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(54) Title: VEHICLE SEAT MODULE WITH EXTRUDED NON-WOVEN AND J-CLIP

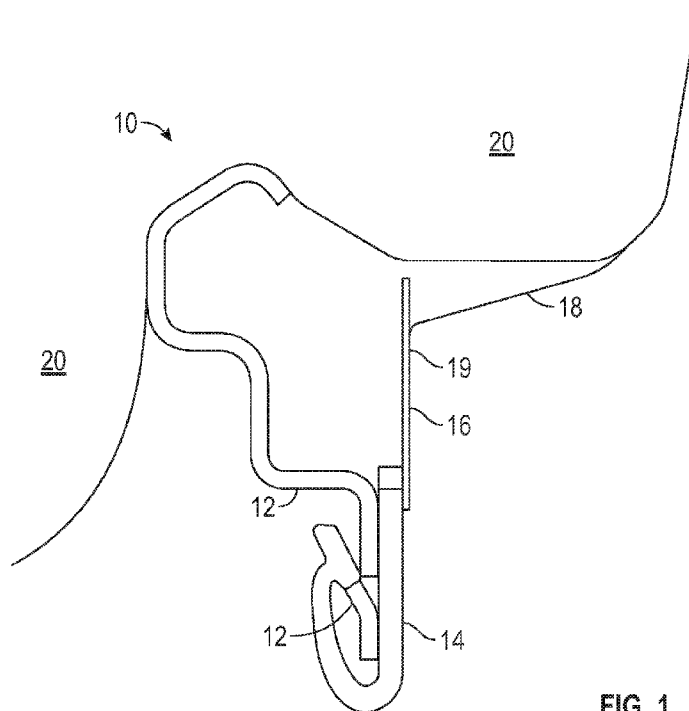


FIG. 1

(57) Abstract: In one example, a vehicle seat includes a non-woven and a J-clip, wherein the non-woven is secured to the J-clip to define a single component. The vehicle seat includes a trim cover attached to the non-woven, and the J-clip is attached to a cushion frame to attach the trim cover to the cushion frame.



TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
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Published:

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VEHICLE SEAT MODULE WITH EXTRUDED NON-WOVEN AND J-CLIP

REFERENCE TO PRIOR APPLICATION

[0001] This application claims the benefit of United States Provisional Application No. 62/807,525 filed February 19, 2019.

BACKGROUND

[0002] A J-clip is attached to a trim cover, and the J-clip attaches to a cushion frame to attach the trim cover to the cushion frame. When approximately 250 N of force is applied, the J-clip can disengage from the cushion frame, requiring the J-clip to be manually reattached to the cushion frame.

SUMMARY

[0003] In an embodiment, a vehicle seat or vehicle seat module includes a non-woven and a J-clip. The non-woven is secured to the J-clip to define a single component. The vehicle seat includes a trim cover attached to the non-woven, and the J-clip is attached to a cushion frame to attach the trim cover to the cushion frame.

[0004] In another embodiment according to any of the previous embodiments, the J-clip is polypropylene.

[0005] In another embodiment according to any of the previous embodiments, the non-woven is polyester In another embodiment according to any of the previous embodiments, the non-woven is secured to the J-clip with an adhesive.

[0006] In another embodiment, the non-woven is secured to the J-clip with stitches formed by sewing.

[0007] In another embodiment according to any of the previous embodiments, the non-woven is secured to the J-clip by molding a portion of the J-clip around the non-woven.

[0008] In another embodiment according to any of the previous embodiments, the non-woven is attached to the trim cover with stitches along a sewing line.

[0009] In another embodiment according to any of the previous embodiments, the non-woven is attached to the trim cover with stitches along a sewing line.

[0010] In another embodiment according to any of the previous embodiments, a foam pad is located between the trim cover and the cushion frame.

[0011] In another embodiment according to any of the previous embodiments, the J-clip is attached to one side of the non-woven.

[0012] In another embodiment according to any of the previous embodiments, the J-clip is attached to both sides of the non-woven.

[0013] In another embodiment according to any of the previous embodiments, the non-woven is secured to the J-clip by molding a portion of the J-clip around the non-woven such that the non-woven is inside a portion of the J-clip.

[0014] In another embodiment according to any of the previous embodiments, the portion of the non-woven is located within a straight portion of the J-clip.

[0015] In another embodiment, a vehicle seat or vehicle seat module includes a polyester non-woven comprising polypropylene and a J-clip including a straight portion and a curved portion. The polyester non-woven is located within the straight portion of the J-clip such that the J-clip is attached to both sides of the polyester non-woven to secure the polyester non-woven to the J-clip, and the curved portion of the J-clip receives a portion of a cushion frame to attach a trim cover to the cushion frame. The vehicle door includes A trim cover attached to the polyester non-woven with stitches along a sewing line and a foam pad located between the trim cover and the cushion frame.

[0016] In another embodiment, a method of transferring a load on a vehicle seat includes the step of applying a load on a vehicle seat and transferring a force to a non-woven attached to a J-clip to bend the non-woven attached to a J-clip. The J-clip is attached to a cushion frame.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] Other advantages of the present invention can be understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

[0018] Figure 1 schematically illustrates a side view of a J-clip engaged on a cushion frame;

[0019] Figure 2 schematically illustrates a side view of a first embodiment of the J-clip attached to a non-woven or carpet; and

[0020] Figure 3 schematically illustrates a side view of a second embodiment of the J-clip attached to the non-woven.

DETAILED DESCRIPTION

[0021] As shown in Figure 1, a vehicle seat 10 includes a cushion frame 12. A J-clip 14 is clipped on a portion of the cushion frame 12. In one example, the curved portion of the J-clip 14 receives the portion of the cushion frame 12. In one example, the J-clip 14 is polypropylene. The J-clip 14 is secured to an extruded non-woven 16 (4.4 oz/yd²) or carpet (264 g/m² or 400 g/m²). In one example, an adhesive is used to secure the J-clip 14 to the non-woven 16 to form a single component. In another example, the J-clip 14 can be secured to the non-woven 16 by stitches formed by sewing to form a single component, as shown in Figure 2.

[0022] The non-woven 16 is attached to a trim cover 18. In one example, the non-woven 16 is polyester. In one example, the non-woven is 4.4 oz/yd². In one example, the non-woven 16 is sewn to the trim cover 18 with stitches at a sewing line 19. The non-woven 16 and the J-clip 14 hold the trim cover 18 to the cushion frame 12. A foam pad 20 is located between the trim cover 18 and the cushion frame 12.

[0023] In one example shown in Figure 2, the J-clip 14 is attached to one side of the non-woven 16. In another example shown in Figure 3, the J-clip 14 is attached to both sides of the non-woven 16. In this example, the J-clip 14 is molded around a portion of the non-woven 16 such that the non-woven 16 is inside a portion of the J-clip 14. In one example, a portion of the non-woven 16 is located within the straight portion of the J-clip 14.

[0024] When an occupant sits on the vehicle seat, the non-woven 16 “folds” and bends, so that a force generated is transferred to the non-woven 16 instead of the J-clip 14, preventing the load from transferring to the J-clip 14. This prevents the J-clip 14 from moving and disengaging from the cushion frame 12. The “folding” of the non-woven 16 allows the J-clip 14 to stay intact with the cushion frame 12. The attachment of the J-clip 14 and the non-woven 16 allows a high load to be applied to the seat. As the non-woven 16 is weaker than the J-clip 14, the non-woven 16 will deflect first and will not transfer load to the J-clip 14.

[0025] The foregoing description is only exemplary of the principles of the invention. Many modifications and variations of the present invention are possible in light of the above teachings. The preferred embodiments of this invention have been disclosed, however, so that one

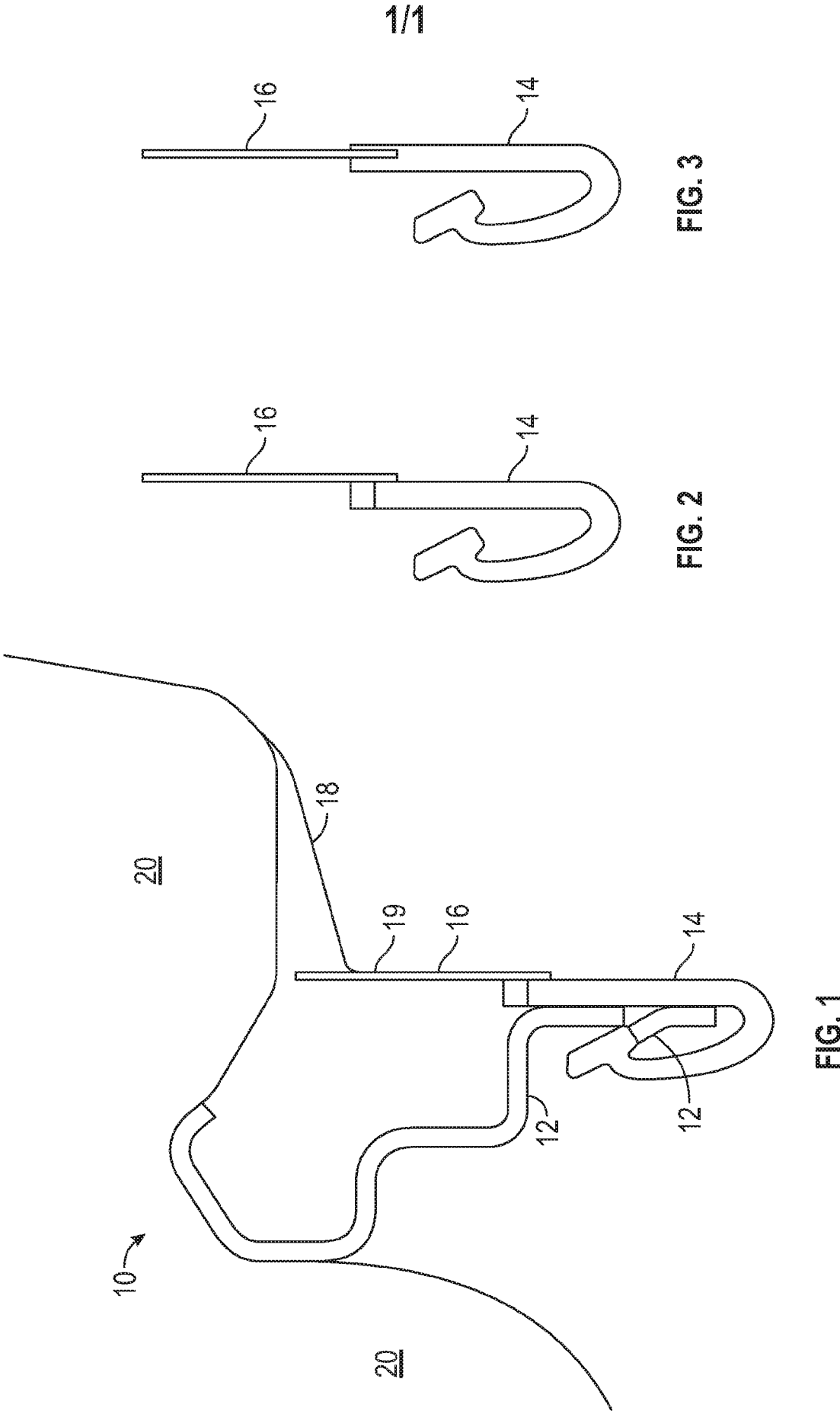
of ordinary skill in the art would recognize that certain modifications would come within the scope of this invention. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described. For that reason the following claims should be studied to determine the true scope and content of this invention.

CLAIMS

What is claimed is:

1. A vehicle seat module comprising:
a non-woven;
a J-clip, wherein the non-woven is secured to the J-clip to define a single component; and
a trim cover attached to the non-woven, wherein the J-clip is attached to a cushion frame to attach the trim cover to the cushion frame.
2. The vehicle seat module as recited in claim 1 wherein the J-clip is polypropylene.
3. The vehicle seat module as recited in claim 1 wherein the non-woven is polyester.
4. The vehicle seat module as recited in claim 1 wherein the non-woven is secured to the J-clip with an adhesive.
5. The vehicle seat module as recited in claim 1 wherein the non-woven is secured to the J-clip with stitches formed by sewing.
6. The vehicle seat module as recited in claim 1 wherein the non-woven is secured to the J-clip by molding a portion of the J-clip around the non-woven.
7. The vehicle seat module as recited in claim 1 wherein the non-woven is attached to the trim cover with stitches along a sewing line.
8. The vehicle seat module as recited in claim 1 wherein a curved portion of the J-clip receives a portion of the cushion frame.
9. The vehicle seat module as recited in claim 1 wherein a foam pad is located between the trim cover and the cushion frame.

10. The vehicle seat module as recited in claim 1 wherein the J-clip is attached to one side of the non-woven.
11. The vehicle seat module as recited in claim 1 wherein the J-clip is attached to both sides of the non-woven.
12. The vehicle seat module as recited in claim 11 wherein the non-woven is secured to the J-clip by molding a portion of the J-clip around the non-woven such that the non-woven is inside a portion of the J-clip.
13. The vehicle seat module as recited in claim 12 wherein the portion of the non-woven is located within a straight portion of the J-clip.
14. A vehicle seat module comprising:
 - a polyester non-woven comprising polypropylene;
 - a J-clip including a straight portion and a curved portion, wherein the polyester non-woven is located within the straight portion of the J-clip such that the J-clip is attached to both sides of the polyester non-woven to secure the polyester non-woven to the J-clip, and the curved portion of the J-clip receives a portion of a cushion frame to attach a trim cover to the cushion frame;
 - the trim cover attached to the polyester non-woven with stitches along a sewing line; and
 - a foam pad located between the trim cover and the cushion frame.
15. A method of transferring a load on a vehicle seat comprising the steps of:
 - applying a load on a vehicle seat; and
 - transferring a force to a non-woven attached to a J-clip to bend the non-woven attached to a J-clip, wherein the J-clip is attached to a cushion frame.



INTERNATIONAL SEARCH REPORT

International application No
PCT/US2019/064673

A. CLASSIFICATION OF SUBJECT MATTER
INV. B60N2/60
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B60N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 820 212 A (HOSHINO AKIHIKO [JP] ET AL) 13 October 1998 (1998-10-13) figures 3A, 3B, 2A,4B column 2, line 26 - line 44 column 4, line 9 - line 19 column 3, line 59 - line 63 column 3, line 52 - line 58 column 4, line 20 - line 22 -----	1-15
A	WO 2004/014690 A1 (JOHNSON CONTROLS TECH CO [US]; HUTTON WILLIAM DEXTER [US] ET AL.) 19 February 2004 (2004-02-19) the whole document paragraph [0003] -----	1-15
A	US 2012/038200 A1 (STANKIEWICZ TIMOTHY J [US] ET AL) 16 February 2012 (2012-02-16) the whole document -----	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

8 April 2020

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28/04/2020

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5820212	A	13-10-1998	DE 19714675 A1	06-11-1997
			GB 2311936 A	15-10-1997
			US 5820212 A	13-10-1998

WO 2004014690	A1	19-02-2004	AU 2003261240 A1	25-02-2004
			WO 2004014690 A1	19-02-2004

US 2012038200	A1	16-02-2012	CN 102271555 A	07-12-2011
			EP 2361026 A1	31-08-2011
			JP 5600684 B2	01-10-2014
			JP 5877223 B2	02-03-2016
			JP 2012511962 A	31-05-2012
			JP 2014206274 A	30-10-2014
			KR 20110096068 A	26-08-2011
			US 2012038200 A1	16-02-2012
			WO 2010068854 A1	17-06-2010
