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F. A. HELM
CAR TOP CARRIER

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2 Sheets-Sheet 1

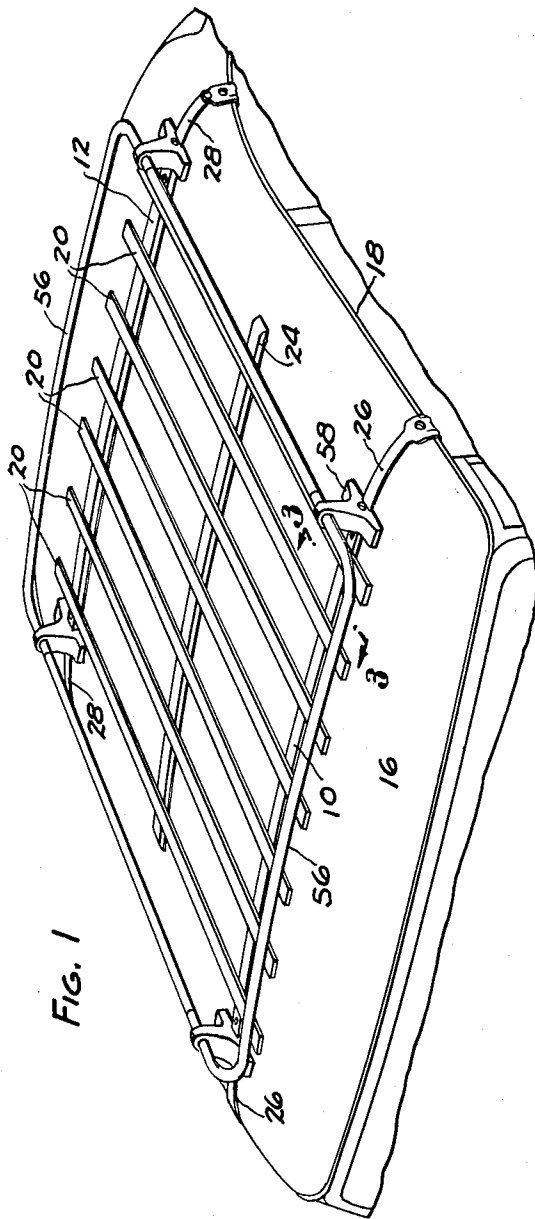


FIG. 1

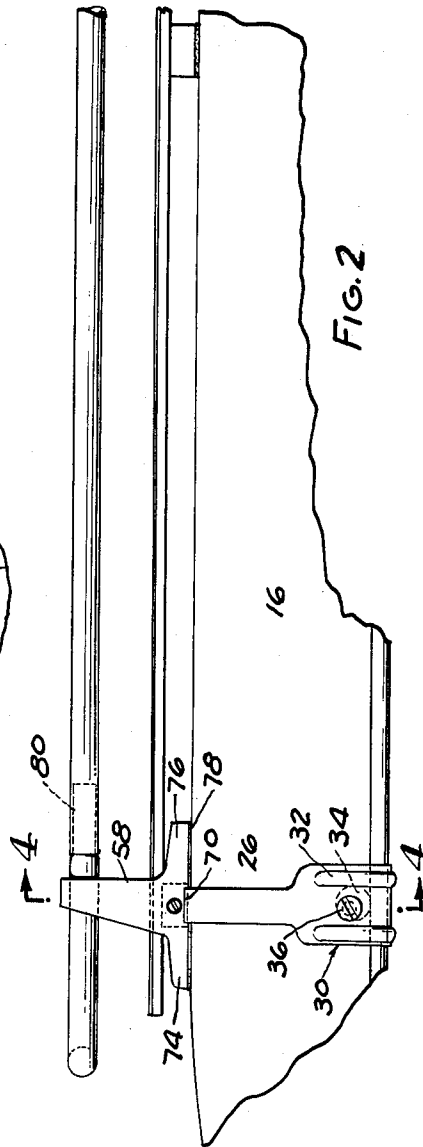


FIG. 2

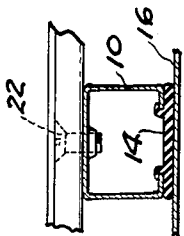


FIG. 3

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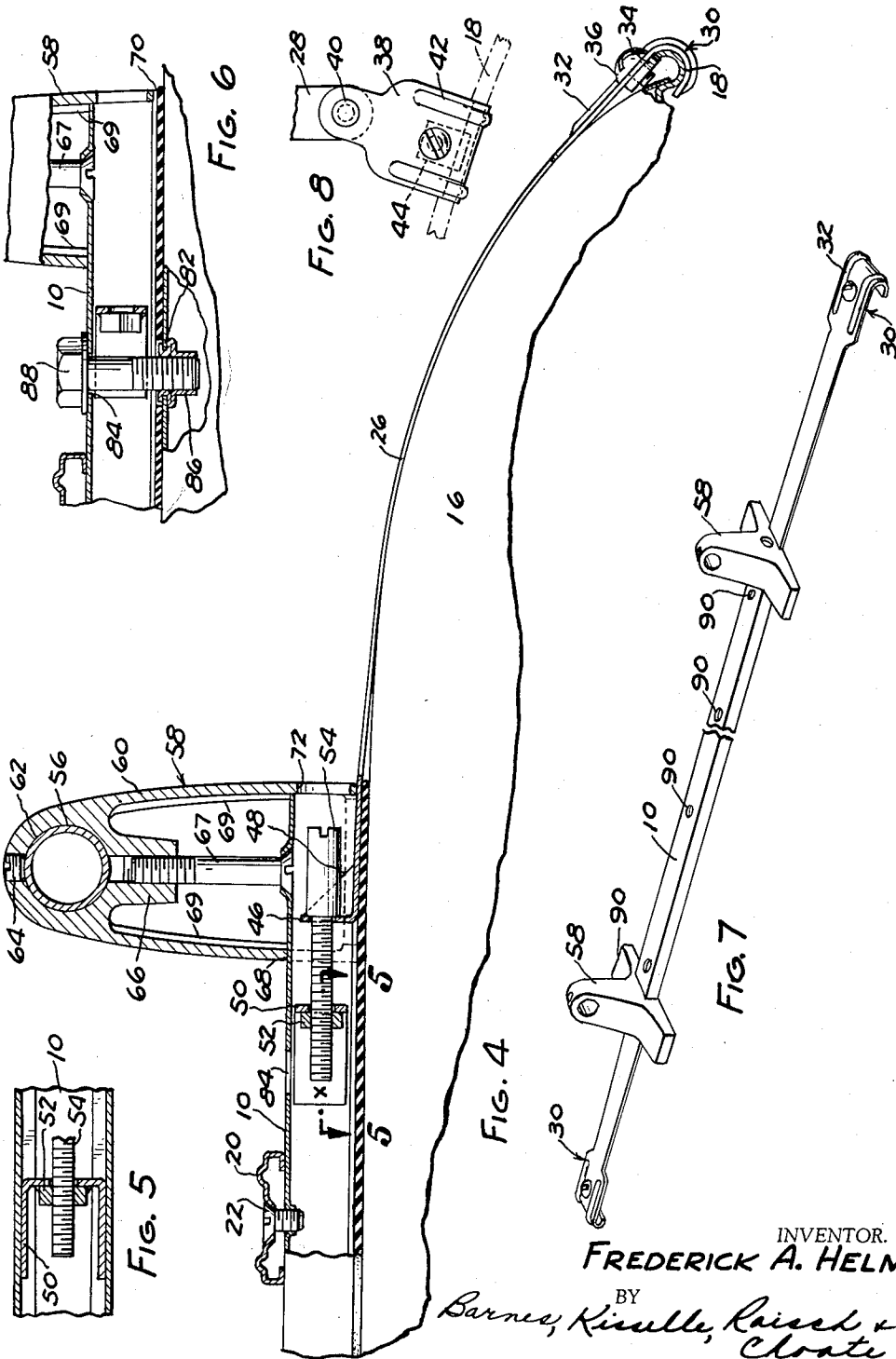
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CAR TOP CARRIER

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4 Claims. (Cl. 224—42.1)

This invention relates to car top carriers such as may be utilized for securing luggage, skis, boats or other paraphernalia to the top of a sedan or other similar hard-top motor vehicle. Carriers of this type are usually provided with large rubber suction cups arranged singly or in pairs at the opposite ends of rigid cross bars extending from side to side of the top. Hold-down straps are commonly utilized to exert downward tension on the ends of the cross bars from a suitable attachment point, usually the projecting drip rail commonly provided along the sides of a standard metal top. These constructions are rather cumbersome and awkward to use and they lack the neat and trim appearance which is afforded by a built-in luggage rack installed at the time the car is manufactured.

It is an object of the present invention to provide an improved car top carrier which may be utilized as a removable attachment and yet which provides a neat and trim appearance comparable to that of a factory installed carrier.

Another object is to provide a car top carrier in which an improved hold-down means is provided in a concealed location.

A further object is to provide a car top carrier of the class described which may be readily adapted to permanent installation as a built-in part of the car structure.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred form of the present invention is illustrated.

In the drawings:

Fig. 1 is a perspective view of a car top carrier incorporating a preferred form of the present invention.

Fig. 2 is a fragmentary side view of the structure illustrated in Fig. 1.

Fig. 3 is a fragmentary cross section on line 3—3 of Fig. 1.

Fig. 4 is a fragmentary cross section on line 4—4 of Fig. 2.

Fig. 5 is a cross section on line 5—5 of Fig. 4.

Fig. 6 is a view corresponding to Fig. 4 showing an alternate form of attachment.

Fig. 7 is a perspective view of a cross bar and hold-down means, and

Fig. 8 is a fragmentary view of a hold-down hook of the swivel type.

The carrier illustrated in Fig. 1 is in the form of a luggage rack and comprises front and rear main cross bars 10 and 12. These are preferably formed of a rolled metal channel such as illustrated in Fig. 3 and may carry a suitable cushion strip 14 of rubber or other plastic material to prevent damage to the vehicle finish.

The vehicle top 16 is provided with a conventional drip rail 18 along its perimeter which is situated below the upper portion of the top upon which the cross bars 10 and 12 are positioned. The luggage rack may comprise a plurality of longitudinal slats 20 which are secured to the cross bars 10 and 12 by screws 22. A third

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cross bar 24 may be provided at the mid portion of the slats and be of similar cross section to that shown in Fig. 3.

The hold-down means for the carrier comprise, in the present example, two pairs of tension members or hold-down straps 26 and 28. These extend between the drip rail 18 and the end portion of the cross bars 10 and 12 respectively, and are arranged to be tightened by a mechanism as described hereafter.

Referring now to Fig. 4, the hold-down strap 26 is provided at its end with an integral hook portion 30 which is adapted to embrace the drip rail 18. The portion 30 is formed in the shape of a J with the circular portion extending through no more than a semi-circle, so that it may be readily slid into engagement with the drip rail 18. The hook portion is formed with a pair of raised ribs 32 which serve to stiffen the hook.

An eccentric cam 34 is mounted for pivotal movement in the leg of the J and has a headed stem 36 provided with a slot for actuation by a screwdriver. The diameter and eccentricity of the cam 34 are such that when it is positioned at a maximum distance from the rail 18, there is adequate clearance to engage the hook over the rail. When the cam is turned to a position such as illustrated in Figs. 2 and 4, it engages the edge of the rail to tightly clamp the hook against disengagement.

The strips 28 are provided with pivoted hooked ends as shown in Fig. 8, the hook portion 38 being pivoted by means of a rivet 40 at the end of strap 28. The hook 38 is provided with upstanding ribs 42 and may be provided with a screw operated clamping nut 44 arranged to clamp against the inner surface of the drip rail.

The straps 26 and 28 may all be secured to the cross bars 10 and 12 by a tightening mechanism which is the same for all straps and is shown in Figs. 4 and 5. For this purpose, the straps are each formed with an upstanding lug 46 at their inner ends. The lug 46 may be braced by gusset members 48 of triangular shape at each side of the strap members.

Securely attached to the inside of the channel-shaped cross bars adjacent each end thereof is a bracket 50 which may be attached by spot welding to the sides of the channel from which bar 10 is formed. The bracket 50 carries welded or staked thereto a nut 52. A clamping screw 54 forms a connection between the lug 46 and the bracket 50 which may be adjustably tightened to hold down the entire assembly upon the roof 16.

Means 58 is provided for closing the open end of each of the cross bars 10 and 12 and conveniently this may also serve as a post or bracket for supporting an edge rail 56 of a luggage rack (Fig. 1). As shown in Fig. 4, the bracket 58 is formed with an upstanding column 60 which may be hollow and of rectangular or other desired shape and has a bore 62 at its upper end within which the edge rail 56 may be mounted and tightly clamped by a set screw 64.

The bracket 58 is formed with an internal boss 66 which has a threaded hole for the reception of a screw 67 which engages with the upper part of the cross rail 10 shown in Fig. 4. The lower portion of the bracket 58 has an opening 68 which is shaped to embrace the top and sides of the cross bars 10 and 12. At its opposite face, the bracket 58 has a small opening 70 (see Fig. 2) which is only large enough to receive one of the straps 26 and 28. An access hole 72 is also provided through which a screwdriver may be inserted to turn the clamping screw 54. A suitable removable closure plug, not shown, may be provided in each of the holes 72 so that the open end of the channel which forms cross rails may be completely closed for appearance purposes. The lower portion of the brackets 58 may be provided with fore-

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and-aft extensions or foot portions 74 and 76, which provide increased area of contact with the roof 16 and may be protected by a suitable pad 78. When clamped in place by screw 67 cross rail 10 seats against the lower ends of internal ribs 69 to provide a very rigid assembly.

The edge rail 56 is preferably formed in three sections including the front and rear sections which are bent into a U-shape and have a reduced diameter coupling section indicated at 80 in Fig. 2. The side sections may be straight and receive the reduced portions 80 into engagement therewith by a press fit. The set screws 64 also serve to prevent displacement of the telescoped connection.

In operation, the carrier may be installed with the clamping screws 54 loosened up and the unit otherwise completely assembled. It is placed upon the top 16 and the hooks 30 and 38 are engaged over the drip rail 18, their clamping means having been previously loosened for this purpose. After engagement, the clamping means 34 and 44 may be tightened to hold the hooks firmly in engagement with the rails 18. Thereupon, the screws 54 are progressively tightened to draw the rack down tightly upon the top 16 through the tension of the straps 26 and 28. After all of the screws 54 have been properly tightened so as to equalize and center the position of the carrier on the car top, the cover plugs may be replaced over the access holes 72.

If it is desired to mount the carrier without the use of the straps 26 and 28 in a way which makes it a permanent part of the vehicle, the construction shown in Fig. 6 may be utilized. Here the roof 16 is perforated by drilling holes 82 at points in register with the holes 84 provided in the cross rails 10 and 12. A threaded ferrule 86 of the self-swaging type may be positioned in the hole 82 and receive a bolt 88 for permanently holding the cross bar tightly down against the top.

The arrangement shown in Fig. 6 provides a very secure and satisfactory mounting with a minimum number of holes in the roof 16. Since the locking bolts 67 securely lock the brackets 58 and edge rail 56 to the cross bars 10 and 12, the whole rack assembly comprises in effect an integral unit. Thus the whole rack assembly can be securely mounted on the roof 16 with four screws 88. The brackets 58 need not be independently mounted on the roof 16 by separate screws which would require additional drilling.

If it is desired to utilize the carrier for purposes other than a luggage rack, the slats 20 and cross piece 24 may be omitted and ski holders, boat brackets, or other attachments may be secured to the cross bars 10 and 12 by threaded fastening holes shown at 90 in Fig. 7.

It will thus be seen that the present invention provides an improved car top carrier in which the appearance of a temporary attachment is not only avoided but also in which the hold-down means is readily accessible for tightening or loosening, and is nevertheless concealed

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within the structure of the rack itself. This provides a neat appearance, resembling that a factory-installed carrier without requiring any defacing of the vehicle roof in order to obtain a secure attachment. Nevertheless, the same carrier structure may be permanently attached to the vehicle roof if that is desired.

While the form of embodiment of the invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A car top carrier construction for attachment to a transversely curved vehicle roof surface having a drip rail at its lowermost side edges, a hollow metal cross bar adapted to rest upon the roof surface and having an open end, a bracket fixedly secured to the cross bar on the inside thereof and extending transversely across the interior thereof, means forming a threaded hole in the bracket which is axially aligned with the open end of the bar, a drip rail hook for engaging the drip rail, a hold-down strap having one end attached to the drip rail hook, the other end of said strap extending through the open end of the cross bar and having an upstanding lug thereon positioned within the hollow cross bar between said bracket and the open end of the cross bar, a clamp screw extending through said lug and engaging the threaded hole in the bracket, said clamp screw being disposed wholly within the cross bar and being accessible for turning through the open end of the cross bar.

2. A car top carrier construction as called for in claim 1 including a closure member overlying the end portion of the cross bar which is open, said closure member having an end portion through which the hold-down strap extends.

3. A car top carrier construction as called for in claim 1 including a closure member overlying and concealing the end portion of the cross bar which is open, said closure member having an end wall overlying the open end of the cross bar, said end wall having an access opening therein aligned axially with the clamp screw and the lower edge of said end wall having a shallow notch therein through which the hold-down strap extends.

4. A car top carrier construction as called for in claim 3 wherein the closure member comprises an upright stanchion secured to said end of the bar and an elevated side rail for the carrier secured to the upper end of the stanchion.

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