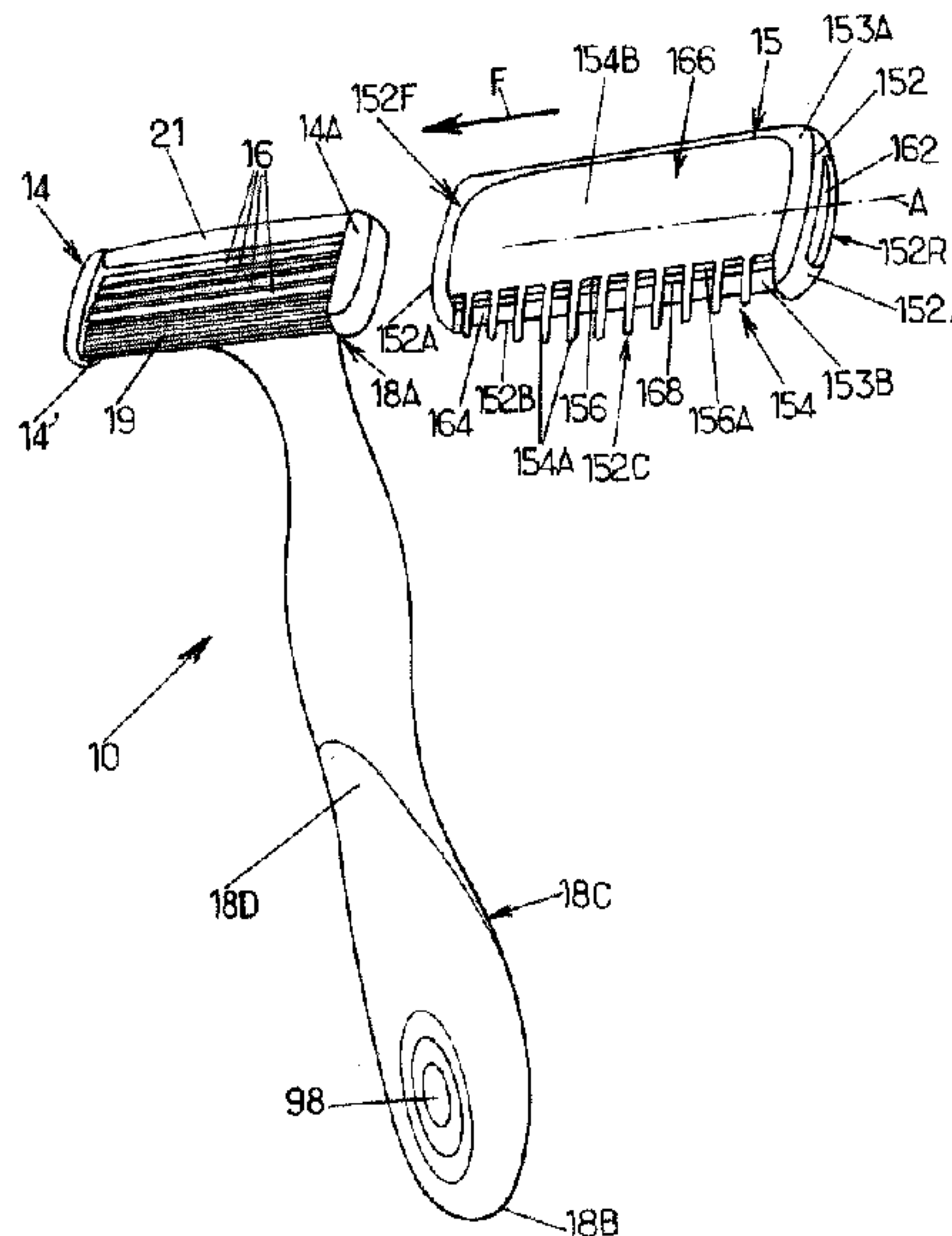




(86) Date de dépôt PCT/PCT Filing Date: 2011/08/04
(87) Date publication PCT/PCT Publication Date: 2012/03/08
(45) Date de délivrance/Issue Date: 2018/07/17
(85) Entrée phase nationale/National Entry: 2013/02/05
(86) N° demande PCT/PCT Application No.: EP 2011/063497
(87) N° publication PCT/PCT Publication No.: 2012/028413
(30) Priorité/Priority: 2010/08/30 (EP EP2010/062632)

(51) Cl.Int./Int.Cl. *B26B 21/24* (2006.01),
B26B 21/40 (2006.01)
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(54) Titre : CAPUCHON DE PROTECTION POUR UNE CARTOUCHE DE RASAGE, ENSEMBLE DE RASAGE, RASOIR, PROCÉDE DE RASAGE AVEC UN TEL RASOIR ET PROCÉDE DE FABRICATION D'UN CAPUCHON DE PROTECTION
(54) Title: A PROTECTIVE COVER FOR A SHAVING CARTRIDGE, A SHAVING ASSEMBLY, A RAZOR, A METHOD OF SHAVING WITH SUCH A RAZOR AND A METHOD OF MANUFACTURING A PROTECTIVE COVER



(57) **Abrégé/Abstract:**

A protective cover for a shaving cartridge, a shaving assembly including a cartridge and a protective cover, a razor having a razor handle and such a shaving assembly, a method of shaving with such a razor and a method of manufacturing such a protective cover. The protective cover (15) comprises a housing (152) extending longitudinally along a longitudinal axis (A) and being provided with a comb (154) and a trimming blade (156), said trimming blade (156) having an elongated cutting edge (156A) and said comb (154) having several teeth (154A) projecting obliquely to said longitudinal axis (A) and protruding forwardly with regard to said trimming blade (156).

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
8 March 2012 (08.03.2012)(10) International Publication Number
WO 2012/028413 A1(51) International Patent Classification:
B26B 21/24 (2006.01) **B26B 21/40** (2006.01)(21) International Application Number:
PCT/EP2011/063497(22) International Filing Date:
4 August 2011 (04.08.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ,

[Continued on next page]

(54) Title: A PROTECTIVE COVER FOR A SHAVING CARTRIDGE, A SHAVING ASSEMBLY, A RAZOR, A METHOD OF SHAVING WITH SUCH A RAZOR AND A METHOD OF MANUFACTURING A PROTECTIVE COVER

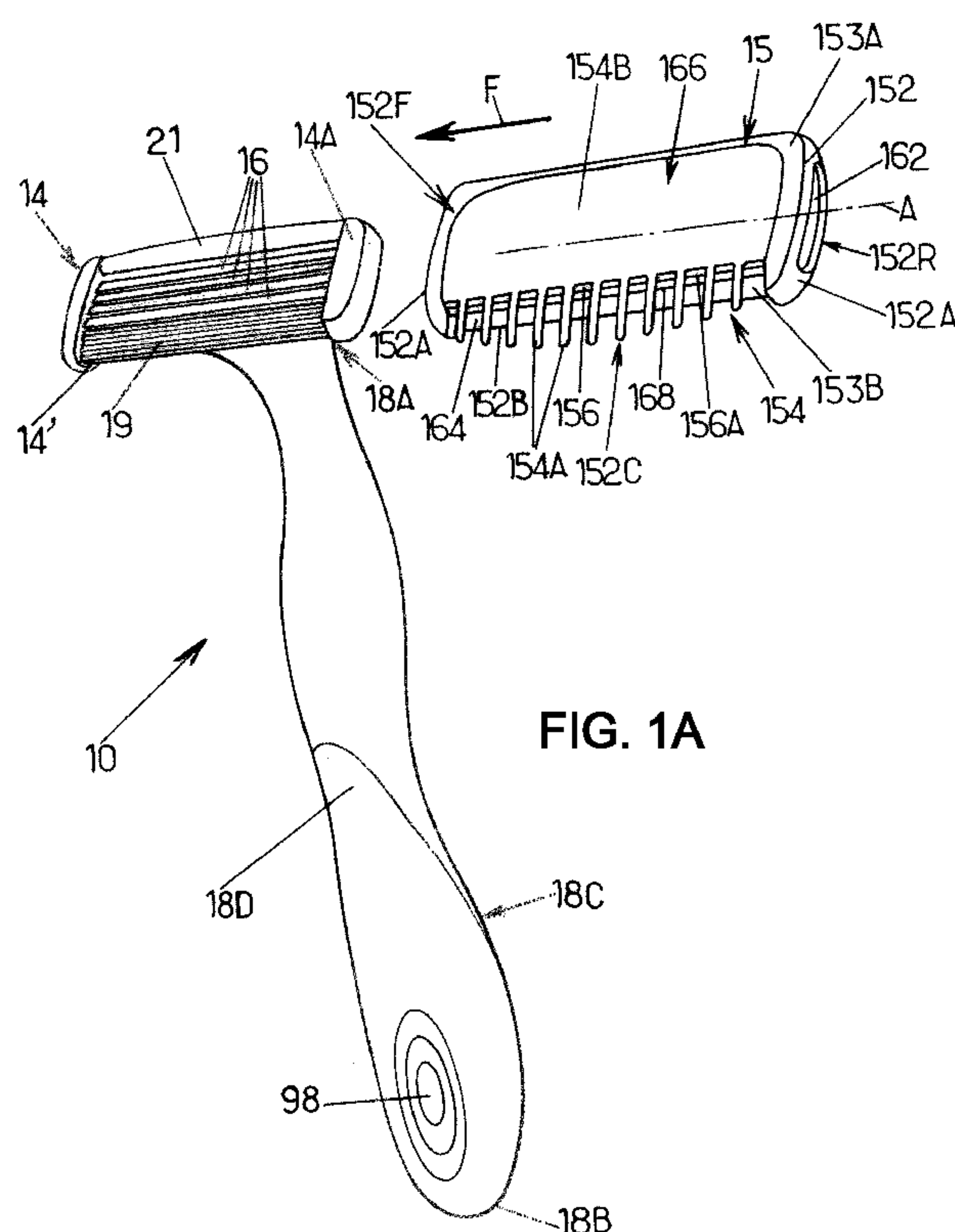


FIG. 1A

(57) Abstract: A protective cover for a shaving cartridge, a shaving assembly including a cartridge and a protective cover, a razor having a razor handle and such a shaving assembly, a method of shaving with such a razor and a method of manufacturing such a protective cover. The protective cover (15) comprises a housing (152) extending longitudinally along a longitudinal axis (A) and being provided with a comb (154) and a trimming blade (156), said trimming blade (156) having an elongated cutting edge (156A) and said comb (154) having several teeth (154A) projecting obliquely to said longitudinal axis (A) and protruding forwardly with regard to said trimming blade (156).

WO 2012/028413 A1

TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG). — *of inventorship (Rule 4.17(iv))*
Published: — *with international search report (Art. 21(3))*

Declarations under Rule 4.17:

A protective cover for a shaving cartridge,
a shaving assembly, a razor,
a method of shaving with such a razor and
a method of manufacturing a protective cover

FIELD OF THE DISCLOSURE

5 The invention relates to protective covers for shaving cartridges, to shaving assemblies including a cartridge and a protective cover, to a razor having a razor handle and such an assembly and to methods of shaving.

BACKGROUND OF THE DISCLOSURE

10 In particular, the invention is related to the manner to protect a shaving cartridge and to shave the hair to a given length.

 Generally, the covers are provided onto the shaving cartridge to protect the last from dust, cutting, etc.

15 However, such known covers are limited to that protective function and are released from the shaving cartridge before shaving.

 Besides, covers also exist which are provided with a comb allowing the shaving to a given length, since such
20 combs give access to the shaving blades provided on the shaving cartridge.

 However such covers provided with a comb lost their protective function since the shaving blades provided on the shaving cartridge are at least partially accessible
25 through the teeth of the comb.

 Therefore, the known covers do not allow both protecting the shaving blades and allowing shaving to a given length.

SUMMARY OF THE DISCLOSURE

30 To this aim, it is provided a cover and a method which allow both protecting the shaving blades and trimming

hair to a given length with a sole cover.

According to an aspect of the present invention, there is provided a protective cover for a shaving cartridge, the protective cover comprising a housing extending longitudinally along a longitudinal axis and being provided with a comb and at least one trimming blade, said trimming blade having an elongated cutting edge and said comb having several teeth projecting obliquely to said longitudinal axis and protruding forwardly with regard to said trimming blade.

Preferred embodiments of the cover are described hereunder.

To this end, according to the invention, the protective cover comprising a housing extending longitudinally along a longitudinal axis and being provided with a comb and a trimming blade, said trimming blade having an elongated cutting edge and said comb having several teeth projecting obliquely to said longitudinal axis and protruding forwardly with regard to said trimming blade. The elongated cutting edge of the trimming blade can be parallel to the longitudinal axis or can be tilted with regard to the last.

The cover of the present invention thus allows protecting the shaving blades of the shaving cartridge and shave hair to a given length.

In various embodiments of the invention, one and/or the other of the following features may be incorporated in this cover alone or in mutual combination:

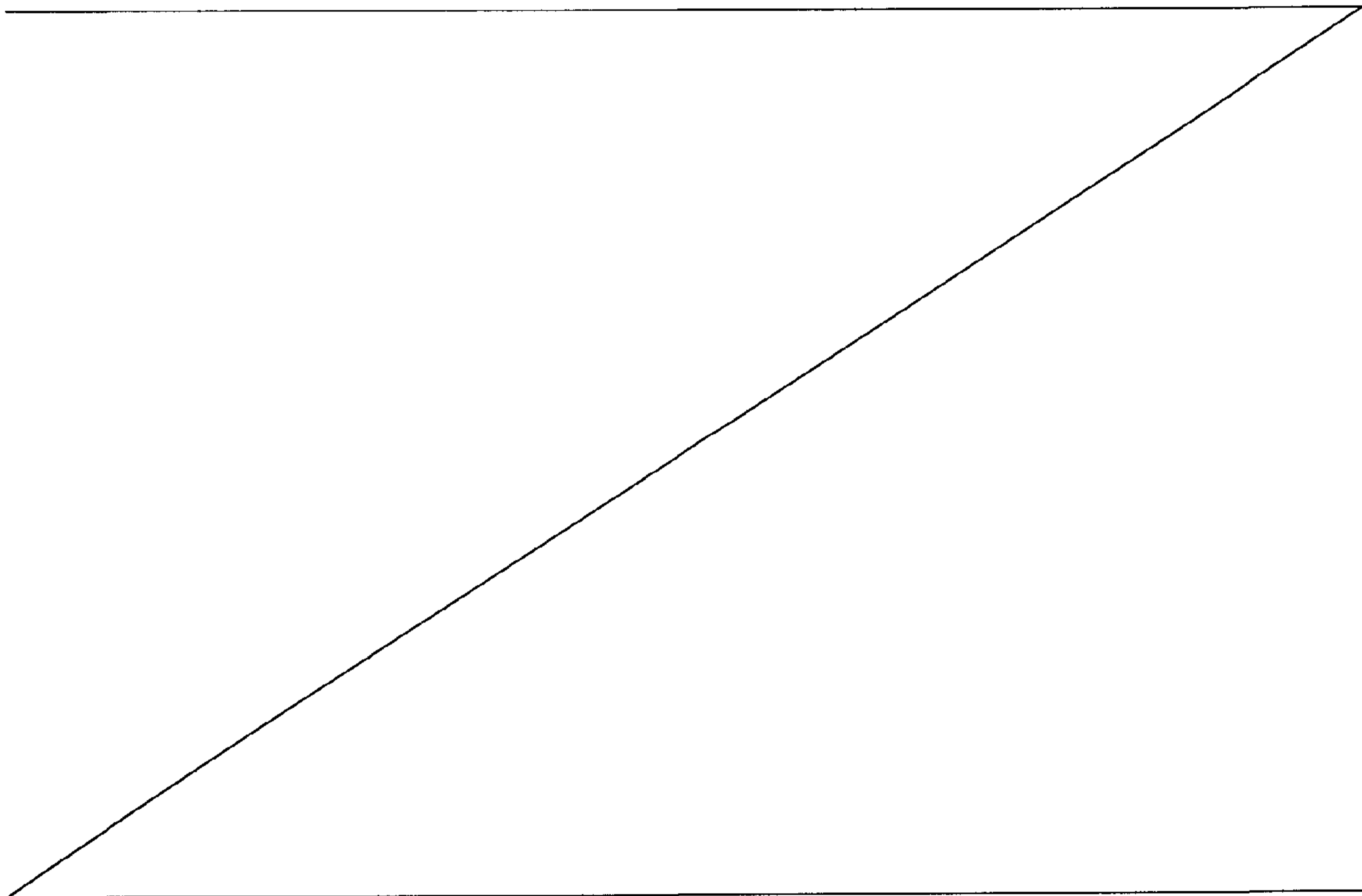
- the teeth are perpendicular to said longitudinal axis and wherein the teeth protrude forwardly with regard to said housing;

· the cover is provided with a rear opening through which the connecting members of a shaving cartridge covered by the cover are accessible for the connection to a razor handle;

- the housing comprises a front face and a rear face, the trimming blade and the comb being provided onto the front face;

- the housing comprises a front face and a rear face, the trimming blade and the comb being provided onto the front face, and the cover is provided with a rear opening provided onto the rear face through which the connecting members of a shaving cartridge covered by the cover are accessible for the connection to a razor handle;

· the housing comprises a front face and a rear face, the housing comprises an upper part and a lower part,



said comb being provided on said upper part and said trimming blade being located between the upper part and the lower part; a cavity is provided between the upper part and the lower part of the housing;

5 - the protective cover is further provided with a forwardly skin contacting surface located forward the trimming blade and a rearwardly skin contacting surface located rearward the trimming blade, the trimming blade being inclined with regard to a plane tangential to the
10 rearwardly skin contacting surface;

 - the trimming blade is fixedly (meaning fixed and motionless) and unreleasably mounted in said housing; the trimming blade is rivet mounted in said housing;

 - the trimming blade is movably mounted in said
15 housing;

 - several trimming blades are provided on the housing;

 - the housing comprises a back ventilation opening;

20 - the comb is molded in two separate parts preferably corresponding to the teeth and to the rear part or in one single piece,

 - the protective cover is further provided with several combs.

25 The invention also concerns a shaving assembly including a cartridge and such a protective cover, said shaving cartridge having one or more shaving blades each provided with a cutting edge, the protective cover being able to cover at least the cutting edge of the shaving
30 blades.

In various embodiments of the invention, one and/or the other of the following features may be incorporated in this shaving assembly alone or in mutual combination:

 - the protective cover has an opening through

which the cover is slidable over said shaving cartridge to cover said shaving cartridge;

- said protective cover covers the shaving cartridge the trimming blade, and more specifically its cutting edge, is parallel to or tilted with regard to the one or more shaving blades.

The invention also concerns a razor having a razor handle and such a shaving assembly, the shaving cartridge being able to be attached to the razor handle.

10 In various embodiments of the invention, one and/or the other of the following features may be incorporated in this razor alone or in mutual combination:

- the razor handle extends through the rear opening when the protective cover is slid onto the shaving cartridge and when the razor handle is attached to the shaving cartridge;

- shaving cartridge is pivotally attached to the razor handle;

- the razor handle extend longitudinally along a longitudinal direction, said longitudinal direction being perpendicular to the longitudinal axis of the protective cover;

- the razor handle comprises a lock and release mechanism to attach a shaving cartridge onto the razor handle or to release a shaving cartridge attached to the razor handle.

30 The invention also concerns a method of shaving wherein the user uses the above mentioned razor, selectively either in a first shaving manner in which the protective cover is removed from the shaving cartridge and the shaving cartridge is used for shaving, or in a second manner in which the protective cover is covering the shaving cartridge and the trimming blade of said cover is used for trimming body hair.

35 The invention concerns also a method of

manufacturing a protective cover comprising a housing which comprises an upper part and a lower part, which extends longitudinally along a longitudinal axis and which is provided with a comb and at least one trimming blade, said
5 trimming blade having an elongated cutting edge which can be parallel to or tilted with regard to the longitudinal axis and said comb having several teeth protruding forwardly with regard to said trimming blade, the method comprising the steps of

- 10 - providing an upper part having a lower surface, including securing pins protruding from said lower surface, and a comb provided with several teeth,
- providing a trimming blade having trimming blade apertures in alignment with said securing pins,
- 15 - mounting said trimming blade onto upper part, said securing pins passing through the trimming blade apertures,
- providing a lower part having securing apertures in alignment with said securing pins,
- 20 - mounting the lower part onto the trimming blade, said securing pins passing through the securing apertures,
- forming a crimping head at one end of each securing pin, thereby irremovably riveting both the trimming
25 blade and the upper part onto the lower part.

This method can further comprising the steps of

- providing a spacer having holes in alignment with said securing pins,
- mounting said spacer onto said trimming blade,
30 said securing pins passing through said holes,
- providing a second trimming blade having trimming blade apertures in alignment with said securing pins,
- mounting said second trimming blade onto said

spacer, said securing pins passing through said trimming blade apertures, and

- forming a crimping head at one end of each securing pin, thereby riveting together the trimming blades, the spacer and the upper part onto the lower part.

This method can also further comprise the steps of

- providing a securing pins member comprising the securing pins,
- fixedly attaching the securing pins member onto the lower surface of the upper part,
- comprising the step of molding the comb in a high polished surface mould cavity.

BRIEF DESCRIPTION OF THE DRAWINGS

Other characteristics and advantages of the invention will readily appear from the following description of one embodiment, provided as non-limitative examples, in reference to the accompanying drawings.

In the drawings:

Figure 1A is a perspective view of a razor according to the invention, the protective cover being released.

Figure 1B is a perspective view of a razor according to the invention, the cover is being placed on the shaving cartridge to protective cover the last.

Figure 1C is a perspective view of a razor according to the invention, the protective cover being covering the shaving cartridge.

Figure 1D is a partial transversal section of the shaving assembly of Figure 1C along lines ID-ID, the shaving cartridge being released and the lock/release mechanism being in the head release position.

Figure 1E is a partial transversal section of a shaving assembly, the housing being provided with several trimming blades.

Figures 1F to 1L are top schematic views of a protective cover according to various embodiments.

Figure 2A is a transversal section of a protective cover according to another embodiment covering a shaving
5 cartridge.

Figure 2B is a partial transversal section of the protective cover of Figure 2A covering a shaving cartridge.

Figure 2C is an exploded perspective view of the protective cover of Figure 2A without the shaving
10 cartridge.

Figure 2D is an exploded perspective view of the protective cover according to another embodiment without the shaving cartridge, the housing being provided with several trimming blades.

15 Figure 2E is a top view of the protective cover shown in Figure 2A, the protective cover covering the shaving cartridge.

Figure 2F is a perspective view of the protective cover shown in Figure 2A, the shaving cartridge being
20 released.

Figure 3 is a top view of a protective cover according to another embodiment, the protective cover covering a shaving cartridge.

Figure 4A is a perspective view of the protective
25 cover according to another embodiment

Figure 4B is a sectional view of the protective cover of Figure 4A.

Figure 5 is a perspective view of the razor shown in Figure 1A, the shaving cartridge being released.

30 Figure 6A is a perspective view of the razor shown in Figure 1A, the shaving cartridge being connected to the razor handle.

Figure 6B is a perspective top view of the razor shown in Figure 1C, the shaving cartridge being connected
35 to the razor handle and the protective cover being put onto

the shaving cartridge.

Figure 6C is a side view of the razor shown in Figure 1A, the shaving cartridge being connected to the razor handle and the protective cover being put onto the shaving cartridge.

Figure 7A is a perspective exploded view of the razor shown in Figure 1A (without the shaving cartridge and without the protective cover).

Figure 7B is a perspective view of the lock/release mechanism shown in Figure 7A (without the handle body).

Figure 8A is a partial longitudinal section of the razor of Figure 6C along lines VIII-VIII, the shaving cartridge being released and the lock/release mechanism being in the head release position.

Figure 8B is a partial longitudinal section of the razor of Figure 6C along lines VIII-VIII, the shaving cartridge being connected to the razor handle and the lock/release mechanism being in the head lock position.

Figure 8C is a partial longitudinal section of the razor of Figure 6C along lines VIII-VIII, the shaving cartridge being release and the lock/release mechanism being in the head lock position.

Figure 8D is a view of detail VIIID of Figure 8B.

On the different Figures, the same reference signs designate identical or similar elements.

DETAILED DESCRIPTION OF THE DISCLOSURE

Figure 1A illustrates a wet razor comprising a razor handle 12, a shaving cartridge 14 and a protective cover 15 which can cover the shaving cartridge 14 as illustrated on Figure 1C and thus form a shaving assembly.

The shaving cartridge 14 is provided with one or more shaving blades 16 which can be movably or fixedly retained in the housing of the shaving cartridge 14. For instance, as illustrated on Figures 1A and 1B, the shaving cartridge 14 is provided with four shaving blades 16, but

the invention is not limited to said number of shaving blades.

As well known, the shaving cartridge 14 can further be provided with a guard bar 19 and/or with a lubra 21.

5 The shaving cartridge 14 is preferably a disposable shaving cartridge and includes a front face 14A having the one or several blades 16 exposed thereon, and a rear face 14B which can be connected to the razor handle 12 as illustrated on Figures 1A, 1B and 1C by connecting members
10 28.

As illustrated on the Figures, the razor handle 12 has an elongated handle body 18 extending in a longitudinal direction L between a front end 18A and a back end 18B. The longitudinal direction L may be curved and/or include one
15 or several straight portions. The handle body 18 has an upper face 18C opposite to a lower face 18D.

The protective cover 15 can cover the shaving cartridge 14 in being releasably attached onto the last. Thus, the shaving cartridge 14 can be covered or uncovered
20 with the protective cover 15. The protecting cover 15 can be slid onto the shaving cartridge 14 as illustrated on Figures 1A and 1B by sliding it along arrow F. The protecting cover 15 can also be attached to the shaving cartridge 14 by any other way, like for instance by snap-
25 fitting.

The protecting cover 15 comprises a housing 152 extending longitudinally along a longitudinal axis A and is provided with a comb 154 and a trimming blade 156. Thanks to this comb 154 and trimming blade 156, the protective
30 cover 15 allows trimming hair at a given length. This is particularly useful when the razor according to the invention is used to shave for instance the bikini; of course it can be used for other shaving and for instance also for cutting a beard to a given length.

35 That length can be adjustable. In that case, either

the user can use another protecting cover 15 provided with a comb 154 having teeth of a height H154 different from the height of first protecting cover 15 in being all greater or all smaller, or the user can use a sole protecting cover 15 since the comb 154 is detachable from the housing 152. In that last case, the protecting cover 15 is able to receive interchangeable combs 154; one detachable comb 154 having teeth of a height different from the height of another detachable comb 154 in being all greater or all smaller. The height provided on any of the comb may also vary from one tooth to the other. The height H154 of the teeth can be comprised between 1 mm and 20 mm, preferably between 2 mm and 10 mm and/or preferably between 10 mm and 15 mm.

Besides, the number of teeth can be different from one protecting cover 15 to another one. For instance, the number of teeth can be comprised between 5 and 15, preferably equal to 7. According to the number of teeth provided on one comb in relation with its dimension, the density of teeth can be more or less important. The higher the density of teeth is (for instance 13 teeth for a comb of about 35 mm length), the easier the manufacture of the protecting covers 15 is, especially when manufacturing in series. More precisely, when manufactured in large quantities, the protecting covers 15 will be taken to another station where they will be attached to the shaving cartridge 14. The same appears previous the mounting of the trimming blade(s) when the protecting covers 15 are to be provided on a separate mounting station where the trimming blade(s) will be mounted. Actually, each time there is a need to manipulate the protecting covers 15 there is risk of tangling the teeth of one comb with the teeth of another one. Thus, the density of teeth should be chosen in order to avoid the need of another manufacturing stage to detangle and align the combs. Besides, the tangled teeth between two or more combs could increase the scrap rate as

tangled parts will lead to broken teeth.

Besides, the comb 154 can be non detachably fixed (meaning motionless) on the protecting cover 15 or it can be mounted movable on the protecting cover 15 in order to
5 adjust the height H154 of the teeth to the desired height.

As depicted on Figures 1A-1C and 2C-2F, the trimming blade 156 is elongated along the longitudinal axis A and has an elongated cutting edge 156A parallel to the longitudinal axis A. The trimming blade 156 can be parallel
10 to the longitudinal axis A or it can be inclined/tilted with regard to the longitudinal axis A as depicted on Figure 3. More precisely, the trimming blade 156 can be tilted of an angle Ω with regard to the longitudinal axis A. This angle Ω is preferably comprised between 0° (the
15 trimming blade edge 156A being parallel to the longitudinal axis A) and 60° , preferably between 0° and 45° or preferably between 0° and 20° .

The comb 154 has several teeth 154A which project obliquely to the longitudinal axis A and which protrude
20 forwardly with regard to the trimming blade 156. More precisely, the angle θ between the teeth 154A and the longitudinal axis A can be of 90° as depicted on Figures 1A-1C and 2C-2F; the teeth 154A are perpendicular to said longitudinal axis A and the teeth protrude forwardly with
25 regard to said housing 152. The angle θ between the teeth 154A and the longitudinal axis A can be different from 90° in being comprised between 20° and 160° . Besides, considering one comb, the angle θ can be the same for each of the teeth or may vary from one tooth to the other.
30 According to the value of angle θ and the value of angle Ω , the teeth 154A can be perpendicular to the trimming blade(s) 156 or not. More precisely, the teeth 154A and the trimming blade edge(s) 156A can be respectively perpendicular to said longitudinal axis A and parallel to

said longitudinal axis A or the teeth 154A and the trimming blade edge(s) 156A can be tilted with regard to said longitudinal axis A.

The angle θ can for instance be of about 70° as depicted schematically on Figure 1F or of 110° as depicted schematically on Figure 1G. All the teeth are on Figures 1F and 1G skewed, or inclined, in the same direction (right or left).

The comb 154 as depicted schematically on Figure 1H comprises for instance a first half of the teeth projecting obliquely toward the right of the comb 154 and the second half of the teeth projecting obliquely toward the left of the comb 154. The angle θ can for instance be of about 70° for the first half of the teeth and of 110° for the second half of the teeth.

The comb 154 as depicted schematically on Figure 1I is similar to the one depicted on Figure 1H, but the angle θ varies from one tooth to the other one. The first half of the teeth projecting obliquely toward the right of the comb 154 may have an angle θ decreasing from the tooth 154L farthest from the center to the one 154' located in the center, whereas the second half of the teeth projecting obliquely toward the left of the comb 154 may have an angle θ increasing from the tooth 154R farthest from the center to the one 154' located in the center. The angle θ can for instance vary from about 90° to 45° for the first half of the teeth, whereas it may vary from about 90° to 135° for the second half of the teeth.

The comb 154 as depicted schematically on Figure 1J is provided with teeth projecting such that they form a "zig-zag" path. More precisely, the teeth can project obliquely alternatively toward the right and toward the left from one tooth to the adjacent one. The angle θ may be equal or may increase or decrease from the tooth to the

next tooth inclined in the same direction (right or left).

Besides, whatever the embodiment the teeth 154A can further be provided with an additional coating or overmolding on their walls. As depicted schematically on Figure 1K, the inner walls 154W of the teeth 154A are provided with an additional material 154WR like rubber for instance in order to increase friction at the hair contact and help align the hair being cut even further. This leads also to a better gripping of the hair during the cut.

As depicted schematically on Figure 1L, instead of rubber walls 154WR, a toothbrush like hairs of rubber or plastic 154WC can also be provided on the inner walls 154W of the teeth 154A in order to help with the alignment of the hair to be cut.

The length l of the teeth 154A measured from the longitudinal forward edge 152B of the housing 152 can be the same for all of them as illustrated on Figures 2A-2F or can vary in being for instance greater from the sides 152A to the center 152C of the housing 152 as illustrated on Figures 1A-1E where the teeth follow a curved path as best seen on Figure 1C. Actually, as for the height H154, the length l of the teeth 154A can vary from one comb to another comb, and/or may also vary from one tooth to the other, on a same comb. The length l of the teeth 154A can be comprised between 5 mm and 40 mm, preferably between 10 mm and 30 mm and/or preferably between 5 mm and 25 mm.

Besides, the protective cover 15 may be provided a sole comb 154 or with several combs 154. As depicted on Figures 4A and 4B, the protective cover 15 can comprise two combs 154. Each of these combs 154 can be provided with the features defined here for one comb. More precisely, for instance, the teeth of the combs 154 can be transversal to the longitudinal axis A in being perpendicular or skewed. The inner wall of the teeth 154A can be provided with an

additional coating or a toothbrush like hairs of rubber or plastic. The number, length and height of the teeth may vary among the combs and from one comb to the others. Besides, only one comb 154 can be provided with one or more
5 trimming blade(s) or each of the combs 154 can be provided with one or more trimming blade(s). As depicted on Figures 3A and 3B, only one of the two combs 154 is provided with a trimming blade 156.

The housing 152 comprises a front face 152F and a
10 rear face 152R, the trimming blade 156 and the comb 154 being provided onto the front face 152F, whereas the rear face 152R is provided with a rear opening 158 (see Figures 1D-1E, 2C-2D, 2F, and 6B-6C) through which the connecting members 28 of the shaving cartridge 14 covered
15 by the protective cover 15 are accessible for the connection to the razor handle 12. Actually, the razor handle 12 extends through said opening 158 when the protective cover 15 is slid onto the shaving cartridge 14 and when the razor handle 12 is attached to the shaving
20 cartridge 14.

When provided onto the shaving cartridge 14, the comb 154 and the trimming blade 156 are thus located on the front face 10A of the razor 10, opposite to the connection with the handle 12 as best illustrated on Figures 1C, 6B
25 and 6C.

The comb 154 comprises the teeth 154A and a rear part 154B from which the teeth 154A protrude forwardly. The comb 154 can be molded in two separate parts preferably corresponding to the teeth 154A and to the rear part 154B
30 or can be molded in one single piece. The comb 154 can be directly molded onto the front face 152F of the housing 152 like a kind of over-molding or can be molded with the front face 152F according to the manufacture process (molding bi-injection, etc.). In both cases, the teeth protrude
35 forwardly with regard to the housing 152 and extend beyond

15

the housing 152 and the trimming blade 156.

The comb 154 is preferably made of a plastic material; the plastic material can be same as that used for the housing 152, more specifically for the rest of the housing 152, or can be different in being for instance softer. Besides, the plastic used for the comb 154 can have a different color than that used for the housing 152, more specifically for the rest of the housing 152.

The housing 152 is preferably composed of an upper part 153A and a lower part 153B, said comb 154 being provided on said upper part 153A and said trimming blade 156 being located between the upper part 153A and the lower part 153B. The housing 152 of the protective cover 15 can be manufactured in one single piece or, in order to facilitate the manufacture of the protective cover 15, it can comprised several parts assembled together by known assembling means like crimping, welding, etc.

As already above mentioned the comb 154 and the rest of the housing 152 can be of the same material or can be different, the same applies also for the upper part 153A and the lower part 153B when they are two separate pieces.

According to a first embodiment, the upper part 153A and a lower part 153B of the housing 152 can be one single piece as depicted on Figure 1D in which the front face 152F of the housing 152 is preferably composed of an upper part 153A and a lower part 153B, said comb 154 being provided on said upper part 153A and said trimming blade 156 being located between the upper part 153A and the lower part 153B.

According to a second embodiment, the housing 152 can be made of at least two separate pieces as depicted on Figures 2A and 2B. More precisely for that second embodiment, the upper part 153A and a lower part 153B of the housing 152 are forming respectively a comb part and a cover part. In that case, the comb 154 is provided on the

upper part 153A. The trimming blade 156 is located between the upper part 153A and the lower part 153B, more specifically between the lower face 153AB of the upper part 153A (opposite to the front face 153AA corresponding to the front face 152F of the housing 152) and the upper face 153BA of the lower part 153B (opposite to the lower face 153BB corresponding to the rear face 152R of the housing 152).

Besides, when the housing 152 is made of several separate parts as depicted on Figures 2A and 2B, a cavity 153 is provided between the upper part 153A and the lower part 153B, in order to ensure that there is no water trapped between these two mating parts. Actually, this cavity 153 prevents bacteria or mold growth that could occur due to humidity that may appear in the small gap created by the two mating parts and bad air circulation. This cavity 153 is sufficiently large to promote air flow for quick drying and makes also harder the formation of water stagnation droplets.

Besides, as illustrated on Figure 2C, the trimming blade 156 can be put directly between the upper part 153A and the lower part 153B of the housing 152 or as illustrated for instance on Figures 1D, a spacer 153C can be put directly between the trimming blade 156 and the lower part 153B of the front face 152F of the housing 152.

Besides, the trimming blade 156 can be fixedly (meaning motionless) and unreleasably mounted in the housing 152 for instance in being rivet mounted in said housing 152 or can be movably mounted in it for instance with elastic fingers (not illustrated) allowing the trimming blade 156 to move when shaving forces are applied on it.

The protective cover 15 can further be provided with a forwardly skin contacting surface 164 located forward the trimming blade 156 and a rearwardly skin

contacting surface 166 located rearward the trimming blade 156.

Besides, the rearwardly skin contacting surface 166 is preferably a highly polished (glossy) surface in order to have a low friction coefficient that promotes dry shavings. A very low friction surface on the comb 166 can also be provided for instance with a high polished surface on the mould cavity (32 μm , 16 μm or even 8 μm type finish) used for manufacturing the comb 166.

Besides, the trimming blade 156 can be parallel to a plane P tangential to the rearwardly skin contacting surface 166 or can be inclined of an angle α with regard to that plane P. In that case, the angle α is preferably comprised between 0 and 30°, the trimming blade 156 and more precisely its edge 156A being inclined forwardly in direction to the plane P.

Besides, several trimming blades can be provided on the housing 152 as depicted on Figures 1E and 2D. In that case, the trimming blades 156 are stacked one above the other and can be separated with spacers 153C as detailed hereafter. This combination of blade(s) and spacer(s) gives the ability to have one or more blades to act as a trimmer.

Further, the trimming blades 156 can also be parallel to the plane P or can be inclined of an angle α with regard to that plane P.

The protective cover 15 is preferably not provided with any kind of connecting member allowing the connection to the razor handle. It is also preferably not in contact with any part of the razor handle 12. Actually, as detailed hereafter the shaving cartridge 14 can be pivotally connected to the razor handle 12 and in that case, when the protective cover 15 is put onto the shaving cartridge 14 it is also pivotally connected to the razor handle 12 via the shaving cartridge 14 and more precisely via the connecting members 28 of the shaving cartridge 14.

The location the trimming blade(s) 156 and more specifically of it/their cutting edge 156A is chosen in order to offer the best arrangement for manageability and stability of the protective cover 15 used as a trimmer.

5 More specifically and as depicted for instance on Figure 2A, the pivot axis PA of the shaving cartridge 14 is located roughly in the middle of the protective cover 15. Actually, the pivot axis PA of the shaving cartridge 14 is located at a distance DPA from the rear longitudinal face
10 of the protective cover 15, more specifically from the rearmost longitudinal face 152RL of the housing 152 (opposite the longitudinal forward edge 152B of the housing 152). In comparison with the distance D156A to the trimming blade edge 156A from said rearmost longitudinal face 152RL,
15 the distance DPA is more or less of half value. For instance, DPA is of about 9 mm to 11 mm, preferably of about 10 mm, whereas D156A is of about 17 mm to 22 mm, preferably of about 18 mm.

This arrangement offers a limited range of motion
20 of the trimming blade(s) 156 which enhances the safety perception and allows more precise control of the trimming blade(s) 156 especially in hard to reach areas. This is because the shaving force applied by the user is uniformly distributed over the whole of the trimmer surface due to
25 the symmetrical pivot centre (roughly in the middle of the trimmer system). Also the closer distance of the pivot axis to the trimming blade edge 156A and the flat surface formed by the rearwardly skin contacting surface 166 which is parallel and above the blade gives an advantage because the
30 flat skin contacting surface pushes at the axis location and always maintain contact with the skin. Thus, such a location avoids rotation of the shaving cartridge 14 thus lifting the trimmer blade(s) 156 off the skin.

The rear opening 158 can lead in a lateral opening
35 160 provided on one of the lateral faces 152A of the

housing 152 allowing the protective cover 15 to be slid onto the shaving cartridge 14 along arrow F.

An opposite lateral opening 162 can also be provided on the other of the lateral faces 152A of the housing 152 in order to make easier the sliding of the protective cover 15 especially in allowing the air pressed by the shaving cartridge 14 inside the protective cover 15 when it is being slid onto the last can escape.

When the protective cover 15 is completely put onto the shaving cartridge 14, it covers at least the edges of the shaving blades 16 of the shaving cartridge 14. Actually, as depicted on the figures, the protective cover 15 covers completely the shaving blades 16 when it is put onto the shaving cartridge 14. Especially, no opening or access is possible to the shaving blades 16 through the protective cover 15, when the last is completely put onto the shaving cartridge 14. Therefore, the protective cover can absolutely protect the shaving blades and the user cannot get injured with them.

As indicated above, the trimming blade 156 is elongated along longitudinal axis A and the wash through opening 168 is also elongated along longitudinal axis A. When the protective cover 15 is attached onto the shaving cartridge 14 for instance after having being slid onto the shaving cartridge 14, the trimming blade 156 can be parallel to the one or more shaving blades 16. Actually, when parallel to the shaving blade(s) 16, the shaving blades 16 are also elongated along longitudinal axis A. The shaving blades 16 are preferably perpendicular to the longitudinal direction/axis L of the handle body 18; therefore the longitudinal axis A is perpendicular to the longitudinal direction L when the protective cover 15 is put onto the shaving cartridge 14 attached to the razor handle 12.

Besides, the length of the trimming blade 156 can

be of the same value than that of the shaving blades 16, but it is preferable shorter in order to have a more precise shaving with the trimming blade 156 than with the shaving blades 16.

5 In order to be able to be washed and to evacuate the cut hair, the protective cover 15 is however provided with a wash through opening 168 located in front of the trimming blade 156. To ensure that the shaving blade 14 does not get dirty when the protective cover 15 is used for
10 shaving, this wash through opening 168 is offset from one relative to the longitudinal forward edge 14' of the shaving cartridge 14.

More precisely, when the protective cover 15 is put onto the shaving cartridge 14, the wash through opening 168
15 is offset by being more forward than the housing of the shaving cartridge 14. The value of the offset between the wash through opening 168 and the longitudinal forward edge 14' is preferably comprised between 0 mm and 5 mm.

Besides, the protective cover 15 can be provided
20 with a back ventilation opening 151 as depicted on Figures 2A-2C and 2E. This back ventilation opening 151 is preferably located at the back of protective cover 15 opposite to the comb teeth 154A in order to allow the lubra
21 of the shaving cartridge 14 to dry after use for
25 traditional shaving. Actually, when shaving traditionally (i.e. with the shaving cartridge 14, the protective cover 15 being removed), the lubra 21 becomes wet. As depicted on Figures 2E and 2F, when the protective cover 15 is put onto the shaving cartridge 14 after traditional shaving the back
30 ventilation opening 151 prevents sticking of the lubra 21 onto the protective cover 15 that could occur due to swelling of the lubra 21 when wet. The back ventilation opening 151 thus prevents the shaving cartridge 14 and more precisely its lubra 21 to be damaged.

35 A method of manufacturing such a protective cover

15 will now be described. The method comprises the steps of

- providing an upper part 153A having a lower surface 153AB and including securing pins 155 protruding from said lower surface 153AB,
- 5 - providing a trimming blade 156 having trimming blade apertures 156' in alignment with said securing pins 155,
- mounting said trimming blade 156 onto upper part 153A, said securing pins 155 passing through the
10 trimming blade apertures 156',
- providing a lower part 153B having securing apertures 153' in alignment with said securing pins 155,
- mounting the lower part 153B onto the trimming
15 blade 156, said securing pins 155 passing through the securing apertures 153',
- forming a crimping head 155A at one end of each securing pin 155, thereby irremovably riveting both the trimming blade 156 and the upper part 153A onto
20 the lower part 153B.

The securing pins 155 can be formed as a single piece with the upper part 153A or they can be separate pieces. In that last case, the method further comprises the steps of

- 25 - providing a securing pins member 155' comprising the securing pins 155 as depicted on Figure 2A and 2B,
- fixedly attaching the securing pins member 155' onto the lower surface 153AB of the upper part
30 153A.

The securing pins member 155' can for instance be over-molded onto the upper part 153A, more specifically onto its lower surface 153AB. In that case, the securing pins member 155' and the upper part 153A can be made of

different materials. The material combinations could give the advantage of hiding or enhancing the visibility of the trimming blade by changing the colour or material type or by enhancing the trimming blades appearance by allowing the use of printing or in mould labeling of the securing pins member 155' before it is over-moulded with the upper part 153A. Thus graphics applications can be provided to communicate the costumer logos, images or other information. This can be achieved through thermal printing, IML or other existing applications.

The material used can comprise a plastic material harder than the one used for the comb 154 which is preferably soft.

When the protective cover 15 comprises several trimming blades, the method further comprises the steps of

- providing a spacer 153C having holes 153'C in alignment with said securing pins 155,
- mounting said spacer 153C onto said trimming blade 156, said securing pins 155 passing through said holes 153'C,
- providing a second trimming blade 156 having trimming blade apertures 156' in alignment with said securing pins 155,
- mounting said second trimming blade 156 onto said spacer 153C, said securing pins 155 passing through said trimming blade apertures 156', and
- forming a crimping head at one end of each securing pin 155, thereby riveting together the trimming blades 156, the spacer 153C and the upper part 153A onto the lower part 153B.

The above-mentioned steps are particularly adapted for a protective cover 15 comprising two trimming blades; however, one should understand that in order to manufacture a protective cover 15 comprising more than two trimming blades, these steps of providing a spacer and a second

trimming blade should be repeated before mounting the lower part 153B onto the trimming blade 156 as many times as necessary, said securing pins 155 passing through the securing apertures 153', and then forming a crimping head 5 155A at one end of each securing pin 155, thereby irremovably riveting both the trimming blades 156, the spacers 153C and the upper part 153A onto the lower part 153B.

Besides, the razor can be a disposable one or can 10 be a razor system in which the shaving cartridge thrown when the edge of the blade(s) is dulled. In that last case, the shaving cartridge 14 is a disposable one and a lock/release mechanism 20 is also provided as shown in greater details in figures 7A-B and 8A-C and enables to 15 selectively connect the shaving cartridge 14 to the razor handle 12 or release said shaving cartridge 14 in order to exchange shaving cartridges.

The lock/release mechanism 20 is included in the handle body 18 which may therefore be in two parts 18' and 20 18'' (see figure 7A). The lock/release mechanism 20 includes two arms 22 which can be made for instance out of molded plastic material. The two arms 22 may each extend from a first end 22A situated inside the handle body 18 toward a free end 22B which may protrude toward the outside 25 at the front end 18A of the razor handle 12. The two arms 22 may be disposed in a V shape, diverging from a medial axis X from their first end 22A toward their respective free end 22B. The medial axis X is substantially parallel to the curved longitudinal axis L of the handle. The first 30 ends 22A of the two arms 22 may be connected together by a hinge 23, formed for instance as a thin bridge of plastic material connecting the two arms 22 to each other when said arms are molded as a single piece. The hinge 23 may have a negligible resilient action, or no resilient action, on the 35 two arms 22.

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The two arms 22 further include respectively two pushbuttons 24 which may be formed integrally therewith and which may protrude laterally out of the handle body 18, for instance through two holes 25 formed in said handle body 18. The pushbuttons 24 may thus be surrounded by the handle body 18 in all directions around the holes 25.

The free ends 22B of the arms 22 may be provided with respectively two bearings, in particular two shell bearings 26 which are exposed toward the outside. The free ends 22B could also be provided with journal means or any known connecting means.

Each shell bearing 26 may for instance include a cylindrical concave front face 26A and a lateral edge 26B which protrudes outwardly and which has also a cylindrical shape. The two front faces 26A and the two lateral edges 26B have the same cylindrical axis, corresponding to the pivot axis of rotation of the shaving cartridge 14 which also correspond to the longitudinal axis A of the protective cover 15.

In reference to Figures 8A, 8B and 8C, the arms 22 are elastically biased opposite to one another toward a head locking position (see Figure 8B or 8C) and movable toward one another into a head release position (see Figure 8A).

As shown in figure 8A, the rear face 14B of the shaving cartridge 14 may include two connecting members or rearwardly protruding connectors, i.e. two inwardly facing arcuate slots 28 shaped in correspondence with the lateral edges 26B of the shell bearings 26 and adapted to receive said lateral edges 26B for pivotally mounting the shaving cartridge 14 onto the handle 12. These arcuate slots 28 may be formed respectively in two protruding ribs 30 including two respective lateral surface 29 (and its corresponding internal face 29') and two respective inclined surfaces 31 facing each other and extending slantwise toward each other

from the top of the ribs 30 toward the arcuate slots 28, so as to facilitate the insertion of the shell bearings 26 in the arcuate slots 28 and may be limited toward the handle 12 by a first arcuate concave surface 32 facing toward the shaving cartridge 14, and away from the handle 12, by a larger second arcuate convex surface 34 facing toward the handle 12.

The front faces 26A of the shell bearings 26 bear respectively on the second arcuate convex surfaces 34. Said second arcuate convex surfaces 34 may include respectively two notches 36 for receiving corresponding protrusions 38 of the shell bearings 26, so as to limit the angular range of rotation of the shaving cartridge 14. The rear face 14A of the shaving cartridge 14 may further include a central rib 40 having an edge forming a top flat cam surface 42 facing away from the shaving cartridge 14 toward the handle 12.

In case of a disposable shaving cartridge and with reference to Figures 7A-B and 8A-C, the lock/release mechanism 20 further includes a plunger 48 which is movably mounted, substantially along the medial axis X between the two arms 22. This plunger 48 has a central body 50 and two lateral wings 52 extending opposite to one another toward the two arms 22. The central body 50 extends longitudinally parallel to the medial axis X, between a first, substantially flat free end 50A which bears against the cam surface 42 of the shaving cartridge 14 (see Figure 8A), and a second end 50B facing away from the shaving cartridge 14.

A recess 54 may be hollowed out in the central body 50, said recess 54 forming a blind hole which opens at the second end 50B of the central body 50, in the direction of the handle 12. Each lateral wing 52 may include a detent 56 protruding parallel to the medial axis X toward the shaving cartridge 14, said detent 56 facing an inwardly extending protrusion 58 belonging to the corresponding arm 22. The

protrusion 58 has an opening 60 which is limited inwardly by a rim 62 belonging to said protrusion 58. Besides, the lateral wings 52 of the plunger 48 may each have respectively two ribs 64 which extend in a medial plane of the arms 22, opposite to the central body 50.

The plunger 48 is elastically biased toward the cam surface 42 of the shaving cartridge 14 so as to cooperate therewith by camming action to bias said shaving cartridge 14 in rotation about pivot axis A toward a rest position. In the example shown in the figures, the plunger 48 is elastically biased by a helicoidal spring 66, which has a first spring end fitted into the recess 54 and a second spring end fitted into a recess 68, for instance in the form of a blind hole, hollowed out in an arm pusher 70.

The arm pusher 70 is disposed between the arms 22 in line with the plunger 48 along the medial axis X. More specifically, said arm pusher 70 is disposed between the plunger 48 and the hinge 23 along the medial axis X. The recess 68 opens parallel to the medial axis X toward the plunger 48.

The arm pusher 70 is slidably mounted between the arms 22, substantially parallel to the medial axis X and is elastically biased by said spring 66 toward the handle 12, i.e. away from the shaving cartridge 14. Said arm pusher 70 cooperates by camming action with the two arms 22, more specifically with the two pushbuttons 24 for biasing said arms 22 outwardly away from each other, toward a head locking position shown in Figure 8B, where lateral edges 26B of the shell bearings 26 penetrate in the corresponding arcuate slots 28 of the shaving cartridge 14.

The arm pusher 70 has preferably a central body 72 in which the recess 68 is hollowed out, and two lateral extensions 74 extending opposite to one another toward the two arms 22 and cooperating by camming action respectively with said two arms 22 for biasing the arms toward the head

locking position. More particularly, these lateral extensions 74 may penetrate in two slots 76 formed respectively in the two arms and facing each other. The two lateral extensions 74 of the arm pusher 70 may have lateral edges 78 which cooperate by camming action with the respective bottoms 80 of the slots. Said lateral edges 78 may be diverging from the medial axis X in a direction away from the handle 12, whereas the bottoms 80 may also diverge from the medial axis in the direction away from the handle 12.

Thanks to these dispositions, the same spring 66 is used to bias the plunger 48 elastically toward the cam surface 42 of the shaving cartridge 14 and to bias the arm pusher 70 away from the shaving cartridge 14, thus biasing both the shaving cartridge 14 in rotation toward the rest position and the arms 22 toward the shaving cartridge lock position. It should be noted that the plunger 48 is maintained between the two arms 22 both by cooperation with the spring 66 by abutment against the cam surface 42 of the shaving cartridge 14 and eventually by abutment against the protrusions 58 of the arms 22.

When a shaving cartridge 14 is mounted on the razor handle 12, the lock/release mechanism 20 is normally in the head lock position (see Figure 8B). Starting from this position, when a user wishes to exchange shaving cartridges, he first pushes on both pushbuttons 24, which brings the arm 22 toward each other against the camming action of the arm pusher 70. During this movement, the arm pusher 70 slides along the medial axis X toward the plunger 48. When the arms 22 have sufficiently moved toward each other to reach the head release position shown in figure 8A, the shaving cartridge 14 is released by the shell bearings 26 and is simultaneously ejected by the plunger 48.

The plunger 48 then moves forward to an outwardly

protruding position, so that the detents 56 of said plunger penetrate in the openings 60 of the protrusions 58 of the arms. In this position, as shown in figure 8A, the arms 22 are maintained in the head release position by abutment of the rims 62 against said detents 56, thus cooperating by hooking action.

Afterwards, when a new shaving cartridge 14 is fixed to the handle 12, the shell bearings 26 are inserted between the arcuate slots 28 of the new shaving cartridge 14 and the cam surface 42 of said new shaving cartridge pushes the plunger 48 backward toward the handle. The arms 22 are then released and moved away from each other under the action of the arm pusher 70, so that the shell bearings 26 insert themselves in the arcuate slots 28 of the new shaving cartridge, and the lock/release mechanism 20 is again in the position shown in figure 8B (head locked position).

When a user pushes on both pushbuttons 24, the handle is in the head release position like depicted on Figure 8A and can receive the ribs 30 of a shaving cartridge 14 to be locked.

When the shell bearings 26 are inserted between the arcuate slots 28 and the user releases the pushbuttons 24, the cam surface 42 of said new shaving cartridge pushes the plunger 48 backward toward the handle and the lock/release mechanism 20 is again in the position shown in figure 8B (head lock position) and the new shaving cartridge 14 is fixed to the handle 12.

In the position illustrated on Figure 8B, the shaving cartridge 14 is pivotally connected on the handle 12, the front faces 26A of the shell bearings 26 bearing respectively on the second arcuate convex surfaces 34, whereas the lateral edge 26B of the shell bearings 26 is in contact with the internal face 29' of the ribs 30.

In order to improve the gripping of the razor handle 12 and thus the shaving, the handle body 18 can be provided with a first finger rest area 96 on the upper face 18C of the handle body 18 (see Figure 6B), and with a
5 second finger rest area 98 on the lower face 18D of the body (see Figures 5 or 6A), said finger rest areas 96 and 98 may be flexible gripping areas made of an injected moulded elastomeric material, whereas the rest of the handle can be substantially rigid backbone of an injected
10 moulded thermoplastic, non elastomeric material.

With such a razor 10, a user is able to shave selectively either with the shaving blades 16, when the protective cover 15 is released from the shaving cartridge 14 or with the trimming blade 156 when the protective cover
15 15 is covering the shaving cartridge 14.

Hence, in a first shaving manner in which the protective cover 15 is removed from the shaving cartridge 14, the user can shave "traditionally" with the shaving cartridge 14. When the protective cover 15 is already
20 covering the shaving cartridge 14, the user has just to slide the protective cover 15 from the shaving cartridge 14 and shave.

In a second manner in which the protective cover 15 is covering the shaving cartridge 14, the user can shave
25 body hair to a given length with the trimming blade 156 and the comb 154. In that last case, the user has just to slide the protective cover 15 onto the shaving cartridge 14 if it is not yet provided onto it.

CLAIMS

1. A protective cover for a shaving cartridge, the protective cover (15) comprising a housing (152) extending longitudinally along a longitudinal axis (A) and being provided with a comb (154) and at least one trimming blade (156), said trimming blade (156) having an elongated cutting edge (156A) and said comb (154) having several teeth (154A) projecting obliquely to said longitudinal axis (A) and protruding forwardly with regard to said trimming blade (156).

2. Protective cover according to claim 1, wherein the elongated cutting edge (156A) is parallel to the longitudinal axis (A).

3. Protective cover according to claim 1 or 2, wherein the teeth (154A) are perpendicular to the longitudinal axis (A) and wherein the teeth (154A) protrude forwardly with regard to the housing (152).

4. Protective cover according to any one of claims 1 to 3, the shaving cartridge (14) having connecting members (28), wherein the protective cover (15) is provided with a rear opening (158) through which the connecting members (28) of the shaving cartridge (14) covered by the protective cover (15) are accessible for the connection to a razor handle (12).

5. Protective cover according to claim 4, wherein the housing (152) comprises a front face (152F) and a rear face (152R), the trimming blade (156) and the comb (154) being provided onto the front face (152F).

6. Protective cover according to claim 5, wherein the rear opening (158) is provided onto the rear face (152R).

7. Protective cover according to claim 5 or 6, wherein

the housing (152) comprises an upper part (153A) and a lower part (153B), said comb (154) being provided on said upper part (153A) and said trimming blade (156) being located between the upper part (153A) and the lower part (153B).

8. Protective cover according to claim 7, wherein a cavity (153) is provided between the upper part (153A) and the lower part (153B) of the housing (152).

9. Protective cover according to any one of the claims 1 to 8, further provided with a rearwardly skin contacting surface (166) located rearward the trimming blade (156), the trimming blade (156) being inclined with regard to a plane (P) tangential to the rearwardly skin contacting surface (166).

10. Protective cover according to any one of the claims 1 to 9, wherein the trimming blade (156) is fixedly and unreleasably mounted in the housing (152).

11. Protective cover according to claim 9, wherein the trimming blade (156) is rivet mounted in the housing (152).

12. Protective cover according to any one of claims 1 to 8, wherein the trimming blade (156) is movably mounted in the housing (152).

13. Protective cover according to any one of the claims 1 to 12, wherein several trimming blades are provided on the housing (152).

14. Protective cover according to any one of the claims 1 to 13, wherein the housing (152) comprises a back ventilation opening (151).

15. Protective cover according to any one of the claims 1 to 14, further provided with several combs (154).

16. A shaving assembly including a cartridge and the protective cover (15) according to any one of the claims 1 to

15, said shaving cartridge (14) having one or more shaving blades (16) each provided with a cutting edge (16A), wherein the protective cover (15) is able to cover at least the cutting edge (16A) of the one or more shaving blades (16).

17. Shaving assembly according to the claim 16, wherein the protective cover (15) has an opening (160) through which the protective cover (15) is slidable over said shaving cartridge (14) to cover said shaving cartridge (14).

18. Shaving assembly according to the claim 16 or 17, wherein when said protective cover (15) covers the shaving cartridge (14), the trimming blade (156) is parallel to the one or more shaving blades (16).

19. A razor having a razor handle (12) and the shaving assembly according to any one of claims 16 to 18, the shaving cartridge (14) being able to be attached to the razor handle (12).

20. Razor according to the claim 19, the protective cover (15) being provided with a rear opening (158), wherein the razor handle (12) extends through the rear opening (158) when the protective cover (15) is slid onto the shaving cartridge (14) and when the razor handle (12) is attached to the shaving cartridge (14).

21. Razor according to the claim 19 or 20, wherein the shaving cartridge (14) is pivotally attached to the razor handle (12).

22. Razor according to any one of claims 18 to 20, wherein the razor handle (12) extend longitudinally along a longitudinal direction (L), said longitudinal direction (L) being perpendicular to the longitudinal axis (A) of the protective cover.

23. Razor according to any one of claims 19 to 22, wherein the razor handle (12) comprises a lock and release mechanism (20) to attach the shaving cartridge (14) onto the razor handle (12) or to release the shaving cartridge (14) attached to the razor handle (12).

24. A method of shaving wherein a user uses the razor according to anyone of claims 19 to 23, selectively either in a first shaving manner in which the protective cover (15) is removed from the shaving cartridge (14) and the shaving cartridge (14) is used for shaving, or in a second manner in which the protective cover (15) is covering the shaving cartridge (14) and the trimming blade (156) of said protective cover (15) is used for trimming body hair.

25. A method of manufacturing a protective cover comprising a housing (152) which comprises an upper part (153A) and a lower part (153B), which extends longitudinally along a longitudinal axis (A) and which is provided with a comb (154) and at least one trimming blade (156), said trimming blade (156) having an elongated cutting edge (156A) parallel to the longitudinal axis (A) and said comb (154) having several teeth (154A) protruding forwardly with regard to said trimming blade (156), the method comprising the steps of

- providing the upper part (153A) having a lower surface (153AB), including securing pins (155) protruding from said lower surface (153AB), and a comb (154) provided with several teeth (154A),
- providing a trimming blade (156) having trimming blade apertures (156') in alignment with said securing pins (155),
- mounting said trimming blade (156) onto the upper part (153A), said securing pins (155) passing through the trimming blade

apertures(156'),

- providing a lower part (153B) having securing apertures (153') in alignment with said securing pins (155),
- mounting the lower part (153B) onto the trimming blade (156), said securing pins (155) passing through the securing apertures (153'),
- forming a crimping head (155A) at one end of each securing pin (155), thereby irremovably riveting both the trimming blade (156) and the upper part (153A) onto the lower part (153B).

26.A method of manufacturing a protective cover comprising a housing (152) which comprises an upper part (153A) and a lower part (153B), which extends longitudinally along a longitudinal axis (A) and which is provided with a comb (154) and at least one trimming blade (156), said trimming blade (156) having an elongated cutting edge (156A) and said comb (154) having several teeth (154A) protruding forwardly with regard to said trimming blade (156), the method comprising the steps of

- providing the upper part (153A) having a lower surface (153AB), including securing pins (155) protruding from said lower surface (153AB), and a comb (154) provided with several teeth (154A),
- providing a trimming blade (156) having trimming blade apertures (156') in alignment with said securing pins (155),
- mounting said trimming blade (156) onto the upper part (153A), said securing pins (155) passing through the trimming blade apertures(156'),
- providing the lower part (153B) having securing apertures (153') in alignment with said securing pins (155),
- mounting the lower part (153B) onto the trimming blade (156),

said securing pins (155) passing through the securing apertures (153'),

- forming a crimping head (155A) at one end of each securing pin (155), thereby irremovably riveting both the trimming blade (156) and the upper part (153A) onto the lower part (153B).

27. The method according to the claim 25 or 26, further comprising the steps of

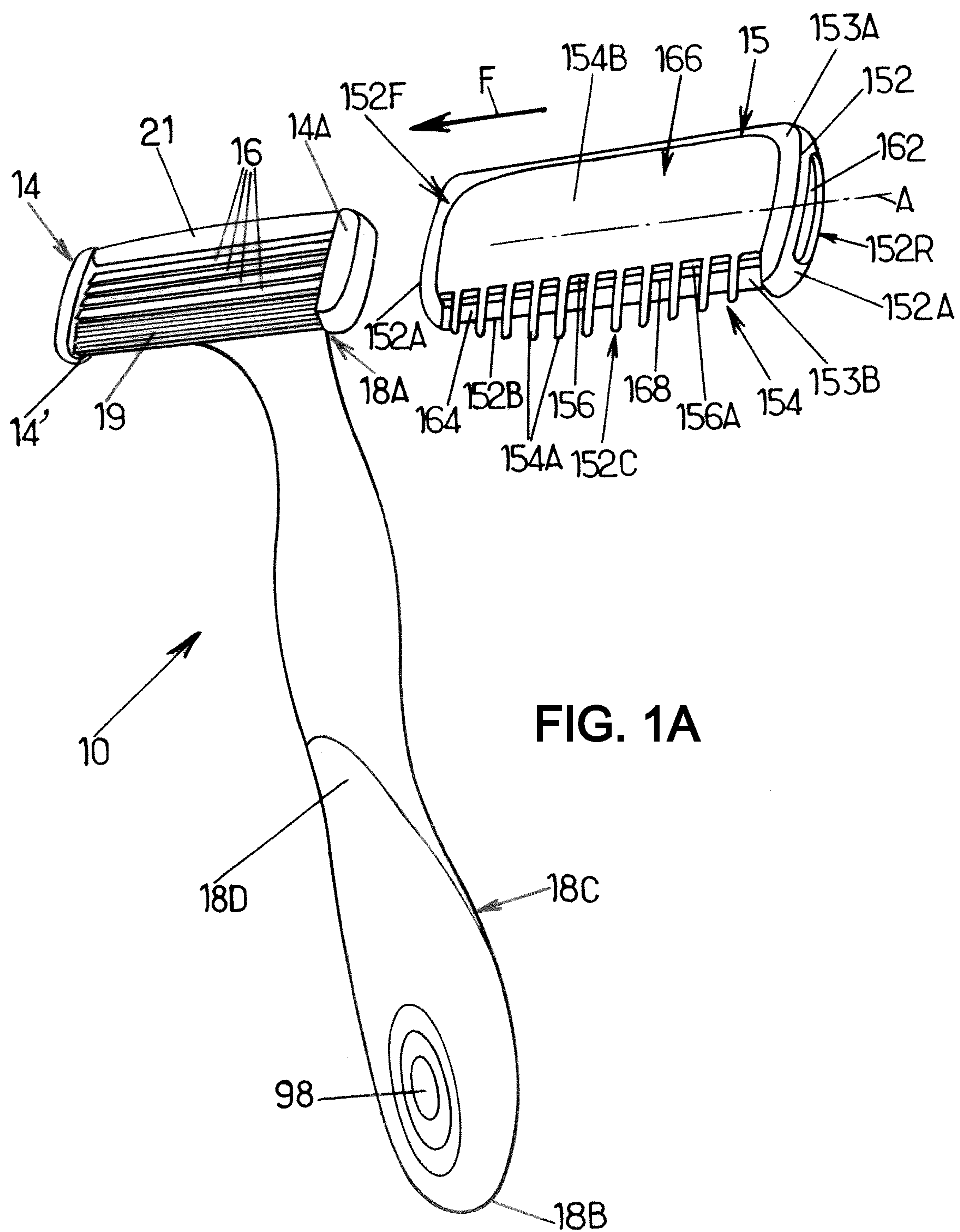
- providing a spacer (153C) having holes (153'C) in alignment with said securing pins (155),
- mounting said spacer (153C) onto said trimming blade (156), said securing pins (155) passing through said holes (153'C),
- providing a second trimming blade (156) having trimming blade apertures (156') in alignment with said securing pins (155),
- mounting said second trimming blade (156) onto said spacer (153C), said securing pins (155) passing through said trimming blade apertures (156'), and
- forming a crimping head at one end of each securing pin (155), thereby riveting together the trimming blades (156), the spacer (153C) and the upper part (153A) onto the lower part (153B).

28. The method according to anyone of claims 25 to 27, further comprising the steps of

- providing a securing pins member (155') comprising the securing pins (155),
- fixedly attaching the securing pins member (155') onto the lower surface (153AB) of the upper part (153A).

29. The method according to anyone of claims 25 to 28, further comprising the step of molding the comb (154) in a high polished surface mould cavity.

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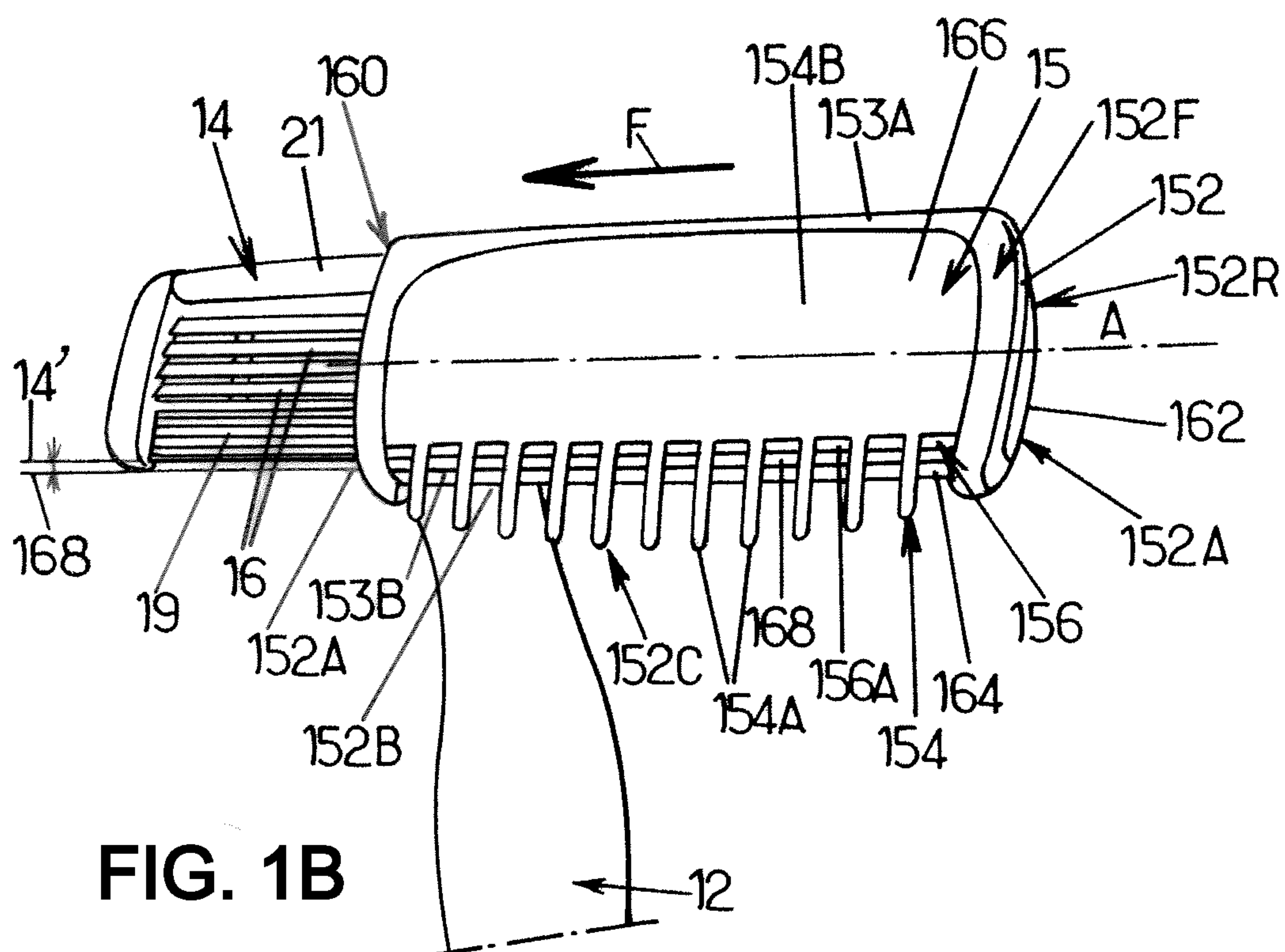


FIG. 1B

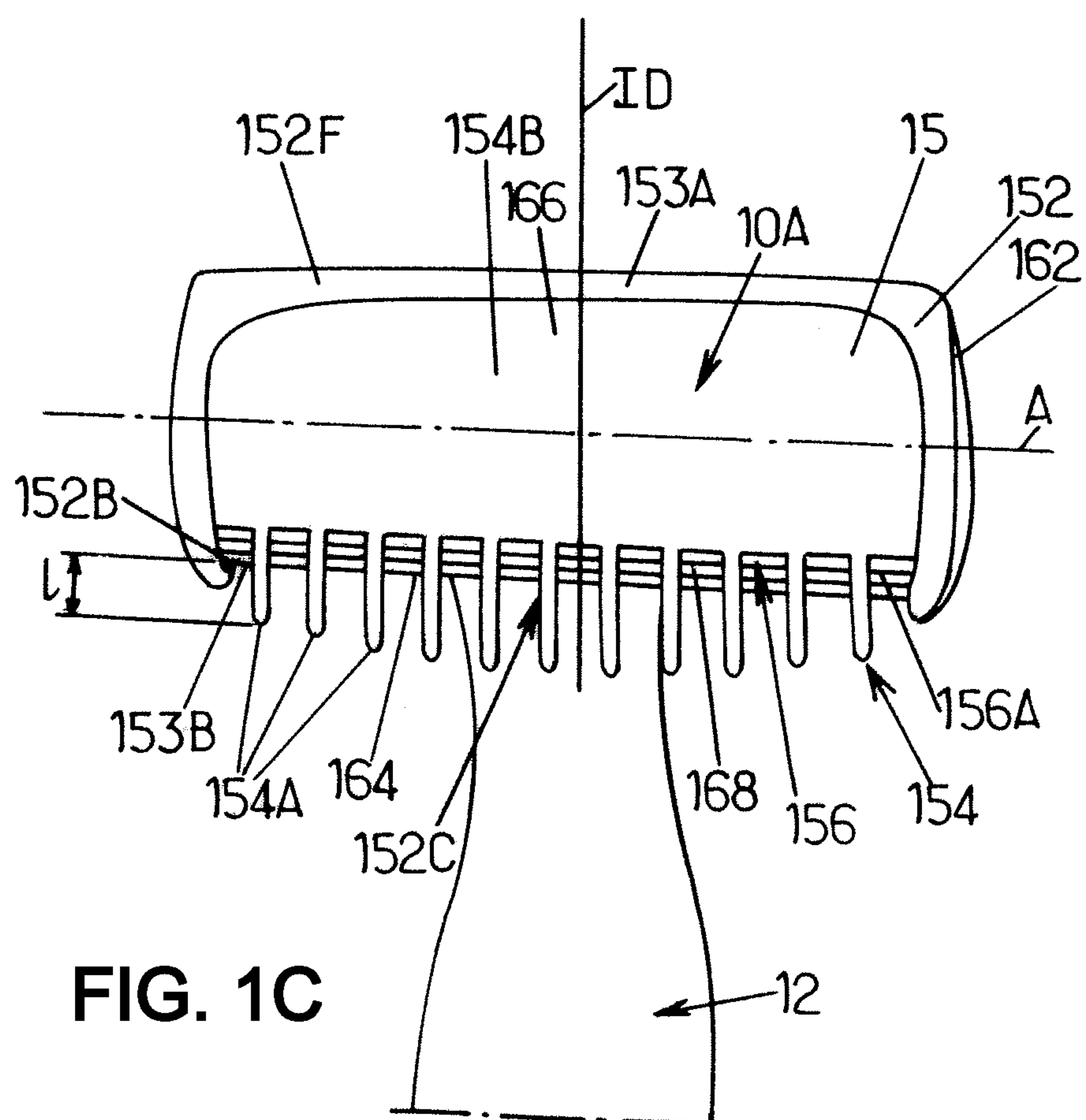


FIG. 1C

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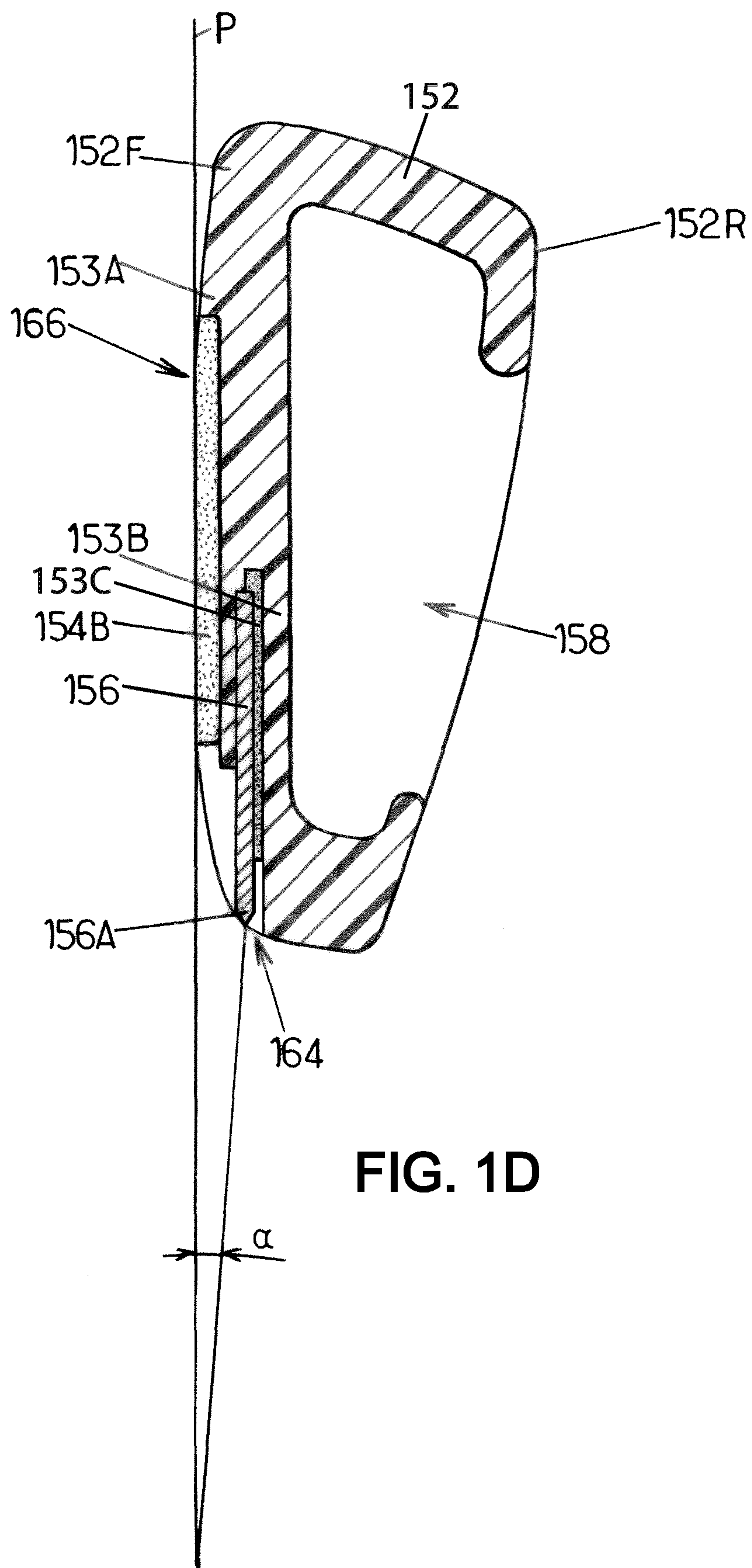


FIG. 1D

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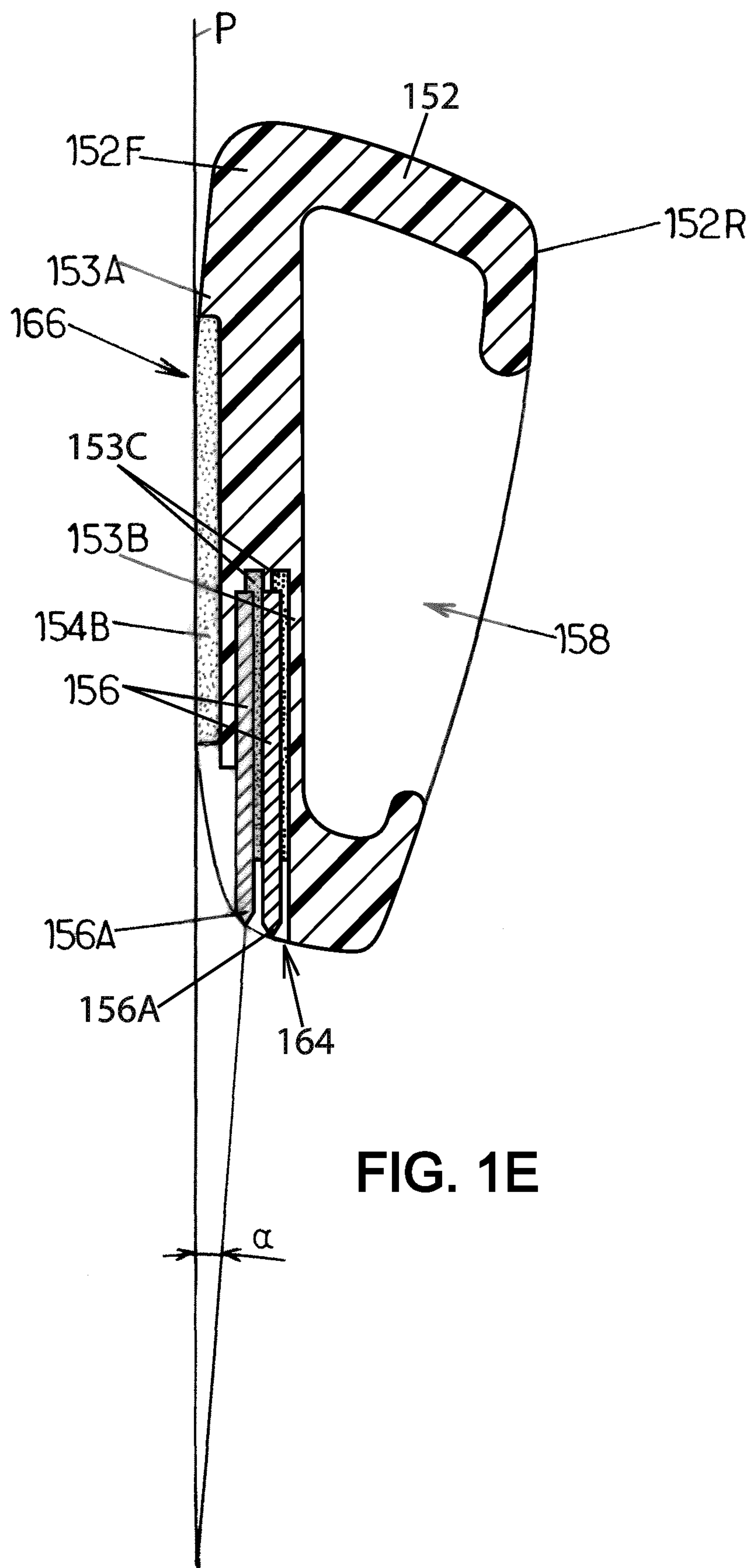
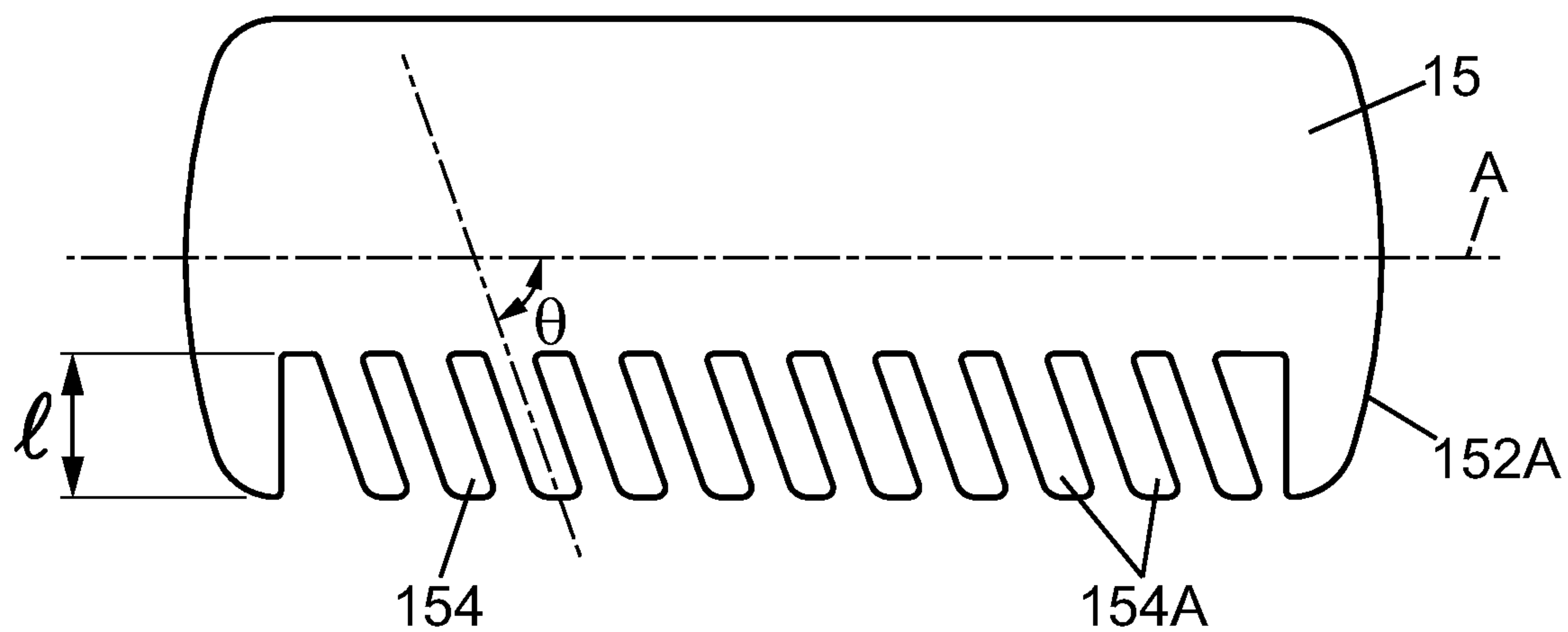
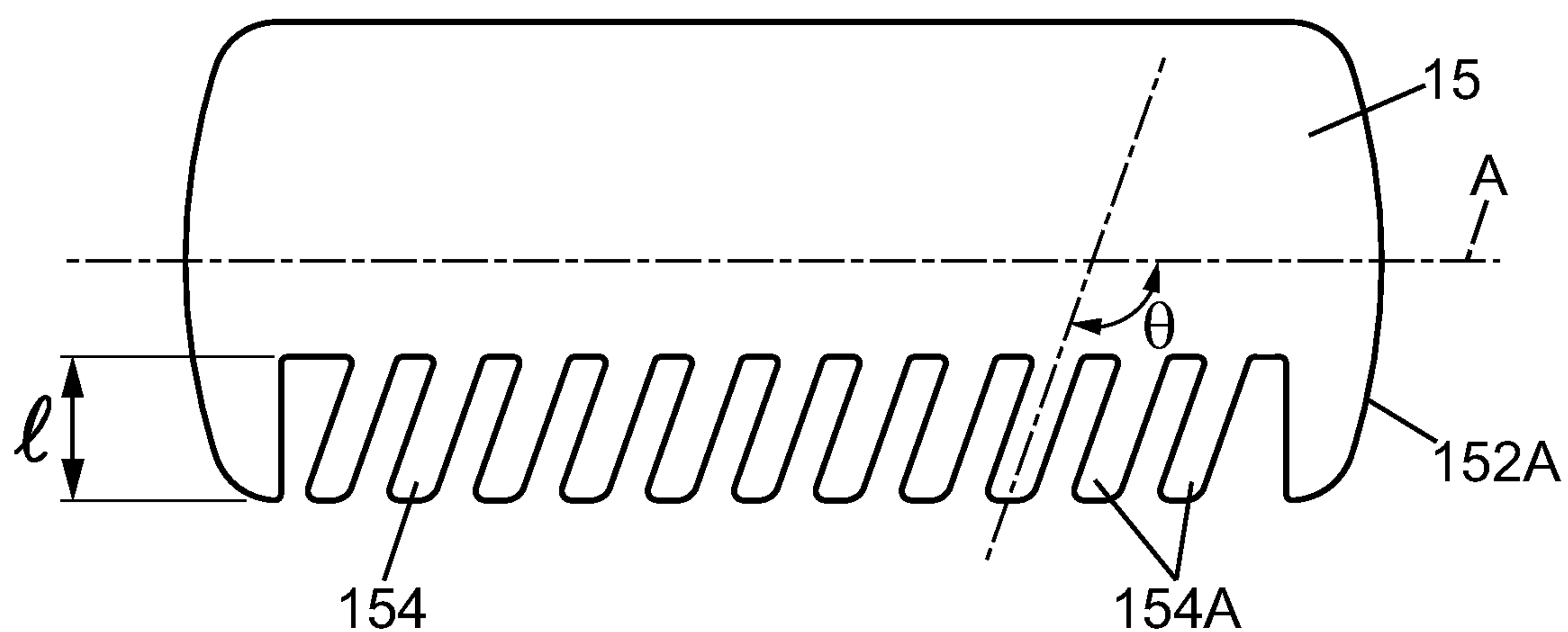
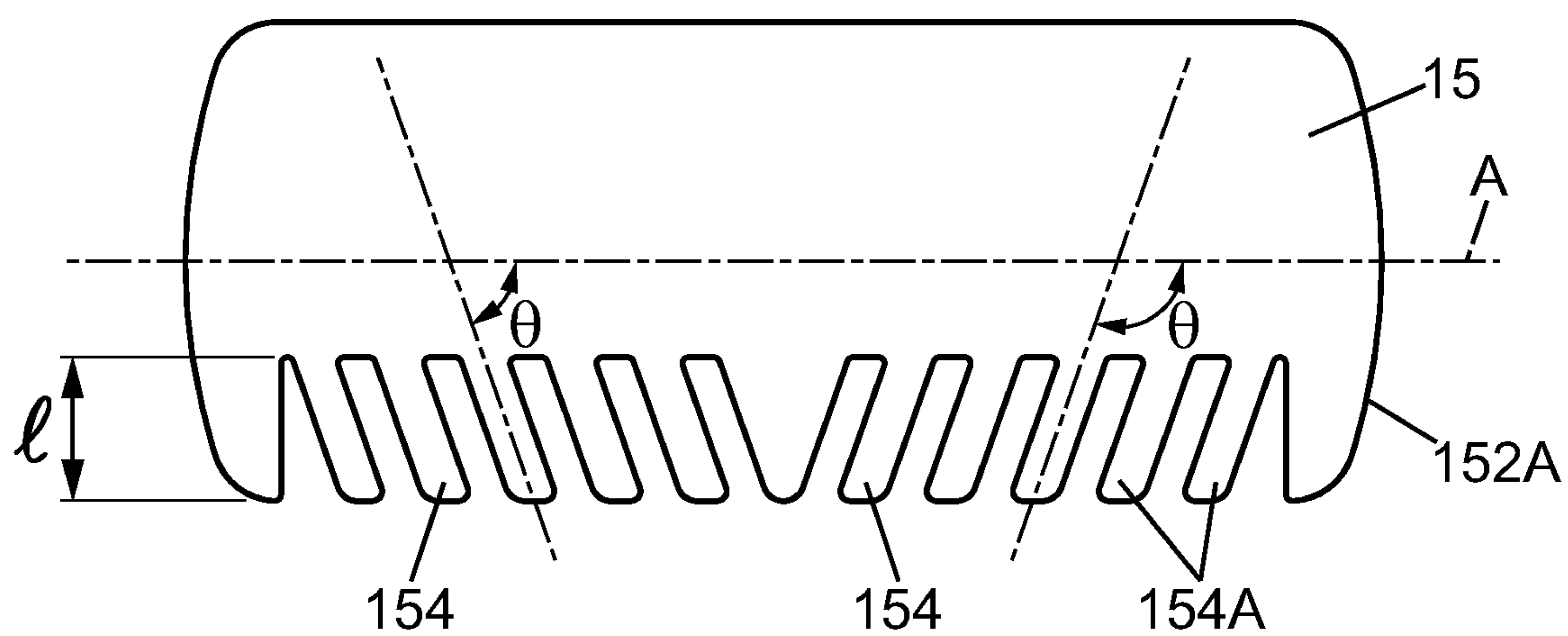
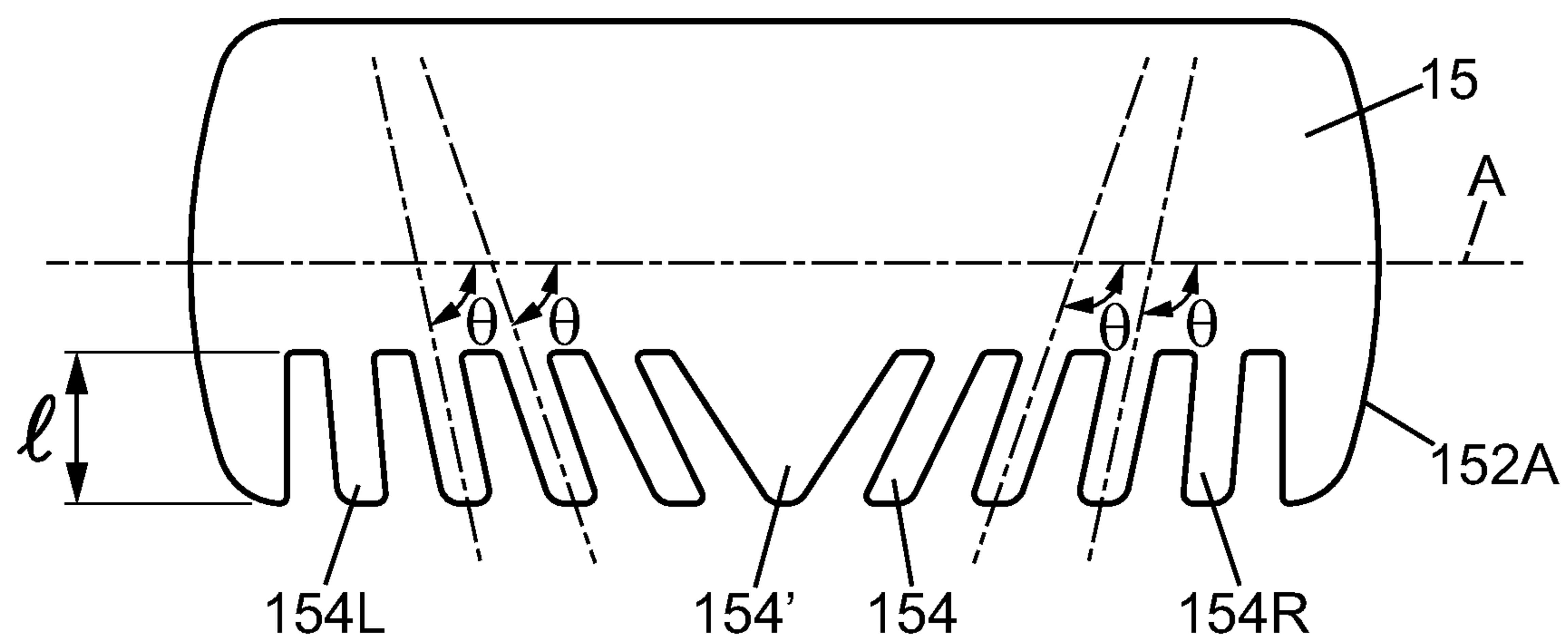
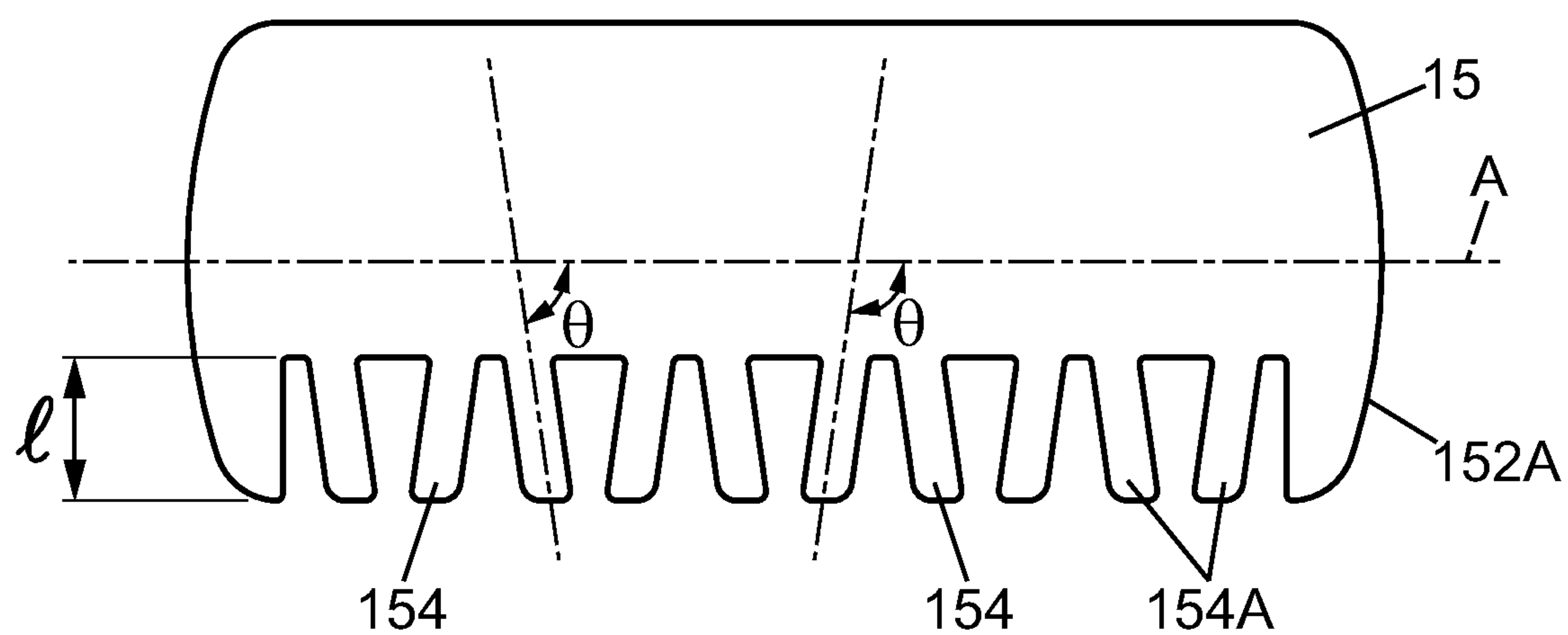


FIG. 1E

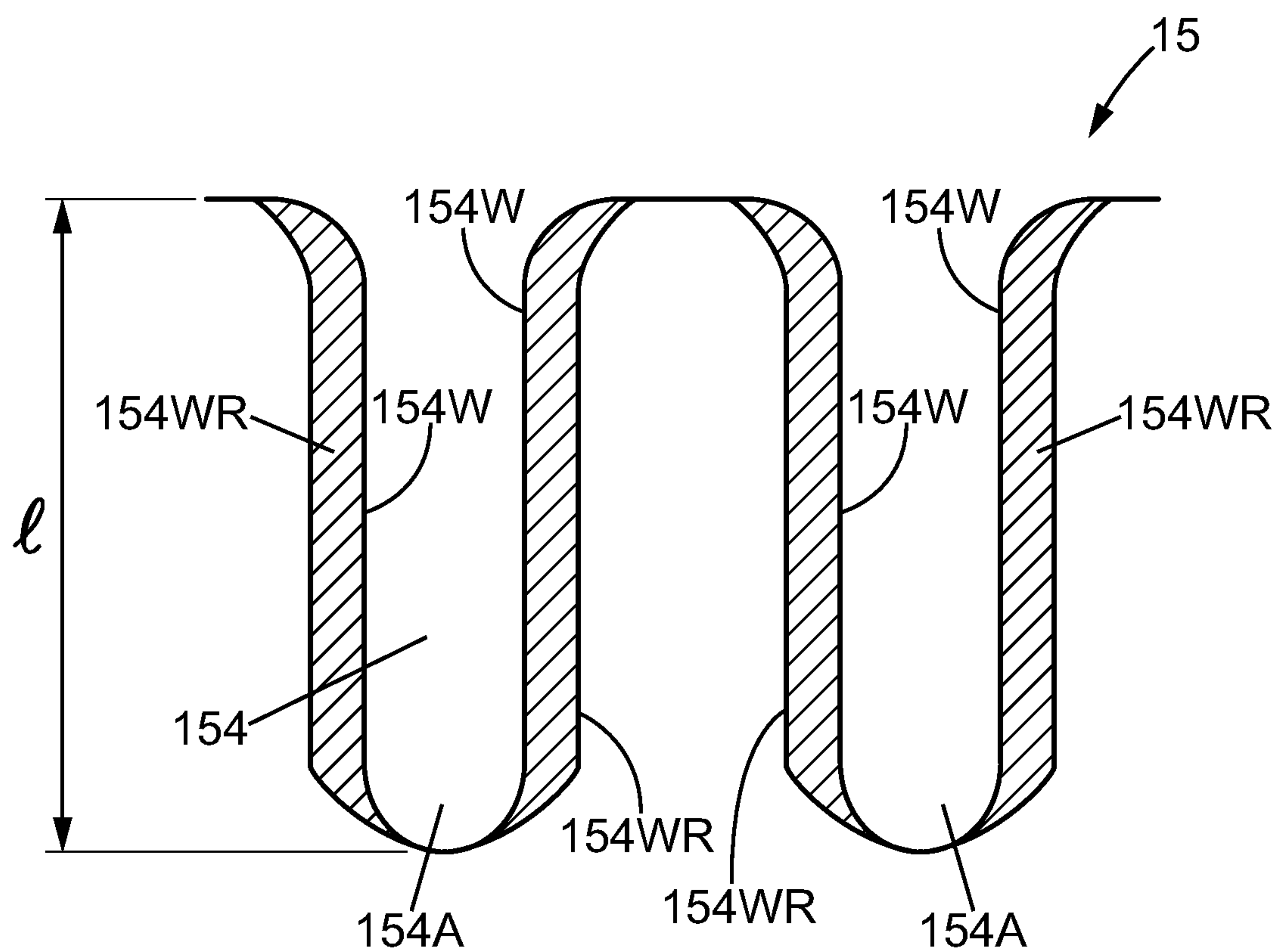
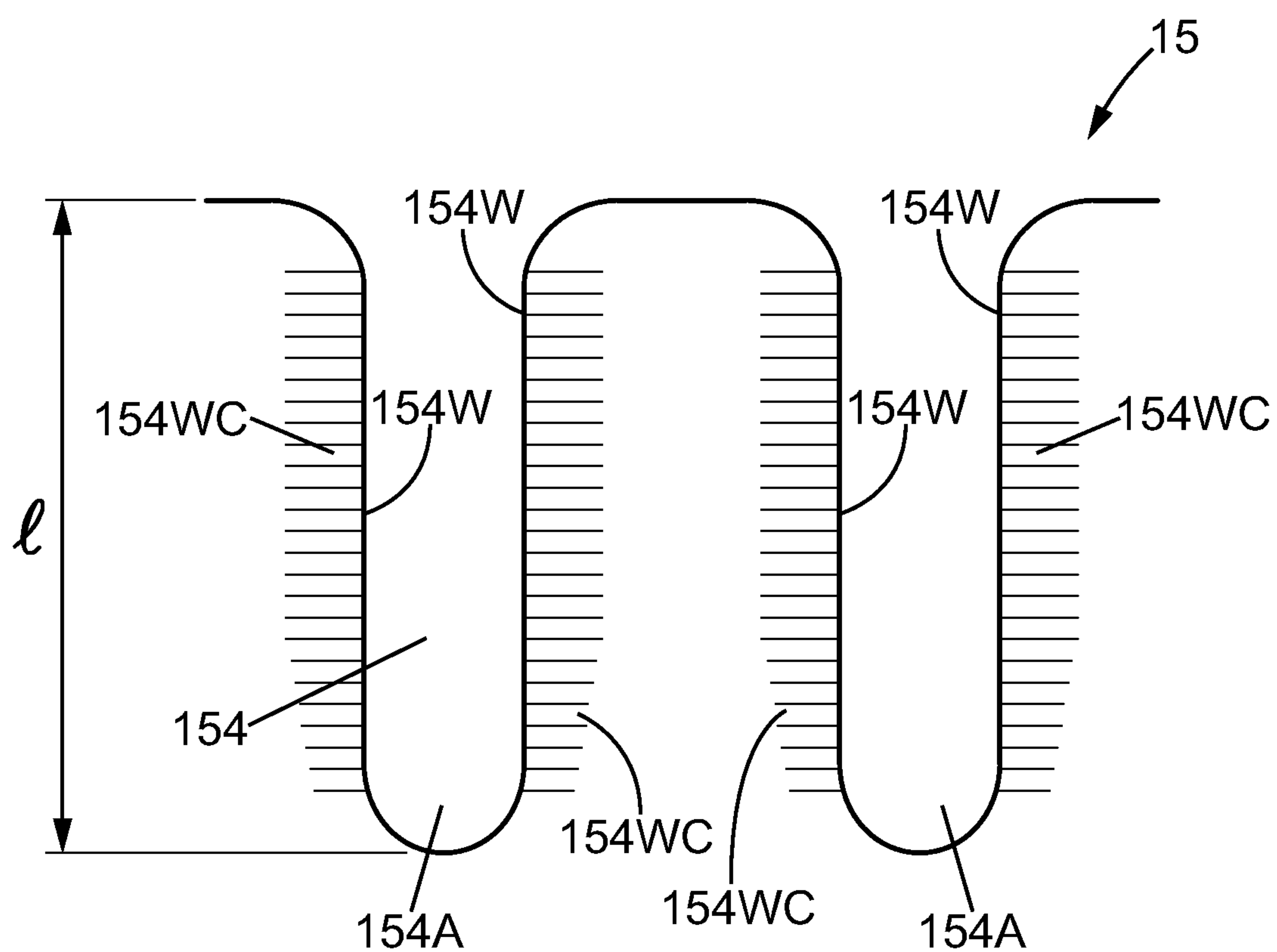
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FIG. 1F**FIG. 1G****FIG. 1H**

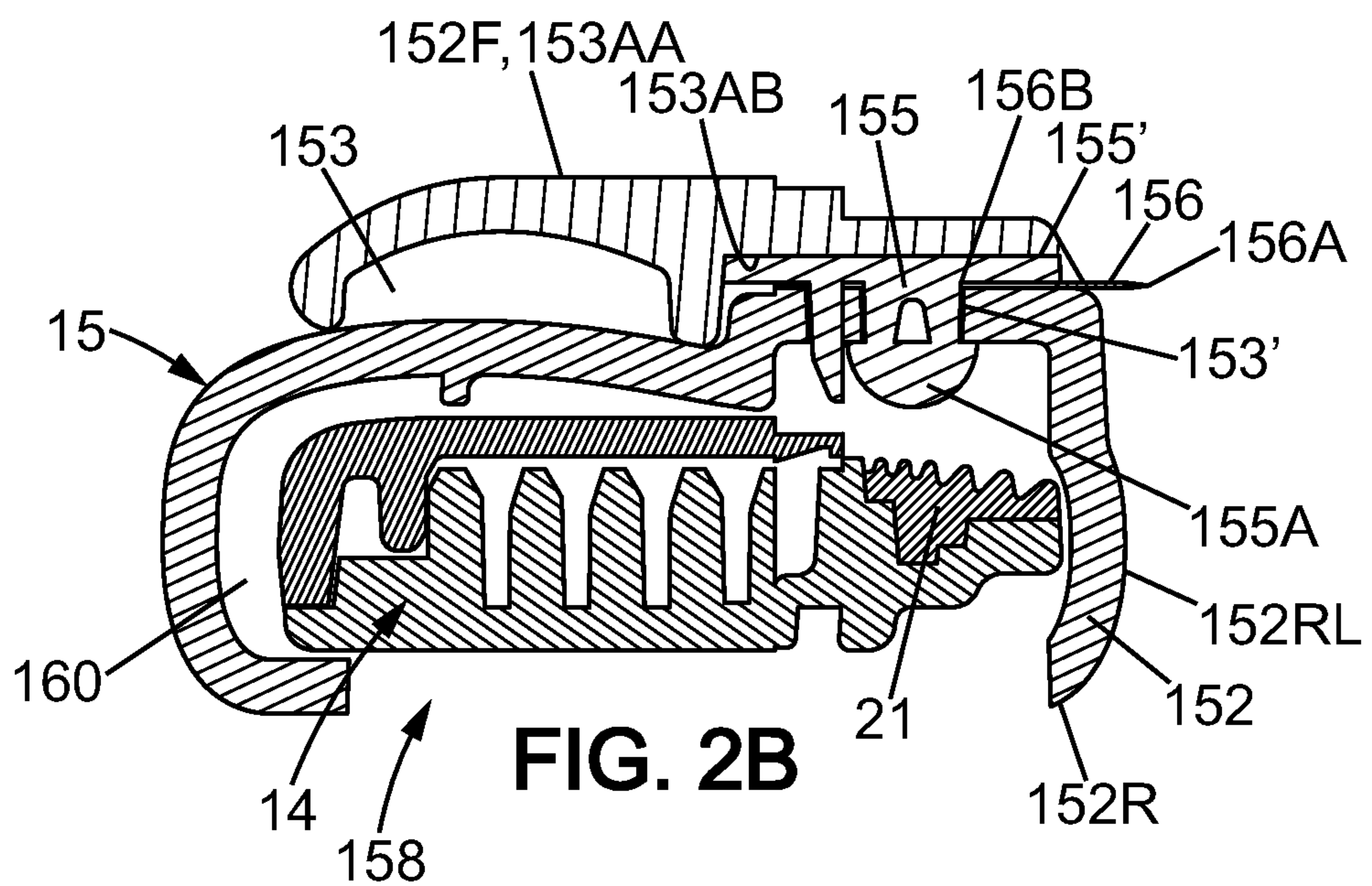
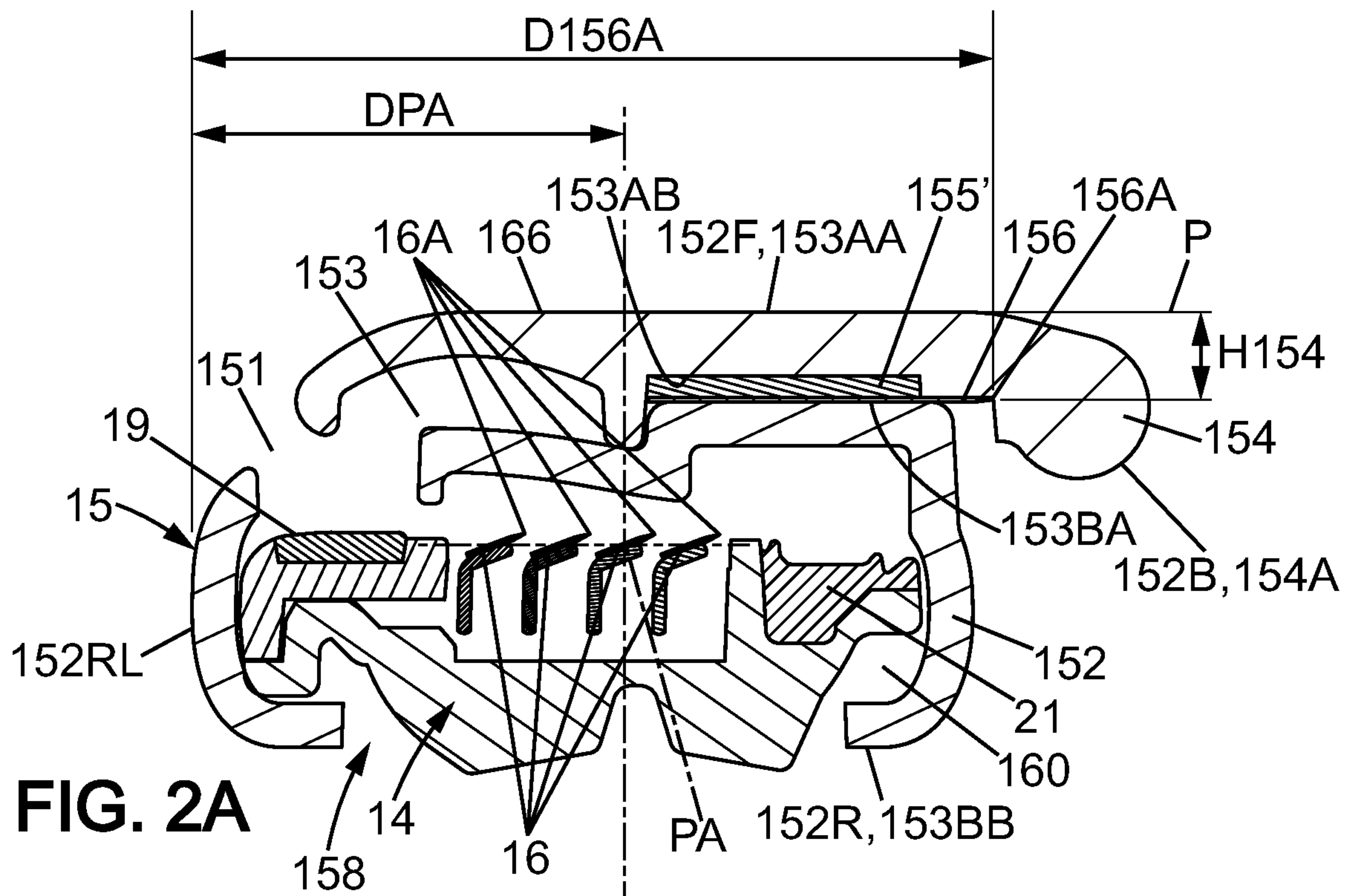
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FIG. 1I**FIG. 1J**

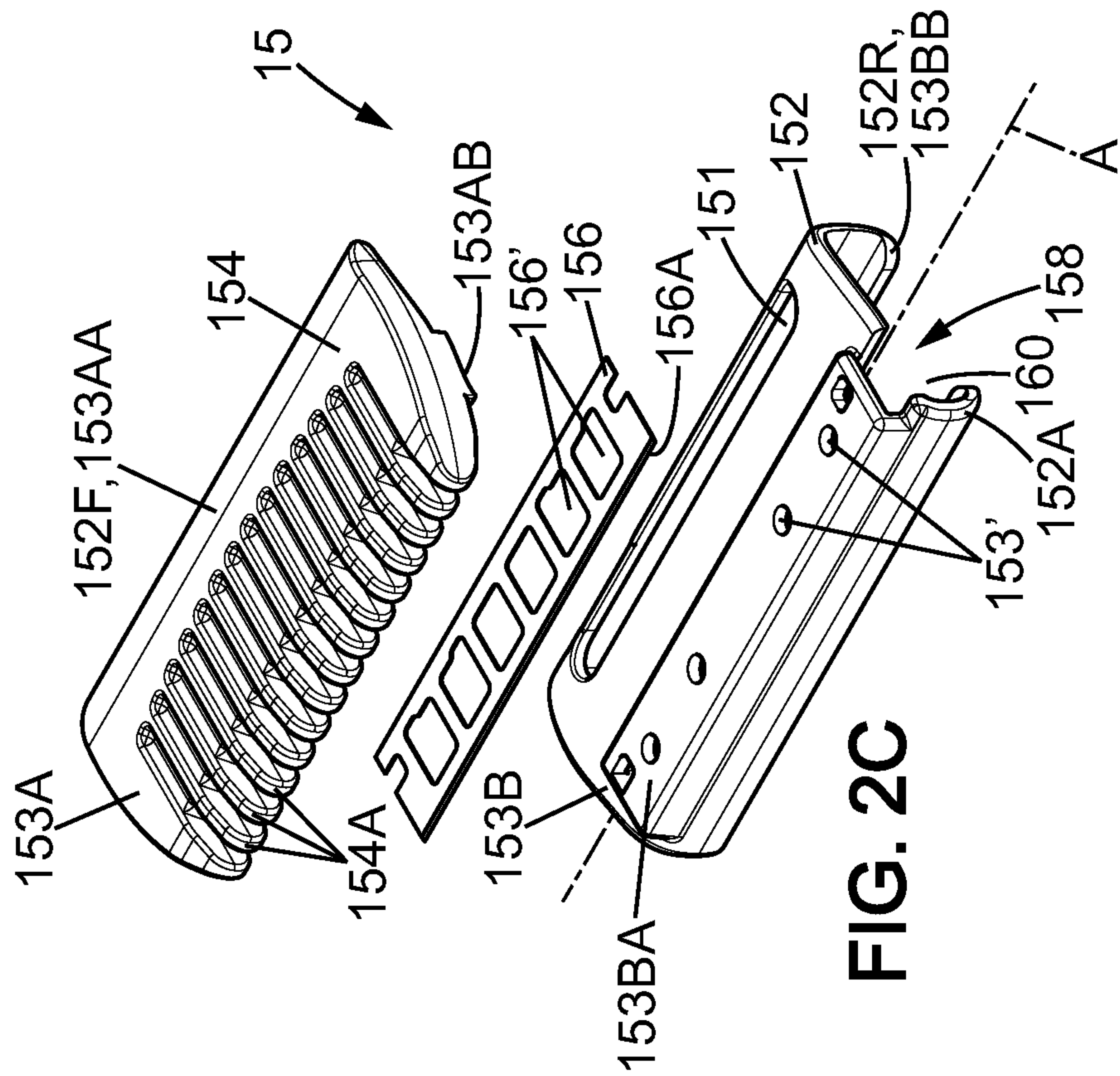
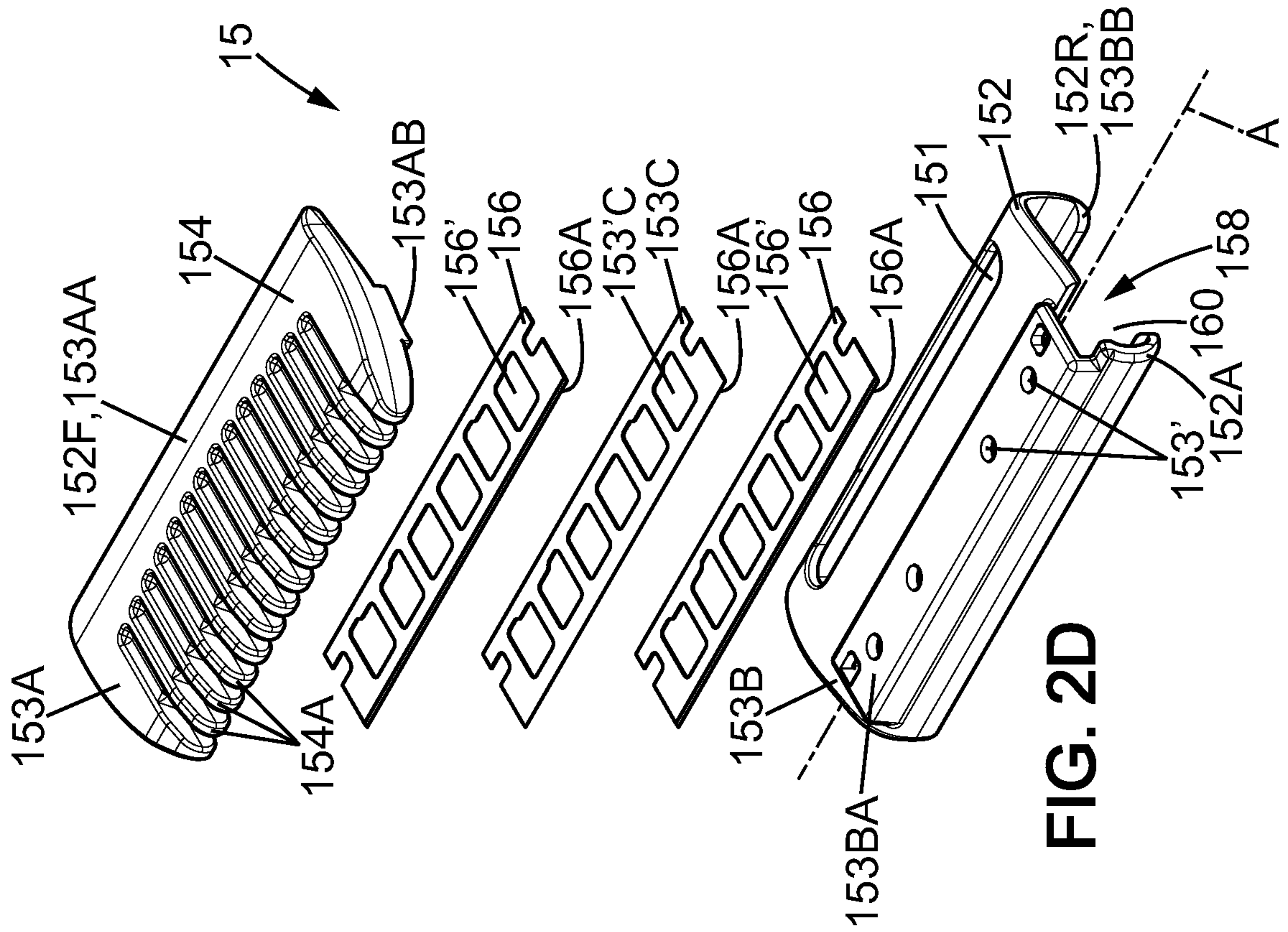
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**FIG. 1K****FIG. 1L**

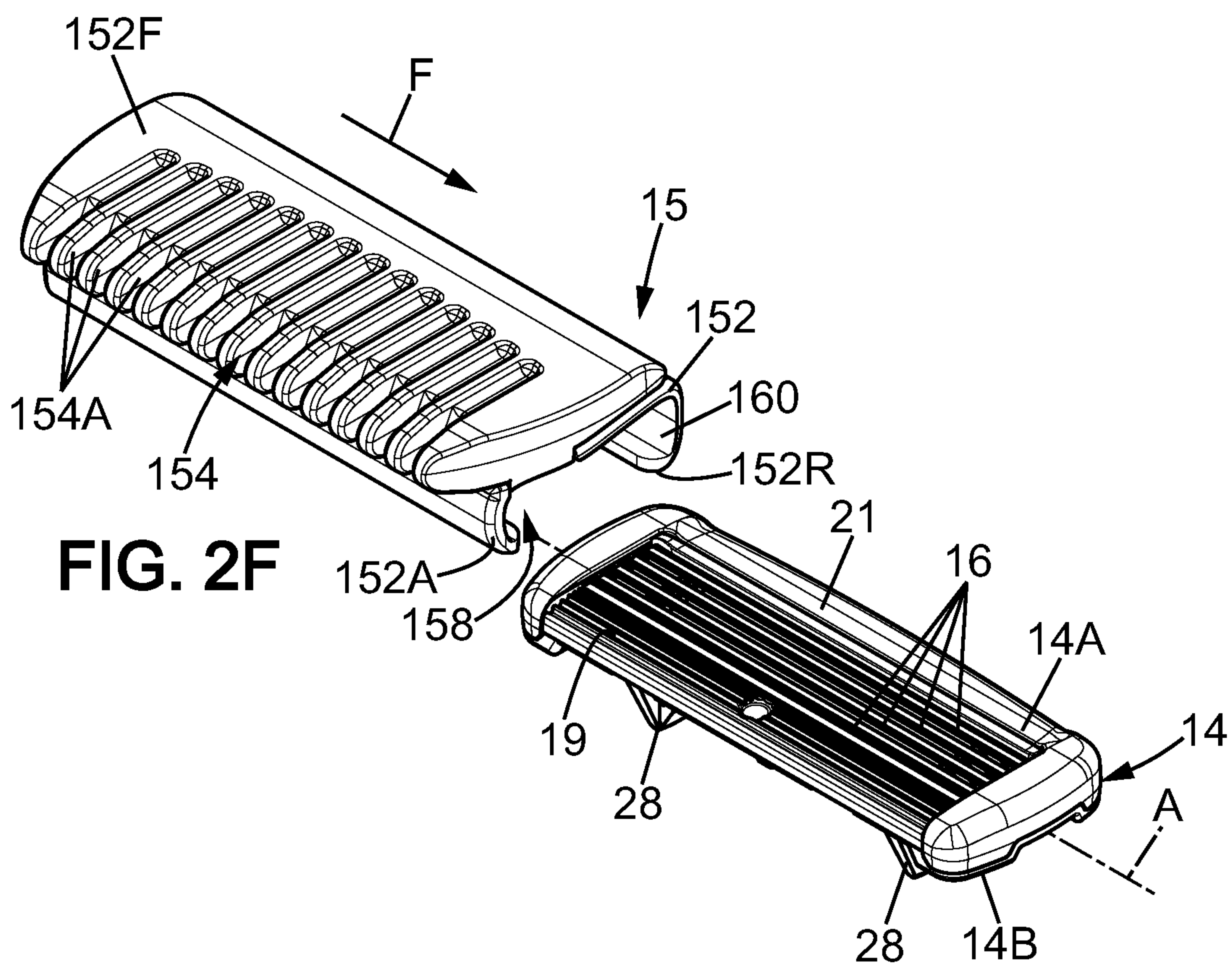
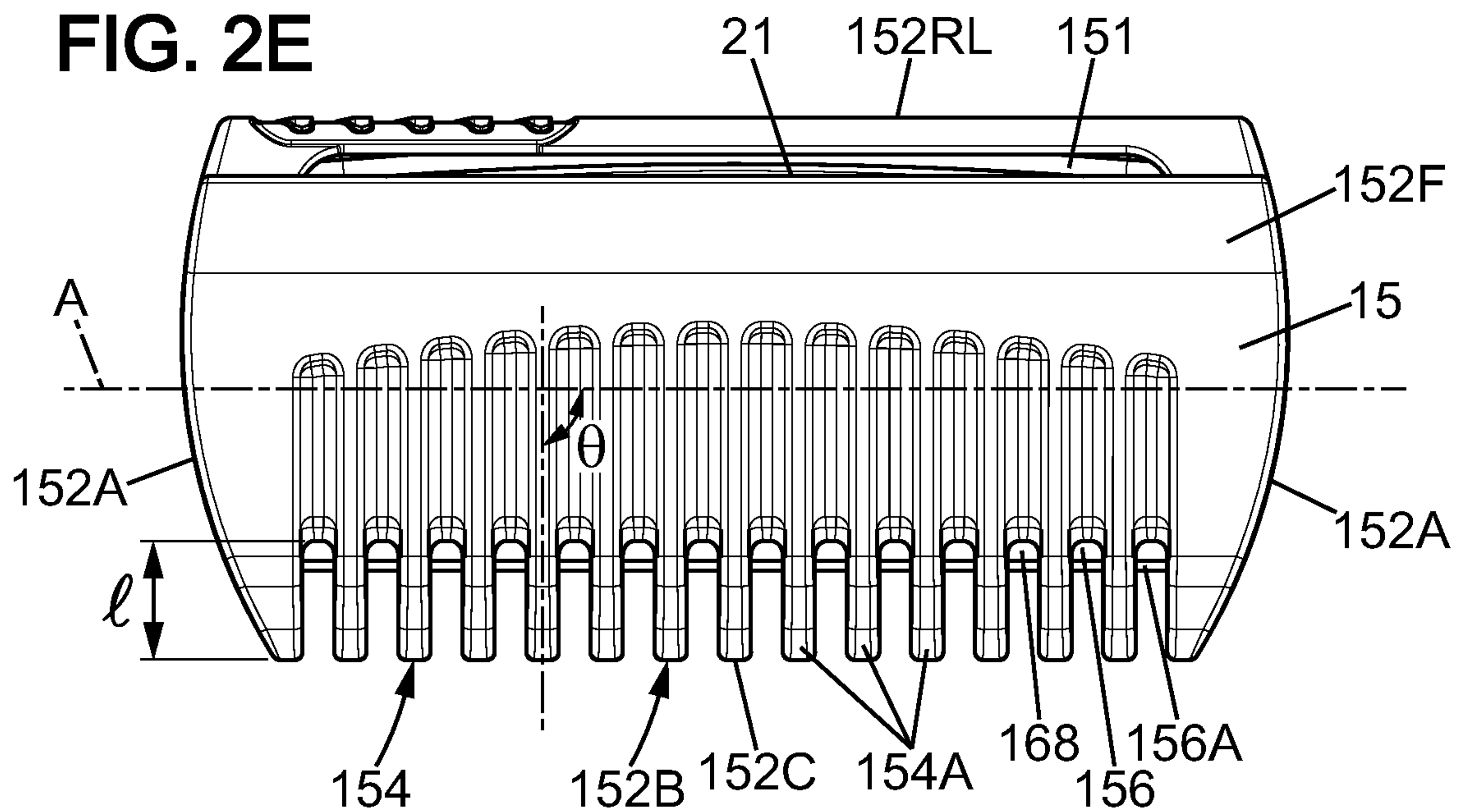
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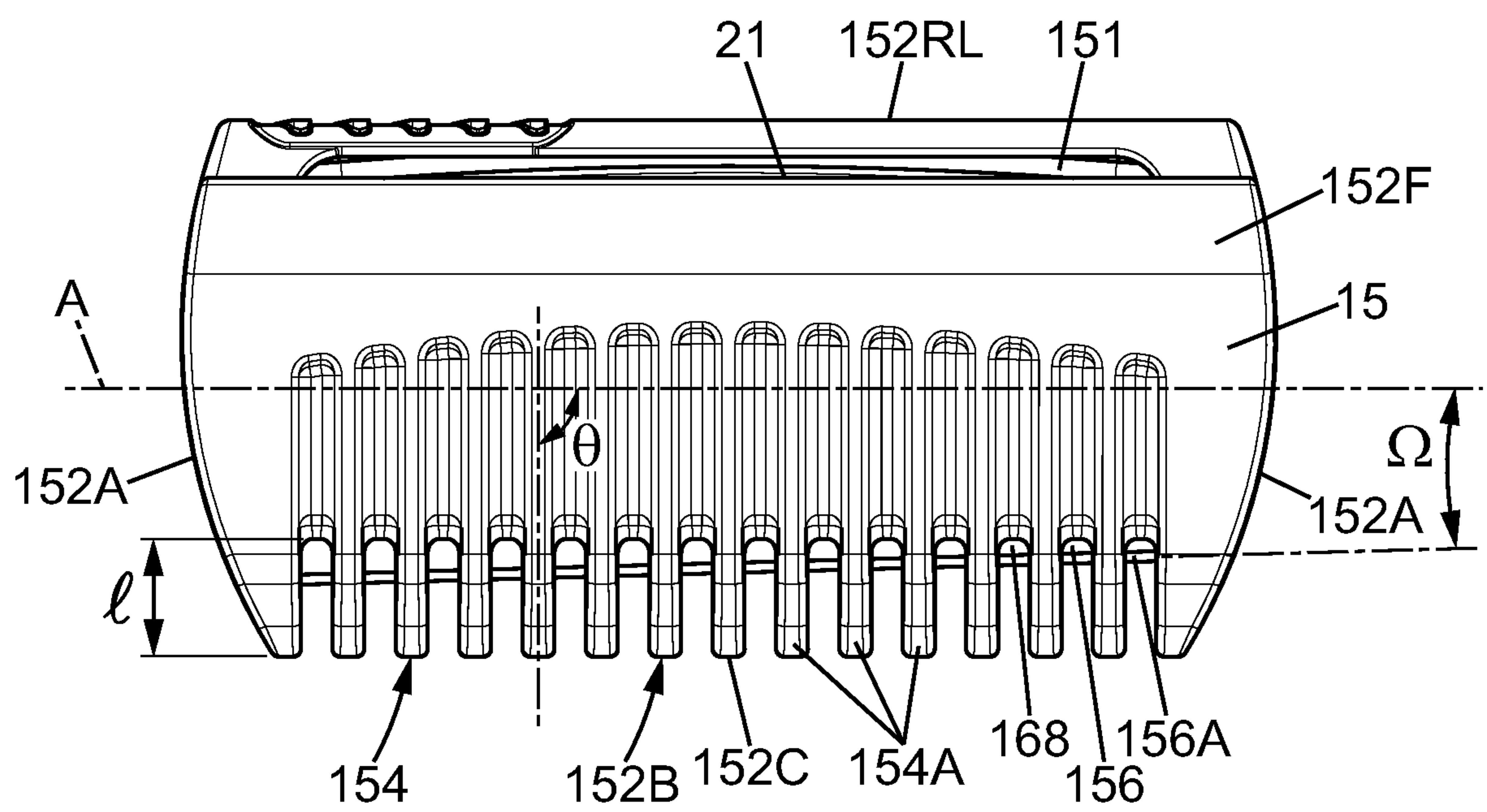
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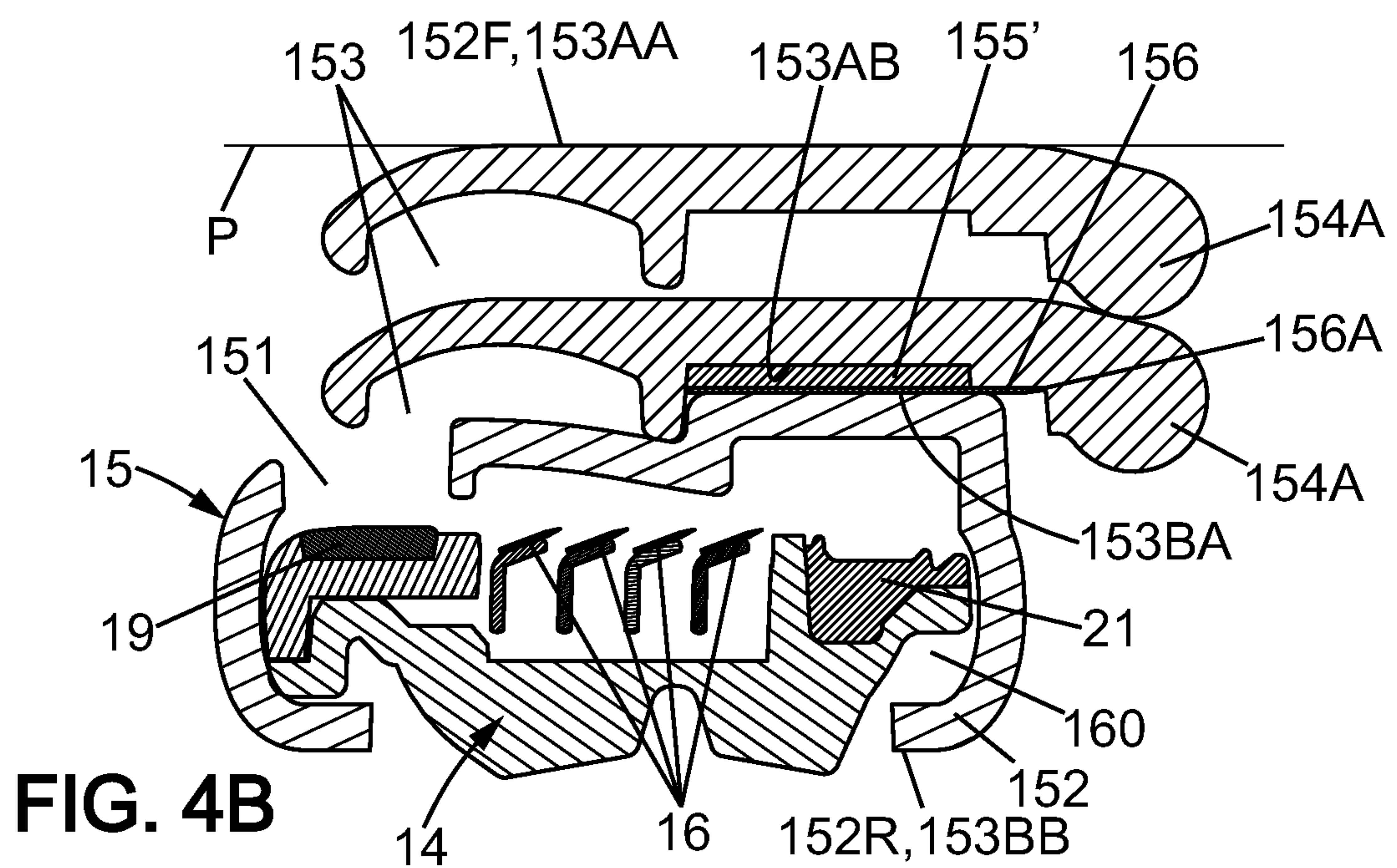
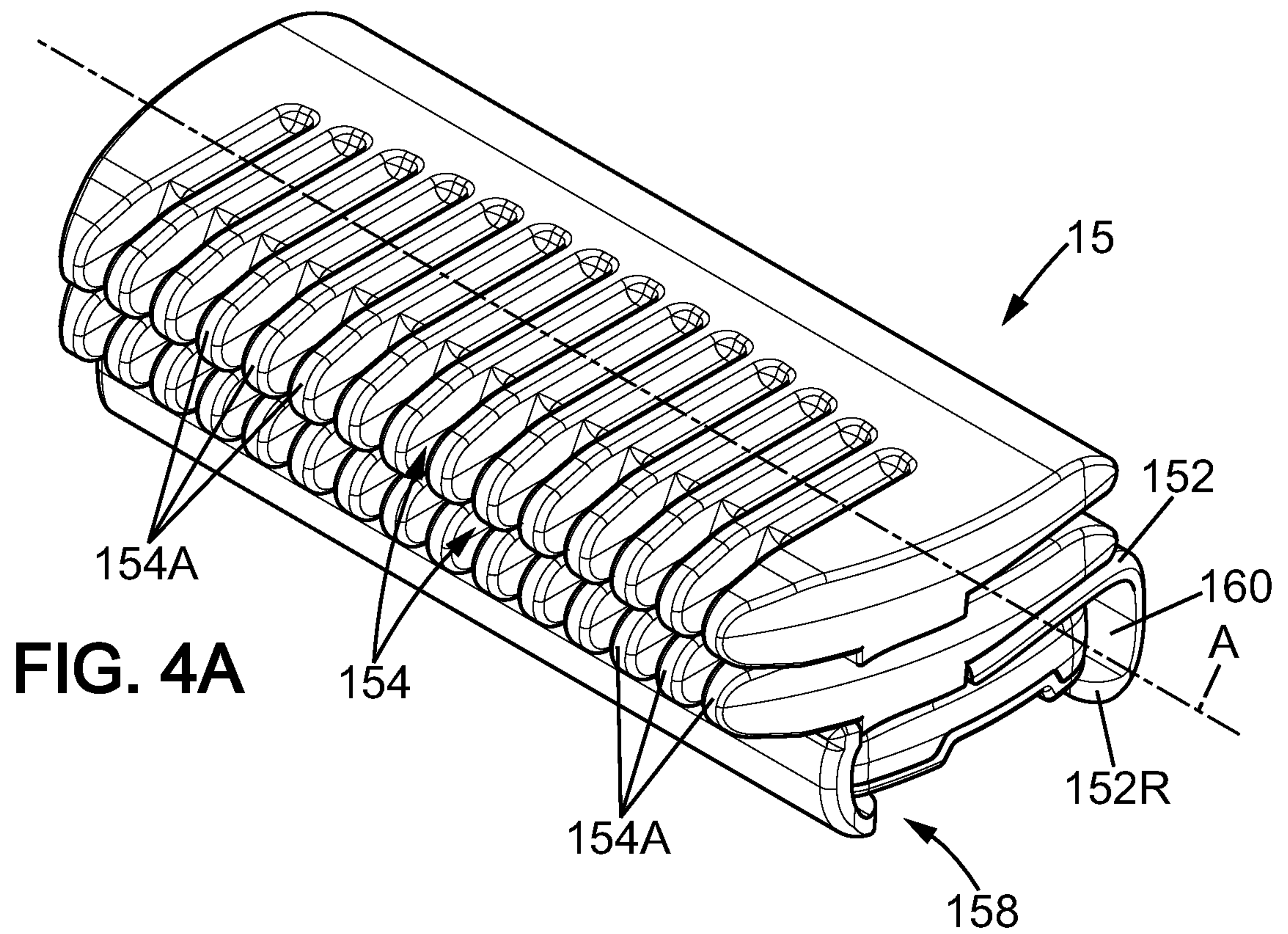
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FIG. 2E

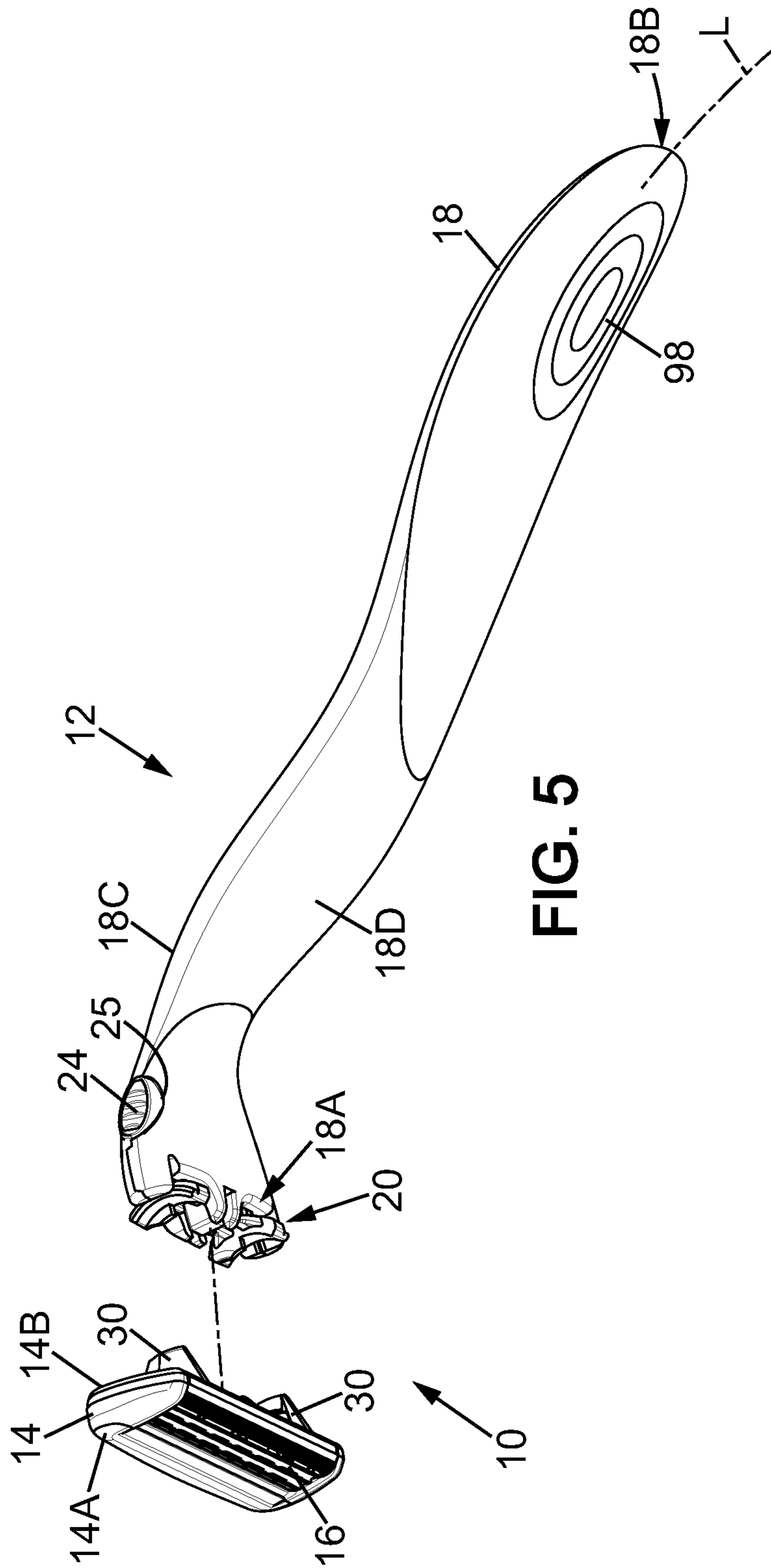
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**FIG. 3**

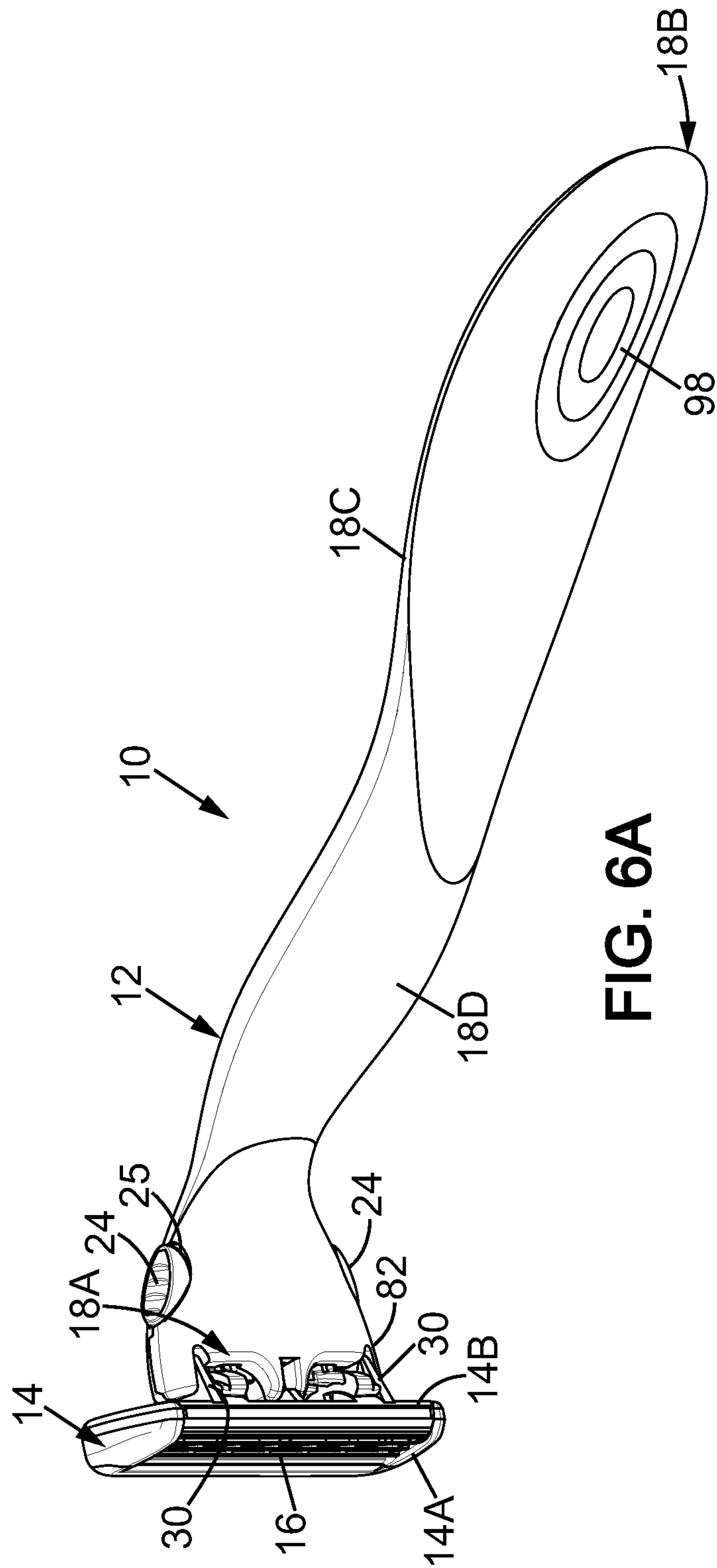
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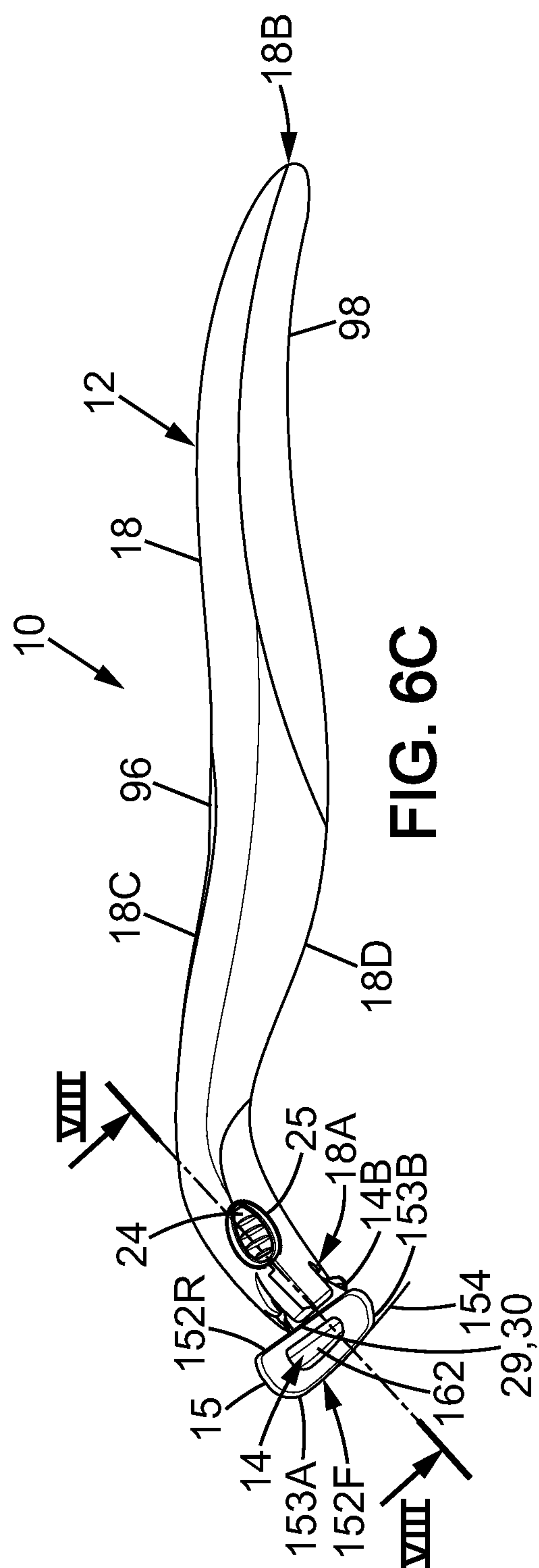
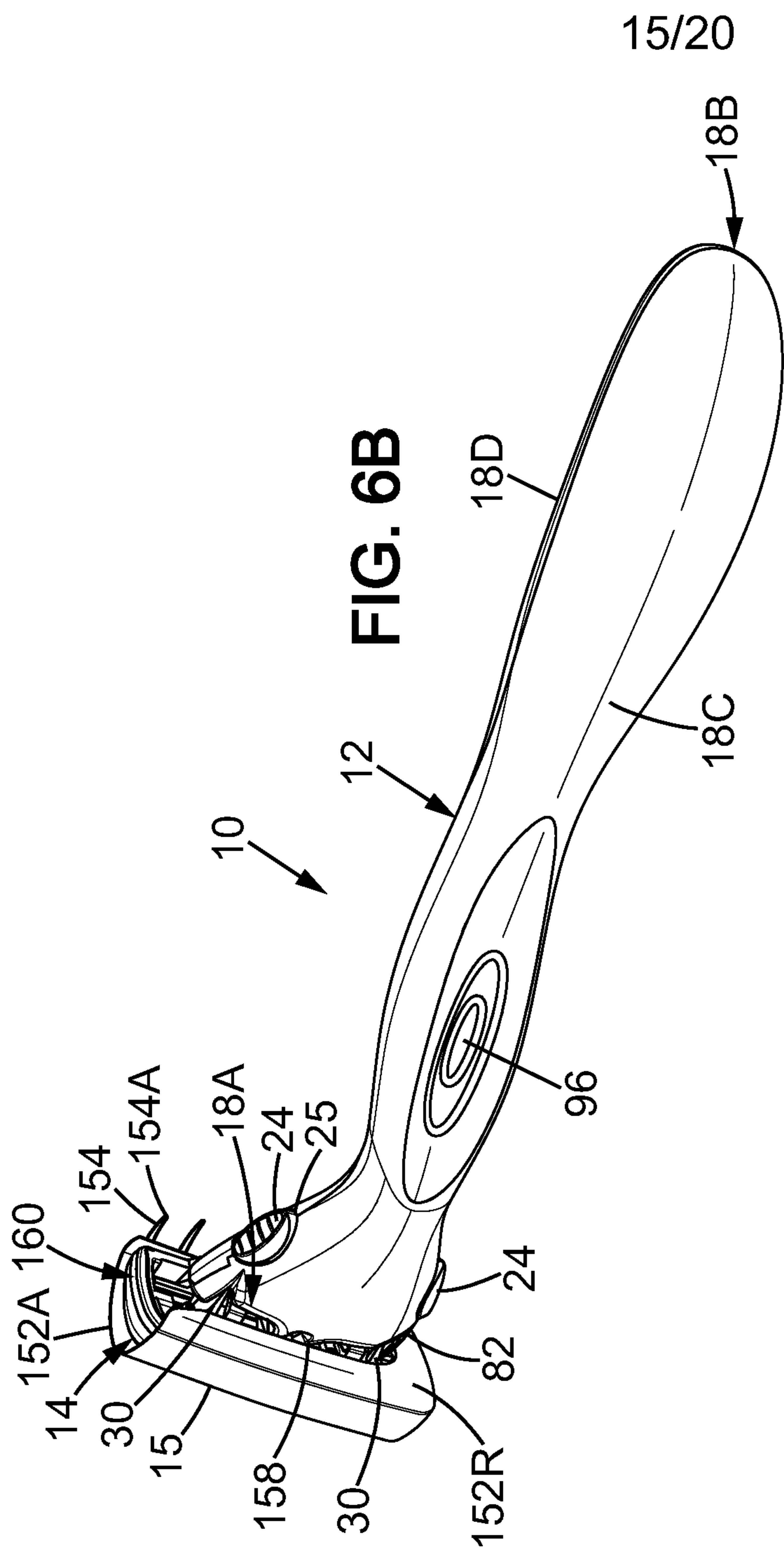


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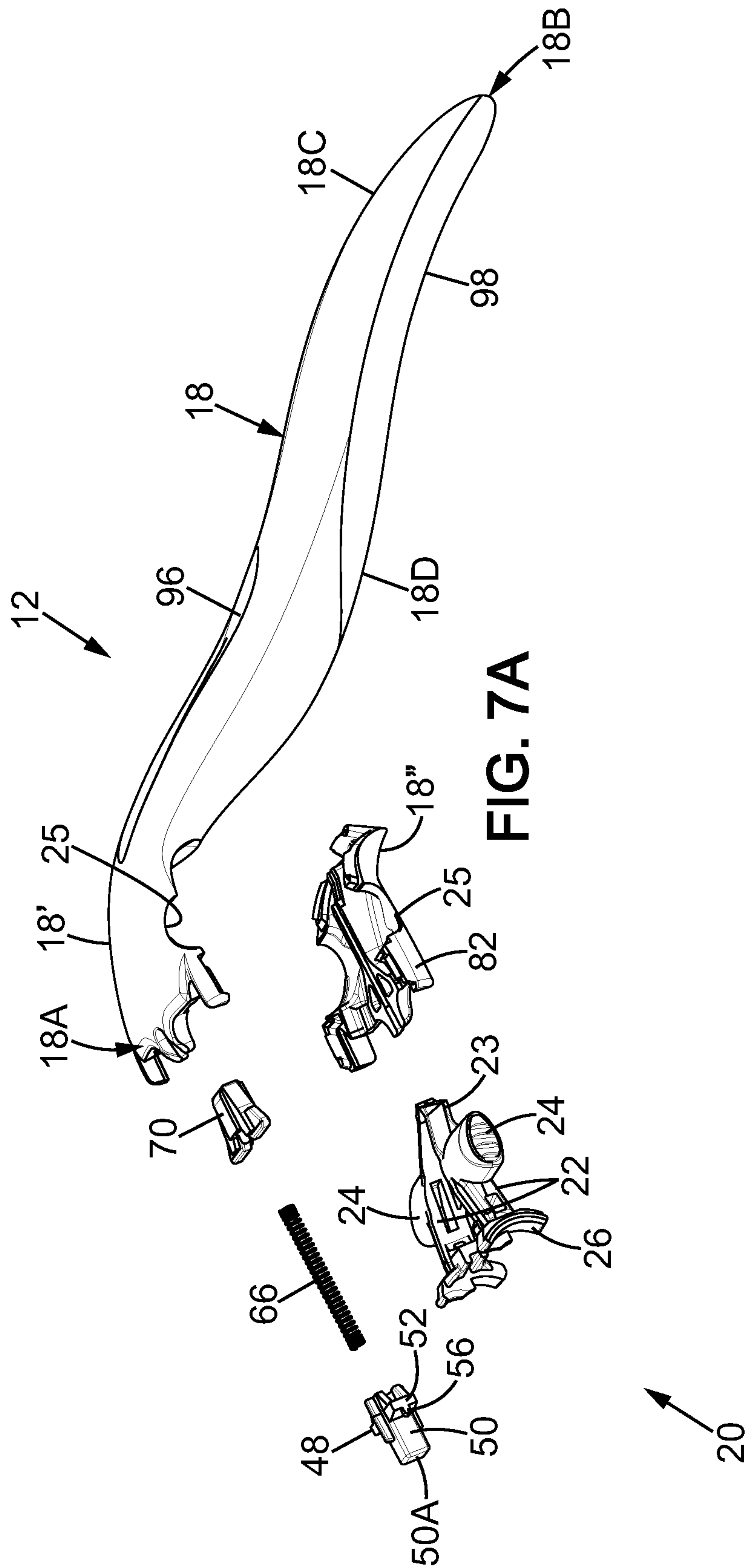


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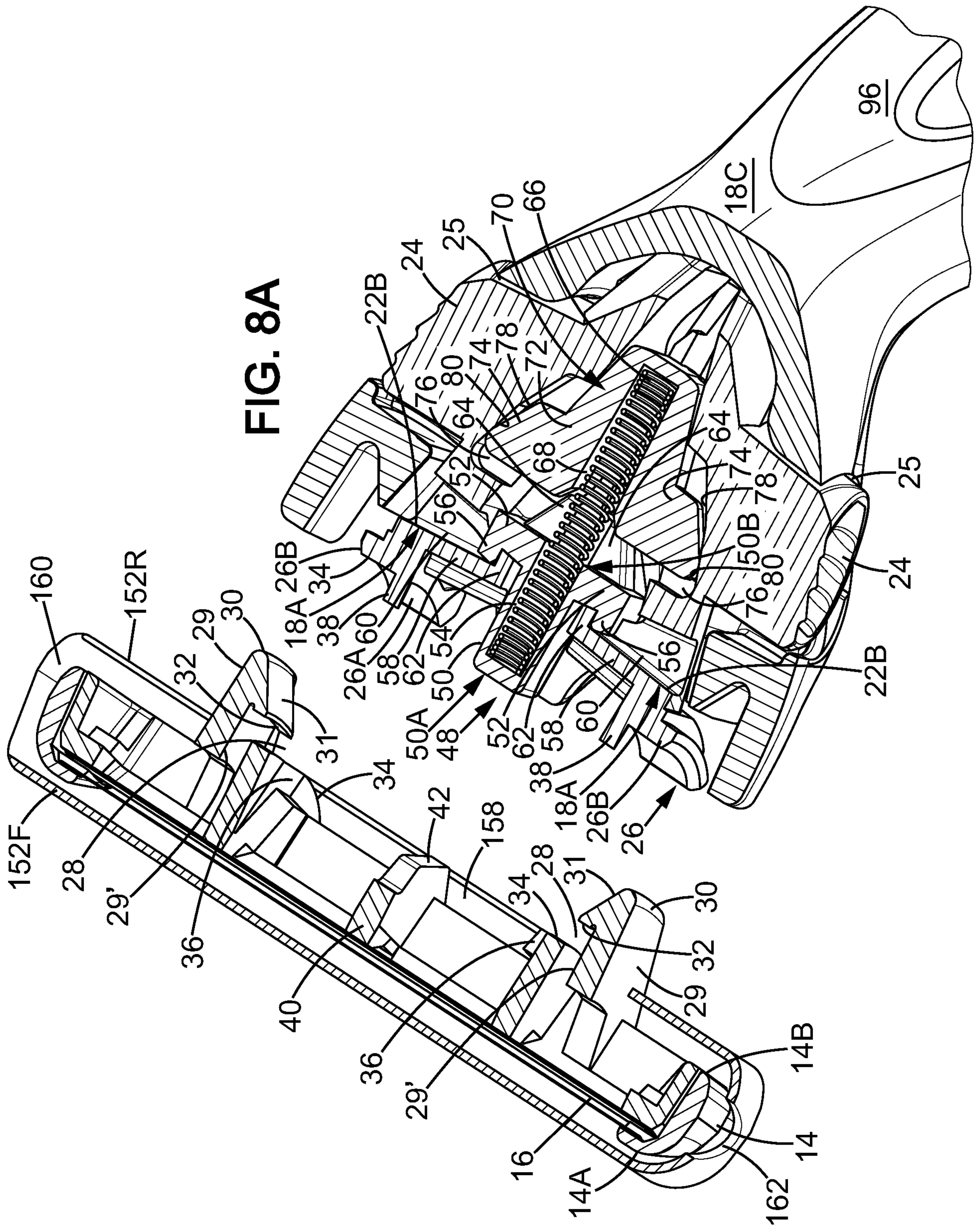


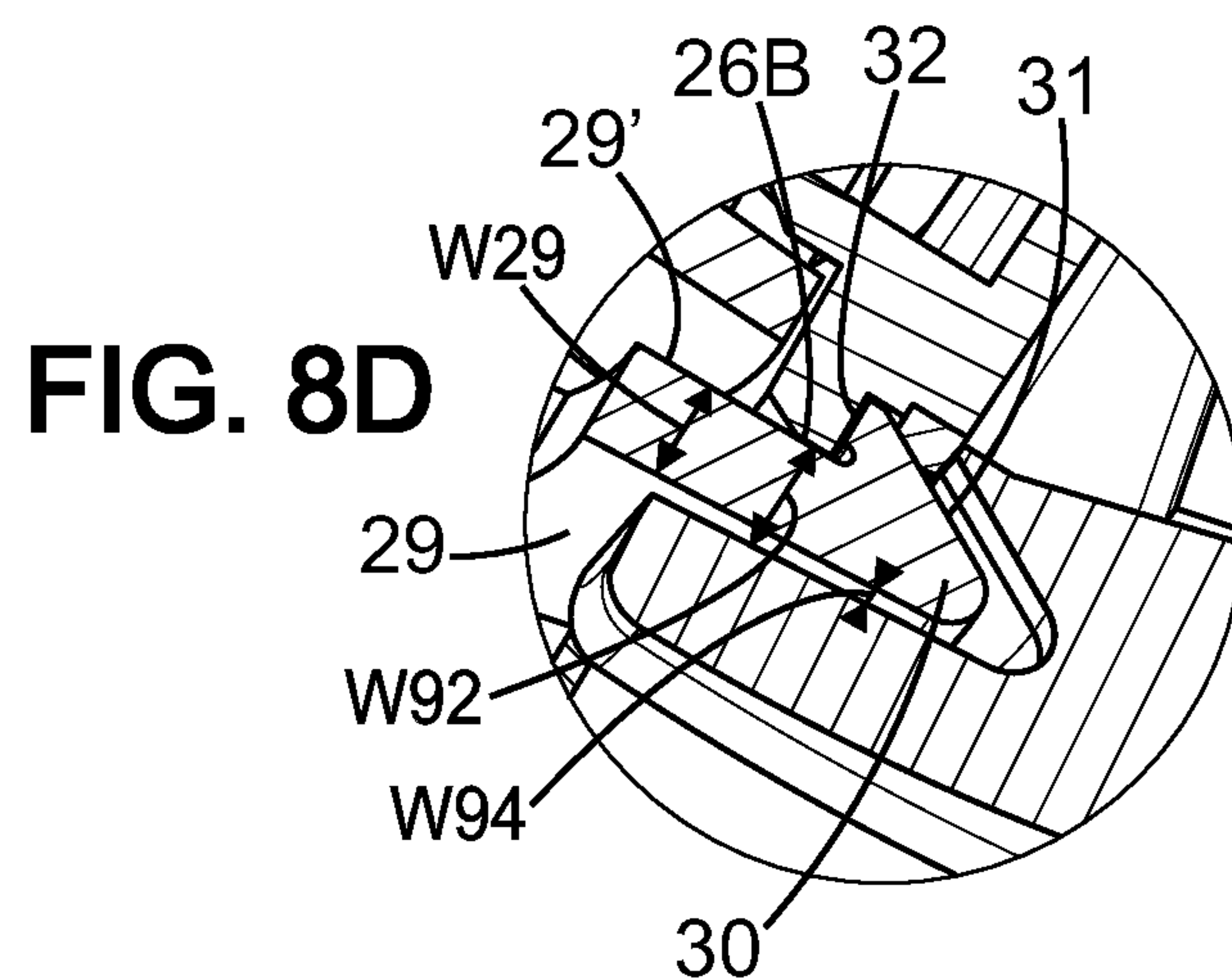
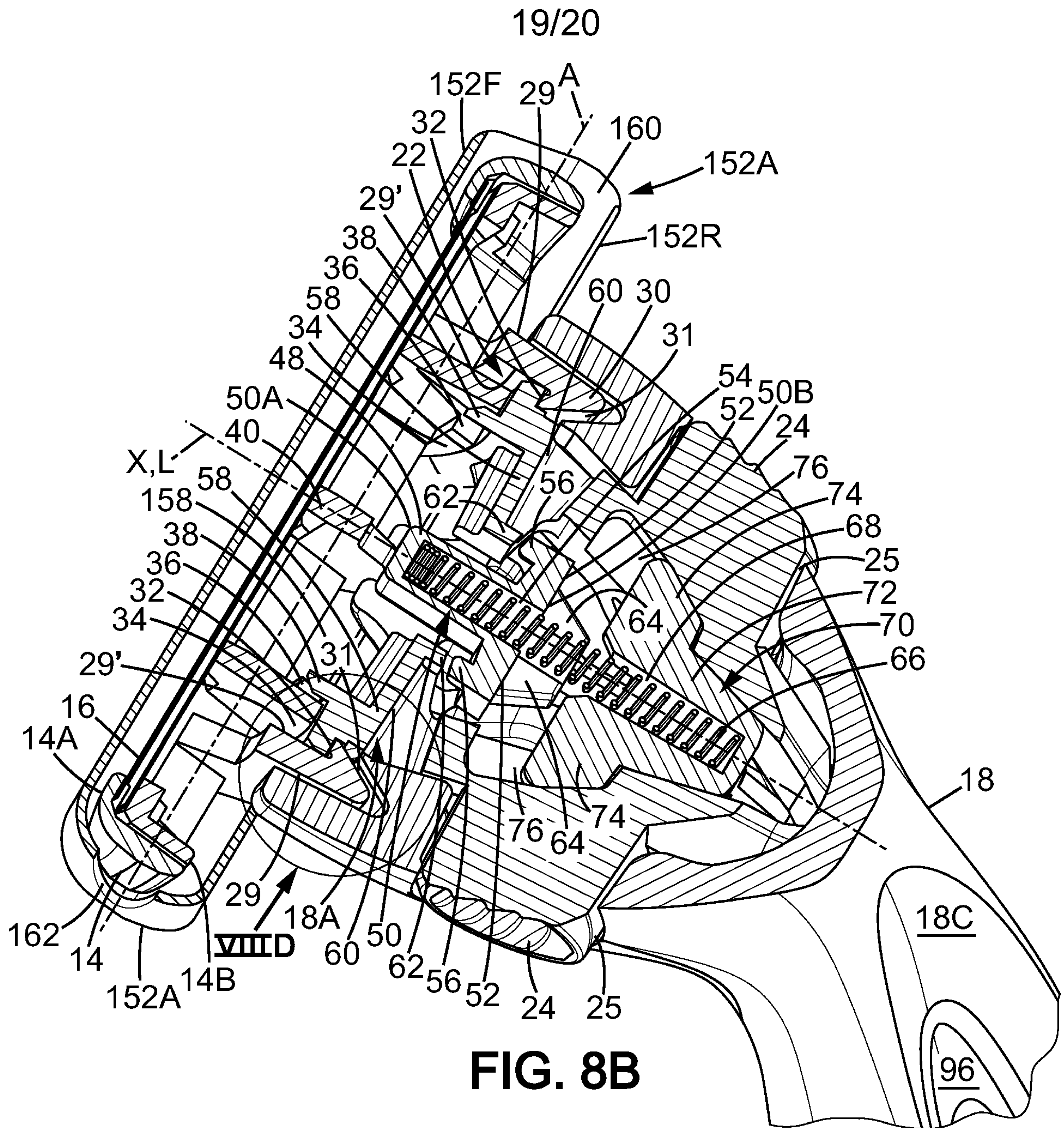


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