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(54) **Watch strap**

Uhrarmband

Bracelet de montre

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(73) Proprietor: **Disney Enterprises, Inc.
Burbank, CA 91521-0158 (US)**

(72) Inventors:
• **KRAUS, Stephanie
Glendale, California 91206 (US)**
• **HEATHERLY, Chris
Pasadena, California 91104 (US)**
• **OUYE, Randal
La Crescenta, California 91214 (US)**

- **NISHIOKA, Julie
Glendale, California 91208 (US)**
- **HOLLAND, John,
c/o AlchemyLabs
San Francisco,
California 94103 (US)**
- **SAND, Jeffrey
San Francisco, C 94107 (US)**

(74) Representative: **Nederlandsch Octrooibureau
P.O. Box 29720
2502 LS The Hague (NL)**

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Description

BACKGROUND

Field of the disclosure

[0001] The present application relates to a watch strap (see CH-A-529 529 referring to a bracelet or a necklace).

Description of the background art

[0002] When using a fastenable article, it is often desirable to use fastening means which are easy and simple to use. This is particularly true when the fastenable articles are clothing items, such as shoes, belts, phone holders and time pieces.

[0003] With reference to the latter case, for example, watches have been typically provided with various buckle-type fastening means in order to fasten portions of the band together and thus secure the timepiece to a wearer's wrist, for example. While this method is sufficient to secure timepieces to a wrist, the intricacies involved in using a buckle/clasp-type of fastening mechanism may prove to be too difficult/complex to operate without encountering difficulty and frustration, especially for young children or persons with limited manual dexterity.

[0004] Generally the concept of time is also often difficult and complex for children to comprehend.

[0005] A configuration that provides secure fastening and ease of operation, both for fastening and unfastening, as well as a method to teach children how to tell the time and to relate time to various daily events, is clearly needed.

[0006] Also, in the case of wristwatches, it is sometimes desirable to transfer the watch from one band to another, for example, to use a band that better coordinates with other fashion items. However, most existing mechanisms used to attach watches to watchbands use very small pins, making the band difficult and time consuming to remove and install. Hence, there is a need for an improved attachment mechanism that provides for quick and easy removal and installation of different watchbands on a wristwatch.

SUMMARY OF THE DISCLOSURE

[0007] The present disclosure relates to a watch strap according to claim 1.

[0008] The strap has a snapping mechanism that allows the strap to be secured on a portion of the human body, such as the wrist or the ankle.

[0009] The snapping mechanism utilizes cooperation of two assemblies on the strap, a magnet assembly and a metal assembly. The magnet assembly is located proximate to or at one end of the strap. The metal assembly is located proximate to or at the other end of the strap. During use, the magnet assembly is secured to the metal assembly. The magnet assembly becomes secured to

the metal assembly through a snap action, where contact between the magnet assembly and the metal assembly is achieved at least in part by means of a magnetic engagement between the magnet assembly and the metal assembly.

[0010] The watch band, including the snapping mechanism of the invention, can easily be put on and taken off. This is particularly advantageous when the watch band is used by children and people with limited manual dexterity.

[0011] The foregoing and other objects, features and advantages of the present disclosure will be apparent to those of skill in the art from the following detailed description which makes reference to several figures which are exemplary and nonlimiting.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

Figure 1 shows a perspective view of an embodiment of a magnet assembly not according to the invention; Figure 2 shows a sectional perspective view of a the magnet assembly of Figure 1 on a strap;

Figure 3 shows a cross-sectional view of a magnet arrangement comprising the magnet assembly of Figure 1 and the strap;

Figure 4 shows a top view of a further embodiment of the magnet arrangement not according to the invention;

Figure 5 shows a bottom view of the embodiment shown in Figure 4;

Figure 6 shows a bottom view of a further embodiment of the magnet arrangement not according to the invention;

Figure 7 shows a top view of the further embodiment of Figure 6;

Figure 8 shows a top view of an embodiment of the magnet arrangement according to the invention;

Figure 9 shows a bottom view of the embodiment of Figure 8;

Figure 10 shows a perspective view of a magnet portion;

Figure 11 shows a perspective cross-sectional view of a magnet arrangement including the magnet portion of Figure 10;

Figure 12 shows a further cross-sectional view of the magnet arrangement of Figure 11;

Figure 13 shows a top view of an embodiment of an exemplary metal arrangement not according to the invention;

Figure 14 shows a bottom view of the embodiment of Figure 13;

Figure 15 shows an exploded cross-sectional view of the embodiment of Figures 13 and 14;

Figure 16 shows a top perspective view of the metal arrangement of Figures 13 to 15;

Figure 17 shows a top view of an embodiment of the

metal arrangement according to the invention;
 Figure 18 shows a bottom view of the further embodiment of Figure 17;
 Figure 19 shows a top view of a still further embodiment of the metal arrangement not according to the invention;
 Figure 20 shows a bottom view of the still further embodiment of Figure 19;
 Figure 21 shows a partial cross-sectional view of another embodiment of the metal arrangement according to the invention;
 Figure 22 shows a partial perspective cross-sectional view of the embodiment of Figure 21;
 Figure 23 shows a front cross-sectional view of another embodiment of the metal arrangement;
 Figures 24A-24C show a metal element in a stamped and tumbled condition, in a bent condition and in a folded condition;
 Figure 25 shows insertion of the metal element of Figure 24B in a strap;
 Figure 26 shows a partial bottom perspective view of a strap and a metal element;
 Figure 27 shows a cross-sectional view of a strap; and
 Figures 28-32C show watches embodying exemplary snapping arrangements of which Figures 30A, 31B, 32A and 32B are not according to the invention.

DETAILED DESCRIPTION OF THE DISCLOSURE

[0013] A snapping arrangement is initially disclosed. The arrangement comprises a strap and two cooperating assemblies on the strap, a magnet assembly and a metal assembly. The magnet assembly is located proximate to or at one end of the strap. The metal assembly is located proximate to or at the other end of the strap. During use of the strap, for example on the wrist or ankle of a user, the magnet assembly is secured to the metal assembly. The magnet assembly becomes secured to the metal assembly through a snap action, where contact between the magnet assembly and the metal assembly is achieved at least in part by means of a magnetic engagement between the magnet assembly and the metal assembly.

[0014] Several embodiments are shown in the present disclosure exhibiting different shapes and functions of the magnet/metal assemblies.

1. Magnet assembly

[0015] Figures 1-3 show an embodiment not according to the invention of a magnet assembly (1) on a strap (2), comprising an upper portion (3) and a lower portion (4). The upper portion (3) is usually button-shaped and does not need to be magnetic. For example, it can be made of plastic. The lower portion (4) is magnetic and can be cylindrical in shape.

[0016] The lower portion (4) can be connected with the

upper portion (3) in a variety of ways.

[0017] For example, the upper portion (3) can have an element protruding from its bottom surface and engaging with a recess in the upper surface of the lower portion (4). To this effect, a hole will be formed in the strap (2), near a tip (5) of the strap. Therefore, the upper portion (3) and the lower magnetic portion (4) pop into place and engage one another, thus forming the magnetic assembly.

[0018] Figures 4-5 show in more detail an upper surface (6) and a lower surface (7) of the strap. With reference to those figures, and alternatively to what is disclosed above, the upper portion (3) of the magnet assembly can be glued together with the upper surface (6) of the strap, and the lower magnetic portion (4) of the magnet assembly can be glued together with the lower surface (7) of the strap. Figure 5 also shows a rib (8), which could be added to the magnetic assembly to increase stability of the assembly on the strap. A further kind of connection between the upper portion (3) and the lower magnetic portion (4) is a "press fit" connection, where the upper portion (3), the portion of the strap (2) close to the tip (5), and the lower magnetic portion (4) are kept into place by means of pressure forces.

[0019] Figures 6-7 show a second embodiment of the magnet assembly on the strap (2), comprising a cap (9), enclosing both the upper portion (3) and the lower magnetic portion (4). The cap (9) forms a space (not shown), between the upper portion (3) and the lower magnetic portion (4), for an end portion of the strap (2) to be inserted before the components of the magnet assembly are snapped into place. Also in this case, a hole will be formed in the strap (2).

[0020] It should be noted that the presence of the cap (9) under the upper portion (3) and above the strap (2) on the non-magnetic side of the magnet assembly provides a pleasant aesthetic, mushroom-like aspect. Additionally, stability of the end portion of the strap is improved. Alternatively the cap itself could also provide a tip of the strap, thus not requiring the strap to be placed in the middle of the cap. Connection between the cap/tip and the strap (2) can be achieved by mechanical means, such as screws (10,11) as schematically shown in Figure 7.

[0021] Alternatively to what is shown in Figures 6 and 7, the cap (9) can be provided instead of (and not in addition to) the upper portion (3). In this case, the aesthetic effect due to the presence of the upper portion can be obtained by suitable reshaping of the cap element (9).

[0022] Figures 8-12 show an embodiment according to the invention of the magnet assembly on the strap (2), where cap (9) also acts as upper portion. In this embodiment, the lower magnetic portion of the magnet assembly is provided by an arc- or bean-shaped element (13). The shape of the element (13) is better shown in perspective in the enlargement of Figure 10. Figures 11 and 12 are partial cross sections better showing some of the details of the third embodiment. In particular, the cap (9)

comprises a recessed area (14) on its top. Additionally, a retention pin (15), preferably a metal retention pin, is provided to connect the strap (2) with the cap (9). In this way the whole assembly, including lower magnetic portion (13), is kept in place by means of mechanical forces. If desired, an upper portion, as shown in the previous Figures 1-4, can be provided in place of the recessed area (14). It should be noted that the connection between the upper portion and the lower magnetic portion (12) can be obtained in a variety of ways, easily determinable by the person skilled in the art upon reading of the present disclosure. For example, the arcshaped portion could be press-fit into the cap portion, or partially recessed into the cap portion.

2. Metal assembly

[0023] The metal assembly is located on an end of the strap (2) opposite the end which the magnet assembly is located. In this way, when the strap (2) is closed, in a circular fashion, one assembly will mate with the other.

[0024] Figures 13-16 show an embodiment not according to the invention of a metal assembly on the strap (2). The metal assembly comprises a plurality of rivets (16), each having a top or mating surface (17) and a bottom or engaging surface (18), as shown in the exploded view of Figure 15. Each rivet (16) engages into a corresponding metal element (19) by means of its engaging surface (18), as also shown in the exploded view of Figure 15. The metal elements (19) are located on the lower surface (7) of the strap (2), proximal to the skin of the user. The rivets (16) are located on the upper surface (6) of the strap (2), distal to the skin of the user, during use. The substantially circular shape of the mating surfaces (17) corresponds to the substantially circular shape of the bottom surface of the lower magnetic portion (4) of the magnet assembly, shown in some of the previous Figures. Magnetic engagement of the bottom surface of the lower magnetic portion (4) with one of the mating surfaces (17), one of the mating surfaces (17) being chosen among the others in accordance with the desires or size of the wrist or ankle of the user, allows closure of the strap (2). Of course, stability of the closure of the strap (2) is maximized when there is geometric correspondence between the bottom surface of the lower magnetic portion (4) of the magnet assembly and the mating surface (17).

However, geometric correspondence between the mating surfaces is just a preferred embodiment, and not a necessary feature of the present disclosure. Additionally, the person skilled in the art will recognize, upon reading of the present disclosure, many geometric alternative shapes, such as square, rectangular, triangular, hexagonal, etc. shapes, both for the bottom surface of the lower magnetic portion (4) of the magnet assembly and the mating surface (17), are possible.

[0025] Pressed rivet technology, preferably used to realize the assembly of Figures 13-16, is known to the per-

son skilled in the art and does not need to be described in detail. For example, an overmolding process could be used, i.e. the strap (2) is first molded and then the rivets (16) and metal elements (19) are molded into the strap (2), on opposite surfaces (6, 7) thereof.

[0026] Figures 17-20 show different shapes of the rivets and metal elements. For example, the shape of the mating surfaces of Figure 17 is suitable for use with the lower magnetic portion (13) shown in Figure 10. Spacing between the rivets (16) determines the number of rivets and consequently, the number of different sizes of the strap (2). In case the shape of the rivets (16) is such that the mating portion (17) is circular, spacing between the rivets (16) cannot be less than the diameter of the rivets (16), thus reducing the available design choices. For example, spacing between the rivets (16) in these embodiments is usually about 10 mm (about .4"). However, it should be noted that an arc- or bean- shape allows a better stability of the metal elements (19) when pressed into the strap. In particular, arc/bean-shaped metal elements have less tendency to pivot than circularly-shaped metal elements. Additionally, the presence of arc/bean shaped metal elements instead of circular elements allows for tighter spacing between the rivets (16), thus permitting a higher number of different sizes to be provided on the strap (2).

[0027] The metal assembly structure can be reinforced by means of a rib or spine structure (20) placed in the strap (2) and mechanically connecting the various elements of the metal assembly, as shown, for example, in Figure 19. The presence of a reinforcing structure provides for a better stability of the assembly and helps avoid undesired pivoting movement of the rivets and metal elements during use of the strap (2). According to a first aspect (not shown in the Figures), the rib structure could be additional to, or independent from, the plurality of rivets (16) and metal elements (19), to be placed, for example, between the rivets (16) and the metal elements (19), and comprising a plurality of holes in correspondence with the junction between each metal element and its corresponding rivet.

[0028] Figures 21-22 show a partial cross sectional view and a partial perspective view, respectively, of a second embodiment (21) of the rib structure, where the rib structure (21) is integral with the plurality of metal elements. Therefore, according to this second embodiment as shown in detail in Figure 22, the integral rib structure (21) comprises a spine portion (22) comprising a plurality of holes (23) and a plurality of mating metal portions, each having a first side (24A) and a second side (24B), placed in correspondence with a hole (23) and having a shape matingly corresponding to the shape of a lower magnetic portion (4) of the magnet assembly (1).

[0029] According to a further embodiment of the metal assembly in accordance with the teachings of the present disclosure, the metal-element/rivet combination is replaced by a plurality of staple elements. Figure 23 is a cross-sectional view and shows one of the staple ele-

ments (25) inserted into corresponding openings or slots (26) of the strap (2). In particular, the strap (2) is provided with two slots (26) for each of the staple elements (25) to be placed.

[0030] Figures 24A-24C show the various shapes of each staple element (25) during a manufacturing process. During the manufacturing process, each staple element initially exhibits a first stamped and tumbled condition (A), Figure 24A, with arcuated, for example substantially semi-circular, shape, having an outer periphery (27), an inner periphery (28), and two lateral ends (29, 30). The staple undergoes a first bending operation, Figure 24B, and is bent along its lateral ends (29, 30) to provide a bent condition (B) comprising an upper, unbent, mating portion (31), a first bent portion (32) and a second bent portion (33). Further to this, one or more staples are inserted into the strap (2), as shown in Figure 25. Each staple is placed or loaded into position by inserting its first and second bent portions (32, 33) into slots (26) provided in the strap (2) and shown in Figures 25 and 26. At the end of this step, the mating portions (31) of each loaded staple in its condition (B) have reached their position in the strap (2). Subsequent to this, the first and second bent portions (32, 33) are bent or folded again, this time around the strap (2), to reach a completely folded condition (C), as shown in Figure 24C, which shows a staple alone for clarity reasons. Figure 26 shows this last step in more detail, showing the bent portions (32, 33) both in their (B) condition (32B, 33B) and their (C) condition (32C, 33C).

[0031] As shown in Figures 23 and 25, the preferred embodiment also provides for a particular structure of the area surrounding the slots (26) for each staple (25). In particular, for each staple (25), the region comprising the two slots (26) is recessed and comprises a step-like structure with two raised or stepped portions (34, 35) and one lower flat portion (36), on which the staple (25) is to be placed. Each slot (26) is placed in correspondence to the region between a stepped portion (34, 35) and the flat portion (36). In this way, a more stable mechanical structure is obtained, and the overall shape also has a more pleasant aesthetic aspect.

3. The Strap

[0032] The magnetic and metal assembly have been described heretofore with reference to a strap.

[0033] With reference to the strap, such strap could be of any material or shape. Should printing on the strap be required, a preferred embodiment shown in crosssection of the strap is shown in Figure 27 and provides for a smooth convex upper surface (37) of the strap and a smooth concave lower surface (38) of the strap.

[0034] In a further preferred embodiment, the strap of the disclosure may include a portion having a shape that matches the shape of the interior surface of a watchcase. Such portion is preferably substantially centrally located in the strap. In particular the portion can have a substan-

tially circular or oval shape and may be used with a hinging assembly later disclosed in the present disclosure.

4. The watch

[0035] The strap described heretofore is the band of a watch.

[0036] Figures 28-32C show various watches embodying exemplary snapping arrangements described according to the present disclosure, and will not be described herein in detail, as these embodiments are understandable to the person skilled in the art, in light of the present disclosure.

[0037] The present disclosure has been explained with reference to specific embodiments. Other embodiments will be apparent to those of ordinary skill in the art in view of the foregoing description. The scope of protection of the present disclosure is defined by the appended claims.

Claims

1. A watch strap (2) having an elongated member having a first end and a second end wherein the first and second ends are adapted to be fastened together around a wearer's wrist, wherein the first end has a plurality of metal elements (19) provided along the strap (2) from the first end, each axially spaced from each adjacent metal element (19), and the second end having a lower magnetic portion (13), whereby the lower magnetic portion (13) can magnetically engage the upper surface of one of the metal elements (19) to fasten the first and second ends of the strap (2) together, **characterized in that** the lower magnetic portion (13) is arc- or bean shaped and a mating portion of each metal element is arc- or bean shaped.
2. The watch strap (2) according to claim 1 wherein each metal element (19) is a staple (25).
3. The watch strap (2) according to claim 2 wherein each staple (25) is inserted into corresponding openings or slots (26) of the watch strap (2).
4. The watch strap (2) according to claim 3, wherein for each staple (25) a region comprising the two openings or slots (26) is recessed.
5. The watch strap (2) according to any one of the claims wherein the lower magnetic portion (13) protrudes from a lower surface of the second end of the strap.

Patentansprüche

1. Uhrarmband (2) mit einem länglichen Element mit einem ersten Ende

und einem zweiten Ende, wobei die ersten und zweiten Enden dazu ausgestaltet sind, um das Handgelenk eines Trägers herum miteinander verbunden zu werden, wobei das erste Ende eine Mehrzahl von Metallelementen (19), die von dem ersten Ende entlang des Armbands (2) angeordnet sind, wobei jedes Metallelement axial auf Abstand zu jedem benachbarten Metallelement (19) liegt, und der zweite Endbereich einen unteren magnetischen Bereich (13) hat, wodurch der untere magnetische Bereich (13) sich magnetisch an die obere Oberfläche eines der Metallelemente (19) koppeln kann, um die ersten und zweiten Enden des Armbands (2) miteinander zu verbinden, **dadurch gekennzeichnet, dass** der untere Magnetbereich (13) bogenförmig oder bohnenförmig ist und ein dazu passender Bereich jedes Metallelements bogenförmig oder bohnenförmig ist.

2. Uhrarmband (2) nach Anspruch 1 wobei jedes Metallelement (19) eine Klammer (25) ist. 20
3. Uhrarmband (2) nach Anspruch 2, wobei jede Klammer (25) in entsprechende Öffnungen oder Schlitzlöcher (26) des Armbands (2) eingesetzt ist. 25
4. Uhrarmband (2) nach Anspruch 3, wobei für jede Klammer (25) eine Region vertieft ist, die die zwei Öffnungen oder Schlitzlöcher (26) aufweist. 25
5. Uhrarmband nach einem der Ansprüche, wobei der untere Magnetbereich (13) von einer unteren Oberfläche des zweiten Endes des Armbandes vorsteht. 30

Revendications 35

1. Bracelet de montre (2) comprenant un élément allongé ayant une première extrémité et une seconde extrémité, les première et seconde extrémités étant adaptées pour être fixées ensemble autour du poignet d'une personne qui le porte, la première extrémité comportant plusieurs éléments métalliques (19) situés le long du bracelet (2) à partir de la première extrémité, chacun d'eux étant espacé axialement de chaque élément métallique (19) adjacent et la seconde extrémité comportant une partie magnétique inférieure (13), la partie magnétique inférieure (13) pouvant s'engager magnétiquement avec la surface supérieure de l'un des éléments métalliques (19) pour fixer ensemble les première et seconde extrémités du bracelet (2), **caractérisé en ce que** la partie magnétique inférieure (13) a une forme d'arc ou de haricot et une partie d'accouplement de chaque élément métallique a une forme d'arc ou de haricot. 40 45 50 55
2. Bracelet de montre (2) selon la revendication 1, dans lequel chaque élément métallique (19) est un cavalier (25).

3. Bracelet de montre (2) selon la revendication 2, dans lequel chaque cavalier (25) est inséré dans des ouvertures ou fentes correspondantes (26) du bracelet de montre (2).
4. Bracelet de montre (2) selon la revendication 3, dans lequel chaque cavalier (25) comporte une région, comprenant les deux ouvertures ou fentes (26), qui est évidée.
5. Bracelet de montre (2) selon l'une des revendications, dans laquelle la partie magnétique inférieure (13) fait saillie à partir d'une surface inférieure de la seconde extrémité du bracelet.

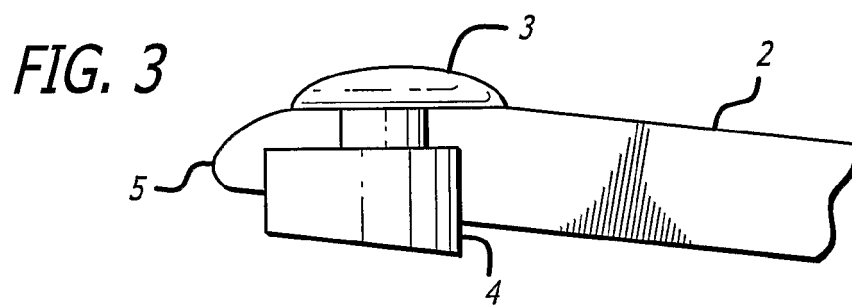
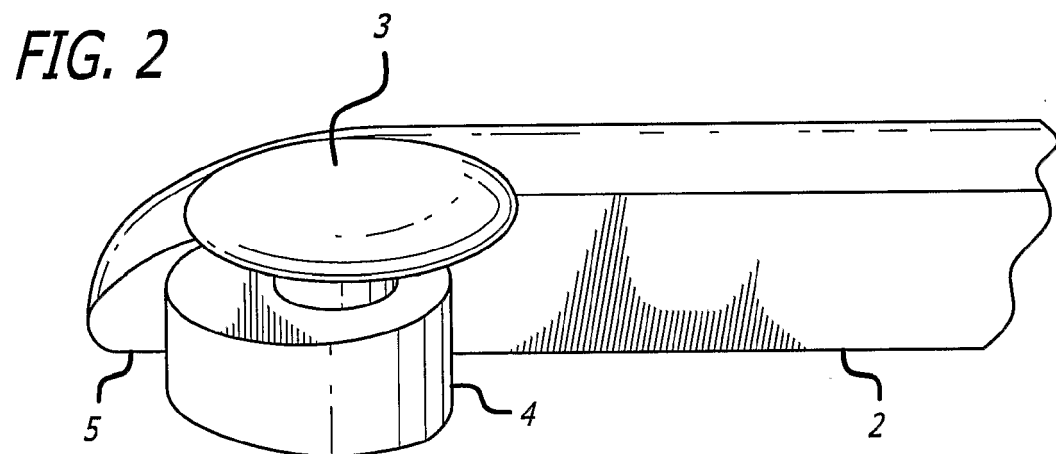
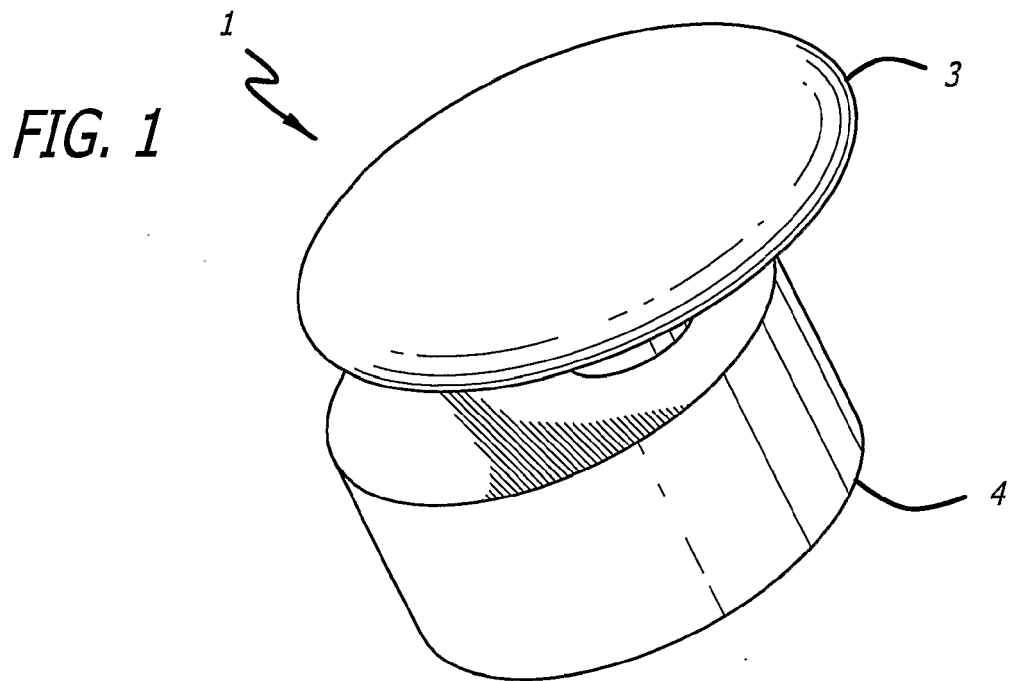


FIG. 4

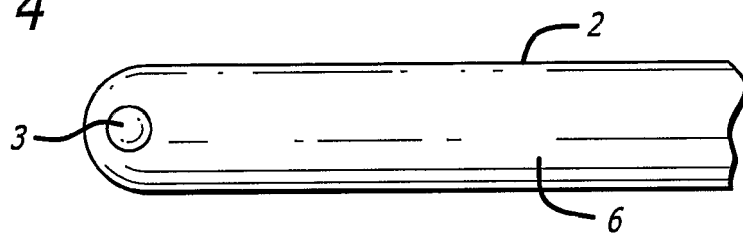


FIG. 5

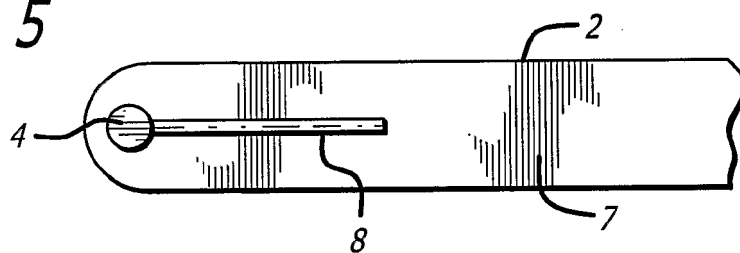


FIG. 6

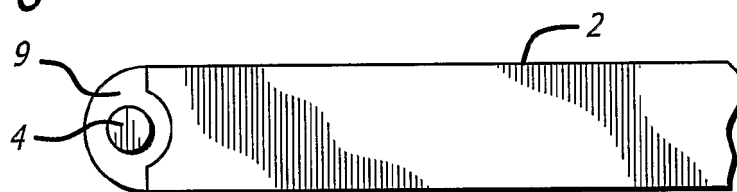


FIG. 7

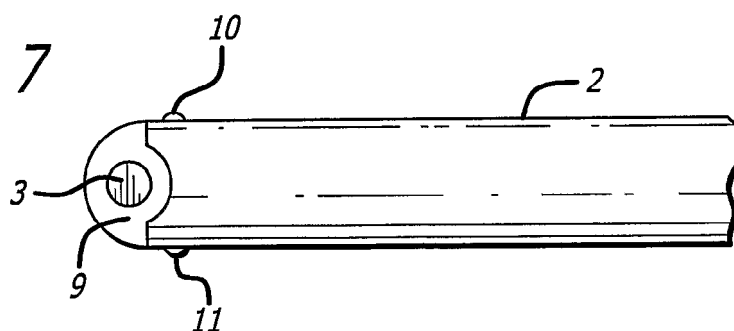
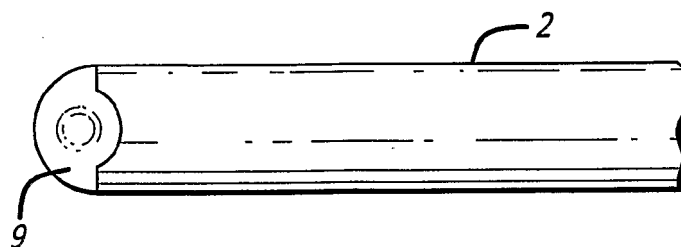


FIG. 8



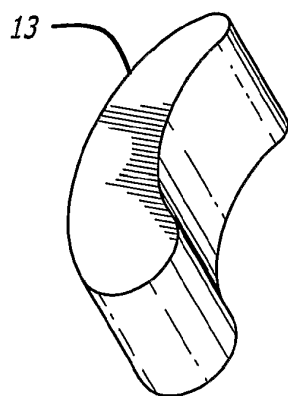
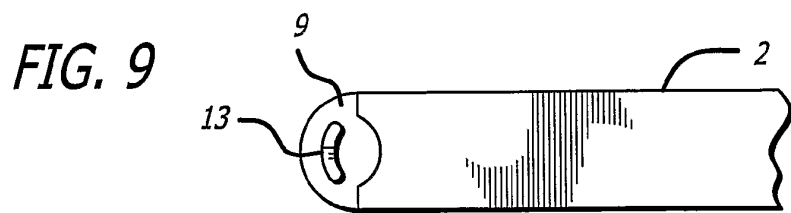


FIG. 10

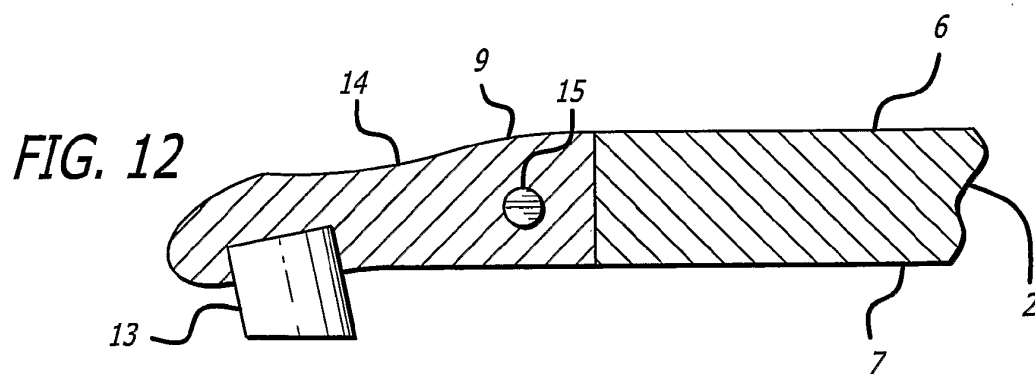
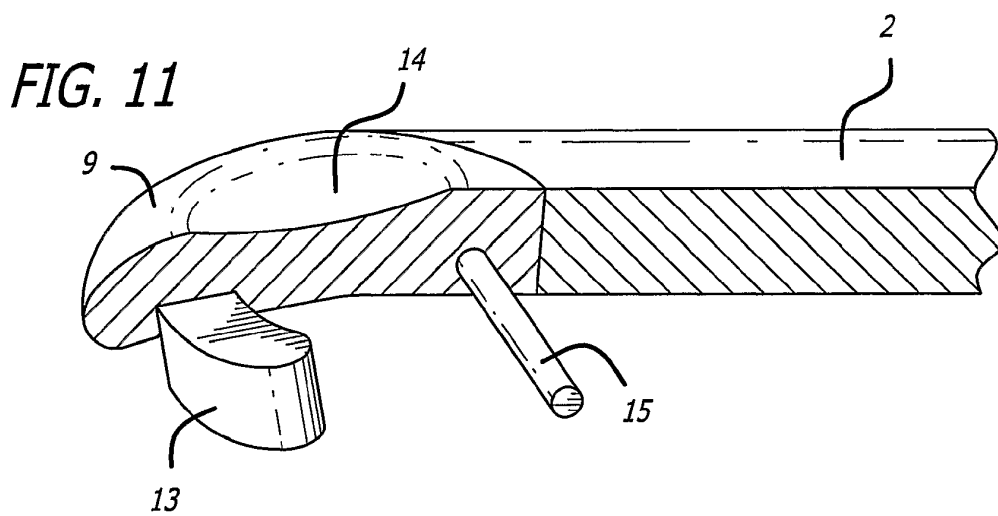


FIG. 13

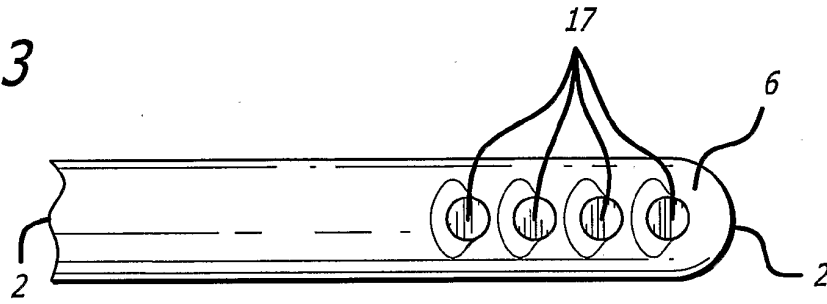


FIG. 14

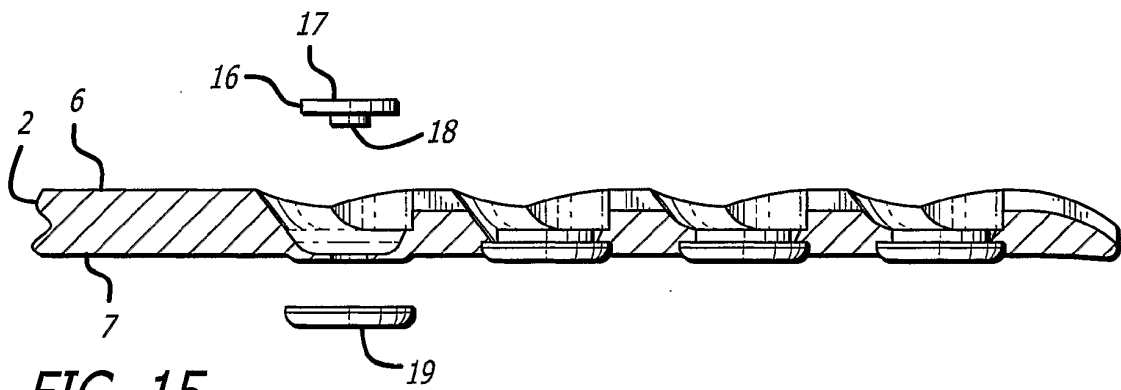
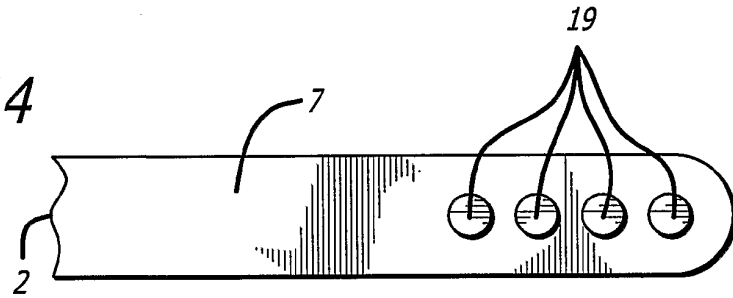


FIG. 15

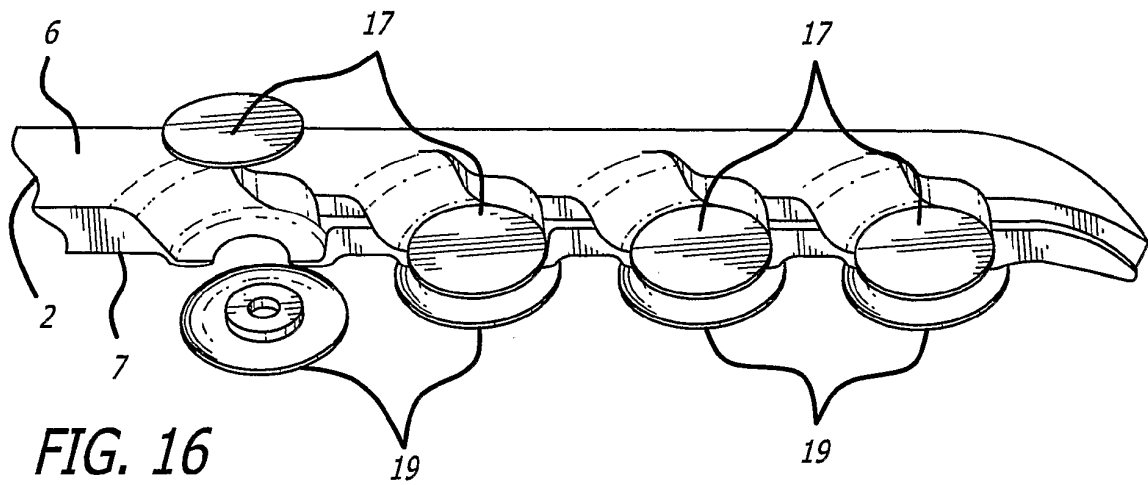


FIG. 16

FIG. 17

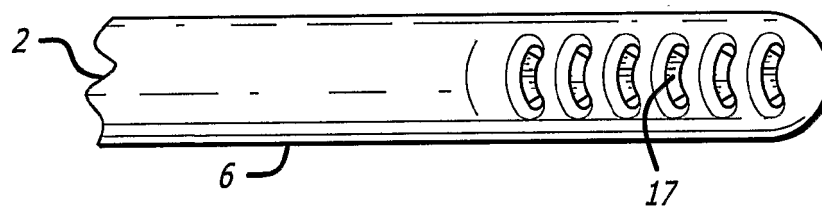


FIG. 18

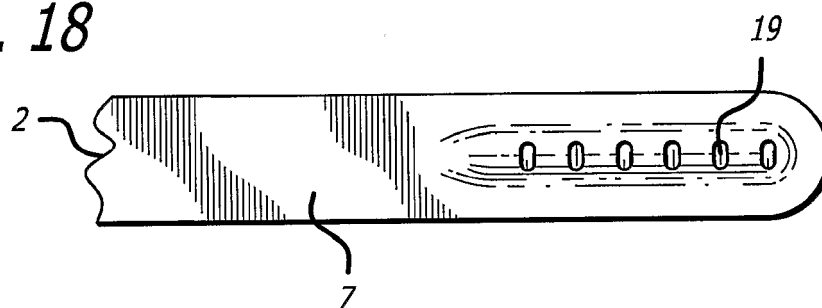


FIG. 19

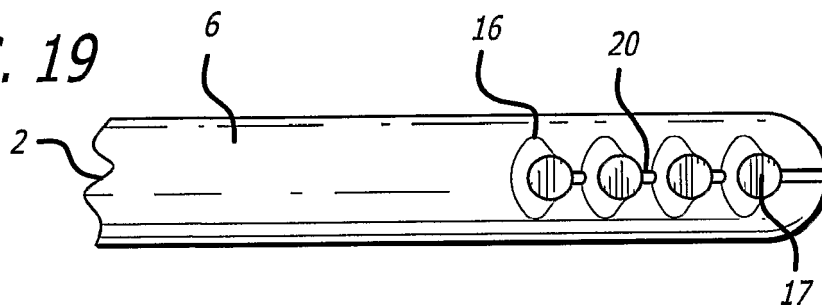
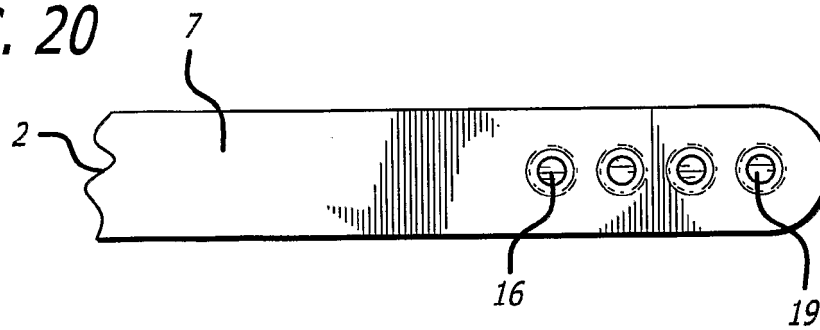
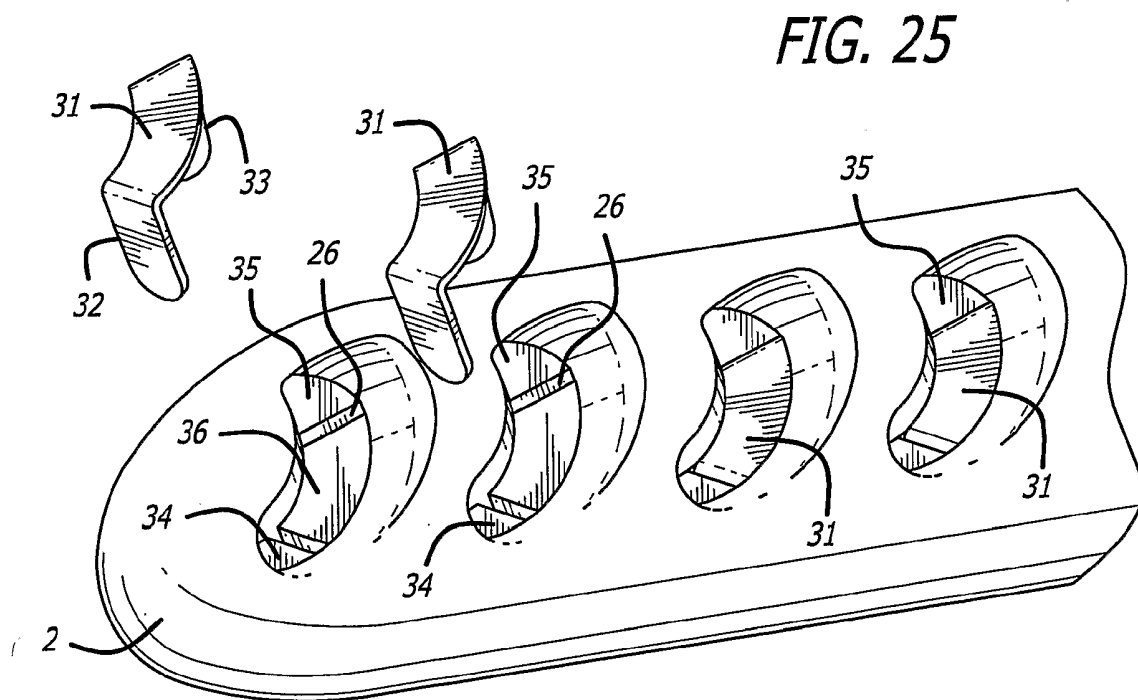
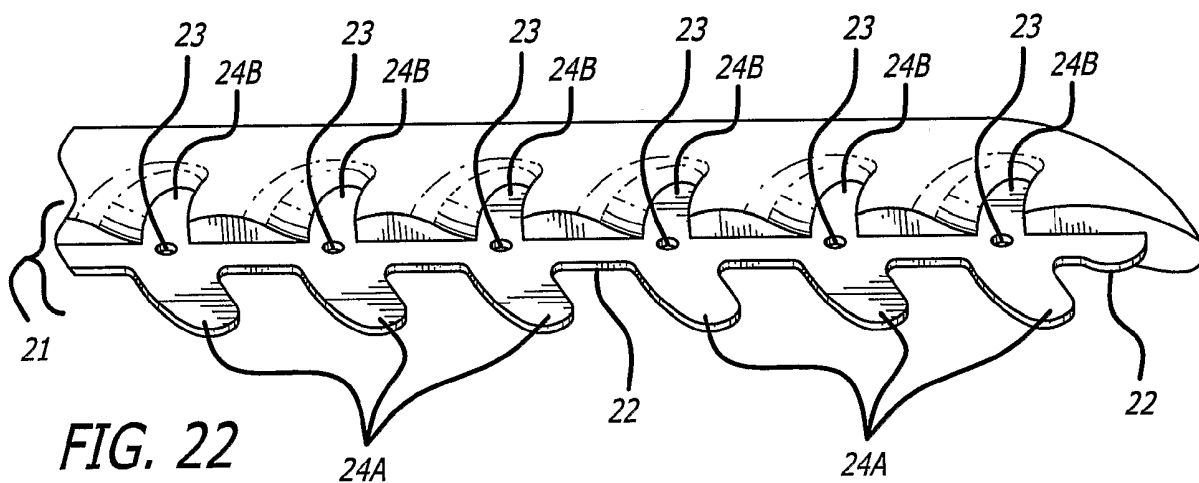
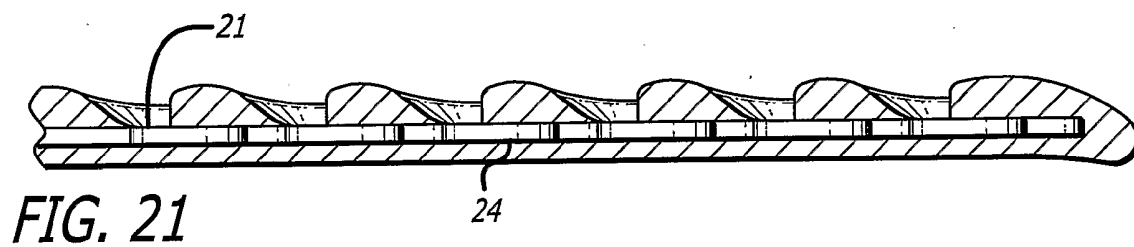
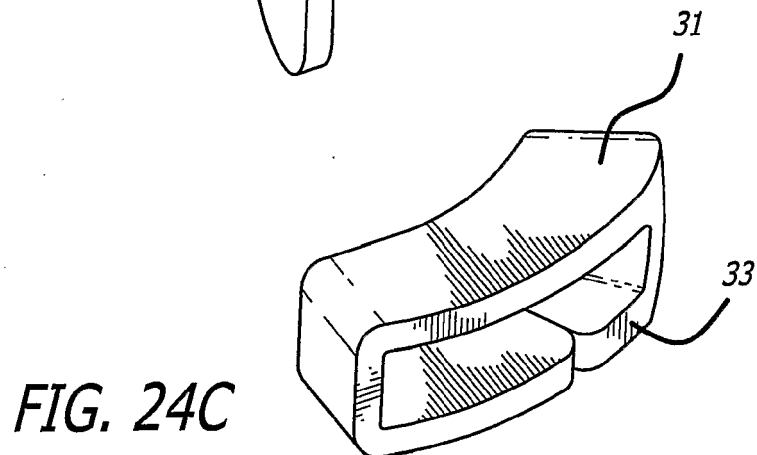
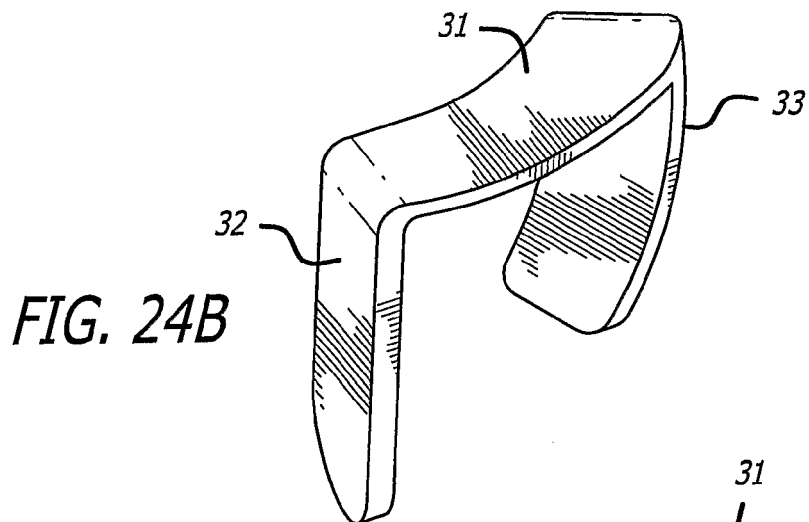
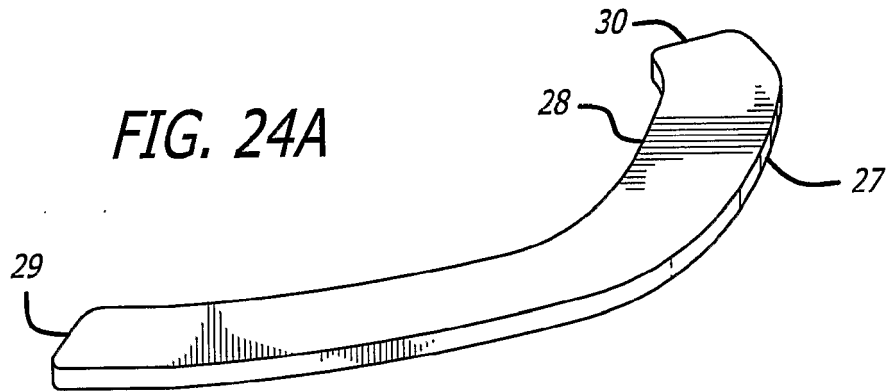
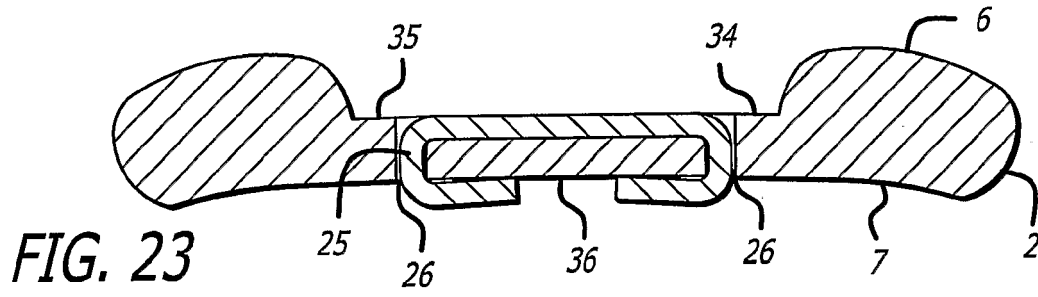


FIG. 20







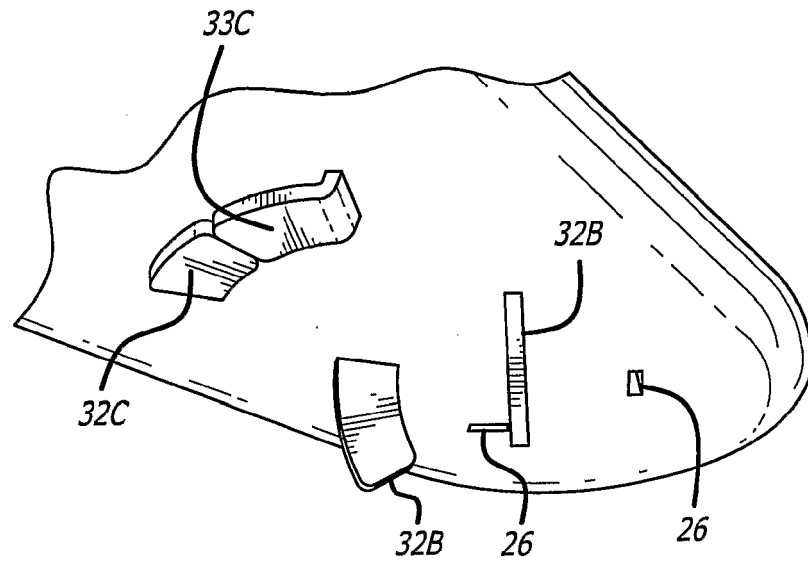


FIG. 26

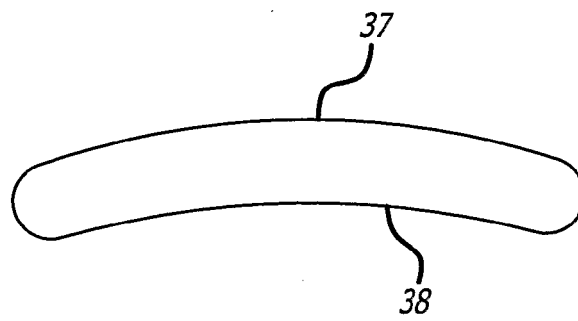


FIG. 27

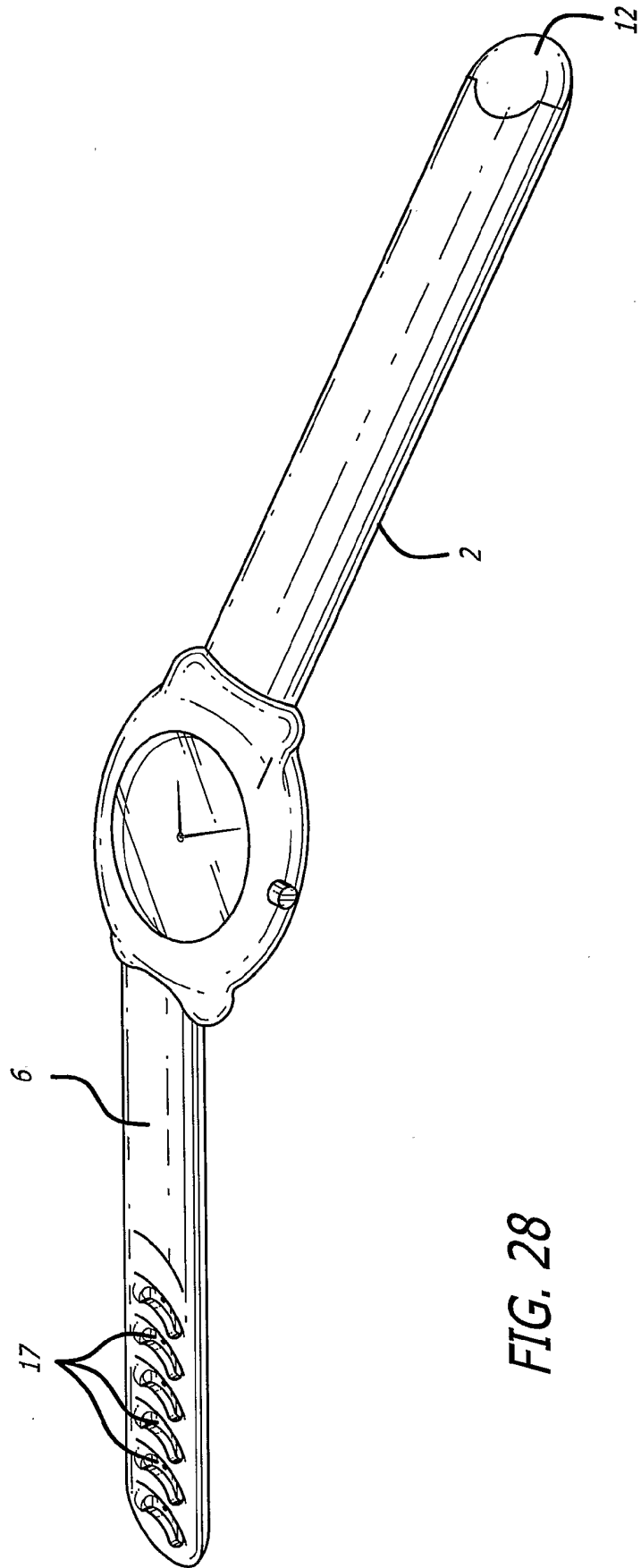


FIG. 28

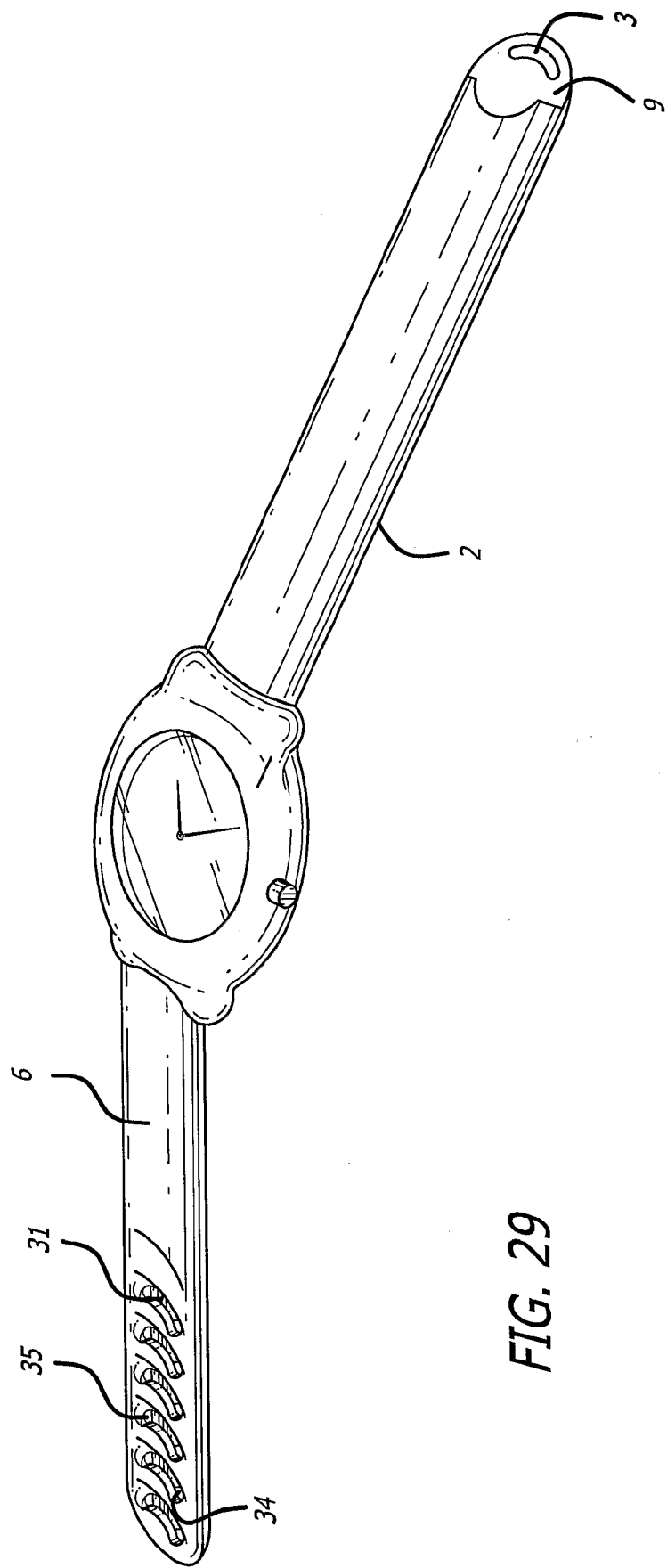
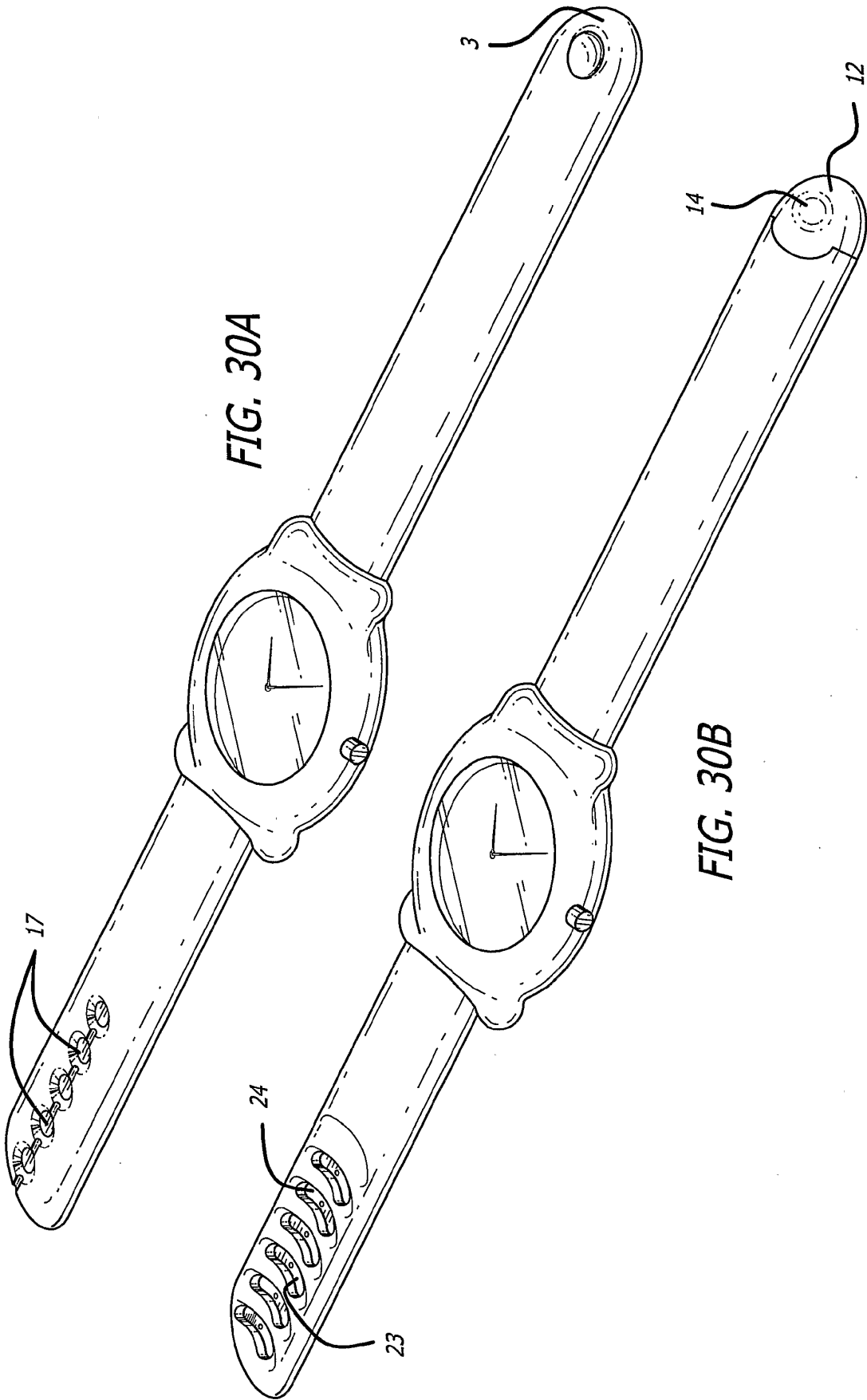


FIG. 29



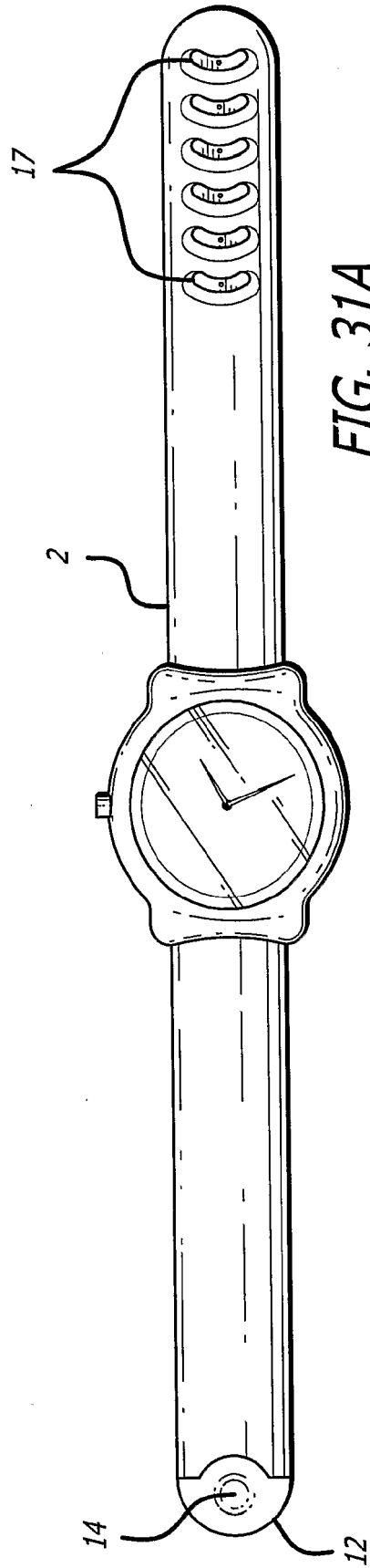


FIG. 31A

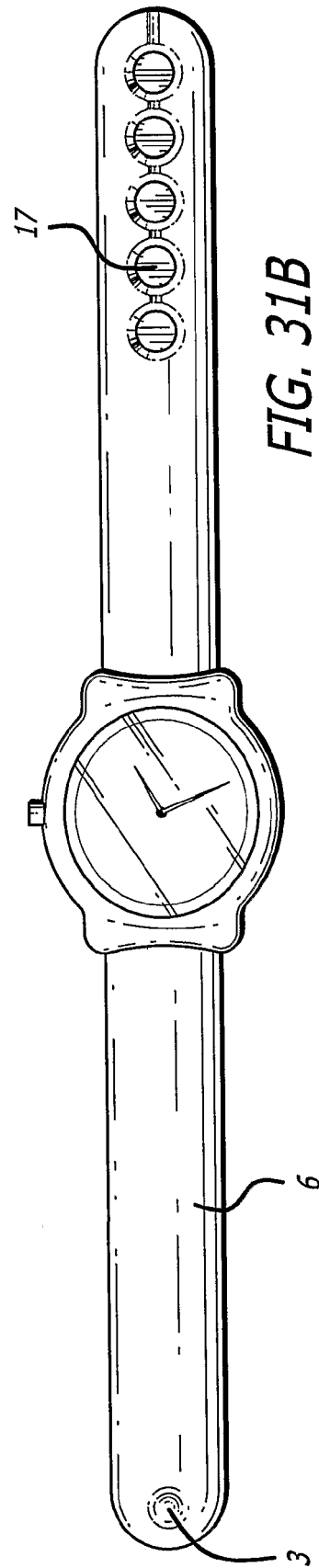
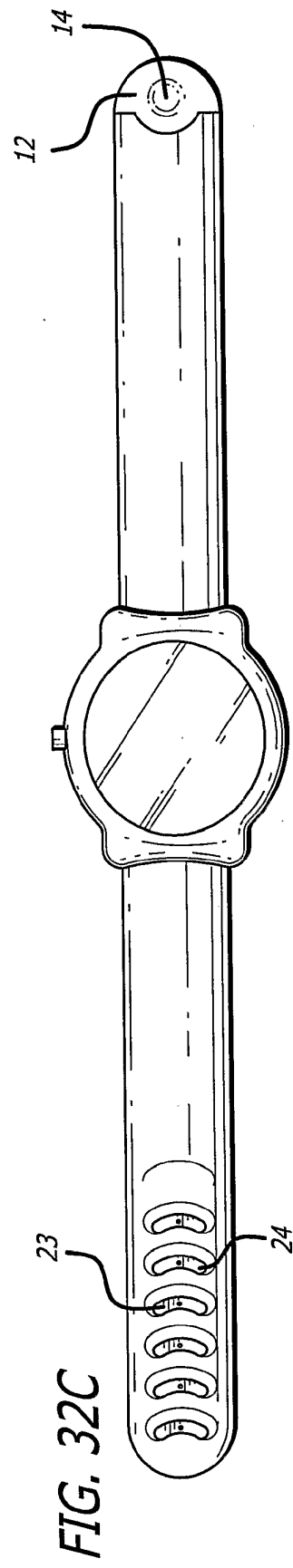
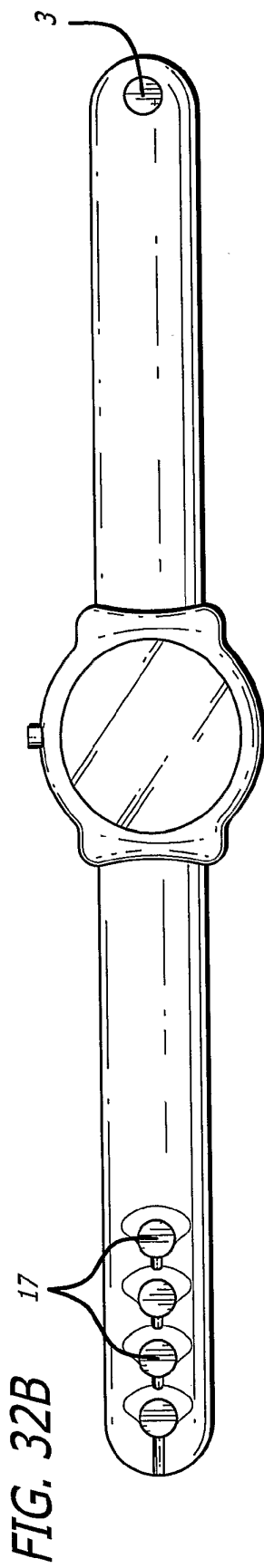
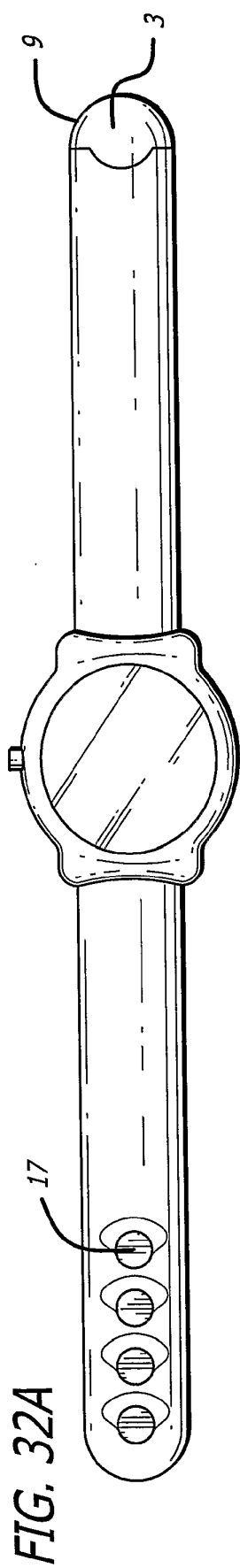


FIG. 31B



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CH 529529 A [0001]