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(54) **SNOWBOARD BINDING HIGHBACK HAVING AN UPPER PORTION OF UNIFORM MATERIAL**

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(52) **U.S. Cl.**

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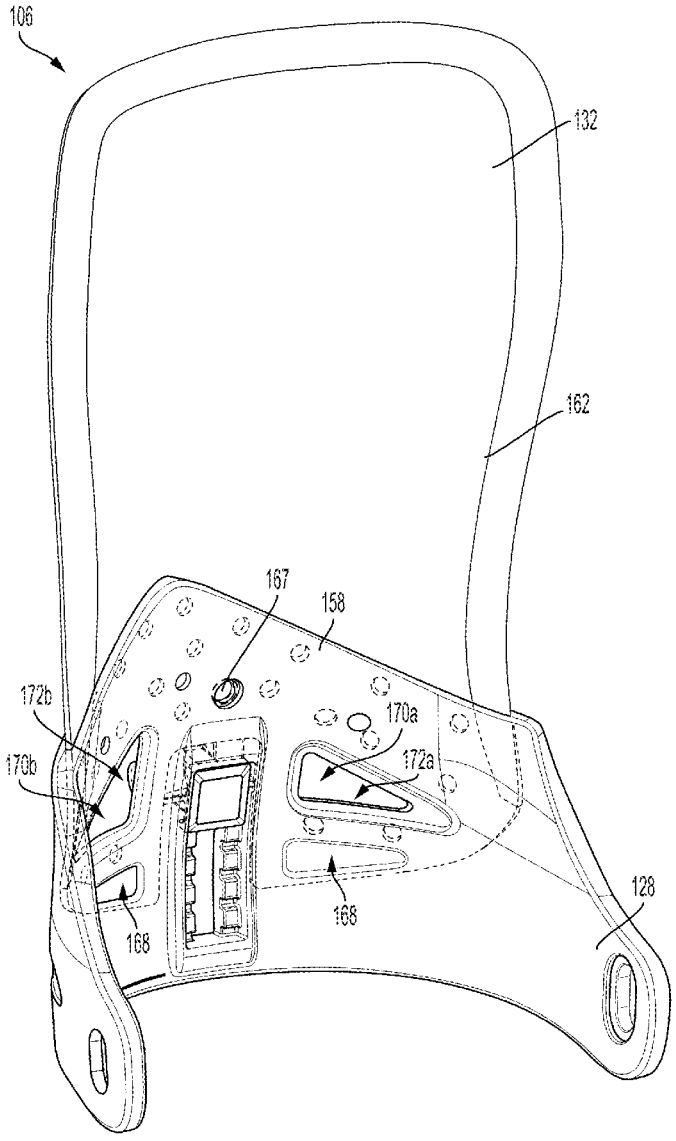
(57) **ABSTRACT**

A highback for a snowboard binding, and method of creating same, includes a lower portion configured to couple the highback to a baseplate of the snowboard binding such that a proximal end of the first portion is proximate the baseplate. An upper portion having a first section and second section is formed from a uniform material. The first section is anchored within the lower portion and the second section extends from a distal end of the lower portion away from the proximal end.



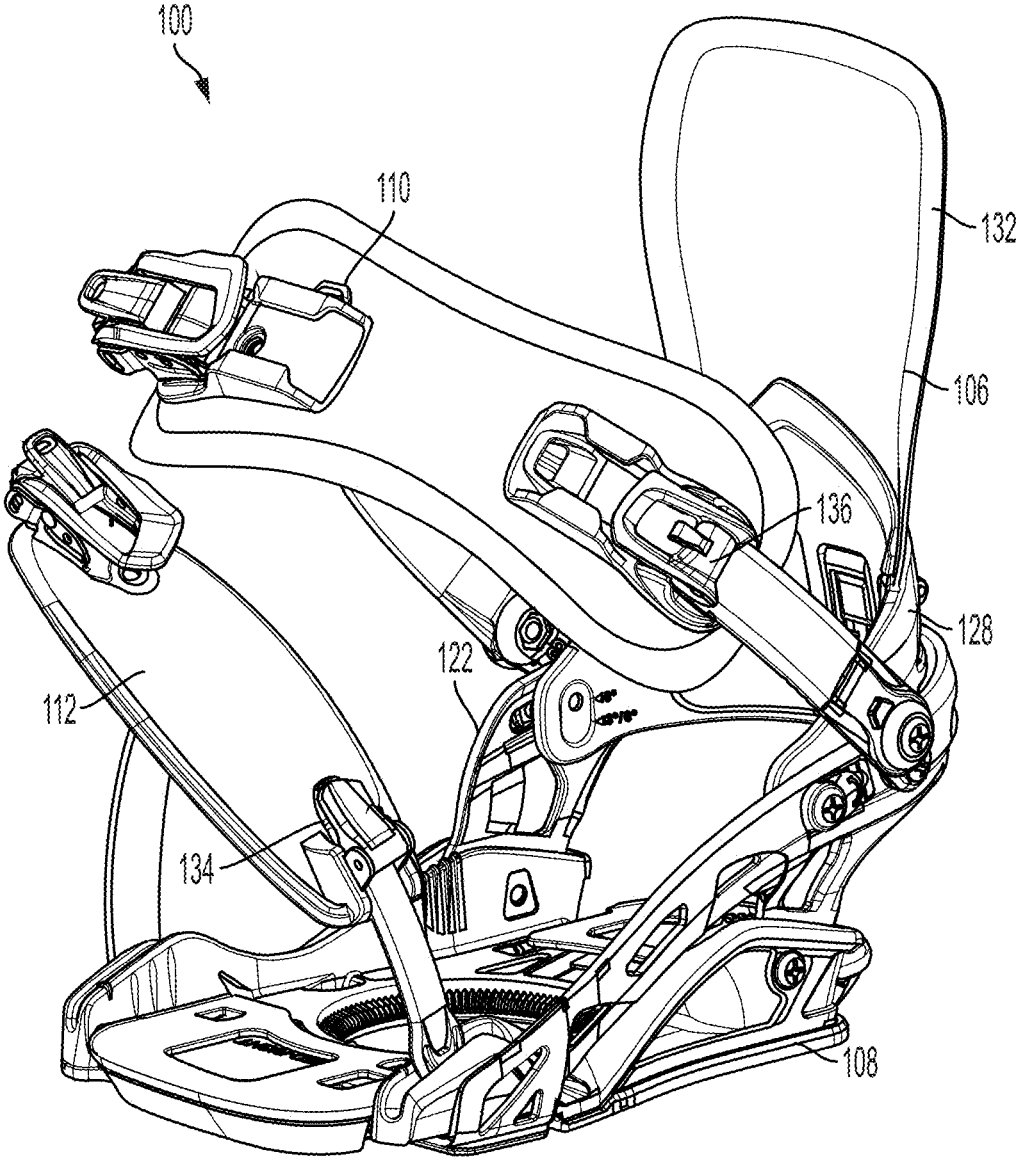


FIG. 1

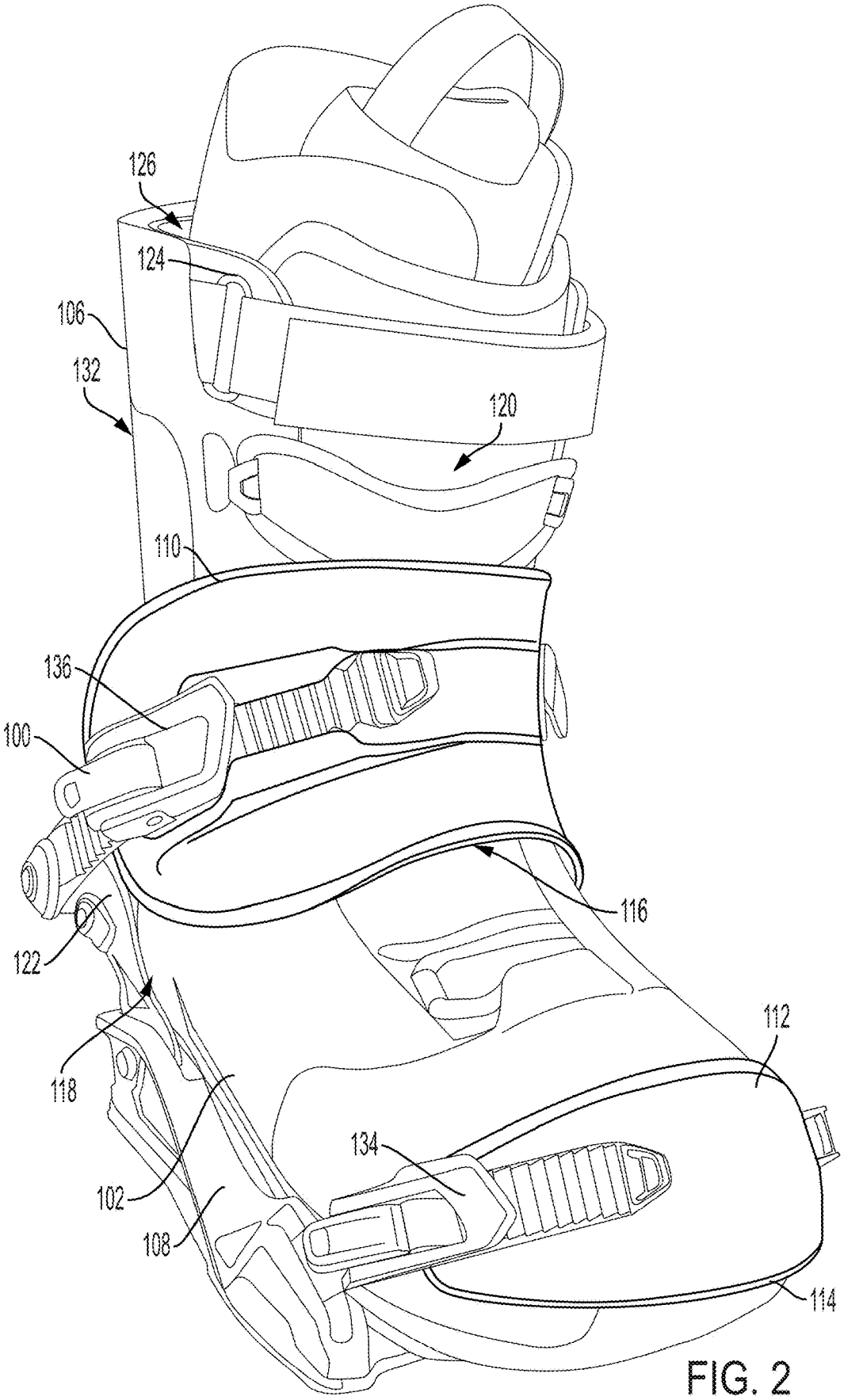


FIG. 2

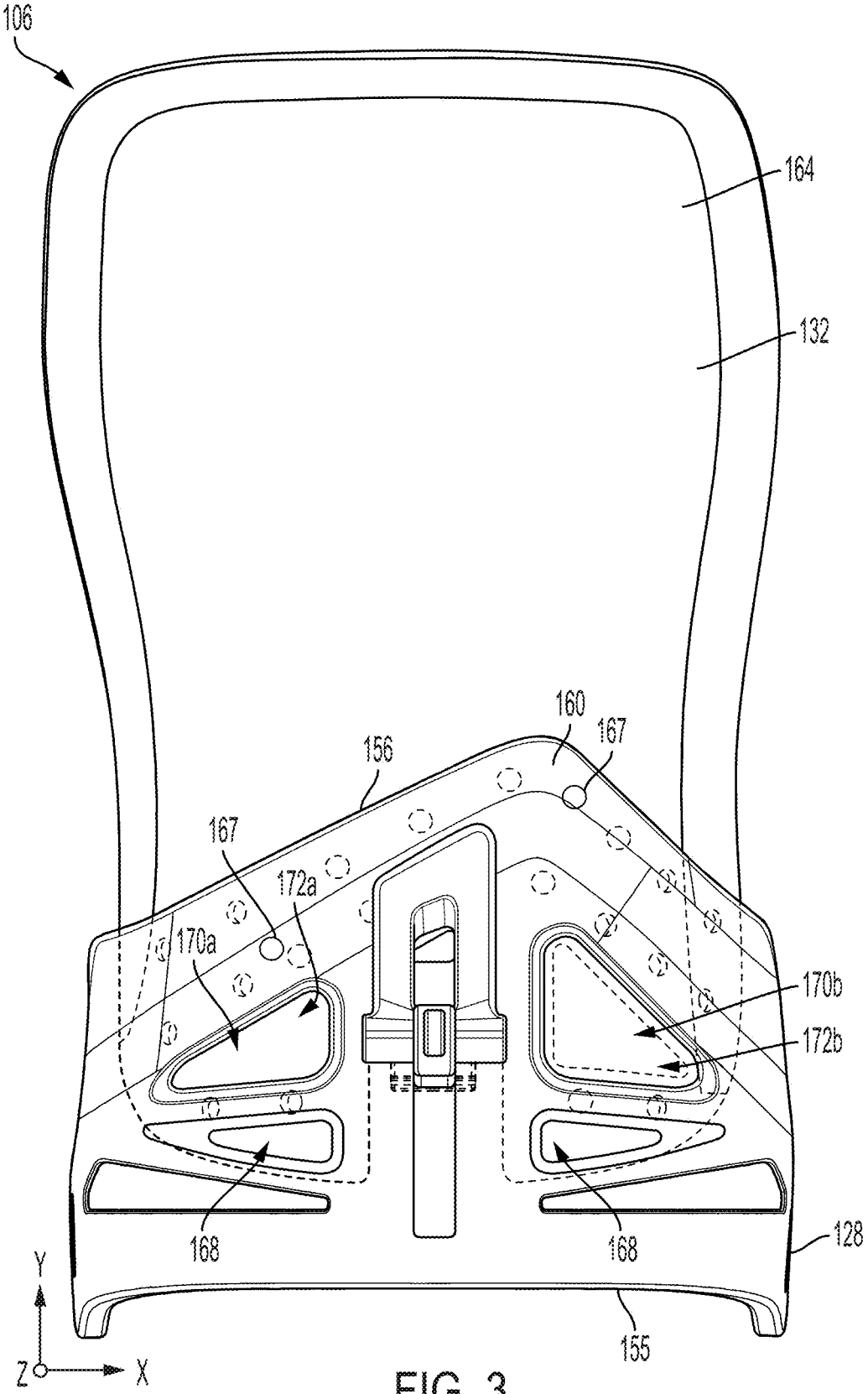

106
164
132
160
167
156
167
172a
170a
170b
172b
168
168
128
155
Y
Z
X

FIG. 3

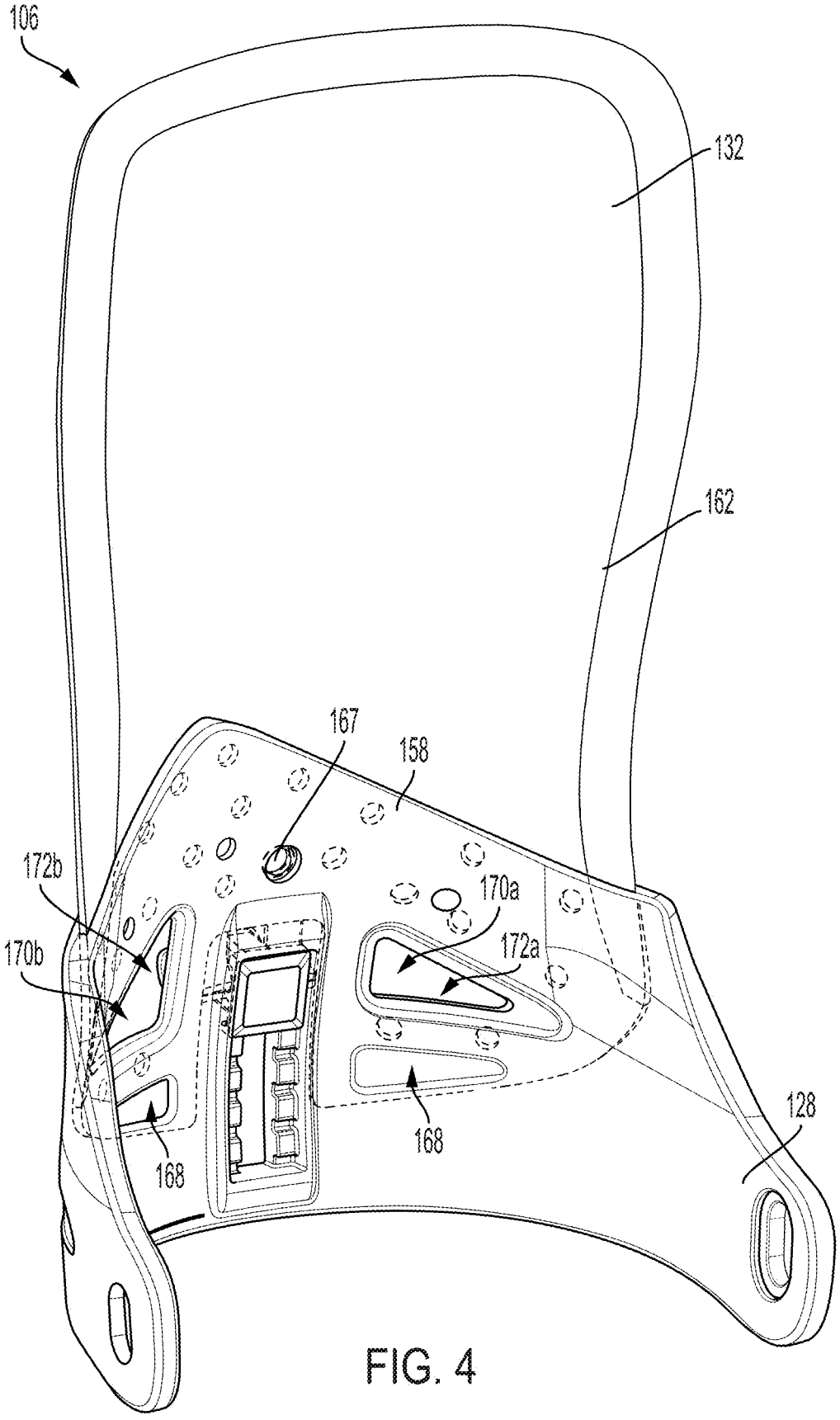


FIG. 4

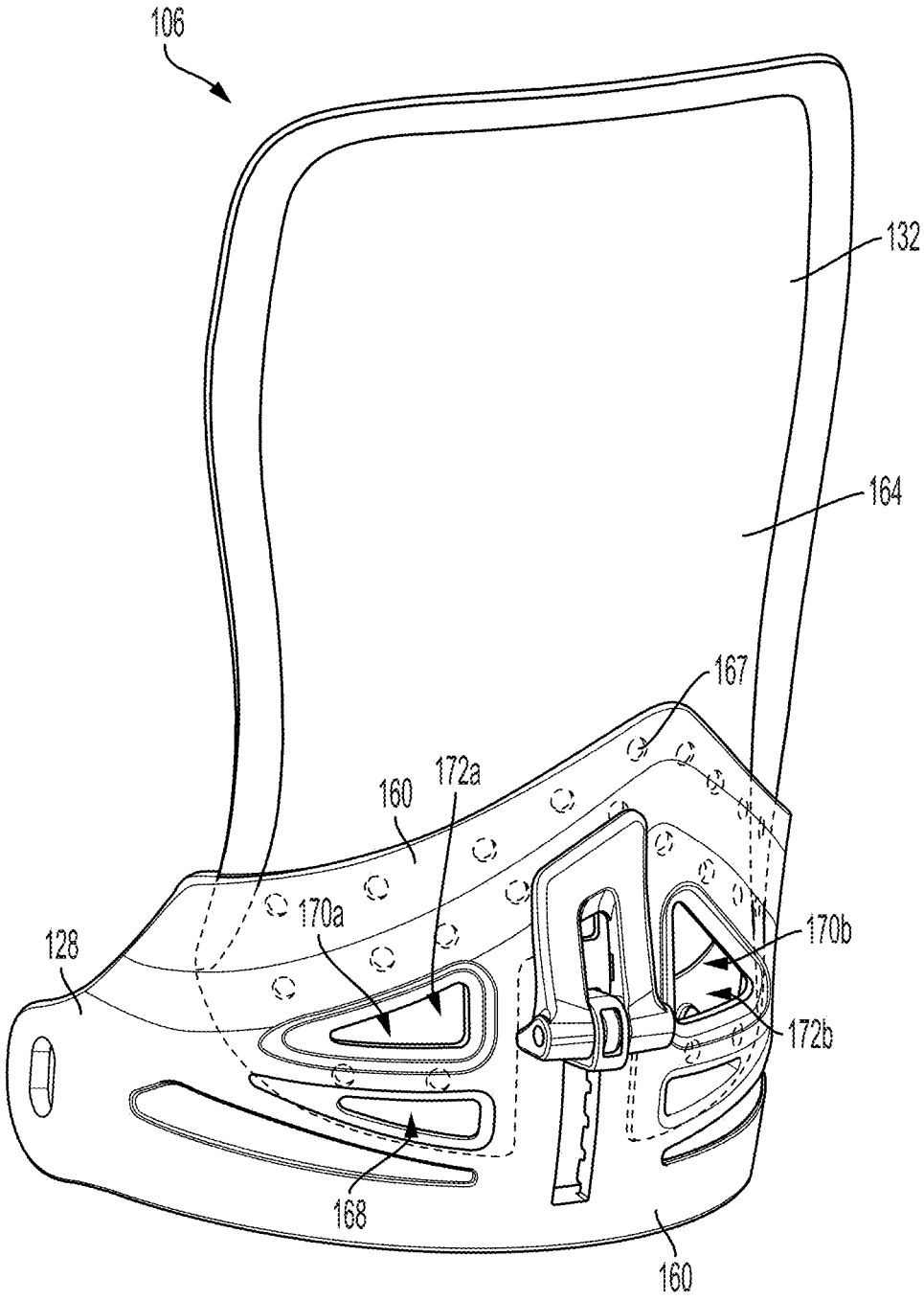


FIG. 5

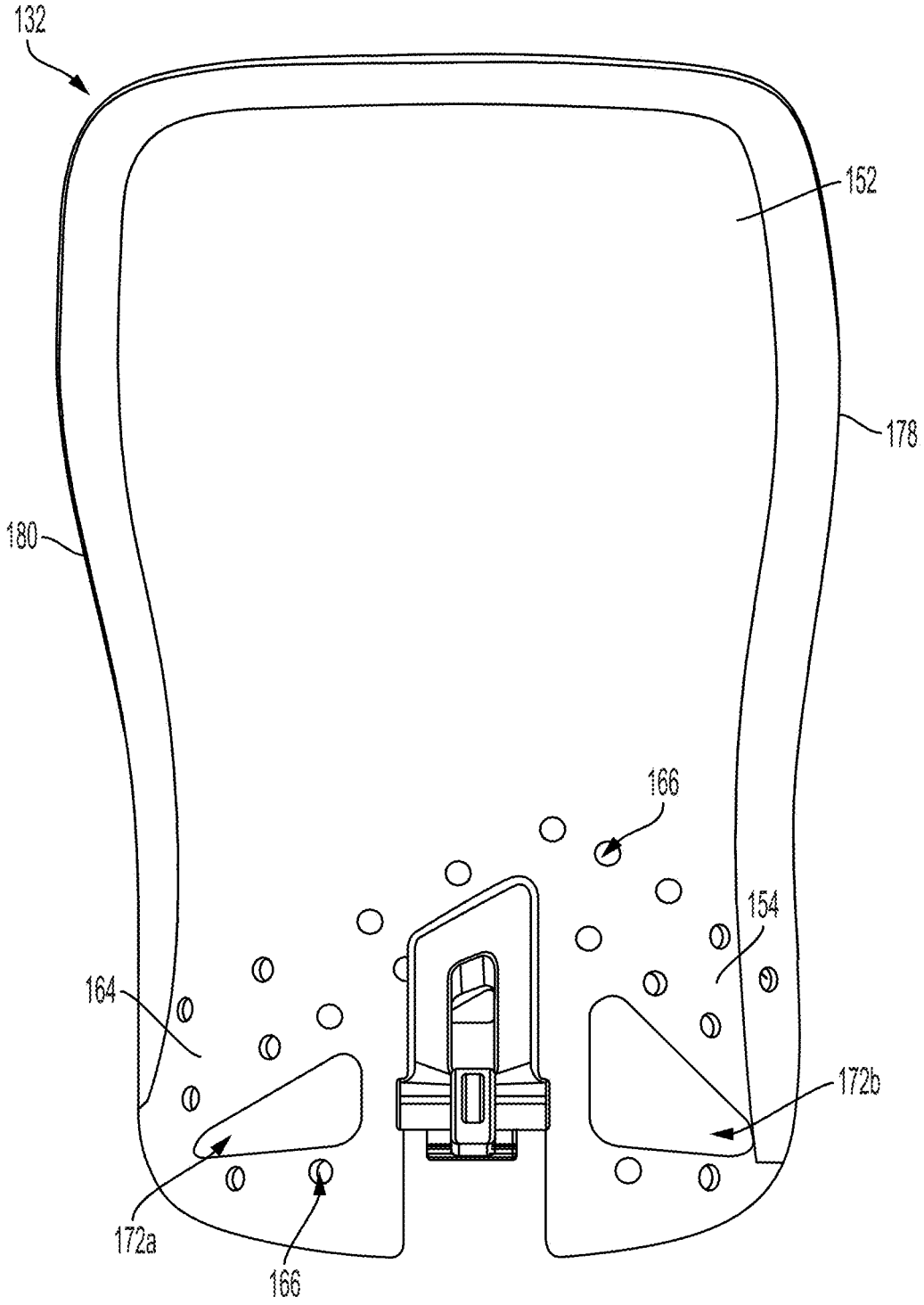


FIG. 6

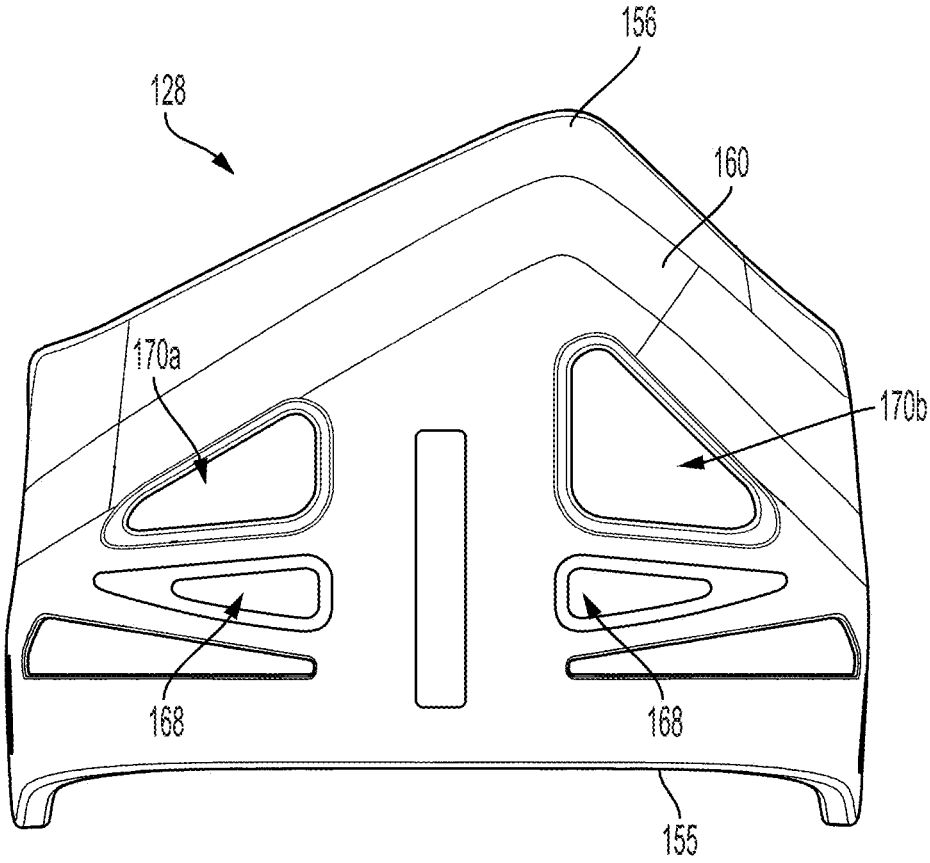


FIG. 7

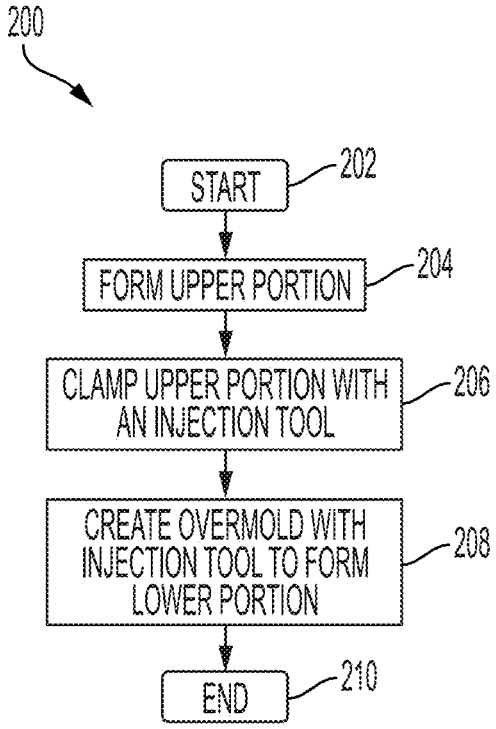

200
START
202
FORM UPPER PORTION
204
CLAMP UPPER PORTION WITH AN INJECTION TOOL
206
CREATE OVERMOLD WITH INJECTION TOOL TO FORM LOWER PORTION
208
END
210

FIG. 8

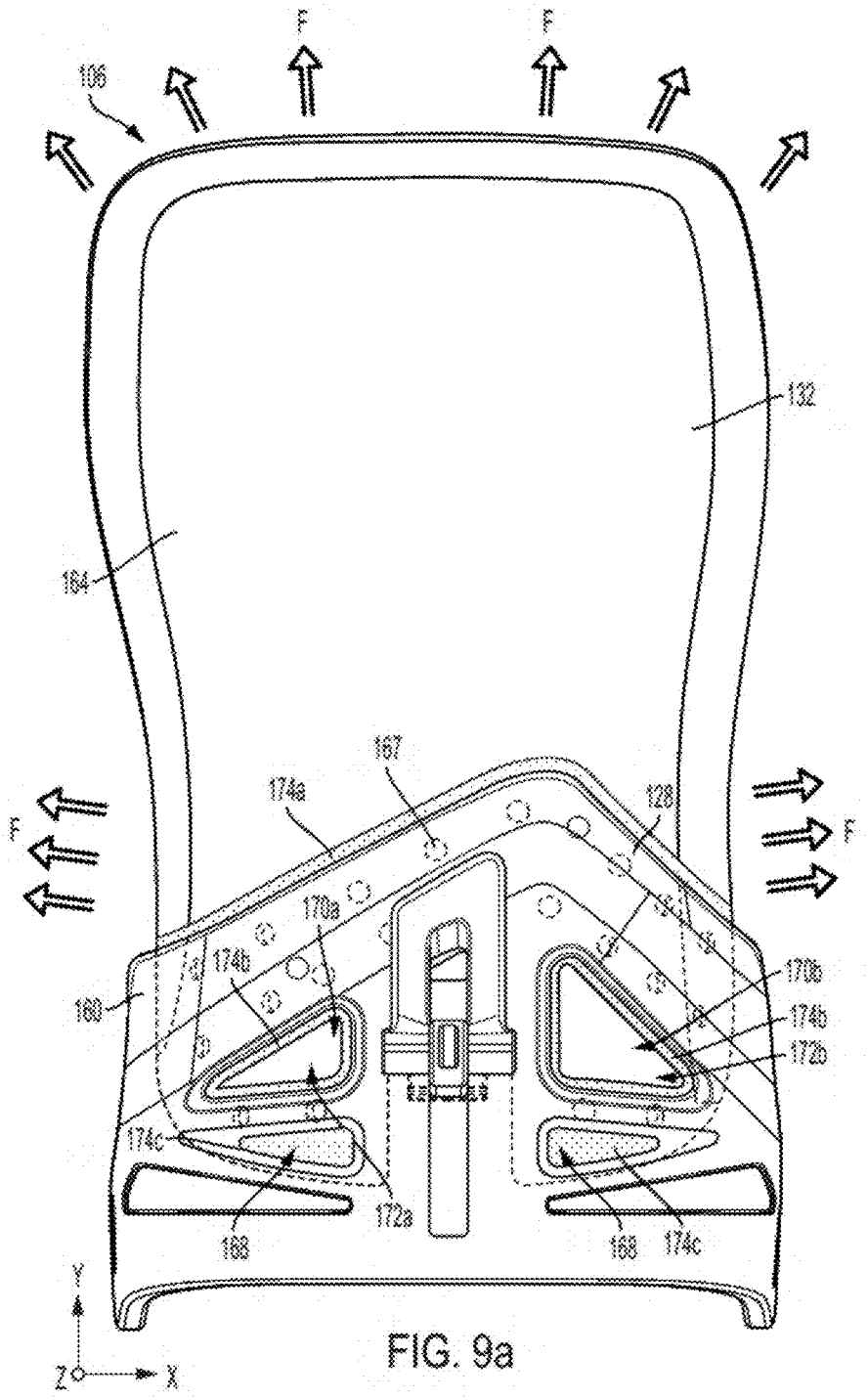

F
F
106
132
164
167
174a
128
F
F
170a
174b
160
170b
174b
172b
174c
172a
168
168
174c
Y
Z
X

FIG. 9a

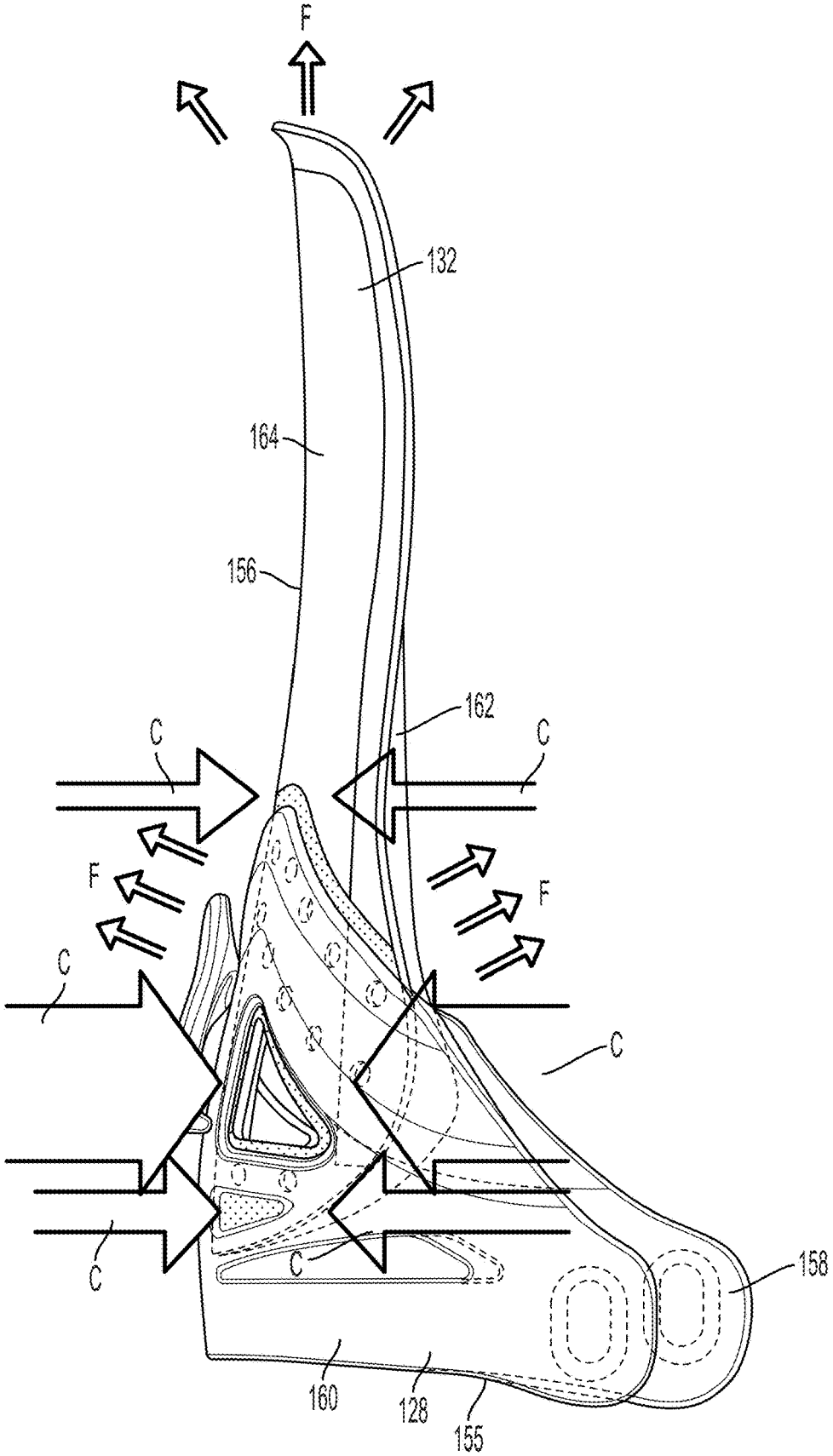


FIG. 9b

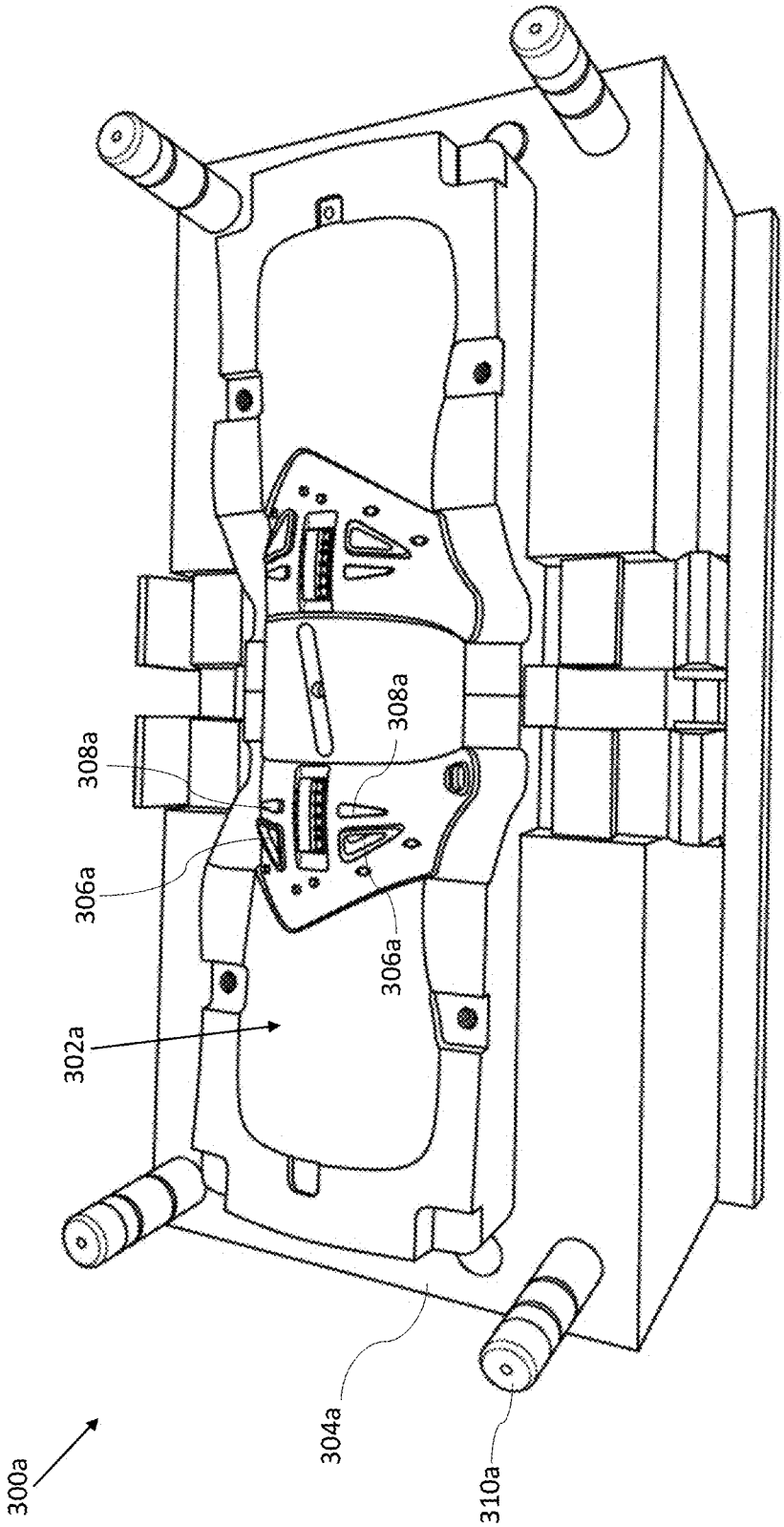


FIG. 10a

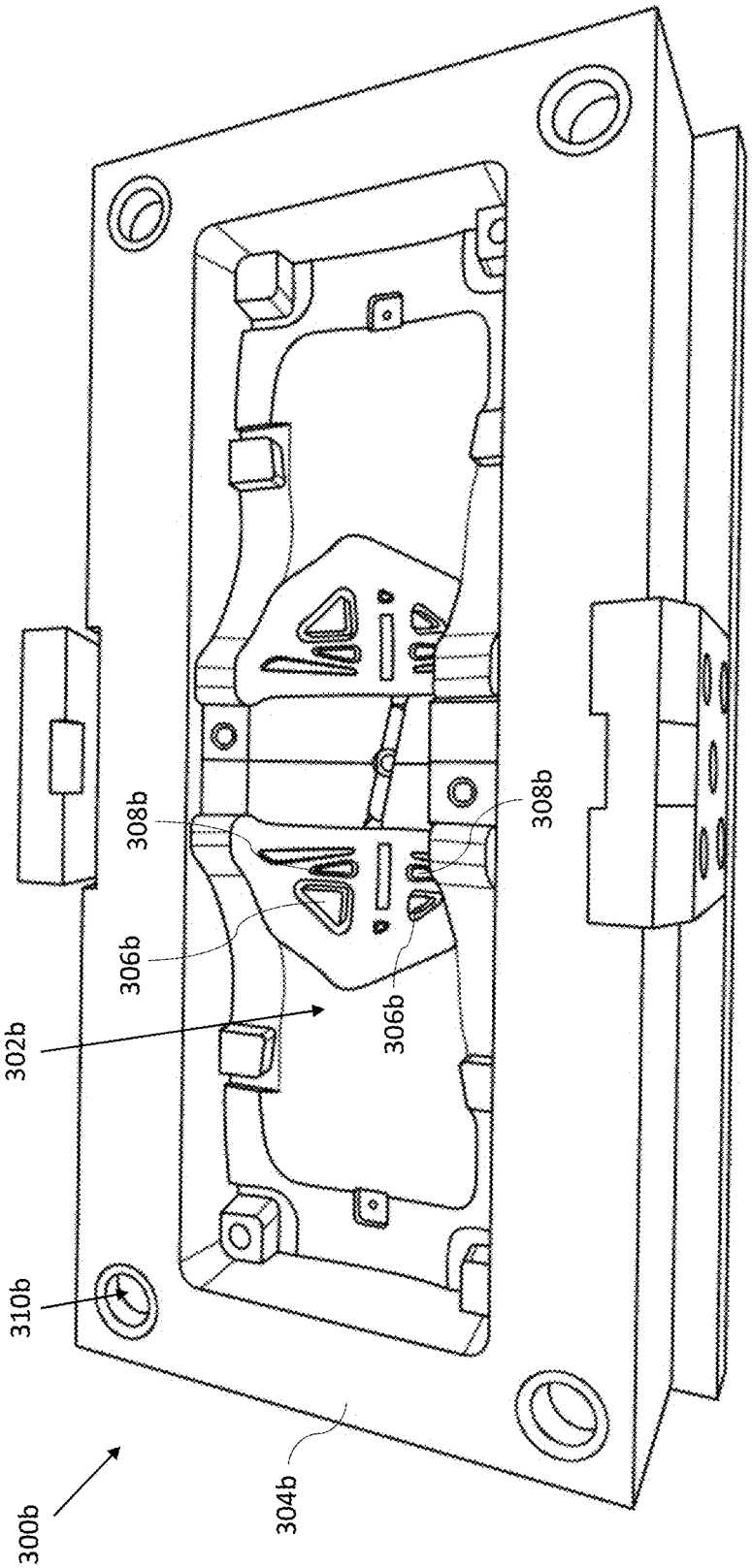


FIG. 10b

SNOWBOARD BINDING HIGHBACK HAVING AN UPPER PORTION OF UNIFORM MATERIAL

FIELD OF THE TECHNOLOGY

[0001] The subject disclosure relates to sporting equipment, and more particularly to highbacks for snowboard bindings.

BACKGROUND OF THE TECHNOLOGY

[0002] Snowboard bindings include highbacks which run along the backside of a snow boarder's lower leg and are used for controlling the snowboard. For turning, the snowboarder will typically lean into the highback of the snowboard binding to pressure the snowboard edge against the snow. This action helps initiate a turn on the heel edge of the snowboard.

[0003] Highbacks are often made up of a single material. This can be an injection plastic material or composite (e.g. glass or carbon fiber reinforced nylon). Sometimes these highbacks can include foam padding for the snowboard boot to push against (e.g. glued to the inside surface of the highback). The foam padding provides comfort and protects the snowboard boot from highback abrasion, but does not affect the function of the highback and is not a required component. Thus, the highback itself is essentially a single material.

[0004] One drawback of single material highbacks is that they lack stiffness and/or are unable to flex in a controlled manner. Stiffness can be gained by adding material thickness perpendicular to the forces applied on the highback. Adding more material, or rib features, can improve stiffness but leads to a binding that is heavier than desirable and/or bulky looking. Increasing flex in this way can also make the highback brittle and susceptible to cracking at the mounting points or along the vertical axis (i.e. torsion flex). Further, too much support can make the highback uncomfortable because of a lack of flex around the vertical axis, some flex being desirable to snowboarders, particularly when performing maneuvers such as grabs, spins and inverted flips which require flex laterally.

[0005] The highback can also include holes or coring in some areas to add lightness, aesthetic technical appeal, and targeted softer or flexible regions. No matter the quantity or size of holes typically used on a highback, the material is always flexed and stressed when loaded, which gives rise to concerns of breakage that can be difficult to address while still keeping the material light and flexible. It is difficult to have the ideal level of flex and stiffness in a single uniform material highback.

[0006] To combat the problems described above, some highbacks use two separate materials, including a more flexible material and a more rigid material that allows for a better strength to flex to weight ratios that one material highbacks cannot achieve.

[0007] It is also difficult to effectively incorporate two materials into a single highback for a desired effect. For example, a recess can be molded into a first material and filled with a second material, such as a stiffener (or just a generally stiffer injection plastic). However, this results in an overlap of both materials so the material properties are not able to be entirely independent. Further, the materials must be held together by structural components which adds additional weight and incidentally impacts the other properties of the material, such as flexure.

[0008] Therefore there is a need for a snowboard binding which minimizes stress while still providing support and comfort for the rider.

SUMMARY OF THE TECHNOLOGY

[0009] In light of the needs described above, the subject technology relates to a two material highback for a snowboard binding which optimizes flex and stability by connecting the separate materials without any frame, margin, or the use of any additional support structure.

[0010] In at least one aspect, the subject technology relates to a highback for a snowboard binding. The highback includes a first portion configured to couple the highback to a baseplate of the snowboard binding such that a proximal end of the first portion is proximate the baseplate. The highback includes a second portion of a uniform material. The second portion has a first section anchored within the first portion and a second section extending from a distal end of the first portion, the distal end opposite the proximal end, the second section extending in a direction away from the proximal end.

[0011] In some embodiments, the first section of the second portion is lodged between two opposing support members of the first portion. In some cases, the first section of the second portion includes a plurality of perforations through the first section and the first portion includes a plurality of connecting members connecting the opposing support members of the first portion, each of the perforations being filled by a connecting member. The first portion can include a first plurality of windows extending therethrough, the windows each being a non-circular shape. The first section of the second portion can include a second plurality of windows extending therethrough, the second plurality of windows each aligned with one of the first plurality of windows and having the non-circular shape of said window. In some embodiments, the first portion further includes a third plurality of windows extending therethrough, the third plurality of windows each being a non-circular shape and surrounding a solid area of the first section. The non-circular shape of each window can be triangular.

[0012] In at least one aspect, the subject technology relates to a highback for a snowboard binding with a lower portion and upper portion. The lower portion configured to couple the highback to a baseplate of the snowboard binding such that a lower end of the lower portion is proximate the baseplate. The upper portion is a uniform material and has a lower section anchored within the lower portion. The upper portion also includes an upper section extending from an upper end of the lower portion such that the upper section is configured to support a leg of a rider when in use.

[0013] In some embodiments, the lower section is lodged between opposing support members of the lower portion including an inner support member and an outer support member. In some cases, the lower section of the upper portion includes a plurality of perforations through the lower section and the lower portion includes a plurality of connecting members extending through the perforations and connecting the inner support member and the outer support member of the lower portion. In some cases, the lower portion includes a first plurality of windows extending therethrough, each of the first plurality of windows being a non-circular shape. The lower section of the upper portion

can also include a second plurality of windows extending therethrough, the second plurality of windows each being a non-circular shape and being aligned with the first plurality of windows. In some cases, the lower portion includes a third plurality of windows extending therethrough, the third plurality of windows each being a non-circular shape and surrounding a portion of the lower section of the upper portion.

[0014] In some embodiments, the lower portion is formed from a first material configured to flex in response to an applied force and the upper portion is formed from a second material configured to maintain substantially a predetermined shape in response to the applied force. In some cases, the lower portion is configured to flex along a longitudinal axis in response to the applied force, the longitudinal axis running between the lower end and the upper end of the lower portion. The first material can be an injection plastic and the second material can be a composite material. The first material can be nylon and the second material can be an extruded glass fiber with thermoplastic resin.

[0015] In at least one aspect, the subject technology relates to a method of manufacturing a highback for a snowboard binding. An upper portion of a composite material is formed, the upper portion having a first plurality of windows, the first plurality of windows each being a shape. The upper portion is clamped on opposing sides of the upper portion with an injection tool such that a plurality of pin details of the injection tool are each inserted into one of the first plurality of windows, each pin having the shape of the window into which it is inserted. A lower portion is formed around a lower section of the upper portion using the injection tool to create an overmold having an inner support member and an outer support member on opposing sides of the upper portion such that the upper portion is lodged between the inner support member and outer support member.

[0016] In some embodiments, the upper portion has a plurality of perforations therethrough and forming the overmold includes forming connecting members extending between the perforations to connect the inner support member and the outer support member. In some cases, the step of clamping the composite upper portions on opposing sides of the upper portion with an injection tool further comprises clamping a plurality of non-circular opposing clamps on either side a plurality of solid areas of the lower section of the upper portion. In some cases, the shape of the windows and pin details is non-circular.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] So that those having ordinary skill in the art to which the disclosed system pertains will more readily understand how to make and use the same, reference may be had to the following drawings.

[0018] FIG. **1** is a front perspective view of the snowboard binding in accordance with the subject technology.

[0019] FIG. **2** is a front perspective view of the snowboard binding of FIG. **1** securing a boot.

[0020] FIG. **3** is a rear view of the highback of the snowboard binding of FIG. **1**.

[0021] FIG. **4** is a front perspective view of the highback of the snowboard binding of FIG. **1**.

[0022] FIG. **5** is a rear perspective view of the highback of the snowboard binding of FIG. **1**.

[0023] FIG. **6** is a rear view of the upper portion of the highback of FIG. **1**.

[0024] FIG. **7** is a rear view of the lower portion of the highback of FIG. **1**.

[0025] FIG. **8** is a flowchart of a method of assembling the highback of FIG. **1** in accordance with the subject technology.

[0026] FIG. **9***a* is a rear view of the highback of FIG. **1** showing clamping forces during a method of assembling the highback in accordance with the subject technology.

[0027] FIG. **9***b* is a side view of the highback of FIG. **1** showing clamping forces during a method of assembling the highback in accordance with the subject technology.

[0028] FIG. **10***a* is a perspective view of a first side of an injection tool for assembling the highback of FIG. **1**.

[0029] FIG. **10***b* is a perspective view of a second side of an injection tool for assembling the highback of FIG. **1**.

DETAILED DESCRIPTION

[0030] The subject technology overcomes many of the prior art problems associated with snowboard bindings. In brief summary, the subject technology provides a frameless dual material highback for a snowboard binding. The advantages, and other features of the systems and methods disclosed herein, will become more readily apparent to those having ordinary skill in the art from the following detailed description of certain preferred embodiments taken in conjunction with the drawings which set forth representative embodiments of the present invention. Like reference numerals are used herein to denote like parts. Further, words denoting orientation such as "upper", "lower", "distal", and "proximate" are merely used to help describe the location of components with respect to one another. For example, an "upper" surface of a part is merely meant to describe a surface that is separate from the "lower" surface of that same part. No words denoting orientation are used to describe an absolute orientation (i.e. where an "upper" part must always be vertically above).

[0031] Referring now to FIGS. **1-2**, a snowboard binding **100** in accordance with the subject technology is shown. In FIG. **1**, the snowboard binding **100** is shown isolated form a snowboard boot, while in FIG. **2**, the snowboard binding **100** is shown securing a snowboard boot **102** as it would during use. The snowboard binding **100** includes a baseplate **108**, and straps **110**, **112** which secure the boot **102** within the binding **100**. A highback **106** includes an upper portion **132** and a lower portion **128** configured in accordance with the subject technology, as discussed in more detail below. The binding **100** shown is for an exemplary binding for a right foot snowboard boot **102** in accordance with the subject technology, it being understood that a binding for a left foot snowboard boot in accordance with the subject technology would mirror the right foot binding **100**.

[0032] The baseplate **108** forms the bottom portion of the binding **100** and allows a rider to mount the snowboard binding **100** to a snowboard (not shown). When a rider places their boot **102** into the binding **100**, the baseplate **108** is the base which the bottom of the rider's boot **102** contacts. For ease of explanation herein, the boot **102** will be described as having a toe region **114**, ankle region **116**, heel region **118**, and high ankle region **120**. After the rider inserts their foot into the boot **102**, the toe region **114** is proximate to the location expected of a rider's toe, the ankle region **116** is proximate to the expected location of the rider's ankle, the heel region **118** is proximate to the location expected of the rider's heel, and the high ankle region **120** is proximate to

the location expected rider's lower leg above the heel and ankle regions **118**, **116** (the term "proximate" being used herein to describe a relative location that is closer than other portions which are not proximate, or distal).

[0033] The highback **106** is an upright support member which is fixedly coupled to the baseplate **108** of the binding **100** (either directly, or via a connector portion **122** as shown), the upper portion **132** of the highback **106** extending upward from (i.e. perpendicular to) the baseplate **108**. The highback **106** has an inward curve **124** which forms a cavity **126** within which the boot **102** can be positioned. The upper portion **132** of the highback **106** is designed to provide support for the high ankle region **120** of the rider's boot **102**. The lower portion **128** of the highback **106**, proximate the baseplate **108**, includes a heelcup **130** configured to secure the heel region **118** of the rider's boot **102** and provide flexure as the rider maneuvers.

[0034] The lower portion **128** of the highback **106** also includes corresponding lower fasteners **134** and upper fasteners **136** which attach to toe and ankle straps **112**, **110**, respectively. When a boot **102** is positioned within the highback **106**, the ankle strap **110** can be placed across the ankle region **120** of the boot **102**, which generally corresponds to a rider's ankle, such that the ankle strap **110** extends across the cavity **126** of the highback **106**. The ankle fasteners **136** can then securely fasten the ankle strap **110** to opposite sides of the highback **106**, and therefore across the ankle region **116** of the boot **102**, while still allowing the rider to manually make adjustments for comfort. Similarly, the toe strap **112** can be placed across the toe region **114** of the boot **102**. The lower fasteners **134** can then securely fasten the toe strap **112** at either side of the toe region **114** of the boot **102** to secure the boot **102** (the fasteners **134** being connected directly to the baseplate **108**, or to the connector portion **122** which is connected to the baseplate **108**) while still allowing the rider to manually make adjustments.

[0035] Referring now to FIGS. **3-7**, the highback **106** of FIGS. **1-2** is shown separated from the other components of the snowboard binding **100** to more clearly highlight the design and advantages of the highback **106**. FIGS. **3-5** show the entire highback **106**, while FIG. **6** shows only the upper portion **132** and FIG. **7** shows only the lower portion **128** of the highback **106**.

[0036] The highback **106** can generally be a nylon injection or composite blend, such as a glass or carbon filled injection. The upper portion **132** and the lower portion **128** of the highback **106** are each a different uniform material. The upper portion **132** is generally a more rigid material while the lower portion **128** is a less rigid material. While the lower portion **128** is a material meant to flex in response to an applied force from a user (particularly, along the "y" axis of the highback **106**), the upper portion **132** is a material which maintains substantially a predetermined shape in response to the applied force. More specifically, the upper portion **132** is a material configured to maintain substantially a predetermined shape in response to an applied force from a rider to provide support and control. The lower portion **128**, by contrast, is designed to flex in response to the applied force from a rider, allowing for maneuverability. In some cases, the lower portion **128** can specifically be configured to flex along a longitudinal axis, which is the general direction of the user's leg (i.e. the direction in which the highback **106** extends). While various materials can be used, as would be understood by one of skill in the art, in some cases the lower portion **128** of the highback **106** can be an injection plastic and the upper portion **132** can be a composite material, such as an extruded glass fiber with thermoplastic resin. In some cases, the upper portion **132** can be a composite glass fiber Polyethylene terephthalate glycol-modified lamination while the lower portion **128** can be an overmolded nylon material. Alternatively, other materials can be used. Notably, while certain advantageous materials are shown in described herein, other materials than those shown and described could also be used to effectively implement the subject technology, as would be understood by one of skill in the art. The particular materials described herein, while found to be effective, are for exemplary purposes only, and are not meant to limit the subject technology to a particular material type.

[0037] The upper portion **132** and lower portion **128** are coupled together in such a way that the materials remain separate and no additional fastening structure, or frame, is required. More particularly, the upper portion **132** can be described as two sections (although note that both are still part of the same uniform material of the upper portion **132**), an upper section **152** and a lower section **154**. When the upper portion **132** and lower portion **128** are coupled together, the lower section **154** of the upper portion **132** is anchored within the upper end **156** of the lower portion **128** (i.e. the end distal the baseplate **108** and opposite the lower end **155**) of the highback **106**. More specifically, the upper end **156** of the lower portion **128** has two support members, an inner support member **158** nearer the expected location of a rider's boot **102** and an outer support member **160** on the other side of the inner support member **158** with respect to the expected location from the rider's boot **102**. The lower section **154** of the upper portion **132** is lodged between the two support members **158**, **160**, which close on inner and outer sides **162**, **164** of the highback **106** in the lower section **154**. The support members **158**, **160** are joined in the areas around the periphery of the lower section **154** where they are not separated by the upper portion **132**. Various advantageous features can also be included to allow the upper portion **132** to be securely lodged within the lower portion **128**. For example, the lower section **154** can include a plurality of perforations **166** therethrough. The lower portion **128** can then be formed around the lower section **154** of the upper portion **132** by using an injection overmold, allowing the injection material of the lower portion **128** to fill the perforations **166** and form cylindrical connecting members **167** between the inner and outer support members **158**, **160**. In this way, the upper portion **132** and lower portion **128** are coupled together to securely form a highback **106** of a distinct upper portion **132** and lower portion **128**. Since the upper portion **132** remains a separate material from the lower portion **128**, it is able to respond to some forces separately from the lower portion **128** (and vice versa). However, the upper and lower portions **132**, **128** are still inseparably attached since the upper portion **132** is anchored there within. No frame or other connecting mechanism which would impact the response and performance of the highback **106** is required. Further, since the portions **132**, **128** are completely separately formed, and modular, various upper portions can be designed with different strength and/or flex characteristics but having a size and shape that allows them to be easily integrated into a standard lower portion **128** size and/or shape.

[0038] The highback **106** also includes a number of windows, including lower windows **168** and upper windows **170***a*, **170***b* (generally **170**) on the lower portion **128**. The upper portion **132** likewise includes windows **172***a*, **172***b* (generally **172**), which correspond to the windows **170** when the upper portion **132** is anchored within the lower portion **128**. The windows **168**, **170**, **172** assist in the manufacturing process and allow for the creation of the highback **106** as described in more detail below. In particular, non-circular (e.g. triangular or other non-circular shaped) windows can be used to prevent rotation during the manufacturing process, but other shapes, including circular, could also be used. In addition, the positioning and shape of the windows **168**, **170**, **172** is specified as shown and described to provide a particular advantageous torsional flex to the highback **106**, such as along the y-axis of the highback. To that end, windows **170***b*, **172***b*, which are proximate a lateral edge **178** of the highback **106**, can be significantly larger (i.e. 50-150 percent larger) than the windows **170***a*, **172***a* which are on the medial edge **180** of the highback to allow for asymmetric flex of the highback **106**.

[0039] Referring now to FIG. **8**, a flowchart **200** of a manufacturing process for a highback **106** in accordance with the subject technology is shown. The manufacturing process utilizes an injection tool, which can be seen in FIGS. **10***a* and **10***b*. The injection tool is a mold comprised of two clamshell sides **300***a*, **300***b* which fit together to form the overmold for the lower portion **128**. Note that the exemplary sides **300***a*, **300***b* shown are used to form two lower portions **128** around two upper portions **132** simultaneously (i.e. forming two highbacks **106**) and therefore are each symmetrical between left and right sides. It should be understood that this is by way of example only, and the injection tool need only be capable of forming a mold for a single highback lower portion **128**.

[0040] The first side **300***a* of the injection tool has a convex interior **302***a* within an outer frame **304***a*, the convex interior **302***a* clamping the inner side **162** of the upper section **152** of the upper portion **132** while leaving space around the lower section **154** to form a mold for the inner support member **158** of the lower portion **128**. The second side **300***b* has a concave interior **302***b* within an outer frame **304***b*, the concave interior clamping the outer side **164** of the upper section **152** of the upper portion **132** while leaving space around the lower section **154** to form a mold for the outer support member **160** of the lower portion **128**. The injection tool includes pin details **306***a*, **306***b* in the shape of the windows **172** (i.e. triangular), which align with and extend through the windows **172** (and form windows **170** of the lower portion **128**) to hold the upper portion **132** in place during assembly. The second side **300***b* includes male protruding pin details **306***b* while the first side **300***a* has female pin details **306***a* with an outer edge which couple with the male pin details **306***b*. Similarly, lower clamping members **308***a*, **308***b* extend from both sides **300***a*, **300***b* to grasp the lower section **154** of the upper portion **132** below the windows **172** during assembly. The frames **304***a*, **304***b* also include complimenting exterior supports **310***a* and apertures **310***b*, the supports **310** being configured for insertion into the apertures **310***b* to securely hold the sides **300***a*, **300***b* together during the assembly process.

[0041] Referring again to FIG. **8**, the manufacturing process of the flowchart **200** can be used to form the components of the highback **106**, as described above, and it should be understood that similar materials to those described with respect to the highback **106** can be implemented. As such, reference is made throughout the description of the flowchart **200** herein to the components of the highback **106** which are described herein.

[0042] The manufacturing process begins at step **202**. An upper portion **132** of the highback **106** is then initially formed at step **204**. The upper portion **132** can be formed from a composite material using thermoforming, or through various known methods such as injection, forged/pressed composite layups, or other methods as are known in the art. Thermoforming a composite material has been found to be advantageous as it results in a good strength to weight ratio, ideal flex, and allows for the easy substitution of one shape upper portion **132** with another. A plurality of perforations **166** are included which each extend through the entire upper portion **132** of the highback **106** in the lower section **154**. The upper portion **132** also includes a number of windows **172** which can be non-circular in shape, as best shown in FIG. **7**.

[0043] Once the upper portion **132** has been formed, an injection tool (e.g. FIGS. **10***a*-**10***b*) is clamped around the upper portion **132** on either side **162**, **164**. The injection tool includes pin details **306***a*, **306***b* that are each in the shape of one of the windows **172** on the upper portion **132**. Male pin details **306***b* engage female pin detail **306***a* counterparts through the windows **172** and on an opposing sides of the injection tool to hold the upper portion **132** in place and align the upper portion **132** and injection tool as opposing clamshell sides **300***a*, **300***b* are shut around the upper portion **132** for the mold for the lower portion **128**. The pin details **306***a*, **306***b* each have a non-circular shape corresponding to one of the windows **172** (and corresponding to the opposing pin detail **306***a*, **306***b* on the other side). The non-circular shape prevents rotation of the upper portion **132** in the general plane of the upper portion **132** during the molding process, which can tend to exert a very high pressure on the highback **106**. Notably, in other cases, the pin details **306***a*, **306***b* can be other shapes (as can the corresponding windows **172**) which similarly hold the upper portion **132** in place. The pin details extending through windows **172** and ultimately create the windows **170** in the lower portion **132** as the injection material fills in the mold sides **302***a*, **302***b* around the pin details **306***a*, **306***b*. Thus, the lower portion **128** is created with windows **170** corresponding to the windows **172** in the upper portion **132**.

[0044] The injection tool can also include lower opposing clamps **308***a*, **308***b*, which can also be non-circularly shaped (e.g. triangular or other shape). Unlike the pin details **306***a*, **306***b*, which extend through the windows **172** in the upper portion **132**, the lower clamps **308***a*, **308***b* press against solid areas of the upper portion **132** on either side **162**, **164** during the overmolding process. In this way, the lower opposing clamps **308***a*. **308***b* grasp the upper portion **132** to hold it in place as the lower portion **128** is formed. The lower windows **168** on the lower portion **128** are created around the lower clamps **308***a*, **308***b* of the insertion tool, and thus are a shape corresponding to the lower clamps **308***a*, **308***b*. The insertion tool can also clamp the upper portion **132** at an area just above the eventually formed upper end **156** of the lower portion **128**, as discussed below.

[0045] At step **208**, once clamshell sides **302***a*, **302***b* of the injection tool are in place around the lower portion **128**, the lower portion **128** is created, forming an overmold by filling

the shell of the injection tool. Thus, the material used for the lower portion **128** is provided to the injection tool for forming around the upper portion **132**, forming the lower portion **128** substantially as shown herein. As such, the inner and outer support members **158**, **160** of the lower portion **128** can be formed around the upper portion **132**. Further, as the sides **302***a*, **302***b* of the injection tool are filled around the upper portion **132**, the perforations **166** are filled with the material of the lower portion **128**, forming connectors **167** between the support members **158**, **160** of the lower portion **128**.

[0046] After the lower portion **128** is fully formed, with the upper portion **132** being lodged between the support members **158**, **160**, the highback **106** is formed and the injection tool can be opened and removed. The process then ends at step **210**, with the creation of a highback **106** including a frameless upper portion **132** and lower portion **128** which are securely bonded as described. Notably, the materials described herein can also be particularly advantageous during assembly of the highback **106**. For example, an upper portion **132** formed from polyethylene terephthalate glycol-modified laminate while the lower portion **128** is an overmolded nylon material is effective. In such a case, the upper portion **132** has an ideal melting temperature which is low enough to facilitate a good bond with the nylon lower portion **128**, but high enough to avoid melting when the lower portion **128** is overmolded, which would cause defects. The use of thermoplastic materials is also advantageous, at it is supportive but flexible and non-brittle. Overall, the final highback **106** is allows for flexing for comfort and control of the user, and provides support without being susceptible to cracking or other material failure.

[0047] Referring now to FIGS. **9***a*-**9***b*, the highback **106** is shown with clamping forces during assembly being illustrated. During the step of clamping the upper portion **204** and forming the lower portion **208**, the insertion tool applies opposing clamping forces "C" on opposing sides **162**, **164** of the upper portion **132**. The particular areas where the insertion tool clamps the upper portion **174***a*, **174***b*, **174***c* (generally **174**) are illustrated in shading. In particular, the insertion tool clamps the upper portion **132** at an area **174***a* just above the expected upper end of the lower portion **128**, which is above the perforations **166**. The insertion tool also clamps the upper portion **132** in a perimeter **174***b* around the windows **172**. Finally, the insertion tool clamps a solid area **174***c* of the upper portion **132** below the windows **172**. The clamping forces "C" hold the upper portion **132** and lower portion **128** together as the lower portion **128** is overmolded, resisting separation from external forces "F" in the "x" or "y" direction and/or rotation around the "z" axis. Providing the clamping surfaces **174** as shown allows for the highback **106** to be formed consistently and accurately while only affecting the flexure of the highback **106** as desired. While other clamping surfaces could be provided, a corresponding impact on flexure of the highback **106** would be expected.

[0048] Notably, while clamping of the highback **106** directly during the manufacturing process is shown, it is also possible to include pins on the injection tool which are placed outside the end product of the highback **106**. These pins could be placed adjacent to the upper portion **132**, or even on the upper portion **132**, the tabs then being removed from the upper portion **132** after the highback is formed.

[0049] All orientations and arrangements of the components shown herein are used by way of example only. Further, it will be appreciated by those of ordinary skill in the pertinent art that the functions of several elements may, in alternative embodiments, be carried out by fewer elements or a single element. Similarly, in some embodiments, any functional element may perform fewer, or different, operations than those described with respect to the illustrated embodiment. Also, functional elements (e.g. connectors, fasteners, and the like) shown as distinct for purposes of illustration may be incorporated within other functional elements in a particular implementation.

[0050] While the subject technology has been described with respect to preferred embodiments, those skilled in the art will readily appreciate that various changes and/or modifications can be made to the subject technology without departing from the spirit or scope of the subject technology. For example, each claim may depend from any or all claims in a multiple dependent manner even though such has not been originally claimed.

What is claimed is:

1. A highback for a snowboard binding comprising:

a first portion configured to couple the highback to a baseplate of the snowboard binding such that a proximal end of the first portion is proximate the baseplate; and

a second portion of a uniform material having:

a first section anchored within the first portion; and

a second section extending from a distal end of the first portion, the distal end opposite the proximal end, the second section extending in a direction away from the proximal end.

2. The highback of claim **1**, wherein the first section of the second portion is lodged between two opposing support members of the first portion.

3. The highback of claim **2**, wherein:

the first section of the second portion includes a plurality of perforations through the first section; and

the first portion includes a plurality of connecting members connecting the opposing support members of the first portion, each of the perforations being filled by a connecting member.

4. The highback of claim **1**, wherein:

the first portion includes a first plurality of windows extending therethrough, the windows each being a non-circular shape; and

the first section of the second portion includes a second plurality of windows extending therethrough, the second plurality of windows each aligned with one of the first plurality of windows and having the non-circular shape of said window.

5. The highback of claim **4**, wherein the first portion further includes a third plurality of windows extending therethrough, the third plurality of windows each being a non-circular shape, the third plurality of windows each surrounding a solid area of the first section.

6. The highback of claim **5**, wherein the non-circular shape of each window is triangular.

7. A highback for a snowboard binding comprising:

a lower portion configured to couple the highback to a baseplate of the snowboard binding such that a lower end of the lower portion is proximate the baseplate; and

an upper portion of a uniform material having:

a lower section anchored within the lower portion; and

an upper section extending from an upper end of the lower portion such that the upper section is configured to support a leg of a rider when in use.

8. The highback of claim **7**, wherein the lower section is lodged between opposing support members of the lower portion including an inner support member and an outer support member.

9. The highback of claim **8**, wherein:

the lower section of the upper portion comprises a plurality of perforations through the lower section; and

the lower portion includes a plurality of connecting members extending through the perforations and connecting the inner support member and the outer support member of the lower portion.

10. The highback of claim **9**, wherein:

the lower portion includes a first plurality of windows extending therethrough, each of the first plurality of windows being a non-circular shape; and

the lower section of the upper portion includes a second plurality of windows extending therethrough, the second plurality of windows each being a non-circular shape, the second plurality of windows aligned with the first plurality of windows.

11. The highback of claim **10**, wherein the lower portion includes a third plurality of windows extending therethrough, the third plurality of windows each being a non-circular shape, the third plurality of windows each surrounding a portion of the lower section of the upper portion.

12. The highback of claim **7**, wherein the lower portion is formed from a first material configured to flex in response to an applied force and the upper portion is formed from a second material configured to maintain substantially a predetermined shape in response to the applied force.

13. The highback of claim **12**, wherein the lower portion is configured to flex along a longitudinal axis in response to the applied force, the longitudinal axis running between the lower end and the upper end of the lower portion.

14. The highback of claim **12**, wherein the first material is an injection plastic and the second material is a composite material.

15. The highback of claim **12**, wherein the first material is nylon and the second material is an extruded glass fiber with thermoplastic resin.

16. A method of manufacturing a highback for a snowboard binding comprising:

forming an upper portion of a composite material, the upper portion having a first plurality of windows, the first plurality of windows each being a shape;

clamping the composite upper portion on opposing sides of the upper portion with an injection tool such that a plurality of pin details of the injection tool are each inserted into one of the first plurality of windows, each pin having the shape of the window into which it is inserted; and

forming a lower portion around a lower section of the upper portion using the injection tool to create an overmold having an inner support member and an outer support member on opposing sides of the upper portion such that the upper portion is lodged between the inner support member and outer support member.

17. The method of claim **16**, wherein:

the upper portion has a plurality of perforations therethrough; and

forming the overmold includes forming connecting members extending between the perforations to connect the inner support member and the outer support member.

18. The method of claim **16**, wherein the step of clamping the composite upper portions on opposing sides of the upper portion with an injection tool further comprises clamping a plurality of non-circular opposing clamps on either side a plurality of solid areas of the lower section of the upper portion.

19. The method of claim **16**, wherein the shape of the windows and pin details is non-circular.

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