

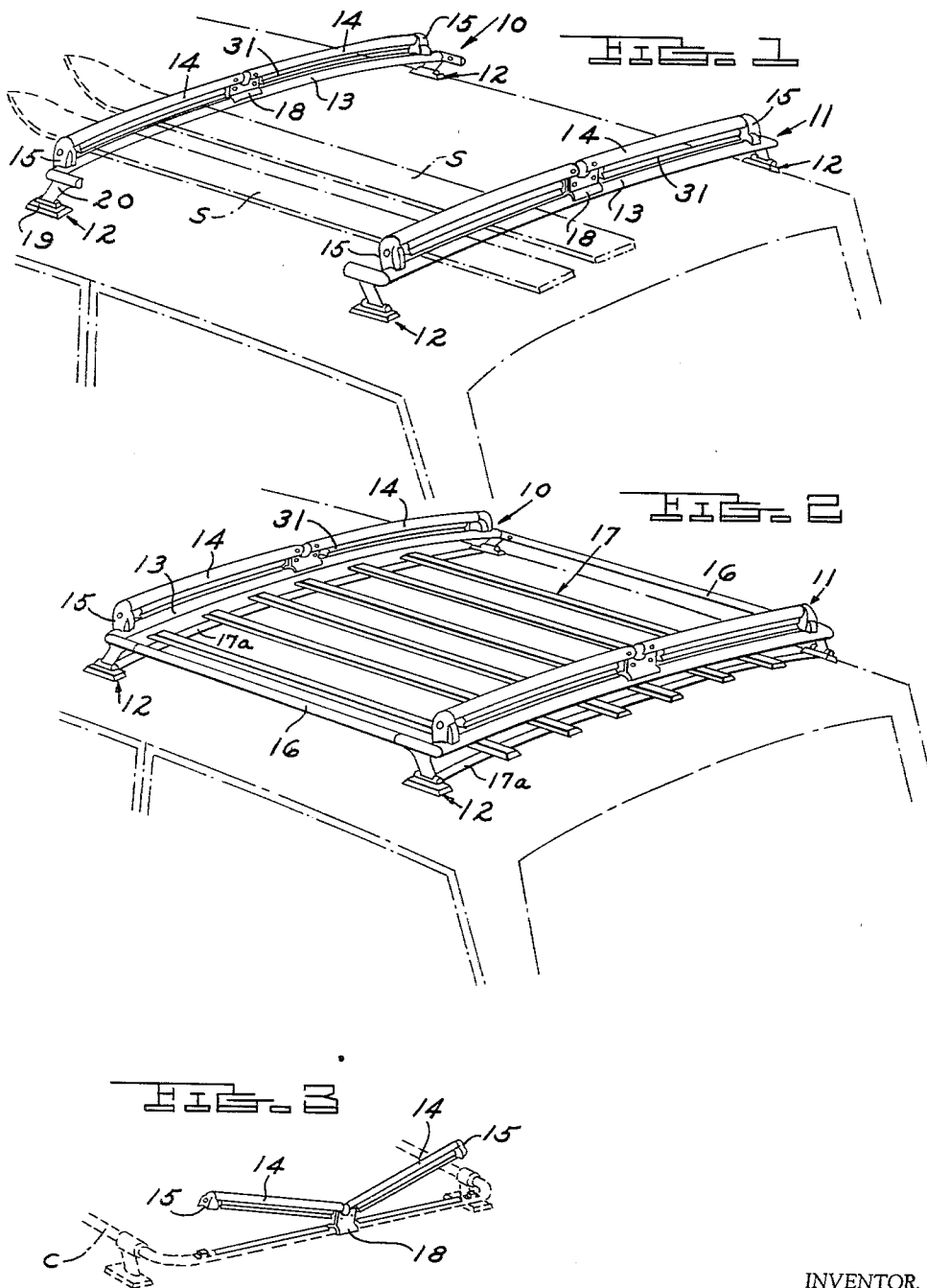
Dec. 14, 1965

F. A. HELM
CAR TOP SKI RACK

3,223,302

Filed Nov. 1, 1962

6 Sheets-Sheet 1



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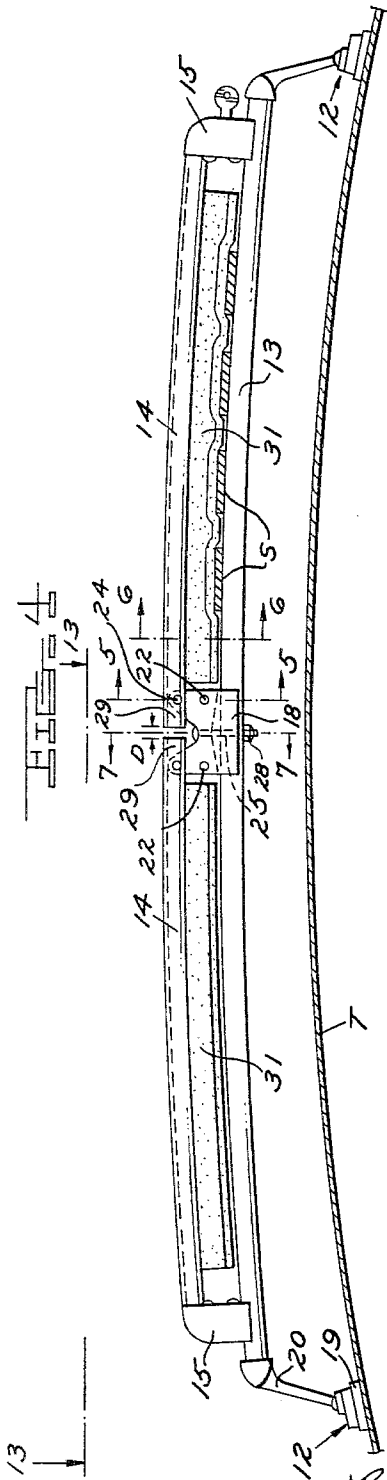
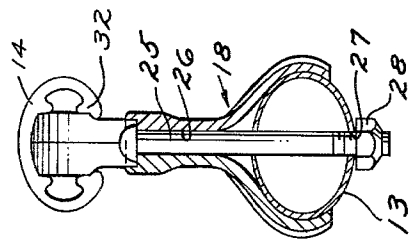
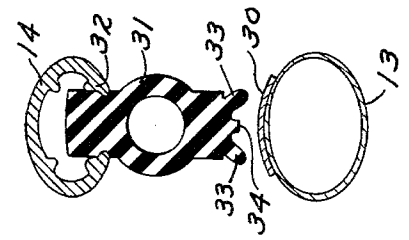
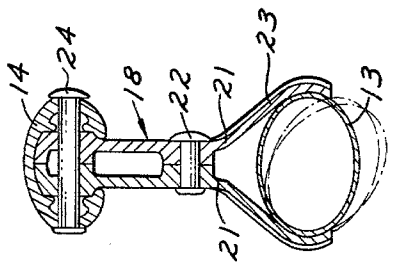
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6 Sheets-Sheet 2



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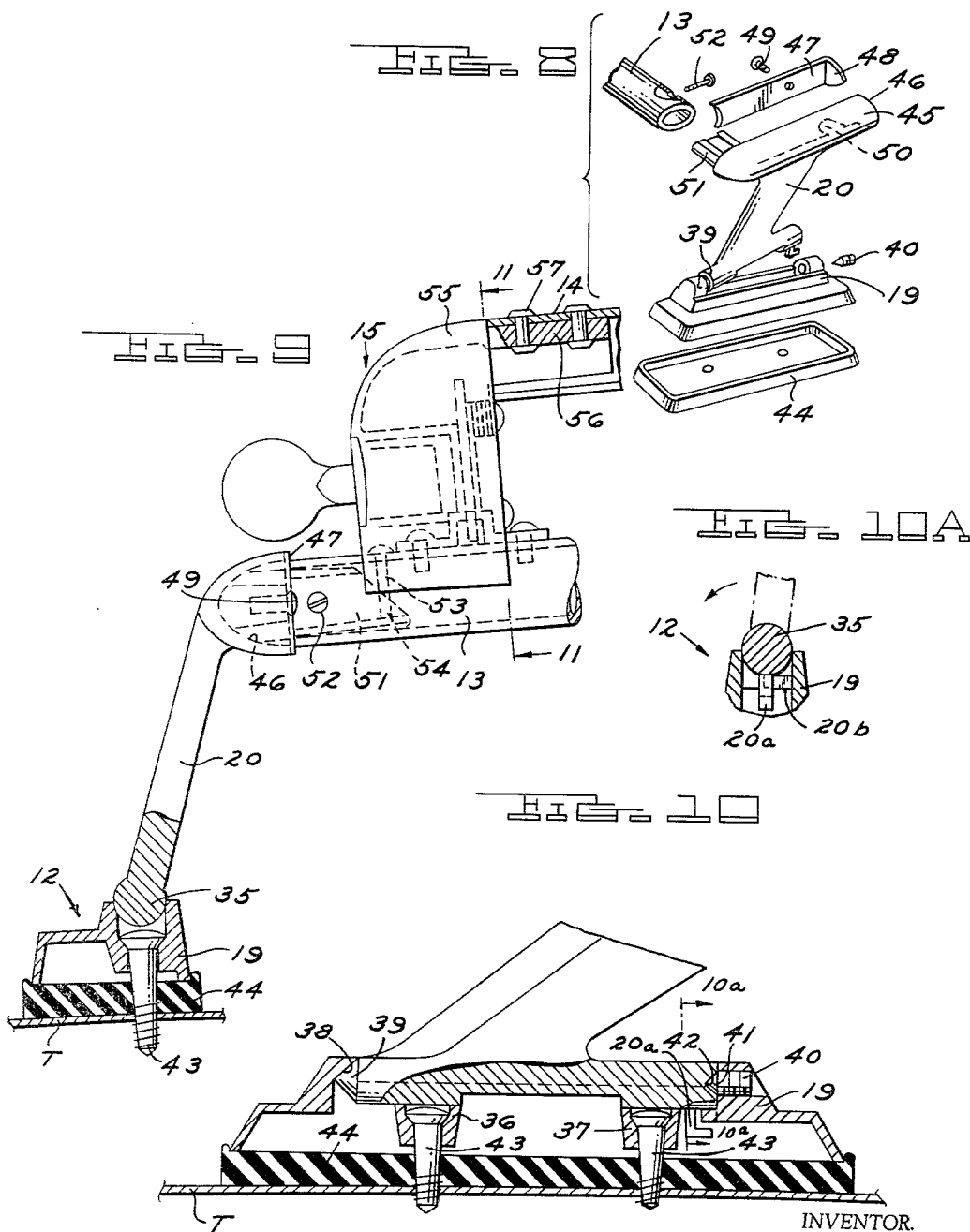
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6 Sheets-Sheet 3



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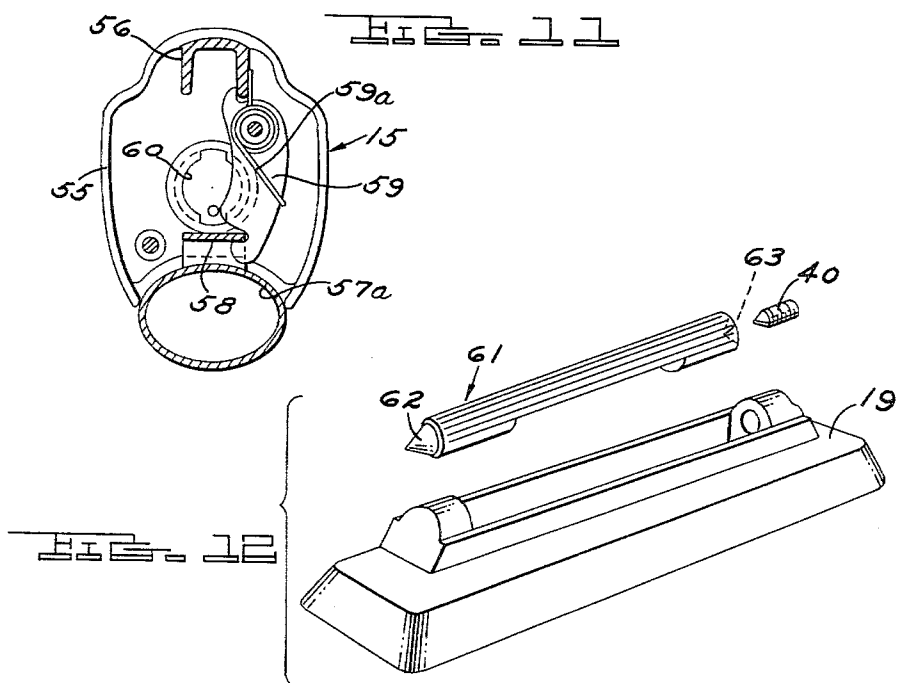
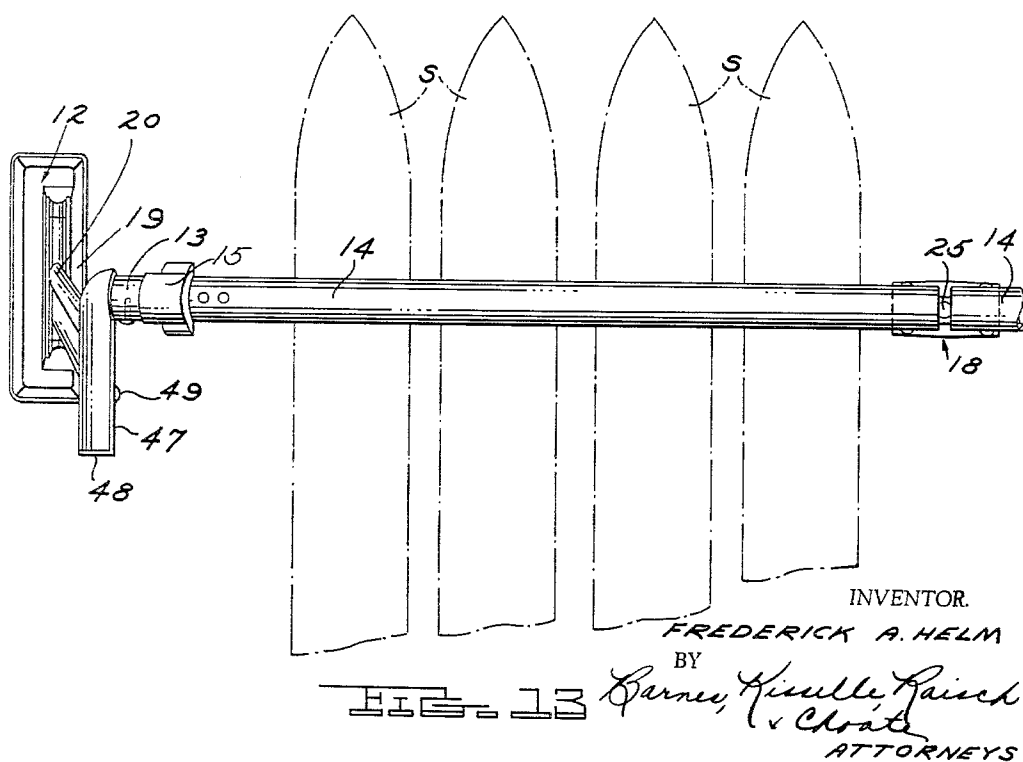
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CAR TOP SKI RACK

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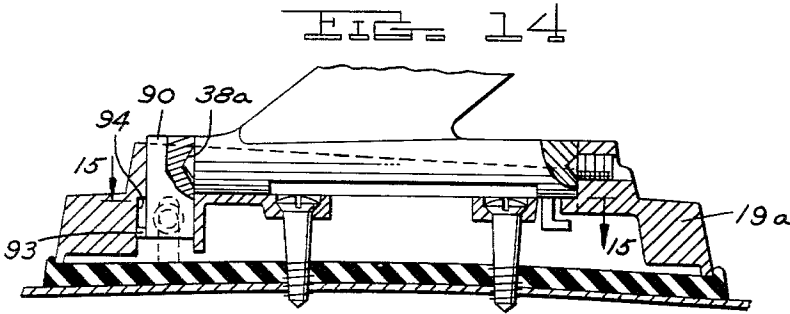
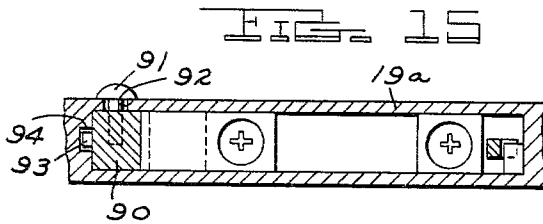
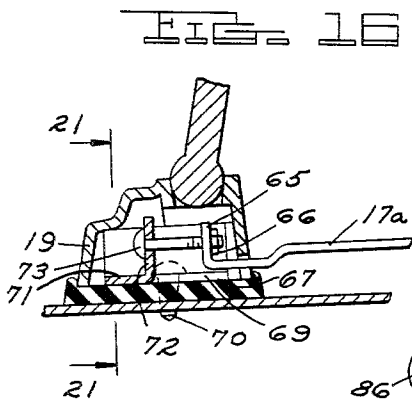
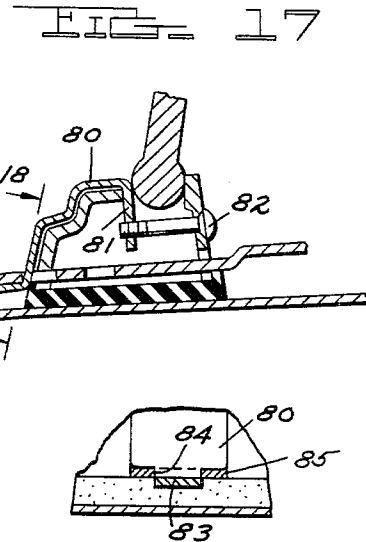
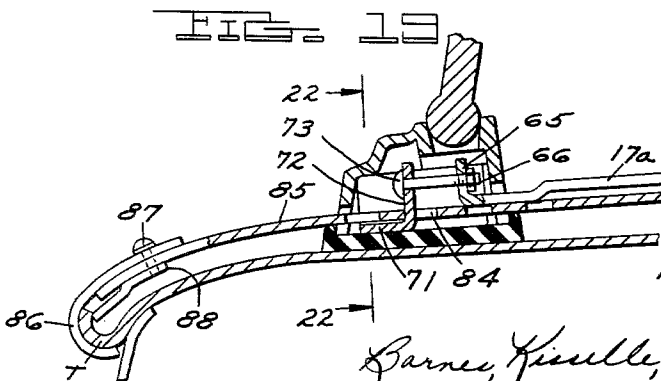
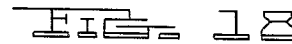
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6 Sheets-Sheet 5



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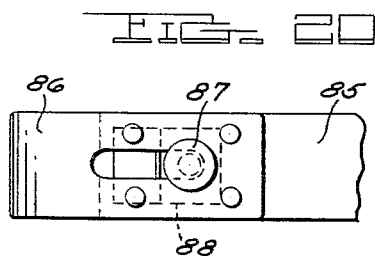
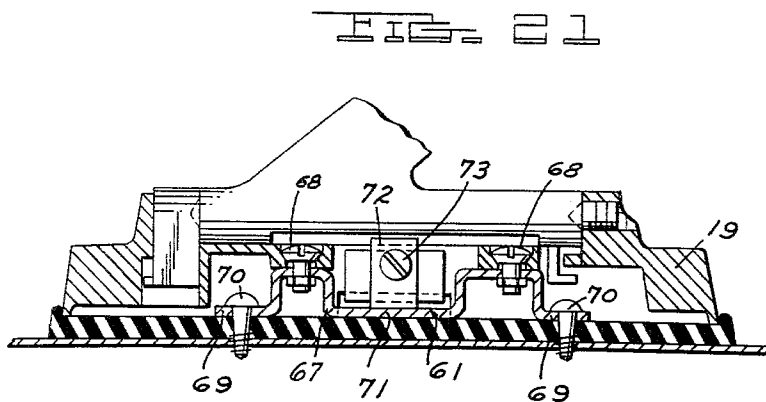
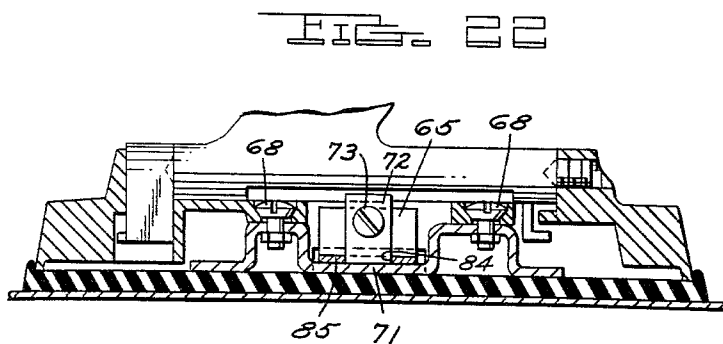
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6 Sheets-Sheet 6



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3,223,302

CAR TOP SKI RACK

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9 Claims. (Cl. 224-42.1)

This invention relates to ski racks and particularly to car top ski racks.

It is an object of this invention to provide a car top ski rack which is theft proof, light weight, low cost, attractive in appearance, can be readily converted to a luggage carrier, or can be adapted to present-day luggage carriers.

It is a further object of the invention to provide such a car top carrier which can be readily adapted to a variety of car tops having different curvatures.

In the drawings:

FIG. 1 is a perspective view of a car top ski rack embodying the invention.

FIG. 2 is a perspective view of the ski rack embodying the invention converted to use as a luggage carrier.

FIG. 3 is a fragmentary perspective view of the car top ski rack embodying the invention as applied to a conventional luggage carrier.

FIG. 4 is a transverse sectional view through a car top having a ski rack embodying the invention thereon.

FIG. 5 is a sectional view on an enlarged scale taken along the line 5-5 in FIG. 4.

FIG. 6 is a sectional view on an enlarged scale taken along the line 6-6 in FIG. 4.

FIG. 7 is a sectional view on an enlarged scale taken along the line 7-7 in FIG. 4.

FIG. 8 is an exploded view of a stanchion used in the ski rack embodying the invention.

FIG. 9 is a fragmentary part sectional view on an enlarged scale of one end of the ski rack embodying the invention.

FIG. 10 is a fragmentary longitudinal sectional view of the base shown in FIG. 9.

FIG. 10A is a fragmentary sectional view taken along the line 10A-10A in FIG. 10.

FIG. 11 is a sectional view taken along the line 11-11 in FIG. 9.

FIG. 12 is a perspective view of a modified base used when the ski rack is removed from the car top.

FIG. 13 is a fragmentary plan view on an enlarged scale taken along the line 13-13 in FIG. 4.

FIG. 14 is a fragmentary longitudinal sectional view similar to FIG. 10 showing a modified form of stanchion.

FIG. 15 is a fragmentary sectional view taken along the line 15-15 in FIG. 14.

FIG. 16 is a transverse sectional view of a stanchion shown in FIG. 2.

FIG. 17 is a transverse sectional view showing the manner in which the stanchions shown in FIG. 1 can be mounted on a car top by the use of straps.

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

FIG. 19 is a fragmentary transverse sectional view showing the manner in which the stanchions shown in FIG. 2 can be mounted on a car top by the use of straps.

FIG. 20 is a fragmentary plan view of a portion of the straps shown in FIGS. 17 and 19.

FIG. 21 is a fragmentary sectional view taken along the line 21-21 in FIG. 16.

FIG. 22 is a fragmentary sectional view taken along the line 22-22 in FIG. 19.

Referring to FIG. 1, the car top ski rack embodying the invention comprises at least two pairs of ski rack assemblies 10, 11 which are substantially identical but are positioned on the car top in opposed relation, as present-

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ly described. Each assembly 10, 11 includes opposed pairs of stanchions 12 between which cross rails 13 extend. In addition, each assembly 10, 11 includes arms 14 which are hinged at their inner ends to brackets 18 on the cross rails 13 and are adapted to be swung downwardly over skis laid on the cross rails 13 and locked to the cross rails by lock units 15.

As will be more readily understood hereinafter, the ski racks shown in FIG. 1 can be readily converted to a luggage carrier by the addition of side rails 16 extending between the longitudinally spaced stanchions 12 and a base 17 fastened to the stanchions 12.

As will be further understood, the subassembly comprising the arms 14, brackets 18 and lock units 15 can be adapted to the front rail of a car top carrier C of conventional construction as shown in FIG. 3.

As indicated above, the ski rack assemblies 10, 11 are of identical construction but are positioned oppositely facing one another. Referring to FIG. 4, which shows a ski rack assembly, each of the arms 14 is pivoted to brackets 18 fixed adjacent the center of the cross rail 13. Each stanchion 12 includes a base 19 and an upright 20 which is angularly adjustable about the longitudinal axis of the base 19 to permit the base 19 to be adjusted and thereby conform to car tops T of different curvatures.

As shown in FIG. 5, the bracket 18 comprises complementary members 21 which are preferably in the form of extrusions that are clamped together by spaced rivets 22 and have their lower ends 23 enlarged in such a manner that the cross rail 13, which is oval in cross section, can be inserted therebetween by a rotating action. This is shown in dotted lines in FIG. 5.

As further shown in FIGS. 5 and 7, each arm 14 is generally C-shaped in cross section and is hinged to bracket 18 by a rivet 24 at a point spaced from its inner end. The bracket 18 is fastened to the cross rail 13 by a bolt 25 that extends downwardly through an opening 26 therein and an opening 27 in the cross rail 13. A nut 28 is threaded on the lower end of the bolt 25.

In order to prevent access to the bolt when the arms 14 are in locked position on the cross rail 13, the inner ends 29 of the arms 14 extend beyond the pivot pins 24 sufficiently to overlie the head of the bolt 25. The space D between the inner ends (FIG. 4) is less than the width of the bolt head so that the bolt cannot be removed, even though the nut 28 is removed.

In order to frictionally hold the skis S between the arms 14 and cross rail 13, a friction strip 30 of preferably plastic tape is placed along the top surface of the cross rail 13 and a longitudinal extrusion of resilient material 31 is frictionally held between the inner ends 32 of the C-shaped arms 14. The strip 31 is preferably of hollow construction and has its lower end formed with ribs 33, 34 such that strip 31 is compressed and frictionally engages the top surface of the skis to hold the skis between the arms 14 and cross rail 13 with sufficient force to prevent them from being removed by a sliding movement transversely relative to the cross rails 13 and the arms 14.

Referring to FIGS. 8, 9 and 10, which show the specific construction of each stanchion 12, each lower end 35 of each upright 20 is in the form of a cylindrical rod that engages an arcuate seat defined by projections 36, 37 in the base 19. By this arrangement, the angular relationship of the upright 20 can be varied with respect to the base 19 in order to accommodate the ski rack to car tops of varying curvatures.

Each upright 20 is locked in angularly adjusted position relative to the base 19 by an arrangement which includes a conical seat 38 at one end of the base 19 into which a complementary conical projection 39 on one end of the cylindrical lower end 35 of upright 20 projects. A screw 40 at the other end of the base has a conical point 41

which is adapted to extend into a conical depression 42 at the other end of the cylindrical portion 35 to lock the upright in desired angular position.

It can be seen that by this arrangement the upright 20 can only be removed, after removal of the screw 40, by an angular swinging movement about an axis transverse to the longitudinal axis of the base 19. This feature is utilized in the ski rack shown in FIG. 1 to prevent removal of the skis when the screws 40 are removed. Thus, the stanchions 12 are positioned with the screws 40 facing oppositely one another, that is, with the projections 39 extending in opposite directions so that if the screws 40 are removed when the skis are in position, the uprights cannot be removed. Since the upright at one end must be moved by a swinging action rearwardly while the upright at the other end must be removed by a swinging action forwardly, the two actions oppose one another and it is impossible to remove the uprights and, in turn, the ski racks so that the skis are safe and the rack is theft proof.

Each base 19 is adapted to be fastened to the car top T by screws 43 which extend through projections 36, 37 and through a resilient pad 44 into the car top. As shown in FIG. 9, the cylindrical portion 35 of upright 20 overlies the screws so that the screws 43 are inaccessible when the uprights are in position.

As shown in FIGS. 8 and 9, the upper end of each upright 20 is enlarged as at 45 and formed with an arcuate seat 46. In the rack shown in FIG. 1, the face of the seat 46 is closed by a flat bracket 47 having an inwardly extending flange 48 that is held in position by a screw 49 threaded into a boss 50.

However, in the ski rack shown in FIG. 2, wherein the ski rack is converted to a luggage carrier, the bracket 47 is not used and the side rails 16 are oval in cross section and are adapted to be fastened on the seats 46 formed on the upper ends of the uprights 20 to be held in position by screws threaded into the bosses 50.

As further shown in FIGS. 8 and 9, the upper end 45 of each upright 20 is formed with an integral boss 51 in the base of the arcuate seat 46. The boss extends into and forms a support for the oval cross rail 13. A screw 52 is adapted to extend laterally through the side of the cross rail 13 into the boss 51.

Although the uprights 20 cannot be removed from the base 19 when the ski rack is in position holding skis, as described above, loosening or removal of the lock screws 40 (FIG. 10) permits angular movement of the uprights 20. In order to insure that the cross rail 13 will not be removed from the uprights by swinging the uprights angularly, a radial projection formed by a screw 53 on cross rail 13 is provided and is adapted to engage the tapered end 54 of the projection 51 and thereby prevent removal of the cross rail 13 from the upright 20 regardless of the angular movement of the upright 20 relative to the base 19. As shown in FIG. 9, the housing 55 of the lock unit 15 overlies the screw 53 to prevent its removal when the lock unit is in position clamping arm 14 on the cross rail 13.

As shown in FIGS. 8, 10 and 10A, in order to further prevent the removal of the upright 20 when it is swung outwardly, the lower end of the upright is formed with an L-shaped projection 20a which projects downwardly and in the direction of the screw 40. Projection 20a swings beneath a shoulder or ledge 20b in the base 19 when the upright 20 is swung outwardly or in the direction of the arrow as shown in FIG. 10A preventing any upward movement of the upright 20 and thus preventing removal of the upright 20.

In the form of the invention shown in FIG. 2, the cross straps 17a of the base 17 are fastened to the stanchions 12 in the manner shown in FIGS. 16 and 21. As shown in FIGS. 16 and 21, the ends of each cross strap 17a are bent upwardly as at 65 and a nut 66 is welded thereto. An intermediate bracket 67 is fixed to the base 19 by bolts

68 which extend through the openings in the base through which the screws that fasten the base to the car top normally extend. The bracket 67 includes downwardly bent end portions 69 through which mounting screws 70 extend and are threaded into the car top. In addition, the bracket 67 includes a central depressed portion 71 from which a flange 72 is bent upwardly. A screw 73 extends through the flange and an opening in the portion 65 of strap 17a and is threaded into the nut 66 to thereby fasten the end of the strap 17a to the base 19.

As shown in FIGS. 9 and 11, the lock unit 15 comprises a housing 55 mounted on a U-shaped member 56 which is fastened to the outer end of each arm by rivets 57. The underside of the housing 55 is formed with an elliptical seat 57 that engages the cross rail 13. The cross rail 13 is, in turn, provided with a U-shaped bracket that is riveted to the end thereof. A latch 59 is pivoted in the housing 15 and is adapted to engage the U-shaped bracket 58. The latch is spring loaded by a coil spring 59a. A key-operated tumbler lock 60 is used in connection with the latch to lock the latch in position. By this arrangement, the end of the arm is locked in a theft-proof manner to cross rail 13.

It can be readily understood that the conversion of the ski rack embodying the invention to a luggage rack can be made by the addition of the cross rail 16 and the base 17, the latter may be such as shown in my copending application Serial No. 197,403, filed May 24, 1962, titled Car Top Carrier.

A further feature of the invention is that the uprights 19 and associated cross rails 13 and arms 14 may be removed from the car top by removal of the screws 40 when the ski rack is not to be used and a decorative rod 61 which is generally cylindrical and has a conical end 62 and conical recess 63 on the ends thereof may be inserted in the base 19 for locking by set screw 40 so that the base 19 can be left on the car top with the rod 61 providing a decorative appearance. Further, this arrangement provides a handle which may be of value for access where the ski rack is used on low-slung cars such as sports cars. Serrations on the rod 61 not only improve the appearance thereof but, in addition, facilitate grasping the rod.

Instead of utilizing screws to hold the stanchions in the form of the invention shown in FIG. 1, straps may be used as shown in FIGS. 17 and 18. In this form of the invention, an auxiliary bracket 80 is provided over the stanchion and has a leg 81 that projects downwardly between the lower end of the stanchion 20 and the base 19. A screw 82 extends through the base and is threaded into the leg 81 to hold the bracket in position. Bracket 80 includes an upwardly bent tab 83 that is adapted to be selectively positioned in openings 84 provided at longitudinally spaced points on a strap 85. A hook 86 is adjustably mounted on the end of the strap by a screw 87 that extends through the strap 85 and is threaded into a retainer plate 88. The hook 86 engages the trough T of the car top with the plate 88 projecting into the trough to thereby lock the strap 85 in position.

In a similar fashion, the stanchions 12 in the form of the invention shown in FIG. 2 can be mounted by use of straps instead of screws. Thus, as shown in FIGS. 19 and 22, the upwardly bent portion 72 of bracket 71 is selectively positioned through one of the openings 84 in the strap 85. The free end of the strap 85 is mounted on the trough T in the same fashion as in FIGS. 17 and 18.

The stanchion shown in FIGS. 21 and 22 has the additional feature of being adjustable upwardly and downwardly to accommodate a longitudinal curvature in the car top. This is more specifically shown in FIGS. 14 and 15 where the stanchion 12 is provided with a separate piece 90 at one end thereof which is movable upwardly and downwardly and in which the conical seat 38 is provided. The piece 90 is locked in vertically ad-

justed position by a screw 91 extending through a vertical slot 92 in the base and threaded into the piece 90. The removal of the piece 90 by upward movement is prevented by a projection 93 that engages a shoulder 94 in the base.

It can thus be seen that there has been provided a ski rack which is theft-proof, light in weight, relatively inexpensive, which can be readily converted to a luggage car or adapted to conventional luggage carriers and, at the same time, can be mounted on car tops having varying curvatures.

This application is a continuation-in-part of my co-pending application Serial No. 197,403, filed May 24, 1962, and titled Car Top Carrier.

I claim:

1. In a car top ski rack, the combination comprising at least two pairs of opposed stanchions adapted to be mounted on a car top at longitudinally spaced points along the sides thereof, each said stanchion comprising a base and an upright extending upwardly from said base, each said base having a seat into which the lower end of each said upright extends, means for locking the lower end of each said upright with respect to said seat, said means being such that the upright can only be removed relative to the base by an arcuate movement longitudinally of the car top about a generally transverse axis, a cross rail extending between the upper ends of each pair of said uprights, an arm hinged to each said cross rail about one end thereof, means for locking the other end of each said arm with respect to its cross rail to clamp skis laid on the cross rails, said stanchions being so positioned that the uprights in one opposed pair of stanchions can only be removed by an upward and rearward swinging movement while the uprights in other opposed pairs of stanchions can only be removed by an upward and forward swinging movement.
2. The combination set forth in claim 1 including a second arm pivoted to each said cross rail at one end, means associated with the other end of said second arm for locking the other end of said arm to said cross rail, the arms being hinged to their respective cross rail at their inner ends, the means for hinging said arms comprising a bracket, a fastener extending through the bracket generally radially into said cross rail, the inner ends of the arms when the arms are in locked position extending axially of the cross rails toward one another and overlying said fastening means such that the fastening means cannot be removed.
3. In a car top ski rack, the combination comprising at least two pairs of opposed stanchions adapted to be mounted on a car top at longitudinally spaced points along the sides thereof, each said stanchion comprising a base and an upright extending upwardly from said base, each said base having a seat into which the lower end of each said upright extends, means for locking the lower end of each said upright with respect to said seat, said means being such that the upright can only be removed relative to the base by an arcuate movement longitudinally of the car top about a generally transverse axis, cross rails extending between the upper ends of said uprights, an arm hinged to each said cross rail about one end thereof, means for locking the other end of each said arm with

respect to its cross rail to clamp skis laid on the cross rails,

said stanchions being so positioned that the uprights in one opposed pair of stanchions can only be removed by an upward and rearward swinging movement while the uprights in other opposed pairs of stanchions can only be removed by an upward and forward movement,

said means for locking each said stanchion comprising a depression in said base at one end of the stanchion, a projection on one end of the upright adapted to extend into said depression,

and a locking member adapted to be moved into engagement with the other end of said upright, a portion of said base including said depression being movable upwardly and downwardly,

and means for locking said portion relative to said base, whereby said upright may be adjusted fore and aft of the base.

4. In a car top carrier, the combination comprising a stanchion for carrier rails adapted to be mounted on a car top,

each said stanchion comprising a base and an upright extending upwardly from said base,

each said base having a seat into which the lower end of each said upright extends, means for locking the lower end of each said upright with respect to said seat,

said means being such that the upright can only be removed relative to the base by an arcuate movement about a transverse axis,

said means for locking each said stanchion comprising a depression in said base at one end of the stanchion, a projection on the upright adapted to extend into said depression,

and a locking member adapted to be moved into engagement with the other end of the upright,

a portion of said base including said depression being movable upwardly and downwardly,

and means for locking said portion relative to said base,

whereby said upright may be adjusted fore and aft of the base.

5. In a car top ski rack, the combination comprising at least two pairs of opposed stanchions adapted to be mounted on a car top at longitudinally spaced points along the sides thereof,

each said stanchion comprising a base and an upright extending upwardly from said base,

each said base having a seat into which the lower end of each said upright extends,

means for locking the lower end of each said upright with respect to said seat,

said means being such that the upright can only be removed relative to the base by an arcuate movement longitudinally of the car top about a generally transverse axis,

cross rails extending between the upper ends of said uprights,

an arm hinged to each said cross rail about one end thereof,

means for locking the other end of each said arm with respect to its cross rail to clamp skis laid on the cross rails,

said stanchions being so positioned that the uprights in one opposed pair of stanchions can only be removed by an upward and rearward swinging movement while the uprights in other opposed pairs of stanchions can only be removed by an upward and forward movement,

and interengaging means between said base and said upright adapted to be engaged when the upright is swung outwardly relative to said base to prevent the removal of the upright.

6. In a car top carrier, the combination comprising a stanchion for carrier rails adapted to be mounted on a car top, each said stanchion comprising a base and an upright extending upwardly from said base, 5
each said base having a seat into which the lower end of each said upright extends, means for locking the lower end of each said upright with respect to said seat, 10
said means being such that the upright can only be removed relative to the base by an arcuate movement about a transverse axis, and interengaging means between said base and said upright adapted to be engaged when the upright is swung outwardly relative to said base to prevent the removal of the upright. 15

7. For use in a car top carrier having longitudinally spaced cross rails, the combination comprising a bracket adapted to be fixed on a cross rail, a pair of arms hinged at one end to said bracket, 20
means for locking the other end of each said arm to its respective cross rail to hold skis laid over said cross rail, means for fastening said bracket to a cross rail comprising a fastener extending downwardly through 25
the bracket generally radially into a cross rail and being inaccessible from the bottom of the cross rail, the inner ends of the arms when the arms are in locked position extending axially toward one another and overlying said fastening means such that the fastening means are inaccessible and cannot be removed. 30

8. In a car top ski rack, the combination comprising at least two pairs of opposed stanchions adapted to be mounted on a car top at longitudinally spaced points along the sides thereof, 35
each said stanchion comprising a base and an upright extending upwardly from said base, each said base having a seat into which the lower end of each said upright extends, means for locking the lower end of each said upright with respect to said seat, 40
said means being such that the upright can only be removed relative to the base by an arcuate movement longitudinally of the car top about a generally transverse axis, 45
a cross rail extending between the upper ends of each pair of said uprights, an arm hinged to each said cross rail about one end thereof, 50
means for locking the other end of each said arm with respect to its cross rail to clamp skis laid on the cross rails, said stanchions being so positioned that uprights in one opposed pair of stanchions can only be removed by an upward and rearward swinging movement while the uprights in other opposed pairs of stanchions can only be removed by an upward and forward swinging movement, 55
each said cross rail being tubular,

each said upright having a projection at the upper end thereof into which the tubular cross rail extends, means for fastening said tubular cross rail to said projection, 5
said projection having its end inclined with respect to the longitudinal and transverse axes of the cross rail, and a member extending radially into said tubular rail for engagement with said projection whereby any tipping movement of said upright relative to said cross rail in the event the upright is moved angularly of the base is insufficient to permit removal of the cross rail from the projection on the upper end of the upright.

9. In a car top carrier, the combination comprising a stanchion for carrier rails adapted to be mounted on a car top, 5
each said stanchion comprising a base and an upright extending upwardly from said base, each said base having a seat into which the lower end of each said upright extends, means for locking the lower end of each said upright with respect to said seat, 10
said means being such that the upright can only be removed relative to the base by an arcuate movement about a transverse axis, a cross rail extending between the upper ends of each pair of said uprights, 15
each said cross rail being tubular, each said upright having a projection at the upper end thereof into which the tubular cross rail extends, means for fastening said tubular cross rail to said projection, 20
said projection having its end inclined with respect to the longitudinal and transverse axes of the cross rail, and a member extending radially into said tubular rail for engagement with said projection whereby and tripping movement of said upright relative to said cross rail in the event the upright is moved angularly of the base is insufficient to permit removal of the cross rail from the projection on the upper end of the upright. 25

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