A gutter drain is used in connection with a gutter around a hatch mounted in an opening of a boat deck. The gutter drain has a generally U-shaped saddle. The saddle has a pair of opposed side portions extending upward from a bottom portion. The saddle outer surface conforms closely to the gutter inside surface. A circular mounting sleeve is attached to the saddle, and has a plurality of flexible annular rings to mount the gutter drain. A circular nozzle is attached to the mounting sleeve by an elbow having an angle greater than 90°, and has an annular ridge to retain a drain tube.

The gutter drain is driven downward into a gutter-mounting hole by a hammer blow, until the saddle is seated in the gutter. The annular rings deflect resiliently upward and are biased outward against the mounting hole, to hold the gutter drain securely in place, and seal against leakage. The saddle side portions are biased outward, and press against the gutter sidewalls to further seal the gutter drain.
U-SHAPED GUTTER DRAIN
CROSS-REFERENCE TO RELATED APPLICATIONS
[0001] Not Applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT
[0002] Not Applicable

BACKGROUND OF THE INVENTION
[0003] This invention relates to the field of drain connection fittings. It pertains, more particularly, to a U-shaped fitting to drain water from the gutter around the opening of a vehicle roof, and especially to drain water from the gutter around the opening of a boat hatch.

[0004] Water tends to collect in the gutter of a vehicle roof opening. Upon opening a sunroof or hatch, the collected water will drip inside the vehicle, wetting passengers, carpets, and seats. Water leakage can even cause an electrical short, and subsequent fire. The combined action of wind and vehicle motion will exacerbate the problem. Typical automotive practice is to weld a nipple to the steel gutter floor, and connect a drain tube leading to a drainage point. Marine practice usually omits any drain, resulting in water ingress to the boat cabin interior. Marine hatch gutters are typically molded plastic, and cannot be welded.

[0005] Gutter drains are known, and have taken a variety of configurations in the past. Some examples of gutter drains in the prior art are found in the following patents:

[0006] Ono, U.S. Pat. No. 4,892,351, Fig. 4; Kempter, U.S. Pat. No. 4,589,694, Fig. 2; Feng, Publication No. CN 2936843 Y; and Hattass, Publication No. CA 2065891, each shows a gutter of trapezoidal or rectangular cross-section. A drain fitting with a flange is installed in one lower corner of the gutter. In automotive practice; this has the advantage of angling the drain fitting to keep a low profile for the headliner. In marine practice, it has the disadvantage in that hatches are often installed in a deck, adjacent significant structural members. An angled fitting could be blocked by a beam or frame. A further disadvantage is that the angled fitting would have to be custom made to fit the cross-section. A yet further disadvantage is that drilling an angled hole in precisely the right place and angle requires considerable skill and experience. A still further disadvantage is that a corner drain is limited in size, and hence flow capacity. A marine drain must be able to handle green water flowing across a deck. Another disadvantage is that the angled drain must be cemented in place, requiring clean up, and often resulting in a leaky fitting.

[0007] Haught, Publication No. WO01/00477; Blech, Publication No. DE 19808898; Gourvellec, Publication No. FR 2890617; and Haas, Publication No. DE 102005046292; each disclose a drain fitting adapted for installation in a flat sheet metal surface. Marine hatch gutters are typically U-shaped. A limitation of the flat drain is that it will not lie flush with the floor of a U-shaped gutter, nor seal properly. A further limitation is that the flat drain is limited in size by not extending up the sidewalls, and the flow capacity is thus compromised.

[0008] The prior art devices are all adapted for installation in thin sheet metal. They show only one gripping element to secure the drain in the gutter. Most of them have an elastomer flange to seal against leakage. A plurality of gripping elements would better serve to secure the drain in the thicker marine hatch gutter, and also serve as a seal.

[0009] Accordingly, there is a need to provide a U-shaped gutter drain that can extend across the floor of a gutter, and up the side walls for maximum surface area for sealant/adhesive to achieve a secure purchase against the gutter, so as to preclude loosening of the drain due to engine vibration, and to allow room for maximum drain capacity.

[0010] There is a further need to provide a U-shaped gutter drain of the type described and that is directed straight downward from the gutter floor, and also provides for an elbow portion to direct drain water to the right, left, forward, or aft, so as to clear structural members.

[0011] There is a yet further need to provide a U-shaped gutter drain of the type described and wherein the elbow portion is disposed at an angle somewhat greater than ninety degrees, so as to completely drain water in the event that the boat is heeled away from a level condition on a trailer or jacks, and also to facilitate installation into a smaller sized hole than is required for a ninety degree elbow.

[0012] There is a still further need to provide a U-shaped gutter drain of the type described and wherein the drain can be installed and secured in a space too limited to wield a wrench and tighten a nut.

[0013] There is another need to provide a U-shaped gutter drain of the type described and wherein the required hole size can be minimized by providing an elbow portion disposed at angle somewhat greater than ninety degrees, and by offsetting the nozzle downward for greater clearance at installation.

[0014] There is yet another need to provide a U-shaped gutter drain of the type described and that can be quickly and easily installed by semi-skilled workers.

[0015] There is still another need to provide a U-shaped gutter drain of the type described and that is robust for long service life, and yet can be manufactured cost-effectively in large quantities of high quality.

BRIEF SUMMARY OF THE INVENTION

[0016] In accordance with the present invention, there is provided a gutter drain 50 for use in connection with a gutter 30 around a hatch mounted in an opening of a boat deck. The gutter 30 has a generally horizontal floor 32, and a pair of opposed skin/aisles 34, 36, extending upward from the floor. A gutter-mounting hole 40, having a predetermined diameter, passes through the floor.

[0017] The gutter drain 50 comprises a generally U-shaped saddle 52 extending between opposite first 54 and second 56 ends along a generally vertical saddle plane. The saddle has a bottom portion 58 and a pair of opposed side portions 60, 62, extending upward from the bottom portion 58 on either side of the saddle plane. The saddle outer surface is adapted to conform closely to the gutter inside surface. The saddle bottom portion 58 is adjacent the gutter floor 32. The saddle side portions 60, 62, are resiliently biased outwardly against the gutter sidewalls 34, 36, to seal the saddle against moisture leakage from the gutter. The saddle has a saddle hole 68 through the outer surface.

[0018] A circular mounting sleeve 70 has an upper end 72 attached to the saddle outer surface, and has a predetermined diameter. The mounting sleeve has a central axis and a bore 76 in communication with the saddle hole 68. A plurality of flexible annular rings 90 encircles the mounting sleeve 70 for
mounting the gutter drain 50 in the gutter-mounting hole 40. The annular rings have a diameter greater than the mounting hole predetermined diameter.

[0019] A circular nozzle 78 is disposed below the mounting sleeve 70. An elbow 92 joins the mounting sleeve 70 and the nozzle 78. The nozzle has an outer surface, a central axis, and a nozzle bore 86 in communication with the mounting sleeve bore 76. The nozzle 78 has at least one annular ridge 88 encircling it to retain a resilient drain tube. The mounting sleeve central axis is disposed at a predetermined angle to the nozzle central axis of greater than ninety degrees. This angle facilitates installation of the gutter drain 50 into the mounting hole 40. The angle will also permit water to completely drain in the event that the boat is heeled away from a level condition while in storage.

[0020] Upon assembly of the gutter drain 50, the nozzle 78 is inserted into the gutter-mounting hole 40, and the mounting sleeve 70 is positioned over the mounting hole 40. The gutter drain 50 is then driven downward into the mounting hole 40 by a hammer blow, until the saddle outer surface 64 is seated in the gutter floor 32. The annular rings 90 deflect resiliently upward and are biased outward against the mounting hole 40, and serve to hold the gutter drain 50 securely in place, while also sealing against leakage. The saddle side portions 60 and 62 are biased outward, and press against the gutter sidewalls 34 and 36. This bias further seals the gutter drain 50 against water leakage, and also further stabilizes the gutter drain 50 against movement.

[0021] The positioning of the gutter drain 50 in the center of the gutter floor 32 helps to maximize the diameter of the gutter drain 50, and thus maximize the flow rate of water from the gutter 30.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0022] A more complete understanding of the present invention may be obtained from consideration of the following description in conjunction with the drawing, in which:

[0023] FIG. 1 is a perspective view of a U-shaped gutter drain constructed in accordance with the invention.
[0024] FIG. 2 is a front elevational view of the U-shaped gutter drain of FIG. 1.
[0025] FIG. 3a is a left side cross-sectional elevational view of the U-shaped gutter drain of FIG. 1, taken along lines 3-3 of FIG. 2.
[0026] FIG. 3b is a cross-sectional elevational view of the U-shaped gutter drain of FIG. 1, taken along lines 3b-3b of FIG. 3a.
[0027] FIG. 4 is a top plan view of the U-shaped gutter drain of FIG. 1.
[0028] FIG. 5 is a perspective view of another U-shaped gutter drain constructed in accordance with the invention.
[0029] FIG. 6 is a front elevational view of the U-shaped gutter drain of FIG. 5.
[0030] FIG. 7 is a left side cross-sectional elevational view of the U-shaped gutter drain of FIG. 5, taken along lines 7-7 of FIG. 6.
[0031] FIG. 8 is a top plan view of the U-shaped gutter drain of FIG. 5.
[0032] FIG. 9 is a perspective view of yet another U-shaped gutter drain constructed in accordance with the invention.
[0033] FIG. 10 is a front elevational view of the U-shaped gutter drain of FIG. 9.
[0034] FIG. 11 is a left side cross-sectional elevational view of the U-shaped gutter drain of FIG. 9, taken along lines 11-11 of FIG. 10.
[0035] FIG. 12 is a top plan view of the U-shaped gutter drain of FIG. 9.
[0036] FIG. 13 is a cross-sectional, perspective, assembly view of the U-shaped gutter drain of FIG. 1, assembled into a hatch gutter and boat deck.
[0037] FIG. 14 is an exploded view of the assembly of FIG. 13.
[0038] FIG. 15 is a cross-sectional elevational view of the assembly of FIG. 13, taken along lines 15-15 of FIG. 13.
[0039] FIG. 16 is an enlarged detail view of the annular ring mounting, taken at DET. 16 of FIG. 15.
[0040] FIG. 17 is a left side elevational view of still another U-shaped gutter drain constructed in accordance with the invention.
[0041] FIG. 18 is a perspective view of the U-shaped gutter drain of FIG. 17.
[0042] FIG. 19 is a left side elevational view of a further U-shaped gutter drain constructed in accordance with the invention.
[0043] FIG. 20 is a perspective view of the U-shaped gutter drain of FIG. 19.
[0044] FIG. 21 is a left side elevational view of a yet further U-shaped gutter drain constructed in accordance with the invention.
[0045] FIG. 22 is a perspective view of the U-shaped gutter drain of FIG. 21.
[0046] FIG. 23 is a left side elevational view of a still further U-shaped gutter drain constructed in accordance with the invention.
[0047] FIG. 24 is a perspective view of the U-shaped gutter drain of FIG. 23.

DETAILED DESCRIPTION OF THE INVENTION

[0048] Referring now to the drawing, and especially to FIGS. 1-4 and 13-16 thereof, a gutter drain is shown at 50 and is for use in connection with a gutter 30 around an opening of a vehicle roof. In the preferred embodiment, the gutter 30 is part of a hatch mounted in an opening of a boat deck 46, as shown in FIGS. 13-16. The gutter 34 has a generally horizontal floor 32, and a pair of opposed sidewalls 34 and 36, extending upward from the floor 32. The gutter 30 has an inside surface 38. The gutter 30 has a mounting hole 40 through the floor 32. The mounting hole 40 has a predetermined diameter. The gutter typically has an outer flange 42 around the periphery for mounting the boat hatch into an opening in a boat deck 46, and an inner flange 44 for strength. The boat deck 46 typically will have reinforcement around the hatch opening consisting of stringers and frames 48.

[0049] The gutter drain 50 comprises a generally U-shaped saddle 52 extending between opposite first 54 and second 56 ends along a generally vertical saddle plane. The saddle 52 has a bottom portion 58 and a pair of opposed side portions 60 and 62 extending upward from the bottom portion 58 on either side of the saddle plane. The saddle 52 has an outer surface 64 and an opposite inner surface 66. The saddle outer surface 64 is adapted to conform closely to the gutter inside surface 38. The saddle bottom portion 58 is adjacent the gutter floor 32. Each of the saddle side portions 60 and 62 are adjacent a respective gutter side wall 34 and 36. The saddle side portions 60 and 62 are adapted to be resiliently biased outwardly against the gutter sidewalls 34 and 36, so as to seal
the saddle 52 against moisture leakage from the gutter 30. Extending the saddle side portions 60 and 62 upward against the gutter sidewalls 34 and 36 will also maximize the surface area for sealant/adhesive to achieve a secure purchase against the gutter 30. This large area will preclude loosening of the drain 50 due to engine vibration, and subsequent leakage of water. The leakage could cause an electrical short-circuit, resulting in a fire. The large cross-sectional area will also allow room for maximum drain flow capacity. The saddle 52 has a generally vertical saddle hole 68 extending from the outer surface 64 through to the inner surface 66.

[0050] A mounting sleeve 70 has an upper end 72 attached to the saddle outer surface 64, and extending downward to a lower end 74. The mounting sleeve 70 is generally circular in cross-section, and has a predetermined diameter. The mounting sleeve 70 has a mounting sleeve central axis and a mounting sleeve bore 76 through the mounting sleeve 70 and in communication with the saddle hole 68. At least one, and preferably a plurality, of flexible annular rings 90 encircles the mounting sleeve 70 for mounting the gutter drain 50 in the gutter-mounting hole 40. The annular rings 90 have a diameter greater than the mounting hole predetermined diameter.

[0051] A nozzle 78 has a proximal end 80 disposed below the mounting sleeve lower end 74, and extending outward to a distal end 82. The nozzle 78 is generally circular in cross-section. The nozzle 78 has an outer surface 84, and a nozzle central axis. The nozzle 78 has a nozzle bore 86 extending through it in communication with the mounting sleeve bore 76. The nozzle 78 is adapted to receive a resilient drain tube (not shown). The nozzle 78 has at least one annular ridge 88 encircling the nozzle outer surface 84. The annular ridge 88 is adapted to retain the drain tube on the nozzle 78.

[0052] The mounting sleeve central axis and the nozzle central axis are disposed at a predetermined angle to one another, defining a nozzle plane. In this embodiment, the saddle plane and the nozzle plane are generally perpendicular. This directs the nozzle 78 laterally so as to drain water away from the gutter 30, as shown in FIG. 15. The mounting sleeve 70 and the elbow 90 will position the nozzle 78 low enough to clear the deck reinforcement 48.

[0053] An elbow 92 joins the mounting sleeve and the nozzle. The elbow 92 has a bore 94 in communication with the mounting sleeve bore 76 and the nozzle bore 86. The elbow 92 has an axis where the elbow 92 and the nozzle 78 are joined. The predetermined angle between the mounting sleeve central axis and the nozzle central axis can be any degrees, but preferably is greater than ninety degrees. Installing the gutter drain 50 in the gutter 30 requires tilting the gutter drain 50, inserting the nozzle 78 through the mounting hole 40, and rotating the gutter drain 50 back to an upright position. During this installation, the nozzle 78 tends to strike the underside of the boat deck 46 or the frames 48. One solution is to drill a larger diameter mounting hole 40. This is problematic, since the annular rings 90 require a minimal sized mounting hole 40 to seal and grip securely. Setting the predetermined angle to greater than ninety degrees will mitigate the interference. This allows minimizing the mounting hole diameter, and facilitates installation of the gutter drain 50 into the mounting hole 40. Setting the predetermined angle to greater than ninety degrees will also permit the water to completely drain in the event that the boat is beached away from a level condition while in storage on a trailer or jacks. Drawing FIGS. 3a and 15 show the predetermined angle at 100°. Ideally, the predetermined angle will be between 100° and 110°, and preferably closer to 110°.

[0054] Another way to mitigate the interference is to offset the nozzle central axis downward from the elbow axis, as shown in FIGS. 3a, 3b, and 15. This will also minimize the mounting hole diameter, and facilitate installation of the gutter drain 50 into the mounting hole 40.

[0055] Upon assembly of the gutter drain 50, the nozzle 78 is inserted into the gutter-mounting hole 40, and the mounting sleeve 70 is positioned over the mounting hole 40. The gutter drain 50 is then driven downward by a hammer blow, until the saddle outer surface 64 is seated in the gutter floor 32. The mounting sleeve 70 then enters the mounting hole 40. The annular rings 90 deflect resiliently upward against the mounting hole 40. The annular rings 90 are thereby biased outward against the mounting hole 40, and serve to hold the gutter drain 50 securely in place, while also sealing against leakage. This is shown in FIGS. 15 and 16. Once the saddle outer surface 64 is seated in the gutter 30, the saddle side portions 60 and 62 are biased outward, and press against the gutter sidewalls 34 and 36. This bias further seals the gutter drain 50 against water leakage, and also further stabilizes the gutter drain 50 against movement.

[0056] The positioning of the gutter drain 50 in the center of the gutter floor 32 helps to maximize the diameter of the gutter drain 50. This, in turn, will maximize the flow rate of water from the gutter 30.

[0057] Turning now to FIGS. 5-8, as well as FIGS. 13-16, another gutter drain is shown at 150 and is for use in connection with a gutter 30 around an opening of a vehicle roof, as described above.

[0058] The gutter drain 150 is similar to gutter drain 50 disclosed above, in that it comprises a generally U-shaped saddle 152 extending between opposite first 154 and second 156 ends along a generally vertical saddle plane. The saddle 152 has a bottom portion 158 and a pair of opposed side portions 160 and 162 extending upward from the bottom portion 158 on either side of the saddle plane. The saddle 152 has an outer surface 164 and an opposite inner surface 166. The saddle outer surface 164 is adapted to conform closely to the gutter inside surface 38. The saddle bottom portion 158 is adjacent the gutter floor 32. Each of the saddle side portions 160 and 162 are adjacent a respective gutter side wall 34 and 36. The saddle side portions 160 and 162 are adapted to be resiliently biased outwardly against the gutter sidewalls 34 and 36, so as to seal the saddle 152 against moisture leakage from the gutter 30. The saddle 152 has a generally vertical saddle hole 168 extending from the outer surface 164 through to the inner surface 166.

[0059] A mounting sleeve 170 has an upper end 172 attached to the saddle outer surface 164, and extending downward to a lower end 174. The mounting sleeve 170 is generally circular in cross-section, and has a predetermined diameter. The mounting sleeve 170 has a mounting sleeve central axis and a mounting sleeve bore 176 through the mounting sleeve 170 and in communication with the saddle hole 168. A plurality of flexible annular rings 190 encircles the mounting sleeve 170 for mounting the gutter drain 150 in the gutter-mounting hole 40. The annular rings 90 have a diameter greater than the mounting hole predetermined diameter.

[0060] A nozzle 178 has a proximal end 180 disposed below the mounting sleeve lower end 174, and extending outward to a distal end 182. The nozzle 178 is generally circular in cross-section. The nozzle 178 has an outer surface
184, and a nozzle central axis. The nozzle 178 has a nozzle bore 186 through it in communication with the mounting sleeve bore 176. The nozzle 178 is adapted to receive a resilient drain tube (not shown). The nozzle 178 has at least one annular ridge 188 encircling the nozzle outer surface 184. The annular ridge 188 is adapted to retain the drain tube on the nozzle 178.

[0061] The mounting sleeve central axis and the nozzle central axis are disposed at a predetermined angle to one another, defining a nozzle plane. The gutter drain 150 differs from gutter drain 50 disclosed above, in that the saddle plane and the nozzle plane are generally parallel. This directs the nozzle 178 laterally in the same general direction as the gutter 30, providing another mounting option. An elbow 192 joins the mounting sleeve to and the nozzle. The elbow 192 has a bore 194 in communication with the mounting sleeve bore 176 and the nozzle bore 186.

[0062] Assembly of the gutter drain 150 is similar to the assembly of gutter drain 50. The gutter drain 150 is driven downward by a hammer blow, until the saddle outer surface 164 is seated in the gutter floor 32. The annular rings 190 deflect resiliently upward against the gutter-mounting hole 40. The annular rings 190 are thereby biased outward against the gutter mounting hole 40, and serve to hold the gutter drain 150 securely in place, while also sealing against leakage. Once the saddle outer surface 164 is seated in the gutter 30, the saddle side portions 160 and 162 are biased outward, and press against the gutter sidewalls 34 and 36. This bias further seals the gutter drain 150 against water leakage, and also further stabilizes the gutter drain 150 against movement.

[0063] Referring now to FIGS. 9-12, as well as FIGS. 13-16, another embodiment of the gutter drain is shown at 250 and is for use in connection with a gutter 30 around an opening of a vehicle roof, as described above.

[0064] The gutter drain 250 is similar to gutter drain 50 disclosed above, in that it comprises a generally U-shaped saddle 252 extending between opposite first 254 and second 256 ends along a generally vertical saddle plane. The saddle 252 has a bottom portion 258 and a pair of opposed side portions 260 and 262 extending upward from the bottom portion 258 on either side of the saddle plane. The saddle 252 has an outer surface 264 and an opposite inner surface 266. The saddle outer surface 264 is adapted to conform closely to the gutter inside surface 38. The saddle bottom portion 258 is adjacent the gutter floor 32. Each of the saddle side portions 260 and 262 are adjacent a respective gutter side wall 34 and 36. The saddle side portions 260 and 262 are adapted to be resiliently biased outwardly against the gutter sidewalls 34 and 36, so as to seal the saddle 252 against moisture leakage from the gutter 30. The saddle 252 has a generally vertical saddle hole 268 extending from the outer surface 264 through to the inner surface 266.

[0065] A mounting sleeve 270 has an upper end 272 attached to the saddle outer surface 264, and extending downward to a lower end 274. The mounting sleeve 270 is generally circular in cross-section, and has a predetermined diameter. The mounting sleeve 270 has a mounting sleeve central axis and a mounting sleeve bore 276 through the mounting sleeve 270 and in communication with the saddle hole 268. A plurality of flexible annular rings 290 encircles the mounting sleeve 270 for mounting the gutter drain 250 in the gutter-mounting hole 40. The annular rings 290 have a diameter greater than the mounting hole predetermined diameter.

[0066] A nozzle 278 has a proximal end 280 attached to the mounting sleeve lower end 274, and extending outward to a distal end 282. The nozzle 278 is generally circular in cross-section. The nozzle 278 has an outer surface 284, and a nozzle central axis. The nozzle 278 has a nozzle bore 286 through it in communication with the mounting sleeve bore 276. The nozzle 278 is adapted to receive a resilient drain tube (not shown). The nozzle 278 has at least one annular ridge 288 encircling the nozzle outer surface 284. The annular ridge 288 is adapted to retain the drain tube on the nozzle 278.

[0067] The gutter drain 250 differs from gutter drain 50 disclosed above, in that the mounting sleeve central axis and the nozzle central axis are collinear. This directs the nozzle 278 vertically so as to drain water downward away from the gutter 30. The mounting sleeve bore 276 is in communication with the nozzle bore 86.

[0068] Assembly of the gutter drain 250 is similar to the assembly of gutter drain 50. The gutter drain 250 is driven downward by a hammer blow, until the saddle outer surface 264 is seated in the gutter floor 32. The annular rings 290 deflect resiliently upward against the gutter-mounting hole 40. The annular rings 290 are thereby biased outward against the gutter mounting hole 40, and serve to hold the gutter drain 250 securely in place, while also sealing against leakage. Once the saddle outer surface 264 is seated in the gutter 30, the saddle side portions 260 and 262 are biased outward, and press against the gutter sidewalls 34 and 36. This bias further seals the gutter drain 250 against water leakage, and also further stabilizes the gutter drain 250 against movement.

[0069] Turning now to FIGS. 17 and 18, as well as FIGS. 13-16, another gutter drain is shown at 350 and is for use in connection with a gutter (not shown) around an opening of a vehicle roof, as described above.

[0070] The gutter drain 350 is similar to gutter drain 50 disclosed above, in that it comprises a generally U-shaped saddle 352 extending between opposite first 354 and second 356 ends along a generally vertical saddle plane. The saddle 352 has a bottom portion 358 and a pair of opposed side portions 360 and 362 extending upward from the bottom portion 358 on either side of the saddle plane. The saddle 352 has an outer surface 364 and an opposite inner surface 366. The saddle outer surface 364 is adapted to conform closely to the gutter inside surface 38. The saddle bottom portion 358 is adjacent the gutter floor 32. Each of the saddle side portions 360 and 362 are adjacent a respective gutter side wall 34 and 36, so as to seal the saddle 352 against moisture leakage from the gutter. The saddle 352 has a generally vertical saddle hole 368 extending from the outer surface 364 through to the inner surface 366.

[0071] A mounting sleeve 370 has an upper end 372 attached to the saddle outer surface 364, and extending downward to a lower end 374. The mounting sleeve 370 is generally circular in cross-section, and has a predetermined diameter. The mounting sleeve 370 has a mounting sleeve central axis and a mounting sleeve bore 376 through the mounting sleeve 370 and in communication with the saddle hole 368. A plurality of flexible annular rings 390 encircles the mounting sleeve 370 for mounting the gutter drain 350 in the gutter-mounting hole. The annular rings 390 have a diameter greater than the gutter-mounting hole predetermined diameter.

[0072] A nozzle 378 has a proximal end 380 disposed below the mounting sleeve lower end 374, and extending outward to a distal end 382. The nozzle 378 is generally
circular in cross-section. The nozzle 378 has an outer surface 384, and a nozzle central axis. The nozzle 378 has a nozzle bore 386 through it in communication with the mounting sleeve bore 376. The nozzle 378 is adapted to receive a resilient drain tube (not shown). The nozzle 378 has at least one annular ridge 388 encircling the nozzle outer surface 384. The annular ridge 388 is adapted to retain the drain tube on the nozzle 378.

[0073] The mounting sleeve central axis and the nozzle central axis are disposed at a predetermined angle to one another, defining a nozzle plane. The saddle plane and the nozzle plane are generally perpendicular. An elbow 392 joins the mounting sleeve and the nozzle. The elbow 392 has a bore 394 in communication with the mounting sleeve bore 376 and the nozzle bore 386.

[0074] The gutter drain 350 differs from gutter drain 50 disclosed above, in that gutter drain 50 has a generally U-shaped saddle 52 having a cross-section of a constant radius arc. The gutter drain 350 has a generally U-shaped saddle 352 having a rectangular cross-section. The manner of installing gutter drain 350 is the same as that of gutter drain 50 disclosed above.

[0075] Referring now to FIGS. 19 and 20, as well as FIGS. 13-16, another gutter drain is shown at 450 and is for use in connection with a gutter (not shown) around an opening of a vehicle roof, as described above.

[0076] The gutter drain 450 is similar to gutter drain 50 disclosed above, in that it comprises a generally U-shaped saddle 452 extending between opposite first 454 and second 456 ends along a generally vertical saddle plane. The saddle 452 has a bottom portion 458 and a pair of opposed side portions 460 and 462 extending upward from the bottom portion 458 on either side of the saddle plane. The saddle 452 has an outer surface 464 and an opposite inner surface 466. The saddle outer surface 464 is adapted to conform closely to the gutter inside surface. The saddle bottom portion 458 is adjacent the gutter floor. Each of the saddle side portions 460 and 462 are adjacent a respective gutter sidewall. The saddle side portions 460 and 462 are adapted to be resiliently biased outwardly against the gutter sidewalls, so as to seal the saddle 452 against moisture leakage from the gutter. The saddle 452 has a generally vertical saddle hole 468 extending from the outer surface 464 through to the inner surface 466.

[0077] A mounting sleeve 470 has an upper end 472 attached to the saddle outer surface 464, and extending downward to a lower end 474. The mounting sleeve 470 is generally circular in cross-section, and has a predetermined diameter. The mounting sleeve 470 has a mounting sleeve central axis and a mounting sleeve bore 476 through the mounting sleeve 470 and in communication with the saddle hole 468. A plurality of flexible annular rings 490 encircles the mounting sleeve 470 for mounting the gutter drain 450 in the gutter-mounting hole. The annular rings 490 have a diameter greater than the gutter-mounting hole predetermined diameter.

[0078] A nozzle 478 has a proximal end 480 disposed below the mounting sleeve lower end 474, and extending outward to a distal end 482. The nozzle 478 is generally circular in cross-section. The nozzle 478 has an outer surface 484, and a nozzle central axis. The nozzle 478 has a nozzle bore 486 through it in communication with the mounting sleeve bore 476. The nozzle 478 is adapted to receive a resilient drain tube (not shown). The nozzle 478 has at least one annular ridge 488 encircling the nozzle outer surface 484. The annular ridge 488 is adapted to retain the drain tube on the nozzle 478.

[0079] The mounting sleeve central axis and the nozzle central axis are disposed at a predetermined angle to one another, defining a nozzle plane. The saddle plane and the nozzle plane are generally perpendicular. An elbow 492 joins the mounting sleeve and the nozzle. The elbow 492 has a bore 494 in communication with the mounting sleeve bore 476 and the nozzle bore 486.

[0080] The gutter drain 450 differs from gutter drain 50 disclosed above, in that gutter drain 50 has a generally U-shaped saddle 52 having a cross-section of a constant radius arc. The gutter drain 450 has a generally U-shaped saddle 452 having a trapezoidal cross-section. The manner of installing gutter drain 450 is the same as that of gutter drain 50 disclosed above.

[0081] Turning now to FIGS. 21 and 22, as well as FIGS. 13-16, another gutter drain is shown at 550 and is for use in connection with a gutter (not shown) around an opening of a vehicle roof, as described above.

[0082] The gutter drain 550 is similar to gutter drain 50 disclosed above, in that it comprises a generally U-shaped saddle 552 extending between opposite first 554 and second 556 ends along a generally vertical saddle plane. The saddle 552 has a bottom portion 558 and a pair of opposed side portions 560 and 562 extending upward from the bottom portion 558 on either side of the saddle plane. The saddle 552 has an outer surface 564 and an opposite inner surface 566. The saddle outer surface 564 is adapted to conform closely to the gutter inside surface. The saddle bottom portion 558 is adjacent the gutter floor. Each of the saddle side portions 560 and 562 are adjacent a respective gutter sidewall. The saddle side portions 560 and 562 are adapted to be resiliently biased outwardly against the gutter sidewalls, so as to seal the saddle 552 against moisture leakage from the gutter. The saddle 552 has a generally vertical saddle hole 568 extending from the outer surface 564 through to the inner surface 566.

[0083] A mounting sleeve 570 has an upper end 572 attached to the saddle outer surface 564, and extending downward to a lower end 574. The mounting sleeve 570 is generally circular in cross-section, and has a predetermined diameter. The mounting sleeve 570 has a mounting sleeve central axis and a mounting sleeve bore 576 through the mounting sleeve 570 and in communication with the saddle hole 568. A plurality of flexible annular rings 590 encircles the mounting sleeve 570 for mounting the gutter drain 550 in the gutter-mounting hole. The annular rings 590 have a diameter greater than the gutter-mounting hole predetermined diameter.

[0084] A nozzle 578 has a proximal end 580 disposed below the mounting sleeve lower end 574, and extending outward to a distal end 582. The nozzle 578 is generally circular in cross-section. The nozzle 578 has an outer surface 584, and a nozzle central axis. The nozzle 578 has a nozzle bore 586 through it in communication with the mounting sleeve bore 576. The nozzle 578 is adapted to receive a resilient drain tube (not shown). The nozzle 578 has at least one annular ridge 588 encircling the nozzle outer surface 584. The annular ridge 588 is adapted to retain the drain tube on the nozzle 578.

[0085] The mounting sleeve central axis and the nozzle central axis are disposed at a predetermined angle to one another, defining a nozzle plane. The saddle plane and the nozzle plane are generally perpendicular. An elbow 592 joins
the mounting sleeve and the nozzle. The elbow 592 has a bore 594 in communication with the mounting sleeve bore 576 and the nozzle bore 586.

[0086] The gutter drain 550 differs from gutter drain 50 disclosed above, in that gutter drain 50 has a generally U-shaped saddle 52 having a cross-section of a constant radius arc. The gutter drain 550 has a generally U-shaped saddle 552 having an elliptical cross-section. The manner of installing gutter drain 550 is the same as that of gutter drain 50 disclosed above.

[0087] Referring now to FIGS. 23 and 24, as well as FIGS. 13-16, another gutter drain is shown at 650 and is for use in connection with a gutter (not shown) around an opening of a vehicle roof, as described above.

[0088] The gutter drain 650 is similar to gutter drain 50 disclosed above, in that it comprises a generally U-shaped saddle 652 extending between opposite first 654 and second 656 ends along a generally vertical saddle plane. The saddle 652 has a bottom portion 658 and a pair of opposed side portions 660 and 662 extending upward from the bottom portion 658 on either side of the saddle plane. The saddle 652 has an outer surface 664 and an opposite inner surface 666. The saddle outer surface 664 is adapted to conform closely to the gutter side surface. The saddle bottom portion 658 is adjacent the gutter floor. Each of the saddle side portions 660 and 662 are adjacent a respective gutter side wall. The saddle side portions 660 and 662 are adapted to be resiliently biased outwardly against the gutter sidewalls, so as to seal the saddle 652 against moisture leakage from the gutter. The saddle 652 has a generally vertical saddle hole 668 extending from the outer surface 664 through to the inner surface 666.

[0089] A mounting sleeve 670 has an upper end 672 attached to the saddle outer surface 664, and extending downward to a lower end 674. The mounting sleeve 670 is generally circular in cross-section, and has a predetermined diameter. The mounting sleeve 670 has a mounting sleeve central axis and a mounting sleeve bore 676 through the mounting sleeve 670 and in communication with the saddle hole 668. A plurality of flexible annular rings 690 encircles the mounting sleeve 670 for mounting the gutter drain 650 in the gutter-mounting hole. The annular rings 690 have a diameter greater than the gutter-mounting hole predetermined diameter.

[0090] A nozzle 678 has a proximal end 680 disposed below the mounting sleeve lower end 674, and extending outward to a distal end 682. The nozzle 678 is generally circular in cross-section. The nozzle 678 has an outer surface 684, and a nozzle central axis. The nozzle 678 has a nozzle bore 686 through it in communication with the mounting sleeve bore 676. The nozzle 678 is adapted to receive a resilient drain tube (not shown). The nozzle 678 has at least one annular ridge 688 encircling the nozzle outer surface 684. The annular ridge 688 is adapted to retain the drain tube on the nozzle 678.

[0091] The mounting sleeve central axis and the nozzle central axis are disposed at a predetermined angle to one another, defining a nozzle plane. The saddle plane and the nozzle plane are generally perpendicular. An elbow 692 joins the mounting, sleeve and the nozzle. The elbow 692 has a bore 694 in communication with the mounting sleeve bore 676 and the nozzle bore 686.

[0092] The gutter drain 650 differs from gutter drain 50 disclosed above, in that gutter drain 50 has a generally U-shaped saddle 52 having a cross-section of a constant radius arc. The gutter drain 650 has a generally U-shaped saddle 652 having saddle side portions extending straight at an angle to each other. The manner of installing gutter drain 650 is the same as that of gutter drain 50 disclosed above.

[0093] A gutter draining method is disclosed for draining the gutter, the gutter draining method comprising the steps of providing a gutter drain having a generally U-shaped saddle, and extending a pair of opposed side portions upward from a bottom portion of the saddle. Then, attaching a mounting sleeve to the saddle, extending the mounting sleeve downward, and encircling the mounting sleeve with a plurality of flexible annular rings. Next, disposing a nozzle below the mounting sleeve and extending the nozzle outward.

[0094] Following this, juxtaposing the saddle over the gutter-mounting hole, striking the gutter drain with a hammer so that the mounting sleeve enters the gutter mounting hole, and driving the gutter drain downward with the hammer so that the saddle is seated in the gutter floor. As a result, each of the saddle side portions is adjacent a respective gutter.

[0095] The next step is biasing the saddle side portions resiliently outward against the gutter sidewalls, and sealing the saddle against moisture leakage from the gutter with the biasing of the saddle side portions. Then, allowing the flexible annular rings to bend upward in response to the mounting sleeve entering the gutter-mounting hole. This results in biasing the annular rings resiliently outward against the mounting hole, thereby retaining the gutter drain in the gutter with the biasing of the annular rings, and sealing the gutter drain against water leakage with the biasing of the annular rings. Lastly, adapting the nozzle to receive a drain tube, for draining the gutter.

[0096] Further steps comprise: encircling the nozzle outer surface with at least one annular ridge, and adapting the annular ridge to retain the drain tube on the nozzle.

[0097] Yet further steps comprise: disposing the nozzle collinear with the mounting sleeve. Then, adapting the nozzle to receive the drain tube generally vertically, for draining the gutter downward.

[0098] Alternative steps comprise: disposing the nozzle and the mounting sleeve at a predetermined angle to one another. Then, adapting the nozzle to receive the drain tube transversely, for draining the gutter transversely outward. Finally, joining the mounting sleeve and the nozzle with an elbow.

[0099] Numerous modifications and alternative embodiments of the invention will be apparent to those skilled in the art in view of the foregoing description. Accordingly, this description is to be construed as illustrative only and is for the purpose of teaching those skilled in the art the best mode of carrying out the invention. Details of the structure may be varied substantially without departing from the spirit of the invention and the exclusive use of all modifications that will come within the scope of the appended claims is reserved.

PARTS LIST
U-Shaped Gutter Drain

[0100] No. Description
[0101] 30 gutter
[0102] 32 gutter floor
[0103] 34 gutter side wall
[0104] 36 gutter side wall
[0105] 38 gutter inside surface
[0106] 40 gutter mounting hole
[0107] 42 gutter outer flange
[0108] 44 gutter inner flange
[0109] 46 boat deck
[0110] 48 deck frame
[0111] 50 gutter drain
[0112] 52 U-shaped saddle
[0113] 54 saddle first end
[0114] 56 saddle second end
[0115] 58 saddle bottom portion
[0116] 60 saddle side portion
[0117] 62 saddle side portion
[0118] 64 saddle outer surface
[0119] 66 saddle inner surface
[0120] 68 saddle hole
[0121] 70 mounting sleeve
[0122] 72 mounting sleeve upper end
[0123] 74 mounting sleeve lower end
[0124] 76 mounting sleeve bore
[0125] 78 nozzle
[0126] 80 nozzle proximal end
[0127] 82 nozzle distal end
[0128] 84 nozzle outer surface
[0129] 86 nozzle bore
[0130] 88 nozzle annular ridge
[0131] 90 annular rings
[0132] 92 elbow
[0133] 94 elbow bore
[0134] 150 gutter drain
[0135] 152 U-shaped saddle
[0136] 154 saddle first end
[0137] 156 saddle second end
[0138] 158 saddle bottom portion
[0139] 160 saddle side portion
[0140] 162 saddle side portion
[0141] 164 saddle outer surface
[0142] 166 saddle inner surface
[0143] 168 saddle hole
[0144] 170 mounting sleeve
[0145] 172 mounting sleeve upper end
[0146] 174 mounting sleeve lower end
[0147] 176 mounting sleeve bore
[0148] 178 nozzle
[0149] 180 nozzle proximal end
[0150] 182 nozzle distal end
[0151] 184 nozzle outer surface
[0152] 186 nozzle bore
[0153] 188 nozzle annular ridge
[0154] 190 annular rings
[0155] 192 elbow
[0156] 194 elbow bore
[0157] 250 gutter drain
[0158] 252 U-shaped saddle
[0159] 254 saddle first end
[0160] 256 saddle second end
[0161] 258 saddle bottom portion
[0162] 260 saddle side portion
[0163] 262 saddle side portion
[0164] 264 saddle outer surface
[0165] 266 saddle inner surface
[0166] 268 saddle hole
[0167] 270 mounting sleeve
[0168] 272 mounting sleeve upper end
[0169] 274 mounting sleeve lower end
[0170] 276 mounting sleeve bore
[0171] 278 nozzle
[0172] 280 nozzle proximal end
[0173] 282 nozzle distal end
[0174] 284 nozzle outer surface
[0175] 286 nozzle bore
[0176] 288 nozzle annular ridge
[0177] 290 annular rings
[0178] 350 gutter drain
[0179] 352 U-shaped saddle
[0180] 354 saddle first end
[0181] 356 saddle second end
[0182] 358 saddle bottom portion
[0183] 360 saddle side portion
[0184] 364 saddle outer surface
[0185] 362 saddle side portion
[0186] 366 saddle inner surface
[0187] 368 saddle hole
[0188] 370 mounting sleeve
[0189] 372 mounting sleeve upper end
[0190] 374 mounting sleeve lower end
[0191] 376 mounting sleeve bore
[0192] 378 nozzle
[0193] 380 nozzle proximal end
[0194] 382 nozzle distal end
[0195] 384 nozzle outer surface
[0196] 386 nozzle bore
[0197] 388 nozzle annular ridge
[0198] 390 annular rings
[0199] 392 elbow
[0200] 394 elbow bore
[0201] 450 gutter drain
[0202] 452 U-shaped saddle
[0203] 454 saddle first end
[0204] 456 saddle second end
[0205] 458 saddle bottom portion
[0206] 460 saddle side portion
[0207] 462 saddle side portion
[0208] 464 saddle outer surface
[0209] 466 saddle inner surface
[0210] 468 saddle hole
[0211] 470 mounting sleeve
[0212] 472 mounting sleeve upper end
[0213] 474 mounting sleeve lower end
[0214] 476 mounting sleeve bore
[0215] 478 nozzle
[0216] 480 nozzle proximal end
[0217] 482 nozzle distal end
[0218] 484 nozzle outer surface
[0219] 486 nozzle bore
[0220] 488 nozzle annular ridge
[0221] 490 annular rings
[0222] 492 elbow
[0223] 494 elbow bore
[0224] 550 gutter drain
[0225] 552 U-shaped saddle
[0226] 554 saddle first end
[0227] 556 saddle second end
[0228] 558 saddle bottom portion
[0229] 560 saddle side portion
[0230] 562 saddle side portion
[0231] 564 saddle outer surface
[0232] 566 saddle inner surface
[0233] 568 saddle hole
[0234] 570 mounting sleeve
1. A gutter drain, for use in connection with a gutter around an opening of a vehicle roof, the gutter having a generally horizontal floor and a pair of opposed side walls extending upward from the floor, the gutter having an inside surface, the gutter having a mounting hole therethrough, the gutter drain comprising:

- a generally U-shaped saddle extending between opposite first and second ends along a generally vertical saddle plane, the saddle having a bottom portion and a pair of opposed side portions extending upward from the bottom portion on either side of the saddle plane, the saddle having an outer surface and an opposite inner surface, the saddle outer surface being adapted to conform closely to the gutter inside surface, with the saddle bottom portion adjacent the gutter floor, and each of the saddle side portions adjacent a respective gutter side wall, the saddle side portions adapted to be resiliently biased outwardly against the gutter side walls, so as to seal the saddle against moisture leakage from the gutter, the saddle having a generally vertical saddle bore extending from the outer surface through to the inner surface;
- a mounting sleeve having an upper end attached to the saddle outer surface, the mounting sleeve extending downward to a lower end, the mounting sleeve being generally circular in cross-section, the mounting sleeve having a predetermined diameter, the mounting sleeve having a mounting sleeve central axis and a mounting sleeve bore therethrough in communication with the saddle hole;
- a nozzle having a proximal end disposed below the mounting sleeve lower end, the nozzle extending outward to a distal end, the nozzle being generally circular in cross-section, the nozzle having an outer surface, the nozzle having a nozzle central axis and a nozzle bore therethrough in communication with the mounting sleeve bore, the nozzle being adapted to receive a drain tube; and
- mounting means for mounting the gutter drain in the gutter-mounting hole.

2. The gutter drain of claim 1, wherein the mounting means further comprises:

- at least one flexible annular ring encircling the mounting sleeve, the annular ring having a predetermined diameter; and
- the mounting hole having a diameter greater than the mounting sleeve predetermined diameter, and less than the annular ring predetermined diameter; so that upon assembly, the mounting sleeve will be disposed over the mounting hole, the gutter drain will be driven downward by a hammer blow, the mounting sleeve will enter the mounting hole, the annular ring will deflect resiliently upward against the mounting hole, the saddle outer surface will be seated in the gutter, and the annular ring will be resiliently biased against the mounting hole, thereby retaining the gutter drain in the gutter and sealing the gutter drain against water leakage.

3. The gutter drain of claim 1, wherein the nozzle further comprises at least one annular ridge encircling the nozzle outer surface, the annular ridge being adapted to retain the drain tube on the nozzle.

4. The gutter drain of claim 1, wherein:

- the nozzle proximal end is attached to the mounting sleeve lower end; and
- the mounting sleeve central axis and the nozzle central axis are collinear.

5. The gutter drain of claim 1, further comprising:

- the mounting sleeve central axis and the nozzle central axis being disposed at a predetermined angle to one another; a nozzle plane defined by the mounting sleeve central axis and the nozzle central axis, the nozzle plane and the saddle plane being generally parallel; and
- an elbow joining the mounting sleeve and the nozzle, the elbow having a bore in communication with the mounting sleeve bore and the nozzle bore.

6. The gutter drain of claim 1, further comprising:

- the mounting sleeve central axis and the nozzle central axis being disposed at a predetermined angle to one another; a nozzle plane defined by the mounting sleeve central axis and the nozzle central axis, the nozzle plane and the saddle plane being generally perpendicular; and
- an elbow joining the mounting sleeve and the nozzle, the elbow having a bore in communication with the mounting sleeve bore and the nozzle bore.

7. A gutter drain, for use in connection with a gutter around an opening of a vehicle roof, the gutter having a generally horizontal floor and a pair of opposed side walls extending upward from the floor, the gutter having an inside surface, the gutter having a mounting hole therethrough with a predetermined diameter, the gutter drain comprising:
a generally U-shaped saddle extending between opposite first and second ends along a generally vertical saddle plane, the saddle having a bottom portion and a pair of opposed side portions extending upward from the bottom portion on either side of the saddle plane, the saddle having an outer surface and an opposite inner surface, the saddle outer surface being adapted to conform closely to the gutter inside surface, with the saddle bottom portion adjacent the gutter floor; and each of the saddle side portions adjacent a respective gutter side wall, the saddle side portions adapted to be resiliently biased outwardly against the gutter side walls, so as to seal the saddle against moisture leakage from the gutter, the saddle having a generally vertical caddie hole extending from the outer surface through to the inner surface; a mounting sleeve having an upper end attached to the saddle outer surface, the mounting sleeve extending downward to a lower end, the mounting sleeve being generally circular in cross-section, the mounting sleeve having a predetermined diameter, the mounting sleeve having a mounting sleeve central axis and a mounting sleeve bore therethrough in communication with the saddle hole; a nozzle having a proximal end disposed below the mounting sleeve lower end, the nozzle extending outward to a distal end, the nozzle being generally circular in cross-section, the nozzle having an outer surface, the nozzle having a nozzle central axis and a nozzle bore therethrough in communication with the mounting sleeve bore, the nozzle being adapted to receive a drain tube; and at least one flexible annular ring encircling the mounting sleeve for mounting the gutter drain in the gutter mounting hole, the annular ring having a diameter greater than the mounting hole predetermined diameter; so that upon assembly, the mounting sleeve will be disposed over the mounting hole, the gutter drain will be driven downward by a hammer blow, the mounting sleeve will enter the mounting hole, the annular ring will deflect resiliently upward against the mounting hole, the saddle outer surface will be seated in the gutter, and the annular ring will be resiliently biased against the mounting hole, thereby retaining the gutter drain in the gutter and sealing the gutter drain against water leakage.

8. The gutter drain of claim 7, wherein the nozzle further comprises at least one annular ridge encircling the nozzle outer surface, the annular ridge being adapted to retain the drain tube on the nozzle.

9. The gutter drain of claim 7, wherein:
   the nozzle proximal end is attached to the mounting sleeve lower end; and
   the mounting sleeve central axis and the nozzle central axis are collinear.

10. The gutter drain of claim 7, further comprising:
    the mounting sleeve central axis and the nozzle central axis being disposed at a predetermined angle to one another;
    a nozzle plane defined by the mounting sleeve central axis and the nozzle central axis, the nozzle plane and the saddle plane being generally parallel; and
    an elbow joining the mounting sleeve and the nozzle, the elbow having a bore in communication with the mounting sleeve bore and the nozzle bore, the elbow having an axis where the elbow and the nozzle are joined.

11. The gutter drain of claim 10, wherein the predetermined angle between the mounting sleeve central axis and the nozzle central axis is greater than ninety degrees, so as to minimize the mounting hole diameter, to facilitate installation of the gutter drain into the mounting hole, and to completely drain water in the event that the boat is heeled away from a level condition while in storage.

12. The gutter drain of claim 10, wherein the nozzle central axis is offset downward from the elbow axis, so as to minimize the mounting hole diameter, and to facilitate installation of the gutter drain into the mounting hole.

13. The gutter drain of claim 7, further comprising:
    the mounting sleeve central axis and the nozzle central axis being disposed at a predetermined angle to one another;
    a nozzle plane defined by the mounting sleeve central axis and the nozzle central axis, the nozzle plane and the saddle plane being generally perpendicular; and
    an elbow joining the mounting sleeve and the nozzle, the elbow having a bore in communication with the mounting sleeve bore and the nozzle bore, the elbow having an axis where the elbow and the nozzle are joined.

14. The gutter drain of claim 13, wherein the predetermined angle between the mounting sleeve central axis and the nozzle central axis is greater than ninety degrees, so as to minimize the mounting hole diameter, to facilitate installation of the gutter drain into the mounting hole, and to completely drain water in the event that the boat is heeled away from a level condition while in storage.

15. The gutter drain of claim 13, wherein the nozzle central axis is offset downward from the elbow axis, so as to minimize the mounting hole diameter, and to facilitate installation of the gutter drain into the mounting hole.

16. A gutter draining method for draining a gutter around an opening of a vehicle roof, the gutter having a generally horizontal floor and a pair of opposed side walls extending upward from the floor, the gutter having an inside surface, the gutter having a mounting hole therethrough with a predetermined diameter, the gutter draining method comprising the steps of:
    providing a gutter drain having a generally U-shaped saddle;
    extending a pair of opposed side portions upward from a bottom portion of the saddle;
    attaching a mounting sleeve to the saddle and extending the mounting sleeve downward;
    encircling the mounting sleeve with a plurality of flexible annular rings;
    disposing a nozzle below the mounting sleeve and extending the nozzle outward;
    juxtaposing the saddle over the gutter-mounting hole;
    striking the gutter drain with a hammer so that the mounting sleeve enters the gutter-mounting hole;
    driving the gutter drain downward with the hammer so that the saddle is seated in the gutter floor, and each of the saddle side portions is adjacent a respective gutter sidewall;
    biasing the saddle side portions resiliently outward against the gutter sidewalls;
    sealing the saddle against moisture leakage from the gutter with the biasing of the saddle side portions;
    allowing the flexible annular rings to bend upward in response to the mounting sleeve entering the gutter-mounting hole;
biasing the annular rings resiliently outward against the mounting hole;
retaining the gutter drain in the gutter with the biasing of the annular rings;
sealing the gutter drain against water leakage with the biasing of the annular rings; and
adapting the nozzle to receive a drain tube, for draining the gutter.

17. The gutter draining method of claim 16, further comprising the steps of:
encircling the nozzle outer surface with at least one annular ridge; and
adapting the annular ridge to retain the drain tube on the nozzle.

18. The gutter draining method of claim 16, further comprising the steps of:
disposing the nozzle collinear with the mounting sleeve; and
adapting the nozzle to receive the drain tube generally vertically, for draining the gutter downward.

19. The gutter draining method of claim 16, further comprising the steps of:
disposing the nozzle and the mounting sleeve at a predetermined angle to one another;
adapting the nozzle to receive the drain tube transversely, for draining the gutter transversely outward; and
joining the mounting sleeve and the nozzle with an elbow.

20. The gutter draining method of claim 19, further comprising the steps of:
setting the predetermined angle between the mounting sleeve central axis and the nozzle central axis to an angle greater than ninety degrees;
minimizing the mounting hole diameter by the angle greater than ninety degrees, thereby facilitating installation of the gutter drain into the mounting hole; and
draining water completely, by the angle greater than ninety degrees, in the event that the boat is heeling away from a level condition while in storage.

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