pilings 1. The U-shaped hooks 37, 38, will engage the underside of the studs 6, and the turn buckles 39, 40, can be tightened to the desired degree of tension. As the turn buckles 39, 40, are tightened, the chains 35, 36, will pull the pilings 1 and cross-beam 14 together in a stable triangulated structural unit.

If desired, the degree of slope which the deck assembly forms with the bank can be changed by merely raising or lowering the cross-beam 14. Also, it is possible to compensate for changes in the level of the water by similarly adjusting the vertical height of the cross-beam 14 on the pilings 1. Thus, if it is desired to either raise or lower the cross-beam 14, it is manually lifted until the hanger elements 26 fall out of supportive engagement with the studs 6. Thereupon, the portion of the cross-beam 14 can be changed to any desired level within the limit of the vertical height of the pilings 1. When the cross-beam 14 has been elevated or lowered to the desired position, the hanger elements 26 are, thereupon, allowed to engage the upper surface of the studs 6. When the dock or pier A is fully installed, the caps 9 may be applied to the upper ends of the pilings 1 for safety and appearance.

When it is desired to disassemble the pier A, the reverse procedure is followed. The deck assembly 41 is removed from the pilings 1 by merely lifting the stringers 42, 43, until the notches 45 are clear of the cross-beam 14. Then, tension on the support chains 35, 36, is released by turning the turn buckles 39, 40, in the correct direction so that the U-shaped hooks 37, 38, can be released from the studs 6. The cap members 9 can then be removed and it is possible to lift the cross-beam 14 off of the pilings 1. The pilings 1 can then be pulled upwardly from their position in the lake or river bed. If desired, the deck assembly 41 can be further disassembled by removing the planks 44 from the two side stringers 42, 43. Thus, it is possible to package the entire disassembled structure into a small compact unit.

It is possible to provide a modified form of boat dock or pier B, substantially as shown in FIGS. 9-11. The boat dock or pier B is similar in all respects to the previously described boat dock pier A, except that it is provided with a second deck assembly 46 which will extend outwardly in parallel relation to and beyond the deck assembly 41. The deck assembly 46 is provided with two parallel spaced side stringers 47, 48, that are

connected by means of transversely extending wooden planks 49 rigidly secured at their upper surfaces. The transversely extending planks 49 do not extend the entire length of the stringers 47, 48, as in the case of the previously described deck assembly 41, but terminate at a distance inwardly of the left transverse margin, that is, the margin shown in the left-hand side of FIG. 10. The side stringers 47, 48, are, moreover, provided with U-shaped notches 50 at their lower margins that are substantially identical to the previously described notches 46. The transverse distance between the stringers 47, 48, is slightly less than the distance between the stringers 42, 43, of the deck assembly 41, so that the notches 50 of the stringers 47, 48, can suitably engage the cross-beam 14 inwardly of the stringers 42, 43, substantially as shown in FIG. 10.

The boat dock or pier B is used and assembled in the same manner as the previously described boat dock A. The extra deck assembly 46 thereupon permits the user to extend the effective length of the deck. It is, of course, obvious that the same supporting arrangement must be used at the free end of the deck assembly 46, as in the case of the deck assembly 41. It should also be obvious that any desired number of deck-sections could be used to extend the effective deck length to any desired distance in the water.

It is also possible to utilize the structural framework of the present invention in the construction of a shelter C, as shown in FIG. 12, which comprises two identical vertical uprights 51, each being T-shaped in cross-section and integrally including a web 52, a flange 53, and lower sharpened end 54. The forwardly presented face of each flange is integrally provided with a series of uniformly spaced studs 55 and adjustably mounted near the lower ends 54 of the uprights 51 are foot plates or ground plates 56 which are substantially identical with the previously described foot plates 10.

Provided for cooperation with the uprights 51 is a cross-beam 57 preferably formed from an inverted somewhat U-shaped channel section substantially similar to the previously described cross-beam 14 and including a flat upper web 58, two downwardly and outwardly inclined side walls 59, 60, and outwardly extending flanges 61, 62. At each of its transverse ends the web 58 is centrally slotted to provide clearance recesses 63, 64, for slidably engaging the webs 52 of the uprights 51. These clearance recesses 63, 64, correspond in shape and function to the previously described clearance recesses 21, 22. Adjacent each end, the flanges 61, 62, are provided with pairs of apertures 65 for accommodating U-shaped hanger elements 66, each of which is rockably mounted in a transversely aligned pair of apertures and, when swung outwardly, is adapted for loosely embracing and sliding up and down along one of the uprights 51. These hanger elements 66 are substantially identical in shape, construction, and function, with the previously described hanger elements 26 and, when swung upwardly into an angular position, will engage and lock against selected studs 55, so as to hold the cross-beam in rigidly supported lengthwise extending position between the two uprights 51, as best seen in FIG. 13.

As a first stage in erecting the shelter C, the cross-beam 56 can be laid lengthwise upon the ground in the area in which the shelter C is to be erected, so that the lower sharpened ends 54 of the uprights 51 can be more or less exactly aligned with the opposite ends of the cross-beam 57. Thus located, the uprights 51 can be driven vertically into the ground by a conventional sledge or conventional position-driving tool until the uprights 51 have reached a desired depth to afford adequate structural strength. In ordinary types of soil the uprights 51 need only be driven down into the ground to a depth of approximately six to ten inches below the surface of the ground, and in such case the foot plates 56 are suitably adjusted so that when the uprights 51 reach this depth, the foot plates 56 will

rest approximately flatwise against the surface of the ground, as shown in FIGS. 12 and 13. The above-ground portion of the uprights 51 ordinarily only have a length ranging from six to eight feet, although it should be understood that there is nothing particularly critical about such length. When the two uprights 51 have been driven into the ground the cross-beam 57 can be manually lifted and slid down the top of the uprights to a desired height above the ground.

Thereupon, two pairs of downwardly and outwardly diverging joists 67 are laid at their upper ends upon the cross-beam 57, substantially in the manner shown in FIGS. 12 and 14. At their upper ends, the joists 67 are provided with apertures 68 for accommodating the legs 69 of a U-shaped fastener 70, which embraces the upwardly projecting end of the adjacent upright 51. Slipped over the inwardly projecting threaded ends of the legs 69 are washers 71 and nuts 72 are threaded thereon to draw the joists 67 securely together and tightly against the upwardly projecting end of the adjacent upright 51, as best seen in FIG. 15. By applying a certain amount of downward pressure to the upper ends of the joists 67, as the nuts 72 are drawn tight, the cross-beam 57 is effectively locked in place and the entire upper end of the structure becomes mutually reinforcing.

Rectilinear roof-forming sections 73 of plywood can be applied to the upwardly presented faces of each pair of transversely aligned joists 66 and, if necessary, secured in place by any conventional means, such as nails 74 or the like. Also, if desired, an elongated ridge-board 75 can be placed along the upper horizontal margins of the roof-forming sections 73 in upwardly spaced parallel relation to the cross-beam 57 and held in place by conventional nails 76, or other similar fastening elements, all as best seen in FIG. 14.

It has been found that the shelter C can be very quickly constructed and will furnish a stable highly effective protective cover for small animals or small farm machinery, and will serve many different purposes of this type. The shelter C, even though constructed of relatively few members, is, nevertheless, quite strong and durable. Moreover, different types of roof-forming elements, other than plywood, such as corrugated sheet iron, may also be utilized if desired and it will, of course, be understood in such connection that suitable fastening means of any available conventional type may be employed to secure such roof-forming elements to the joists 67.

It is also possible to utilize the structural framework of the present invention in the construction of a log storage rack D, as shown in FIG. 16 which comprises four uprights 77 which are identical in all respects to the previously described uprights 51. Provided for adjustable disposition between transversely aligned pairs of uprights 77 are cross-beams 78 which, except for length, are identical with the previously described cross-beams 57. Secured at their ends by means of bolts 79 and nuts 80 and extending horizontally between the pairs of cross-beams 78 are parallel stringers 81 preferably formed of the same type of U-shaped channel section as the cross-beams 78. Preferably, the lower ends of the uprights 77 are provided with adjustable foot plates or ground plates 82 which are identical in construction and function with the previously described foot plates 10 and 56. As shown in FIG. 16, cordwood may be piled within the rack D to a reasonably substantial height and thereby securely and effectively held in a neat rectilinear stack or pile within the rack D. It will, of course, be evident that the cross-beams 78 and stringers 81 can be adjusted to any suitable height above the ground in order to prevent rodents and other small animals from making nests or seeking cover within the stack of cordwood, as frequently occurs when cordwood is stacked or piled directly upon the ground.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the structural framework

for quickly erecting boat piers, lean-tos, log racks, and similar structures, may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent:

1. A boat pier comprising a pair of vertical support members constructed of T-shaped steel, said support members having a front vertical plate and a flange extending inwardly from the center portion of said plate, a plurality of spaced forwardly extending projections integrally formed on said vertical plate, a pair of foot plates, each of said foot plates integrally including a flat horizontal plate and an angular downwardly extending flange having a T-shaped aperture for loose-fitting disposition at various selected positions around a vertical support member, said extending flanges being adapted for hanging loosely on the support member with which such plate is operatively associated and also being adapted for optionally locking into a rigid position against the upper portion of the extending projections of such support member when the horizontal plate thereof is brought into bearing engagement with the ground, a transversely extending cross-beam, an outwardly extending U-shaped hanger element rockably mounted on each end of said cross-beam, said cross-beam being slidably engaged at its opposite ends upon said support member, said hanger elements being each engaged with a projection on the respective vertical support member thereby securing said cross-beam in any one of a plurality of selectable positions on said support members, chain means extending between said cross-beam and each of said support members for holding the U-shaped hanger elements securely down on the forwardly extending projections and thereby preventing the cross-beam from unauthorized upward shifting movement, and a deck assembly mounted at one of its transverse ends on said cross-beam.

2. A boat pier comprising a pair of vertical support members constructed of T-shaped steel, said support members having a front vertical plate and a flange extending inwardly from the center portion of said plate, a plurality of spaced forwardly extending projections integrally formed on said vertical plate, a pair of foot plates, each of said foot plates integrally including a flat horizontal plate and an angular downwardly extending flange having a T-shaped aperture for loose-fitting disposition at various selected positions around a vertical support member, said extending flanges being adapted for hanging loosely on the support member with which such plate is operatively associated and also being adapted for optionally locking into a rigid position against the upper portion of the extending projections of such support member when the horizontal plate thereof is brought into bearing engagement with the ground, a transversely extending cross-beam, said cross-beam having an inverted U-shape with a top wall and two downwardly and outwardly extending side walls, an outwardly extending flange integrally formed on the lower margins of each of said side walls, an outwardly extending U-shaped hanger element rockably mounted on each end of said cross-beam, said cross-beam being slidably engaged at its opposite ends upon said support member, said hanger elements being each engaged with a projection on the respective vertical support member thereby securing said cross-beam in any one of a plurality of selectable positions on said members, chain support means extending between said cross-beam and each of said support members for holding the U-shaped hanger elements securely down on the forwardly extending projections and thereby preventing the cross-beam from unauthorized upward shifting movement, and a deck assembly mounted at one of its transverse ends on said cross-beam.

3. A boat pier comprising a pair of vertical support members constructed of T-shaped steel, said support members having a front vertical plate and a flange ex-

tending inwardly from the center portion of said plate, a plurality of spaced forwardly extending projections integrally formed on said front vertical plate, a pair of foot plates, each of said foot plates integrally including a flat horizontal plate and an angular downwardly extending flange having a T-shaped aperture for loose-fitting disposition at various selected positions around a vertical support member with which such plate is operatively associated and also being adapted for optionally locking into a rigid position against the upper portion of the extending projections of such support member when the horizontal plate thereof is brought into bearing engagement with the ground, a transversely extending cross-beam, said cross-beam having an inverted U-shape with a top wall and two downwardly and outwardly extending side walls, an outwardly extending flange integrally formed on the lower margins of each of said side walls, an outwardly extending U-shaped hanger element rockably mounted on each end of said cross-beam, said cross-beam being slidably engaged at its opposite ends upon said support member, said hanger elements being each engaged with a projection on the respective vertical support member thereby securing said cross-beam in any one of a plurality of selectable positions on said support members, and a deck assembly mounted at one of its transverse ends on said cross-beam.

4. A portable boat pier comprising a pair of vertical support members constructed of T-shaped steel, said support members having a front vertical plate and a flange extending inwardly from the center portion of said plate, a plurality of spaced forwardly extending projections integrally formed on said front vertical plate, a pair of foot plates, each of said foot plates integrally including a flat horizontal plate and an angular downwardly extending flange having a T-shaped aperture for loose-fitting disposition at various selected positions around a vertical support member with which such plate is operatively associated and also being adapted for optionally locking into a rigid position against the upper portion of the extending projections of such support member when the horizontal plate thereof is brought into bearing engagement with the ground, a transversely extending cross-beam, said cross-beam having an inverted U-shape with a top wall and two downwardly and outwardly extending side walls, an outwardly extending flange integrally formed on the lower margins of each of said side walls, an outwardly extending U-shaped hanger element rockably mounted on each end of said cross-beam, said cross-beam being slidably engaged at its opposite ends upon said support member, said hanger elements being each engaged with a projection on the respective vertical support member thereby securing said cross-beam in any one of a plurality of selectable positions on said support members, and a deck assembly mounted at one of its transverse ends on said cross-beam, said deck assembly comprising a pair of spaced parallel side walls connected by a plurality of top members spaced the entire length of said side walls.

5. A boat pier comprising a pair of uprights each being T-shaped in cross-section and integrally including a flange and a web, the latter extending inwardly from the flange, said flange having a plurality of laterally presented spaced studs, a cross-beam disposed transversely between the uprights abuttingly engaged at its opposite end therewith, said cross-beam and being provided at its opposite ends with swingable latching hangers in engagement with the uprights and in optional retentive engagement with any selected one of the studs, and a plurality of deck assemblies each being mounted at one of its transverse ends on said cross-beam.

6. A boat pier comprising a pair of uprights each being T-shaped in cross-section and integrally including a flange and a web, the latter extending inwardly from the flange, said flange having a plurality of laterally presented spaced studs, a cross-beam disposed transversely between the

uprights abuttingly engaged at its opposite end therewith, said cross-beam and being provided at its opposite ends with swingable latching hangers in engagement with the uprights and in optional retentive engagement with any selected one of the studs, and interlocking deck units mounted at their ends upon and extending in opposite directions from said cross-beam.

7. A boat pier comprising a pair of uprights each being T-shaped in cross-section and integrally including a flange and a web, the latter extending inwardly from the flange, said flange having a plurality of laterally presented spaced studs, a cross-beam disposed transversely between the uprights abuttingly engaged at its opposite end therewith, said cross-beam and being provided at its opposite ends with swingable latching hangers in engagement with the uprights and in optional retentive engagement with any selected one of the studs, and deck means removably mounted at one of its transverse ends on said cross-beam.

8. A boat pier comprising a pair of uprights each being T-shaped in cross-section and integrally including a flange and a web, the latter extending inwardly from the flange, said flange having a plurality of laterally presented spaced studs, a cross-beam disposed transversely between the uprights abuttingly engaged at its opposite end therewith, said cross-beam and being provided at its opposite ends with swingable latching hangers in engagement with the uprights and in optional retentive engagement with any selected one of the studs, and interlocking deck units re-

movably mounted at their ends upon and extending in opposite directions from said cross-beam.

References Cited by the Examiner

UNITED STATES PATENTS

5	266,658	10/1882	Teal.	
	472,514	4/1892	Sankey	182—179
	666,833	1/1901	Weldon.	
10	1,008,491	11/1911	Pruden	189—2
	1,153,371	9/1915	Carter	248—244
	1,373,781	4/1921	Wagner	248—244
	1,912,049	5/1933	Voorhees	61—48
	2,652,694	9/1953	Melges	61—48
15	2,701,038	2/1955	Mooney	189—2
	2,729,415	1/1956	Smaliegan	248—244
	2,948,121	8/1960	Karst	61—48
	3,044,633	7/1962	Baker	211—147
	3,046,748	7/1962	Monroe	61—48
20	3,072,262	1/1963	Cassel	211—147
	3,074,239	1/1963	Mustard	61—48

FOREIGN PATENTS

25	509,670	1/1953	Italy.
	524,717	4/1955	Italy.

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