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(54) **ADAPTER UNIT FOR A SHAVING RAZOR**

ADAPTEREINHEIT FÜR RASIERER

ADAPTATEUR POUR RASOIR

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Description

[0001] The present invention relates to the construction of shaving razors, in which an adapter unit provides an interface between a razor blade carrier and a razor handle engaging member.

[0002] A manufacturer of shaving razors may manufacture shaving razors of a wide variety of designs. In particular, many designs have been developed with respect to the interconnection of razor blade carriers and razor handles. In many circumstances, it would be advantageous for a manufacturer to be able to use razor blade carriers and razor handles of various designs together.

[0003] For example, for the sake of manufacturing efficiency, it would be advantageous for a manufacturer to be able to use a standardized razor blade carrier with multiple razor handle designs or a standardized razor handle with multiple razor blade carrier designs. In addition, it would be commercially attractive for a manufacturer to produce a standardized razor handle that would be compatible with various commercially available razor blade carrier designs. In addition, it would be advantageous for a manufacturer to be able to use new razor handle designs with older razor blade carrier designs to extend the life of the older razor blade carrier designs. Furthermore, it would be advantageous for a manufacturer to use new razor blade carrier designs with older razor handle designs to facilitate the transition to new razor blade carrier designs.

[0004] Accordingly, there exists a need for a device and method for allowing razor blade carriers and razor handles of various designs to be used together.

[0005] US-A-4403414 relates to a socket device for making a pivotal connection between a single or multiple blade cartridge and a support where a connection between the socket and the support is accomplished by interlocking arcuate flanges and a connection between the socket and a cartridge is formed by cooperation between a channel and track.

[0006] US-A-4288920 relates to a shaving system include a handle and a blade assembly, the handle having a first and second connecting portion extending from an end thereof, the blade assembly comprising a body portion having blade apparatus permanently fixed therein, a first blade assembly connecting portion pivotally engaged with the first handle connection portion, and a second blade assembly connecting portion fixedly connected to the second handle connecting portion to facilitate the dynamic change of shaving geometry during a shaving operation.

SUMMARY OF THE INVENTION

[0007] According to a first aspect of the present invention there is provided a razor cartridge for use with a razor handle having a handle engagement member extending from one end thereof, said razor cartridge comprising:

a razor blade carrier having a carrier engagement member thereon;
and
an adapter unit having a first side and a second side,

wherein:

said first side of said adapter unit has a first adapter engagement member shaped for snapping into non-detachable engagement with said carrier engagement member to attach said adapter unit to said razor blade carrier; and
said second side of said adapter unit has a second adapter engagement member shaped for mating with the handle engagement member;

whereby the handle engagement member is capable of being coupled to said razor blade carrier via said adapter unit.

[0008] Advantageously, with the adapter unit of the present invention, a manufacturer of shaving razors may mass produce a standardized razor blade carrier for all of its various models of shaving razors, and use different adapter units to adapt the standardized razor blade carrier to different designs of razor handle engagement members. Since the economies of scale of mass producing the standardized razor blade carrier will typically outweigh the added cost of producing the relatively simple adapter unit of the present invention, a manufacturer may reduce its overall costs of manufacturing different razor designs.

[0009] The carrier engagement member of the razor cartridge may comprise one or more claws, and the adapter engagement member may comprise an elongated projection. Alternatively, the carrier engagement member may comprise one or more slots, and the adapter engagement member may comprise one or more tabs.

[0010] In another preferred embodiment of the present invention, there is provided a razor cartridge for use with a razor handle having a handle engagement member extending from one end thereof. The razor cartridge includes a razor blade carrier having a carrier engagement member thereon, and an adapter unit having a first side and a second side. The first side of the adapter unit has a first adapter engagement member lockingly mateable with the carrier engagement member, with at least one of the first adapter engagement member and the carrier engagement member being resiliently yieldable, such that the first adapter engagement member and the carrier engagement member may be snapped into non-detachable engagement with each other. The second side of the adapter unit has a second adapter engagement member pivotably mateable with the handle engagement member, at least one of the second adapter engagement member and the handle engagement member being resiliently yieldable, such that the second adapter engagement member and the handle engagement member may be snapped into pivotable engagement with each other.

[0011] The carrier engagement member of the razor blade carrier may comprise one or more claws, and the first adapter engagement member may comprise an elongated projection. Alternatively, the carrier engagement member may comprise one or more slots, and the first adapter engagement member may comprise one or more tabs.

[0012] The second adapter engagement member of the adapter unit may be detachable or non-detachable from the handle engagement member. Moreover, the handle engagement member may comprise a projection with a rounded end, and the adapter engagement member may comprise a socket for receiving the projection. Preferably, the socket comprises a plurality of resilient fingers.

[0013] In yet another preferred embodiment, there is provided a razor cartridge for use with a razor handle having a handle engagement member extending from one end thereof. The razor cartridge includes a razor blade carrier having first and second carrier engagement members thereon. The second carrier engagement member is pivotably engageable with the handle engagement member. The razor cartridge also includes an adapter unit having a first side and a second side, the first side having an adapter engagement member lockingly mateable with the first carrier engagement member, with at least one of the adapter engagement member and the first carrier engagement member being resiliently yieldable, such that the adapter engagement member and the first carrier engagement member may be snapped into non-detachable engagement with each other. The second side of the adapter unit has an aperture for guiding the handle engagement member into pivotable engagement with the second carrier engagement member.

[0014] The first carrier engagement member may comprise one or more claws, and the adapter engagement member may comprise an elongated projection. In addition, the first carrier engagement member may comprise one or more slots, and the adapter engagement member may comprise one or more tabs. Preferably, the aperture comprises tapered inner walls.

[0015] In each of the embodiments described above, the razor handle may have a central, projecting tongue, and the adapter unit may have a socket for loosely receiving the tongue, such that when the handle and the adapter unit are engaged, the central, projecting tongue and the socket cooperate to limit the pivoting range of the handle with respect to the razor cartridge.

[0016] The adapter unit of the present invention may advantageously be an injection-molded, plastic piece.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

Figs. 1 and 2 are isometric views of an adapter unit according to a preferred embodiment of the present invention;

Figs. 3 and 4 are exploded isometric views of a shaving razor including the adapter unit according to the preferred embodiment of Figs. 1 and 2;

Figs. 5 and 6 are isometric views of the shaving razor of Figs. 3 and 4 with the razor blade carrier, adapter unit, and handle engaged;

Figs. 7 and 8 are isometric views of an adapter unit according to another preferred embodiment of the present invention;

Fig. 9 is an exploded isometric view of a shaving razor including the adapter unit according to the preferred embodiment of Figs. 7 and 8;

Fig. 10 is an isometric view of the shaving razor of Fig. 9, with the razor blade carrier, adapter unit, and handle engaged;

Figs. 11 and 12 are exploded side views of a shaving razor including the adapter unit according to the preferred embodiment of Figs. 7 and 8;

Figs. 13 and 14 are isometric views of an adapter unit according to another preferred embodiment of the present invention; and

Fig. 15 is an exploded isometric view of a shaving razor including the adapter unit according to the preferred embodiment of Figs. 13 and 14.

DETAILED DESCRIPTION

[0018] Figs. 1 and 2 show isometric views of an adapter unit 10 according to a first preferred embodiment of the present invention. The adapter unit 10 includes an elongated, generally rectangular base 12 having a bottom side 14a and a top side 14b.

[0019] The bottom side 14a includes two groups of resilient fingers 16a and 16b disposed on opposite ends of the longitudinal axis of the base 12. The two groups of resilient fingers 16a and 16b form the boundaries of two spherically-shaped cavities 26a and 26b, respectively. Depending on the position and size of the spherically-shaped cavities 26a and 26b, the bottom side 14a may include rounded depressions further delineating the boundaries of the spherically-shaped cavities. As shown in the figures, four resilient fingers for each group is preferred, but any number of fingers operable to form the boundaries of a spherically-shaped cavity may be used. The bottom side 14a also includes a central socket 18. The central socket 18 includes a notch 20 running perpendicular to the plane of the bottom side 14a.

[0020] The top side 14b includes projections extending outwardly from its longitudinal edges. Along the length of one longitudinal edge of top side 14b, there is disposed an elongated projection 22. Along the other longitudinal edge of top side 14b, there are disposed a pair of projecting tabs 24a and 24b, as shown in Fig. 2. Referring to Fig. 2, the tabs 24a and 24b are disposed on opposite ends of the longitudinal axis of the base 12. The top side 14b also includes a pair of projections 28a and 28b extending from the top side 14b and running perpendicular

to the longitudinal edges of top side 14b.

[0021] Figs. 3 to 6 show isometric views of a shaving razor including a standardized razor blade carrier 30, the adapter unit 10 of Figs. 1 and 2, and a razor handle end 50. In Figs. 3 and 4, the shaving razor is shown before engagement of the razor blade carrier 30, adapter unit 10, and razor handle end 50. In Figs. 5 and 6, the shaving razor is shown with the razor blade carrier 30, adapter unit 10, and handle end 50 engaged together.

[0022] As shown in these figures, the razor blade carrier 30 is an elongated, generally rectangular structure. The axis of elongation is parallel to the cutting edge of the razor blade or blades contained in the razor blade carrier (blades not shown). The razor blade carrier 30 may include any of the blade, guard, and cap features that are well-known in the art (not shown). Referring to Fig. 3, the razor blade carrier 30 includes a bottom base 32 with a resilient lip 44 formed around it. In the center of the base 32, a plateau-like projection 34 extends from the base 32. The plateau-like projection 34 is shaped to fit in between the projections 28a and 28b on the adapter unit 10.

[0023] On either side of the plateau-like projection 34, a pair of support structures 40a and 40b extend from the base 32. As best shown in Fig. 3, a plurality of claws 36 are disposed on the lip 44 along one of the longitudinal sides of the razor blade carrier 30. As best shown in Fig. 4, a pair of slots 38a and 38b are formed in the support structures 40a and 40b, respectively, on the side of the razor blade carrier 30 opposite from the claws 36. Referring to Figs. 3 and 4, the standardized razor blade carrier 30 also includes a pair of cylindrical shafts 42a and 42b formed in the support structures 40a and 40b, respectively, which together define a pivot axis for the razor blade carrier 30 for certain handle designs. The cylindrical shafts 42a and 42b are not utilized in the embodiment of Figs. 3 to 6, but will be utilized in a later embodiment.

[0024] In the embodiment of Figs. 3 to 6, the razor handle end 50 is bifurcated into two arms 54a and 54b, which form a V-shape. The two arms 54a and 54b are joined at their outer ends by a bridge portion 62. Each arm 54a and 54b includes a ball-like projection 56a and 56b, respectively, at its end. The bridge portion 62 includes a central, projecting tongue 58, which is T-shaped in cross-section.

[0025] To engage the adapter unit 10 with the razor blade carrier 30, the tabs 24a and 24b of the adapter unit 10 are placed within the slots 38a and 38b, respectively, of the razor blade carrier 30. The adapter unit 10 is then pivoted about the longitudinal edge on which the tabs 24a and 24b are located until the elongated projection 22 contacts the claws 36. Pressure is then exerted on the adapter unit 10 so that, by camming action of the elongated projection 22 on the claws 36, the claws 36 and the lip 44 are pushed outwardly. After the elongated projection 22 has passed the claws 36, the claws 36 and the lip 44 return to their original positions, thus locking the adapter unit 10 into the razor blade carrier 30, and thereby forming a razor cartridge. During this procedure, the plateau-like projection 34 of the razor blade carrier 30 cooperates with the projections 28a and 28b of the adapter unit 10 to guide and stabilize the adapter unit 10 into position.

[0026] It will be seen that once the adapter unit 10 is engaged with the razor blade carrier 30, the adapter unit 10 permits the razor cartridge formed thereby to be engaged with the handle end 50 by snapping the ball-like projections 56a and 56b of the handle end 50 into the spherical cavities 26a and 26b formed by the groups of resilient fingers 16a and 16b, respectively, of the adapter unit 10. Once engaged, the ball-like projections 56a and 56b and the groups of resilient fingers 16a and 16b form a pair of ball-and-socket joints. In addition, the tongue 58 of the handle end 50 fits into the socket 18 of the adapter unit 10, with the T-shape of the tongue 58 cooperating with the notch 20 of the socket 18 to guide the razor handle end 50 into the adapter unit 10 in the correct orientation for shaving. Preferably, the socket 18 is slightly wider than the tongue 58 leaving room for play between the tongue 58 and the socket 18 so that the razor cartridge, consisting of the razor blade carrier 30 and the adapter unit 10, may be pivoted on the ball-and-socket joints. The play between the socket 18 and the tongue 58 determines the pivot range of the razor cartridge.

[0027] Figs. 7 and 8 show isometric views of an adapter unit 110 according to a second preferred embodiment of the present invention. The adapter unit 110 includes an elongated, generally rectangular base 112 having a bottom side 114a and a top side 114b.

[0028] With reference to Fig. 7, the bottom side 114a includes two pairs of resilient fingers 116a and 116b disposed on opposite ends of the longitudinal axis of the base 112. Each pair of resilient fingers 116a and 116b are adapted to receive a cylindrically shaped structure. The bottom side 114a also includes a central socket 118. The central socket 118 includes a notch 120 running perpendicular to the plane of the bottom side 114a.

[0029] With reference to Fig. 8, the top side 114b of the adapter unit 110 includes projections extending outwardly from its longitudinal edges. Running along the length of one longitudinal edge, an elongated projection 122 is disposed on the top side 114b. On the opposite longitudinal edge, there are disposed a pair of projecting tabs 124a and 124b. The top side 114b also includes a pair of projections 128a and 128b extending from the top side 114b and running perpendicular to the longitudinal edges of the top side 114b.

[0030] Figs. 9 and 10 show exploded and assembled isometric views, respectively, of a shaving razor including the standardized razor blade carrier 30 previously described with regard to the embodiment of Figs. 3 to 6, the adapter unit 110 of Figs. 7 and 8, and a razor handle end 150. Figs. 11 and 12 show exploded side views of the same shaving razor.

[0031] As shown in Figs. 9 to 12, the handle end 150 is bifurcated into two arms 154a and 154b, which form a

V-shape. The two arms 154a and 154b are joined at their outer ends by a bridge portion 162. The arms 154a and 154b include recesses 160a and 160b, respectively, at their ends. The recesses 160a and 160b include therein cylindrically shaped portions 156a and 156b, respectively. The bridge portion 162 includes a central, projecting tongue 158, which is T-shaped in cross-section.

[0032] It will be seen that the projections on the top side 114b of the adapter unit 110 are similar to those of the adapter unit 10 of Figs. 1 to 6. Thus, the adapter unit 110 is engaged to the standardized razor blade carrier 30 in the same manner as has been described with respect to the adapter unit 10 to thereby form a razor cartridge. The handle end 150 is engaged with the adapter unit 110 by snap fitting the rounded portions 156a and 156b into the two pairs of resilient fingers 116a and 116b, respectively. As in the prior embodiment of the present invention, the tongue 158 fits into the socket 118, with the T-shape of the tongue 158 cooperating with the notch 120 of the socket 118 to guide the handle end 150 into the adapter unit 110 in the correct orientation for shaving. Preferably, the socket 118 is slightly wider than the tongue 158 leaving room for play between the tongue 158 and the socket 118 so that the razor cartridge may be pivoted about the cylindrically shaped portions 160a and 160b. The play between the socket 118 and the tongue 158 determines the pivot range of the razor cartridge formed by the adapter unit 110 and the razor blade carrier 30.

[0033] Figs. 13 and 14 show isometric views of an adapter unit 210 according to a third preferred embodiment of the present invention. The adapter unit 210 includes an elongated, generally rectangular base 212 having a bottom side 214a and a top side 214b.

[0034] With reference to Fig. 13, the bottom side 214a includes a pair of guiding structures 216a and 216b disposed at opposite ends of the longitudinal axis of the base 212. The guiding structures 216a and 216b are generally rectangular structures with central openings 226a and 226b, respectively, and inner walls that taper towards the central openings. The bottom side 214a also contains a pair of extending tapered projections 215a and 215b, located between the guiding structures 216a and 216b.

[0035] With reference to Fig. 14, the top side 214b includes projections that extend outwardly from its longitudinal edges. Extending outwardly along one longitudinal edge of the top side 214b, there are disposed a pair of elongated projections 222a and 222b. On the opposite longitudinal edge, a pair of projecting tabs 224a and 224b are disposed on the top side 214b. The top side 214b also includes a pair of projections 228a and 228b extending therefrom and running perpendicular to the longitudinal edges of the top side 214b.

[0036] Fig. 15 shows an isometric view of a shaving razor including the standardized razor blade carrier 30, the adapter unit 210 of Figs. 14 and 15, and a razor handle end 250. In Fig. 15, the adapter unit 210 is shown engaged with the razor blade carrier 30. The manner of engagement of the adapter unit 210 with the razor blade carrier 30 is the same as described for the prior two adapter unit embodiments 10 and 110. When the adapter unit 210 and the standardized razor blade carrier 30 are engaged, the central openings 226a and 226b are aligned over the openings of the cylindrical shafts 42a and 42b (see Figs. 3 and 4), respectively, on the inside walls of the support structures 40a and 40b of the standardized razor blade carrier 30.

[0037] The razor handle end 250 includes a main casing 255 and, extending from one end of the main casing 255, two arm members 254a and 254b and a central, spring-loaded tongue 258. Extending from the sides of the main casing 255 are two buttons 253a and 253b, which are operatively coupled to the arm members 254a and 254b, in a manner well-known in the art, so as to be able to move the arm members inwardly towards each other. The arm members 254a and 254b are normally separated under spring tension from one another by a distance determined by the main casing 255.

[0038] The arm members 254a and 254b contain outwardly extending rounded pins 256a and 256b, respectively, which define a pivot axis for the handle end 250. The dimensions of the rounded pins 256a and 256b are such that they fit into the cylindrical shafts 42a and 42b of the standardized razor blade carrier 30, enabling the razor cartridge formed by the standardized razor blade carrier 30 and the adapter unit 210 to pivot with respect to the handle end 250.

[0039] To engage the razor cartridge with the handle end 250, the arm members 254a and 254b are pushed into the guiding structures 216a and 216b of the adapter unit 210. As the arm members 254a and 254b are pushed into the guiding structures 216a and 216b, the tapered walls of the guiding structures 216a and 216b guide the rounded pins 256a and 256b into the openings of the cylindrical shafts 42a and 42b (see Figs. 3 and 4) of the razor blade carrier 30, respectively.

[0040] Once the handle end 250 and the razor cartridge are engaged, the central, spring-loaded tongue 258 cooperates with the bottom side 214a of the adapter unit 210 to bias the razor cartridge to a neutral, rest position. When the razor cartridge is pivoted, the camming action of the central tongue 258 against the bottom side 214a compresses the spring-loaded, central tongue 258 into the main casing 255. When the forces on the razor blade carrier 30 are released, the compressed, spring-loaded, central tongue 258 acts in reverse against the bottom side 214a to return the razor cartridge to its original, rest position. During the pivoting movement, the projections 215a and 215b prevent the central tongue 258 from moving side to side.

[0041] Preferably, the adapter units of the present invention are composed of plastic and are produced by a two-plate injection molding process. Preferably, the mold has a core pin that is not mechanically activated. The plastic material is preferably either polystyrene or ABS. The razor blade carriers and handles to be used with the

adapter unit of the present invention can be made with any of the materials and processes that are well-known in the art for making such components.

[0042] Although the present invention has been described with reference to certain preferred embodiments, various modifications, alterations, and substitutions will be known or obvious to those skilled in the art. For example, although the preferred embodiments as described are used to attach various handle designs to a standardized razor blade carrier, the present invention may also be used to attach a single handle design to various razor blade carriers. In addition, although the various embodiments of the adapter units have been described and shown in connection with detachable and pivotable razor handles, non-detachable and non-pivotable razor handles may also be used with the adapter units of the present invention with appropriate modifications to the engaging means. As another example, although preferred configurations of projections and tabs have been described with regard to the engagement of the adapter units and the standardized razor blade carrier, other configurations may be used. Thus, the preferred embodiments described and illustrated are in no way intended to limit the scope of the invention, as defined by the appended claims.

Claims

1. A razor cartridge for use with a razor handle (50;250) having a handle engagement member (56a,56b; 256a,256b) extending from one end thereof, said razor cartridge comprising:

a razor blade carrier (30) having a carrier engagement member thereon;
and
an adapter unit (10;210) having a first side (14b; 214b) and a second side (14a;214a),

wherein:

said first side (14b;214b) of said adapter unit (10;210) has a first adapter engagement member shaped for snapping into non-detachable engagement with said carrier engagement member to attach said adapter unit (10;210) to said razor blade carrier (30); and
said second side (14a;214a) of said adapter unit (10) has a second adapter engagement member shaped for mating with the handle engagement member (56a,56b;256a,256b);

whereby the handle engagement member (56a,56b; 256a,256b) is capable of being coupled to said razor blade carrier (30) via said adapter unit (10).

2. A razor cartridge as in claim 1, wherein at least one of the adapter engagement member and the carrier engagement member are resiliently yieldable.

3. A razor cartridge as in any preceding claim, wherein:

said carrier engagement member comprises one or more claws (36); and
said first adapter engagement member comprises an elongated projection.

4. A razor cartridge as in any of claims 1 or 2, wherein:

said carrier engagement member comprises one or more slots (38a, 38b); and
said first adapter engagement member comprises one or more tabs (24a, 24b).

5. A razor cartridge as in any preceding claim, wherein said second adapter engagement member is shaped for pivotable mating with the handle engagement member (56a, 56b), whereby the handle engagement member (56a, 56b) is pivotably coupled to said razor blade carrier (30) via said adapter unit (10).

6. A razor cartridge as in claim 5, wherein said second adapter engagement member comprises at least one socket corresponding to and shaped for receiving a rounded projection on the handle engagement member (56a, 56b).

7. A razor cartridge as in claim 6, wherein said at least one socket comprises a plurality of resilient fingers (16a, 16b).

8. A razor cartridge as in claim 5, wherein said second adapter engagement member comprises a socket corresponding to and shaped for receiving a ball-like projection on the handle engagement member (56a, 56b), whereby when the handle engagement member (56a, 56b) and said second adapter engagement member are engaged, the ball-like projection and said socket form a pivotable ball-and-socket joint.

9. A shaving razor cartridge as in claim 8, wherein said socket comprises a plurality of resilient fingers (16a, 16b).

10. A razor cartridge as in claim 5, wherein said adapter unit (10) has a socket (18) for loosely receiving a centrally projecting tongue (58) on the handle (50) such that when the handle (50) and said adapter unit (10) are engaged, the tongue (58) and said socket (18) cooperate to limit the pivoting range of the handle (50) with respect to said razor cartridge.

11. A razor cartridge as in any preceding claim, wherein said carrier engagement member and said handle engagement member (56a, 56b) are not directly

mateable.

12. A razor cartridge as in claim 1, wherein said first adapter engagement member is lockingly mated to said carrier engagement member.

13. A razor cartridge as in any preceding claim, wherein said adapter (10) is a plastic piece.

14. A razor cartridge as in claim 13, wherein said adapter unit (10) is an injection-molded piece.

15. A razor cartridge as in claim 1, wherein the razor blade carrier (30) having the first carrier engagement member also comprises a second carrier engagement member thereon, said second carrier engagement member being shaped for pivotable engagement with the handle engagement member (256a, 256b); and
an aperture is formed in said second side (214a) of said adapter unit (210) for guiding a handle engagement member (256a, 256b) therethrough and into pivotable engagement with said second carrier engagement member.

16. A razor cartridge as in claim 15, wherein at least one of the adapter engagement member and the carrier engagement member are resiliently yieldable.

17. A razor cartridge as any of claims 15 or 16, wherein:

said first carrier engagement member comprises one or more claws (36);
and
said adapter engagement member comprises an elongated projection (222a, 222b).

18. A razor cartridge as in any of claims 15 or 16, wherein:

said first carrier engagement member comprises one or more slots (38a, 38b);
and
said adapter engagement member comprises one or more tabs (224a, 224b).

19. A razor cartridge as in any of claims 15 to 18, wherein:

said adapter unit (210) is configured to adapt said razor cartridge for use with a handle (250) having two arm members (254a, 254b) with outwardly extending pins (256a, 256b) defining a pivot axis about which the handle (250) pivots with respect to said razor blade carrier (30), and a central, spring-loaded tongue (258) between the arm members (254a, 254b);
said aperture in said second side (214a) of said adapter unit (210) includes an aperture for each arm member (259a, 254b) of the handle (250); and
said adapter unit (210) has a bottom side extending between said apertures in said second side (214a) such that when the handle (250) and said adapter unit (210) are engaged, the central, spring-loaded tongue (258) cooperates with said bottom side of said adapter unit (210) to return said razor blade carrier (30) to a rest position after pivoting with respect to the handle (250).

20. A razor cartridge as in claim 19, wherein said adapter (210) is a plastic piece.

21. A razor cartridge as in claim 20, wherein said adapter unit (210) is an injection-molded piece.

22. A razor cartridge as in claim 1, wherein said adaptor unit (10) further comprises:

a base (12) having the first side (14b) and the second side (14a).

23. A razor cartridge as in claim 22, wherein at least one of the adapter engagement member and the carrier engagement member are resiliently yieldable.

24. A razor cartridge as in any of claims 22 or 23, wherein a second adapter engagement member is shaped for pivotable mating with the handle engagement member (56a, 56b).

25. A razor cartridge as in any of claims 22 to 24, wherein an aperture for guiding said handle engagement member (56a, 56b) into pivotable engagement with a second carrier engagement member is formed in said second side (14a) of said base (12), whereupon insertion of a handle engagement member (56a, 56b) through said aperture permits coupling of the handle engagement member (56a, 56b) with the razor blade carrier (30).

Patentansprüche

1. Einsatz für einen Rasierapparat zur Verwendung mit einem Rasierapparatgriff (50; 250), der ein Griffbauteil (56a, 56b; 256a, 256b) für den Eingriff aufweist, das sich von einem Ende davon erstreckt, wobei besagter Einsatz für den Rasierapparat umfasst:

einen Träger (30) für die Klinge des Rasierapparats, welcher darauf ein Trägerbauteil für den Eingriff aufweist;
und
eine Adaptereinheit (10; 210), welche eine erste

Seite (14b; 214b) und eine zweite Seite (14a; 214a) aufweist,

wobei:

besagte erste Seite (14b; 214b) der besagten Adaptereinheit (10; 210) ein erstes Adapterbauteil für den Eingriff aufweist, das so geformt ist, dass es in einen festen Eingriff mit besagtem Trägerbauteil für den Eingriff einschnappt um besagte Adaptereinheit (10; 210) am besagten Träger (30) für die Klinge des Rasierapparats zu befestigen; und
besagte zweite Seite (14a; 214a) der besagten Adaptereinheit (10) ein zweites Adapterbauteil für den Eingriff aufweist, das so geformt ist, dass es mit dem Griffbauteil (56a, 56b; 256a, 256a) für den Eingriff zusammenpasst;

wobei das Griffbauteil (56a, 56b; 256a, 256b) für den Eingriff in der Lage ist, an besagten Träger (30) für die Klinge des Rasierapparats über besagte Adaptereinheit (10) angekoppelt zu werden.

2. Einsatz für einen Rasierapparat nach Anspruch 1, wobei wenigstens das Adapterbauteil für den Eingriff und wenigstens das Trägerbauteil für den Eingriff oder wenigstens das Adapterbauteil für den Eingriff oder wenigstens das Trägerbauteil für den Eingriff unter Widerstand beweglich sind.

3. Einsatz für einen Rasierapparat nach einem der vorstehenden Ansprüche, wobei:

besagtes Trägerbauteil für den Eingriff eine oder mehrere Klauen (36) umfasst; und
besagtes erstes Adapterbauteil für den Eingriff einen verlängerten Vorsprung umfasst.

4. Einsatz für einen Rasierapparat nach Anspruch 1 oder 2, wobei:

besagtes Trägerbauteil für den Eingriff einen oder mehrere Schlitze (38a, 38b) umfasst; und
besagtes erstes Adapterbauteil für den Eingriff ein oder mehrere Elemente (tabs) (24a, 24b) umfasst.

5. Einsatz für einen Rasierapparat nach einem der vorstehenden Ansprüche, wobei besagtes zweites Adapterbauteil für den Eingriff so geformt ist, dass es drehbar mit dem Griffbauteil (56a, 56b) für den Eingriff zusammenpasst, wobei das Griffbauteil (56a, 56b) für den Eingriff drehbar mit besagtem Träger (30) für die Klinge des Rasierapparats über besagte Adaptereinheit (10) verbunden ist.

6. Einsatz für einen Rasierapparat nach Anspruch 5, wobei besagtes zweites Adapterbauteil für den Eingriff wenigstens eine Fassung entsprechend der und geformt für die Aufnahme eines gerundeten Vorsprungs auf dem Griffbauteil (56a, 56b) für den Eingriff umfasst.

7. Einsatz für einen Rasierapparat nach Anspruch 6, wobei besagte wenigstens eine Fassung eine Vielzahl von elastischen Fingern (16a, 16b) umfasst.

8. Einsatz für einen Rasierapparat nach Anspruch 5, wobei besagtes zweites Adapterbauteil für den Eingriff eine Fassung umfasst entsprechend der und geformt für die Aufnahme eines kugelartigen Vorsprungs auf dem Griffbauteil (56a, 56b) für den Eingriff, wobei, wenn das Griffbauteil (56a, 56b) für den Eingriff und besagtes zweites Adapterbauteil für den Eingriff in einander eingreifen, der kugelartige Vorsprung und besagte Fassung eine drehbare Verbindung zwischen Kugel und Fassung bilden.

9. Einsatz für einen Rasierapparat nach Anspruch 8, wobei besagte Fassung eine Vielzahl von nachgiebigen Fingern (16a, 16b) umfasst.

10. Einsatz für einen Rasierapparat nach Anspruch 5, wobei besagte Adaptereinheit (10) eine Fassung (18) zum beweglichen Aufnehmen einer zentral hervorstehenden Zunge (58) auf dem Griff (50) aufweist, so dass, wenn der Griff (50) und besagte Adaptereinheit (10) in einander eingreifen, die Zunge (58) und besagte Fassung (18) zusammenwirken, um den drehbaren Bereich des Griffs (50) in Bezug auf besagten Einsatz für den Rasierapparat zu begrenzen.

11. Einsatz für einen Rasierapparat nach einem der vorstehenden Ansprüche, wobei besagtes Trägerbauteil für den Eingriff und besagtes Griffbauteil (56a, 56b) für den Eingriff nicht direkt zusammenpassen.

12. Einsatz für einen Rasierapparat nach Anspruch 1, wobei besagtes erstes Adapterbauteil für den Eingriff verschließbar mit besagtem Trägerbauteil für den Eingriff zusammenpasst.

13. Einsatz für einen Rasierapparat nach einem der vorstehenden Ansprüche, wobei besagter Adapter (10) ein Plastikstück ist.

14. Einsatz für einen Rasierapparat nach Anspruch 13, wobei besagte Adaptereinheit (10) ein Stück ist, das durch Spritzgießen hergestellt wird.

15. Einsatz für einen Rasierapparat nach Anspruch 1, wobei der Träger (30) für die Rasierklinge, welcher das erste Trägerbauteil für den Eingriff aufweist, auch ein zweites Trägerbauteil für den Eingriff darauf

umfasst, wobei besagtes zweites Trägerbauteil für den Eingriff für den drehbaren Eingriff mit dem Griffbauteil (256a, 256b) für den Eingriff geformt ist; und eine Öffnung in besagter zweiten Seite (214a) der besagten Adaptereinheit (210) gebildet wird, um ein Griffbauteil (256a, 256b) für den Eingriff dort hindurch und in drehbaren Eingriff mit besagtem zweiten Trägerbauteil für den Eingriff zu führen.

16. Einsatz für einen Rasierapparat nach Anspruch 15, wobei wenigstens das Adapterbauteil für den Eingriff und wenigstens das Trägerbauteil für den Eingriff oder wenigstens das Adapterbauteil für den Eingriff oder wenigstens das Trägerbauteil für den Eingriff elastisch erhältlich sind.

17. Einsatz für einen Rasierapparat nach einem der Ansprüche 15 oder 16, wobei:

besagtes erstes Trägerbauteil für den Eingriff eine oder mehrere Klauen (36) umfasst;
und
besagtes Adapterbauteil für den Eingriff einen verlängerten Vorsprung (222a, 222b) umfasst.

18. Einsatz für einen Rasierapparat nach einem der Ansprüche 15 oder 16, wobei:

besagtes erstes Trägerbauteil für den Eingriff einen oder mehrere Schlitze (38a, 38b) umfasst; und
besagtes Adapterbauteil für den Eingriff ein oder mehrere Elemente (tabs) (224a, 224b) umfasst.

19. Einsatz für einen Rasierapparat nach einem der Ansprüche 15 bis 18, wobei:

besagte Adaptereinheit (210) so konfiguriert ist, dass sie besagten Einsatz für einen Rasierapparat adaptiert zur Verwendung mit einem Griff (250), der zwei Armbauteile (254a, 254b) mit sich nach außen erstreckenden Stiften (256a, 256b) aufweist, welche eine Drehachse definieren, um die sich der Griff (250) bezüglich des besagten Trägers (30) für die Klinge des Rasierapparats dreht, und eine zentrale, feder-gespannte Zunge (258) zwischen den Armbauteilen (254a, 254b);

wobei besagte Öffnung in besagter zweiter Seite (214a) der besagten Adaptereinheit (210) eine Öffnung für jedes Armbauteil (254a, 254b) des Griffs (250) enthält; und besagte Adaptereinheit (210) eine Bodenseite aufweist, die sich zwischen besagten Öffnungen in besagter zweiter Seite (214a) erstreckt, so dass, wenn der Griff (250) und besagte Adaptereinheit (210) in einander eingreifen, die zentrale, feder-gespannte Zunge (258) mit besagter Bodenseite der besagten Adaptereinheit (210) zusammenwirkt, um besagten Träger (30) für die Klinge des Rasierapparats nach der Drehung bezüglich des Griffs (250) in eine Ruheposition zurückzuführen.

20. Einsatz für einen Rasierapparat nach Anspruch 19, wobei besagter Adapter (210) ein Plastikstück ist.

21. Einsatz für einen Rasierapparat nach Anspruch 20, wobei besagte Adaptereinheit (210) ein Stück ist, das durch Spritzgießen hergestellt ist.

22. Einsatz für einen Rasierapparat nach Anspruch 1, wobei besagte Adaptereinheit (10) weiter umfasst:

einen Boden (12), welcher die erste Seite (14b) und die zweite Seite (14a) aufweist.

23. Einsatz für einen Rasierapparat nach Anspruch 22, wobei wenigstens das Adapterbauteil für den Eingriff und wenigstens das Trägerbauteil für den Eingriff oder wenigstens das Adapterbauteil für den Eingriff oder wenigstens das Trägerbauteil für den Eingriff unter Widerstand beweglich sind.

24. Einsatz für einen Rasierapparat nach einem der Ansprüche 22 oder 23,
wobei ein zweites Adapterbauteil für den Eingriff so gestaltet ist, dass es drehbar mit dem Griffbauteil (56a, 56b) für den Eingriff zusammenpasst.

25. Einsatz für einen Rasierapparat nach einem der Ansprüche 22 bis 24, wobei eine Öffnung zur Führung des besagten Griffbauteils (56a, 56b) für den Eingriff in drehbaren Eingriff mit einem zweiten Trägerbauteil für den Eingriff gebracht wird, in besagter zweiter Seite (14a) des besagten Bodens (12), wonach es bei Einführung eines Griffbauteils (56a, 56b) für den Eingriff durch besagte Öffnung es ermöglicht wird, das Griffbauteil (56a, 56b) für den Eingriff an den Träger (30) für die Klinge des Rasierapparats anzukoppeln.

Revendications

1. Cartouche de rasoir destinée à être utilisée avec un manche de rasoir (50 ; 250) doté d'un élément de prise du manche (56a, 56b ; 256a, 256b) s'étendant à partir d'une extrémité de ce dernier, ladite cartouche de rasoir aomprenant :

un porte-lame de rasoir (30) ayant un élément de prise du porte-lame sur ce dernier ;
et
un adaptateur (10 ; 210) ayant un premier côté (14b ; 214b) et un second côté (14a ; 214a),

dans laquelle :

ledit premier côté (14b ; 214b) dudit adaptateur (10 ; 210) comporte un élément de prise de l'adaptateur formé pour s'encliqueter de façon non détachable avec ledit élément de prise du porte-lame afin de fixer ledit adaptateur (10 ; 210) sur ledit porte-lame du rasoir (30) ; et
ledit second côté (14a ; 214a) dudit adaptateur (10) comporte un second élément de prise de l'adaptateur formé pour s'accoupler avec l'élément de prise du manche (56a, 56b ; 256a, 256b) ;

moyennant quoi l'élément de prise du manche (56a, 56b ; 256a, 256b) est capable d'être couplé au dit porte-lame du rasoir (30) via ledit adaptateur (10).

2. Cartouche du rasoir selon la revendication 1, dans laquelle l'un de l'élément de prise de l'adaptateur et l'élément de prise du porte-lame sont déformables de façon élastique.

3. Cartouche de rasoir selon l'une quelconque des revendications précédentes, dans laquelle :

ledit élément de prise du porte-lame comprend une ou plusieurs griffes (36) ; et
ledit premier élément de prise de l'adaptateur comprend une projection allongée.

4. Cartouche de rasoir selon l'une quelconque des revendications 1 ou 2, dans laquelle :

ledit élément de prise du porte-lame comprend une ou plusieurs fentes (38a, 38b) ; et
ledit élément de prise de l'adaptateur comprend une ou plusieurs languettes (24a, 24b).

5. Cartouche de rasoir selon l'une quelconque des revendications précédentes, dans laquelle ledit second élément de l'adaptateur est formé pour un accouplement pivotant avec l'élément de prise du manche (56a, 56b), moyennant quoi l'élément de prise du manche (56a, 56b) est couplé de façon pivotante audit porte-lame du rasoir (30) via ledit adaptateur (10).

6. Cartouche de rasoir selon la revendication 5, dans laquelle ledit second élément de prise de l'adaptateur comprend au moins une rotule correspondant à et formée pour la réception d'une projection arrondie sur l'élément de prise du manche (56a, 56b).

7. Cartouche de rasoir selon la revendication 6, dans laquelle ladite au moins une rotule comprend une pluralité de doigts élastiques (16a, 16b).

8. Cartouche de rasoir selon la revendication 5, dans laquelle ledit second élément de prise de l'adaptateur comprend une rotule correspondant à et formée pour la réception d'une projection en forme de bille sur l'élément de prise du manche (56a, 56b), moyennant quoi lorsque l'élément de prise du manche (56a, 56b) et ledit second élément de prise de l'adaptateur sont en prise, la projection en forme de bille et ladite rotule forment une articulation à rotule pivotante.

9. Cartouche de rasoir selon la revendication 8, dans laquelle ladite rotule comprend une pluralité de doigts élastiques (16a, 16b).

10. Cartouche de rasoir selon la revendication 5, dans laquelle ledit adaptateur (10) comporte une rotule (18) destinée à recevoir sans serrage une langue centralement en saillie (58) sur le manche (50) de telle sorte que lorsque le manche (50) et ledit adaptateur (10) sont en prise, la langue (58) et ladite rotule (18) coopèrent pour limiter la partie pivotante du manche (50) par rapport à ladite cartouche de rasoir.

11. Cartouche de rasoir selon l'une quelconque des revendications précédentes, dans laquelle ledit élément de prise du porte-lame et ledit élément de prise du manche (56a, 56b) ne peuvent pas directement s'accoupler.

12. Cartouche de rasoir selon la revendication 1, dans laquelle ledit premier élément de prise de l'adaptateur est accouplé par verrouillage au dit élément de prise du porte-lame.

13. Cartouche de rasoir selon l'une quelconque des revendications précédentes, dans laquelle ledit adaptateur (10) est une pièce en plastique.

14. Cartouche de rasoir selon la revendication 13, dans laquelle ledit adaptateur (10) est une pièce moulée par injection.

15. Cartouche de rasoir selon la revendication 1, dans laquelle le porte-lame du rasoir (30) avec le premier élément de prise du porte-lame comprend également un second élément de prise du porte-lame sur ce dernier, ledit second élément de prise du porte-lame étant formé pour un engagement pivotant avec l'élément de prise du manche (256a, 256b) ; et
une ouverture est formée dans ledit second côté (214a) dudit adaptateur (210) pour guider un élément de prise du manche (256a, 256b) à travers ce dernier et en prise pivotante avec ledit second élément de prise du porte-lame.

16. Cartouche de rasoir selon la revendication 15, dans laquelle au moins l'un de l'élément de prise de l'adaptateur et l'élément de prise du porte-lame sont dé-

formables de façon élastique.

17. Cartouche de rasoir selon l'une quelconque des revendications 15 ou 16, dans laquelle :

ledit premier élément de prise du porte-lame comprend une ou plusieurs griffes (36) ;
et
ledit élément de prise de l'adaptateur comprend une projection allongée (222a, 222b).

18. Cartouche de rasoir selon l'une quelconque des revendications 15 ou 16, dans laquelle :

ledit premier élément de prise du porte-lame comprend une ou plusieurs fentes (38a, 38b) ;
et
ledit élément de prise de l'adaptateur comprend une ou plusieurs languettes (224a, 224b).

19. Cartouche de rasoir selon l'une quelconque des revendications 15 à 18, dans laquelle :

ledit adaptateur (210) est configuré pour adapter ladite cartouche du rasoir destinée à être utilisée avec un manche (250) ayant deux éléments formant bras (254a, 254b) avec des broches s'étendant vers l'extérieur (256a, 256b) définissant un axe pivot autour duquel le manche (250) pivote par rapport au dit porte-lame du rasoir (30), et
une langue centrale à ressort (258) entre les éléments formant bras (254a, 254b) ;
ladite ouverture dans ledit second côté (214a) dudit adaptateur (210) comprend une ouverture pour chaque élément formant bras (254a, 254b) du manche (250) ; et
ledit adaptateur (210) a un côté inférieur s'étendant entre lesdites ouvertures dans ledit second côté (214a) de telle sorte que, lorsque le manche (250) et ledit adaptateur (210) sont en prise, la langue centrale à ressort (258) coopère avec ledit côté inférieur dudit adaptateur (210) pour renvoyer ledit porte-lame du rasoir (30) vers une position de repos après avoir pivoté par rapport au manche (250).

20. Cartouche de rasoir selon la revendication 19, dans laquelle ledit adaptateur (210) est une pièce en plastique.

21. Cartouche de rasoir selon la revendication 20, dans laquelle ledit adaptateur (210) est une pièce moulée par injection.

22. Cartouche de rasoir selon la revendication 1, dans laquelle ledit adaptateur (10) comprend en outre :

une base (12) ayant le premier côté (14b) et le second côté (14a).

23. Cartouche de rasoir selon la revendication 22, dans laquelle au moins l'un de l'élément de prise de l'adaptateur et de l'élément de prise du porte-lame sont déformables de façon élastique.

24. Cartouche de rasoir selon l'une quelconque des revendications 22 ou 23, dans laquelle un second élément de prise de l'adaptateur est formé pour s'accoupler de façon pivotante avec l'élément de prise du manche (56a, 56b).

25. Cartouche de rasoir selon l'une quelconque des revendications 22 à 24, dans laquelle une ouverture destinée à guider ledit élément de prise du manche (56a, 56b) en engagement pivotant avec un second élément de prise du porte-lame est formée dans ledit second côté (14a) de ladite base (12), sur laquelle l'insertion d'un élément de prise du manche (56a, 56b) via ladite ouverture permet le couplage de l'élément de prise du manche (56a, 56b) avec le porte-lame du rasoir (30).

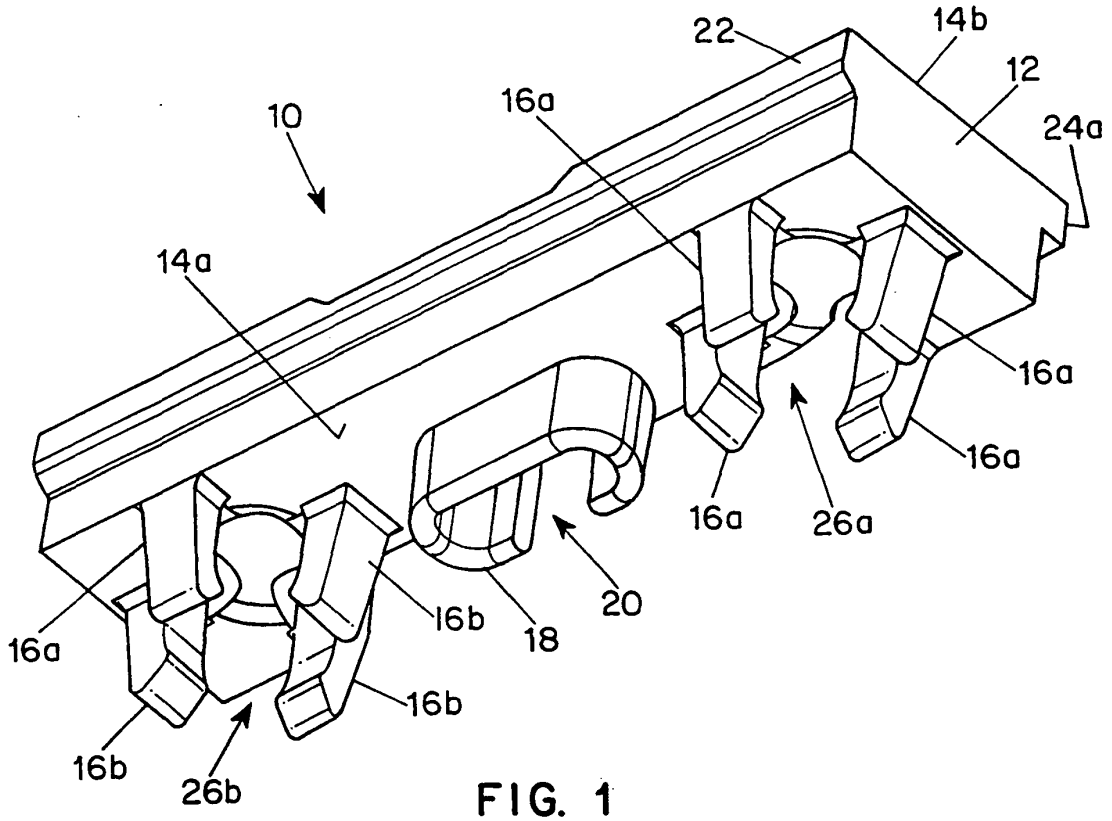

22
14b
12
10
16a
24a
14a
16a
16a
16a
26a
20
16b
18
16a
16b
16b
26b

FIG. 1

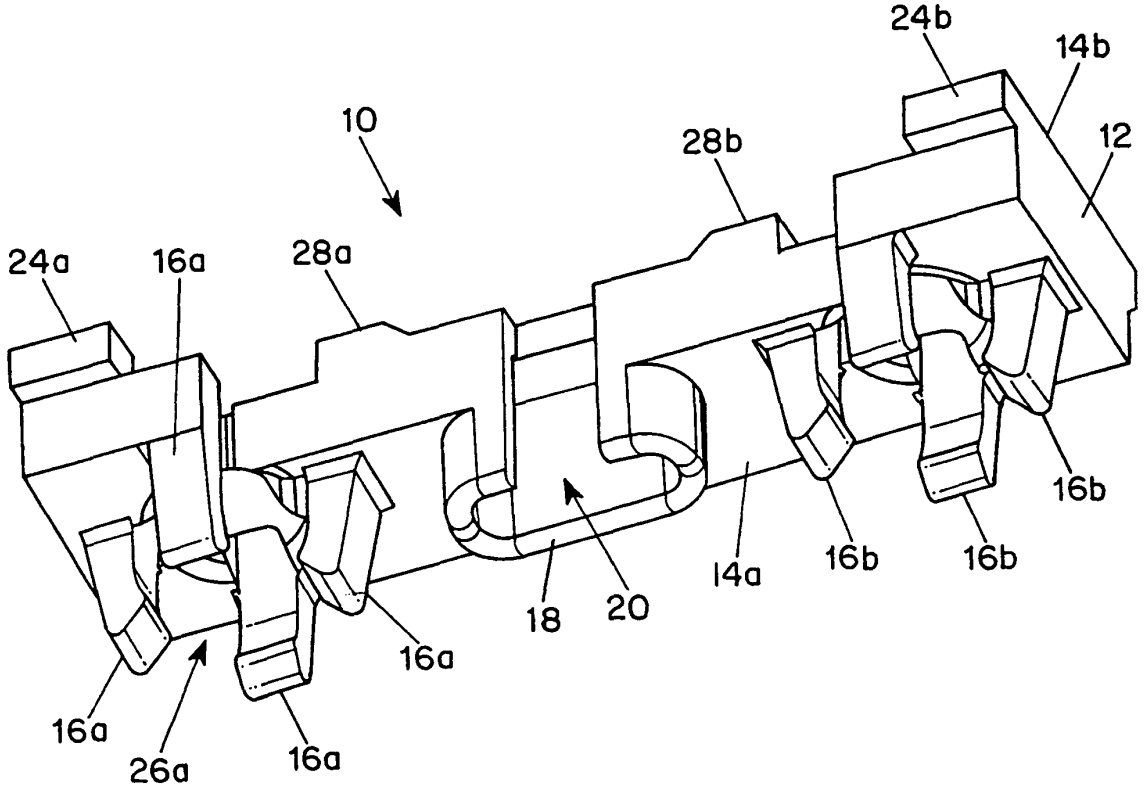

24b
14b
10
28b
12
24a
16a
28a
16b
16b
16b
14a
18
20
16a
16a
26a
16a

FIG. 2

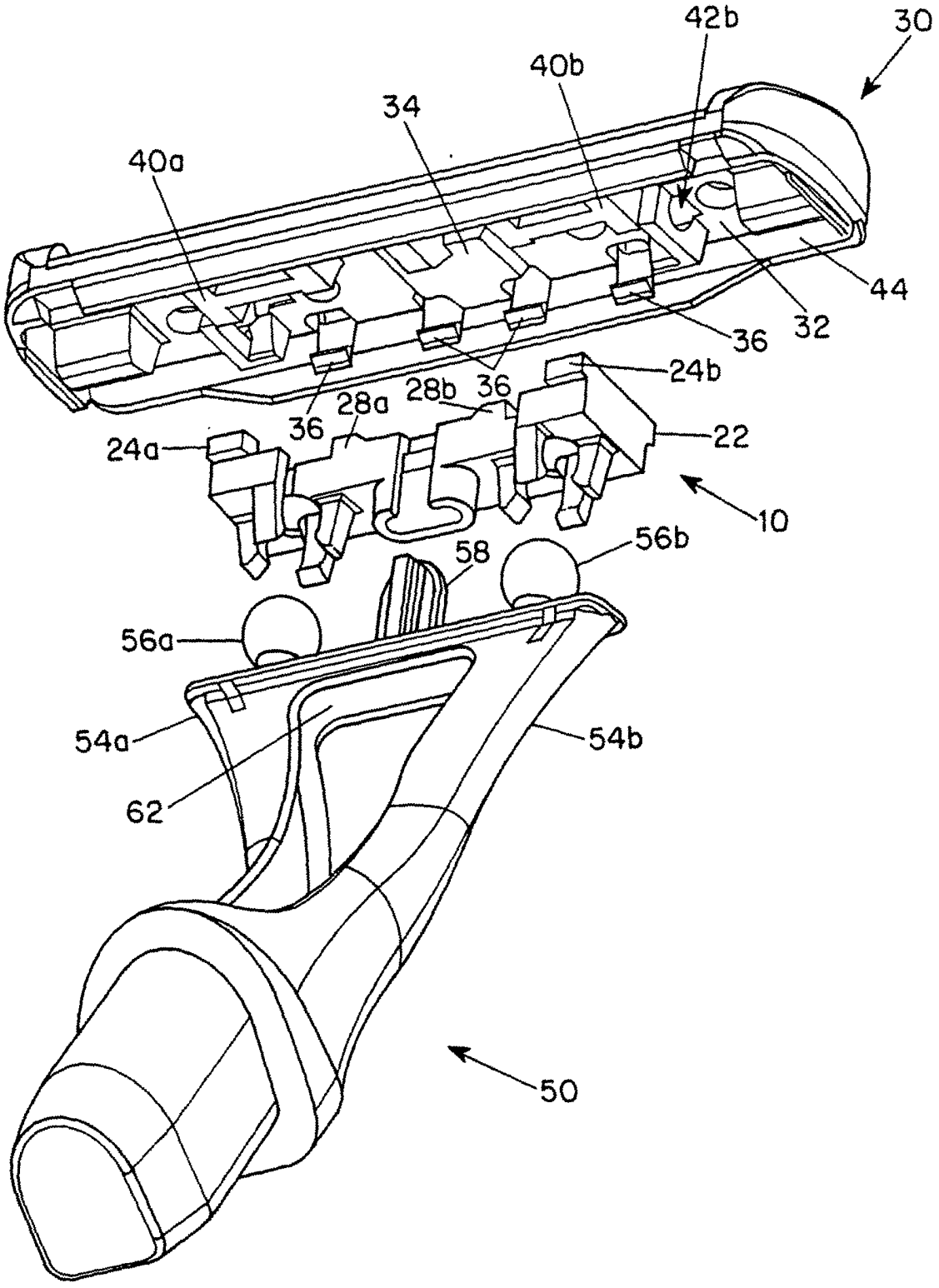

42b
30
40b
34
40a
44
32
36
24b
28b
36
28a
36
24a
22
10
58
56b
56a
54a
54b
62
50

FIG. 3

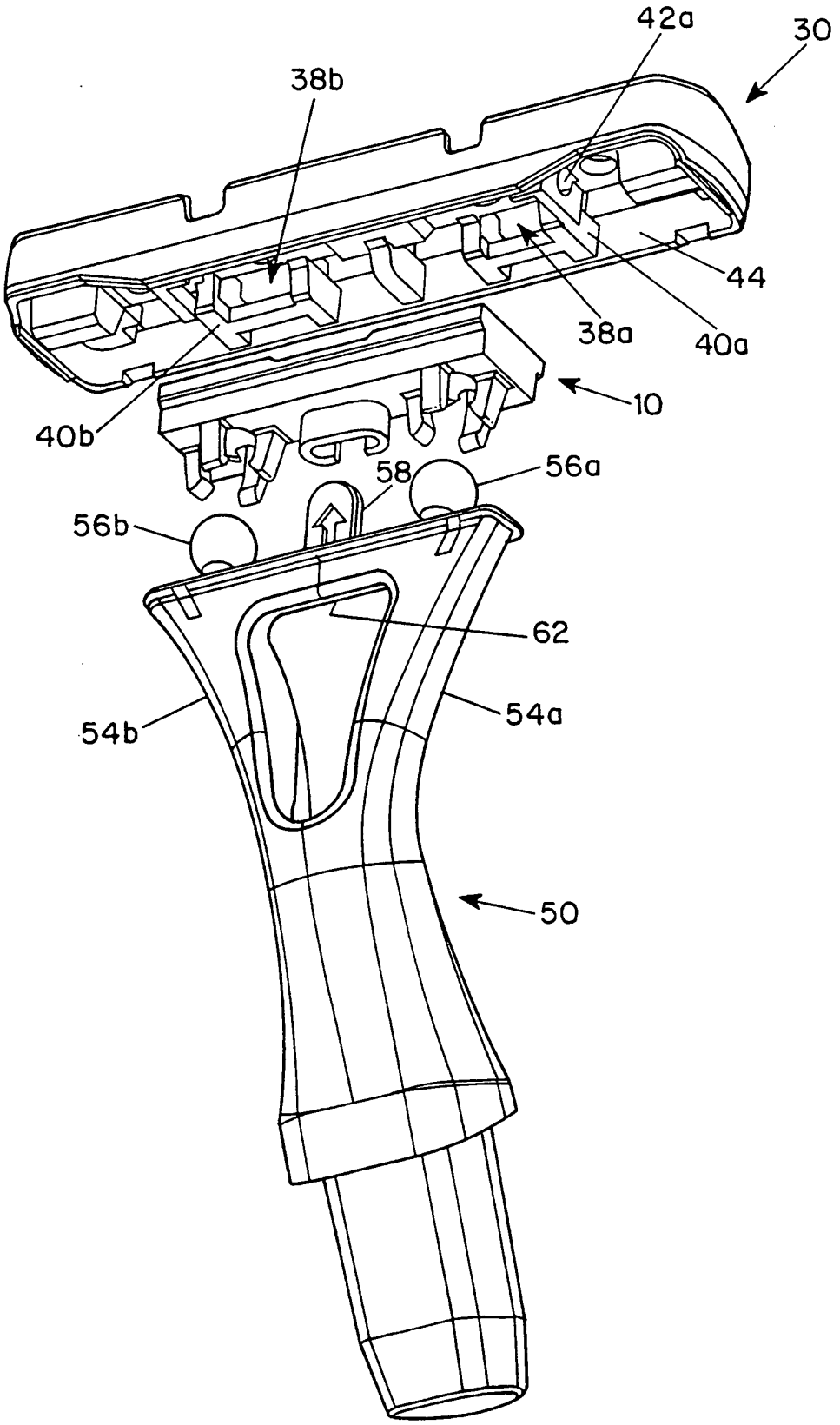


FIG. 4

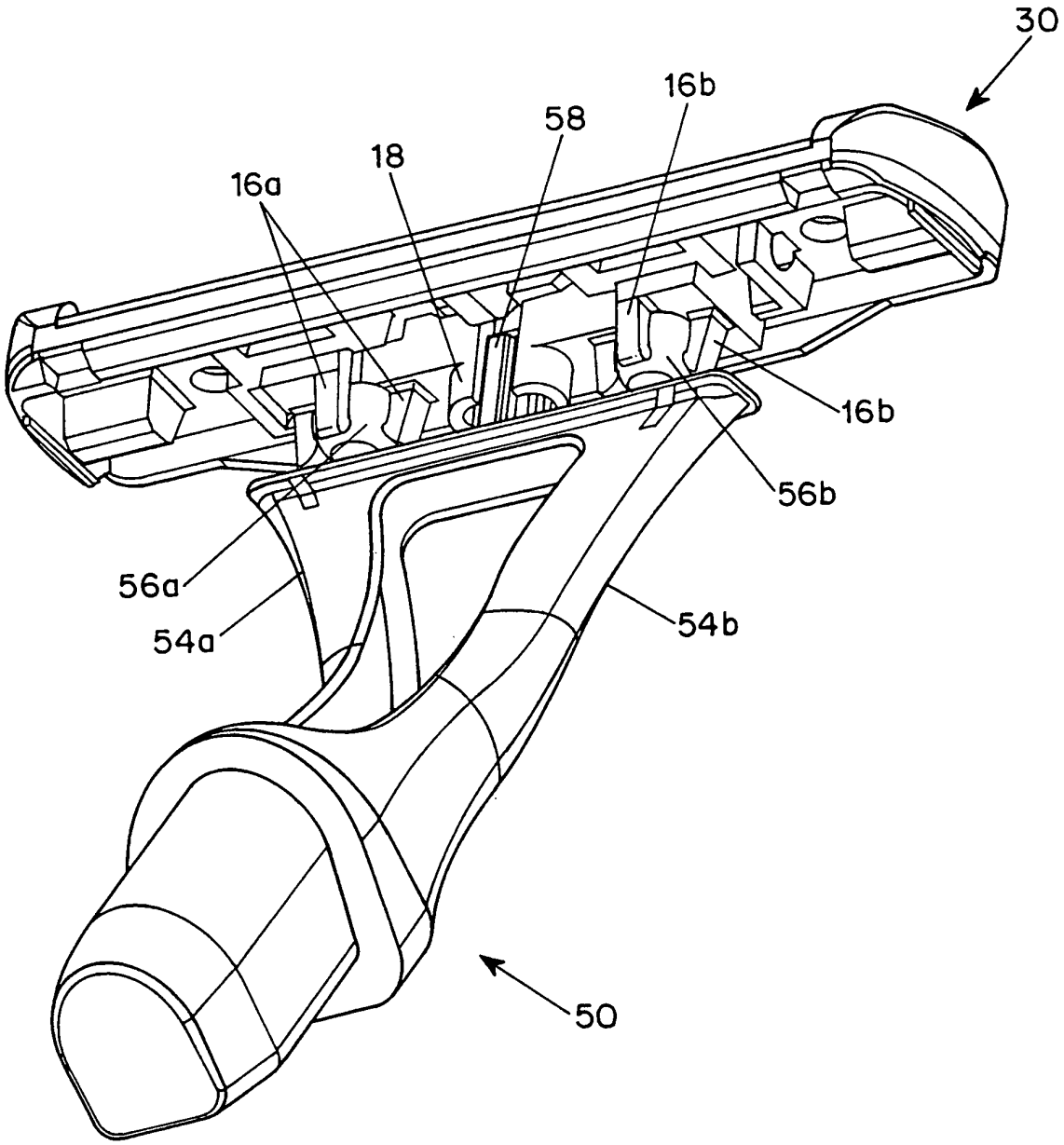


FIG. 5

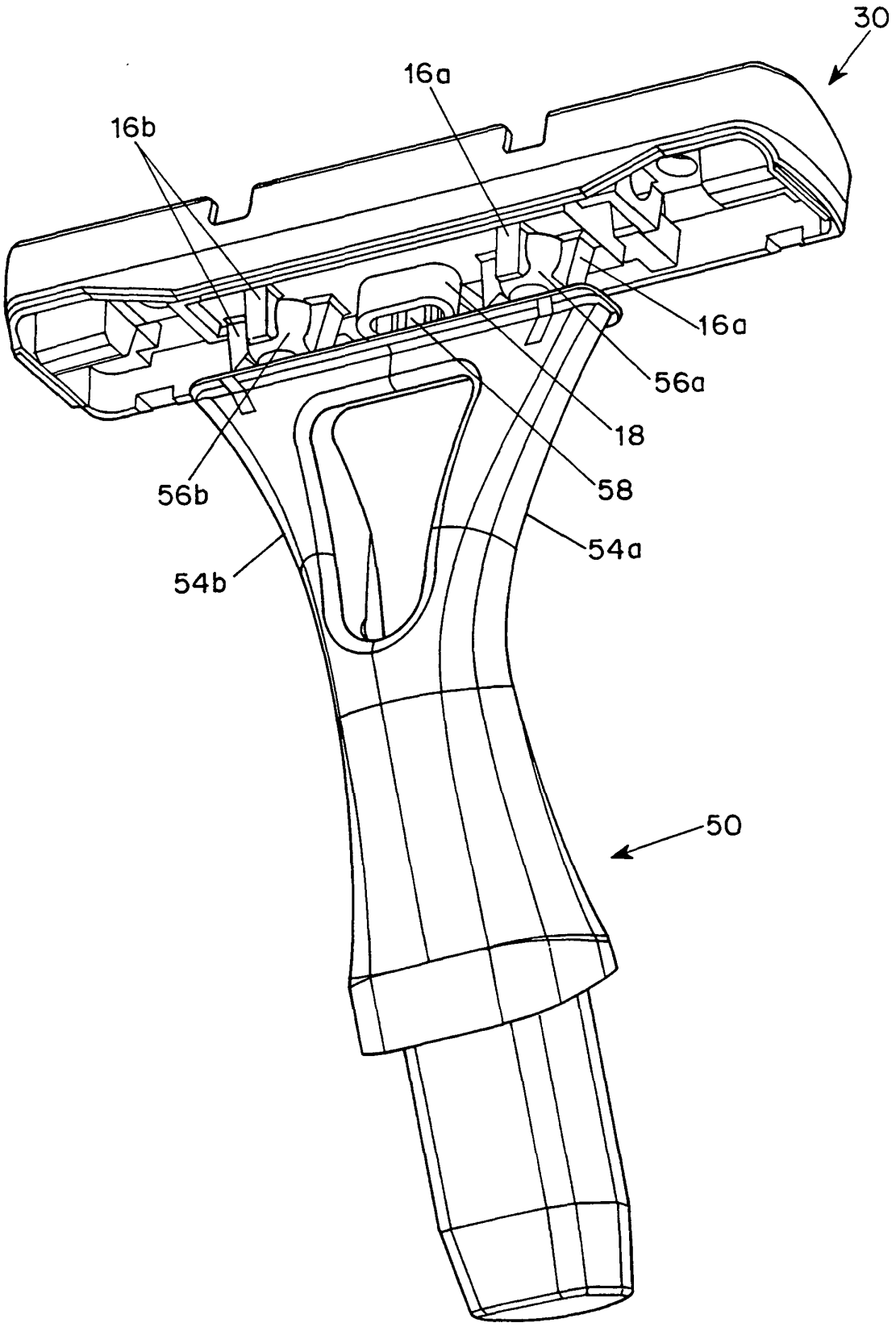


FIG. 6

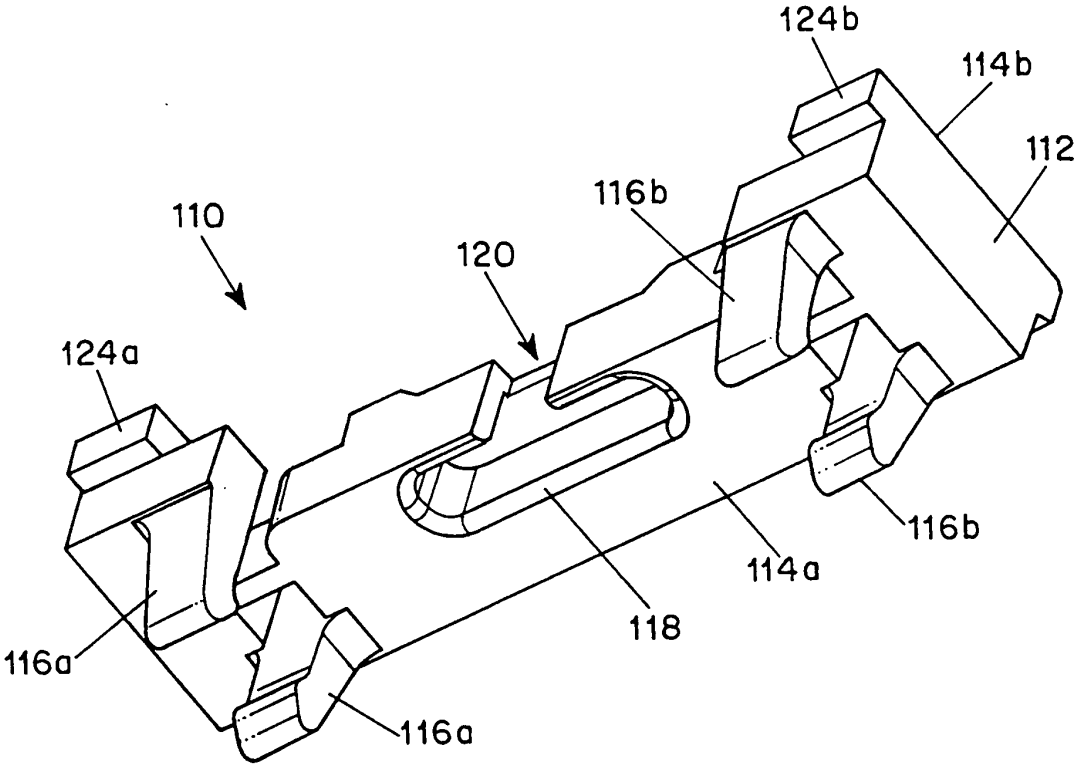

124b
114b
112
110
116b
120
124a
116b
114a
118
116a
116a

FIG. 7

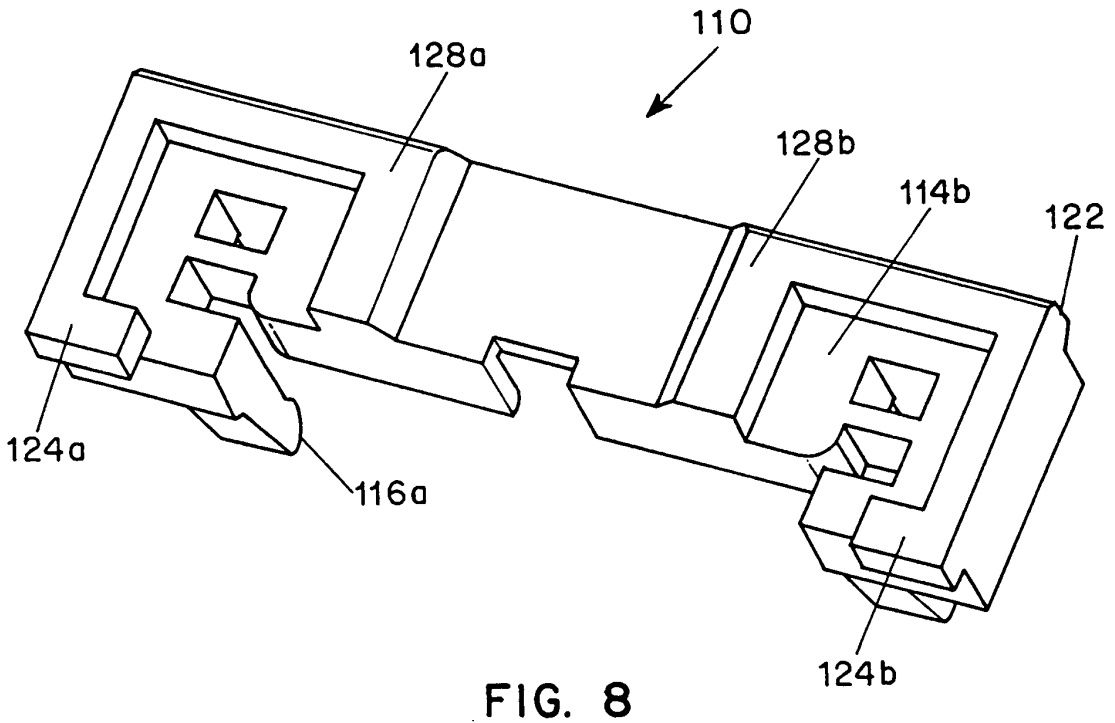

110
128a
128b
114b
122
124a
116a
124b

FIG. 8

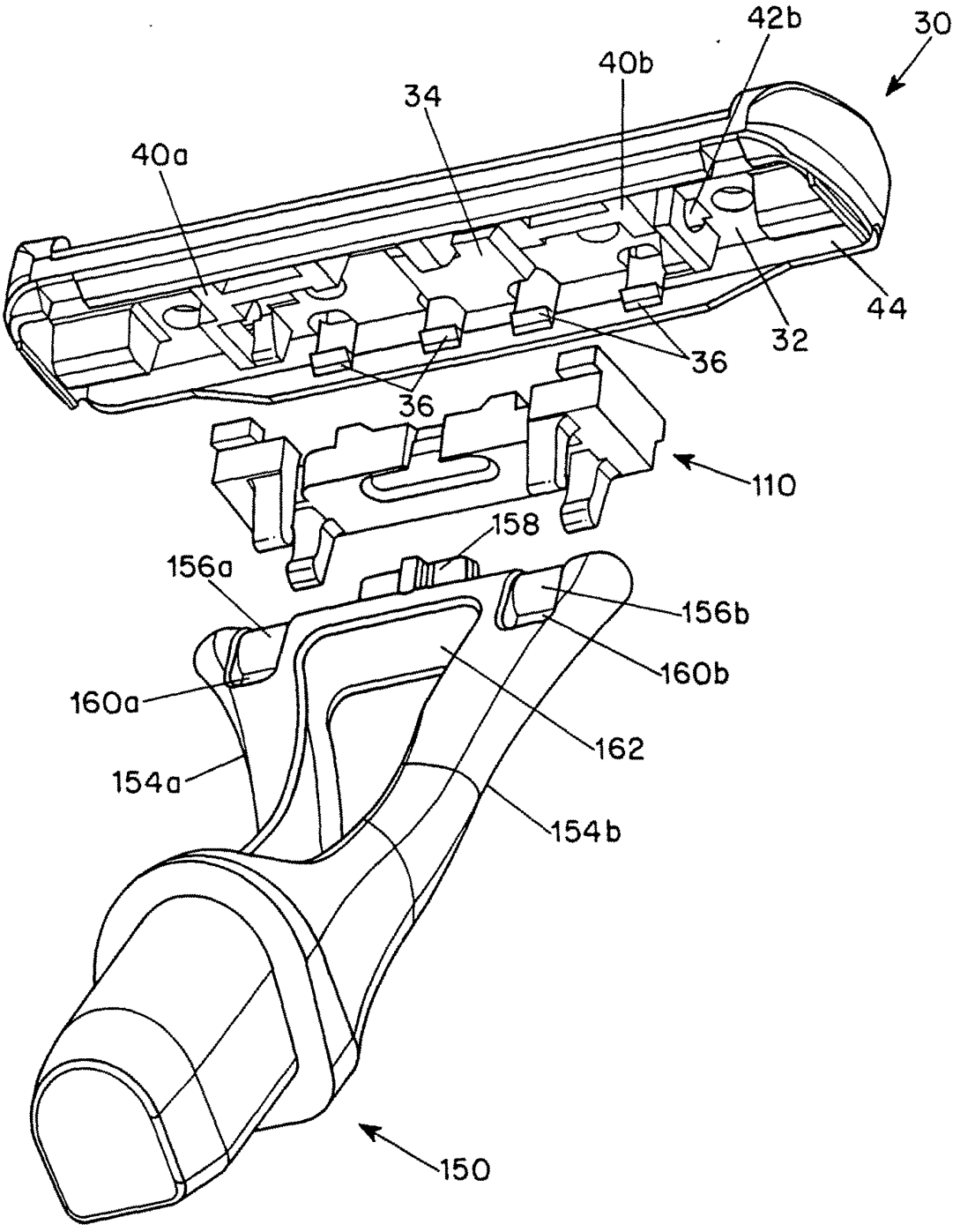

42b
30
40b
34
40a
44
32
36
36
110
158
156a
156b
160b
160a
162
154a
154b
150

FIG. 9

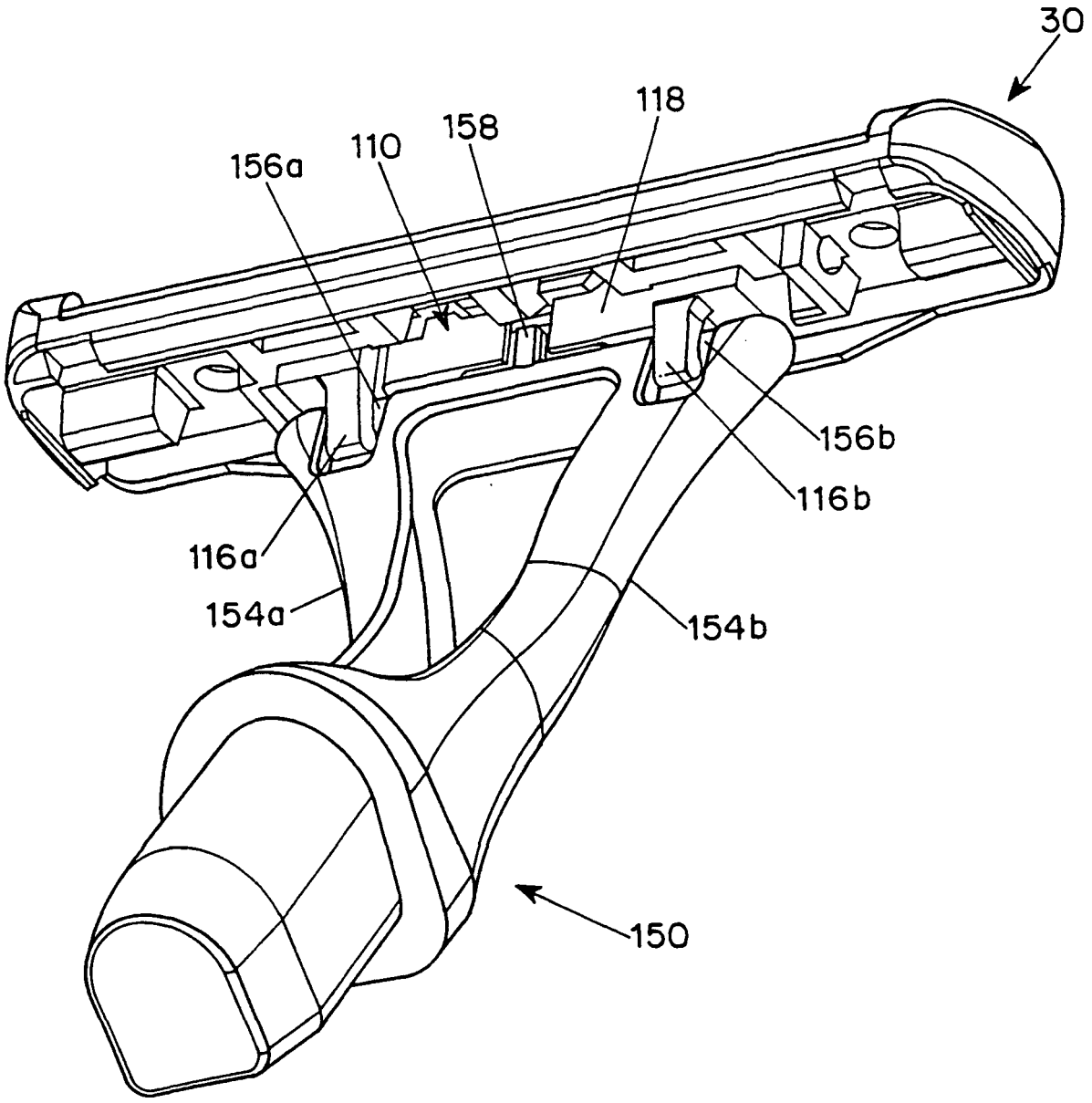


FIG. 10

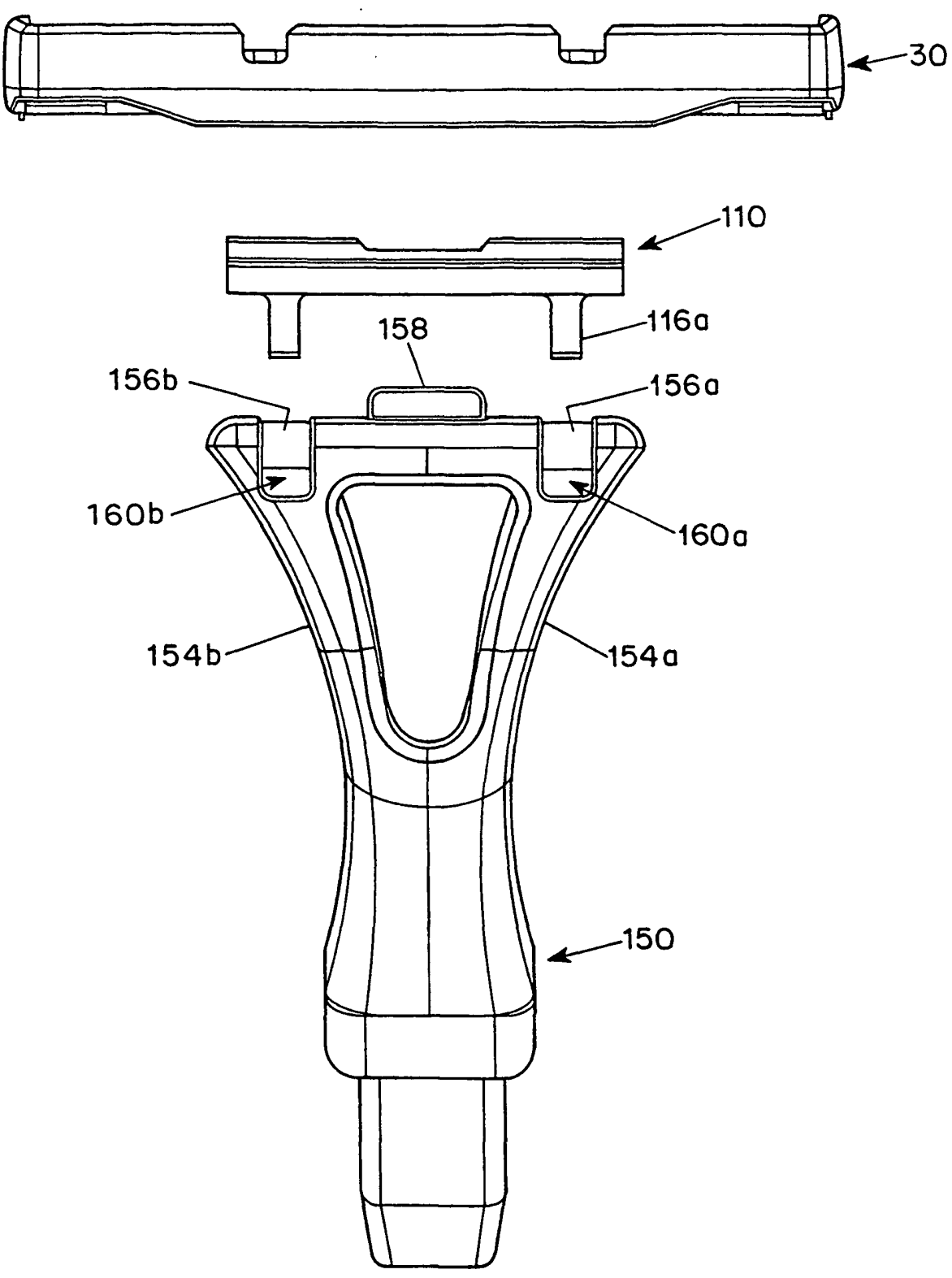


FIG. 11

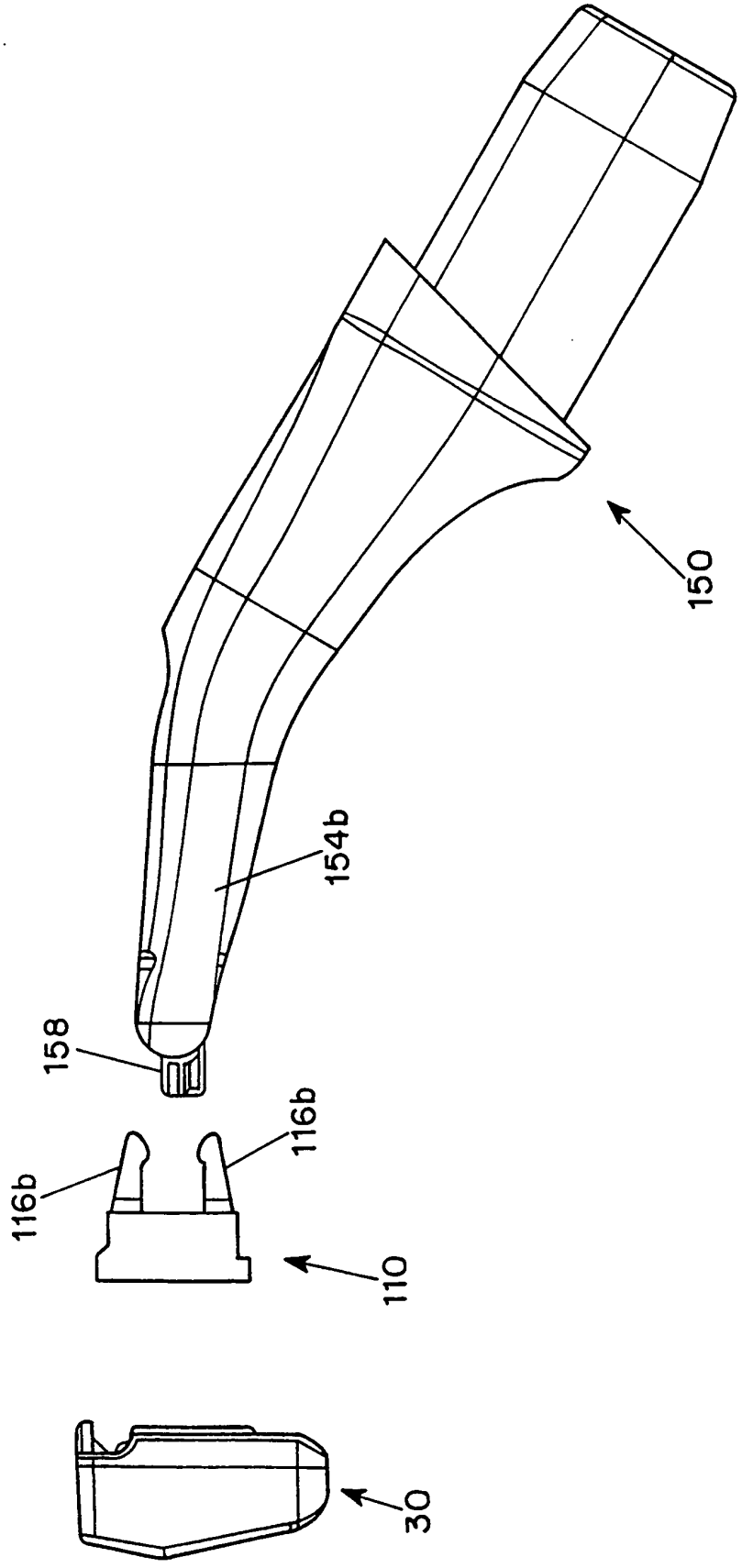


FIG. 12

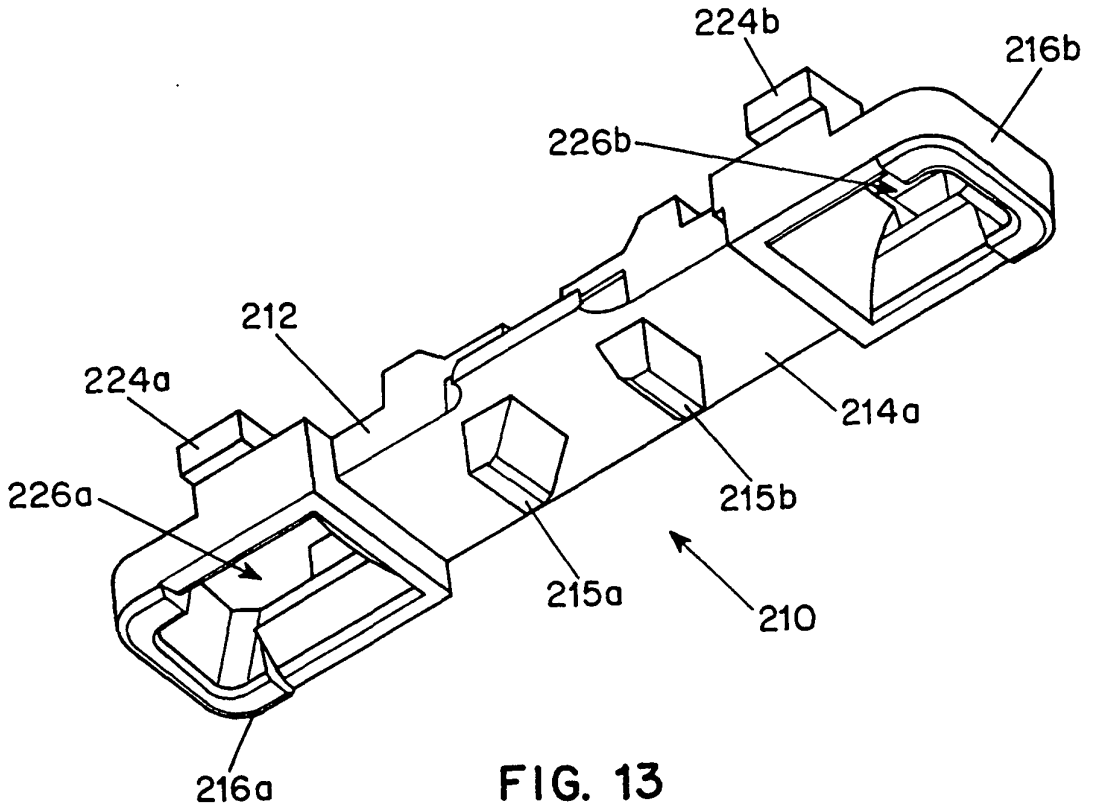

224b
216b
226b
212
224a
214a
226a
215b
215a
210
216a

FIG. 13

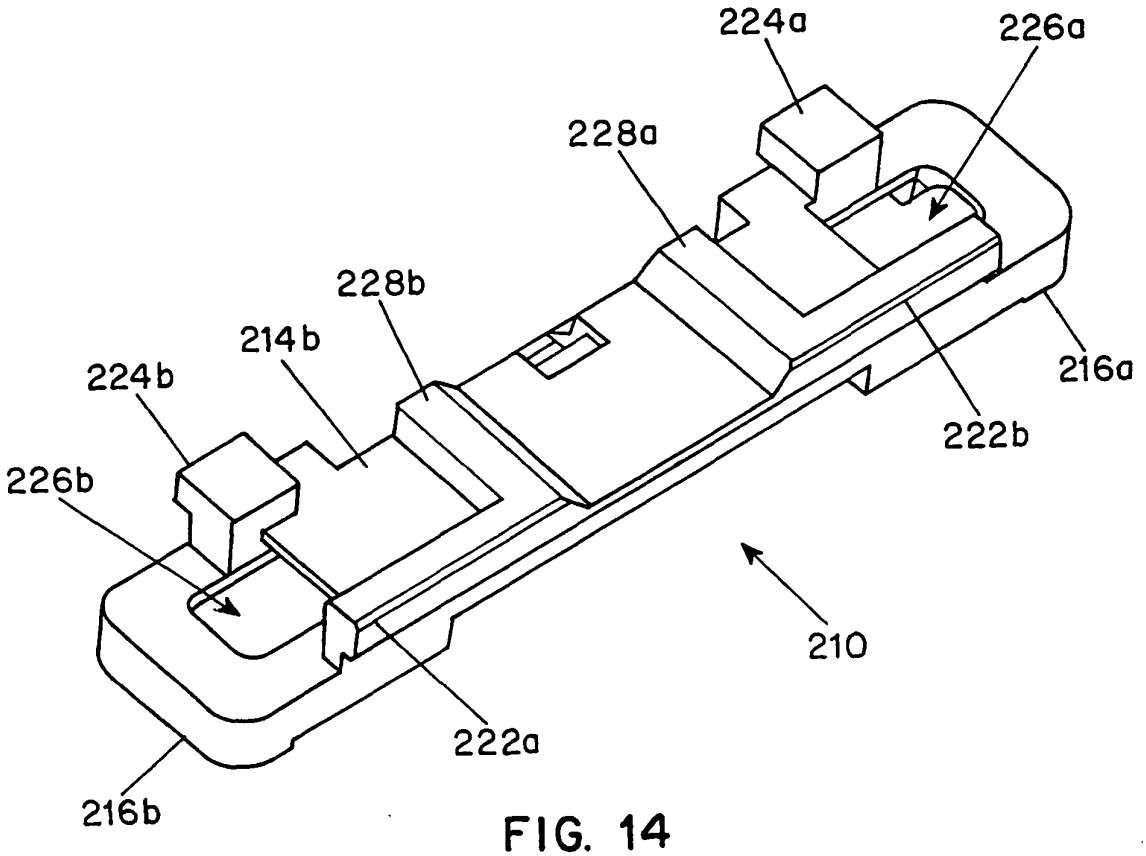

224a
226a
228a
228b
214b
224b
216a
222b
226b
210
222a
216b

FIG. 14

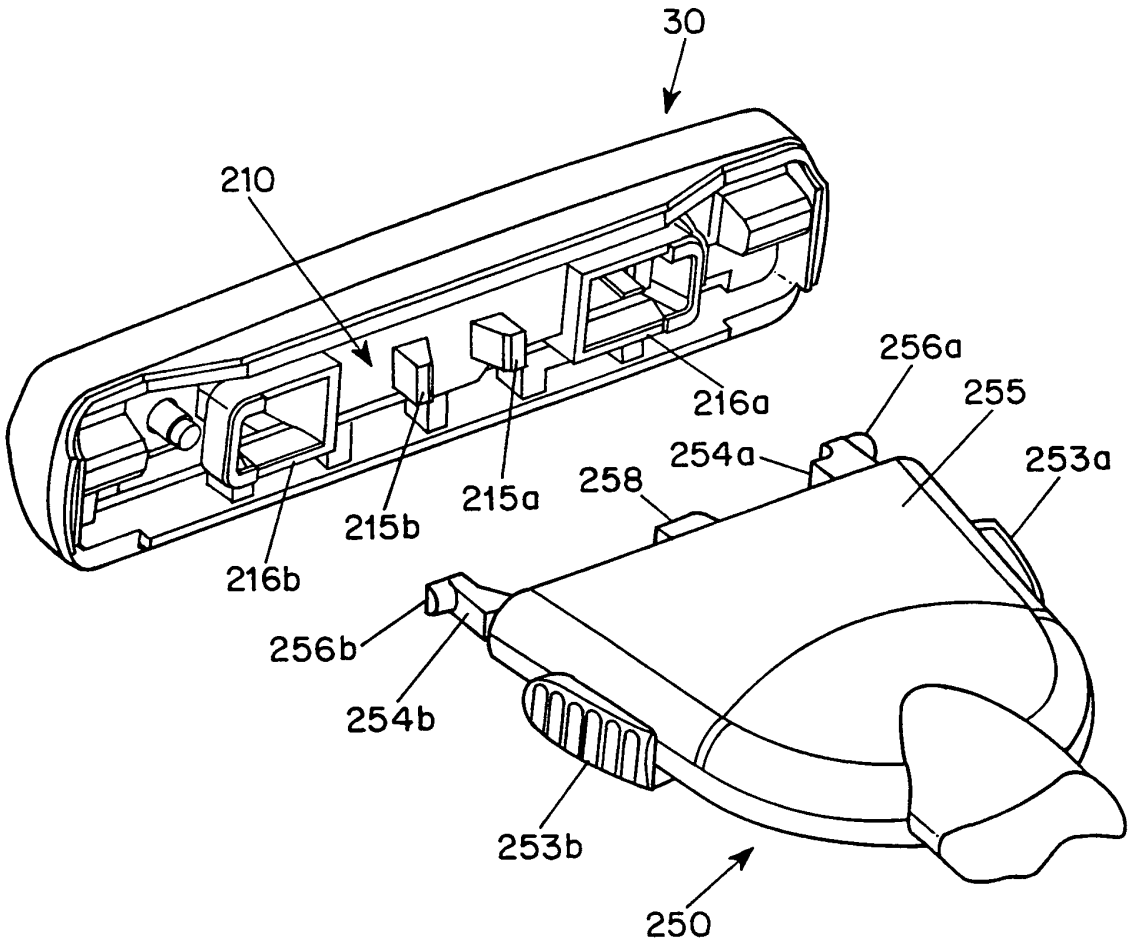

30
210
216a
256a
255
254a
253a
258
215a
215b
216b
256b
254b
253b
250

FIG. 15