An accessory support assembly for securing an accessory to an accessory receiver assembly carried on a motor vehicle includes a mounting post and an accessory mounting bracket pivotally secured to the mounting post. The bracket is displaceable between two different positions. The mounting post is equipped with a spring loaded latch and a snagger screw.
UNIVERSAL ACCESSORY SUPPORT ASSEMBLY

This application claims the benefit of U.S. Provisional Patent Application Serial No. 60/378,116 filed May 15, 2002.

Technical Field

The present invention relates generally to the vehicle accessory field and, more particularly, to a universal accessory support assembly as well as to an accessory mounting post for such as support assembly.

Background of the Invention

Today's active lifestyles place some significant demands on both individuals and their vehicles. Many vehicles must be able to transport substantial cargo for family road trips. Other vehicles are used to haul bulky equipment to work, transport household or garden items and/or carry equipment and supplies for long camping weekends. No matter what type of vehicle an individual drives, there never seems to be enough room for everything needed or sufficient hours in a day to complete multiple trips.

In an effort to address the demands now being placed on individuals and their vehicles by more active lifestyles, Reese Products, Inc. developed the Dual Port System equipment for carrying various
useful accessories on a vehicle. Such accessories include, for example, bike carriers, open cargo carriers, closed cargo carriers, motorcycles carriers, lifts, transformer tables and the like.

The present invention relates to an improvement in the original Dual Port System equipment. Specifically, the present invention is an accessory support assembly and a mounting post for an accessory support assembly that provide enhanced versatility in hauling a wider range of useful vehicle accessories in a more effective and convenient manner.

Summary of the Invention

In accordance with the purposes of the present invention as described herein, an improved accessory support assembly is provided. Such an assembly may be beneficially utilized to secure substantially any accessory to an accessory receiver assembly carried on a motor vehicle.

The accessory support assembly includes a mounting post and an accessory mounting bracket that is pivotally secured to the mounting post so that the accessory mounting bracket is selectively displaceable. Specifically, the mounting bracket may be displaced into a first position where the mounting bracket extends in a substantially vertical plane so as to thereby project upwardly adjacent to the vehicle to which the assembly is mounted. Alternatively, the accessory mounting bracket may be displaced into a second position so that the bracket extends in a substantially horizontal plane. In this second position the bracket
projects outwardly from the vehicle.

More specifically describing the invention, the mounting post may comprise an elongated sleeve that functions to provide half of a male/female connection between the accessory support assembly and the accessory receiver assembly. The accessory support assembly may also include a latch carried on the mounting post for securing the support assembly to the receiver assembly. A pin secures the latch to the mounting post and allows the latch to pivot with respect thereto. The latch may include a first sidewall, a second sidewall, an actuator and a latch element. The actuator and latch element connect the first and second sidewalls. The pin is received in aligned apertures in the first and second sidewalls of the latch and the mounting post.

A spring is provided for biasing the latch into a locking position. The spring includes first and second ends secured to the latch element, a median portion engaging the mounting post and two intermediate portions between the median portion and the first and second ends engaging the pin. The mounting post includes a notch. The latching element is received in the notch when the latch is in the locking position.

Still further, a snugger is carried on the mounting post. The snugger may be adjusted to provide for tight engagement between the support assembly and the accessory receiver assembly. In the embodiment illustrated the snugger comprises a bolt/screw and cooperating jam nut that may be loosened or tightened to snug the support assembly against the receiver assembly and prevent any
tendency for the support assembly to rattle on the receiver assembly.

In accordance with still another aspect of the present invention, an accessory mounting post is provided for securing an accessory to an accessory receiver assembly carried on a motor vehicle. The accessory mounting post may be broadly described as comprising a sleeve-like body including a notch and a latch pivotally secured to the body. The latch includes a latch element that is received in the notch when in a locking position.

In the following description there is shown and described a preferred embodiment of the invention that is illustrative of one of the modes best suited to carry out the invention. As it will be realized, the invention is capable of other different embodiments and its several details are capable of modification in various, obvious aspects all without departing from the invention. Accordingly, the drawings and descriptions will be regarded as illustrative in nature and not as restrictive.

**Brief Description of the Drawings**

The accompanying drawings incorporated in and forming a part of the specification illustrate several aspects of the present invention, and together with the description serve to explain the principles of the invention. In the drawings:

Figure 1 is an exploded perspective view showing the universal accessory support assembly of the present invention along with a utilitarian accessory and an accessory receiver assembly.
Figure 2 is an exploded perspective view of the universal accessory support assembly of the present invention;

Figure 3a is a detailed, fragmentary perspective view of the accessory support assembly shown in Figure 1 connected to a post of a hitch receiver assembly;

Figure 3b is a fragmentary, partially cross-sectional view showing the details of the connection made in Figure 3a;

Figure 4a is a detailed, fragmentary perspective view of the accessory support assembly of the present invention connected to a round tube receiver of a receiver assembly;

Figure 4b is a fragmentary, partially cross-sectional view of the connection shown in Figure 4a;

Figure 5a is a side elevational view showing the mounting bracket in the first or raised position; and

Figure 5b is a side elevational view showing the mounting bracket in the second or lowered position.

Reference will now be made in detail to the present preferred embodiment of the invention, an example of which is illustrated in the accompanying drawings.

Detailed Description of the Invention

Reference is now made to Figure 1 which is an exploded perspective view illustrating the accessory support assembly 10 of the present invention utilized to secure an accessory A such as the open cargo carrier illustrated to a receiver assembly 12 of the type known in
the art that is secured to the frame of a motor vehicle.

As best shown in Figure 2, the receiver assembly 12 includes a cross member 14 of tubular steel or other relatively lightweight, high strength material. A pair of mounting brackets 16, also formed of steel or other high strength material, are secured to the cross member by welding or by appropriate fasteners. Each mounting bracket 16 includes mounting lugs 18 with cooperating apertures 20. The apertures 20 are aligned with apertures in the frame of the motor vehicle and the receiver assembly 12 is secured to the motor vehicle with appropriate fasteners (not shown) received and held in those aligned apertures.

The receiver assembly 12 also includes a pair of spaced receivers 20 in the form of projecting bars 22. Each bar 22 includes a rounded tip 24 and a locking notch 26, the significance of which will be described in greater detail below. Of course, the receiver assembly 12 may also optionally include a trailer hitch receiver box 28 in order to allow the towing of a trailer.

As best shown in Figure 2, the articulated accessory support assembly 10 includes a mounting post 30 that may have a sleeve-like body. The mounting post 30 includes a first sidewall 32, a second sidewall 34 opposing the first sidewall, a third sidewall 36 and a fourth sidewall 38 opposing the third sidewall. Together, the sidewalls 32, 34, 36 and 38 define an internal lumen or tubular opening 40 that may be rectangular in shape. A notch 42 is formed in the fourth sidewall 38 and extends partially into the first and second sidewalls 32, 34. A
series of apertures 44 extend through the first and second sidewalls 32, 34.  

A latch, generally designated by reference numeral 46, is pivotally secured to the mounting post 30. The latch 46 includes a first sidewall 48, a second sidewall 50, a latch element 52 and an actuator 54. As shown, the latch element 52 and actuator 54 connect the first and second sidewalls 48, 50.  

A pin 56 is received in aligned apertures 58 in the first and second sidewalls 48, 50 and in the mounting post 30. The pin 56, which pivotally connects the latch 46 to the post 30, may take the form of a rivet if desired. One or more washers 57 may be provided to ensure the integrity of the connection.  

A spring 62 is provided to bias the latch 46 into a locking position. The spring 62 includes first and second ends 64 that are secured to the latch element 52, a median portion 66 that engages the fourth sidewall 38 of the body 30 and two intermediate portions 68 between the median portion 66 and the two ends 64 that engage the pin 56. As should be appreciated the latch 46 is biased by the spring 62 so that the latch element 52 passes into and is freely received in the notch 42 in the mounting post 30.  

An accessory mounting bracket 70 is pivotally secured to the mounting post 30. More specifically, a pivot pin 72 (e.g. a rivet) is engaged in aligned apertures 74 in the mounting bracket 70 and the first and second sidewalls 32, 34 of the mounting post 30 to provide the pivotal connection. A pair of nylon washers 73 provide a low friction
interface to ensure smooth pivoting action while one or more steel washers 75 reinforce the connection.

As illustrated, the accessory mounting bracket 70 includes an accessory mounting flange 78 incorporating a series of spaced apertures 80. An accessory A is mounted to the flange 78 by means of fasteners 82 that engage the accessory A and the apertures 80 in the mounting flange 78 (see also Figure 1). Cooperating nut and bolt fasteners are particularly useful for this purpose. As further illustrated, the mounting bracket 70 also includes a second flange 84 which opposes the mounting flange 78.

As should be appreciate from viewing drawing Figures 5a and 5b, the mounting bracket 70 is selectively displaceable with respect to the mounting post 30 between first and second positions. As illustrated in Figure 5a, in the first position the mounting bracket 70 extends in a substantially vertical plane with the end 86 of the mounting flange 78 engaging the third sidewall 36 of the mounting post 30 and acting as a stop. In the second position illustrated in Figure 5b, the mounting bracket 70 extends in a substantially horizontal plane with the inner face of the second flange 84 engaging the fourth sidewall 38 of the mounting post and acting as a stop.

In use, an articulated accessory support assembly 10 is mounted on each receiver 20 of the vehicle receiver assembly 12 (see Figures 3a and 3b). Specifically, the individual depresses the actuator 54 thereby pivoting the latch 46 so that the latch element 52 is brought into substantial alignment with the fourth sidewall 38. The open end of the opening 40 in the mounting post 30 is then positioned over the receiver
20. The rounded tip 24 aids the user in aligning the opening 40 over the receiver 20 and seating the mounting post 30 against the stop 23 so that the notch 42 in the post is aligned with the notch 26 in the receiver. The actuator 54 is then released and the spring 62 biases the latch 46 to bring the latch element 52 into engagement with the notch 26. This serves to lock the accessory support assembly 10 in position on the receiver assembly 12. Of course, these same steps are repeated to connect the second accessory support assembly 10 to the other receiver 20.

Following connection of the two accessory support assemblies 10, the mounting brackets 70 are both positioned in the second, transport position wherein the brackets 70 extend in a substantially horizontal plane (see Figure 5b). Specifically, the mounting brackets 70 are pushed downwardly until the second flanges 84 engage the fourth sidewalls 38 of the mounting posts 30. A pin 90 is inserted in the aligned apertures 86, 88 in the bracket 70 and post, respectively, and a clip 92 is inserted on the pin 90 to secure the pin in position. This serves to anchor the mounting brackets 70 in the second, horizontally extending position.

An accessory A may then be mounted on the brackets 70. As illustrated in the drawing figures, that accessory A may take the form of an open cargo carrier. It should be appreciated, however, that substantially any other type of vehicle accessory may be mounted on the mounting brackets 70 which provide spaced horizontal supports by means of the mounting flanges 78 and spaced apertures 80 in those flanges to allow versatility for mounting different types of accessories.
More specifically, the accessory A is positioned on the mounting flanges 78 of the mounting brackets 70 and mounting apertures in the accessory are aligned with the apertures 80 in those flanges. Fasteners 82 are then utilized to anchor the accessory A to the flanges 78.

As a result of manufacturing tolerances or the use of different product dimensions by different manufacturers, some slight play may exist in the connection of the mounting posts 30 on the receivers 20. In order to eliminate this play and any possible rattle that might result, each accessory support assembly 10 is also provided with a snugger, generally designated by reference numeral 94. As illustrated, the snugger comprises a screw 96 that threadedly engages an aperture 98 provided in the fourth sidewall 38 of the post 30 between the latch element 52 and the actuator 54. A jam nut 100 is threaded to the screw 96 between the head of the screw and the sidewall 38. When the mounting post is fully received on the receiver 20 and the latch element 52 is engaged in the notch 26, this screw is tightened until the end of the screw 102 tightly abuts the edge of the receiver 20 so that the receiver is held by pressure between the end of the screw 102 and the inner side of the third sidewall 36. The jam nut 100 is then tightened against the sidewall 38 to prevent the screw 102 from loosening. In this way any potential for ratting may be eliminated and the accessory A is then ready for use.

As should be appreciated, when in the second, horizontal position, the accessory A does project rearwardly from the vehicle. There may be situations where this rearward projection creates a clearance problem such as when attempting to park the vehicle in a
relatively short garage. In such a situation, the accessory may interfere with, for example, the closing of the garage door. Advantageously as a result of the articulated design of the accessory support assembly 10, the present invention allows the accessory A to be folded upwardly into a substantially vertical plane along the rear of the vehicle thereby reducing the distance the accessory projects from the vehicle and allowing clearance for closing the garage door (see Figure 5a). This is a distinct advantage as it eliminates the need for the user to completely remove the accessory from the vehicle.

Specifically, the clips 92 are removed from the pins 90. Next the pins 90 are removed from the apertures 86, 88. The mounting brackets 70 are then displaced to the first position so that they extend in a substantially vertical plane. As a result the accessory A is also pivoted into a vertical plane so that it extends upwardly adjacent to the end of the vehicle. This substantially reduces the distance the accessory projects from the end of the vehicle and allows added clearance. The brackets 70 and accessory A may be anchored in this upright position by again using the pins 90 and clips 92. Specifically, each bracket 70 includes a notch 104 that is aligned with the apertures 88 when the brackets 70 are in the raised position. A pin 90 is inserted in the aligned notch 104 and apertures 88 of each support assembly 10 and the clips 92 are engaged on the pins to hold them in position. As a result, the mounting brackets are anchored in the upright or storage position.

The foregoing description of a preferred embodiment of the invention has been presented for purposes of illustration and
description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Obvious modifications or variations are possible in light of the above teachings.

For example, as illustrated in Figures 4a and 4b, the mounting posts may also be received and held in tubular shaped receivers 20. More particularly, the receiver assembly 120 is equipped with receivers 122 having a tubular configuration defining a circular opening 124. As should be appreciated, the third and fourth walls 36, 38 of the mounting posts are arcuate and may, for example, have a radius of curvature of approximately two inches: that is, slightly less than the diameter of the opening 124. As a result, after removing the snuggers 94 the mounting posts 30 are freely received and slide into the openings 124 of the receivers 122. When the mounting posts are fully seated in the receivers 122, one of the apertures 44 in the posts are aligned with cooperating apertures 126 in the sidewall of the receivers 122. A connecting pin 128 is then inserted through the aligned apertures and a clip 130 is then inserted in the end of the connecting pin 128. The head 132 of the pin 128 and the clip 130 hold the pin in position so that the mounting post is positively secured to the receiver 122.

As a result of the two embodiments shown, it should be appreciated that the accessory support assembly 10 of the present invention may be mounted to different types of receivers 20, 122 without difficulty. This also increases the versatility of the present invention.

The embodiments were chosen and described to provide the best illustrations of the principles of the invention and its practical
application to thereby enable one of ordinary skill in the art to utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. All such modifications and variations are within the scope of the invention as determined by the appended claims when interpreted in accordance with the breadth to which they are fairly, legally and equitably entitled.
In the Claims

1. An accessory support assembly, comprising:
   a mounting post;
   an accessory mounting bracket pivotally secured to said mounting post so that said accessory mounting bracket is selectively displaceable between a first position and a second position.

2. The accessory support assembly of claim 1, further including a latch carried on said mounting post for securing said accessory support assembly to an accessory receiver assembly secured to a vehicle.

3. The accessory support assembly of claim 1, wherein said accessory mounting bracket includes at least one mounting flange including a series of mounting apertures.

4. The accessory support assembly of claim 1, wherein said mounting post comprises an elongated sleeve.
5. The accessory support assembly of claim 4, further including a latch carried on said mounting post for securing said accessory support assembly to an accessory receiver assembly secured to a vehicle.

6. The accessory support assembly of claim 5, further including a pin for securing said latch to said mounting post.

7. The accessory support assembly of claim 6, wherein said latch includes a first sidewall, a second sidewall, an actuator and a latch element, said actuator and latch element connecting said first and second sidewalls.

8. The accessory support assembly of claim 7, wherein said pin is received in aligned apertures in said first sidewall, said second sidewall and said mounting post.

9. The accessory support assembly of claim 8, further comprising a spring for biasing said latch into a locking position.

10. The accessory support assembly of claim 9, wherein said spring includes first and second ends secured to said latch element, a median portion engaging said mounting post and two intermediate portions between said median portion and said first and second ends engaging said pin.
11. The accessory support assembly of claim 10, wherein said mounting post includes a notch, said latching element being received in said notch when said latch is in said locking position.

12. The accessory support assembly of claim 2, further including a snugger carried on said mounting post for tightly engaging said accessory support assembly on said accessory receiver assembly.

13. The accessory support assembly of claim 12, wherein said snugger comprises a bolt/screw and cooperating jam nut.

14. The accessory support assembly of claim 1, wherein said mounting post includes at least one aperture extending through said mounting post.

15. The accessory support assembly of claim 1, wherein said mounting post includes at least two, opposed arcuate sidewalls.

16. An accessory support assembly, comprising:
   a mounting post;
   an accessory mounting bracket; and
   a pivot pin engaging said mounting post and said accessory mounting bracket whereby said accessory mounting bracket is pivotally connected to said mounting post for selective displacement between a first position and a second position.
17. An accessory mounting post for securing an accessory to an accessory receiver assembly carried on a motor vehicle, comprising:
   a sleeve-like body including a notch; and
   a latch pivotally secured to said body, said latch including a latch element received in said notch when in a locking position.

18. The accessory support assembly of claim 17, further including a pin for securing said latch to said body.

19. The accessory support assembly of claim 18, wherein said latch also includes a first sidewall, a second sidewall and an actuator, said actuator and said latch element connecting said first and second sidewalls.

20. The accessory support assembly of claim 19, wherein said pin is received in aligned apertures in said first sidewall, said second sidewall and said body.

21. The accessory support assembly of claim 20, further comprising a spring for biasing said latch into said locking position.

22. The accessory support assembly of claim 21, wherein said spring includes first and second ends secured to said latch element, a median portion engaging said mounting post and two intermediate portions between said median portion and said first and second ends
engaging said pin.

23. The accessory support assembly of claim 22, further including a snagger carried on said body for tightly engaging said accessory support assembly on said accessory receiver assembly.

24. The accessory support assembly of claim 23, wherein said snagger comprises a bolt/screw and cooperating jam nut.

25. The accessory support assembly of claim 24, wherein said body includes a first sidewall, a second sidewall opposing said first sidewall, a third sidewall and a fourth sidewall opposing said third sidewall.

26. The accessory support assembly of claim 25, wherein said notch is formed at least partially in three of said sidewalls.

27. The accessory support assembly of claim 25, further including at least one aperture extending through said first and second sidewalls.

28. The accessory support assembly of claim 25, wherein said third and fourth sidewalls are arcuate.