(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 799 761 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
**07.04.2021 Bulletin 2021/14**

(51) Int Cl.:
***A44C 5/00*** *(2006.01)* ***A44C 5/04*** *(2006.01)*

(21) Application number: **20198420.0**

(22) Date of filing: **25.09.2020**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
Designated Extension States:
**BA ME**
Designated Validation States:
**KH MA MD TN**

(30) Priority: **01.10.2019 IT 201900017597**

(71) Applicant: **Salin S.r.l.**
**36023 Longare (IV) (IT)**

(72) Inventor: **PRIORI, Mario**
**36021 BARBARANO VICENTINO (VI) (IT)**

(74) Representative: **Ziliotto, Tiziano**
**Studio Ziliotto**
**Contrada Porta Santa Lucia, 48**
**36100 Vicenza (IT)**

(54) **ELASTIC BRACELET FOR ITEMS SUCH AS WRISTWATCHES AND/OR JEWELLERY ITEMS AND/OR COSTUME JEWELLERY ITEMS**

(57) The present invention concerns an elastic bracelet (10; 110; 210; 410; 510) for objects (O) such as wristwatches (O) and/or jewellery items and/or costume jewellery items and similar objects. The bracelet (10; 110; 210; 410; 510) comprises at least one elastic section (20), wherein the elastic section (20) comprises a first helical element (30), a second helical element (40) and an elastic element (50; 250; 450) designed to join the first helical element (30) and the second helical element (40).

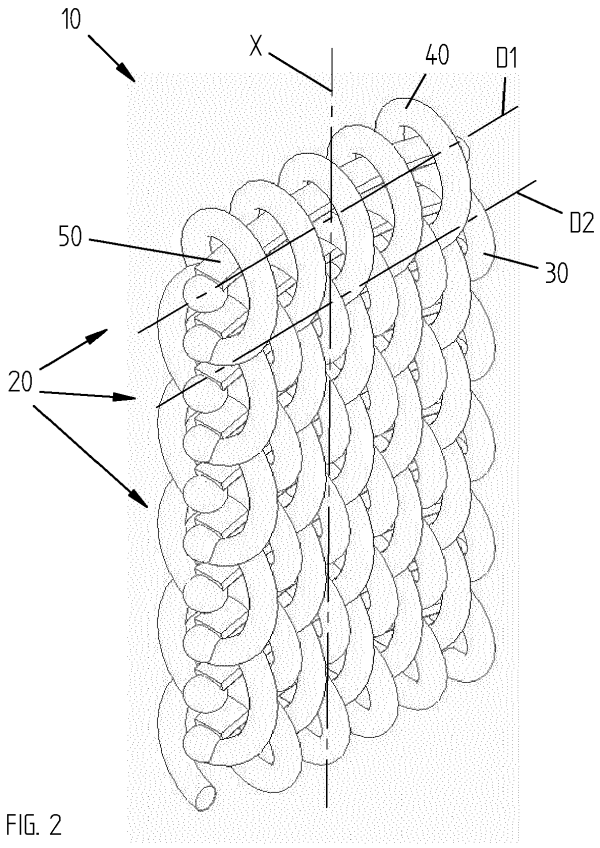


FIG. 2

EP 3 799 761 A1

## Description

### TECHNICAL FIELD OF THE INVENTION

**[0001]** The present invention concerns bracelets, preferably bracelets for objects such as wristwatches and/or jewellery items and/or costume jewellery items.

**[0002]** More specifically, the present invention concerns bracelets in which a certain degree of elasticity is required in order to make them easier to wear and more adaptable compared to traditional bracelets.

### DESCRIPTION OF THE STATE OF THE ART

**[0003]** The use of bracelets which make it possible to put the item on, for example on the wrist in the case of a watch, on the ankle in the case of an anklet, on the neck in the case of a necklace etc, is known in the field of manufacture of objects such as wristwatches and/or jewellery items and/or costume jewellery items.

**[0004]** It is known that in order to make the item easier to put on and to wear for the user bracelets with a certain degree of elasticity are used, wherein said elasticity makes it possible to put the item on more comfortably and/or to adapt it to small variations in diameter, for example the diameter of the wrist, ankle or neck where the item is going to be worn.

**[0005]** Elastic bracelets can be adapted to the small variations occurring in the diameter of the wrist, the ankle or the neck over time, with no need to carry out manual adjustments and/or to interpose adjusting links, for example in proximity to the fastener, for which special tools and/or the intervention of specialized personnel is/are required.

**[0006]** The elastic bracelets of the known type, with or without fastening systems, are constituted by elastic metallic assemblies typically comprising a plurality of rigid links placed side by side and connected to one another by means of preferably metallic elastic elements such as, for example, torsion springs.

**[0007]** The elastic elements allow two adjacent links to be moved away from each other or towards each other, so that the diameter of the bracelet can be automatically adapted to the wrist, the ankle or the neck where it is worn.

**[0008]** The elastic elements used in the known art are typically made of a resistant metallic material, typically steel.

**[0009]** The elastic bracelets of the known type, however, pose some drawbacks.

**[0010]** A first drawback of the bracelets of the known type lies in that the elastic connection elements may come off and/or break, thus affecting the structure of the bracelet and possibly causing the same to open.

**[0011]** Another drawback of the bracelets of the known type lies in that it is difficult to manufacture items completely made of a valuable material, for example gold, silver or platinum, due to the presence of the elastic elements in steel.

**[0012]** The use of elastic steel elements together with rigid elements in a valuable material, for example gold, is not possible, since the considerable difference between the hardness of the two metals would cause the gold elements to rapidly wear out, in fact gold has lower hardness values than steel.

**[0013]** Furthermore, it is important not to neglect the effect, similar to that produced by batteries, which is created between the noble metal, for example gold, which acts as a cathode, and the less noble metal, for example steel, which acts as an anode, when they come in contact with each other and in the presence of a humid environment, caused for example by skin transpiration/sweat.

**[0014]** Another drawback posed by the bracelets of the known type is constituted by the fact that the elastic elements negatively affect the aesthetic appearance of the bracelet, since the choice of their shape is strongly influenced by the elastic function they must serve and sometimes it is not possible to shape the elements so as to achieve the desired aesthetic result. Furthermore, the undesired aesthetic effect is particularly enhanced in the configuration of the bracelet with separated/stretched links.

**[0015]** A further drawback posed by the bracelets of the known type is constituted by the risk of the bracelet links pinching the user's skin or hair when he/she is wearing the bracelet.

**[0016]** Thus, it is the main object of the present invention to overcome or at least partially resolve the problems that characterize the solutions known in the art.

**[0017]** It is a first object of the present invention to provide a solution that makes it possible to manufacture an elastic bracelet which is sturdier than the bracelets of the known type.

**[0018]** It is another object of the present invention to provide an elastic bracelet which is simpler than the bracelets of the known type from the construction point of view. It is another object of the present invention to provide an elastic bracelet which, while maintaining the required elasticity characteristics unchanged, can be produced without using elastic steel elements, so that it can preferably be made with metals that are softer than steel.

**[0019]** It is one object of the present invention to provide a solution which makes it possible to manufacture an elastic bracelet completely made of a precious metal, in particular gold.

**[0020]** It is another object of the present invention to provide a solution that makes it possible to manufacture a bracelet whose aesthetic appearance remains the same both when it is loose and when it is stretched.

### SUMMARY OF THE PRESENT INVENTION

**[0021]** The present invention is based on the general consideration that the problems observed in the state of the art can be at least partially overcome by providing a bracelet comprising at least one elastic section, wherein

said elastic section comprises two helical elements placed side by side and connected through an elastic element.

**[0022]** According to one of the main aspects of the present invention, the subject of the same is thus an elastic bracelet for objects such as wristwatches and/or jewellery items and/or costume jewellery items and the like, said bracelet having a structure that is developed along a main axis and is suited to be curved along said main axis to define a ring shape for said bracelet, said structure comprising at least one elastic section, wherein said elastic section comprises:

- a first helical element that is developed along a first direction, crosswise with respect to said main axis, said first helical element being constituted by a plurality of first consecutive turns wound along said first direction;
- a second helical element that is developed along a second direction, crosswise with respect to said main axis, said second helical element being constituted by a plurality of second consecutive turns wound along said second direction, wherein said first helical element and said second helical element are positioned side by side and penetrate each other at least partially in a corresponding mutual penetration area, wherein at least one turn of said second turns is inserted between two adjacent turns of said first turns and, vice versa, at least one turn of said first turns is inserted between two adjacent turns of said second turns;
- an elastic element designed to join said first helical element and said second helical element, said elastic element being inserted crosswise in said first turns and in said second turns at the level of said mutual penetration area between said first helical element and said second helical element.

**[0023]** According to a preferred embodiment, the elastic element comprises a body having an elongated shape, preferably a metal strap, more preferably a shaped metal strap.

**[0024]** In a preferred embodiment, the elastic element comprises a leaf spring. Preferably, the elastic element comprises an element that works under flexure.

**[0025]** According to a preferred embodiment, the elastic element has a first arched position in which it is suited to push the first helical element against the second helical element in a first position of maximum mutual penetration between the first helical element and the second helical element, and at least one second, less arched position corresponding to a second position of reduced mutual penetration between the first helical element and the second helical element.

**[0026]** In a preferred embodiment, the ends of the elastic element are fixed to respective first turns of the first helical element or to respective second turns of the second helical element.

**[0027]** Preferably, said ends are fixed to the first turns or to the second turns by means of a welding process or by means of a fixing or gluing process.

**[0028]** According to a preferred embodiment, the mutual penetration area extends over the entire length of the first helical element and/or of the second helical element. In a preferred embodiment, the first turns are wound forming a first angle with respect to the first direction and the second turns are wound forming a second angle with respect to the second direction.

**[0029]** Preferably, the first angle is equal to the second angle.

**[0030]** According to a preferred embodiment, the first angle and the second angle are supplementary angles.

**[0031]** In a preferred embodiment, the first direction is perpendicular to the main axis and/or the second direction is perpendicular to the main axis.

**[0032]** According to another aspect of the present invention, the same concerns an object such as a wristwatch or a jewellery and/or costume jewellery item, **wherein** the object comprises a bracelet made according to the description provided above.

## BRIEF DESCRIPTION OF THE FIGURES

**[0033]** Further advantages, objectives and characteristics as well as further embodiments of the present invention are defined in the claims and clarified below through the following description, making reference to the attached drawings; in the drawings, corresponding or equivalent characteristics and/or component parts of the present invention are identified by the same reference numbers. In particular, in the figures:

- Figure 1A shows an axonometric view of a bracelet for a wristwatch according to a first preferred embodiment of the invention;
- Figure 1B shows an axonometric view of a bracelet for a wristwatch according to a different preferred embodiment of the invention;
- Figure 2 shows an axonometric view of a portion of the bracelet of Figure 1;
- Figure 3 shows a plan view of the bracelet portion shown in Figure 2;
- Figure 4 shows a detail of Figure 2 isolated from the rest;
- Figure 5 shows an exploded view of Figure 4;
- Figure 6 shows an enlarged detail of Figure 2;
- Figure 7 shows an enlarged detail of Figure 3;
- Figure 8A shows the bracelet portion of Figure 2 in a first operating configuration;
- Figure 8B shows the front plan view of Figure 8A;
- Figure 8C shows the side plan view of Figure 8A;
- Figure 8D shows some elements of the bracelet in the first operating configuration of Figure 8A isolated from the rest;
- Figure 9A shows the bracelet portion of Figure 8A in a second operating configuration;

- Figure 9B shows the front plan view of Figure 9A;
- Figure 9C shows the side plan view of Figure 9A;
- Figure 9D shows the elements of the bracelet of Figure 8D in the second operating configuration;
- Figure 10A shows a bracelet portion according to a variant embodiment of the invention in a first operating configuration;
- Figure 10B shows the front plan view of Figure 10A;
- Figure 10C shows the side plan view of Figure 10A;
- Figure 10D shows some elements of the bracelet in the first operating configuration of Figure 10A isolated from the rest;
- Figure 11A shows the bracelet portion of Figure 10A in a second operating configuration;
- Figure 11B shows the front plan view of Figure 11A;
- Figure 11C shows the side plan view of Figure 11A;
- Figure 11D shows the elements of the bracelet of Figure 10D in the second operating configuration;
- Figure 12A shows a bracelet portion according to another variant embodiment of the invention in a first operating configuration;
- Figure 12B shows the front plan view of Figure 12A;
- Figure 12C shows the side plan view of Figure 12A;
- Figure 12D shows some elements of the bracelet in the first operating configuration of Figure 12A isolated from the rest;
- Figure 13A shows the bracelet portion of Figure 12A in a second operating configuration;
- Figure 13B shows the front plan view of Figure 13A;
- Figure 13C shows the side plan view of Figure 13A;
- Figure 13D shows the elements of the bracelet of Figure 12D in the second operating configuration;
- Figure 13E shows a detail of a variant embodiment of the bracelet of the invention;
- Figures from 14 to 16 show corresponding side views of bracelet portions according to variant embodiments of the invention;
- Figures 17 and 18 show corresponding bracelet portions according to variant embodiments of the invention;
- Figure 19A shows a bracelet portion according to another variant embodiment of the invention;
- Figure 19B shows the front plan view of Figure 19A;
- Figure 12C shows the side plan view of Figure 19A;
- Figure 20 shows the side view of a bracelet portion according to a further variant embodiment of the invention.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

**[0034]** Even though the present invention is described below with reference to its embodiments represented in the drawings, the present invention is not limited to the embodiments described below and shown in the drawings.

**[0035]** On the contrary, the embodiments described and represented in the drawings clarify some aspects of the present invention, the scope of which is defined in the claims.

**[0036]** The present invention can be especially but not exclusively applied in the field of jewellery and/or costume jewellery. More specifically, the bracelet according to the present invention can be advantageously used to make a valuable or luxury wristwatch. For this reason, the present invention is described here below with particular reference to a wristwatch.

**[0037]** It should, however, be noted that the applications of the present invention are not limited to the case of wristwatches; on the contrary, the present invention can be advantageously applied in all those cases in which a bracelet is required, in particular for objects such as jewellery items and/or costume jewellery items as specified above. For example, a bracelet according to the invention can be used for making an ornamental anklet or a necklace. Furthermore, the jewellery and/or costume jewellery item can be constituted even by the bracelet alone.

**[0038]** A first embodiment of the bracelet 10 according to the present invention is described below with reference to Figures from 1 to 9.

**[0039]** The bracelet 10 shown in Figure 1A is used for making a wristwatch O comprising the bracelet 10, or strap, and a watch W.

**[0040]** More specifically, the bracelet 10 preferably comprises two terminal areas 12, 14 connected to the watch W.

**[0041]** The bracelet 10 according to the invention has a certain degree of elasticity which advantageously makes it possible to wear the item on the wrist or ankle in such a way that it adheres to it but is not too tight, and which adapts the bracelet to small diameter variations, thus making it easier for the user to put the item on and to wear it.

**[0042]** The bracelet 10 has a structure which is developed along a main axis X and is shaped in such a way that it can be curved to define the ring shape desired for the wristwatch O, as shown in Figure 1A.

**[0043]** In the embodiment shown in Figure 1A, the bracelet 10 is preferably made in a single piece closed as a ring and connected to the ends 12, 14 of the watch W.

**[0044]** In preferred variant embodiments, however, the bracelet can be made in several parts assembled together. The parts may comprise, for example, adjacent sections having different shapes and/or structures and connected together, or they may comprise at least two opening sections and a fastening system Z between the two parts which makes it possible to stretch the bracelet 10 for the introduction of the wrist or ankle, as shown in Figure 1B.

**[0045]** Figure 1A shows the bracelet 10 in its curved configuration, ready to be put on by the user, while in Figure 2 and in successive figures the partial views of the bracelet 10 show the bracelet when open and placed on a plane surface for the sake of clarity.

**[0046]** According to an aspect of the present invention,

the structure of the bracelet 10 comprises at least one elastic section 20.

**[0047]** The elasticity according to the present invention is related to variations, meaning extensions and reductions, in the length of the bracelet 10 along its main axis X, for example small extensions of a few millimetres up to extensions that can even reach 20-25 mm, which can make it possible to put the watch on or take it off by sliding the user's hand through it, in particular when the bracelet has no fasteners.

**[0048]** In the preferred embodiment illustrated in Figure 1A, all the sections making up the bracelet 10 are preferably elastic. In preferred variant embodiments, however, the bracelet may comprise one or more elastic sections for limited extension with respect to the total length of the bracelet.

**[0049]** The length of the elastic sections can be conveniently selected according to the extensions/reductions required for the bracelet.

**[0050]** According to an advantageous aspect of the present invention, the elastic section 20 comprises a first helical element 30, a second helical element 40 and an elastic element 50 designed to join the first helical element 30 and the second helical element 40, as illustrated in particular in Figures 4 and 5.

**[0051]** The first helical element 30 and/or the second helical element 40 and/or the elastic element 50 are preferably made of a metallic material, more preferably a valuable metallic material, for example gold, silver, platinum.

**[0052]** In variant embodiments, however, it is possible to use other materials such as, for example, valuable composite/sintered materials or carbon fibre and/or special plastic.

**[0053]** The first helical element 30 is developed along a first direction D1 which is transversal and preferably perpendicular to the main axis X. The first helical element 30 is constituted by a plurality of first consecutive turns 32 wound along the first direction D1.

**[0054]** The second helical element 40 is developed along a second direction D2 which is transversal and preferably perpendicular to the main axis X. The second helical element 40 is constituted by a plurality of second consecutive turns 42 wound along the second direction D2.

**[0055]** The first and the second helical elements 30, 40 are preferably obtained starting from a thread which is wound so as to form the respective turns 32, 42 along the respective directions D1, D2.

**[0056]** In the first preferred embodiment, the turns 32, 42 are wound according to a circular pattern, as shown for example in Figure 8C.

**[0057]** In preferred variant embodiments, however, the turns can be wound according to different profiles, for example in an ovoid profile, as shown in Figures 14, 15 and 16, or in a flattened profile, a rectangular profile etc.

**[0058]** The thread that constitutes the first and/or the second helical element 30, 40 with the respective turns preferably has a solid cross section in a circular geometric shape.

**[0059]** In preferred variant embodiments, the cross section of the thread can have different geometric shapes, for example polygonal, mixtilinear etc., or it can be hollow.

**[0060]** The first helical element 30 and the second helical element 40 preferably have the same length and are arranged side by side and penetrate each other at least partially in a mutual penetration area. In the preferred embodiment illustrated in the figures, the mutual penetration area coincides with the entire length of the two helical elements 30, 40.

**[0061]** In the mutual penetration area, at least one turn of the second turns 42 is inserted between two adjacent turns of the first turns 32 and, vice versa, at least one turn of the first turns 32 is inserted between two adjacent turns of the second turns 42. In the preferred embodiment illustrated in the figures, only one turn of the second turns 42 is inserted between two adjacent first turns 32 and, vice versa, only one turn of the first turns 32 is inserted between two adjacent second turns. Preferably, the first turns 32 of the first helical element 30 are wound forming a predetermined first angle with respect to the first direction D1, for example a 110° angle in the first embodiment illustrated in Figure 7. Analogously, the second turns 42 of the second helical element 40 are wound forming a predetermined second angle with respect to the first direction D2, for example a 70° angle in the first embodiment illustrated in Figure 7. According to the first embodiment illustrated herein, the two angles are preferably supplementary angles. In preferred variant embodiments, however, the value of the two angles can be different. For example, in Figure 17 and in Figure 18 the two angles of the turns 32, 43 of the two helical elements 30, 42 are the same, 70° in the solution illustrated in Figure 17 and 110° in the solution illustrated in Figure 18.

**[0062]** The elastic element 50 that joins the first helical element 30 and the second helical element 40 is preferably inserted crosswise in the first turns 32 and in the second turns 42 at the level of the mutual penetration area.

**[0063]** The elastic joining element 50 preferably comprises a body having an elongated shape, preferably a metal strap, more preferably a metal strap in a rectangular or a contoured rectangular shape.

**[0064]** In a preferred embodiment, the elastic element 50 comprises a first end 52 fixed to one turn 32A of the first turns 32 of the first helical element 30 and a second end 54 fixed to one turn 32B of the first turns 32 of the first helical element 30, while the elastic element 50 of the adjacent section comprises a first end 52 fixed to one turn 42A of the second turns 42 of the second helical element 40 and a second end 54 fixed to one turn 42B of the second turns 42 of the second helical element 40, as shown in Figures 6, 7, 8A and 8B.

**[0065]** The ends 52, 54 of the elastic element 50 are preferably fixed to the corresponding turns by means of

a welding process. In variant embodiments they can be fixed in a different and equivalent manner, for example through a mechanical fixing process or a gluing process etc.

**[0066]** Said welds are shown only in Figures 2, 3, 6, 7, 8A and 8B. In the other figures the ends of the elastic element 50 are open for the sake of simplicity but it is understood that the ends are in any case fixed to the turns, as explained above. The elastic element 50 is preferably constituted by an element that works under flexure.

**[0067]** More preferably, as can be understood by comparing Figures 8B and 9B or Figures 8D and 9D, the elastic element 50 can assume a first arched or released position (Figures 8B and 8D) and at least one second less arched or stretched position (Figures 9B and 9D).

**[0068]** The elastic element 50 is arranged in the first arched position corresponding to a first operating configuration of the bracelet 10, in which it pushes the first helical element 30 against the second helical element 40 towards a first position of maximum mutual penetration between the first helical element 30 and the second helical element 40 (see Figures from 8A to 8C).

**[0069]** The elastic element 50 is arranged in the second, less arched position corresponding to a second operating configuration of the bracelet 10, in which there is a reduced mutual penetration between the first helical element 30 and the second helical element 40 (see Figures from 9A to 9C). In the second operating configuration, the elastic element 50 preferably assumes its stretched/rectilinear configuration.

**[0070]** Preferably, therefore, the elastic element 50 acts as a leaf spring.

**[0071]** Preferably, the elastic elements 50 of the bracelet 10 are assembled in such a way that they all have their arched part on the same side, as shown in Figure 8D. Thanks to the action of the elastic element 50, or of the elastic elements 50 if more than one are provided, the bracelet 10 can thus assume a first operating configuration (Figure 8B), in which it has the minimum size/diameter, and a second operating configuration, in which it has the maximum size/diameter (Figure 9B), thus obtaining the desired flexibility.

**[0072]** Advantageously, the action of the elastic elements 50 of the various elastic sections 20 forming the bracelet 10 makes it easier to put on and wear the wristwatch O and allows the bracelet 10 to be adapted to wrists having different diameters or to variations in the diameter of the same wrist.

**[0073]** Advantageously, furthermore, the simple construction structure of the bracelet makes the latter sturdier than the bracelets of the known type, thus making it almost impossible to lose the bracelet.

**[0074]** Still advantageously, the bracelet does not require the use of elastic steel elements, which instead are used in the known art, so that it can preferably be made with valuable metals, in particular it can be completely made of gold.

**[0075]** A further advantage offered by the bracelet of the present invention is constituted by the fact that the elastic element 50 is completely surrounded by the turns of the helical elements, thus remaining concealed. In this way, the aesthetic appearance of the bracelet is not affected by the elastic element, independently of the operating configuration assumed by the same.

**[0076]** Still advantageously, the special construction of the bracelet with helical elements positioned side by side defines a sufficiently compact and smooth structure, which prevents the bracelet from pinching the skin or hair of the user who is wearing it.

**[0077]** A preferred variant embodiment of the bracelet of the invention 110 is described with reference to Figures 10 and 11. In the drawings, characteristics and/or component parts corresponding or equivalent to those of the previous embodiment are identified by the same reference numbers.

**[0078]** The bracelet 110 according to said embodiment differs from the previous embodiment described with reference to Figures from 1 to 9 due to the different position of the elastic elements 50.

**[0079]** According to said embodiment, the elastic elements 50 of the bracelet 10 are assembled in such a way that the arched part of an elastic element 50 is contrary to the arched part of an adjacent elastic element 50, as shown in Figure 10D. Analogously to what has been previously described with reference to the first embodiment, the elastic elements 50 assume the arched position corresponding to a first operating configuration of the bracelet 10 (minimum size/diameter, Figures from 10A to 10C). The elastic elements 50 then assume a second, less arched position, preferably rectilinear, corresponding to a second operating configuration of the bracelet 10 (maximum size/diameter, Figures from 11A to 11C).

**[0080]** Another preferred variant embodiment of the bracelet of the invention 210 is described with reference to Figures 12 and 13. In the drawings, characteristics and/or component parts corresponding or equivalent to those of the previous embodiment are identified by the same reference numbers.

**[0081]** The bracelet 210 according to said embodiment differs from the embodiment previously described with reference to Figures 10 and 11 8 due to the fact that the elastic elements 250 are made in a different way.

**[0082]** According to said embodiment, the elastic elements of the bracelet are not constituted by separate elements fixed with their ends to the helical elements but belong to a single elastic element 250 conveniently shaped to define corresponding arched sections, each of which serves the same functions previously described.

**[0083]** The ends of each arched section are joined to respective ends of adjacent sections in connection areas 252, preferably in semicircular connection areas.

**[0084]** The connection areas 252 are defined on the lateral edges 210A and 210B of the bracelet. In a preferred embodiment, shown in Figure 13E, a covering element 260 is used to conceal the connection areas 252

and improve the aesthetic effect at the level of the lateral edges 210A, 210B of the bracelet 210.

**[0085]** The covering element preferably comprises a hemi spherical portion 262 inside which there is a pin 264 surrounded by the connection area 252 of the elastic element 250.

**[0086]** Figures from 14 to 16 show possible variant embodiments related to the shape of the turns which make up the helical elements of the bracelet. In particular, Figure 14 shows a possible embodiment in which only turns 332, 342 with an ovoid shape are used, Figures 15 and 16 show a possible embodiment in which turns with a circular shape 32 alternate with turns with an ovoid shape 332.

**[0087]** Figures 17 and 18 show possible variant embodiments related to the inclination of the turns of adjacent helical elements 30, 40 of the bracelet. In particular, in Figure 17 the turns 32, 42 of the two helical elements 30, 40 have the same inclination, preferably a 70° angle with respect to the directions D1, D2 as previously defined, and in Figure 18 the turns 32, 43 of the two helical elements 30, 42 have the same inclination, preferably a 110° angle with respect to the directions D1, D2.

**[0088]** A further preferred variant embodiment of the bracelet of the invention 410 is described with reference to Figures from 19A to 19C. In the drawings, characteristics and/or component parts corresponding or equivalent to those of the previous embodiment are identified by the same reference numbers.

**[0089]** The bracelet 410 according to said embodiment differs from the embodiments described above in that the elastic element 450 is constituted by one pair of elastic elements 450A, 450B. Each of the two elements is shaped so that it can assume the arched position corresponding to a first operating configuration of the bracelet 410 (minimum size/diameter, Figures from 19A to 19C) and a second, less arched position, not shown and preferably rectilinear analogously to what has been described above, corresponding to a second operating configuration of the bracelet 410 (maximum size/diameter).

**[0090]** A further preferred variant embodiment of the bracelet of the invention 510 is described with reference to Figure 20. In the drawings, characteristics and/or component parts corresponding or equivalent to those of the previous embodiment are identified by the same reference numbers.

**[0091]** The bracelet 510 according to said embodiment differs from the embodiments previously described in that only some sections 20 of the bracelet 510 are elastic, having respective elastic elements 50, while other sections 580 are not elastic.

**[0092]** It has thus been shown that the present invention, as described above, allows the set objects to be achieved.

**[0093]** More specifically, the present invention makes it possible to overcome the problems related to the bracelets known in the art. In fact, it has been shown that the bracelet according to the present invention is sturdier than the elastic bracelets of the known type.

**[0094]** While the present invention has been described making reference to the particular embodiments represented in the figures, it should be noted that the present invention is not limited to the specific embodiments illustrated and described herein; on the contrary, further variants of the embodiments described herein fall within the scope of the present invention, which is defined in the claims.

## Claims

1. Elastic bracelet (10; 110; 210; 410; 510) for objects (O) such as wristwatches (O) and/or jewellery items and/or costume jewellery items and similar objects, said bracelet (10; 110; 210; 410; 510) having a structure that is developed along a main axis (X) and is suited to be curved along said main axis (X) in order to define a ring shape for said bracelet (10; 110; 210; 410; 510), said structure comprising at least one elastic section (20), **characterized in that** said elastic section (20) comprises:

   - a first helical element (30) that is developed along a first direction (D1), crosswise with respect to said main axis (X), said first helical element (30) being constituted by a plurality of first consecutive turns (32; 332) wound along said first direction (D1);
   - a second helical element (40) that is developed along a second direction (D2), crosswise with respect to said main axis (X), said second helical element (40) being constituted by a plurality of second consecutive turns (42; 342) wound along said second direction (D2), **wherein** said first helical element (30) and said second helical element (40) are positioned side by side and penetrate each other at least partially in a corresponding mutual penetration area, **wherein** at least one of said second turns (42; 342) is inserted between two adjacent turns of said first turns (32; 332) and, vice versa, at least one of said first turns (32; 332) is inserted between two adjacent turns of said second turns (42; 342);
   - an elastic element (50; 250; 450) designed to join said first helical element (30) and said second helical element (40), said elastic element (50; 250; 450) being inserted crosswise in said first turns (32; 332) and said second turns (42; 342) at the level of said mutual penetration area between said first helical element (30) and said second helical element (40).

2. Bracelet (10; 110; 210; 410; 510) according to claim 1, **characterized in that** said elastic element (50; 250; 450) comprises a body having an elongated shape, preferably a metal strap, more preferably a

shaped metal strap.

3. Bracelet (10; 110; 210; 410; 510) according to claim 1 or 2, **characterized in that** said elastic element (50; 250; 450) comprises a leaf spring.

4. Bracelet (10; 110; 210; 410; 510) according to any of the preceding claims, **characterized in that** said elastic element (50; 250; 450) comprises an element that works under flexure.

5. Bracelet (10; 110; 210; 410; 510) according to any of the preceding claims, **characterized in that** said elastic element (50; 250; 450) has a first arched position, in which it is suited to push said first helical element (30) against said second helical element (40) in a first position of maximum mutual penetration between said first helical element (30) and said second helical element (40), and at least one second, less arched position corresponding to a second position of reduced mutual penetration between said first helical element (30) and said second helical element (40).

6. Bracelet (10; 110; 210; 410; 510) according to any of the preceding claims, **characterized in that** the ends (52, 54) of said elastic element (50; 250; 450) are fixed to respective first turns (32; 332) of said first helical element (30) or to respective second turns (42; 342) of said second helical element (40).

7. Bracelet (10; 110; 210; 410; 510) according to claim 6, **characterized in that** said ends (52, 54) are fixed to said first turns (32; 332) or to said second turns (42; 342) by means of a welding process or by means of a fixing or gluing process.

8. Bracelet (10; 110; 210; 410; 510) according to any of the preceding claims, **characterized in that** said mutual penetration area extends over the entire length of said first helical element (30) and/or of said second helical element (40).

9. Bracelet (10; 110; 210; 410; 510) according to any of the preceding claims, **characterized in that** said first turns (32; 332) are wound forming a first angle with respect to said first direction (D1) and said second turns (42; 342) are wound forming a second angle with respect to said second direction (D2).

10. Bracelet (10; 110; 210; 410; 510) according to claim 9, **characterized in that** said first angle is equal to said second angle.

11. Bracelet (10; 110; 210; 410; 510) according to claim 9, **characterized in that** said first angle and said second angle are supplementary angles.

12. Bracelet (10; 110; 210; 410; 510) according to any of the preceding claims, **characterized in that** said first direction (D1) is perpendicular to said main axis (X) and/or said second direction (D2) is perpendicular to said main axis (X).

13. Object (O), such as a wristwatch (O) and/or a jewellery item and/or a costume jewellery item, **characterized in that** said object (O) comprises a bracelet (10; 110; 210; 410; 510) according to any of the preceding claims.

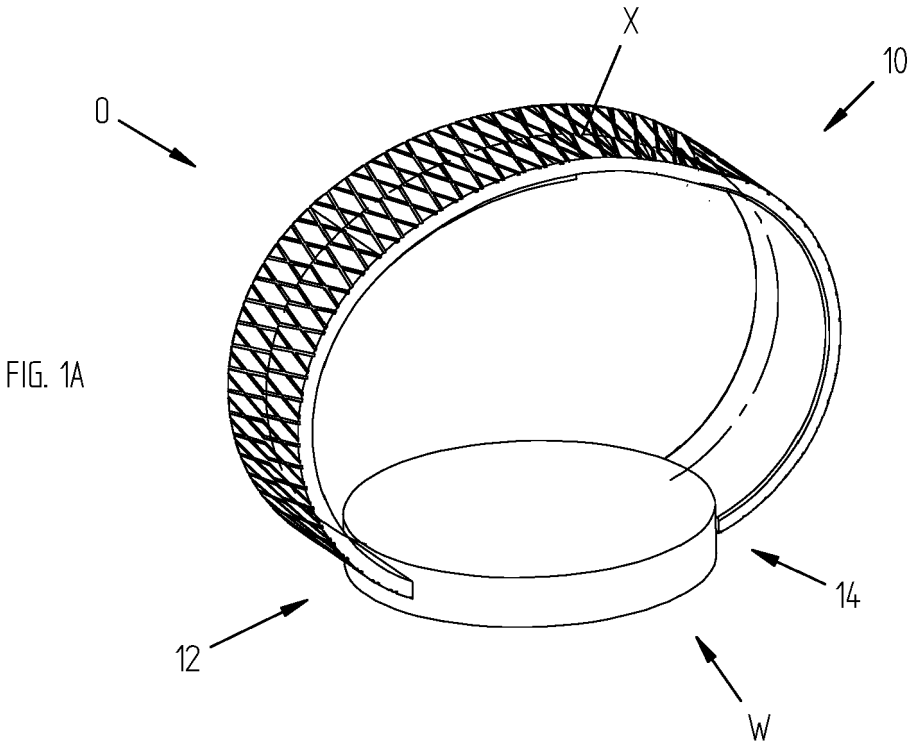


FIG. 1A

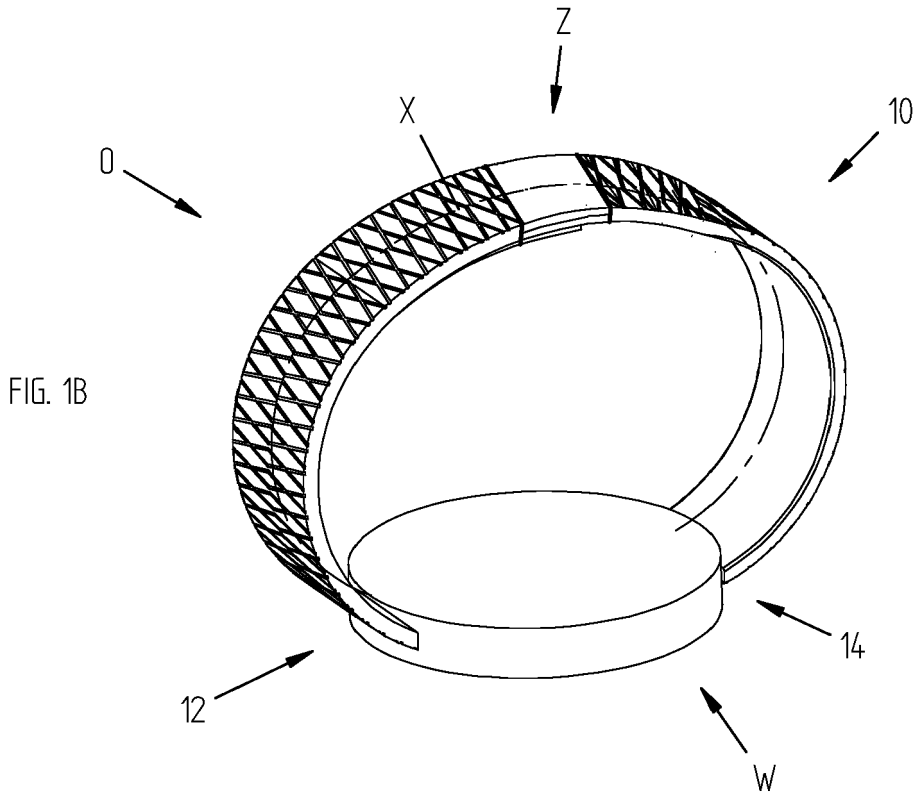


FIG. 1B

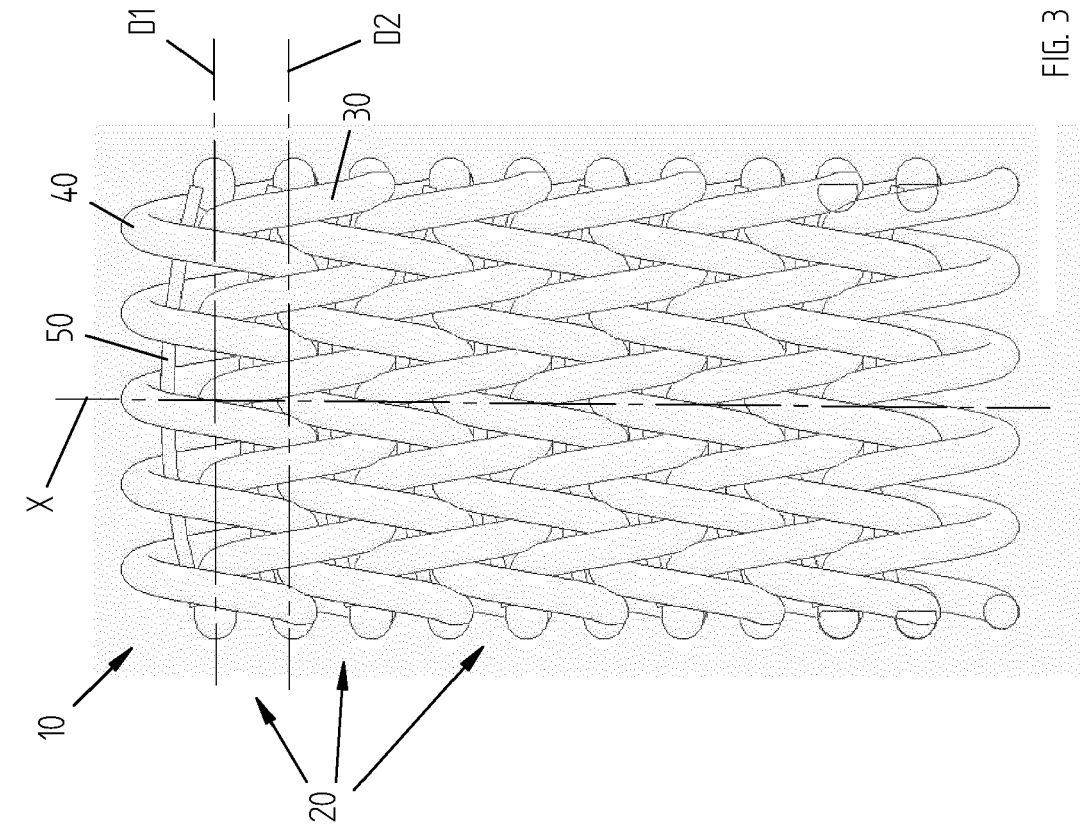


FIG. 3

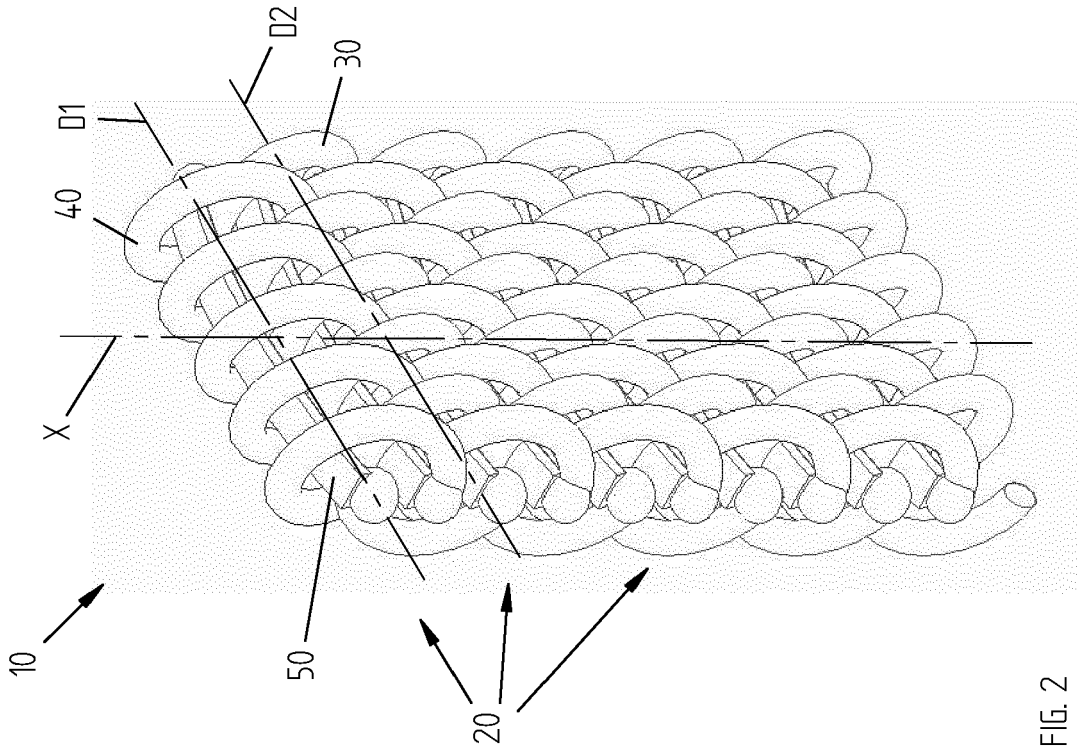


FIG. 2

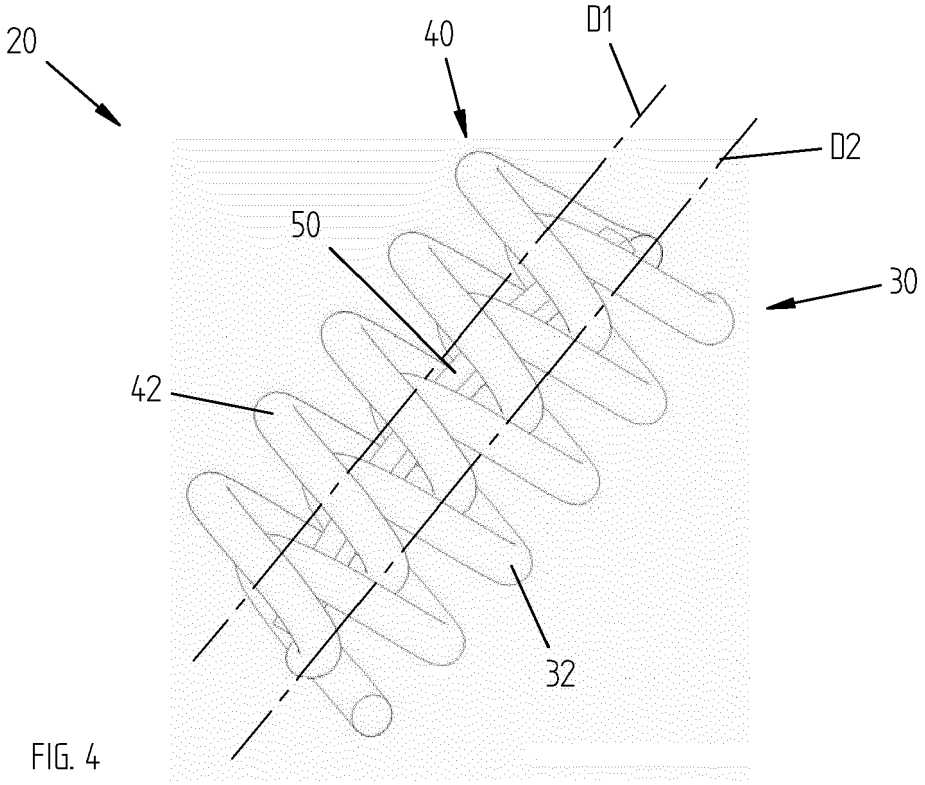


FIG. 4

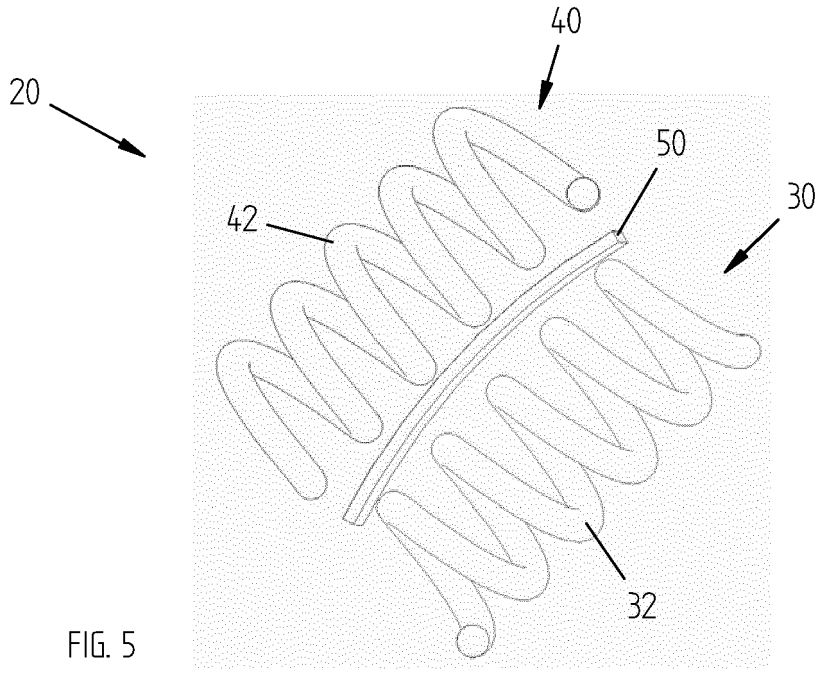


FIG. 5

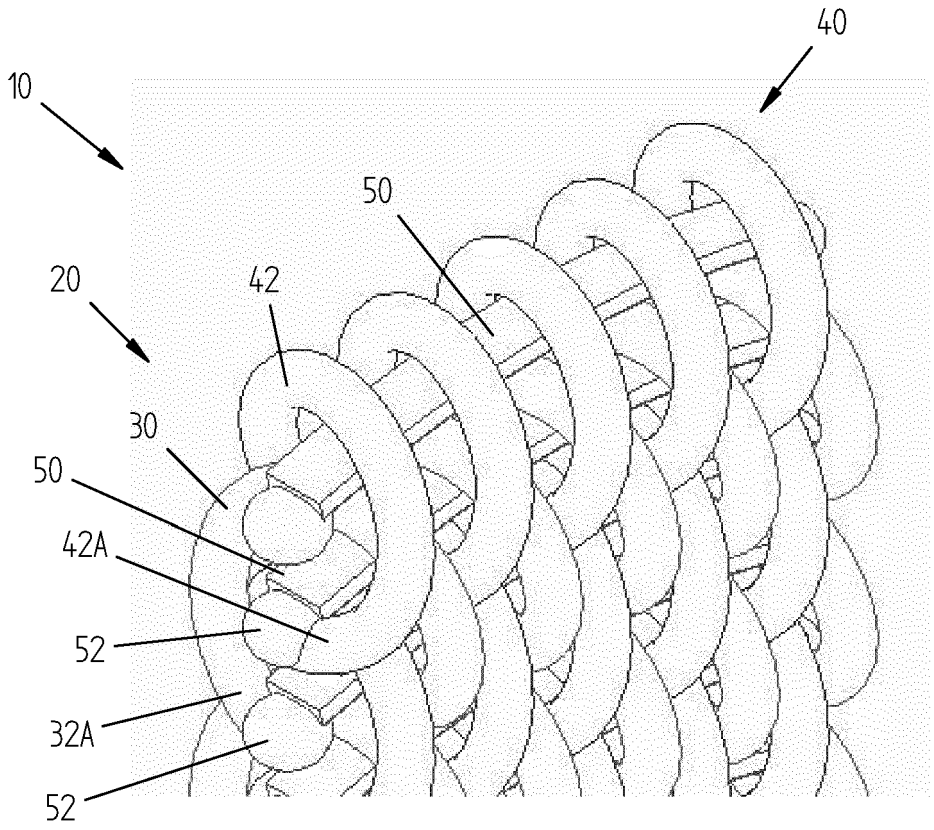
40
10
50
20
42
30
50
42A
52
32A
52

FIG. 6

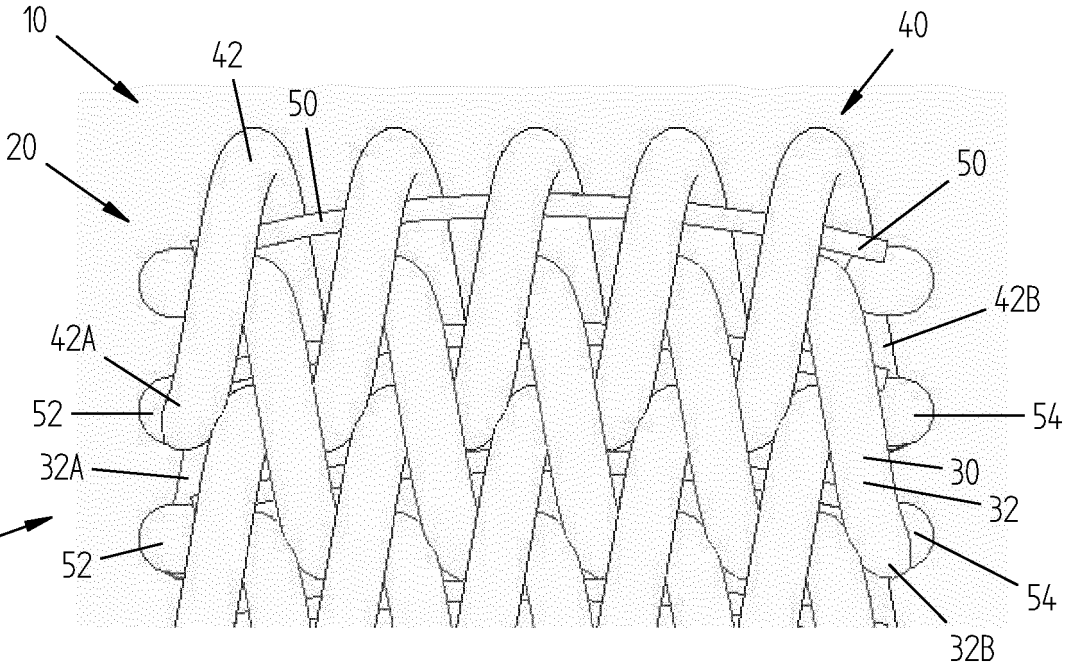
10
42
50
40
20
50
42B
42A
52
54
32A
30
32
20
52
54
32B

FIG. 7

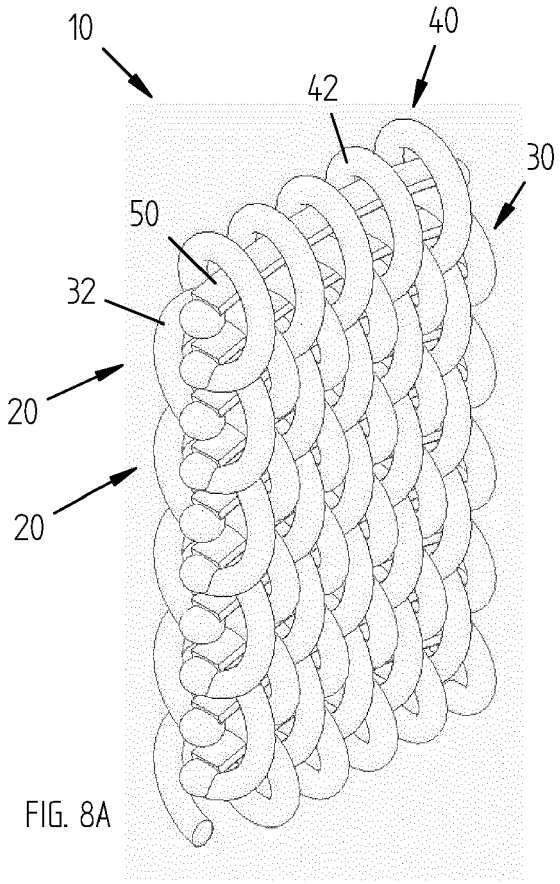


FIG. 8A

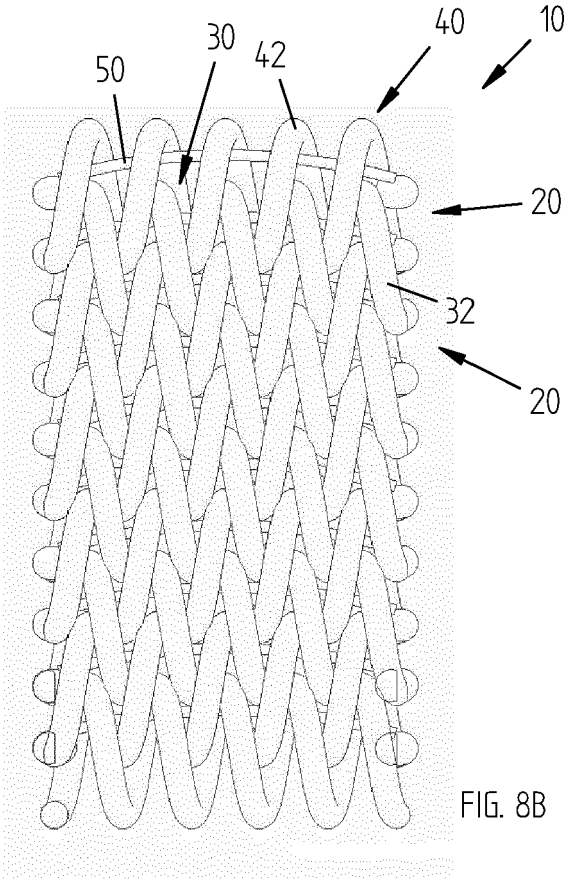


FIG. 8B

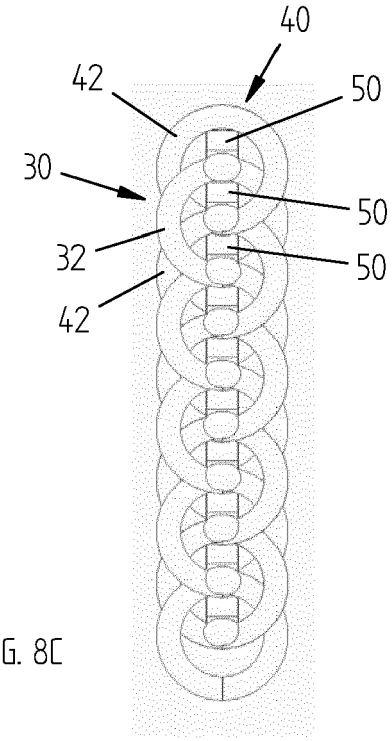


FIG. 8C

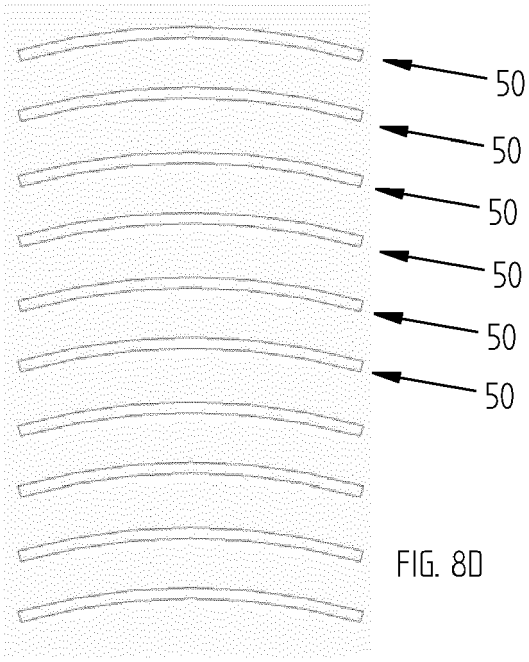


FIG. 8D

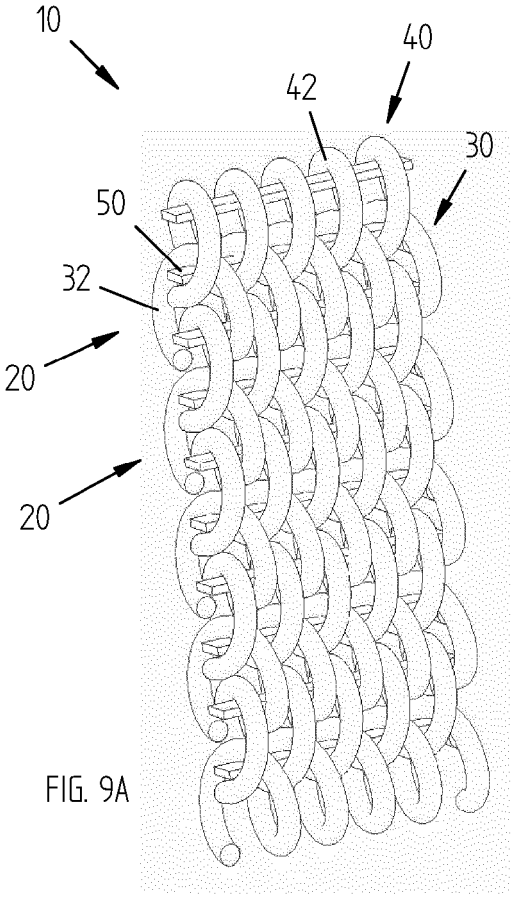


FIG. 9A

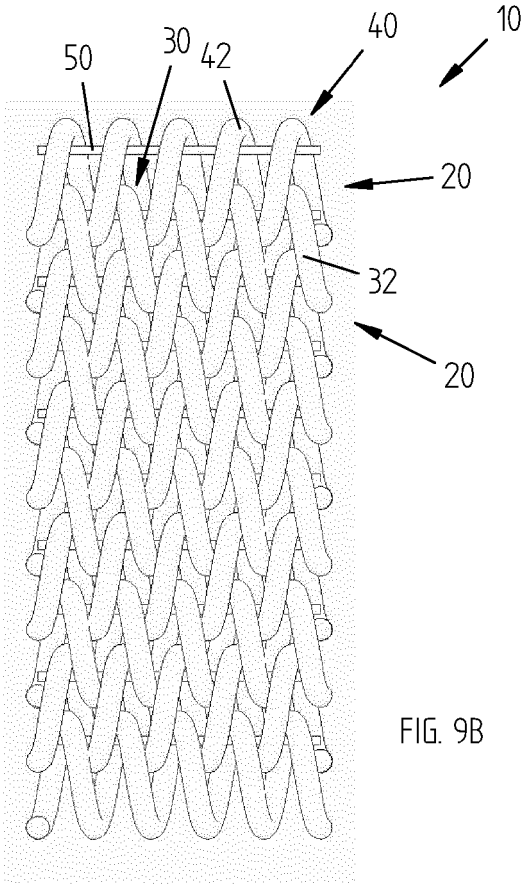


FIG. 9B

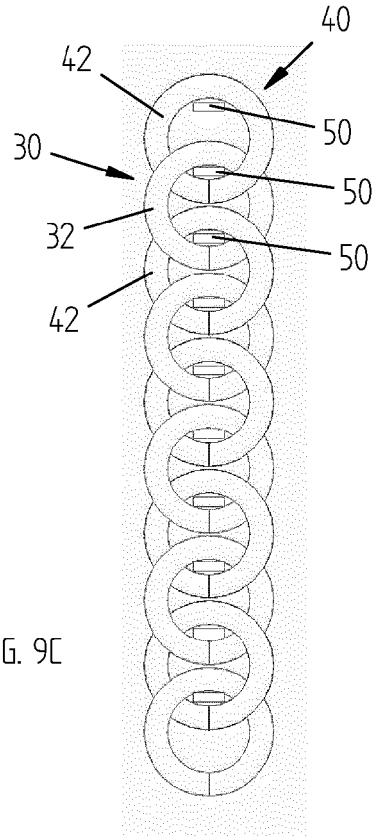


FIG. 9C

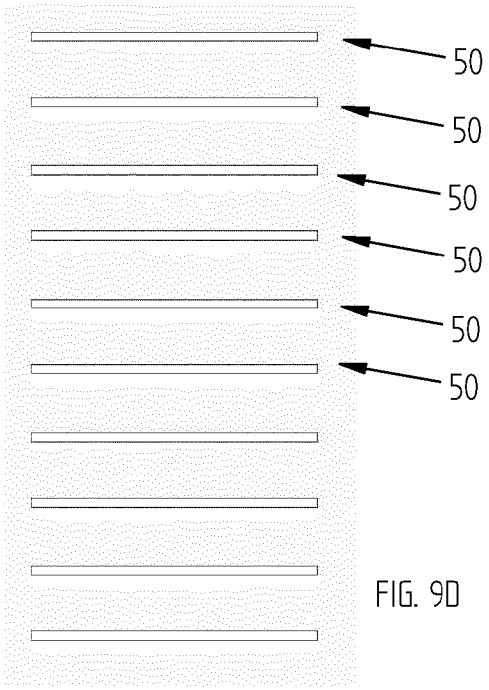


FIG. 9D

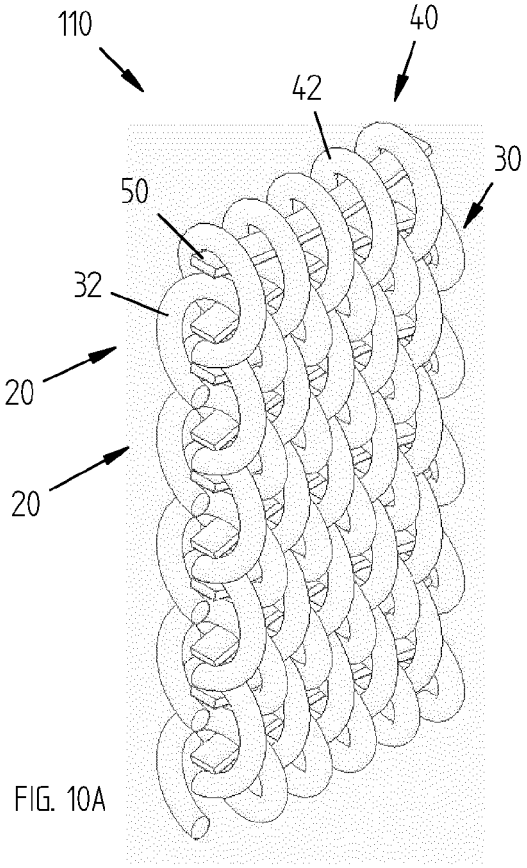


FIG. 10A

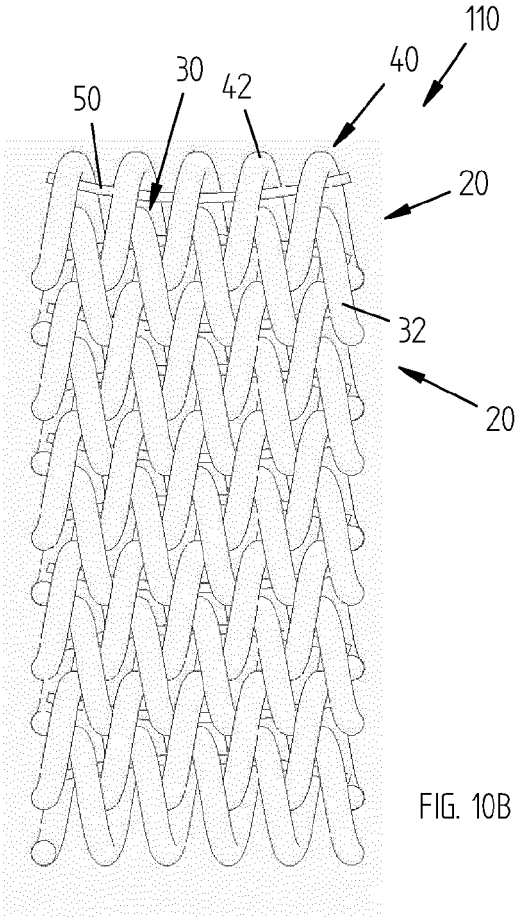


FIG. 10B

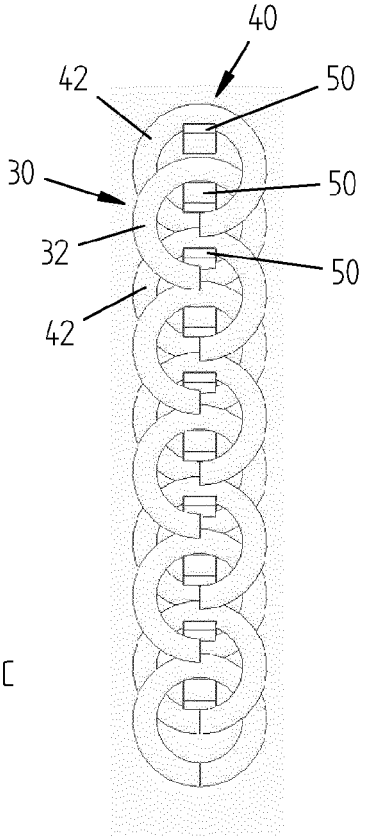


FIG. 10C

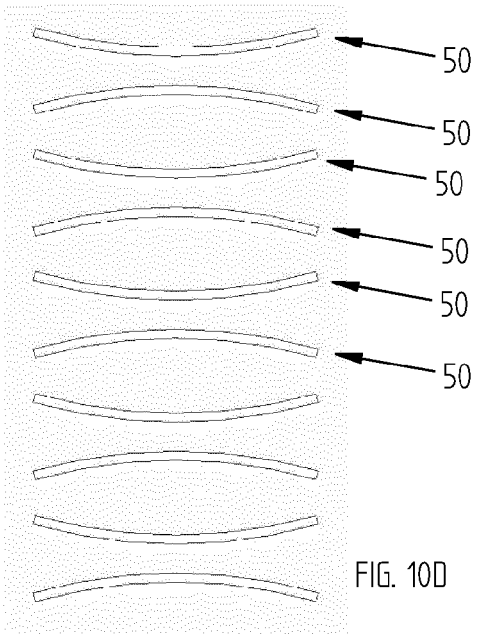


FIG. 10D

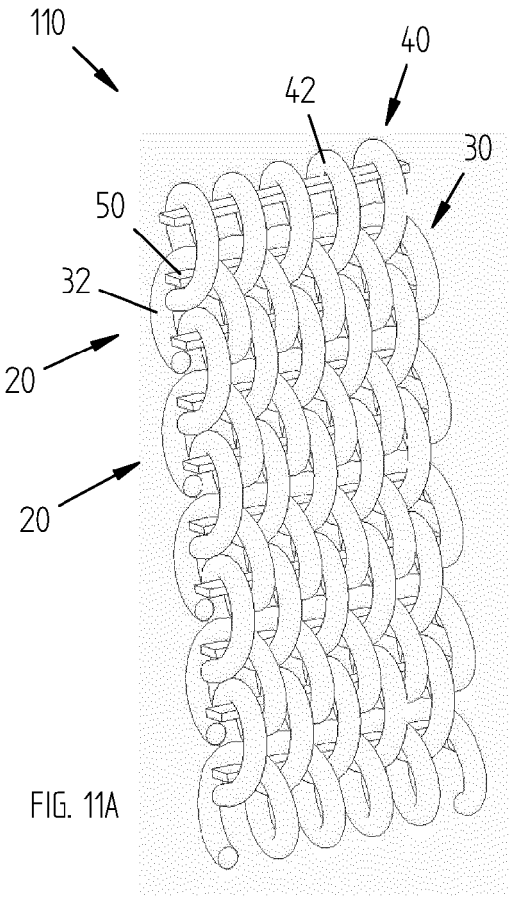


FIG. 11A

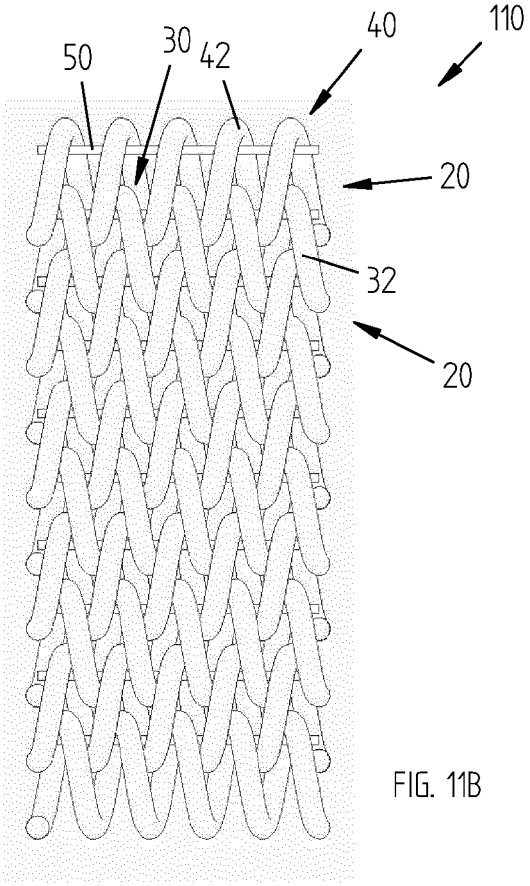


FIG. 11B

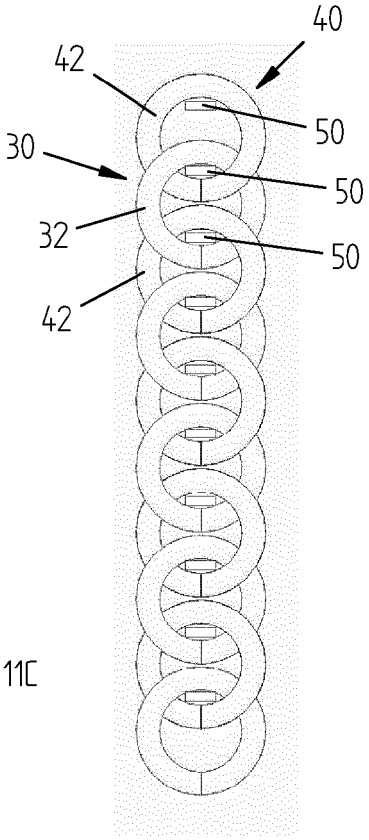


FIG. 11C

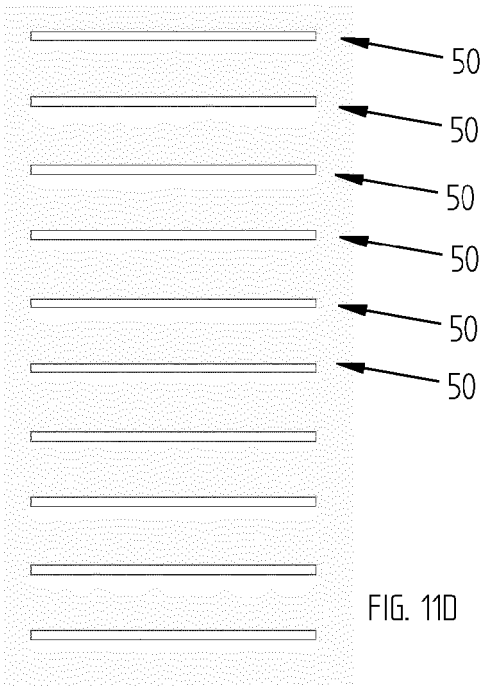


FIG. 11D

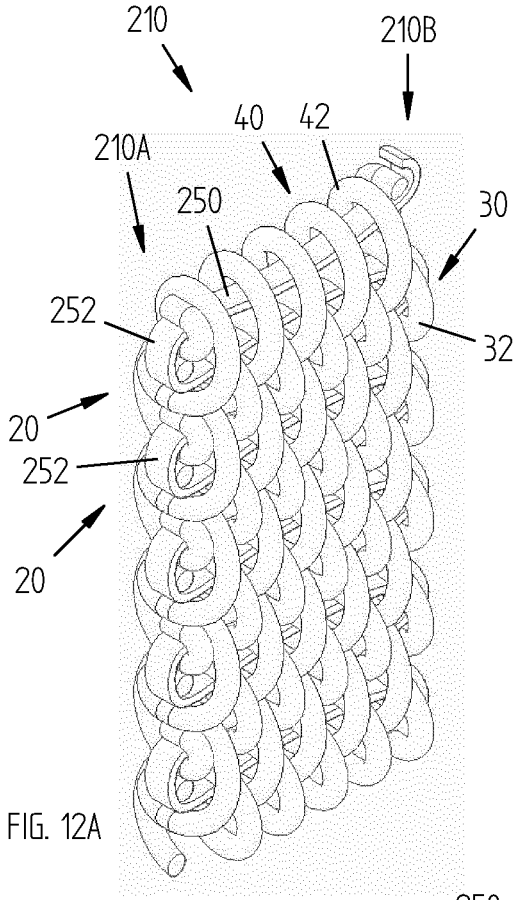


FIG. 12A

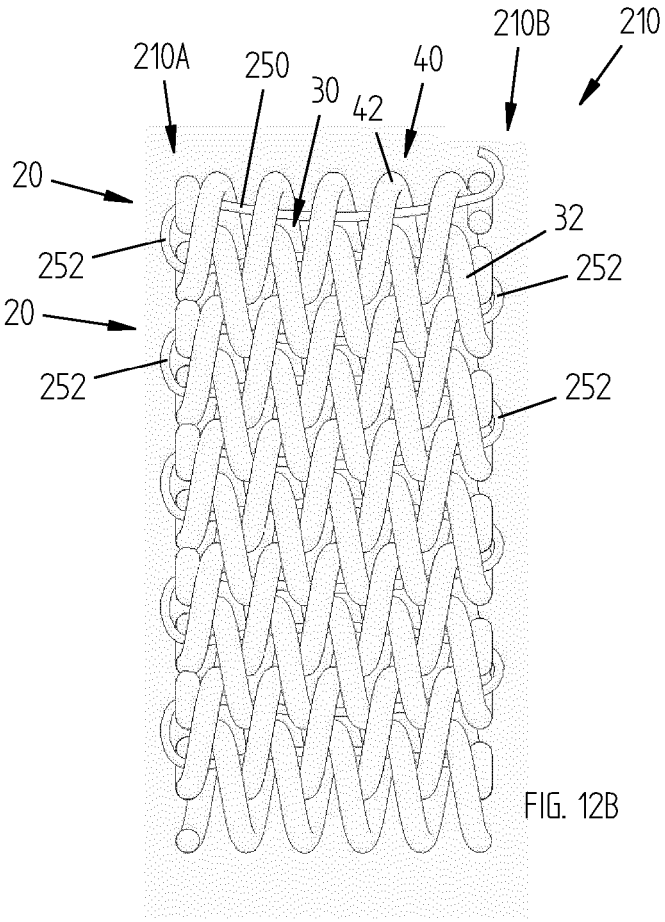


FIG. 12B

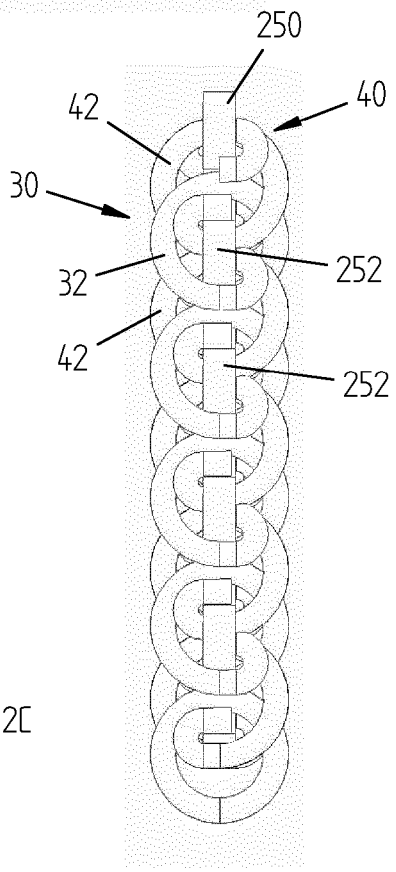


FIG. 12C

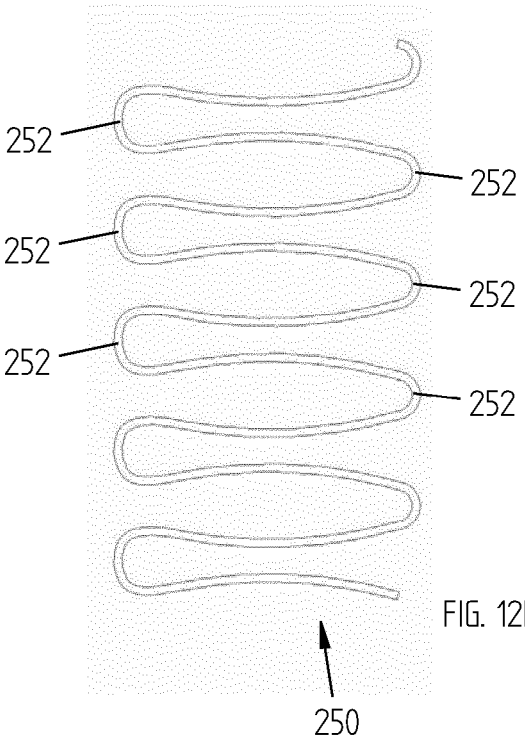


FIG. 12D

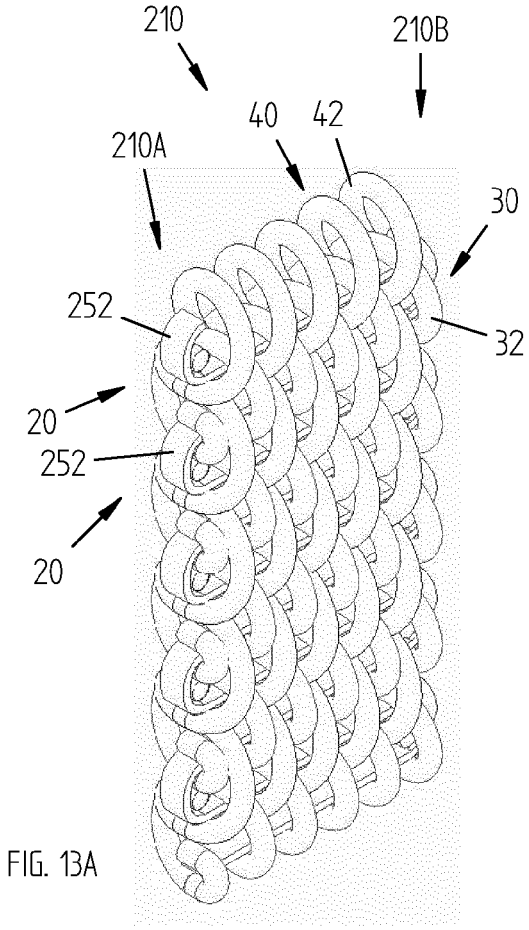


FIG. 13A

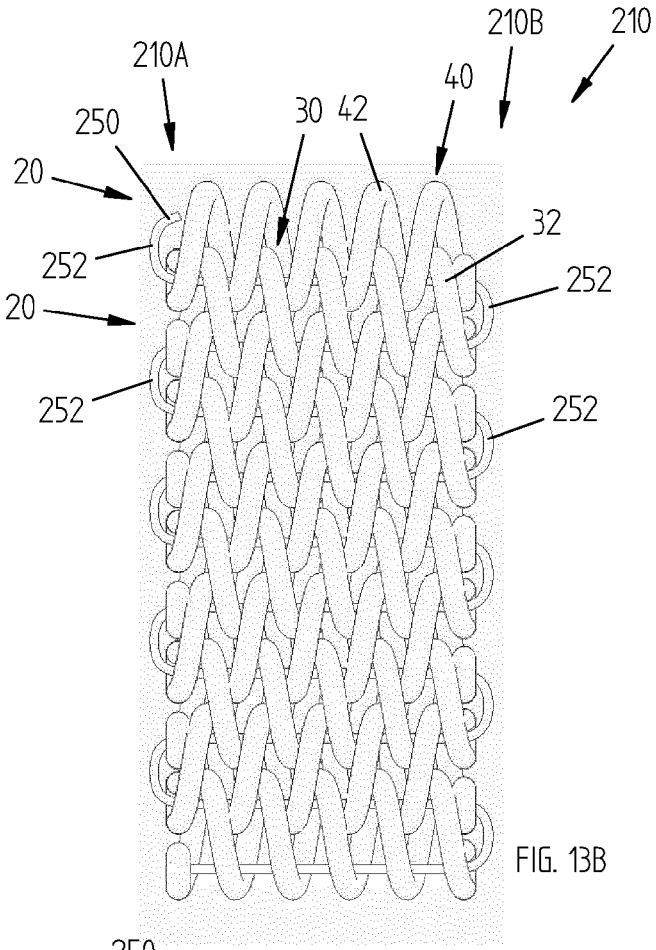


FIG. 13B

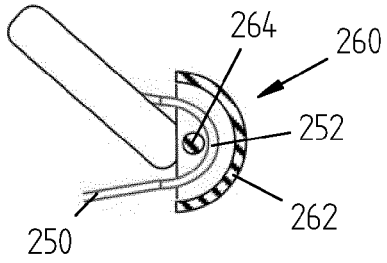


FIG. 13E

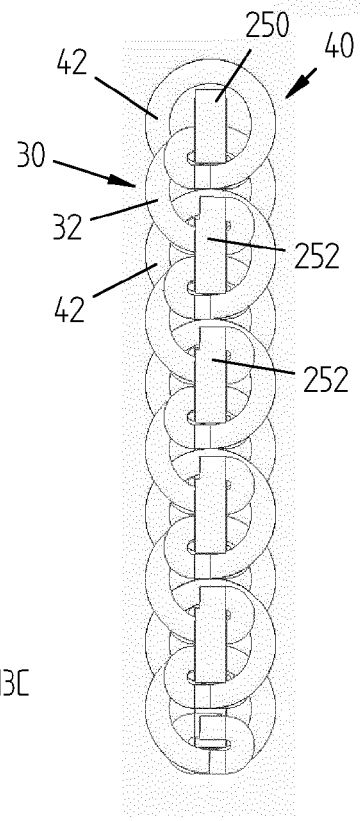


FIG. 13C

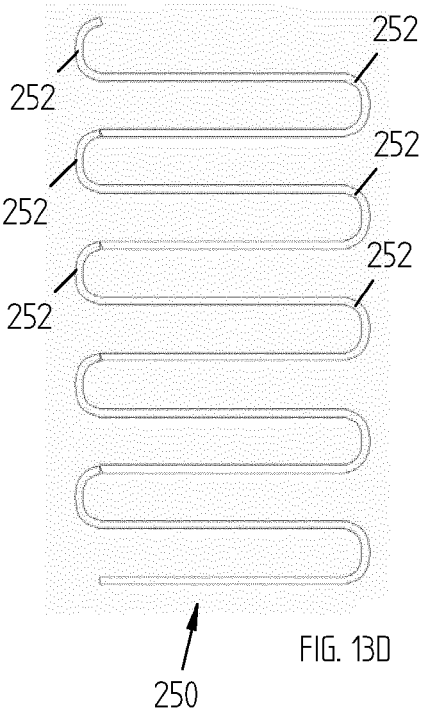


FIG. 13D

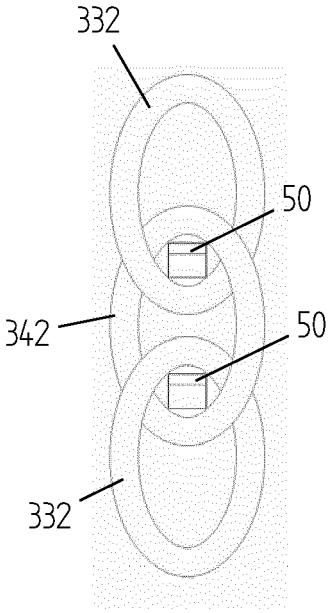


FIG. 14

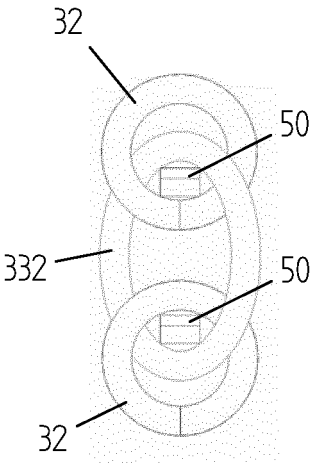


FIG. 15

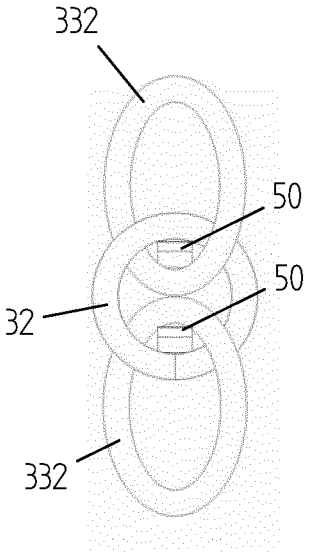


FIG. 16

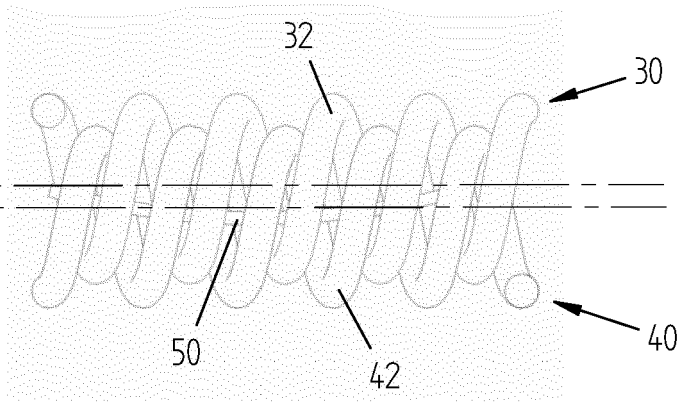


FIG. 17

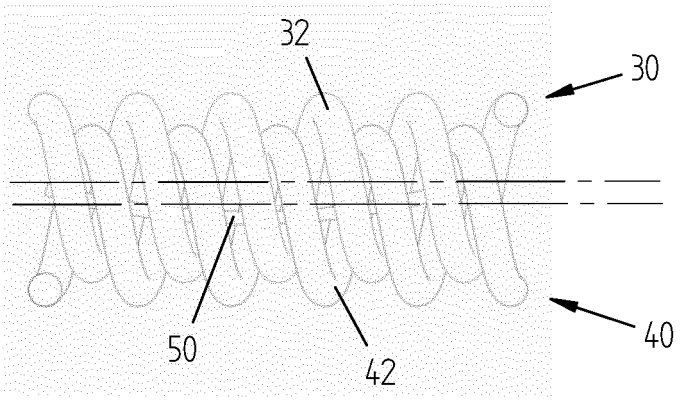


FIG. 18

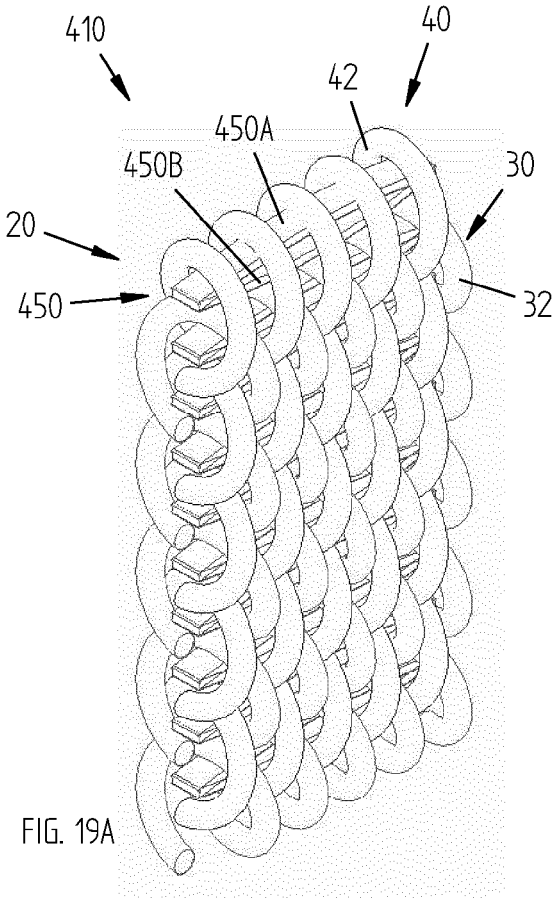


FIG. 19A

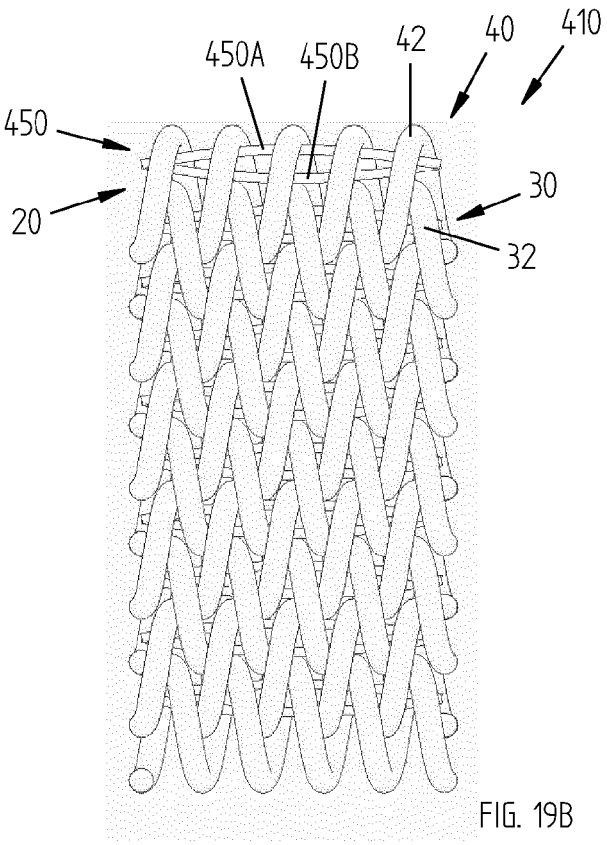


FIG. 19B

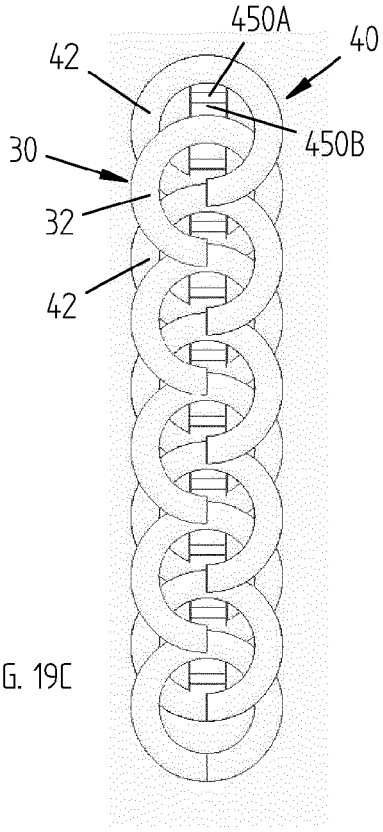


FIG. 19C

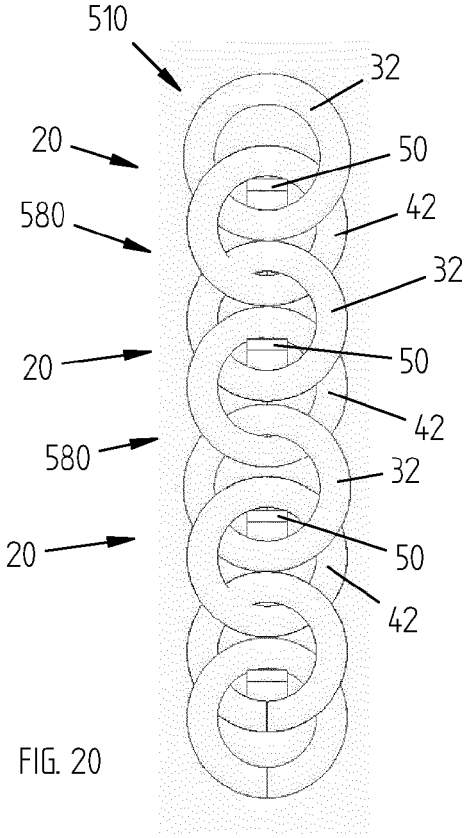


FIG. 20

Europäisches Patentamt
European Patent Office
Office européen des brevets

# EUROPEAN SEARCH REPORT

Application Number
EP 20 19 8420

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|---|---|---|---|
| X | FR 1 093 940 A (J. STOCKREITER)<br>10 May 1955 (1955-05-10)<br>* claim 1; figures 1-5 *<br>* column 1, line 1 - column 3, line 2 * | 1-13 | INV.<br>A44C5/00<br>A44C5/04 |
| X | DE 25 00 980 A1 (FIESSLER & CIE LOUIS; TESCH AG) 15 July 1976 (1976-07-15)<br>* abstract; claim 1; figures 1-7 *<br>* page 6, line 15 - page 10, line 5 * | 1-13 | |
| X | US 2 498 211 A (JACQUES KREISLER)<br>21 February 1950 (1950-02-21)<br>* claim 1; figures 1-4 *<br>* column 2, line 36 - column 5, line 65 * | 1-13 | |
| X | US 4 627 231 A (KIUCHI MANABU [JP])<br>9 December 1986 (1986-12-09)<br>* abstract; figures 1-12 *<br>* column 1, lines 5-8 *<br>* column 3, line 4 - column 5, line 65 * | 1-13 | |
| X | US 3 496 719 A (ZALTRON MARIO)<br>24 February 1970 (1970-02-24)<br>* abstract; figures 10-12 *<br>* column 1, lines 24-30 *<br>* column 1, line 58 - column 6, line 22 * | 1-13 | TECHNICAL FIELDS SEARCHED (IPC)<br>A44C |
| X | GB 946 171 A (MARIO ZALTRON)<br>8 January 1964 (1964-01-08)<br>* abstract; figures 1-6 *<br>* column 1, line 8 - column 4, line 4 * | 1-13 | |

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 4 February 2021 | Contreras Aparicio |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 20 19 8420

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

04-02-2021

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| FR 1093940 A | 10-05-1955 | NONE | |
| DE 2500980 A1 | 15-07-1976 | NONE | |
| US 2498211 A | 21-02-1950 | NONE | |
| US 4627231 A | 09-12-1986 | BE 901295 A | 16-04-1985 |
| | | CH 660113 A5 | 31-03-1987 |
| | | DE 3444754 A1 | 05-09-1985 |
| | | FR 2560506 A1 | 06-09-1985 |
| | | GB 2155303 A | 25-09-1985 |
| | | HK 6489 A | 27-01-1989 |
| | | IT 1182115 B | 30-09-1987 |
| | | JP H0448538 B2 | 07-08-1992 |
| | | JP S60184440 A | 19-09-1985 |
| | | US 4627231 A | 09-12-1986 |
| US 3496719 A | 24-02-1970 | BE 683372 A | 01-12-1966 |
| | | CH 439837 A | 15-07-1967 |
| | | DE 1557544 B1 | 20-08-1970 |
| | | ES 326470 A1 | 01-03-1967 |
| | | GB 1112142 A | 01-05-1968 |
| | | NL 6606844 A | 02-06-1967 |
| | | US 3496719 A | 24-02-1970 |
| GB 946171 A | 08-01-1964 | NONE | |

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82