Aug. 31, 1965 G. E. WATTS ETAL 3,203,438

GUARD RAILS AND CANOPY SUPPORTS FOR BOATS

Filed Nov. 29, 1963 3 Sheets-Sheet 1

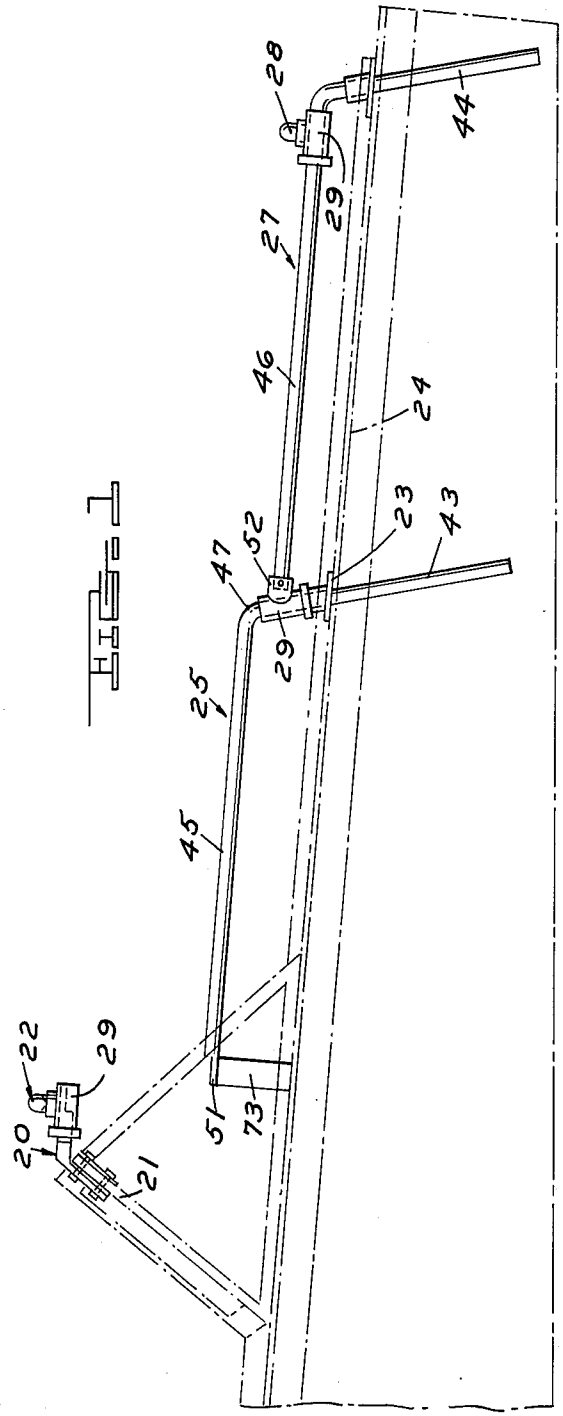


FIG. 1

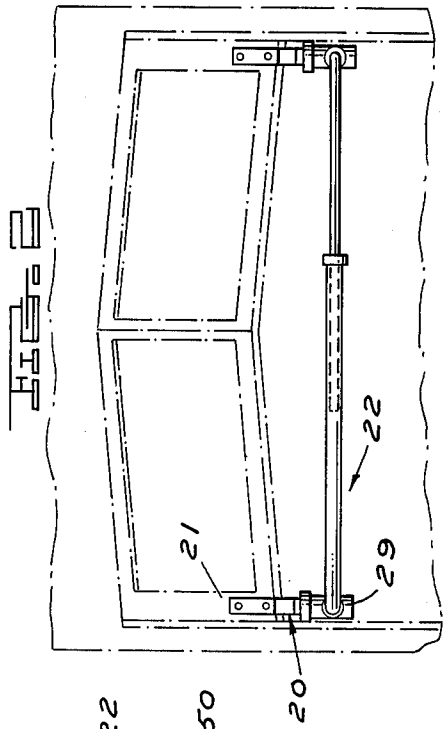


FIG. 2

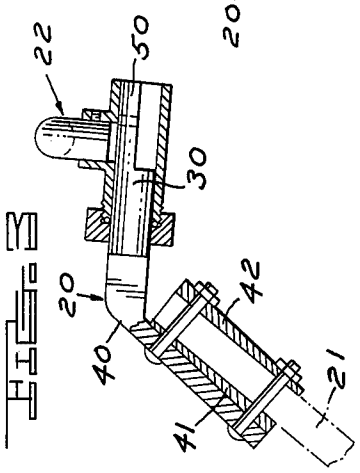


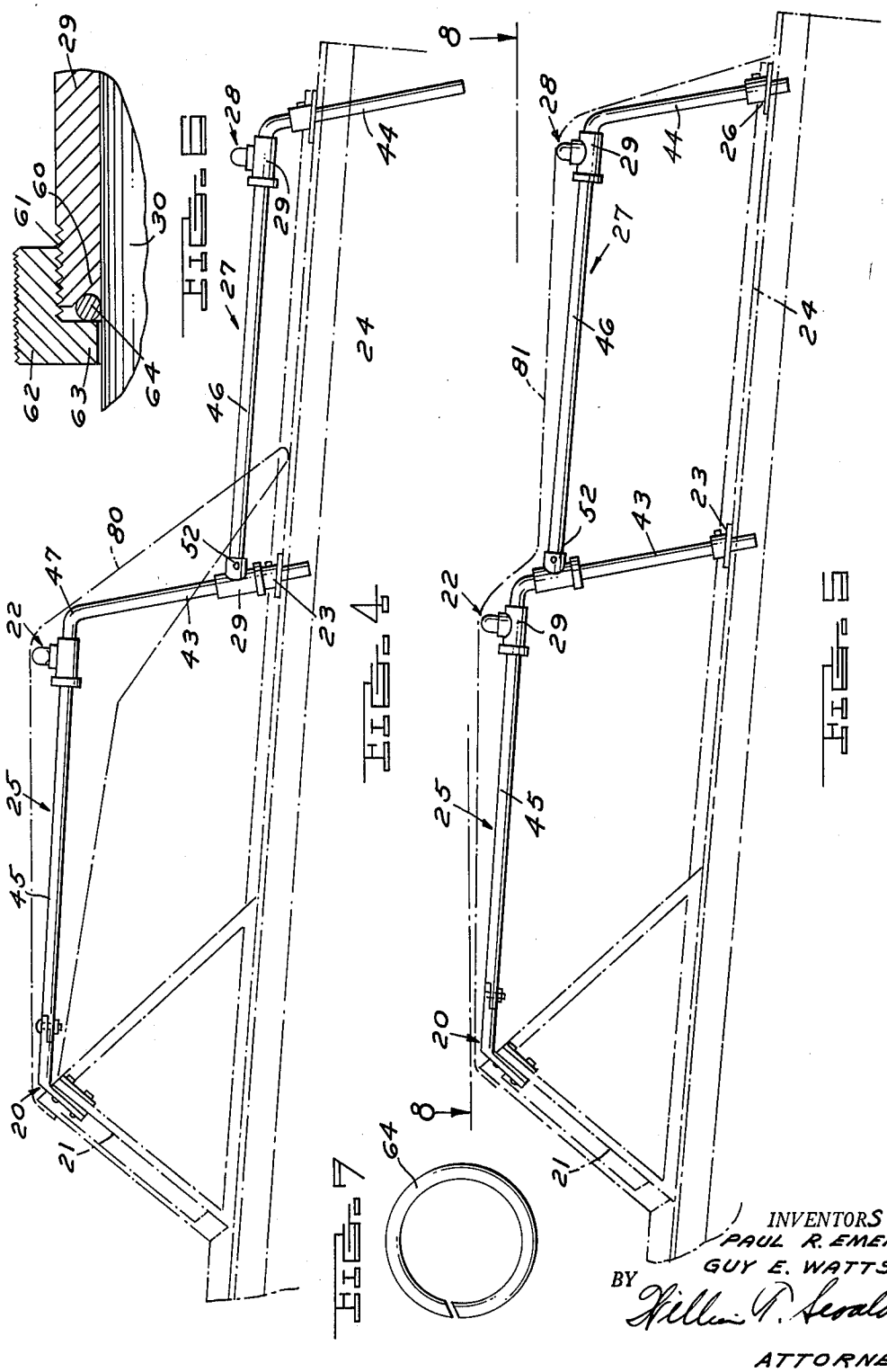
FIG. 3

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GUARD RAILS AND CANOPY SUPPORTS FOR BOATS

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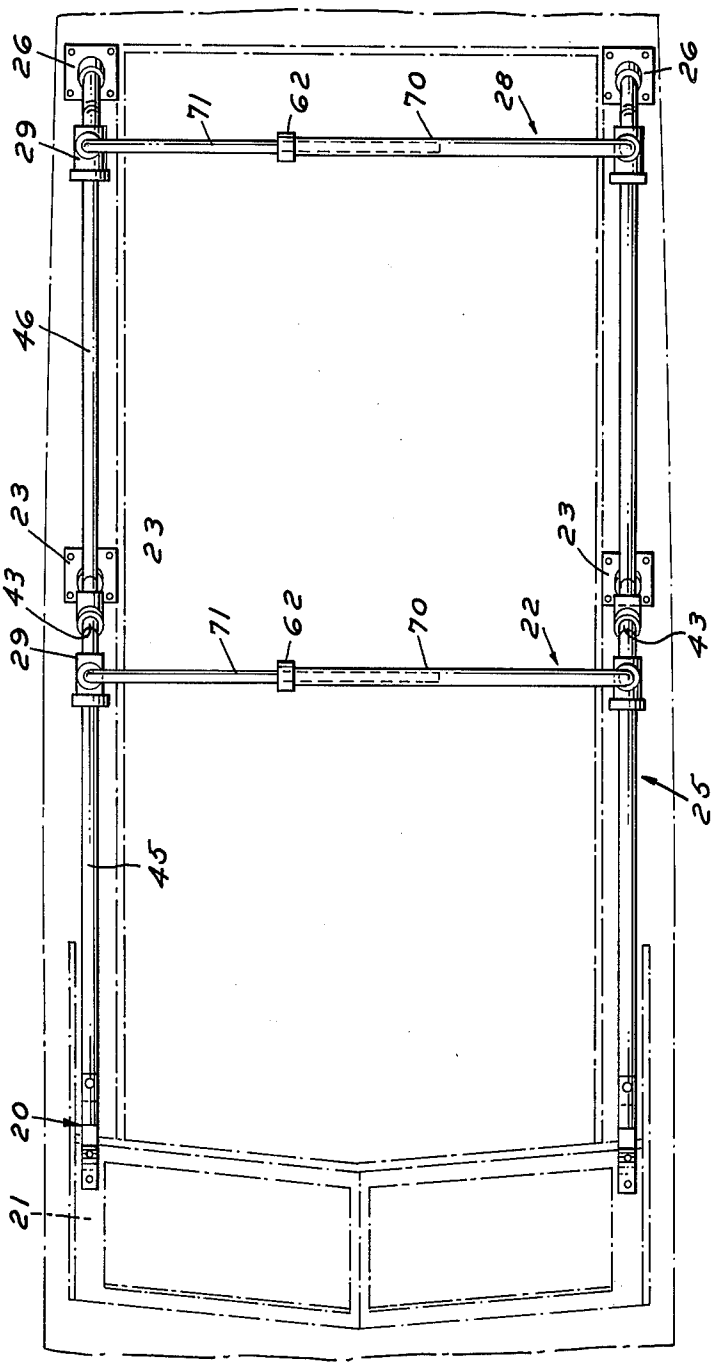
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GUARD RAILS AND CANOPY SUPPORTS FOR BOATS

Filed Nov. 29, 1963 3 Sheets-Sheet 3

FIG. 3



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GUARD RAILS AND CANOPY SUPPORTS FOR BOATS

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5 Claims. (Cl. 135—6)

This invention relates to boat hardware and in particular to an adjustable rail super-structure which is usable not only for guard rails but also for canopy and side curtain supports.

Guard rails and canopy supports are highly useful on boats. They provide the boat operator with protection and shelter. The novel rail super-structure is simple in design and construction, inexpensive to make, easy to install, and ornamental in appearance.

With the foregoing in view, the primary object of the invention is to provide a rail super-structure which is easily mountable on a boat and easily convertible between a lowered position and a raised position. This provides guard rails adjustable between two positions. This also provides canopy and side curtain supports in the raised position.

An object of the invention is to provide a rail super-structure which is highly attractive as it can be easily formed of stainless steel tubing, chrome-plated tubing, and anodized aluminum tubing.

An object of the invention is to provide a rail super-structure for a boat which is convertible between desired positions for selectively using the super-structure as guard rails and canopy supports, thereby obviating the necessity of providing both single-purpose guard rails and single-purpose canopy supports on the same boat.

An object of the invention is to provide a combination guard rail and canopy support super-structure for a boat which has side members which are positionable between up and down positions so that when used as guard rails, they may be lowered and raised to suit the size of the passengers, such as adults and children, and also to suit the position of the passengers such as seated and standing.

An object of the invention is to provide cross-bow rails between the side rails transversely of a boat to provide passengers with cross guard rails in the boat when they are standing or sitting, such as when a passenger is providing observation for the boat operator when water skiing and facing backwardly in the boat.

An object of the invention is to provide side rails and a rear cross bow rail on the super-structure for use by swimmers and skiers in entering and leaving a boat.

An object of the invention is to provide a strong light rail super-structure which gives operators and passengers both lateral and cross support in rough weather and which provides protective canopy support longitudinally and transversely of the boat with the canopy strongly supported and properly secured even in storms.

An object of the invention is to provide a complete hardware kit for boat workmen and individual boat owners so that they may easily mount and secure the rail super-structure on a boat.

An object of the invention is to provide a combination guard rail and canopy support super-structure for a boat which is easily adjustable to the size of the boat and easily adjustable to the angulation of the various portions of the boat to which the rail super-structure is adjustably and convertibly attached.

An object of the invention is to provide a rail super-structure for boats which is integrated in convenient adjustable sections so that it may be selectively mounted on the boat.

An object of the invention is to inter-connect the various rails of the super-structure with sliding sleeve adjustable friction grip fittings so that the rails may be convertibly adjusted relative to one another through the adjustable sliding relationship of the sleeves on the rails.

An object of the invention is to provide deck sockets enclosing receiving apertures in the deck so that the side rails may be slidably disposed on the deck and conveniently raised and lowered by relative up and down movement relative to the deck.

An object of the invention is to provide means for adjustably fitting the rail's super-structure to the angulations encountered in a boat such as between the cabin or windshield and the deck so that the device can be easily integrated with the boat.

An object of the invention is to provide novel locking means on the sleeves so that they do not involve cumbersome and dangerous projections such as wing nuts or bolts and so that the sleeves are forcibly and securely locked in position when the locking mechanism is actuated.

An object of the invention is to provide a light rail super-structure capable of providing strong guards and strong canopy supports wherein the rails inter-connect with one and another providing each other with lateral and cross support so that the total structure resists forces imposed thereon at any point.

These and other objects of the invention will become apparent by reference to the following description of a rail super-structure for a boat embodying the invention taken in connection with the accompanying drawings in which:

FIG. 1 is a side elevational view of the rail super-structure showing a boat in dotted lines and showing the side rails in the down position and the front cross bow in the up position.

FIG. 2 is a partial top plan view of the windshield and front cross bow of FIG. 1.

FIG. 3 is an enlarged cross sectional view of the front support bracket and cross bow support seen in FIG. 1.

FIG. 4 is a view similar to FIG. 1 showing the front side rails in the up position and the front cross bow rearwardly located with a front canopy indicated in dotted lines.

FIG. 5 is a view similar to FIG. 4 showing the rear side rails also in the up position with a full canopy indicated in dotted lines.

FIG. 6 is an enlarged partial cross-sectional view of the locking portion of FIG. 3 illustrating the sleeve tapered end and compression ring on the rail member.

FIG. 7 is a plan view of the spring wire compression ring; and

FIG. 8 is a top plan view of the assembly seen in FIG. 5.

Referring now to the drawings where like numerals refer to like and corresponding parts throughout the several views, a pair of front support brackets **20** are secured to the boat such as on the cabin or a windshield **21**. A cross bow assembly **22** is mounted between the brackets **20**. A pair of like deck sockets **23** are mounted on the deck **24** and enclose an aperture leading downwardly through the deck. A pair of like front side rails **25** have downwardly extending rear portions leading through the deck sockets **23** and forwardly extending portions leading to the brackets **20**. A pair of like rear deck sockets **26** are secured on the deck **24** and enclose apertures leading downwardly therethrough. A pair of like rear side rails **27** have a portion downwardly disposed through the rear sockets **26** and a portion leading forwardly to the paired front rails **25**. A rear bow assembly **28** lies between the rear side rails **27**.

A pair of sleeves **29** surround a rearwardly extending stud **30** on the bracket **20**. The sleeves **29** slidably support the bow assembly **22** relative to the bracket **20**. The sleeves may mount on the front side rails **25** as hereinafter more fully explained.

A pair of like sleeves **29** surround the relatively vertical portions **43** of the front side rails **25** and are connected to the forward ends of the rear side rails **27**. The sleeves **29** and side rails **25** are slidably disposed relative to one and another so that the rails and sleeves may be adjusted relative to one another.

A pair of like sleeves **29** slidably surround the relatively horizontal portions **46** of the rear side rails **27** and are fixed to the rear bow assembly **28** providing means for sliding the bow assembly **28** relative to the rear side rails **27** to any adjusted position thereon. The sleeves **29** include locking means hereinafter more fully described.

From the foregoing, it can be understood that the front side rails **25** may be raised from the position seen in FIG. 1 to the position seen in FIGS. 4, 5, and 8 and that the rear side rails **27** may be raised from the position seen in FIG. 1 to the position seen in FIGS. 5 and 8.

It can also be understood that the front bow assembly **22** can be moved rearwardly from the position seen in FIG. 1 to the position seen in FIGS. 4, 5, and 8. The rear bow assembly **28** is raisable and lowerable with the rear side rails **27** and is slidably positioned threon so as to be movable forwardly from the position illustrated in the drawings.

More particularly, each front bracket **20** comprises an attaching portion **40** supporting the stud **30**. A pair of shim plates **41** and **42** of wedge conformation may be employed to adjust the angulation of the bracket **20** as needed relative to the angulation of the boat cabin or windshield **21**. The wedges **41** and **42** may be similarly disposed relative to one another in the same direction to change the angulation of the bracket supporting portion **40** to adjust the angulation of the stud **30** as desired. Obviously other shims or mounting plates may be used.

Each front side rail **25** and rear side rail **27** comprises a relatively vertical first portion **43** and **44** respectively which is preferably slightly angulated relative to the vertical. The first portions **43** and **44** are respectively slidably disposed in the paired front deck sockets **23** and the paired rear deck sockets **26** respectively. The sliding relationship permits the side rails to be raised and lowered as desired. Locking means is provided on the deck sockets and may be a compression screw or a compression ring as hereinafter more fully described.

Each front side rail **25** and rear side rail **27** is equipped with a forwardly relatively horizontal portion **45** and **46** respectively. The two portions of the side rails may be inter-connected by an integral bend **47**, welded, or fitted as desired.

The rear portions of the studs **30** on the brackets **20** and the front portions of the front side rails **25** have mating ends such as the half-rounds illustrated. The half-round portion **50** on the stud **30** and half-round portion **51** on the front side rail **25** are oppositely disposed so that when they are mated together they form a single round. They may be telescoped or otherwise matingly inter-fitted as desired. With the front cross bow assembly **22** in the position illustrated in FIG. 1 with the front side rails up, the sleeves **29** hold the front side rails and studs **30** in inter-connected relationship. When the front bow assembly **22** is moved rearwardly as illustrated in FIG. 4, a bolt-nut connection may be used to secure the mating ends **50** and **51** or a telescoping arrangement or other connection used in the original design.

The sleeves **29** on the front side rails **25** have connecting means such as the annular flanges **52** connecting with the forward ends of the rear side rails **27**. Thus the sleeves **29** facilitate the sliding inter-connection between the front side rails **25** and the rear side rails **27** so that the front side rails may be raised and lowered independently of the rear side rails and so that the rear side rails may be raised to the position of the front side rails when the front side rails are in their raised position.

The sleeves **29** include novel locking means now described. Each sleeve **29**, FIGS. 1, 3, 6, and 7 has an inwardly tapering frustoconical end **60**. The sleeve **29** has a threaded portion **61** adjacent its inwardly tapered end **60**. A threaded collar **62** surrounds the threaded end **61** in mating relationship and is equipped with a flange **63** in opposition of the tapered end **60** on the sleeve **29**. A split spring wire compression ring **64** lies between the flange **63** and the tapered end **60** and also in surrounding relationship relative to the stud **30** or front side rail **25** or rear side rail **27** depending on the position of the sleeve **29**.

Upon the collar **62** being threaded on the sleeve **29**, the flange **63** engages the wire compression ring **64** and moves it axially against the inwardly tapering end **60** of the sleeve **29**. This forcibly cams the compression ring **64** radially inwardly into gripping relationship with the stud **30** or side rail **25** or **27**. This locks the sleeve **29**, stud **30** or side rail **25** and **27** relative to one another in the adjusted position.

The cross bow members **22** and **28**, FIG. 8, are comprised of telescopic portions wherein the larger portion **70** is sleeved over the smaller portion **71**. The larger portion **70** has an inwardly tapered end such as seen in FIG. 6 and a compression ring **64** fits against the tapered end. The collar **62** is threaded on the larger portions **70** and, by tightening the collar **62**, the telescoped portions **70** and **71** are locked up as herebefore described relative to the sleeve locking devices. Obviously the upstanding portion of the deck sockets **23** and **26** may be threaded and the upper end thereof tapered inwardly and compression rings and collars used thereon to fix the first portion of the side rails in adjusted relationship thereto in securely locked position.

After the component parts of the device are manufactured, they are assembled in two kits. The front kit comprises the brackets **20**, front bow assembly **22** including the sleeves **29**, front side rails **25**, front deck sockets **23**, and a pair of support brackets **73** which are positionable on a boat to support the forward ends of the front side rails in the down position.

The second kit comprises the rear side rails **27**, the sleeves **29** attached thereto, the rear cross bow assembly **28** and the rear deck sockets **26**. A purchaser may buy the front kit and use it by itself and he may also buy the rear kit at the same time or at a later date and use it in conjunction with the first kit.

The installer mounts the front brackets **20** adjusting them angularly to the boat super-structure so that the studs **30** extend substantially horizontally rearwardly. He then positions the front side rails **25** relative to the brackets such as seen in FIG. 4 and marks out the deck apertures. The deck sockets **23** are then secured to the deck of the boat such as by screws or bolts. The side rail members **25** are then positioned in the deck sockets **23** with their first portions **43** slidably disposed therein. The side rail members are positioned to their lowermost position and the front support brackets **73** secured on the deck. The front bow member **22** is then mounted on the studs **30** of the brackets **20**. The device is now installed and ready for use as guard rails and canopy supports.

In installing the rear assembly the apertures in the deck are formed at the proper point and the rear deck sockets **26** fixed thereon. The rear cross bow member **28** is previously mounted on the rear side rail **27**. The front side rail members are removed and the sleeves **29** on the rear side rails **27** are slidably positioned on the first portion **43** of the front side rails **25** above the deck sockets **23**. The first portion **44** of the rear side rails **27** are then slidably disposed in the rear sockets **26**.

The telescopic connection in the cross bow members

22 and 28 allow them to be moved forwardly and rearwardly on the side rails and to expand and contract lengthwise to compensate for differences in spacing in the side rails. While the side rails, FIG. 8, have been shown as lying substantially parallel to one another, it is to be understood that the side rails may lie angularly relative to one another and be wider spaced at one end than at the other. The telescoping cross bows 22 permit the various spacing between the various side rails without interfering with the positioning of the cross bows.

After the device is installed on a boat, the operator and passengers are provided with optional arrangements of the side rails and cross bows. FIG. 1 illustrates the cross bow at the windshield 21 so that an operator may stand in front of the boat and support himself by a grip on the cross bow 22. This load is transferred to the strong portions of the windshield at the brackets 20 and obviates any strain put on the windshield in the central portion thereof which normally breaks the glass in the windshield. This also gives the operator a secure full-grip handhold and also provides any passenger with a secure handhold.

The rear side rails in the position of FIG. 1 provide hand grips and guard rails for other passengers rearwardly in the boat and the rear cross bow 28 provides a hand grip and safety bar at the stern of the boat and, in this position the rails are particularly useful for children, water skiers, and bathers.

In the position shown in FIG. 4, the front cross bow assembly 22 has been moved rearwardly to a point adjacent the first portions 43 of the side rails. In this position a person may stand in the center of the boat and grasp the cross bow 22 and support himself such as while fishing, providing observation for water skiers, watching regattas, and many other situations.

In the adjustment of the device seen in FIG. 5, the rear side rails have been raised and the rear cross bow with them. In this position additional standing guard rails are available for the safety and protection of passengers.

In relation to the canopy support use, FIG. 4 illustrates that a front canopy can be suspended and supported on the front rail assembly. The canopy is shown in dotted lines at 80. FIG. 5 illustrates the support of a full canopy over the entire boat as indicated at 81. Any type of canopy may be used singly and in combination with side curtains as desired. It is obvious that the operator or boat owner may convert his open boat to a full enclosed boat as illustrated in FIG. 5. This gives the operator a full open boat for fair weather use and a fully enclosed boat for sleeping or foul weather.

Due to the fact that the guard rails are made of light, strong material and inter-connected together in their assembly, they provide an extremely strong, completely integrated and cross-connected and supported guard rail and canopy support which is extremely strong although desirably light. Due to the fact that all the connections are locked-up and cross-connected to one another via the rails and cross bows, a strain or force placed on the assembly at one point is resisted and supported by the entire assembly.

The novel device with these features constitutes a compact, durable, neat appearing guard rail, ornamental rail, and canopy support assembly which is easily installed as original or replacement equipment on a boat without the necessity of changing or modifying the boat structure and/or the guard rail assembly as it is easily adaptable.

Although only a preferred embodiment invention has been shown and described in detail, it is obvious that many changes may be made in the size, shape, detail, and arrangements of the various elements of the invention within the scope of the appended claims.

We claim:

1. A combination guard-rail and canopy-support structure easily mountable on a boat and easily convertibly adjustable between selected optional positions comprising,

paired sidewardly spaced front brackets, means for mounting said brackets on a boat super-structure such as a windshield,

paired sidewardly spaced deck sockets mountable on the deck of a boat rearwardly of said brackets; said deck sockets leading downwardly through the deck of a boat on which said deck sockets are mounted;

paired spaced side rails having a first upstanding portion slidably disposed in said deck sockets and a second forwardly extending portion lying at an angle to said first portion; said side rails in their up position leading to a point adjacent said brackets;

releasable lock means on said deck sockets securing said first portions of said side rails in the up position and in the down position; said brackets and said side rail second portions having mating ends;

paired sleeves surrounding said second portions of said side rails adjacent said first portions of said side rails and adapted to be selectively slidable along said second portions of said side rails to a position surrounding said brackets;

releasable lock means on said sleeves for securing said sleeves relative to said side rails and adapted to secure said sleeves to said brackets when said sleeves are located on said brackets;

a bow lying between said sleeves spanning the distance therebetween providing a cross support useable as guard rail and canopy support as desired;

said sleeves when said lock means thereon is released being slidable on said brackets and said second portions of said side rails between points adjacent said brackets and said first portions of said side rails;

said locking means on said sleeves securing said sleeves and said bow on said second portions of said side rails in the adjusted position rearwardly of said brackets providing a cross support adaptable as a cross guard rail spaced from said brackets and a canopy support as desired;

said side rails in said up position providing elevated supports useable as side guard rails and canopy supports as desired;

said side rails being movable from said up position to said down position by separating said mating ends of said side rail second portions and said brackets and releasing said lock means on said deck sockets and sliding said side rail first portions downwardly in said deck sockets;

and paired support means mountable on a boat for supporting said side rail second portions in said down positions;

said sleeves and bow being positionable on said brackets and adapted to be positioned on said side rail second portions in said down position;

said sleeves and bow being optionally positionable on said brackets and on said side rail second portions in said down position to provide a guard rail and canopy support as desired.

2. In a device as set forth in claim 1, said bow comprising two telescoped members slidably disposed relative to one another capable of lengthening and reducing the spanning distance of said bow between said second portions of one said side rails and said brackets to compensate for any sidewise angular disposition of said side rails as positioned by said brackets and said deck sockets when said first sleeves and bow are adjusted to a selected position on one said second portions of said side rails and said brackets.

3. In a device as set forth in claim 1, each said sleeves and said lock surrounding said rail portions and said bracket comprising a sleeve having a radially inwardly tapering frusto-conical end,

a spring-wire split compression ring axially abutting said tapered end on said sleeve and radially surrounding one said rail portion and said bracket in said sleeve,

said sleeve having an exterior threaded portion at said tapered end,

an internally threaded collar threaded on said sleeve exterior threaded portion,

a flange on said collar axially abutting said wire compression ring and radially surrounding one said rail portion and said bracket;

said collar when forcibly threaded up said sleeve threaded portion moving said collar axially against said wire compression ring and moving said wire compression ring axially against said radially inwardly tapering end on said sleeve camming said wire compression ring radially inwardly into gripping relationship on one said rail portion and bracket securing said sleeve on one said rail portion and bracket as located;

said spring wire compression ring upon release of pressure of said flange when said collar is threaded down said sleeve threaded portion automatically moving radially outwardly under its own spring power releasing its gripping relationship on one said rail portion and said bracket as located;

said wire compression ring remaining trapped between said flange and said tapered end of sleeve in surrounding relationship to one said rail portion and said bracket so that upon said collar being threaded up said sleeve, said wire compression ring being again cammed radially inwardly to grip one said rail portion and said bracket depending upon which it is surrounding at the time.

4. In a device as set forth in claim **1**, said locking device on said sockets comprising an inwardly tapered end on said socket, a threaded portion on said socket, a collar threaded on said socket tapered end, a flange on said collar opposing said tapered end, and a spring wire compression ring lying between said tapered end and said flange in surrounding relationship to said side rail portion in said socket; threading said collar on said deck socket moving said flange axially against said compression ring and said compression ring against said tapered end forcing said compression ring radially inwardly into gripping relationship with said side rail portion.

5. In a device as set forth in claim **1**, paired second deck sockets spaced rearwardly from said first deck sockets of claim **1** and leading through the deck of a boat upon which they are mounted, paired second side rails extending rearwardly of said first side rails of claim **1**,

paired second sleeves slidably surrounding said first portions of said first side rails,

said second side rails having a first portion slidably disposed in said second deck sockets for up and down movement;

releasable locks on said second deck sockets securing said first portions of said second side rails in adjusted up and down positions,

said second side rails having a second portion leading at an angle from said first portion and connecting with said second sleeves,

third sleeves slidably disposed on said second side rail second portions for front and back sliding movement,

releasable locks on said third sleeves securing said third sleeves in adjusted position on said second portions of said second side rails, a second bow lying between said third sleeves on said second side rails spanning the distance therebetween; said second bow being positionable forwardly and rearwardly on said second portions of said second side rails by sliding said third sleeves thereon and securable in adjusted position by said locks on said third sleeves;

said second side rails being positionable in said up and down positions by sliding said second sleeves on said first portions of said first side rails and sliding said first portions of said second side rails in said second deck sockets and securable in adjusted position by said locks on said second sleeves and said second deck sockets;

said second side rails and said second bow thereon thereby being raisable and lowerable in said up and down positions with said second bow being movable forwardly and rearwardly for use as a guard rail and canopy support as desired.

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