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(54) CARRIER RACK ON AIR-VENT

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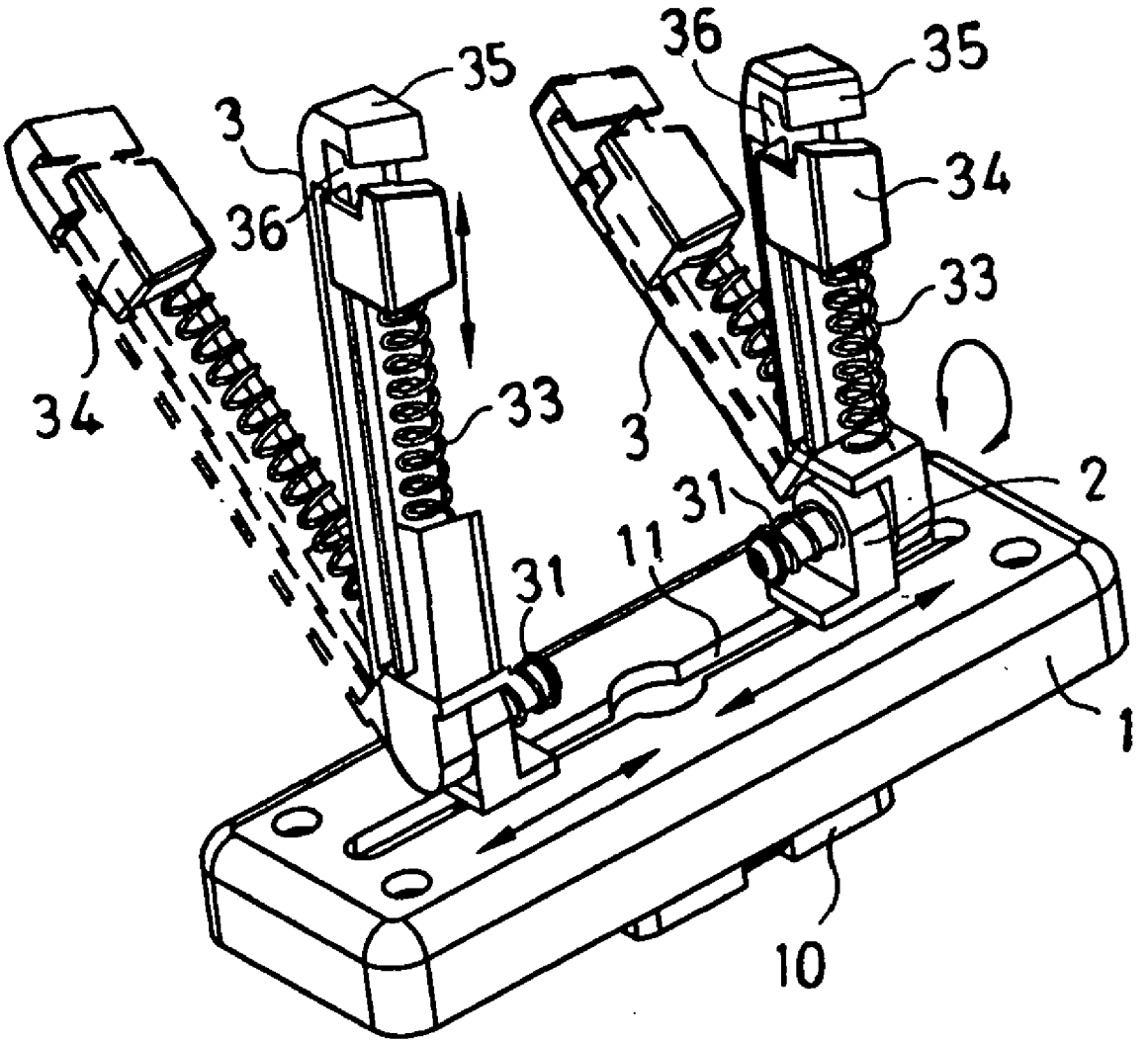
(57) **ABSTRACT**

A carrier rack on air-vent comprising a clasping bracket on one side and horizontal sliding groove on the rear side; sliding groove comprises two sliding blocks that can move right and left; sliding block has a round through hole at its end; round through hole has gullets at proper position around its edge; in round through hole, arm lever is pivotally connected by bolt support along with spring; arm lever is located relative to gullets and cooperates with gullets to form a sprocket; arm lever further comprises a resilient lockout that can move back and forth under the pressure of compression spring; lockout cooperates with hook to form a clasping channel; arm lever extends into air-vent blades through the sliding channel formed by hook and lockout to clasp air-vent blades. This makes it possible to attach to air-vent quickly and via sprocket, arm lever and sliding block can rotate and engage with each other to adjust the angle of carrier and make it easier to firmly clasp heavy objects and provide easy access.



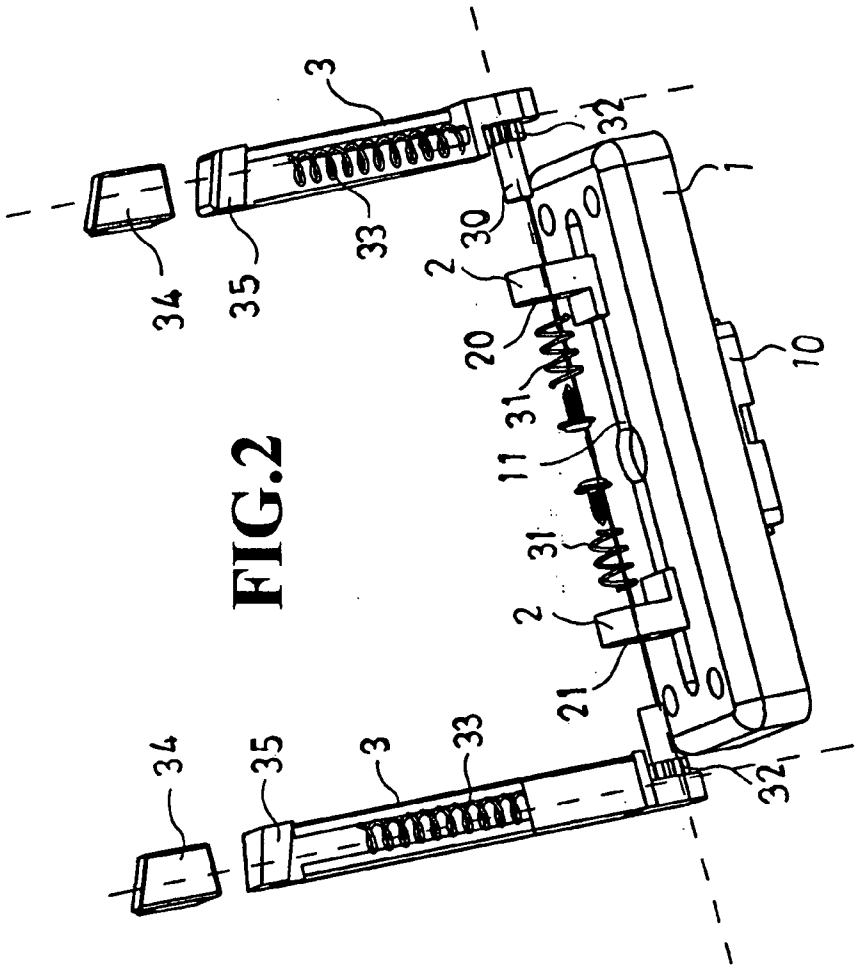

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FIG.2

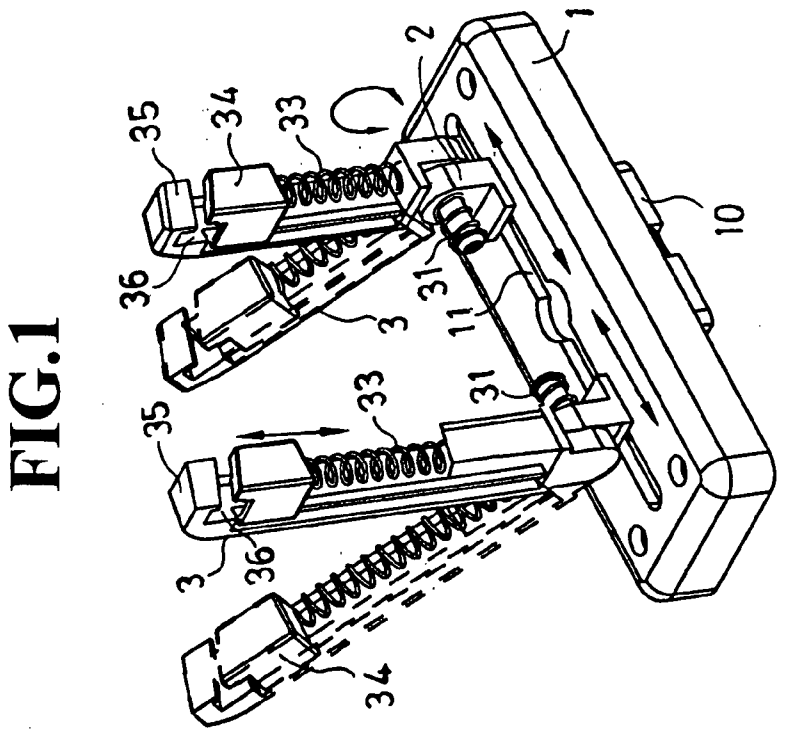
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FIG.1

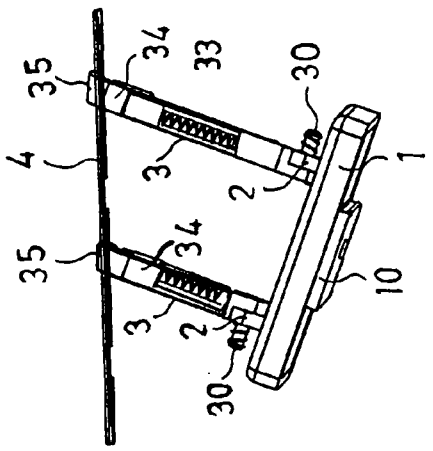

FIG.3

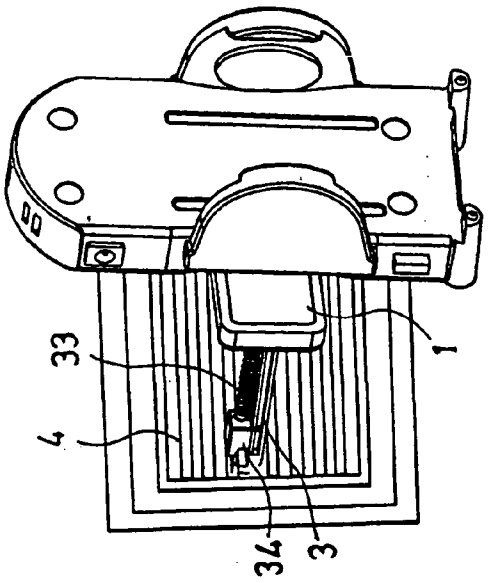

FIG.5

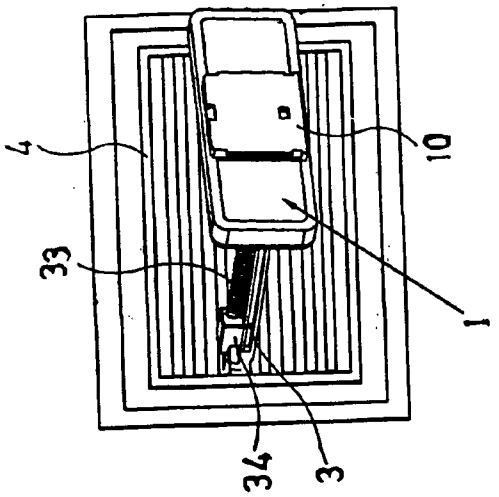

FIG.4

CARRIER RACK ON AIR-VENT

BACKGROUND OF THE INVENTION

[0001] I. Field of the Invention

[0002] The present invention relates to a carrier rack on an automobile air-vents and, more specifically, to a carrier rack on air-vent that firmly and conveniently fixes heavy objects; wherein the carrier comprises a clasping bracket on one side and horizontal sliding groove on the rear side; sliding groove comprises two sliding blocks that can move right and left; sliding block has a round through hole at its end; round through hole has gullets at proper position around its edge; in round through hole, arm lever is pivotally connected by bolt support along with spring; arm lever is located relative to gullets and cooperates with gullets to form a sprocket; arm lever further comprises a resilient lockout that can move back and forth under the pressure of compression spring; lockout cooperates with hook to form a clasping channel; arm lever extends into air-vent blades through the sliding channel formed by hook and lockout to clasp air-vent blades. This makes it possible to attach to air-vent quickly and via sprocket, arm lever and sliding block can rotate and engage with each other to adjust the angle of carrier and make it easier to firmly clasp heavy objects and provide easy access.

[0003] II. Description of the Prior Art

[0004] Heretofore, it is known that users apply in-car holders to accommodate heavy objects such as mobile phones and PDA's, the arm racks are mostly used to make such objects near at hand and within users' sight. However, due to special shape and limited space in automobiles, conventional locking, adhesive or plug-type arm racks have adverse impact on car operation and appearance, rigid arm levers are difficult to adjust and flexible arm levers are susceptible to vibration and movement, which restricts their extensive application. In addition, such racks comprise excessive components and result in high manufacturing cost as well as inconvenience for use and operation.

SUMMARY OF THE INVENTION

[0005] It is therefore a primary object of the invention to provide a carrier rack on air-vent that comprises carrier, a pair of sliding blocks and a pair of arm levers; wherein the carrier comprises a clasping bracket on one side and a sliding groove on the rear side; the sliding groove can engage the sliding blocks that slide left and right; each sliding block has a round through hole on the end; each of the round through hole has a gullets at the proper position around the edge; a arm lever connects to the round through hole with a bolt support and a spring; a sprocket locates on the arm lever corresponding to and passing through the gullet; the arm lever further comprises a resilient lockout that moves back and forth under the pressure of a compression spring; the lockout cooperates with a hook to form a clasping channel; the axis of the round through hole is unparallel to the carrier such that the carrier can form an offset angle with the air-vent when attached to the air-vent. Users can put heavy objects on the clasping bracket and see those objects.

[0006] It is still an object for the invention to provide a carrier rack on air-vent in which users can adjust the right/left engaging position of the arm lever depending on the location of the air-vent or adjust the axis of the clasping channel and the round through holes, such that when attached to the air-vent, the carrier can form an offset angle with the air-vent and form an approximately perpendicular angle with users' sight line to be more convenient for users to view objects fixed on the carrier.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The accomplishment of the above-mentioned object of the present invention will become apparent from the following description and its accompanying drawings which disclose illustrative an embodiment of the present invention, and are as follows:

[0008] **FIG. 1** is a perspective view of the present invention;

[0009] **FIG. 2** is a cross-sectional view of the present invention;

[0010] **FIG. 3** is a top view of the present invention;

[0011] **FIG. 4** is an application view of the present invention;

[0012] **FIG. 5** is another application view of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0013] As shown in enclosed drawings, the present invention comprises a carrier **1**, a pair of sliding blocks **2** and a pair of arm levers **3**; wherein the carrier **1** comprises a clasping bracket **10** on one side and a sliding groove **11** on the rear side; the sliding groove **11** can engage the sliding blocks **2** that slide left and right; each sliding block **2** has a round through hole **20** on the end; each of the round through hole **20** has a gullets **21** at the proper position around the edge; a arm lever **3** connects to the round through hole **20** with a bolt support **30** and a spring **31**; a sprocket **32** locates on the arm lever **3** corresponding to and passing through the gullet **21**; the arm lever **3** further comprises a resilient lockout **34** that moves back and forth under the pressure of a compression spring **33**; the lockout **34** cooperates with a hook **35** to form a clasping channel **36**; the axis of the round through hole **20** is unparallel to the carrier **1** such that the carrier **1** can form an offset angle with the air-vent **4** when attached to the air-vent **4**.

[0014] In practical application, users can adjust the right/left engaging position of the arm lever **3** depending on the location of the air-vent **4** or adjust the axis of the clasping channel **36** and the round through holes **20**, such that when attached to the air-vent **4**, the carrier **1** can form an offset angle with the air-vent **4** and form an approximately perpendicular angle with users' sight line to be more convenient for users to view objects fixed on the carrier **1**. Then, users may pull or push the lockouts **34** on the arm levers **3** to slide forward; then insert the hooks **35** via the gap above the air-vent **4**; use hooks **35** to clasp blades while releasing the resilient lockout **34**; use the compression springs **33** to push the lockouts **34** to move backward such that the clasping channels **36** formed by the hooks **35** firmly clasps the air-vent blades; finally, depending on the high/low position of the air-vent **4**, push the bolt supports **30** to have the sprockets **32** of the arm levers **3** move away from the gullets

21 on the sliding blocks **2** such that the carrier **1** drives the sliding blocks **2** to rotate up and down. When adjusting to proper angle and releasing bolt supports **30**, the resilience of the springs **31** may enable the arm levers **3** to engage with the sliding blocks **2** and sleeve the bolt supports **30** and the sprockets **32** to achieve the purpose of fixing objects. In this way, the clasping bracket **10** of the carrier **1** can firmly fix heavy objects and provide proper viewing angle and position.

[**0015**] While a preferred embodiment of the invention has been shown and described in detail, it will be readily understood and appreciated that numerous omissions, changes and additions may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. A carrier rack on air-vent comprising:

a carrier, a pair of sliding blocks and a pair of arm levers, said carrier comprises a clasping bracket on one side and a sliding groove on the rear side, said sliding groove can engage said sliding blocks that slide left and right, each of said sliding block has a round through hole on the end, each of said round through hole has a gullets at the proper position around the edge, said arm lever connects to said round through hole with a bolt support and a spring, a sprocket locates on said arm lever corresponding to and passing through said gullet, said arm lever further comprises a resilient lockout that moves back and forth under the pressure of a compression spring, said lockout cooperates with a hook to form a clasping channel to clamp on the blade of the air-vent.

2. The carrier rack on air-vent recited in claim 1, wherein said arm lever can be adjusted the right/left engaging position with different length.

3. The carrier rack on air-vent recited in claim 1, wherein said lockout cooperates with a hook to form a clasping channel with offset angle that makes said carrier form an offset angle with the air-vent.

4. The carrier rack on air-vent recited in claim 1, wherein the axis of said round through hole is unparallel to said carrier such that said carrier forms an offset angle with the air-vent.

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