(12) UK Patent Application (19) GB (11) 2472654 (13) A

(43) Date of A Publication 16.02.2011

(21) Application No: 0914323.1

(22) Date of Filing: 15.08.2009

(71) Applicant(s):
Bentley Motors Limited
(Incorporated in the United Kingdom)
Pym's Lane, CREWE, Cheshire, CW1 3PL,
United Kingdom

(72) Inventor(s):
Richard Anthony Heath

(74) Agent and/or Address for Service:
Wilson Gunn
5th Floor, Blackfriars House, The Parsonage,
MANCHESTER, M3 2JA, United Kingdom

(51) INT CL:
B60R 7/02 (2006.01) ***B60P 7/08*** (2006.01)

(56) Documents Cited:
GB 2330614 A **EP 1724154 A1**
EP 0536923 A1 **US 2688289 A**
US 20080253855 A1 **US 20030053879 A1**

(58) Field of Search:
INT CL **B60P, B60R**
Other: **WPI and EPODOC**

(54) Title of the Invention: **Retention system**
Abstract Title: **A retention system**

(57) A retention system 10 comprises at least one elongate channel member 12 and one or more clips 14. The channel member defines an internal channel 22 and has a longitudinal slot 24 providing access to the channel. Each clip has an engagement portion for location in the channel and an external attachment portion connected to the engagement portion by a neck which passes through the slot. The engagement portion is shaped such that in one angular orientation it is able to pass through the longitudinal slot and such that once inserted it can be moved to another angular orientation in which it is unable to pass through the longitudinal slot. At least part of the clip 14 which contacts the channel member 12 once inserted comprises a friction material adapted so that contact between the material and the channel member resists longitudinal movement of the clip along the channel member. The retention system 10 is particularly adapted for use as a luggage retention system for the luggage compartment of a vehicle.

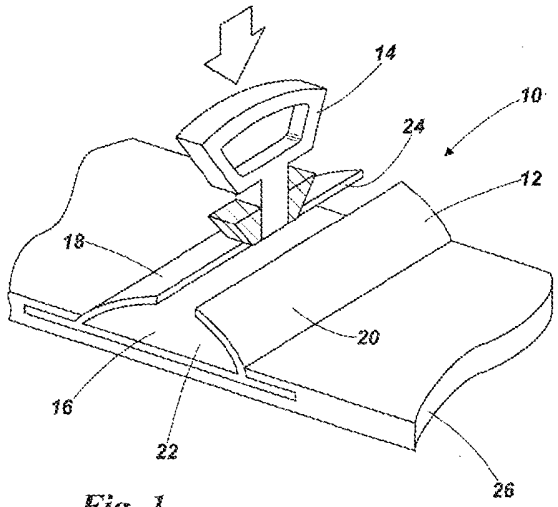


Fig. 1

GB 2472654 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date but within the period prescribed by Rule 22(1) of the Patents Rules 2007.

27 07 10

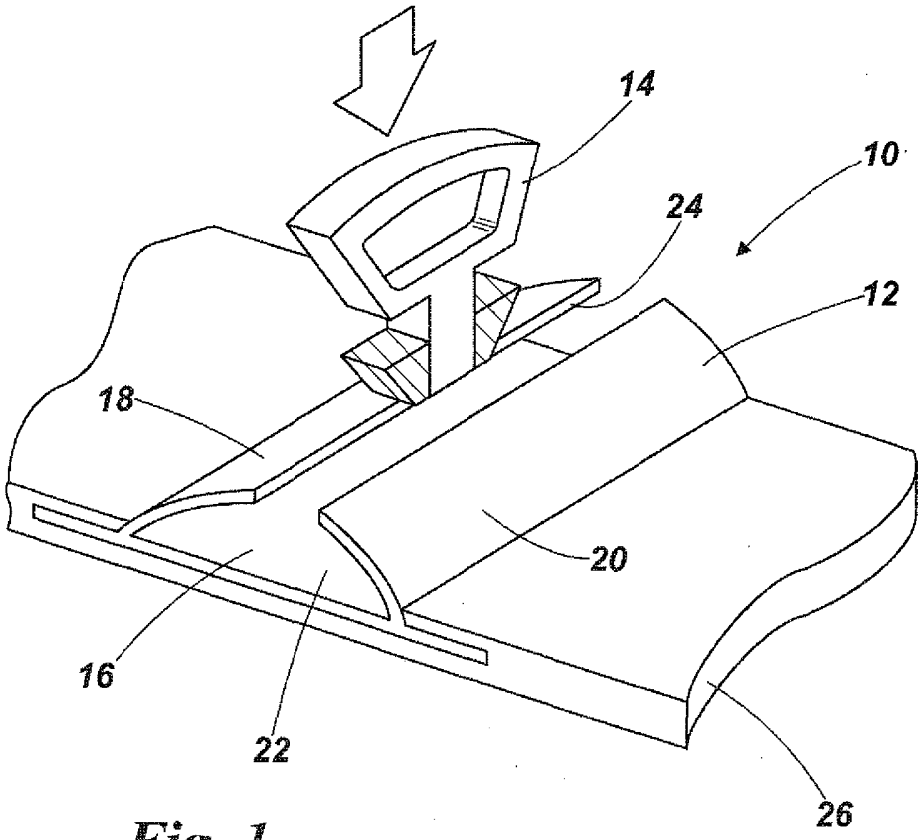


Fig. 1

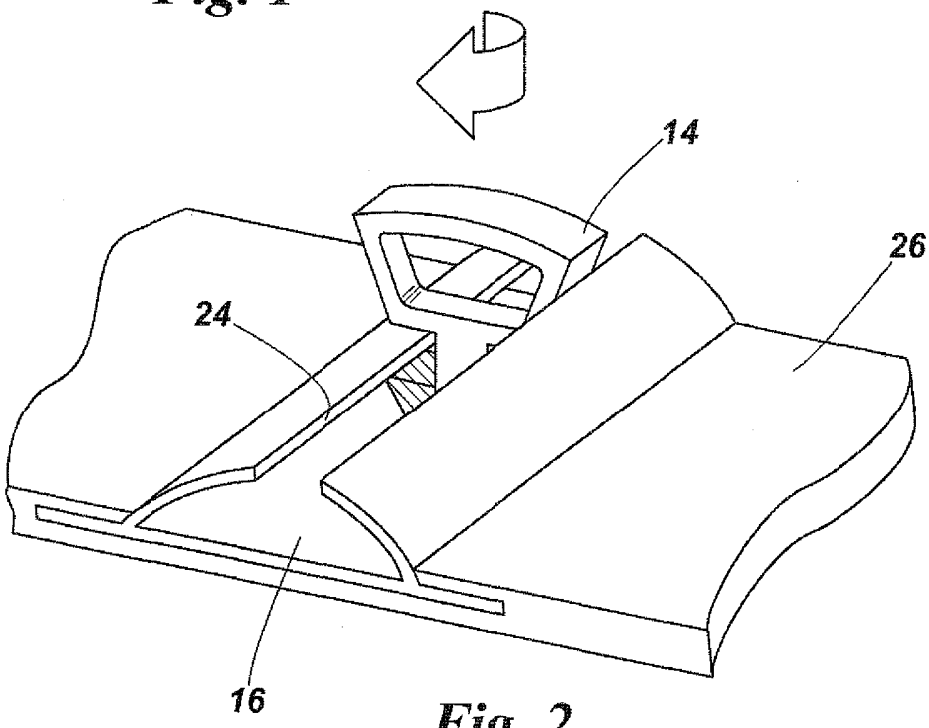


Fig. 2

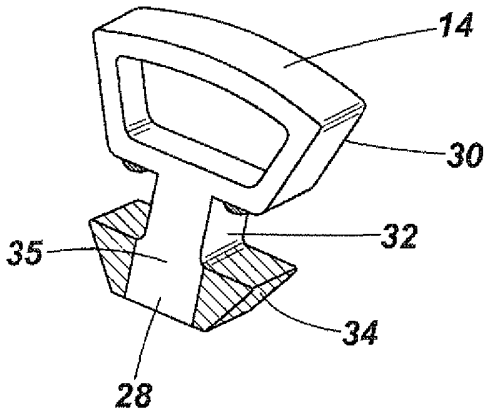


Fig. 3

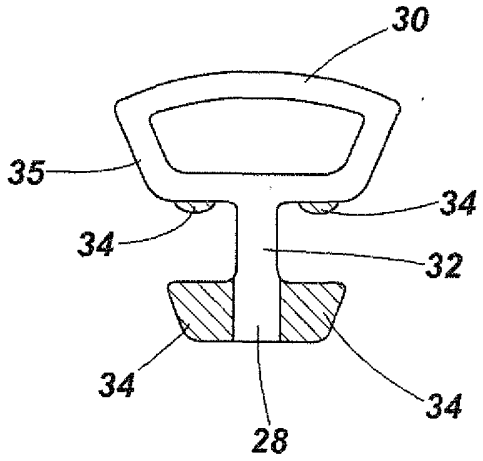


Fig. 4

27 07 10

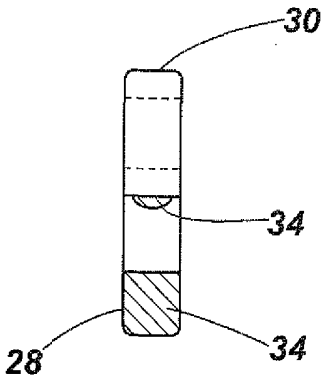


Fig. 5

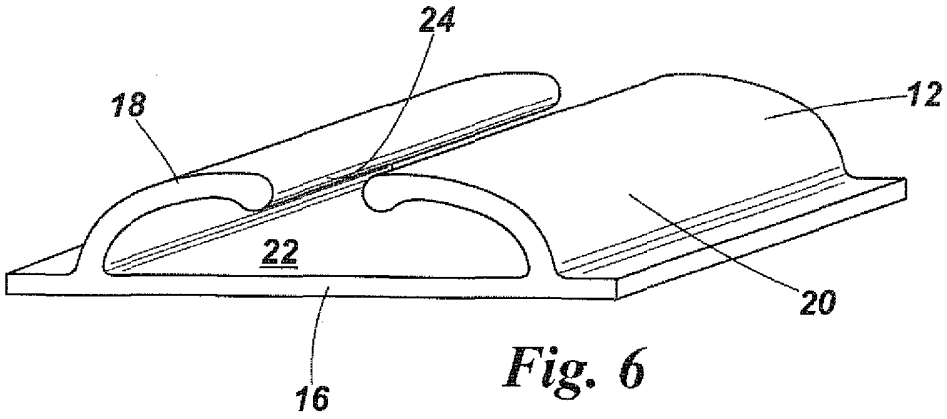


Fig. 6

27 07 10

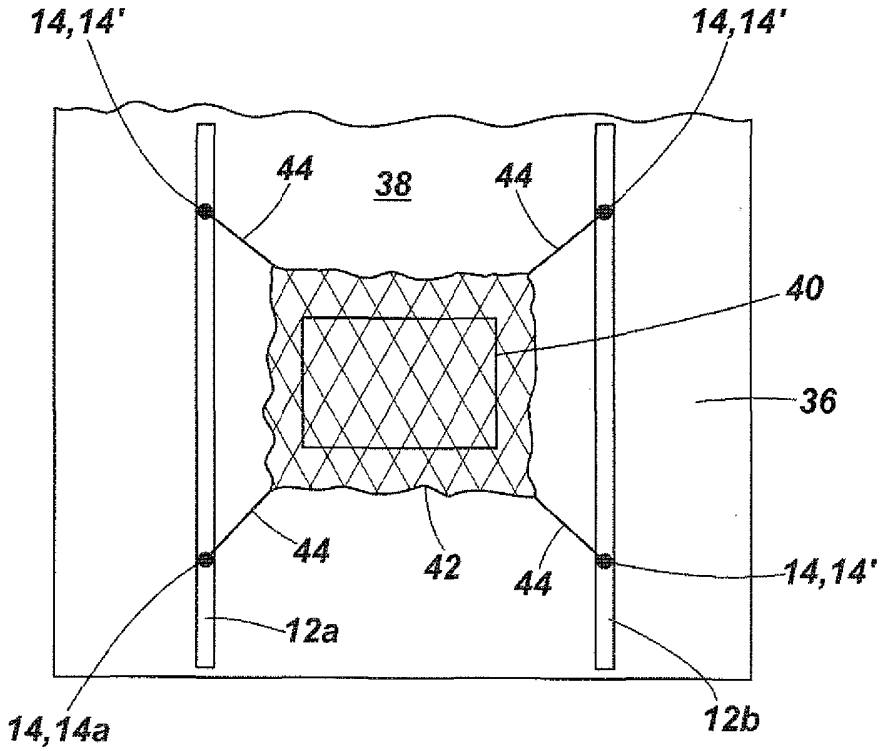


Fig. 7

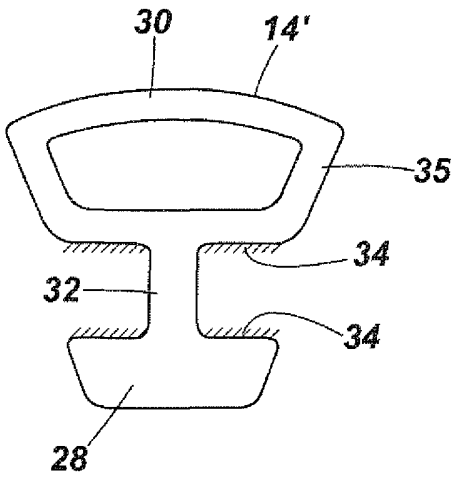


Fig. 8

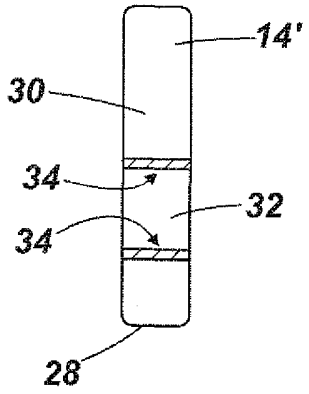


Fig. 9

Retention System

Technical Field of the Invention

The present application relates to a retention system. More particularly, but not exclusively, the invention relates to a retention system for use in a luggage compartment of a vehicle.

Background to the Invention

It is known to provide retention systems in the luggage compartment of a vehicle which can be used to retain items placed in the compartment. Typically, such retention systems are in the form of hinged loops to which retention members, such as luggage straps or nets, can be hooked. The known hinged loops tend to project from the surfaces to which they are attached and so are prone to damage or may cause damage to items placed in the compartment. They may also encroach into valuable storage space. Another problem with the known retention arrangements is that the hinged loops are fixed in position and so that items can only be retained within the luggage compartment in certain positions or by using large retention straps or nets.

It is also known to provide retention members that are slidably mounted in runners in the vehicle luggage compartment. US 5, 176, 479, for example, discloses a beam member which is slidably mounted to a pair of spaced track members fixed in the luggage compartment of a vehicle. The arrangement includes a screw threaded fastener and tap plate associated with each track member to lock the beam in position. This arrangement has the advantage that the position of the beam can be adjusted depending on the size of the luggage but the arrangement is very complicated and expensive to manufacture and yet still provides only limited flexibility.

There is a need, therefore, for an improved retention system for a vehicle luggage compartment which overcomes, or at least mitigates, some or all of the disadvantages of the known retention devices.

There also a need for a simple retention system that can be used in a variety of applications.

Summary of the Invention

In accordance with a first aspect of the invention, there is provided a retention system comprising at least one elongate channel member and one or more clips for insertion into the channel member, the channel member defining an internal channel and having a longitudinal slot providing access to the channel, each clip having an engagement portion adapted to locate in the channel and an external attachment portion connected to the engagement portion by means of a neck which passes through the longitudinal slot, the engagement portion being shaped such that in one angular orientation it is able to pass through the longitudinal slot, so as to enable it to be inserted into or removed from the channel member, and such that once inserted it can be moved to another angular orientation in which it is unable to pass through the longitudinal slot to prevent its removal from the channel member, in which at least part of the clip which contacts the channel member once inserted comprises a friction material adapted so that contact between the material and the channel member resists longitudinal movement of the clip along the channel member.

In a retention system in accordance with the invention, a clip can be inserted in a channel member at any desired location along its length and used to secure a retention member, such as a strap, net or the like, or any other item to the channel member. The application of a force to the clip will tend to rock the clip relative to the channel member bringing regions of the friction material into contact with the channel member so that the clip does not slide along the channel member. This provides a very simple and effective method of locking the clip in position.

The retention system will often comprise two or more channel members which will be spaced apart. In this type of arrangement, clips inserted into two

of the channel members can be used to secure a retention member or other item between them. The channel members may be aligned parallel to one another but this is not essential.

The attachment portion of each clip may be adapted to enable a retention member or other item to be attached to it. The attachment portion could comprise a buckle loop to which a retention member can be affixed. The clips may be separate items or they may be provided integral with or pre-attached to a retention member or other item to be secured.

The clip engagement portion may have a dimension in a first direction which is smaller than the width of the longitudinal slot in the channel member and a dimension in a second direction which is larger than the width of the longitudinal slot. The neck and the engagement portion may be generally "T" shaped. The clip may be made of a load bearing material, such as a metallic or polymeric material onto which the friction material is over-moulded or coated. Alternatively, the friction material may be in the form of separate pads or sleeves that are attached to a load bearing core. The friction material may be a natural or synthetic rubber or another polymeric material.

The at least one elongate channel member may be extruded from a polymeric, metallic, or other suitable material. The at least one channel member may comprise a generally planar base region and two curved side wall regions extending from the base towards each other to define the internal channel, the sidewalls having free ends that are spaced apart to define the longitudinal slot. The at least one channel member may be adapted to fixed to a support surface which may be substantially rigid. Alternatively, the channel member may be affixed to or moulded integrally with a flexible mat. Channel members can also be provided as integral parts of a support surface such as a display unit, framework or shelving arrangement.

The system may be adapted for use as a luggage retention system in a luggage compartment of a vehicle. The system can also be used to mount a

rolling load tray in the luggage compartment of a vehicle using clip like members for engagement in one or more channel members.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a retention system in accordance with a first embodiment of the invention, showing a clip prior to insertion into the channel member;

Figure 2 is a view similar to that of Figure 1 but showing the clip after insertion;

Figure 3 is a perspective view of a clip forming part of the system of Figures 1 and 2;

Figure 4 is a front view of the clip of Figure 3;

Figure 5 is a side view of the clip of Figures 3 and 4;

Figure 6 is a perspective view of a channel member forming part of the system of Figures 1 and 2;

Figure 7 is a schematic plan view of part of the luggage compartment of a vehicle showing a retention system in accordance with the invention in use retaining an item of luggage in position;

Figure 8 is a front view of an alternative embodiment of a clip for use in the retention system of Figures 1and 2; and

Figure 9 is a side view of the clip of Figure 8.

A retention system 10 in accordance with the invention comprises at least one elongate channel member 12 and at least one clip 14 which can be inserted into the channel member at a desired position along its length. In practice, it is envisaged that usually at least two channel members 12 will be used spaced apart and clips used to attach a retention member or other item

between the two channel members. However, in some applications, a single channel member may be used.

The channel member 12 can be made from any suitable material but conveniently is extruded from a suitable polymeric or metallic material. The channel member 12 has a planer base 16 and two curved side walls 18, 20 which extend away from the base towards each other to define an internal channel 22. The free ends of the side walls 18, 20 are spaced apart to define a longitudinal slot 24 providing access to the channel 22. Each channel member may be a separate component, as illustrated in Figure 6, which can be secured to a suitable support surface. Channel members can also be incorporated integrally into a support surface. In a further alternative arrangement, one or more channel members 12 can be formed integrally as part of a mat 26 or other surface covering for use as a floor covering in a storage space, such as the luggage compartment of a vehicle. Channel members 12 can be of any suitable length.

Whilst a channel member 12 having curved side walls 18, 20 and a planar base 16 has been found to be particularly effective, it will be appreciated that the channel member could be formed with a different profile.

Clips 14 for use with the channel member 12 have an engagement portion 28 for insertion into the channel 22 and an external attachment portion 30 which remains outside of the channel member. The engagement portion 28 and the attachment portion 30 are joined by a neck 32 which passes through the longitudinal slot.

The engagement portion 28 has a width, as shown in Figure 5, which is less than the width of the longitudinal slot 24 and a length, as shown in Figure 4, which is greater than the width of the slot 24. This enables the engagement portion 28 to be inserted into and out of the channel through the slot 24 when it is aligned longitudinally with the slot as shown in Figure 1. Once the engagement portion has been introduced into the channel 22 through the slot

24, the clip 14 can be twisted through 90 degrees, as shown in Figure 2, so that the engagement portion is aligned transversely to the slot 24. In this orientation, the engagement portion 28 is unable to pass through the slot 24 and the clip is locked to the channel member 12. In the present embodiment, the engagement portion 28 and the neck 32 form a generally "T" shape but it will be appreciated that other shapes can be produced to function in the same way.

A clip 14 can be inserted into a channel member 12 at any desired position along its length. Parts of the engagement portion 28 and the attachment portion 30 which come into contact with the channel 12 are made from or coated with or are otherwise provided with a friction material 34 which resists sliding movement of the clip 14 relative to the channel member 12. Thus once a clip has been inserted into the channel member 12 it will tend to remain in position.

The attachment portion 30 is adapted to enable a retention member or other item to be attached to it. In the embodiment illustrated, the attachment portion is in the form of a buckle loop 31 to which items can be clipped. However, the design of the attachment portion 30 can be varied as required by the application.

Part of the attachment portion 30 of the clip 14 overlies in close proximity the side walls 18, 20 of the channel member 12. When a force is applied to the clip 14, the clip will tend to rock bringing part of the engagement portion 28 into contact with an inner surface of at least one of the walls 18, 20 and a part of the attachment portion 30 into contact with the outer surface of at least one of the walls. This locks the clip 14 in position and resists movement of the clip along the channel member. The presence of the friction material 34 assists in providing this locking action and also prevents the clip 14 from marking the channel member.

The clip 14 may have a substantially rigid load bearing core 35 which forms the attachment portion 30 and the neck 32 and at least part of the

engagement portion 28 and to which the friction material 34 is applied or attached. The core 35 could be manufactured from a substantially rigid polymeric material or from a metallic material onto which the friction material 34 is applied, either as a coating or an over moulding. Alternatively, separate friction pads or sleeves may be attached to the rigid core. Rather than discreet regions of friction material 34 as shown in the drawings, friction material may be provided on all the surfaces of the clip that come into contact with the channel member when the clip is inserted. Any suitable friction material can be used but materials that are resiliently deformable are particularly suitable as they provide a degree of cushioning, preventing the channel member 12 from being marked or damaged. Suitable friction materials include but are not limited to: natural or synthetic rubber or other polymeric materials.

Figures 8 and 9 illustrate an alternative embodiment of a clip 14' for use in the retention system 10. The clip 14' is similar to the clip 14 described above and has a core 35 made of any suitable load bearing material such as a metallic, polymeric, or composite material. The core 35 defines the engagement portion 28, the attachment portion 30 and the neck 32. A friction material 34 covers the lower surface of the attachment portion 30 and the upper surface of the engagement portion 28 on either side of the neck 32. The friction material 34 is arranged for contact with the side walls 18, 20 of the channel member when a load is applied to the clip.

The retention system 10 provides a flexible and simple to use arrangement for attaching items to a surface. The clips 14, 14' can be inserted anywhere along the length of a channel member 12 and are automatically held in position by a combination the rocking movement of the clip under load and the friction material. No complex clamping arrangement being required to fix each clip in its desired position. Channel members 12 can be provided on any suitable surface whether horizontal, vertical or any angle in-between.

As shown, the clips 14, 14' can be provided as separate items to which retentions members, such as luggage straps, bungee straps and luggage nets, or other items can be attached. Alternatively, clips can be formed integrally with or pre-attached to a retention member or other item. For example, luggage retention straps can have suitable clips at either end or a luggage net can be provided with attachment portions, each having a suitable clip. Clips 14, 14' can also be provided pre-affixed to various luggage items, such as suitcases, bags, golf bags and the like, or any other item which may be secured using the retention system.

Figure 7 illustrates schematically a typical arrangement for use in a vehicle luggage compartment 36. Two channel members 12a, 12b are mounted to the floor 38 of the compartment. The channel members 12a, 12b extend parallel to one another in a longitudinal direction of the compartment and are spaced apart. An item of luggage 40 positioned on the floor of the compartment between the channel members is held in place by means of a luggage net 42. A strap 44 at each corner of the net 42 is attached to a clip 14, 14' which is inserted in a corresponding one of the channel members 12a, 12b.

Whilst two channel members 12a, 12b are shown in Figure 7, it will be appreciated that more than two channel members could be provided in the luggage compartment to allow for greater flexibility. In addition, channel members 12 could also be attached to side, front and/or rear surfaces of the luggage compartment. Channel members could be arranged to extend laterally across the vehicle compartment or in any suitable orientation.

When the retention system is not in use, the clips 14, 14' can be removed from the channel members 12 so that they are not at risk of being damaged and so that they do not damage other items placed in the compartment. This ensures that the whole of the floor space of the luggage compartment is available for use. With the clips removed, the channel members 12a, 12b act as runners on which luggage items can be slid into the luggage

compartment. The channel members can also be used to mount a rolling load assist tray in the luggage compartment using clip like members for insertion in the channel members. Such an arrangement may comprise a base or runners mounted to the channel members 12 using clips 14, 14' and a load tray movably mounted to the base or runners.

The channel members 12 may be fixed to a rigid support surface in the vehicle. However, particularly for use on the floor of the luggage compartment, the channel members 12a, 12b could be formed integrally with or attached to a flexible mat 26 as discussed above. In this case, the weight of the luggage will be relied on to hold the mat 26 in position.

The retention system 10 in accordance with the embodiment described is particularly adapted for use in retaining items in a luggage compartment of a vehicle. However, retention systems in accordance with the invention can be adapted to a wide range of applications. For example, a retention system in accordance with the invention could be adapted for use in holding items intended for display or exhibition. Channel members could thus be incorporated in or mounted to a frame or board for holding display items. The retention system in accordance with the invention could also be adapted use in holding items on shelves or other storage arrangements.

Various changes and modifications may be made to the above described arrangements without departing from the scope of the present invention as defined in the claims.

Claims

1. A retention system comprises at least one elongate channel member and one or more clips for insertion into the channel member, the channel member defining an internal channel and having a longitudinal slot providing access to the channel, each clip having an engagement portion adapted to locate in the channel and an external attachment portion connected to the engagement portion by means of a neck which passes through the longitudinal slot, the engagement portion being shaped such that in one angular orientation it is able to pass through the longitudinal slot, so as to enable it to be inserted into or removed from the channel member, and such that once inserted it can be moved to another angular orientation in which it is unable to pass through the longitudinal slot to prevent its removal from the channel member, in which at least part of the clip which contacts the channel member once inserted comprises a friction material adapted so that contact between the material and the channel member resists longitudinal movement of the clip along the channel member.

2. A retention system as claimed in claim1, wherein the system comprises at least two of said channel members arranged in spaced apart relation.

3. A retention system as claimed in claim1 or claim 2, wherein the attachment portion of the at least one clip is adapted to enable a retention member or other item to be attached to it.

4. A retention system as claimed in and one of the preceding claims, in which the attachment portion of the at least one clip comprises a buckle loop.

27 07 10

5. A retention system as claimed in any one of the preceding claims, wherein the system comprises at least one retention member to which at least one clip is attached.

6. A retention system as claimed in any one of the preceding claims, wherein the engagement portion of the at least one clip has a dimension in a first direction which is smaller than the width of the longitudinal slot in the channel member and a dimension in a second direction which is larger than the width of the longitudinal slot.

7. A retention system as claimed in any one of the preceding claims, wherein the neck and the engagement portion of the at least one clip substantially form a "T" shape.

8. A retention system as claimed in any one of the preceding claims, wherein at least part of the at least one clip is made of a load bearing material, such as a metallic or polymeric material, onto which the friction material is over-moulded or coated.

9. A retention system as claimed in any one of the preceding claims, wherein the at least one clip has a load bearing core and the friction material is in the form of separate pads or sleeves that are attached to the load bearing core.

10. A retention system as claimed in any one of the preceding claims, wherein the friction material is a resiliently deformable material.

11. A retention system as claimed in any one of the preceding claims, wherein, the friction material is a natural or synthetic rubber or a polymeric material.

12. A retention system as claimed in any one of the preceding claims, wherein the at least one elongate channel member is extruded.

13. A retention system as claimed in any one of the preceding claims, wherein the at least one channel member comprises a generally planar

27 07 10

base region and two curved side wall regions extending from the base towards each other to define the internal channel, the sidewalls having free ends that are spaced apart to define the longitudinal slot.

14. A retention system as claimed in any one of the preceding claims, wherein the at least one channel member is adapted to be fixed to a support surface.

15. A retention system as claimed in any one of claims 1 to 13, wherein the at least one channel member is affixed to or moulded integrally with a flexible mat.

16. A retention system as claimed in any one of the preceding claims, wherein part of the attachment portion of each clip overlies in spaced relation a part of the engagement portion, at least opposing surfaces of the overlying parts of the attachment and engagement portions comprising the friction material.

17. A retention system as claimed in claim 16, in which the arrangement is configured such that when each clip is engaged in the channel it can be rocked by the application of a load to the attachment portion to bring part of the engagement portion which comprises the friction material into contact with an inner surface of the channel member and a part of the attachment portion which comprises the friction material into contact with an outer surface of the channel.

18. A retention system as claimed in claim 13, or any one of claims 14 to 17 when dependent on claim 13, in which each side wall of the channel member is received between opposing surfaces of the engagement and attachment portions of the or each clip when it is engaged in the channel member, the opposing surfaces comprising the friction material.

27 07 10

19. A retention system as claimed in any one of the preceding claims, where in the system is a luggage retention system for use in a luggage compartment of a vehicle.

20. A retention system as claimed in claim 1, wherein the system comprises a pair of spaced channel members and a rolling load tray, the rolling load tray being mountable to the channel members using the one or more clips.

21. A retention system as claimed in claim 19, in which the rolling load tray comprises a base or runners mountable to the channel members by means of the one or more clips and a load tray movable mounted to the base or runners.

22. A retention system substantially as hereinbefore described, with reference to and as illustrated in Figures 1 to 5 or Figure 6, or Figure 7 or Figures 8 and 9 of the accompanying drawings.

27 07 10

Application No:	GB0914323.1	**Examiner:**	Melanie Bull
Claims searched:	1-22	**Date of search:**	15 November 2010

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-7, 9-14, 19	US2688289 A (STERLING) See especially Figures 1 and 3.
X	1-14, 19	EP1724154 A1 (BOS GMBH) See especially Figures 5 and 6.
X	1-7, 13, 14, 19	US2003/053879 A1 (DELAY) See especially Figure 4.
X	1-6, 13, 14, 19	US2008/253855 A1 (BOHLKE) See especially Figures 1 and 3 and paragraph 0006.
X	1, 2, 3, 5, 6, 7, 9, 15, 19	EP0536923 A1 (EMHART) See especially Figures 1 and 2.
X	1-3, 5, 6, 7, 13, 14	GB2330614 A (BAKER) See especially 1-3A.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

B60P; B60R

The following online and other databases have been used in the preparation of this search report

WPI and EPODOC

International Classification:

Subclass	Subgroup	Valid From
B60R	0007/02	01/01/2006
B60P	0007/08	01/01/2006