

## **A BRACKET AND RELATED METHODS**

### **FIELD OF INVENTION**

**[001]** The present invention relates broadly, but not exclusively, to a bracket for assembling a backrest to a seat base and to a method for manufacturing a bracket.

### **BACKGROUND**

**[002]** Chairs commonly used in offices or homes are designed with features to provide comfort to users. For example, the backrest may be able to recline. A typical chair with recline feature comprises a foot base, seat base fixed with a seat base fixture and mounted on the foot base, and a backrest mounted on the seat base. Although the chair can be assembled in the factory and delivered to end user, an assembled chair is bulky and difficult to be transported. Therefore, some chairs are designed to be assembled by end users.

**[003]** In a typical chair assembly process, the end user will first have to attach the seat base to the foot base. The seat base may have a seat base fixture which is part of the recline assembly. After which, the user will have to attach a backrest to the seat base. It is cumbersome to install the backrest to the seat base as the user will typically need to support and balance the backrest at approximately 45 degrees angle while attempting to align the mounting holes of the backrest with that of the seat base. Once the mounting holes are aligned, the backrest and seat base will need to be fastened together using four screws. Throughout the fastening process, the backrest needs to be held in position until the backrest and seat base are secured together.

**[004]** A need therefore exists to provide a bracket for assembling a backrest to a seat base that seeks to address at least some of the above problems.

### **SUMMARY**

**[005]** According to a first aspect, there is provided a bracket for assembling a backrest to a seat base, comprising: a body extending in a longitudinal direction from a

first end to a second end, the body forming a channel configured to slidably receive a seat base fixture and prevent movement between the backrest and the seat base fixture in a lateral direction; and at least one stopper disposed adjacent the first end, the at least one stopper may be configured to abut an end portion of the seat base fixture.

**[006]** The body may comprise a pair of guiding rails shaped to form the channel.

**[007]** The body, the at least one stopper and the pair of guiding rails may form a unitary construction.

**[008]** The bracket may further comprise a bevel disposed adjacent the second end of the body.

**[009]** The bracket may further comprise a plurality of openings disposed between the first end and second end of the body, and the plurality of openings may be positioned to align with respective backrest mounting holes disposed on the backrest.

**[0010]** The selected ones of the plurality of openings may be configured to align with seat base mounting holes disposed on the seat base fixture when the at least one stopper abuts the end portion of the seat base fixture.

**[0011]** According to a second aspect, there is provided a method for manufacturing a bracket, comprising the steps of: forming a body, the body extending in a longitudinal direction from a first end to a second end; forming a channel on the body, such that the channel can slidably receive a seat base fixture and prevent movement between a backrest and the seat base fixture in a lateral direction; and disposing at least one stopper adjacent the first end, such that the at least one stopper can abut an end portion of the seat base fixture.

**[0012]** Forming the channel on the body may comprise shaping a pair of guiding rails.

**[0013]** The body, the at least one stopper and the pair of guiding rails may be formed from a single piece of blank using stamping processes.

**[0014]** The method may further comprise the step of disposing a bevel adjacent the second end of the body.

**[0015]** The method may further comprise the step of disposing a plurality of openings between the first end and second end of the body, such that the plurality of openings align with respective backrest mounting holes disposed on the backrest.

**[0016]** Disposing the plurality of openings may further comprise positioning selected ones of the plurality of openings such that the selected ones of the plurality of openings align with seat base mounting holes disposed on the seat base fixture when the at least one stopper abuts the end portion of the seat base fixture.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

**[0017]** Embodiments and implementations are provided by way of example only, and will be better understood and readily apparent to one of ordinary skill in the art from the following written description, read in conjunction with the drawings, in which:

**[0018]** Figure 1A is an isometric view of a bracket, according to an example embodiment.

**[0019]** Figure 1B is a top view of the bracket of Figure 1A.

**[0020]** Figure 1C is a front view of the bracket of Figure 1A.

**[0021]** Figure 1D is a side view of the bracket of Figure 1A.

**[0022]** Figure 2A is a schematic representation of the bracket of Figure 1 positioned above a seat base fixture.

**[0023]** Figure 2B is a schematic representation of the bracket of Figure 1 assembled to the seat base fixture.

**[0024]** Figure 3 is a flowchart illustrating a method for manufacturing a bracket, according to an example embodiment.

## DETAILED DESCRIPTION

**[0025]** Embodiments will be described, by way of example only, with reference to the drawings. Like reference numerals and characters in the drawings refer to like elements or equivalents.

**[0026]** Embodiments of the invention provide a recline guide which may be a bracket that can guide and align a backrest onto a seat base fixture. In use, the bracket is normally first installed on the lower part of the backrest where the backrest is meant to be assembled to the seat base. Thereafter, using the bracket, the backrest may be slid along the seat base fixture to be assembled with the seat base. Once the backrest and seat base fixture are aligned, the bracket can keep the backrest suspended in position. This allows the user to easily insert and fasten screws to secure the backrest and seat base together without having to physically hold the backrest in position during the assembly process.

**[0027]** Figure 1A is an isometric view of a bracket 100, according to an example embodiment. Figure 1B is a top view, Figure 1C is a front view and Figure 1D is a side view of the bracket of Figure 1A. The bracket 100 is suitable for assembling a backrest to a seat base and comprises a body 102 extending in a longitudinal direction from a first end 114 to a second end 104. The body 102 forms a channel 103 configured to slidably receive a seat base fixture and prevent movement between the backrest and the seat base fixture in a lateral direction. The bracket 100 also comprises at least one stopper 112 disposed adjacent the first end 114. The at least one stopper 112 is configured to abut an end portion 216 (Figure 2A) of the seat base fixture. More details will be discussed later with reference to Figure 2.

**[0028]** In one implementation, the body 102 of the bracket 100 may comprise a pair of guiding rails 110a, 110b shaped to form the channel 103. The guiding rails 110a, 110b may be in the form of an L-shape or C-shape for example. In some embodiments, the guiding rails 110a, 110b may extend across substantially most of the length of the body 102 of the bracket 100. In other embodiments, the guiding rails 110a, 110b may be of a short length and disposed along the length of the body 102 of the bracket 100.

**[0029]** In a preferred implementation, the body 102, at least one stopper 112 and the pair of guiding rails 110a, 110b of the bracket 100 may form a unitary construction. For example, the body 102, at least one stopper 112 and the pair of guiding rails 110a,

110b of the bracket 100 may be manufactured from stamping processes using a single piece of blank.

**[0030]** The bracket 100 may further comprise a bevel 106 disposed adjacent the second end 104 of the body 102. As shown in Figure 1D, the plane of the bevel 106 may be inclined at an angle of between 10° and 45° with respect to the plane of the body 102. The bevel 106 may help to guide the seat base fixture into the channel 103 so that the bracket 100 can slidably receive the seat base fixture easily during assembly. Specifically, there is no need for the user to position the second end 104 of the body 102 of the bracket 100 accurately with an end portion 216 (Figure 2A) of the seat base fixture before the backrest can slide along the seat base fixture. Even with a small lateral offset between the bracket 100 and the seat base fixture, the bevel 106 allows the seat base fixture to be guided along the angled surface of the bevel 106 and to slide through the bracket 100 easily. This can significantly reduce the time and effort required from the user to put the backrest and seat base fixture together.

**[0031]** The bracket 100 may also further comprise a plurality of openings 108a, 108b, 108c, 108d disposed between the first end 114 and second end 104 of the body 102. The plurality of openings 108a, 108b, 108c, 108d are positioned to align with respective backrest mounting holes disposed on the backrest. This arrangement allows the bracket 100 to be secured to the backrest using a few of the openings 108a, 108b, 108c, 108d and exposes selected backrest mounting holes to facilitate inserting and fastening screws to secure the backrest and seat base together upon alignment of the two components.

**[0032]** Figure 2A is a schematic representation 200 of the bracket 100 of Figure 1 positioned above a seat base fixture. Figure 2B is a schematic representation 200 of the bracket 100 of Figure 1 assembled to the seat base fixture. The seat base fixture is part of a recline mechanism that allows the backrest of a chair to be reclined. Generally, a seat base fixture may include a first member configured to be mounted to the seat base and a second member extending upwardly. In an assembled chair, the second member will be extended into the side of the backrest. In some configurations, the second member can swivel about the first member so that the chair can recline.

**[0033]** In some embodiments, there is one seat base fixture attached to each side of the seat base. The backrest may have a bracket 100 attached on the one side of the backrest and a mounting plate on the other side. The bracket 100 is used to initially

position the backrest relative to the seat base before screws are fastened to secure the backrest and the seat base fixture on that side. Thereafter, the other side can be secured directly using the mounting plate. As described above, the seat base fixture comprises an end portion 216. Further, the seat base fixture also comprises a plurality of openings 218a, 218b (hereinafter interchangeably referred to as seat base mounting holes 218a, 218b) so that screws can be inserted to fasten the backrest and seat base together once they are aligned.

**[0034]** In a chair assembly process, a seat base attached with the seat base fixture may be held in place while a backrest attached with the bracket 100 may be slid along the seat base fixture until at least one stopper 112 on the bracket 100 abuts an end portion 216 of the seat base fixture. The seat base and backrest will then be in an aligned position as shown in Figure 2B.

**[0035]** As described above, selected ones of the openings of the bracket 100 are positioned to align with respective backrest mounting holes. The selected ones of the plurality of openings may be configured to align with seat base mounting holes 218a, 218b disposed on the seat base fixture when the at least one stopper 112 abuts the end portion 216 (the end portion cannot be seen in Figure 2B as it is hidden beneath the stopper 112) of the seat base fixture.

**[0036]** As shown in Figure 2B, at an aligned position, the at least one stopper 112 on the bracket 100 restricts the backrest from sliding further along the seat base fixture. Further, the channel of the bracket 100 restricts movement of the seat base fixture in the lateral direction. As such, the backrest and seat base are effectively held in place in the aligned position. In other words, the user can release his/her hold on the backrest at this juncture.

**[0037]** It can also be understood from Figure 2B that the selected backrest mounting holes, the selected ones of the plurality of openings 108a, 108b, 108c, 108d (Figure 1) on the bracket 100 and the seat base mounting holes 218a, 218b are aligned with each other at the aligned position. The user can insert screws through the aligned holes and fasten them to secure the backrest and seat base together effortlessly. Effectively, the chair assembly process can be performed by a single user without any assistance or awkward positioning.

**[0038]** Figure 3 is a flowchart 300 illustrating a method for manufacturing a bracket, according to an example embodiment. At step 302, a body is formed, the body extending in a longitudinal direction from a first end to a second end. At step 304, a channel on the body is formed, such that the channel can slidably receive a seat base fixture and prevent movement between a backrest and the seat base fixture in a lateral direction. At step 306, at least one stopper is disposed adjacent the first end, such that the at least one stopper can abut an end portion of the seat base fixture.

**[0039]** As a non-limiting example, the bracket may be manufactured from stamping processes using a single piece of blank. Step 304 of forming the channel on the body may comprise shaping a pair of guiding rails. As described above, the guiding rails may be in the form an L-shape or a C-shape for example. These shapes may be formed by bending the blank accordingly. Similarly, step 306 of disposing at least one stopper adjacent the first end of the bracket may include bending the blank accordingly to form the stopper.

**[0040]** In other words, the step of forming the body, disposing at least one stopper and shaping the pair of guiding rails may comprise forming them as a unitary construction.

**[0041]** The method for manufacturing a bracket may further comprise the step of disposing a bevel adjacent the second end of the body. Similar to forming the guiding rails and stopper, the bevel may be formed by bending an end of the blank to the desired angle.

**[0042]** The method for manufacturing a bracket may also further comprise the step of disposing a plurality of openings between the first end and second end of the body, such that the plurality of openings align with respective backrest mounting holes disposed on the backrest. The plurality of openings may be formed by punching or milling for example.

**[0043]** The step of disposing the plurality of openings between the first end and second end of the body may comprise positioning selected ones of the plurality of openings such that the selected ones of the plurality of openings align with seat base mounting holes disposed on the seat base fixture when the at least one stopper abuts the end portion of the seat base fixture.

**[0044]** It will be appreciated by a person skilled in the art that numerous variations and/or modifications may be made to the present invention as shown in the specific

embodiments without departing from the spirit or scope of the invention as broadly described. For example, the exact dimensions of the bracket may vary depending on the dimensions of the seat base fixture. Also, other manufacturing processes, such as casting, can be used to fabricate the bracket. The present embodiments are, therefore, to be considered in all respects to be illustrative and not restrictive.

**CLAIMS**

1. A bracket for assembling a backrest to a seat base, comprising:
  - a body extending in a longitudinal direction from a first end to a second end, the body forming a channel configured to slidably receive a seat base fixture and prevent movement between the backrest and the seat base fixture in a lateral direction;
  - at least one stopper disposed adjacent the first end, wherein the at least one stopper is configured to abut an end portion of the seat base fixture; and
  - a bevel disposed adjacent the second end of the body, the bevel comprising an angled surface extending away from the second end.
2. The bracket as claimed in claim 1, wherein the body comprises a pair of guiding rails shaped to form the channel.
3. The bracket as claimed in claim 2, wherein the body, the at least one stopper and the pair of guiding rails form a unitary construction.
4. The bracket as claimed in any one of the preceding claims, further comprising a plurality of openings disposed between the first end and second end of the body, wherein the plurality of openings are positioned to align with respective backrest mounting holes disposed on the backrest.
5. The bracket as claimed in claim 4, wherein selected ones of the plurality of openings are configured to align with seat base mounting holes disposed on the seat base fixture when the at least one stopper abuts the end portion of the seat base fixture.
6. A method for manufacturing a bracket, comprising the steps of:
  - forming a body, the body extending in a longitudinal direction from a first end to a second end;
  - forming a channel on the body, such that the channel can slidably receive a seat base fixture and prevent movement between a backrest and the seat base fixture in a lateral direction;
  - disposing at least one stopper adjacent the first end, such that the at least one stopper can abut an end portion of the seat base fixture; and
  - disposing a bevel adjacent the second end of the body, the bevel comprising an angled surface extending away from the second end.

7. The method as claimed in claim 6, wherein forming the channel on the body comprises shaping a pair of guiding rails.
8. The method as claimed in claim 7, wherein the body, the at least one stopper and the pair of guiding rails are formed from a single piece of blank using stamping processes.
9. The method as claimed in any one of claims 6 to 8, further comprising the step of disposing a plurality of openings between the first end and second end of the body, such that the plurality of openings can align with respective backrest mounting holes disposed on the backrest.
10. The method as claimed in claim 9, wherein disposing the plurality of openings further comprises positioning selected ones of the plurality of openings such that the selected ones of the plurality of openings align with seat base mounting holes disposed on the seat base fixture when the at least one stopper abuts the end portion of the seat base fixture.