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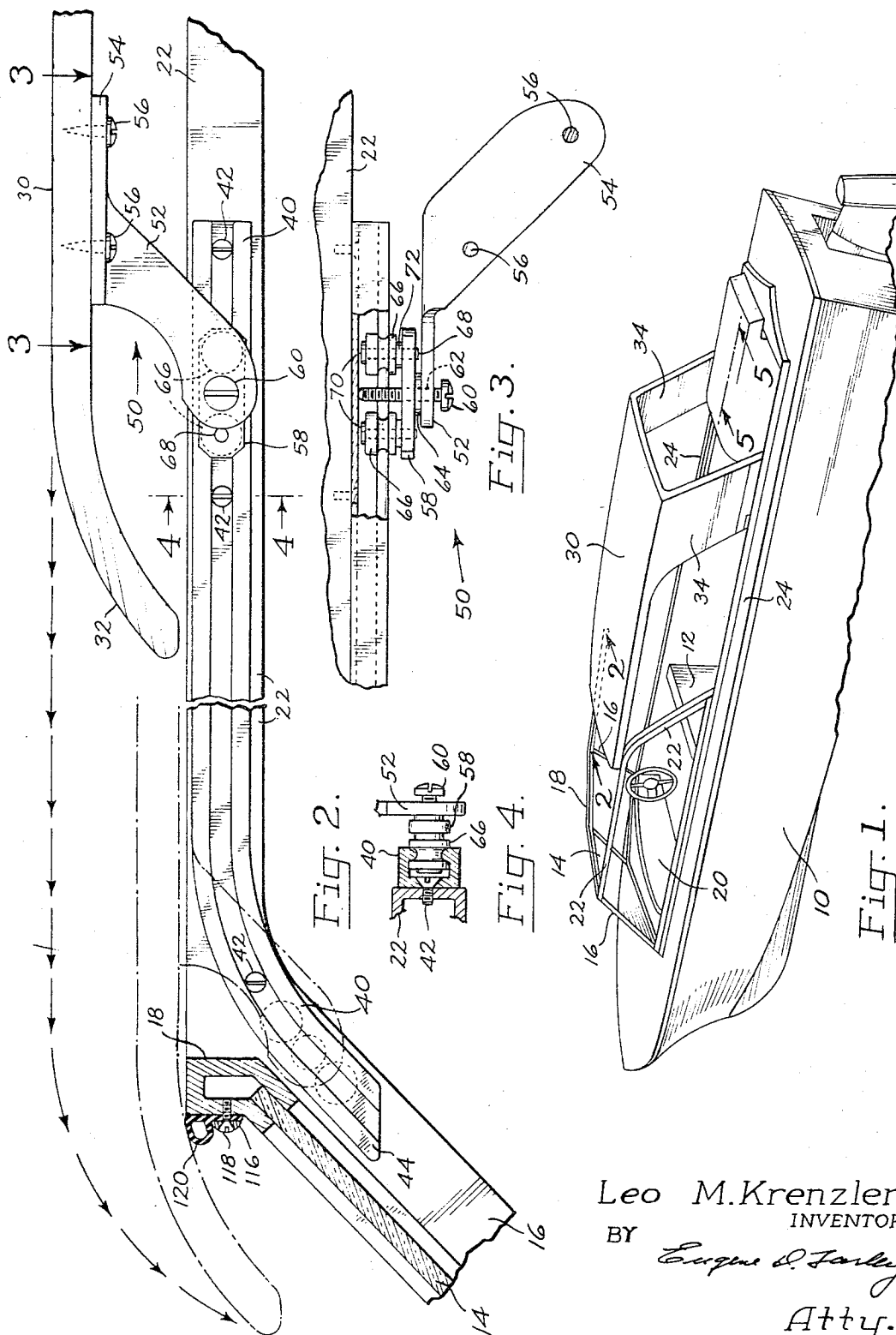
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3,370,308

CONVERTIBLE HARDTOP ASSEMBLY FOR BOATS

Filed July 29, 1966

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

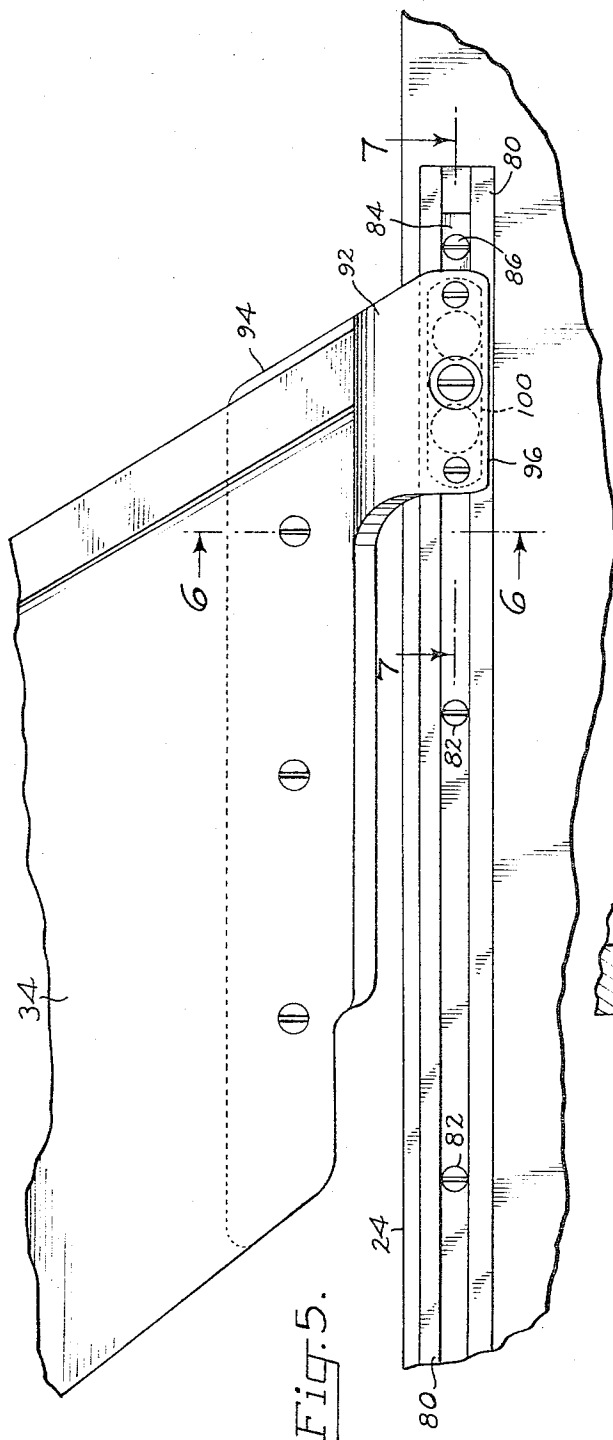


Fig. 5.

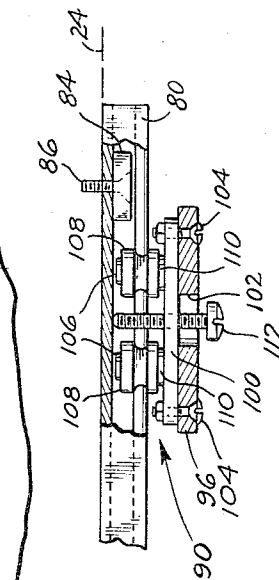


Fig. 7.

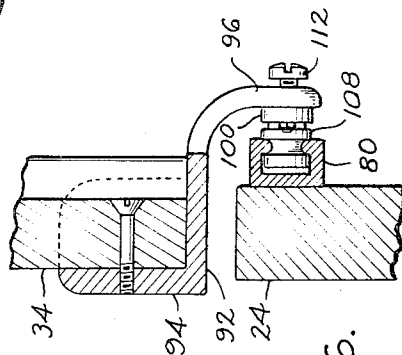


Fig. 6.

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1

3,370,308 CONVERTIBLE HARDTOP ASSEMBLY FOR BOATS

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ABSTRACT OF THE DISCLOSURE

A hardtop has integral rear side panels carrying removable brackets mounting rollers for guiding support in an elongated horizontal rear track secured to gunwales on a boat. Laterally spaced brackets secured removably to the hardtop adjacent the front of the latter pivotally mount rollers for guiding support in an elongated front track secured to side windows of the boat. The forward portion of the front track extends angularly forward and downward along the sides of the boat windshield to lower the front end of the hardtop into sealing engagement with a weather seal along the top edge of the windshield.

This invention relates to convertible hardtop assemblies. It pertains particularly to convertible hardtop assemblies for runabout type boats and is particularly described herein with reference to such application. It is to be understood, however, that the invention also is adaptable to convertible hardtop assemblies for other types of vehicles.

In the operation of boats of various classes, particularly runabouts, it obviously would add to the enjoyment of the operator and his guests to be able to withdraw or remove the low hung and otherwise confining roof whenever the weather is favorable. This is true not only because of the pleasure derived from being in the open air, but also because of the resultant freedom from a low hanging roof which may restrict the freedom of movement of the boat occupants.

It accordingly is the general purpose of the present invention to provide a convertible hardtop assembly for boats characterized by the following advantages:

- (1) It is easily adjustable between open, closed and intermediate positions.
- (2) It may be removed entirely from the boat when desired.
- (3) It may be locked securely in any selected position.
- (4) It moves freely and easily, with little effort, between its various positions.
- (5) It cooperates with weather seal means for sealing off the interior of the boat cabin when the hardtop is in its closed position.
- (6) It is simple and inexpensive in its construction and applicable to a wide variety of boat types.
- (7) It is durable and rugged, as required to withstand damage resulting from vigorous use.

The manner in which the foregoing and other objects of this invention are accomplished will be apparent from the accompanying specification and claims, considered together with the drawings, wherein:

FIG. 1 is a perspective view of a runabout boat equipped with the herein described convertible hardtop assembly illustrated in its open position;

FIG. 2 is a detail sectional view taken along line 2-2 of FIG. 1 and illustrating the manner of mounting the forward portion of the hardtop on the windshield and side windows of the boat;

FIG. 3 is a detail longitudinal sectional view, taken along line 3-3 of FIG. 2;

2

FIG. 4 is a detail, transverse sectional view taken along line 4-4 of FIG. 2;

FIG. 5 is a detail view looking in the direction of arrows 5-5 of FIG. 1 and illustrating the manner of mounting the rearward portion of the hardtop on the gunwales of the boat;

FIG. 6 is a detail transverse sectional view taken along line 6-6 of FIG. 5; and

FIG. 7 is a detail longitudinal sectional view taken along line 7-7 of FIG. 5.

The convertible hardtop assembly of my invention is designed for use with an otherwise open boat having a windshield, a pair of side windows merging with the windshield and gunwales on each side.

Generally considered, the assembly includes a roof section dimensioned to overlie the windshield and side windows, and having integral, rearward, downwardly extending side panels, the lower edges of which are substantially coplanar with the gunwales.

First track means are mounted on the inner upper margins of the side windows and extend longitudinally thereof. First glide means are mounted on the forward margins of the roof underside, and work in the first track means.

Second track means are mounted on the gunwales, one on each side, underlying the side panels and extending rearwardly therefrom. Second glide means are mounted on the lower margins of the side panels and work in the second track means.

Releasable lock means are provided for locking the hardtop in any selected intermediate position of adjustment. When desired, the hardtop may be removed completely, simply by continuing the motion by which it is withdrawn. There thus is provided a convertible hardtop assembly which is conveniently operated and which makes possible using the boat as an open boat in good weather, and as an enclosed, weather-tight boat in inclement weather.

Considering the foregoing in greater detail and with particular reference to the drawings:

In FIG. 1 the convertible hardtop assembly is illustrated as applied to a fast, runabout type boat indicated generally at 10. The boat is fitted with a transverse driver's seat 12; a windshield 14, framed in side pieces 16 and top piece 18; side windows 20, which merge with the windshield and are framed in a downwardly and rearwardly arcuate top piece 22; and gunwales 24 extending along each side in the usual manner.

The hardtop itself comprises a roof section 30 dimensioned to overlie the driver's compartment, defined in part by windshield 14 and side windows 20. The roof has a downwardly arcuate section 32 dimensioned to project forwardly of top piece 18 of the windshield and to serve as a sunshield.

A pair of downwardly extending side panels 34 are formed integrally with the roof. These merge with the rearward ends of side windows 20 when the roof is closed. Their lower edges extend downwardly a sufficient distance to reach and overlap gunwales 24.

The hardtop may be fabricated from fiberglass, wood, metal or other suitable structural material. It is designed to move between an advanced or closed position wherein it overlies seat 12, protecting the occupants from the weather, and a retracted or open position, wherein it is withdrawn from above seat 12 to permit free access of sun and air.

To accomplish this purpose, the forward end of the roof is supported on a glide assembly which moves on side window top pieces 22. Side panels 34 at the rearward end of the roof are supported on glides which move on gunwales 24.

The manner of mounting the forward end of the roof on side window top pieces 22 is illustrated in detail in FIGS. 2, 3 and 4.

Channel shaped tracks 40 are secured by means of screws 42, or otherwise, to the inner sides of top pieces 22 of the side windows. The tracks extend forwardly to the windshield. Downwardly arcuate forward extensions 44 extend along the inner faces of side pieces 16 of the windshield.

The first or forward glide means, indicated generally at 50, are received and work in tracks 40. In the illustrated form of the invention the forward glide means pivotally are mounted on brackets 52 having integral bases 54 secured by means of screws 56 to roof 30.

The lower ends of brackets 52 mount bars 58 by means of pivot pins which preferably comprise elongated screws 60. Screws 60 are journaled in bearing openings 62 through the brackets, but are threaded through bars 58 which they mount. Washers 64 may be interposed between brackets 52 and bars 58.

Bars 58 mount on each of their respective ends grooved wheels 66 made of nylon or other wear-resistant, self-lubricating material. The wheels track on track 22 and are rotatably mounted on short shafts 68, where they are retained by rivet heads 70. Shafts 68 are mounted on the respective ends of bars 58. Washers 72 are interposed between the bars and the inner surfaces of rollers 66 to insure free rotation of the latter.

The rearward glide assembly, supported on gunwales 24, is illustrated in FIGS. 5, 6 and 7.

Tracks 80 are fixed by means of screws 82 to the inner upper margins of the gunwales. The tracks are generally similar to tracks 40, but lie beneath roof side panels 34 and extend rearwardly therefrom a distance determined by the desired roof opening. Stops 84 are secured to the tracks by means of bolts 86.

Second or rearward glide assemblies, indicated generally at 90, work in tracks 80.

The rearward glide assemblies are mounted on brackets 92 which include upwardly extending flanges 94 bolted to the outer faces of panels 34. They also include downwardly extending flanges 96 which overlie tracks 80 and which mount the guide assemblies.

The construction of the glide assemblies is substantially similar to that illustrated above, with the exception that the glide assemblies are mounted in a fixed position, rather than pivotally.

Glide support bars 100 having central openings 102 are fixed by bolts 104 to bracket flanges 96. Bars 100 support short shafts 106 with rivet heads, one on each side of opening 102. Grooved rollers 108 are journaled on the shafts and maintained spaced from bars 100 by means of washers 110.

Screws 112 extend through openings 102 and are threaded through the central portions of bars 100. The inner ends of screws 112 bear against tracks 80 and accordingly serve as releasable locks for locking the hardtop in a selected location.

Seal means cooperate with the hardtop assembly for sealing off the forward end of the roof when the latter is closed.

As shown in FIG. 2, the seal means is mounted across the top of the windshield by means of a molding strip 116 fastened by means of screws 118 to the inside upper margin of windshield top piece 18. Molding strip 116 mounts a resilient tubular pad 120 of rubber, plastic or other suitable sealing material. The pad extends above the plane of the molding strip 116 and top piece 18, and bears against the under side of the roof when the latter is closed.

Operation

The manner of application of the herein described convertible hardtop assembly is as follows:

When the hardtop is in its open, full line position of

the drawings, the leading end of roof 30 overlies the rearward ends of side windows 20. Side panels 34 are located toward the rear of the boat. Rollers 108 of the rearward glide assembly contact stops 84 in the rearward position of the hardtop, FIG. 7. In this position of the hardtop, the space above the occupants seated in seat 12 is open for the admission of sun and air.

If it is desired to adjust the hardtop to an intermediate position, it is moved forwardly along tracks 40, 80. Lock screws 60, 112 are tightened down when the desired position is reached.

When it is desired to completely close the hardtop, it is moved forwardly to the dotted line position of FIG. 2. During the terminal part of such movement, pivotal forward glide assemblies 52 traverse the downwardly extending segments 44 of tracks 40. This lowers the forward, arcuate portion 32 of the roof until it overhangs the top of the windshield, where it serves to prevent glare. Also, as the forward portion of the roof is lowered, its underside contacts transverse sealing strip 120 which seals the interior of the cabin from spray, wind and rain.

It is to be noted that as the forward glide assembly traverses the downwardly arcuate sections of track 40, bars 58 mounting rollers 66 pivot about pivot pins 60 as required to accommodate the glides to the track contour.

It further is to be noted that if it is desired to remove the hardtop completely, this may be accomplished simply by removing stops 84, FIG. 7, by loosening screws 86. The hardtop then may be slid completely out of the open ends of tracks 40, 80 for an open boat adaptation.

It is to be understood that the form of my invention herein shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. In an open boat having a windshield, a pair of side windows merging with the windshield and a gunwale, a convertible hardtop assembly comprising

(a) a hardtop having a roof section dimensioned to overlie the windshield and side windows and having integral, rearward, downwardly extending side panels having lower edges substantially coplanar with the gunwale,

(b) first track means mounted on the inner, upper margins of the side windows and extending longitudinally thereof, the first track means having a forward portion extending angularly forward and downward along the inner sides of the windshield,

(c) first glide means on the forward margins of the roof underside, working in the first track means,

(d) second track means mounted on the gunwale underlying the side panels and extending rearwardly therefrom,

(e) second glide means on the lower margins of the side panels working in the second track means,

(f) a transverse sealing strip secured to the upper margin of the windshield and positioned for sealing contact with the underside of the forward portion of the roof as the first glide means traverses the forward angular portion of the first track means to lower the roof toward the sealing strip, and

(g) adjustable lock means on at least one of the first and second glide means arranged to engage removably the associated track means for securing the glide means against movement relative to the track means.

2. The convertible hardtop assembly of claim 1 wherein each first glide means includes a bar, pivot means pivotally mounting the bar on the roof margin centrally of the bar, and a pair of rollers rotatably mounted on the bar, one on each side of the pivot means, to allow move-

5

ment of the rollers along the angular forward portion of the first track means.

3. The convertible hardtop assembly of claim 1 wherein each first glide means comprises a bar, pivot means pivotally mounting the bar on the roof margin centrally of the bar, a pair of rollers rotatably mounted on the bar, one on each side of the pivot means, the pivot means comprising a bracket mounted on the roof, and wherein said lock means comprises a bolt journaled in the bracket for free rotation thereon and threaded through the bar in the direction of the track, the bolt being of sufficient length, when fully extended, to bear against the track, thereby releasably interengaging the roof and track in a selected position of roof adjustment.

4. The convertible hardtop assembly of claim 1 wherein each second glide means comprises a bar, mounting means mounting the bar on the side panel centrally of the bar, a pair of rollers rotatably mounted on the bar, one on each side of the mounting means, and wherein said lock means comprises a bolt threaded through the bar in the direction of the track, the bolt being of sufficient length when fully extended to bear against the track, thereby releasably interengaging the side panel and track in a selected position of panel adjustment.

5. The convertible hardtop assembly of claim 1 wherein the second track means is mounted on the inner side of the gunwale.

6. In an open boat having a windshield, a pair of side windows merging with the windshield and a gunwale, a convertible hardtop assembly comprising

- (a) a hardtop having a roof section dimensioned to overlie the windshield and side windows and having integral, rearward, downwardly extending side panels having lower edge substantially coplanar with the gunwale,
- (b) first track means mounted on the inner, upper margins of the side windows and extending longitudinally thereof,
- (c) first glide means on the forward margins of the roof underside, working in the first track means,
- (d) second track means mounted on the gunwale underlying the side panels and extending rearwardly therefrom,
- (e) second glide means on the lower margins of the side panels working in the second track means, and
- (f) each first glide means comprises a bar, pivot means pivotally mounting the bar on the roof margin cen-

6

trally of the bar, a pair of rollers rotatably mounted on the bar, one on each side of the pivot means, the pivot means comprising a bracket mounted on the roof, and a bolt journaled in the bracket for free rotation thereon and threaded through the bar in the direction of the track, the bolt being of sufficient length, when fully extended, to bear against the track, thereby releasably interengaging the roof and track in a selected position of roof adjustment.

7. In an open boat having a windshield, a pair of side windows merging with the windshield and a gunwale, a convertible hardtop assembly comprising

- (a) a hardtop having a roof section dimensioned to overlie the windshield and side windows and having integral, rearward, downwardly extending side panels having lower edge substantially coplanar with the gunwale,
- (b) first track means mounted on the inner, upper margins of the side windows and extending longitudinally thereof,
- (c) first glide means on the forward margins of the roof underside, working in the first track means,
- (d) second track means mounted on the gunwale underlying the side panels and extending rearwardly therefrom,
- (e) second glide means on the lower margins of the side panels working in the second track means, and
- (f) each second glide means comprises a bar, mounting means mounting the bar on the side panels centrally of the bar, a pair of rollers rotatably mounted on the bar, one on each side of the mounting means, and a bolt threaded through the bar in the direction of the track, the bolt being of sufficient length when fully extended to bear against the track, thereby releasably interengaging the side panel and track in a selected position of panel adjustment.

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