Aug. 20, 1968 L. H. EISERT ET AL 3,397,546

ROLL OUT-ROLL IN DOCK

Filed March 25, 1966 3 Sheets-Sheet 1

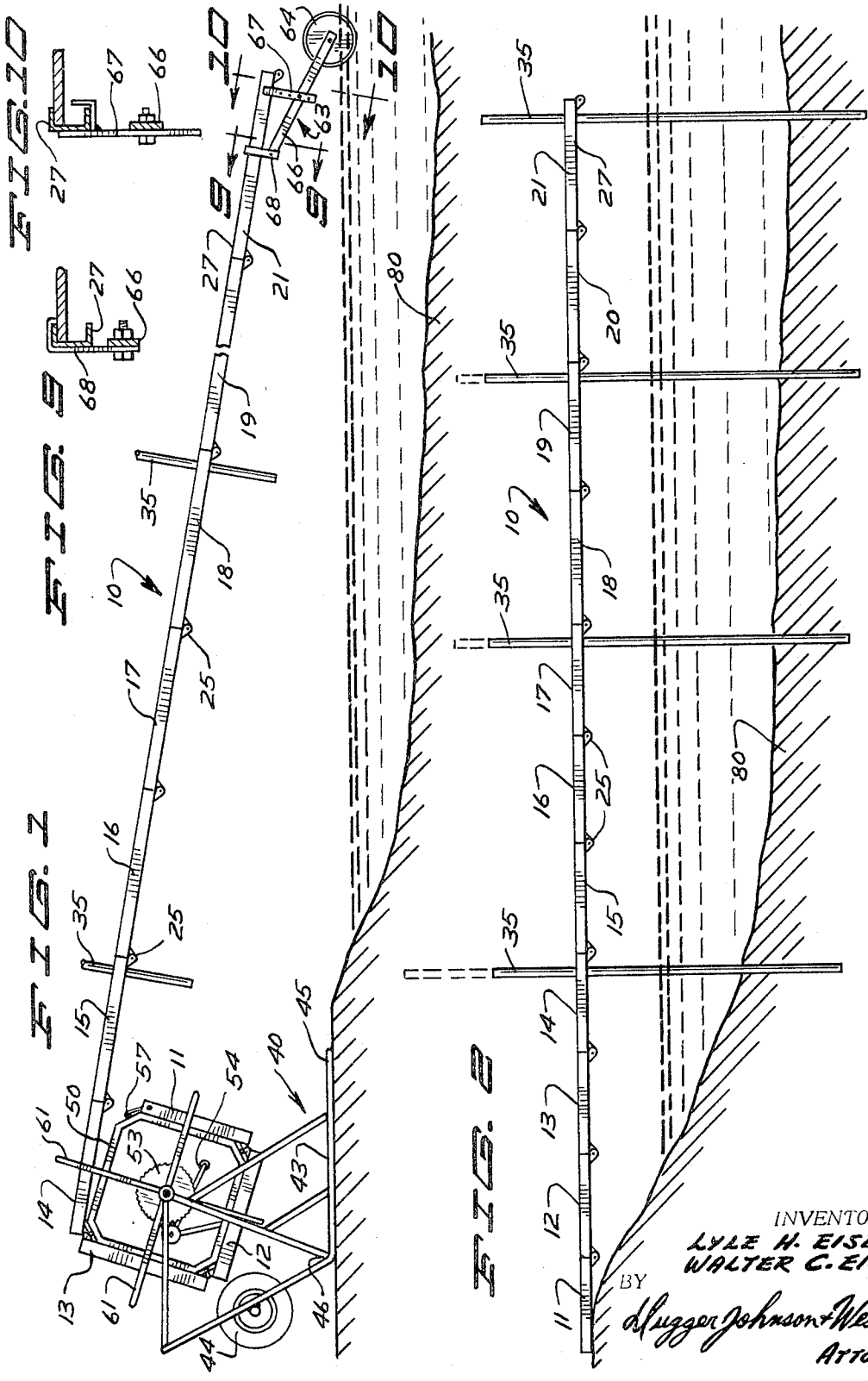


FIG. 1

FIG. 2

FIG. 3

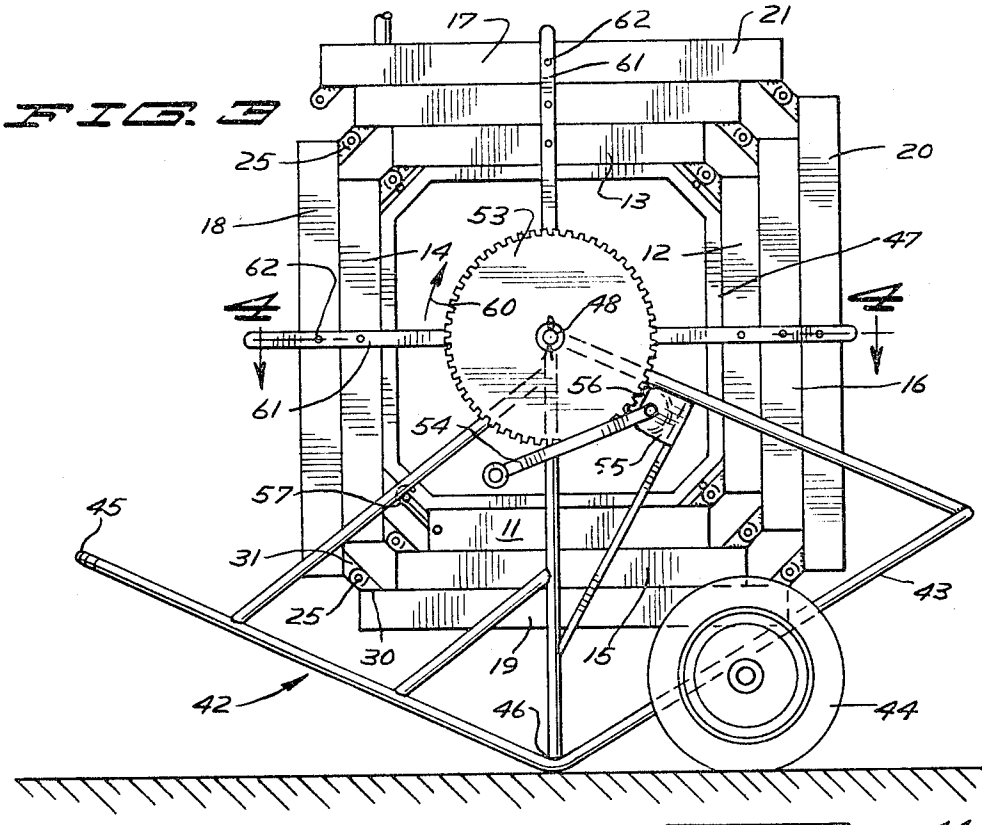
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FIG. 3



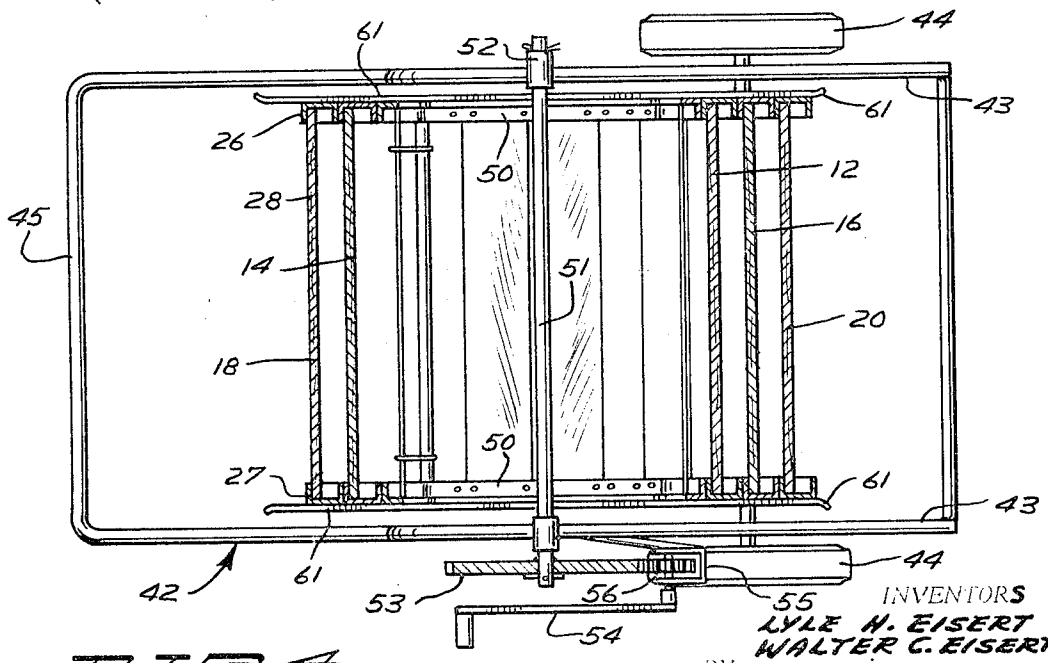


FIG. 4

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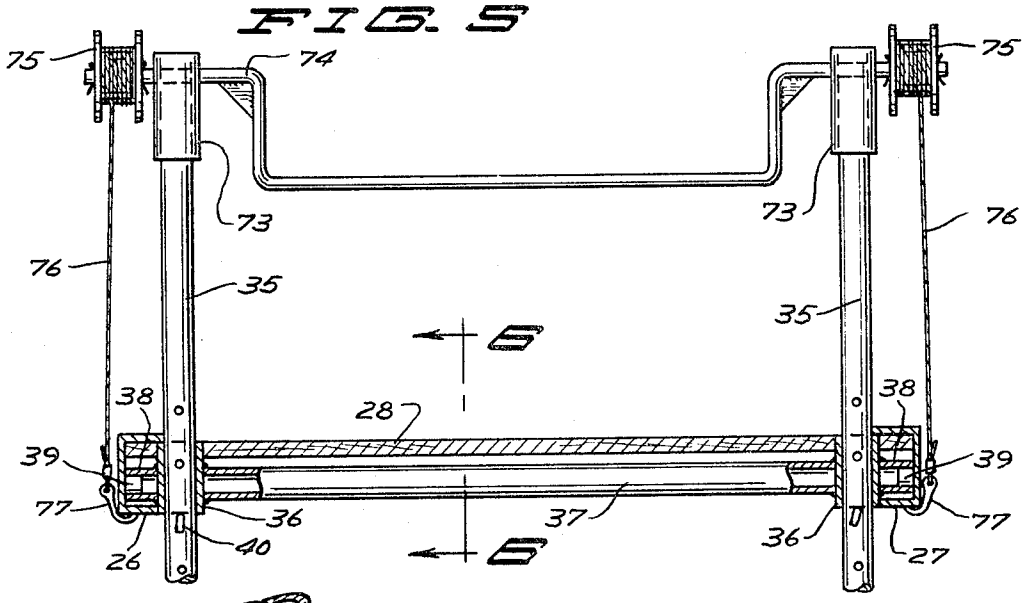
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FIG. 5



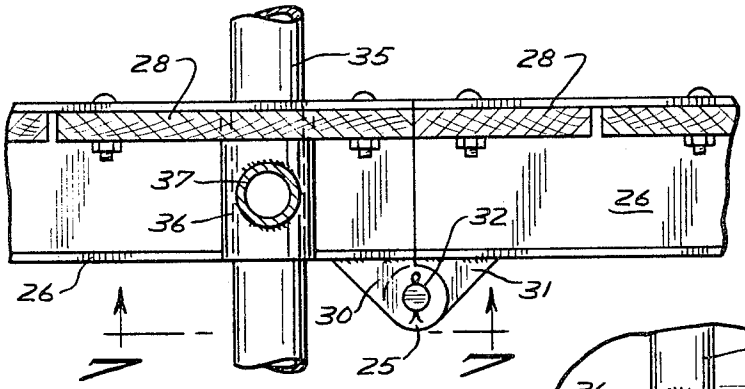


FIG. 6

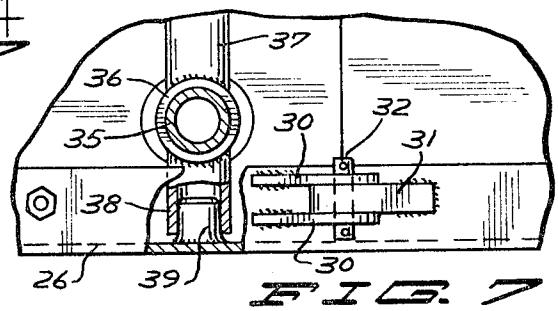


FIG. 7

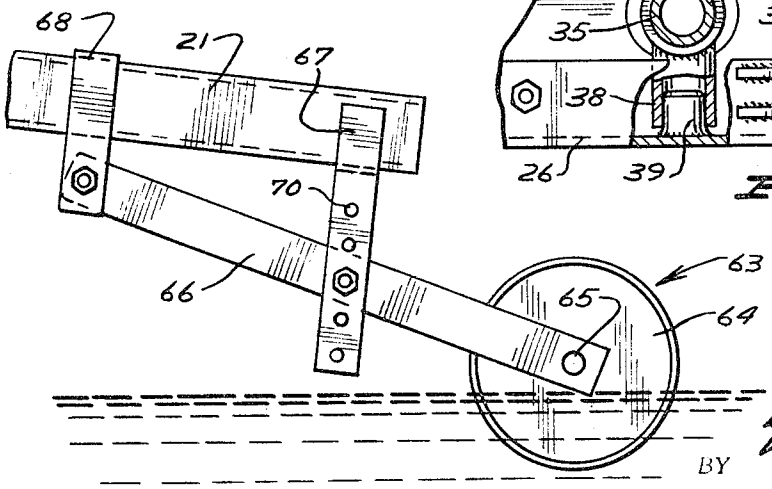


FIG. 8

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ROLL OUT-ROLL IN DOCK

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15 Claims. (Cl. 61—48)

ABSTRACT OF THE DISCLOSURE

A dock or walkway for use adjacent the shoreline of a body of water and which is supported above the body of water comprising a plurality of hinged sections made so that they will not move past a substantially common plane in one direction and which are made so they will hinge in the opposite direction for storage onto a reel. A walkway is initially supported on a float that is pushed out into the water and which supports the walkway above the surface of the water. The inner end of the walkway is then supported adjacent the shoreline, and individual support posts are then placed into the body of water and used to support the walkway sections independently of said float. For storage, the float is installed, the individual support posts are then removed so that the walkway is supported on the float and adjacent the shoreline, and the inner end of the walkway is attached onto a reel, the reel is rotated, and the walkway is wound onto the reel for storage.

The present invention has relation to roll out—roll in walkways used for boat docks and similar structures which can be stored on a portable reel, and easily erected in the water without getting wet.

The device of the present invention is primarily used as a boat dock which permits a boat owner to erect the dock in the spring of the year without getting into the water and also remove the dock in the fall without getting into the water. The unit utilizes a portable storage reel which is designed so that the dock, which is made in hinged sections, can be rolled onto the reel for storage and unrolled when it is to be erected.

During erection the outer end of the dock is temporarily supported on a float so that the permanent support posts can be positioned without getting off the dock, and during disassembly the posts can be removed without getting off the dock. The structure is simple to make and easy to use. The device can also be used for temporary crossing of rivers and streams by the military. In both instances the unit can be easily rolled out in erected form and rolled in for storage or transport without entering the water.

It is therefore an object of the present invention to present a portable walkway which rolls up onto a storage reel, and then can be unrolled for use.

It is a further object of the present invention to present a portable walkway that can be erected and disassembled without entering the water.

It is another object of the present invention to present a portable walkway which is rolled onto a reel that can be quickly transported from place to place.

It is another object of the present invention to present a portable dock wherein the support posts can be installed from above the dock.

Other objects are inherent in the specification and will become apparent as the description proceeds.

In the drawings,

FIG. 1 is a side elevational view showing a roll out-roll in dock or walkway made according to the present invention and shown during installation of the dock in a lake;

FIG. 2 is a side elevational view of the device of FIG. 1, after the dock has been installed;

FIG. 3 is a side elevational view of a storage cart with the entire dock rolled up onto a cart for storage;

FIG. 4 is a sectional view taken as on line 4—4 in FIG. 3;

FIG. 5 is a fragmentary end view showing a device for raising the dock into position on support posts therefor;

FIG. 6 is a side elevational view of a detail of the supporting mechanism for the posts used with the dock, with parts in section and parts borken away;

FIG. 7 is a sectional view taken as on line 7—7 in FIG. 6;

FIG. 8 is a fragmentary side view showing the installation of a float at the leading section of the dock appearing at a time when the dock is being rolled out or rolled in;

FIG. 9 is a sectional view taken as on line 9—9 in FIG. 1; and

FIG. 10 is a sectional view taken as on line 10—10 in FIG. 1.

Referring to the drawings and the numerals of reference thereon, a dock or walkway assembly illustrated generally at **10** is comprised as a plurality of walkway or dock sections **11** through **21** as shown. Each of the adjacent sections are hingedly attached together as at **25**. The hinge axes **25** between the adjacent sections are below the dock sections so that the dock sections will pivot downwardly with respect to their adjacent section, but will not pivot upwardly. In other words the upper surfaces of adjacent sections will not pivot toward each other substantially beyond a common plane. The end edge surfaces of the adjacent dock sections abut against each other and the sections are stopped from pivoting in this direction.

Each of the dock sections is made up of a pair of spaced apart channel members **26** and **27**, respectively, which are joined together with transverse planking or boards **28**. The boards can be fastened to their channels **26** and **27** in any desired manner.

As can be seen, the channels **26** and **27** are facing each other, in other words, the legs of the channels extend inwardly from the outer edges of the dock sections. The pivots **25** are formed by a pair of spaced ears **30, 30** fixed on one of the sections and a tongue **31** on the next adjacent section which fits between the ears. A pin **32** is then passed through provided openings in both the tongue and the ears to form the pivot.

As shown, the dock is supported on a plurality of support posts **35** when it is installed. The posts are mounted at spaced intervals along the sides of the dock. The mounting structure for the posts is shown typically in FIG. 5. A sleeve **36** is positioned at each end of a cross tube **37**. A separate short tubular section **38**, coaxial with tube **37**, is fixed on the outsides of each of the sleeves and they extend toward the main webs of the channels **26** and **27**, respectively. A separate small stub shaft **39** is welded to the webs of each of the channels **26** and **27**, respectively, and these stub shafts **39** slip inside the tubular sections **38**. Thus the sleeve and cross tube assembly is free to pivot about a transverse axis in a limited manner. The sleeves, as shown, pass through provided openings in the boards or planks **28** and the posts then pass through the sleeves, and can be supported on cross pins **40** which are positioned below the sleeves. The posts **35** are provided with a plurality of vertically spaced adjustment holes to permit these posts to be placed as desired.

The openings in the planks **28** for the posts and the sleeves are slightly slotted so that the posts can pivot a limited amount in fore and aft direction about the axis of the tube **37**. This compensates for differences in angles between the adjacent sections of the dock during installation. This is necessary when the posts are being installed and the dock is being raised up to its proper height on the

posts. At that time, the part of the dock section which has been raised (one end of the dock section is raised at a time) will be considerably higher than the part which has not been raised and there will be a substantial angle between the posts and the dock section.

The dock sections are stored on a portable cart assembly **42**. The cart assembly includes a frame **43** which is mounted on wheels **44**, which have axles mounted in a conventional manner so that the cart can be pulled with a handle **45**. The frame **43** extends upwardly from the wheels. The handle member **45** can be lifted so that the frame clears the ground. When the handle is released an intermediate section **46** of the frame will contact the ground and support the cart as shown. At the upper portion of the frame **43**, a reel **47** is rotatably mounted about an axis illustrated at **48**. The reel is comprised as an open centered square frame having a pair of spaced apart side frames **50, 50** held onto an axle **51** which is rotatably mounted in suitable bushings **52** that in turn are attached to the frame. The side frames **50, 50** can be held together in any desired way. As shown, the frames are square and form four peripheral support planes for the dock section. The frames have relieved or recessed corners. A drive gear **53** is drivably mounted onto an outer end of the axle or shaft **51** and this gear in turn is driven through a crank **54** which is rotatably mounted onto a bracket **55** and which has a small pinion gear **56**. The pinion gear drives the large drive gear **53** to rotate the reel.

As can be seen in FIG. 3, the first section or inner section **11** of the dock is attached to one corner of the reel as at **57**. This can be done with a cable or hooks in any conventional manner. The reel is then rotated in direction as indicated by arrow **60** and the dock will be rolled up onto the reel. The first section is one length to start the dock on the roll; sections **12** and **13** are longer and fit against the outer edges of frame **50**, or on the peripheral support surfaces of the reel. The hinge members between the sections fit into the recessed corners of the frames as shown in FIG. 3. When the hinge members open to permit the dock sections to be mounted onto the reel, it can be seen that the dock sections themselves leave open corners. The fourth section **14** is slightly longer than the first three sections and extends past the outer edge of the first section **11** so that the fifth section **15** will lie on the outer surface of the first or inner section **11**. The sections **15, 16** and **17** are of proper length to lie on the outside of the first three sections **11, 12** and **13**.

The section **18** is of size to lie on the outside of the section **14** and extend far enough so the pivot point between sections **18** and **19** permits the section **19** to lie against the outside of the section **15**. Sections **20** and **21** then merely fold on the outside again of sections **16** and **17**.

As can be seen, there are four guide straps **61** mounted onto the reel assembly and these extend substantially parallel and radially outwardly so that they will provide guide means for holding the dock sections in place when they are on the reel.

A plurality of holes **62** are provided in each of the guide members **61** and small pins can then be inserted through the guide member **61** into provided aligning holes in the channels **26** and **27** for the dock sections. This will lock the sections in place in the reel. Once the dock is rolled up as shown, then the entire cart can be stored for the winter or moved to another location.

During the unrolling operation, a float member **63** is mounted adjacent the outer end of the outer section **21** of the dock. This float is comprised as a hollow cylinder or drum as shown which has a pair of stub axles **65** at the opposite ends thereof. A pair of side frame members **66** are rotatably mounted in the axle **65** and the side frame members have suitable slip-on brackets **67** and **68** which are able to slide upwardly underneath the channels **26** and **27**. The bracket **67** is merely an upwardly open U form that fits over the sides of the channels, while the bracket **68** is also U shaped but the U shape extends in the same direction as the channel. In other words, the legs of the U fit over the legs of the channels **26** and **27**. The bracket **67** has a plurality of adjustment holes **70**. These adjustment holes are used for mating with provided openings in the side frame member **66** of the float assembly, and suitable bolts are fastened to adjust the relative position of the drum **64** with respect to the outer end of the dock. This means that the dock can be supported higher or lower in relation to the water when the float is engaging the water.

When the dock is to be used, the cart is rolled adjacent to the shore as shown and is positioned with the handle part of the frame lying flat on the ground. The wheels of the cart as thus positioned in the air and the cart does not tend to roll or be unstable.

The front section **21** of the dock is then pulled off the reel and the float assembly is installed on this outer or front section **21**. A pair of support poles **35, 35** are inserted through the sleeves **36, 36** and held with only a short amount of the pole extending below the dock, as shown in FIG. 1. The pins **40** are used for holding the poles up out of the water in this initial installation procedure. Then the dock is cranked out by turning the crank **54** and operating the reel to push off additional dock sections. The drum itself will act as a wheel or roller on the shore so the outer section of the dock can merely be dropped on the ground and then the crank can be used for forcing the dock out toward the water. With the first pole installed, a couple of sections of the dock are unrolled. When the next support assembly comprising the sleeve **36**, cross tubes **37** and stub tubes **38** is positioned adjacent the reel, but clearing the reel, the second pair of the poles **35** are placed into the sleeves **36** of this assembly and held with only a short length of the post protruding below the dock. Then more of the sections are rolled out and appropriate posts are put into place in the post support assemblies until all of the dock sections have been unrolled. Then the inner end of the dock will be supported on the shore and the outer end will be supported in the water by the float.

Then an operator will start on the shore end of the dock and install a dock raising assembly illustrated in FIG. 5 onto the two posts **35** closest to the shore. The dock raising assembly comprises a pair of guides **73** which slip over the outer ends of the posts **35**. The guides rotatably mount a crank assembly **74** which extends between the guides. At the outer ends of the crank assembly **74** a pair of winch drums **75, 75** are drivably mounted. The winch drums have small ropes or cables **76** attached thereto and a hook **77** is mounted to each of the outer ends of the ropes or cables **76**. The hooks **77** will fit underneath the channels **26** and **27** adjacent posts **35**, as shown. Before the crank assembly and support members **73** are installed on the posts **35**, the pins **40** are removed from above the sleeve **36** so that the posts can drop downwardly into the lake bottom as far as they will.

Once the hooks **77** are in place, the crank **74** is rotated and the rope **76** will be shortened. This will cause the sleeves **36** to slide upwardly on the post **35** and the dock will be raised wtih respect to the post. Of course, in the initial operation the post **35** will be shoved more deeply into the lake bottom illustrated generally at **80** until the posts are firmly anchored. The posts can be provided with bottom support plates or feet if desired. At that time the dock will then be raised up to its desired height above the lake level and the pins **40** will be inserted below the sleeves **36** so that the posts and pins will support the dock (the pins could pass through the sleeves if desired). The crank **74** will be released when the pins are in place so that the sleeves slide down and contact these pins. The dock section is then supported.

Once this is done, the crank **74** and its support **73** are taken off the outer posts **35** and moved to the next pair of posts farther from shore. These posts **35** will then be

dropped down into the lake bottom, the support **73** installed on the upper ends of the posts and the dock raised to the desired level. This is done sequentially until all of the posts are firmly anchored in the lake bottom and the dock is supported on the posts, as shown in FIG. 2. The float assembly can be easily removed.

The entire dock could be reeled out before the posts were inserted in the sleeves too. When the dock is removed from the water, the procedure is reversed. In other words, the float is installed at the outer end of the dock, and then crank **74** and support **73** are placed on the posts farthest from the shore. The dock is raised to take the load off pins **40**. The pins are removed and the dock is lowered with the crank **74** until it is independently supported on the shore. This is done sequentially until the posts no longer support the dock. The dock is supported only by the float and by its support on the shore. The posts can be pulled out of the ground before the dock is reeled onto the storage cart.

The inner section **11** of the dock is attached to the reel as shown at **57** (with a hook or cable), the crank **54** is turned so that the reel will rotate in direction as indicated by arrow **60** and the dock will be wound onto the cart. The posts can be stored separately and the float also can be stored separately.

As shown, to make the sections rest correctly, section **11** is shortest (as shown 21″), sections **12** and **13** are the same length but longer to make the corners open correctly (24″), sections **14** and **15** are longer than sections **12** and **13** (26⅛″), sections **16** and **17** are the same length (28⅜″) but longer than the first five sections, sections **18** and **19** are the same length, but longer still (30⅝″), and sections **20** and **21** are the same length and longest of all (32⅞″). The lengths are selected to make the pivot axes fit properly at the corners.

The device and concept of using a float at an outer end of a folding dock to support it can also be used for making temporary or emergency bridges across small streams or swamps. The folding sections would comprise the walkway and would be mounted onto the reel just as illustrated. Instead of placing posts onto the dock sections as they were rolled off the reel of the cart, additional floats would be clipped underneath the dock sections at periodic intervals in order to provide adequate flotation to support the loads that would be carried by the temporary support. Once the temporary bridge had been used, it could be wound back up onto the cart and hauled with a jeep or truck to another location where it was needed. This would give a very fast sure way of getting troops across swamps and rivers, and to reach victims of floods.

The use of the pins which pass through holes **62** in bracket **61** and into aligning holes on the channels hold the dock sections during the unreeling operation as well. They permit the dock to be pushed by the reel without buckling the sections still on the reel. The pins are removed to permit the sections to come off the reel.

What is claimed is:

1. A portable walkway supported above the surface of water comprising a plurality of rigid sections hingedly attached together about transverse axes, means to prevent the upper surfaces of said sections from hinging toward each other substantially past a common plane but permitting hinging in opposite direction, a removable float member adjacent an outer end of said sections, said float member being of size to support said walkway when only the inner end thereof is supported independently, and a plurality of removable support means positioned at spaced intervals along said walkway, to support the walkway with respect to the bottom of the body of water independently of the float.

2. The walkway of claim **1** further characterized in that hinge means are provided adjacent the sections of said walkway, the axis of said hinge means being positioned below the side members of the walkway.

3. The walkway of claim **1** wherein said float member is comprised as a cylinder, a pair of arms rotatably mounted on said cylinder, and means to attach said arms to the outer section of said walkway.

4. The walkway of claim **3** wherein said means to attach said arms to the walkway comprises a first pair of struts having upwardly open supports to receive a bottom edge of said walkway, and a second pair of struts spaced from said first pair of struts, said second pair of struts being spaced farther away from said float than the first struts and having means to slip over and fit against the top surface of the said walkway on opposite sides thereof.

5. The walkway of claim **1** further characterized in that the support means are a plurality of posts arranged in transversely aligned pairs and which engage the bottom of the body of water over which the walkway is supported.

6. The walkway of claim **5** wherein said posts are slidably mounted in sleeves, said sleeves being mounted to the sections for limited pivotal movement in fore and aft direction with respect to said walkway, and releasable means to secure said posts with respect to said sleeves.

7. A portable walkway supported above the surface of a body of water comprising a plurality of rigid sections hingedly attached together about transverse axes, means to prevent the upper surfaces of said sections from hinging toward each other substantially past a common plane but permitting hinging in opposite direction, a removable float member adjacent an outer end of said walkway, said float member being of size to support said walkway when only the inner end thereof is supported independently, a plurality of support means positioned at spaced intervals along said walkway, a portable reel of size to receive the sections of said walkway, means to detachably connect one end of said walkway to said reel, said reel being rotatable in direction to permit hinging of said sections in a manner so that said sections are wrapped sequentially around the periphery of the reel, said sections being of preselected lengths to wrap around the reel as the reel is rotated.

8. The walkway of claim **7** further characterized in that said reel comprises four sides, the lengths of said sides being selected so that the first four sections will be supported on the periphery of the reel, and the rest of the sections will sequentially rest against the sections previously mounted on the reel.

9. The walkway of claim **7** wherein said reel is mounted onto a cart, and wheel means on said cart to permit transporting said reel from location to location.

10. The walkway of claim **7** further characterized in that said reel has a rotatable frame forming a plurality of peripheral sides forming intersecting planes, the frame at the intersection between adjacent side planes being relieved to receive the hinge between adjacent sections of said walkway when the walkway is mounted on the reel.

11. The walkway of claim **10** further characterized in that the sections comprise a pair of spaced apart channels having inwardly facing legs, and plank members joining said channels, said channels being positioned to lie parallel to the sides of said reel.

12. The method of installing a portable walkway capable of supporting load when supported only at its opposite ends, comprising the steps of: supporting the outer end of said walkway on a float, forcing said walkway into the water so that said float supports the walkway above the surface of the water, extending the walkway the desired amount, supporting the inner end of said walkway adjacent the shore line, installing support posts into the bottom of the body of water from the walkway while the walkway is supported by said float, and securing said support posts with respect to said walkway to support the walkway independently of said float.

13. The method of claim 12 including the further step of removing said float after the walkway has been secured to said posts.

14. The method of claim 12 wherein said walkway sections are mounted onto a rotatable reel, and including the step of rotating the reel to force the float and walkway sections into the water.

15. A portable walkway supported above the surface of water comprising a plurality of rigid sections hingedly attached together about transverse axes, means to prevent the upper surfaces of said sections from hinging toward each other substantially past a common plane but permitting hinging in opposite direction, a removable float member adjacent an outer end of said sections, said float member being of size to support said walkway when only the inner end thereof is supported independently, a plurality of support posts arranged in transversely aligned pairs at spaced intervals along the walkway and which engage the bottom of the body of water over which the walkway is supported, means between the posts and the walkway for supporting said walkway independently of said float, and lift means for raising the walkway sections with respect to the support posts, said lift means comprising a pair of sleeves supported on one pair of the transversely aligned pairs of posts, respectively, a separate winch drum rotatably mounted with respect to each of the sleeves, crank means to drivably engage the winch drums so that upon rotation of said crank means said winch drums will be rotated, a separate cable wound on each of said winch drums, means on the cables to fasten the cables to the walkway adjacent opposite side edges of said walkway, respectively, whereby upon rotation of said crank means said winch drums are rotated to cause the cables to lift the section of the walkway engaged by the cables with respect to the posts on which the sleeves are attached.

References Cited

UNITED STATES PATENTS

585,064	6/1897	Uren	182—41
951,379	3/1910	Norman	14—27
1,358,951	11/1920	Helmich	61—48
1,975,049	9/1934	Middlebrook	61—48 X
2,961,838	11/1960	Vander Wilt	61—48
3,283,517	11/1966	Phillips	61—48
3,229,833	1/1966	Heck et al.	61—48

FOREIGN PATENTS

598,528	5/1960	Canada.

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