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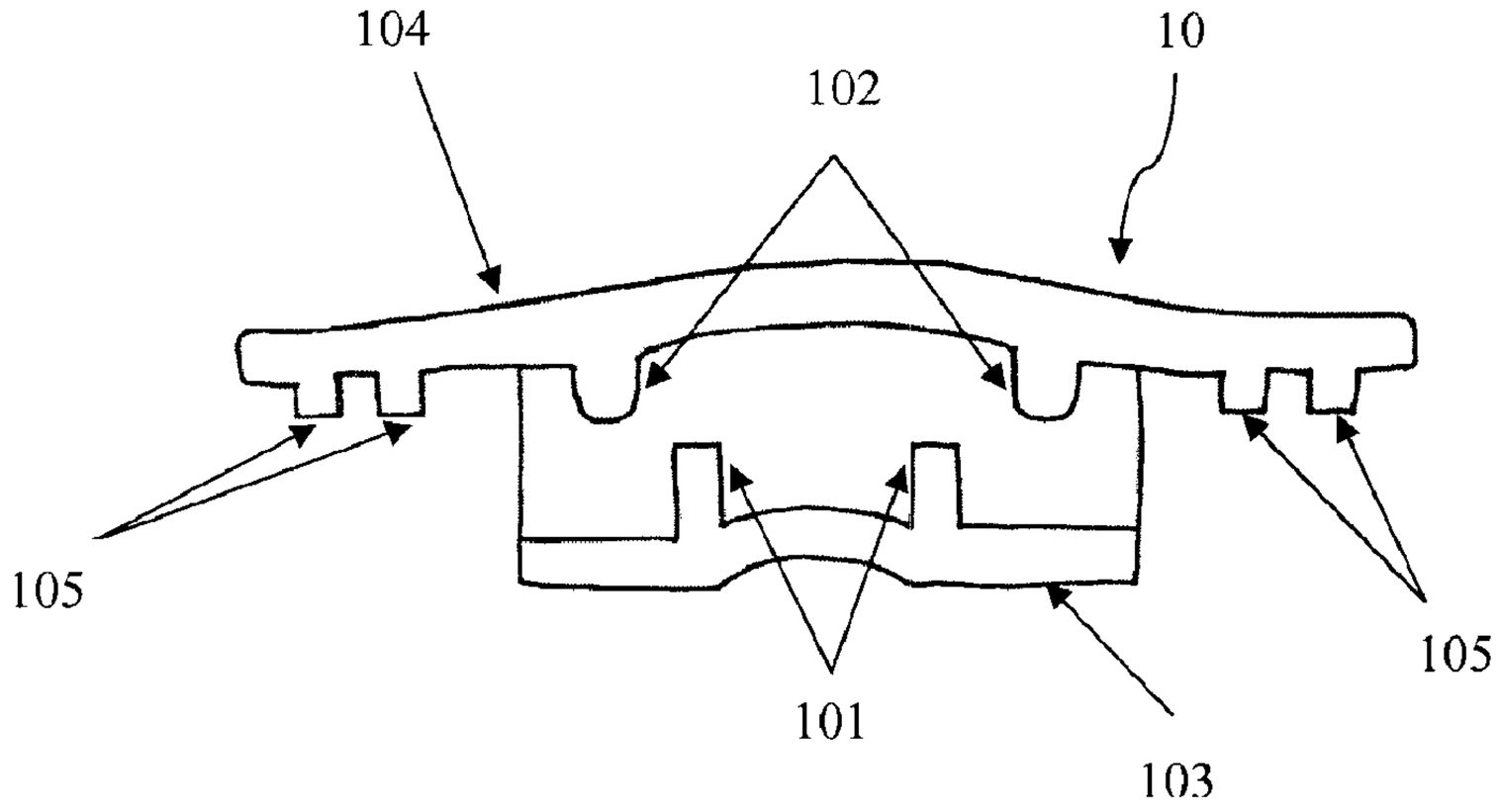

(57) Abrégé/Abstract:
The present invention teaches a sunglasses clip-on device which enables a user to securely place an auxiliary sunglass lens easily and expeditiously. The device enables the sunglass lens to be inserted onto the bridge of a spectacle snugly through mechanical

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(57) Abrégé(suite)/Abstract(continued):
means, thus avoiding the need to use the more costly and weighty traditional magnetic means or the unsightly clamping means. The clip-on device of the invention comprises a proximal-end wall member extending vertically and in parallel with a distal-end wall member. The proximal-end wall member and the distal-end wall member are integrally connected in the middle section to form an inverted "U" shape. The distal-end wall member has a width shorter than the width of the bridge of the spectacle. There is provided at least two mechanical fastener means located at the two outboard ends of the proximal-end wall member for receiving auxiliary sunglass lenses. There is also provided at least two first protrusions means provided on the proximal-end wall member and projecting towards the at least two second protrusions means provided on the distal-end wall member in order to create a void, whereby the thickness of the voids is bigger than the thickness of the spectacle bridge for securely engaging the sunglasses clip-on device onto the bridge.

Abstract

The present invention teaches a sunglasses clip-on device which enables a user to securely place an auxiliary sunglass lens easily and expeditiously. The device enables the sunglass lens to be inserted onto the bridge of a spectacle snugly through mechanical means, thus avoiding the need to use the more costly and weighty traditional magnetic means or the unsightly clamping means. The clip-on device of the invention comprises a proximal-end wall member extending vertically and in parallel with a distal-end wall member. The proximal-end wall member and the distal-end wall member are integrally connected in the middle section to form an inverted "U" shape. The distal-end wall member has a width shorter than the width of the bridge of the spectacle. There is provided at least two mechanical fastener means located at the two outboard ends of the proximal-end wall member for receiving auxiliary sunglass lenses. There is also provided at least two first protrusions means provided on the proximal-end wall member and projecting towards the at least two second protrusions means provided on the distal-end wall member in order to create a void, whereby the thickness of the voids is bigger than the thickness of the spectacle bridge for securely engaging the sunglasses clip-on device onto the bridge.

SUNGLASSES CLIP-ON DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates to the field of sunglasses clip-on devices for attaching sunglass lenses to a pair of spectacle thereon by mechanically inserting the device having the sunglass lenses onto the bridge of the spectacle.

BACKGROUND OF THE INVENTION

[0002] Sunglasses clip-on devices have been known for quite some time. It is desirable for the clip-on sunglasses to be quickly and easily attached and removed from the spectacle so that the user can selectively engage or disengage the clip-on sunglasses when needed.

[0003] Traditionally, there are a number of devices that have been used to attach clip-on sunglasses to spectacle. Examples of the traditional clip-on sunglasses devices include those using magnetic force to fasten the frame of the sunglass lenses to the frame of the spectacle, or those using a flip-over style biasing clamp to secure the sunglass lenses to the bridge of the spectacle. With the flip-over style clamp, a user can "flip" the sunglass lenses skyward when the sunglass function is not required.

[0004] There are many disadvantages associated with the magnetic clip-ons and flip-over clamps. The magnetic clip-ons are expensive and add weight to the spectacle which, in turn, creates discomfort to the user. While the flip-over clamps are not as weighty, the generally conspicuous and unsightly clamping mechanism takes away the aesthetic effect of the sunglass lens.

[0005] In view of the disadvantages of the prior art clip-on devices, it is desirable to provide a sunglasses clip-on device which is both easy to use, inexpensive to manufacture and also

enhances the aesthetic of the sunglass lenses and, at the same time, minimizing the weight burden of the add-on sunglass lenses by having a light weight sunglasses clip-on device.

[0006] The present invention addresses the foregoing shortcomings of the prior art sunglasses clip-on devices.

SUMMARY OF THE INVENTION

[0007] According to one aspect of the invention, it provides a sunglasses clip-on device for releasably engaging an auxiliary sunglass onto the bridge of a spectacle which comprises a proximal-end wall member extending vertically and in parallel with a distal-end wall member. The proximal-end wall member and the distal-end wall member are integrally connected in the middle section to form an inverted "U" shape. The distal-end wall member has a width shorter than the width of the bridge of the spectacle. There is provided at least two mechanical fastener means located at the two outboard ends of the proximal-end wall member for receiving auxiliary sunglass lenses. There is also provided at least two first protrusions means provided on the proximal-end wall member and projecting towards the at least two second protrusions means provided on the distal-end wall member in order to create a void, whereby the thickness of the voids is bigger than the thickness of the spectacle bridge for securely engaging the sunglasses clip-on device onto the bridge.

According to another aspect of the invention, it provides a sunglasses clip-on device for releasably engaging an auxiliary sunglass onto a bridge of a spectacle which comprises a first spectacle-facing wall member, a second spectacle-facing wall member and a bridge-facing wall member. The device provides at least two mechanical fastener means at each of the outboard ends of the first and second spectacle-facing wall members for receiving auxiliary sunglass lenses. There is an inverted "U" shape void joining the inboard end of the first spectacle-facing wall member and another inverted "U" shape void joining the inboard end of the second spectacle-facing wall member at the two lateral ends of the bridge-facing wall member to form a notch in each of the inverted "U" shape voids, whereby the thickness of the notches is bigger than that of the spectacle bridge for securely engaging the sunglasses clip-on device onto the bridge.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The present invention is described with respect to particular exemplary embodiments thereof and reference is accordingly made to the drawings in which:

[0009] FIG. 1 is a bottom view of the sunglasses clip-on device in accordance with an embodiment of the present invention.

[0010] FIG. 2 is a top view of the sunglasses clip-on device shown in FIG. 1.

[0011] FIG. 3 is a front side view of the sunglasses clip-on device shown in FIG. 1.

[0012] FIG. 4 is a rear side view of the sunglasses clip-on device shown in FIG. 1.

[0013] FIG. 5A illustrates a perspective front view of the sunglasses clip-on device shown in FIG. 1.

[0014] FIG. 5B illustrates a perspective rear view of the sunglasses clip-on device shown in FIG. 1.

[0015] FIG. 6 illustrates a perspective view of the sunglasses clip-on device shown in FIG. 1 with sunglass lenses attached thereon.

[0016] FIG. 7 illustrates a perspective view of the sunglasses clip-on device shown in FIG. 1 with sunglass lenses attached thereon and securely attaching onto the bridge of a user's spectacle.

[0017] FIG. 8 illustrates a perspective top view of FIG. 7.

[0018] FIG. 9 illustrates a perspective bottom view of FIG. 7.

[0019] FIG. 10 illustrates a perspective front view of the sunglasses clip-on device of another embodiment.

[0020] FIG. 11 illustrates a perspective front view of the sunglasses clip-on device of yet another embodiment.

[0021] FIG. 12A illustrates a perspective front view of the sunglasses clip-on device of a further embodiment.

[0022] FIG. 12B illustrates a perspective front view of the sunglasses clip-on device shown in FIG. 12A with added metal stripe.

[0023] FIG. 13 illustrates a perspective front view of the sunglasses clip-on device shown in FIGS. 12A and 12B without the sunglass lenses and securely attaching onto the bridge of a user's spectacle.

DETAILED DESCRIPTION OF THE INVENTION

[0024] The sunglasses clip-on devices of the present invention will be described with reference to the drawings disclosed herein.

[0025] FIG. 1 is a bottom view of the sunglasses clip-on device **10** in accordance with a preferred embodiment of the present invention. When the orientation "bottom view" is used in the description herein, it is meant that the viewer is looking into the distal protrusions **101** and proximal protrusions **102** provided on the distal-end wall member **103** and proximal-end wall member **104**, respectively. With this "bottom view" orientation, the viewer is also able to see the two sunglass lens rivets **105** disposed at each outboard end of the proximal-end wall member **104**.

[0026] FIG. 2 is a top view of the sunglasses clip-on device **10** in accordance with the preferred embodiment of the present invention. When the orientation "top view" is used in the description herein, it is meant that the viewer is viewing the clip-on device from the top and that is also how

the device will sit on the bridge of the spectacle when in use. With this "top view" orientation, the view is unable to see the distal protrusions **101** or the proximal protrusions **102** provided on the distal-end wall member **103** and proximal-end wall member **104**. However, the viewer is still able to see the two sunglass lens rivets **105** disposed at each outboard ends of the clip-on device **10**.

[0027] FIG. 3 is a front view of the sunglasses clip-on device **10** in accordance with the preferred embodiment of the present invention. By "front", it is meant that the viewer is looking at the clip-on device **10** away from the user. This also means that the proximal-end wall member **104** is closer to the viewer while the distal-end wall member **103** is further away from the viewer. By the same token, the distal-end wall member **103** is facing the user. With this "front view" orientation, the viewer is unable to see any of the distal protrusions **101**, proximal protrusions **102** or rivet **105**. The viewer clearly sees the proximal-end wall member **104** and, depending on the shape of the clip-on device **10**, perhaps a small portion of the distal-end wall member **103** (as shown).

[0028] FIG. 4 is a rear view of the sunglasses clip-on device **10** in accordance with the preferred embodiment of the present invention. This is the opposite view of FIG. 3. As in FIG. 3, with this "rear view" orientation, the viewer is unable to see neither the distal protrusions **101** nor the proximal protrusions **102**. However, the rivets **105** are clearly visible. The viewer can see the full distal-end wall member **103** but not the full proximal-end wall member **104**, except the two outboard ends where rivets **105** are positioned.

[0029] Referring to FIGS. 1 to 4 and viewing from the top down, the clip-on device **10** takes on an inverted U-shape. The two sides of the inverted "U" are defined by a distal-end wall member **103** and proximal-end wall member **104**. Proximal-end wall member **104** is symmetrically longer than distal-end wall member **103** in order to provide for the rivets **105** to attach the sunglass lens **60** at each of the outboard ends of the proximal-end wall member **104**. Besides the rivets **105**, at least two proximal protrusions **102** are provided on the proximal-end wall member **104**. These proximal protrusions **102** work in cooperation with the distal protrusions **101** to form a tight and snugly fit onto the bridge of the wearer's spectacle **70**.

[0030] As can be seen from FIGS. 1 to 4, the distal-end wall member **103** and the proximal-end wall member **104** are symmetrical and, preferably, matching in their geometrical shape. For example, if the distal-end is concave, it is preferred that the proximal-end is, correspondingly, concave in shape. Moreover, the distal-end wall member **103** is in the middle portion of the clip-on device **10** and its width must be shorter, albeit very slightly, than the bridge **701** of the spectacle **70**. The reason is that the width of the bridge **701** defines the width of the distal-end wall member **103** since the latter must be able to be engaged onto the inside of bridge **701**.

[0031] The width of the middle portion of the proximal-end wall member **104** generally corresponds to the width of the distal-end wall member **103**.

[0032] This "middle" portion on the clip-on device **10** is where the clipping mechanism takes place – by cooperative clamping efforts provided by the distal protrusions **101** and proximal protrusions **102**, such that when the device **10** is being inserted onto the bridge **701** of the spectacle **70**, the distal protrusions **101** are urging against the distal side **703 of** the bridge while, at the same time, the proximal protrusions **102** are urging against the proximal side **702** of the bridge.

[0033] Under this clipping mechanism, in order to produce the best tight fit, the dimension of the void **106** between the distal and proximal protrusions should be bigger, albeit very slightly, than the thickness of the bridge **701** of the spectacle **70**. On the other hand, the precise location of the distal and proximal protrusions are not critical, so long as the distal protrusions **101** and proximal protrusions **102** are more or less evenly spaced apart within the distal-end wall member **103** and proximal-end wall member **104**, respectively. Preferably and as shown in FIGS. 1 to 4, the proximal protrusions **102** are spaced further apart than the distal protrusions **101**.

[0034] In order to provide a tight and snugly fit and to prevent or minimize any rattling of the clip-on device **10** while sitting on the bridge **701** of the spectacle **70**, it is preferred that at least two distal protrusions **101** are provided to work cooperatively with at least two proximal protrusions **102**.

[0035] Optionally, the distal and proximal protrusions can be made of resilient and/or flexible materials such that these protrusions are slightly bendable. It is to be noted that the protrusions **101** and **102** are integrated as part of the sunglasses clip-on device **10** to form a one-piece uni-body. It is also to be noted that the specific shape of the protrusions **101** and **102** is not important. For example, it can be cylindrical, square, diamond or triangular in shape.

[0036] The auxiliary sunglass lenses **60** can be fastened to the clip-on device **10** by inserting the rivets **105** through the lens apertures **601** by using conventional methods, such as to compress the bulb of the rivets **105** against the lenses **60** (as shown in FIG. 6).

[0037] FIGS. 7 to 9 show the different views of the clip-on device **10** of the instant invention being attached to a spectacle **70**.

[0038] Depending on the style of the bridge **701** of the spectacle **70** and/or the style of the spectacle **70** itself, the shape of the clip-on device **10** and the curvatures of the distal-end wall member **103** and proximal-end wall member **104** can be modified. FIG. 10 shows another embodiment of the clip-on device **20** in which the middle bottom portion of the inverted "U" is convex in design. On the other hand, FIG. 11 shows a further embodiment of the clip-on device **30** in which not only the middle bottom portion of the inverted "U" is concave in design, it also rises "above" the proximal-end wall member **104**.

[0039] FIGS. 12A and 12B illustrate additional embodiments of the clip-on device **40**. Referring to FIG. 12A, instead of creating a void **106** between the distal and proximal protrusions, clip-on device **40** utilizes two notches **401** for inserting the clip-on device **40** onto the bridge **701** of the spectacle **70**. In order to provide for a tight and snugly fit, the dimension of the width of the notches **401** should correspond and be just very slightly bigger than the thickness of the bridge **701** of the spectacle **70**.

[0040] FIG. 12B illustrates the clip-on device **40** with bendable means embedded in the proximal-end wall member to promote bendability of the device **40**. A metal stripe **402** is shown thereon.

[0041] FIG. 13 illustrates clip-on device **40** being inserted and fits snugly on bridge **701** of the spectacle **70**.

[0042] The sunglasses clip-on device **10** can be made from any plastic injection materials. Preferably, the device **10** is made from polyflex material. Also preferably, the device **10** is made from plastic injection materials which are stretchable and/or bendable.

[0043] The foregoing detailed description of the present invention is provided for the purposes of illustration and is not intended to be exhaustive or to limit the invention to the embodiments disclosed. Accordingly, the scope of the present invention is defined by the appended claims.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A sunglasses clip-on device for releasably engaging an auxiliary sunglass onto a bridge of a spectacle, said bridge having a distal side and a proximal side, said clip-on device comprising:

- a proximal-end wall member extending vertically between a first end and a second end, extending horizontally between outboard ends, and substantially in parallel with a distal-end wall member extending vertically between a first end and a second end and horizontally between outboard ends, said proximal-end wall member and said distal-end wall member being integrally connected in a middle section at said first ends and open at said second ends to form an inverted "U" shape in cross-section;
- said distal-end wall member having a longitudinal length shorter than a longitudinal length of the bridge of said spectacle;
- at least two mechanical fastener means, each one of said at least two mechanical fastener means is provided at each of the two outboard ends of said proximal-end wall member for receiving auxiliary sunglass lenses;
- at least two first protrusions provided on said proximal-end wall member for urging against said proximal side of said bridge; and
- at least two second protrusions provided on said distal-end wall member for urging against said distal side of said bridge;

wherein said at least two first protrusions project toward said distal-end wall member, and said at least two second protrusions project toward said proximal-end wall member, and

wherein said at least two first and second protrusions define a void, whereby said void having a thickness bigger than the thickness of said spectacle bridge for securely engaging said sunglasses clip-on device onto said bridge;

wherein said distal side of said bridge is a side facing to a user.

2. The clip-on device of claim 1, wherein a curvature of the middle section of said clip-on device is substantially flat.

3. The clip-on device of claim 1, wherein a curvature of the middle section of said clip-on device is convex.

4. The clip-on device of claim 1, wherein a curvature of the middle section of said clip-on device is concave.

5. The clip-on device of any one of claims 1 to 4, wherein said clip-on device is made from plastic injection materials as a one-piece uni-body.

6. The clip-on device of claim 5, wherein said clip-on device is made of resilient or flexible materials.

7. The clip-on device of any one of claims 1 to 6, wherein said at least two first protrusions and said at least two second protrusions are evenly spaced apart within said proximal-end wall member and said distal-end wall member, respectively.

8. The clip-on device of claim 7, wherein said at least two first protrusions are spaced further apart than said at least two second protrusions within said proximal-end wall member and said distal-end wall member, respectively.

9. The clip-on device of any one of claims 1 to 8, wherein said at least two first protrusions and said at least two second protrusions are cylindrical, square, diamond or triangular in shape.

10. A sunglasses clip-on device for releasably engaging an auxiliary sunglass onto a bridge of a spectacle, comprising:

- a first spectacle-facing wall member and a second spectacle-facing wall member, each of which extends horizontally between an outboard end and an inboard end, and

- a bridge-facing wall member extending horizontally between two outboard ends,

wherein at least two mechanical fastener means are provided, each of said at least two mechanical fastener means is provided at each of the outboard ends of said first and second spectacle-facing wall members for receiving auxiliary sunglass lenses;

wherein the inboard end of said first spectacle-facing wall member joining to one of the outboard ends of said bridge, defining a void in an inverted U-shape section, and the inboard end of said second spectacle-facing wall member joining to the other one of the two outboard ends of said bridge-facing wall member to define another void in another U-shape section, each of said voids forms a notch, whereby said notch is bigger than the thickness of said spectacle bridge for securely engaging said sunglasses clip-on device onto said bridge.

11. The clip-on device of claim 10, wherein a bendable means is provided in said spectacle-facing wall member.

12. The clip-on device of claim 11, wherein the bendable means is metal stripe embedded in the spectacle facing wall member.

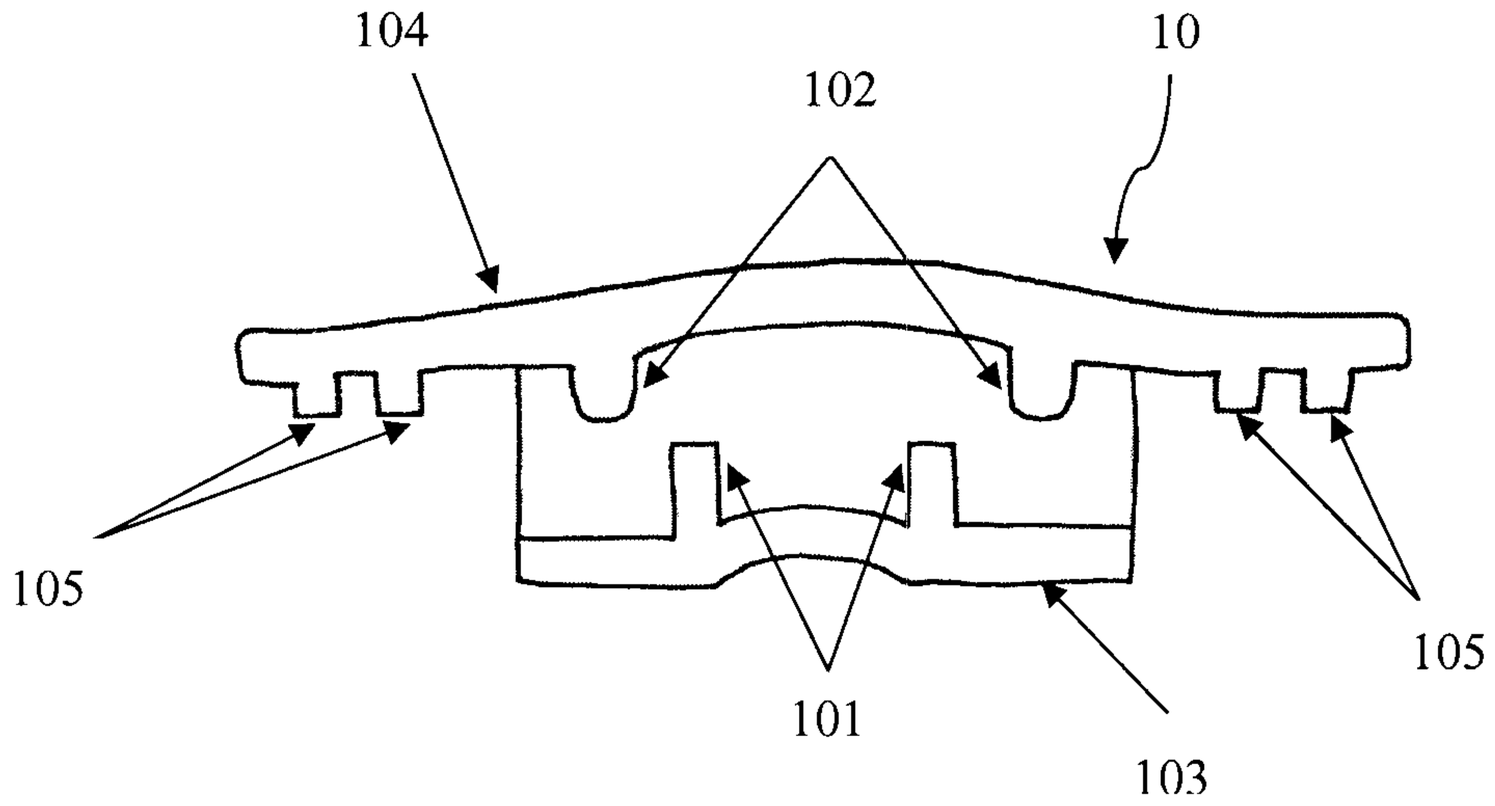


FIG. 1

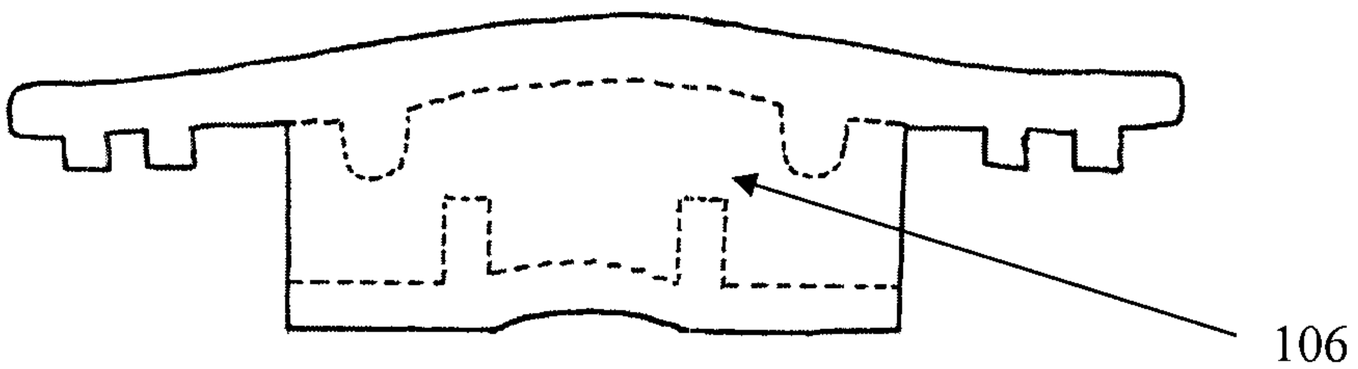


FIG. 2

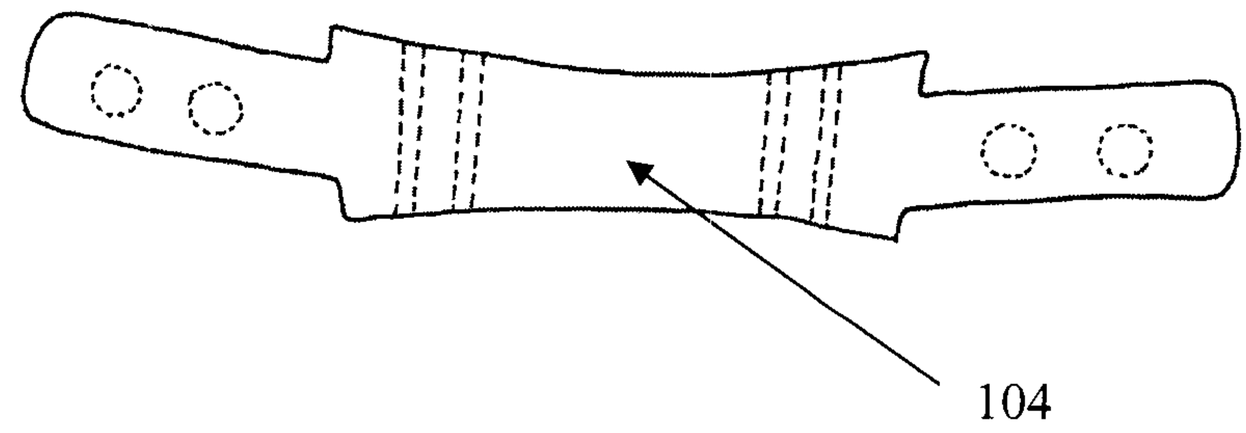


FIG. 3

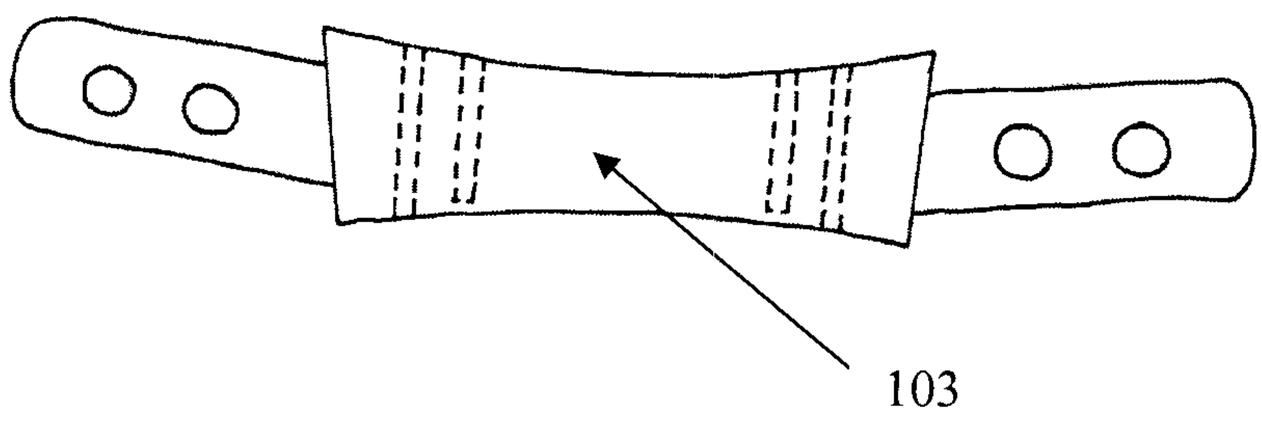


FIG. 4

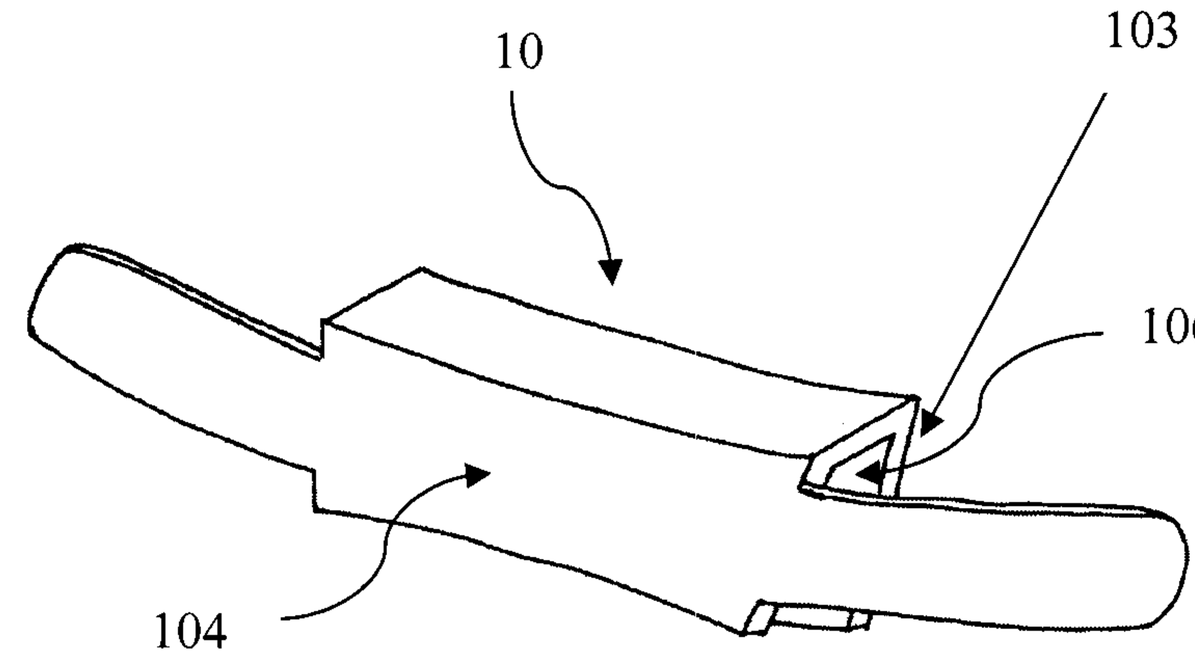


FIG. 5A

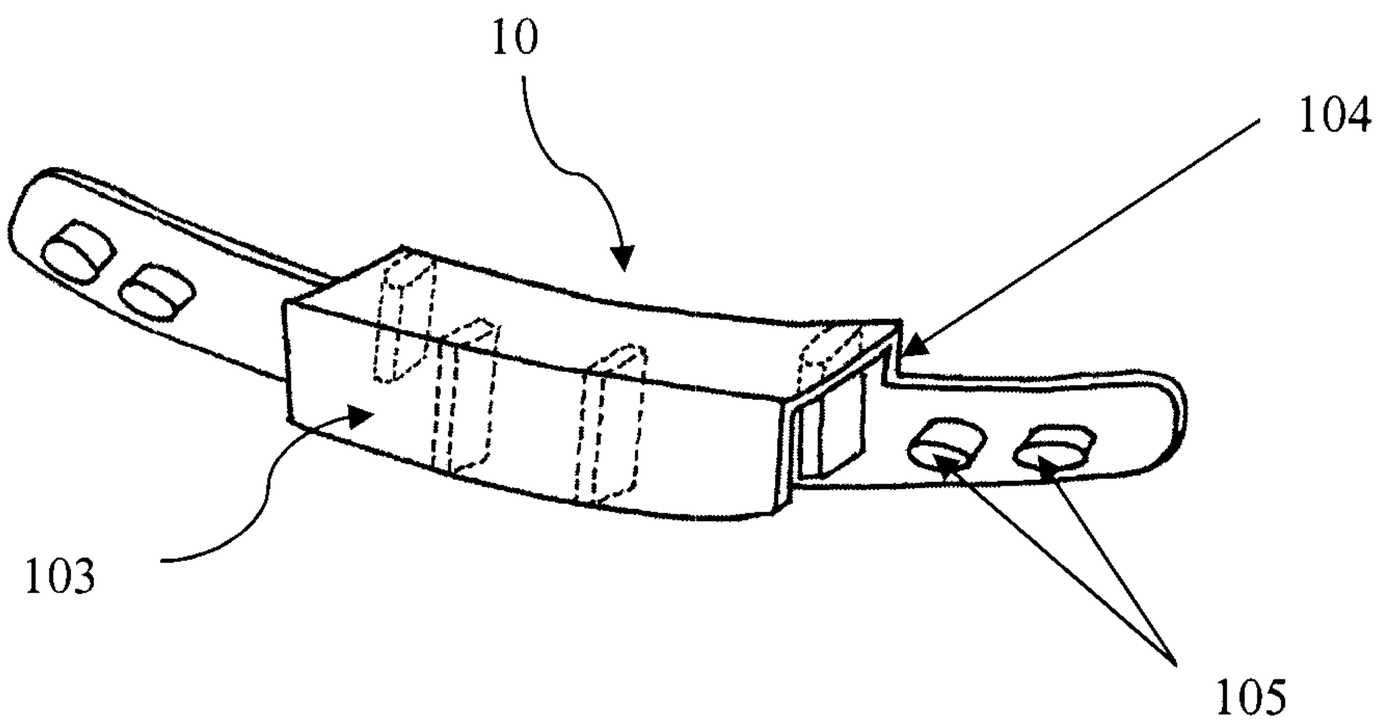


FIG. 5B

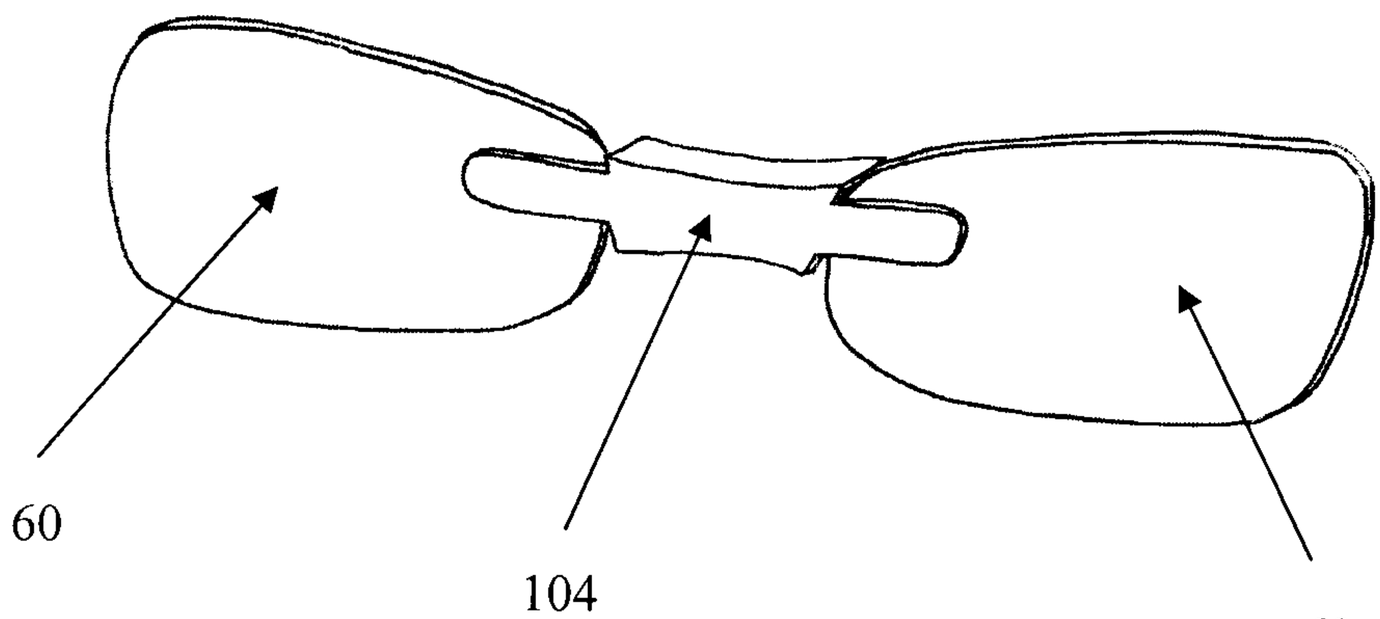


FIG. 6

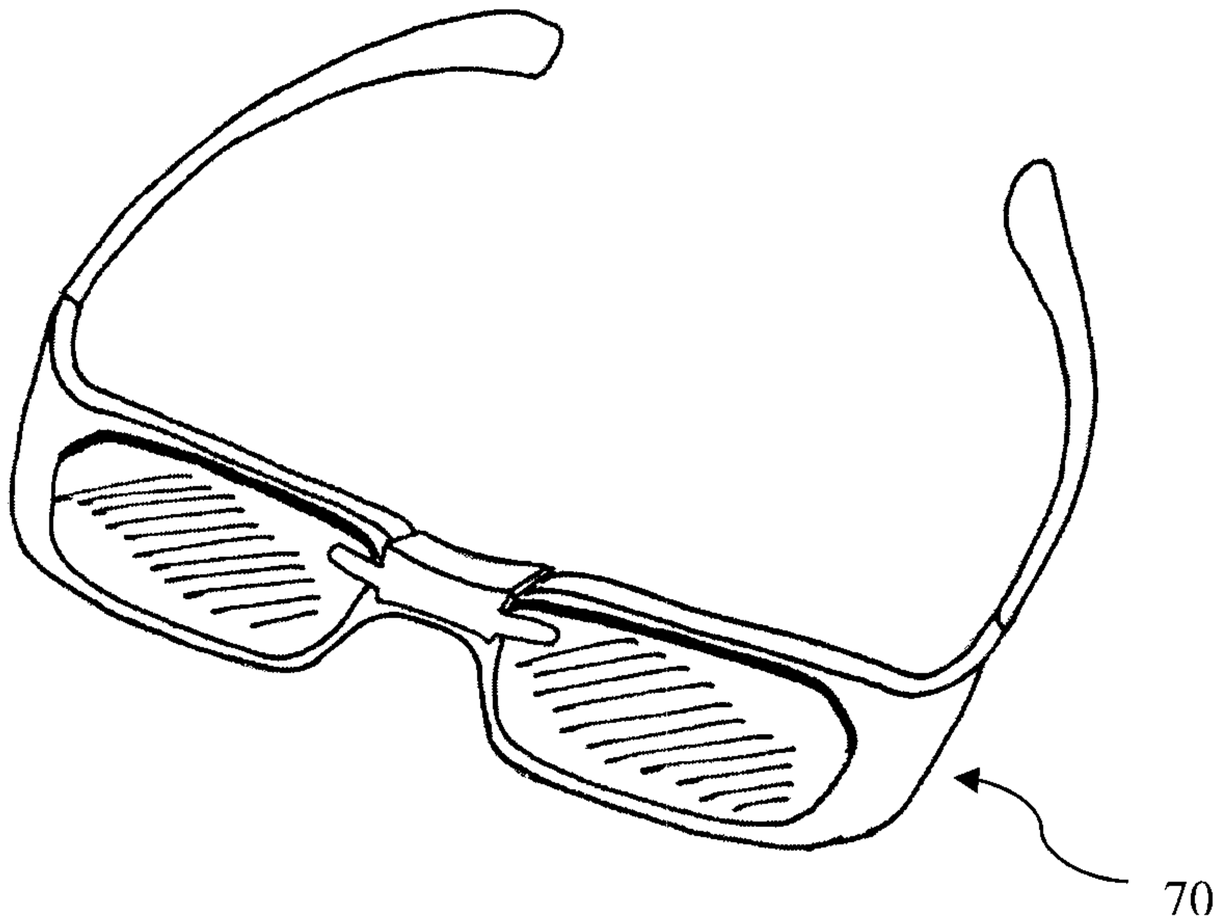


FIG. 7

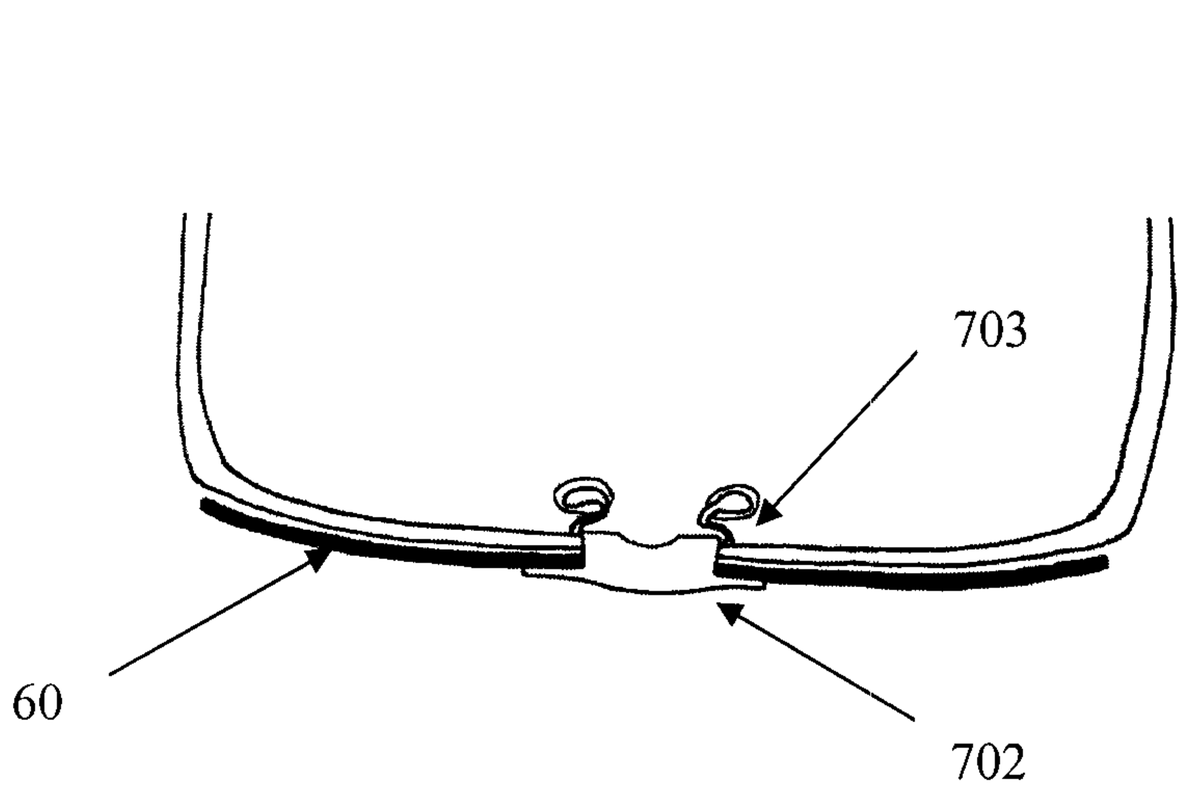


FIG. 8

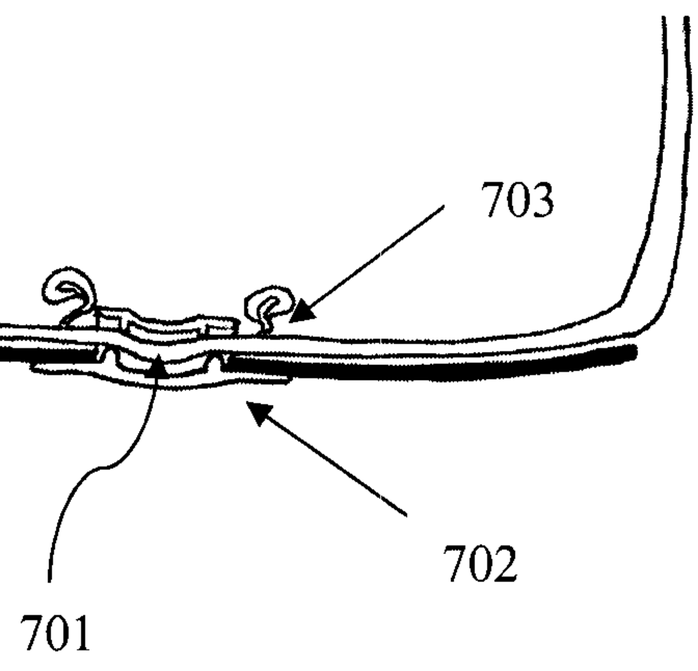


FIG. 9

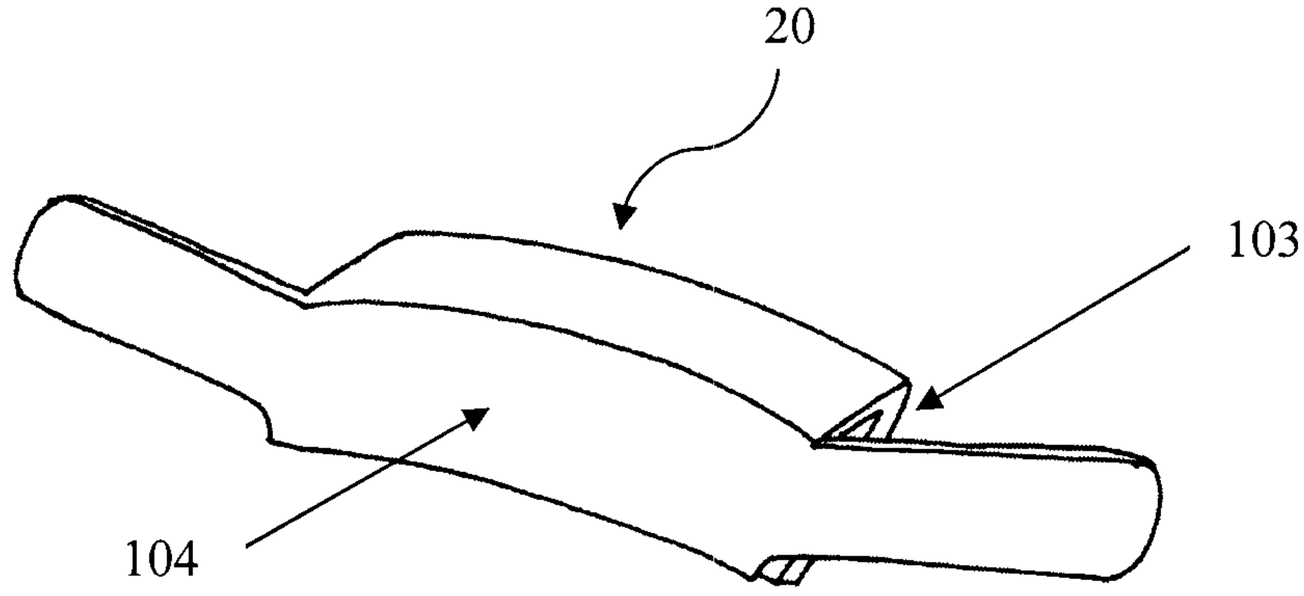


FIG. 10

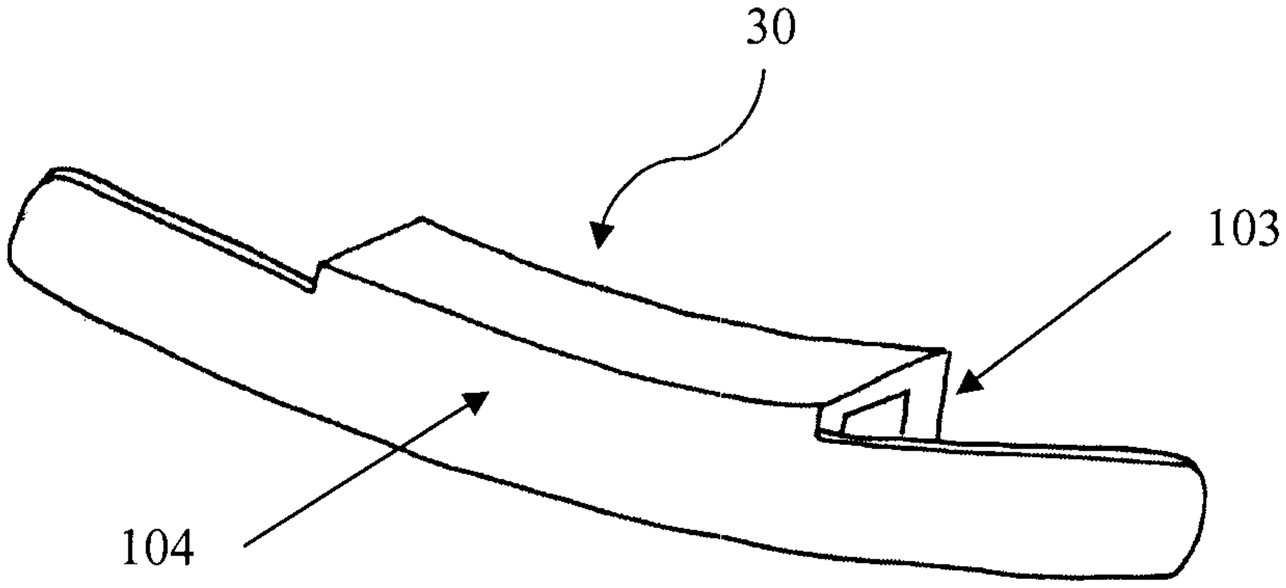


FIG. 11

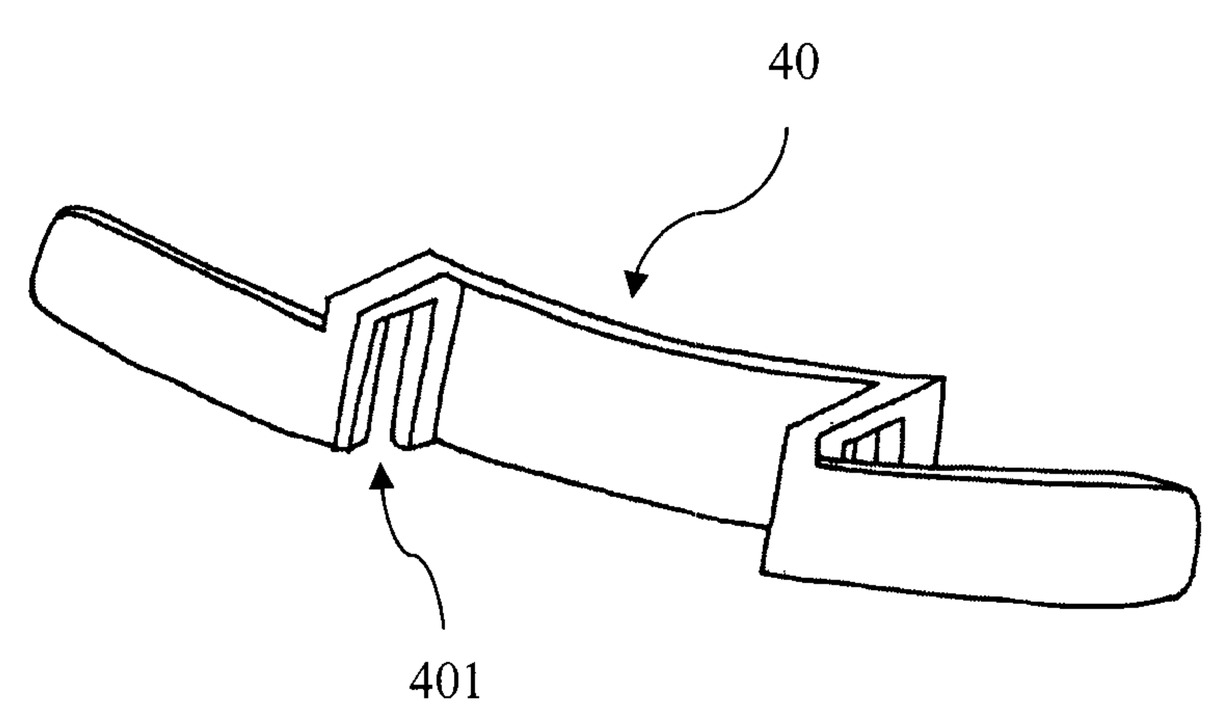


FIG. 12A

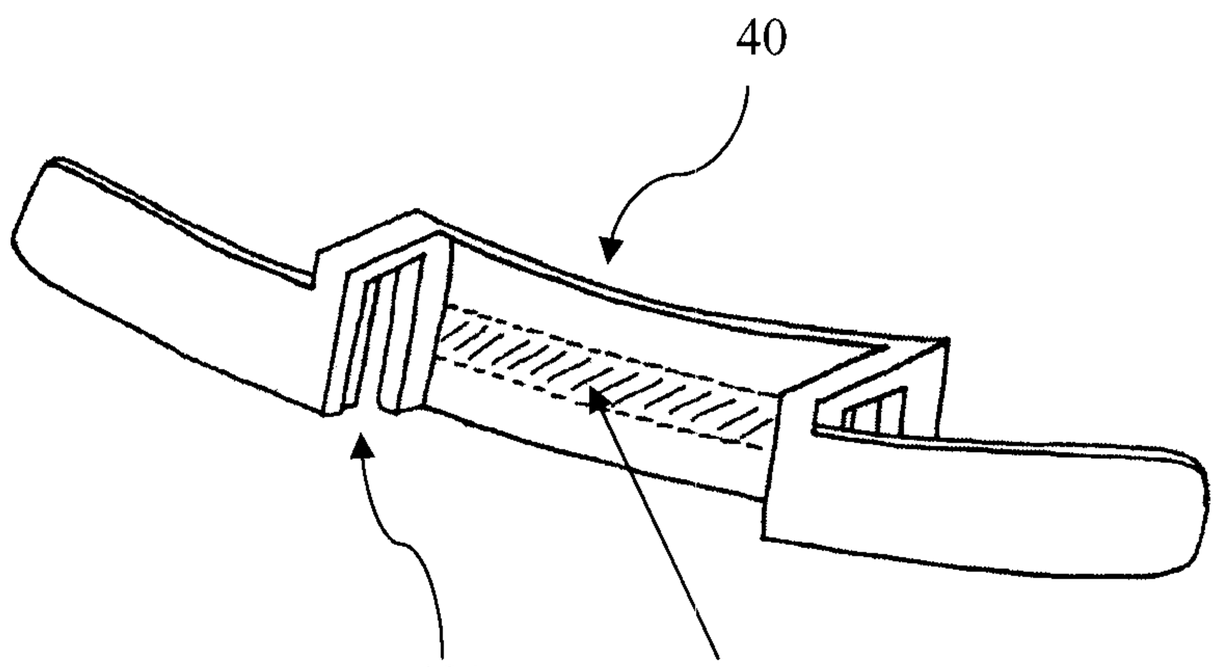


FIG. 12B

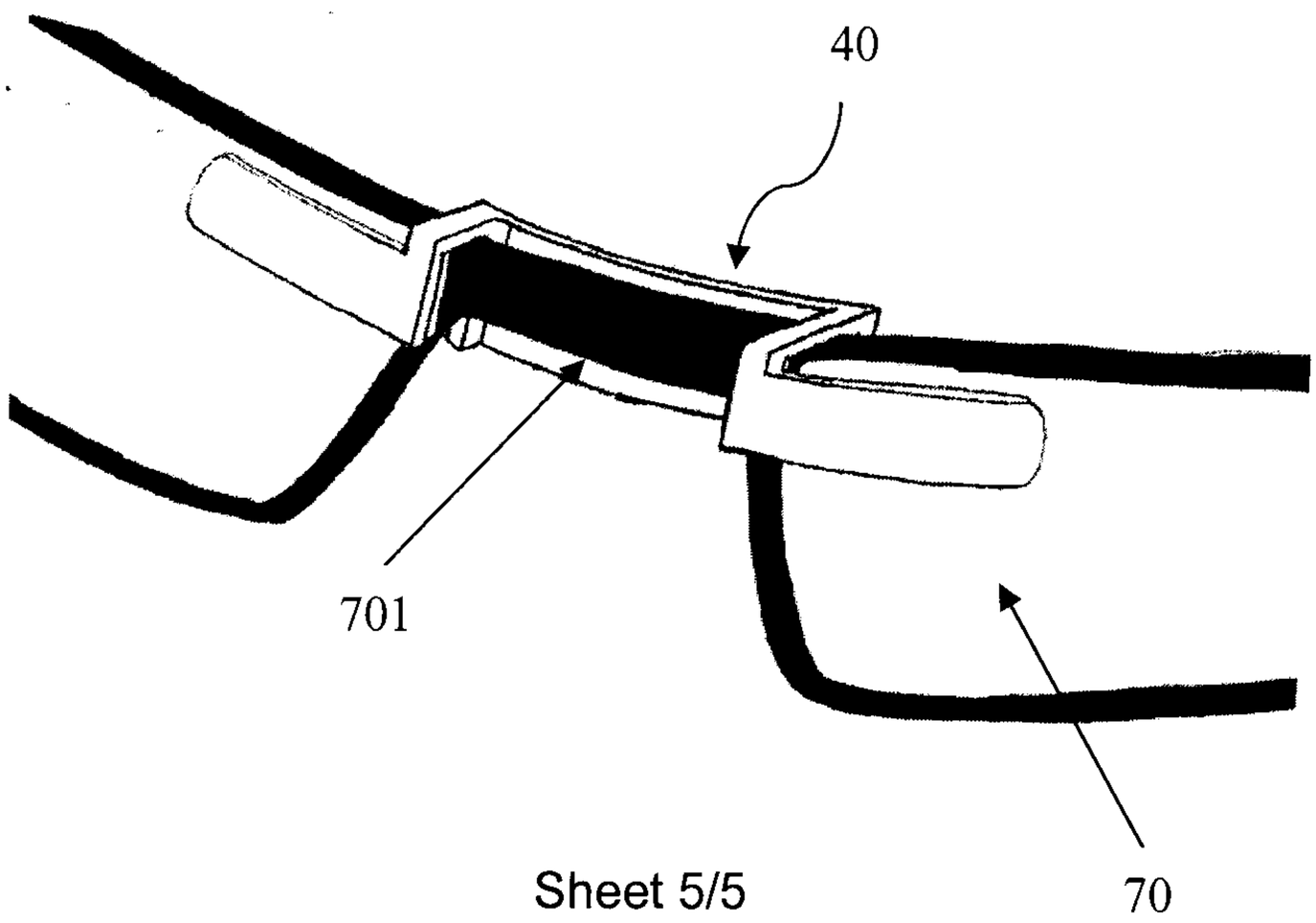
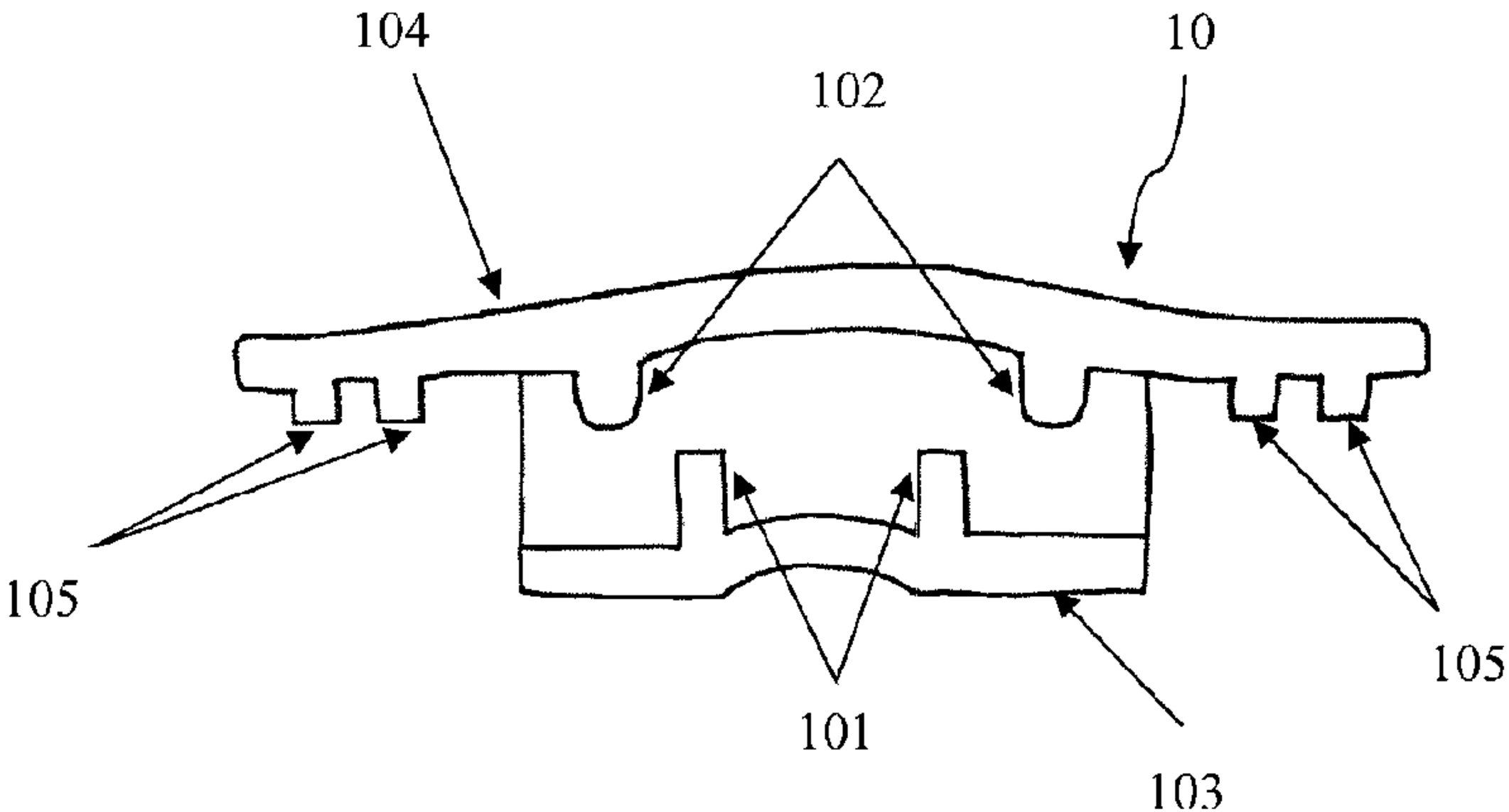


FIG. 13


104
102
10
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