FLAT SCREEN TV BRACKET FOR A VEHICLE

In one preferred embodiment, a mounting bracket is described for a thin profile media display. The mounting bracket includes a wall mounting plate which supports a pivotable, jointed arm that is connected to a display (e.g., an LCD TV). The jointed arm can be selectively locked in place with user adjustable knobs that rotate on a joint-forming pin to lock or unlock the joint from movement. Further, the arm includes a spring biased locking pin that locks the bracket into a folded or retracted position. In this respect, the position retaining mechanisms of the bracket for repositioning of a display, as well as maintain the position of the display during travel.
FLAT SCREEN TV BRACKET FOR A VEHICLE

RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Application Ser. No. 60/821,105 filed Aug. 1, 2006 entitled Flat Screen TV Bracket For A Vehicle which is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] Thin profile media displays such as televisions or computer monitors utilizing LCD or plasma technologies for example, are becoming increasingly common as prices fall for manufacturing this technology. Due to the thin nature of these screens, mounting brackets have become a particularly desirable method of fixing these media screens to the walls and structures other than the home.


[0004] While these brackets are ideal for home use, they are less desirable for use in RV's, trailers, boats, airplanes and other vehicles.

SUMMARY AND OBJECTS OF THE INVENTION

[0005] It is an object of the invention to provide a mounting bracket for a thin profile media display better suited for use within a vehicle.

[0006] It is an object of the invention to provide a mounting bracket for thin profile media displays that can be moved to a non-viewing storage position.

[0007] It is an object of the invention to provide a mounting bracket for thin profile media displays that can be locked in various positions.

[0008] In one preferred embodiment according to the present invention, a mounting bracket is described for a thin profile media display. The mounting bracket includes a wall mounting plate which supports a pivotable, jointed arm. The jointed arm is ultimately connected to a display mounting plate that connects to a display (e.g., an LCD TV). The jointed arm can be selectively locked in place with user adjustable knobs that rotate on a joint-forming pin to create or relieve pressure against the arm. Further, the arm includes a spring biased locking pin that locks the bracket into a folded or retracted position. In this respect, the locking or position retaining mechanisms of the bracket allow a user to not only reposition a display, but maintain the position of the display during travel.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 illustrates a perspective view of a preferred embodiment of a media display bracket according to the present invention;

[0010] FIG. 2 illustrates an exploded perspective view of the preferred embodiment of FIG. 1;

[0011] FIG. 3 illustrates a side profile view of the preferred embodiment of FIG. 1;

[0012] FIG. 4 illustrates a top view of the preferred embodiment of FIG. 1;

[0013] FIG. 5 illustrates a front perspective view of a preferred embodiment of a sliding media display bracket according to the present invention;

[0014] FIG. 6 illustrates a front perspective view of the preferred embodiment of FIG. 5;

[0015] FIG. 7A illustrates a front perspective view of a preferred embodiment of a sliding media display bracket according to the present invention;

[0016] FIG. 7B illustrates a front perspective view of the bracket from FIG. 7A in a retracted position;

[0017] FIG. 7C illustrates an exploded view of the bracket from FIG. 7A;

[0018] FIG. 8 illustrates a perspective view of another preferred embodiment of a television bracket according to the present invention;

[0019] FIG. 9 illustrates a front view of the preferred embodiment of FIG. 8;

[0020] FIG. 10 illustrates a side view of the preferred embodiment of FIG. 8;

[0021] FIG. 11 illustrates a top view of the preferred embodiment of FIG. 8;

[0022] FIG. 12 illustrates a perspective view of the preferred embodiment of FIG. 8 supporting a television;

[0023] FIG. 13 illustrates a front view of a preferred embodiment of a sliding bracket according to the present invention;

[0024] FIG. 14 illustrates a side view of the preferred embodiment of FIG. 13;

[0025] FIG. 15 illustrates a rear perspective view of the preferred embodiment of FIG. 13;

[0026] FIG. 16 illustrates a front perspective view of the preferred embodiment of FIG. 13;

[0027] FIG. 17 illustrates a perspective view of a preferred embodiment of a display mounting bracket according to the present invention;

[0028] FIG. 18 illustrates another perspective view of the preferred embodiment of FIG. 17;

[0029] FIG. 19 illustrates a side view of the preferred embodiment of FIG. 17;

[0030] FIG. 20 illustrates a bottom view of the preferred embodiment of FIG. 17; and

[0031] FIG. 21 illustrates an exploded side perspective view of the preferred embodiment of FIG. 17.

DETAILED DESCRIPTION OF THE INVENTION

[0032] FIGS. 1-4 illustrate a preferred embodiment according to the present invention of a bracket 100 for a thin media display screen such as an LCD television. Unlike many prior brackets, the present bracket 100 includes multiple locking mechanisms to secure the bracket 100 and thus the media display screen in various positions. Thus, the present invention is especially suitable for moving vehicles such as RVs, cars, trucks, boats and planes where a media display is subject to movement, jarring and other forces.

[0033] Wall mounting plate 118 is mounted to a wall or similar surface to secure the bracket 100 in place. The bracket 100 includes a first arm 114 connected to the wall mounting plate 118 by joint 120. The opposite end of the first arm 114 connects via joint 116 to the third arm 104 and fourth arm 106. The third and fourth arms 104 and 106 in turn connect via hinge 122 to the media screen mounting plate 102.
Preferably, the media screen mounting plate 102, as well as the other components of the bracket 100 (and other embodiments described in this specification) are designed for compliance with a known mounting standard such as the Video Electronics Standards Association (VESA) standards. However, it should be understood that almost any mounting or connection mechanism between the bracket 100 and the display can be used.

Since a vehicle may expose its contents to numerous forces including acceleration and jarring, a media screen should be securely mounted and at least prevented from moving when the vehicle is in motion. Failure to secure the displays may result in damage to both the display and the interior of the vehicle. In this regard, the bracket 100 includes a locking pin 112 within arm 106 that moves into an aperture (not shown) in the bottom of arm 114 when the bracket 100 is moved to a folded or retracted position. Preferably, a hollow cylinder member 108 is fixed around the pin 112 and contains a spring biasing the pin in an upwards position (i.e., into the aperture of arm 114). A pull ring 110 assists the user in pulling the pin 112 downwards, out of the aperture of the arm 114 to unlock the bracket 100.

The joints 116 and 122 also include locking or position restricting mechanisms in the form of hand adjustable knobs 117A and 117B which are threaded onto a central pin of the joints 116 or 122. As each adjustable knob 117A and 117B rotate, they move along the thread of the joint pin to increase or decrease pressure on the joint, thereby restricting the joint from moving or releasing the joint to allow free movement. Thus, the user may rotate these knobs 117A or 117B to selectively restrict movement of the joints 116 and 122.

In this respect, the bracket 100 and media screen can be moved between a locked position for travel or a freely movable unlocked position when the vehicle is stationary via the locking pin 112 and knobs 117A and 117B.

FIGS. 5 and 6 illustrate a locking slide bracket 151 for a vehicle. More specifically, the bracket 151 includes a wall mounting plate 150 having top and bottom lips 150A that generally forming a "C" shape track (i.e., including portions perpendicular and parallel to the main mounting portion of the plate 150). The lips 150A are reinforced with each other by slide stops 152 that are coupled to each lip 150A, thereby supporting the weight of the lower lip 150A.

The bracket 151 also includes a locking slide plate 154 disposed between the lips 150A of the wall mounting plate 150. The slide plate 154 preferably includes top and bottom rollers 162 which are positioned to contact a portion of the lips 151A perpendicular to the main mounting portion while the inwardly positioned portion of the lips 151A retain the rollers 162 and therefore the slide plate 154 against the wall mounting plate. In this respect, the slide plate 154 and slide along the length of the mounting plate 150 until an end of the slide plate 154 contacts one of the slide stops 152.

A bottom surface of the slide plate 150 includes a plurality of holes (not shown) which accept a spring biased locking pin 158 (connected to pull ring 160). In this respect, the locking pin 158 is biased into the hole in the slide plate 150 immediately above it, locking the plate 150 from horizontal movement. Thus the user can selectively lock the position of the sliding plate 150.

The sliding plate 150 can directly mount a thin media display or can include additional positioning mechanisms such as the bracket 100 (previously seen in FIGS. 1-4) as seen in FIGS. 5 and 6. Instead of being mounted to a wall of the vehicle, the bracket 100 is mounted to a front surface of the slide plate 150.

Referring to FIGS. 7A-7C, this sliding bracket 170 is similar to the previously described embodiment seen in FIGS. 5 and 6, but lacks a fold out arm which may allow the bracket 170 to support additional weight. Generally, the bracket includes a wall mounting plate 172 having top and bottom lips 172A forming a "C" shaped track. The plate 172 further includes a slide stop 174 and a reinforcement member 176. A slide plate 182 slides (e.g., on rollers or slide pads) within the track of the mounting plate 172 and includes a pivoting media screen mounting plate 184.

As best seen in the exploded view of FIG. 7C, the wall mounting plate 172 includes a spring biased locking pin mechanism 178 connected to handle 180 which moves a locking pin into and out of pin holes 182A in the slide plate 182. Thus, the horizontal position of the locking plate can be locked or unlocked in different positions based on the location of the pin holes 182A.

As seen in FIGS. 7A-7C, the pivoting media screen mounting plate 184 is disposed on one end of the sliding bracket 170. This configuration may be especially appropriate for mounting the bracket 170 and therefore the media screen in a cabinet or other structure, thereby allowing the media screen to be pulled out for use and locked in place. In another mounting example, the bracket 170 may be mounted near a window, allowing the user to slide and angle the media screen towards the window for viewing outside of the vehicle (e.g., at a campsite).

FIGS. 8-12 illustrate another preferred embodiment according to the present invention of a bracket 200 for a media screen. Preferably, the bracket 200 mounts to a ceiling of a vehicle, allowing the media screen to rotate and swivel to different positions. A ceiling mounting plate 208 mounts to the vehicle ceiling while a pivot bracket 210 is pivotally mounted to rotate on the ceiling mounting plate 208. The pivot bracket 210 includes a hinge 212 which connects an arm 204. In turn, the arm 204 connects to a media screen mounting plate 202 via hinge 206. Again, the screen mounting plate 202 preferably conforms to mounting standards, such as those set out by VESA.

The bracket 200 includes two locking mechanisms: a rotational locking mechanism and an arm locking mechanism. The rotational locking mechanism includes a spring biased locking pin 218 within a hollow cylinder 214 on the pivot bracket 210. The locking pin 218 is biased through an unobstructed aperture in the bracket 210 and into an aperture 219 in the ceiling mounting plate 208. In the present example, the mounting plate 208 has four apertures that the locking pin 218 can pass through. Thus, the locking pin 208 prevents the pivot bracket 210 from rotating. When the user wishes to change the rotational orientation of the media screen, the locking pin 208 can be pulled against the bias with pull ring 216.

The second locking mechanism locks the arm 204 in an extended or folded position by laterally moving a spring biased locking pin 224. The locking pin 224 includes locking member 222 which is small enough to pass into notched area 204B, but too large to pass through curved slot 204A. A spring 220 biases the locking pin 224 sideways so that if the arm 204 is moved so that the locking member 222 is aligned with the notched area 204A, it will pass into that area. However, the large size of the locking member 222
prevents it from moving into the curved slot 204A. Thus, the arm 204 is locked in place. If the user desires to unlock the arm 204, locking pin 224 can be pulled by grasping one end and pulling the pin 224 sideways to remove the locking member 222 from the notched area 204B.

[0048] In the present example, only two notched areas 204B are present, one locking the arm 204 in an extended position as shown in FIG. 12 with TV 250 and another for locking the arm 204 in a folded position. Thus, the media screen can be folded against the ceiling, secured from movement and out of the way to provide maximum space for the user. However, additional notched areas 204B can be included to allow locking of the arm 204 in various other positions.

[0049] Turing to FIGS. 13-16, another preferred embodiment of a sliding thin media display bracket 300 is illustrated according to the present invention. A first mounting panel 302 is coupled (e.g., via mounting screws through screw holes in the panel 302) to the back of the thin media display so that angled portions 302A and 302B are angled away from the display.

[0050] A second mounting panel 304 is mounted to the wall or similar vertical surface of the vehicle so that angled portions 304A and 304B are angled away from the wall. As best seen in FIGS. 14 and 15, the side angled portions 302A and 304A of each panel 302 and 304 have complementary angles which allow the first panel 302 to slide between side portions 304A of the second panel 304, thus retaining the first panel 302 from lateral and further downward movement.

[0051] The second panel 304 also includes a locking mechanism 308, including a locking handle 310 that is pivotally mounted on the second panel 304 and partially positioned through a slot in the lower portion 304B of the second panel 304, as best seen in FIG. 16.

[0052] The locking handle 310 is biased by spring 312 into a substantially perpendicular position. As the first panel 302 is slid against the second panel 304, a locking pin 306 on the first panel 302 moves against the top angled portion of the locking handle 301, pushing the handle 310 away from the spring 312. Once the first panel 302 and thus the locking pin have moved low enough, the locking pin 306 fits within notched area 310A of the handle 310, allowing the handle 310 to regain its vertical position. In this respect, the handle 310 locks the first panel 302 to the second panel 304, preventing vertical movement caused, for example, by bumps or other jarring common to a vehicle.

[0053] When the user wishes to remove the media display and therefore the first panel 302 from the second panel 304, the user moves the handle 310 so that the notched area 310A moves away from the spring 312, releasing the locking pin 306 and allowing the first panel 302 to move vertically.

[0054] FIGS. 17-21 illustrate another preferred embodiment of a thin media display mounting bracket 400 according to the present invention. The mounting bracket 400 is configured to move an attached thin media display both vertically and horizontally to achieve a desired viewing angle for a nearby user.

[0055] As best seen in the exploded view of FIG. 21, the mounting bracket 400 is secured to the wall of a vehicle with wall plate 402 (e.g., with screws or bolts). An intermediate member 404 pivotally mounts to a joint portion 402A of the wall plate 402 via pivot pin 410 which allows the intermediate member 404 to pivot vertically (when oriented as in FIGS. 17, 19 and 21).

[0056] The vertical position of the intermediate member 404 can be locked or restricted by tightening knob 412 onto a screw positioned through slot 404A and an aperture in the joint portion 402A. Thus, the user can tighten or loosen the knob 412 to press against the area of the intermediate member 404 around slot 404A to maintain the vertical position of the intermediate member 404. Similarly, the knob 412 can be loosened to allow the intermediate member 404 to pivot on pin 410 as the screw of the knob 412 moves within the slot 404A.

[0057] The mounting bracket 400 also includes a display mounting plate 406 with joint plate 406A. The joint plate 406A includes an aperture through which pin 408 of the intermediate member 404 passes, thereby pivotally mounting the mounting plate 406 so as to pivot horizontally. A second knob 414 on the intermediate member 404 includes a screw that passes through slot 406B on joint plate 406A and through an aperture in the intermediate member 404. In this respect, the user can rotate the second knob 414 to restrict horizontal pivoting of the display mounting plate 406.

[0058] The user initially mounts the bracket 400 (e.g., with screws) via wall mounting plate 402 in any desired orientation, such as from a wall in the positions seen in FIGS. 17 and 18 or from a vehicle ceiling in the position seen in FIG. 19. Next, the thin media display (e.g., LCD TV) is mounted to the bracket 400 via mounting plate 406. Finally the user adjusts the desired vertical and horizontal orientation of the display by loosening and tightening knobs 412 and 414 to selectively lock and release the various portions as previously described.

[0059] It should be understood that different elements of the previously described embodiments may be combine or otherwise incorporated together. For example, the locking slide bracket 151 may be used with any of the previously described embodiments. In another example, different locking mechanisms may be used on the previously described embodiments, such as a locking pin, a notch engaging mechanism or a locking knob.

[0060] Although the invention has been described in terms of particular embodiments and applications, one of ordinary skill in the art, in light of this teaching, can generate additional embodiments and modifications without departing from the spirit of or exceeding the scope of the claimed invention. Accordingly, it is to be understood that the drawings and descriptions herein are proffered by way of example to facilitate comprehension of the invention and should not be construed to limit the scope thereof.

What is claimed is:
1. A media display screen bracket for a vehicle comprising:
   a first mounting portion connectable with a media display screen;
   a first arm pivotally connected to said first mounting portion;
   a second arm pivotally connected to said first arm;
   a second mounting portion pivotally connected to said second arm; and
   a lock for maintaining a position of said first arm relative to said second arm.
2. The media display screen bracket of claim 1, further comprising a first pivot joint between said first arm and said second arm, said first pivot joint comprising a first adjustment member for limiting motion of said joint.

3. The media display screen bracket of claim 2, further comprising a second pivot joint between said first mounting portion and said first arm, said second pivot joint comprising a second adjustment member for limiting motion of said joint.

4. The media display screen of claim 1, wherein said lock is a spring biased pin lock.

5. The media display screen of claim 4, wherein a portion of said lock engages an aperture in said second mounting arm.

6. The media display screen of claim 1, further comprising a slide plate, disposed to slide within a framework; said second mounting portion coupled to said slide plate.

7. The media display screen of claim 6, further comprising a lock disposed on said framework to engage said slide plate and thereby prevent horizontal movement of said slide plate.

8. A bracket for supporting a display screen in a vehicle comprising:
   a first mounting plate for securing to said first mounting plate for rotation about said axis;
   a second bracket member coupled to said first bracket member by said first hinge; said second bracket member having at least a first position and a second position; said second mounting plate coupled to said second bracket member by said second hinge and shaped to support said media display screen.

9. The bracket of claim 8, wherein said first hinge releasably locks said second bracket member in said first position and said second position.

10. The bracket of claim 9, wherein a length of said second bracket member in said first position is in line with said axis and said length of said second bracket member in said second position is not aligned with said axis.

11. The bracket of claim 8, further comprising a first lock disposed on said first bracket member to engage said first mounting plate and thereby prevent rotation of said first bracket member relative to said mounting plate.

12. The bracket of claim 11, wherein said first lock is a spring biased pin lock positioned to engage on of a plurality of apertures disposed in said first mounting plate.

13. The bracket of claim 12, wherein said first hinge comprises a second lock comprising: an elongated tube biased in a first direction and an aperture on said second bracket member.

14. The bracket of claim 12, wherein said first floor plate is mounted to a ceiling.

15. A media display screen bracket for a vehicle comprising:
   a first bracket member including an arm region, a mounting region for mounting on a surface and a first aperture in said arm region;
   a second bracket member coupled to said arm region to pivot in a first direction; and
   a third bracket member coupled to said second bracket member to pivot to pivot in a second direction, about a perpendicular to said first direction; said third bracket member including a mounting region for mounting a media display screen.

16. The media display screen bracket of claim 15, further comprising a locking member located within a first aperture of said first bracket member and within a second elongated aperture of said second bracket member; said locking member selectively locking said first bracket member with said second bracket member.

17. The media display screen bracket of claim 16, further comprising a second locking member located within a third aperture of said second bracket member and within a fourth elongated aperture of said third bracket member; said second locking member selectively locking said second bracket member with said third bracket member.

18. The media display screen bracket of claim 17, wherein said first locking member and said second locking member each comprise a threaded bolt engaged with a hand-actuable nut.

19. The media display screen bracket of claim 18, wherein said second elongated aperture defines a range of pivot motion of said second bracket member relative to said first bracket member.

20. The media display screen bracket of claim 18, wherein said fourth elongated aperture defines a range of pivot motion of said third bracket member relative to said second bracket member.

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