



EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication:
30.10.2019 Bulletin 2019/44

(51) Int Cl.:
A63H 33/10 ^(2006.01) **A63H 33/06** ^(2006.01)

(21) Application number: **17820412.9**

(86) International application number:
PCT/KR2017/005650

(22) Date of filing: **30.05.2017**

(87) International publication number:
WO 2018/004135 (04.01.2018 Gazette 2018/01)

(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**

(30) Priority: **30.06.2016 KR 20160082654**
22.09.2016 KR 20160121583

(71) Applicant: **Hwang, Doo Hyun**
Yongin-si, Gyeonggi-do 16978 (KR)

(72) Inventor: **Hwang, Doo Hyun**
Yongin-si, Gyeonggi-do 16978 (KR)

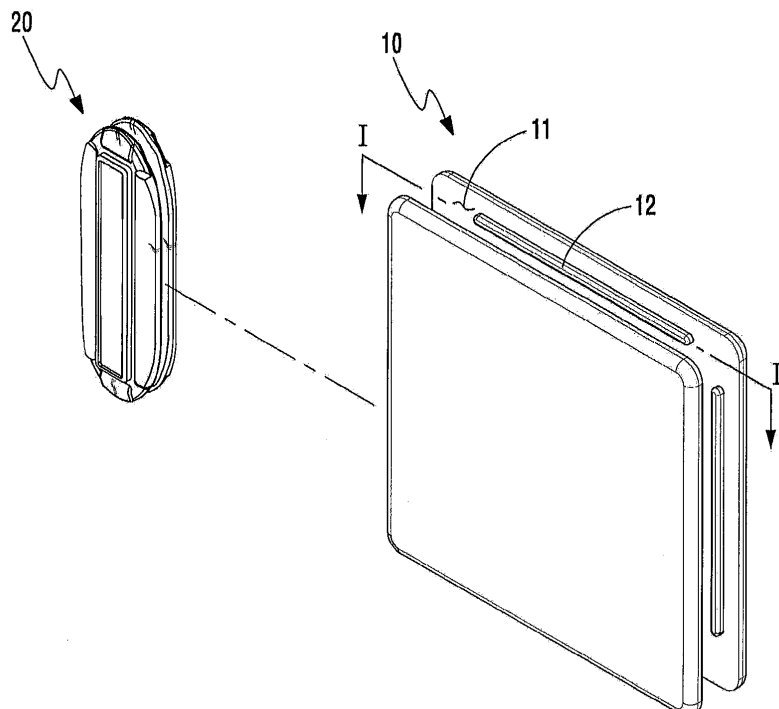
(74) Representative: **dompatent von Kreisler Selting
Werner -
Partnerschaft von Patent- und Rechtsanwälten
mbB
Deichmannhaus am Dom
Bahnhofsvorplatz 1
50667 Köln (DE)**

(54) **ASSEMBLY BLOCKS**

(57) The present invention relates to assembly blocks which can freely be coupled into various text arrays and creative shapes by means of insert-coupling or

slide-coupling of a first block and a second block which can be manufactured from a lightweight material.

FIG. 1



Description

[Technical Field]

5 **[0001]** The present invention relates to assembly blocks, and more particularly, to assembly blocks which can freely be coupled into various text arrays and creative shapes by means of insert-coupling or slide-coupling of a first block and a second block which can be manufactured from a lightweight material.

[Background Art]

10 **[0002]** Assembly blocks are known as toy products for encouraging children's curiosity and facilitating childhood brain development. These toy assembly blocks are mostly configured to be interlocked with other blocks and are completed in various shapes according to the interlocking manner or assembled positions.

15 **[0003]** Since increasing time, efforts and intelligence are required in assembling blocks by complexity of a toy assembly block structure, the degree of difficulty or complexity is determined according to the user's age. Therefore, blocks which are assembled easily and implement a wide variety of styles or patterns can be advantageously used for kids or pre-school aged children to practice assembling of things or to learn the concept of space.

[0004] Toy blocks using a plurality of magnets are disclosed in Korean Patent Nos. 10-1047689 and 10-1468130.

20 **[0005]** In the disclosed toy blocks using a plurality of magnets, however, coupled states of the blocks are maintained solely depending on magnetic forces derived from the magnets. Therefore, in a case where a horizontally elongated block assembly structure or a large-sized assembly structure is to be constructed, the coupled states among the blocks may be randomly released or easily collapsed due to own weights of the blocks, that is, coupling forces between the blocks may be weakened.

25 **[0006]** In addition, since only coupling forces based on the magnetic forces are applied to joining faces of the blocks engaged with each other, the joining faces of the engaged blocks may be easily slipped to release the coupled states when an external force is applied in a direction parallel to the joining faces.

[0007] Moreover, in a case where a block set including a plurality of block units is provided as a commercial product, the block set product may have a noticeably increased weight, making it practically impossible for infants or children to carry the block set product.

[Disclosure of the Invention]

[Technical Problems to be Solved]

35 **[0008]** The present invention has been made in an effort to solve the problems of the prior art, and it is an object of the present invention to provide assembly blocks, which can provide excitement to children in various ways through sliding and click inserting manners while stably coupling the blocks.

[0009] In addition, the present invention provides assembly blocks, which can improve a wide range of creativity by permitting the blocks to be assembled in various shapes.

40 **[0010]** In addition, the present invention provides assembly blocks, which can be manufactured from only plastic materials, which are much lighter than conventional magnetic assembly blocks, thereby providing convenience in carrying the same.

[Technical Solutions]

45 **[0011]** In accordance with an aspect of the present invention, the above and other objects can be accomplished by providing an assembly blocks comprising: a first block configured to have a shape of a panel and having at least one edge provided with a receiving part; a second block configured to have a shape of a panel and having at least one edge to be received in the receiving part of the first block; a first click coupling part configured to protrude or to be recessed on the receiving part; and a second click coupling part formed at a portion of the second block received in the receiving part and configured to be sliding-coupled or insert-coupled to the first click coupling part.

[0012] Here, the receiving part may be formed to have a shape of a groove configured such that a central portion of side surface of the edge of the first block is recessed, and the first click coupling part may be formed to have a shape of a rib and configured to be spaced apart from an inner end of the receiving part,

55 **[0013]** In addition, in case that the second click coupling part is formed at opposite edges of the second block, the second block may be configured such that ends of receiving parts of two neighboring first blocks coupled to the second block come into contact with each other to prevent the second block from being exposed to outside when the second block is coupled to the two neighboring first blocks.

[0014] In addition, the second click coupling part may comprise: a click coupling groove formed at at least one edge of the second block, the click coupling groove having smaller thickness than a body part at the side surface of the edge of the first block and being formed to be recessed; and a pair of coupling blades positioned at both sides of the click coupling groove.

[0015] In addition, the second block may consist of at least two partial bodies which is divided about a lengthwise extension and comprises a rotation axis by which the partial bodies are pivotably coupled to each other, and the second click coupling part may be formed at lengthwise outer edges of the respective partial bodies.

[0016] In addition, click inserting projections may be formed respectively to protrude on facing surfaces of the coupling blades.

[0017] In addition, the click inserting projections may be spaced apart from an inner end of the groove to be formed at outer ends of the groove so as to form a mounting part.

[0018] In addition, the assembly blocks may further comprise: a guide part formed at one of the edges of the second block on which the second click coupling part is formed, the guide part being recessed to divide the second click coupling part into at least two parts; and a sub-click coupling part protruding on the guide part and configured to be inserted into a click coupling groove of the second click coupling part so as to be insert-coupled to the second click coupling part.

[0019] In addition, the sub-click coupling part may be formed on a line extended from the click coupling groove.

[0020] In addition, a click inserting part may be formed to protrude on both surfaces of the sub-click coupling part.

[0021] In addition, the click inserting part may be formed at an external end of the sub-click coupling part.

[0022] In addition, a click inserting groove recessed to receive the click inserting projection and an inserting projection positioned away from the click inserting groove may be formed on an outer surface of the coupling blades.

[0023] In addition, the sub-click coupling part may be formed at a central portion of the opposite edges of the body part.

[0024] In addition, the second block may be made from a bendable elastic material.

[0025] In addition, an inner end of the guide part and an outer end of the second click coupling part insert-coupled to the sub-click coupling part through the guide part may be formed to have curved surfaces which are engaged with each other.

[0026] In addition, the second click coupling part positioned at lengthwise opposite ends of the second block may be formed to have a width gradually decreasing toward an exterior side.

[Advantageous Effects]

[0027] As described above, the assembly blocks according to the present invention can provide excitement to children in various ways by means of insert-coupling or slide-coupling of blocks while stably coupling the blocks.

[0028] In addition, the assembly blocks according to the present invention can improve a wide range of creativity by permitting the blocks to be assembled in various shapes.

[0029] In addition, since the assembly blocks according to the present invention are manufactured using only plastic materials, they are noticeably lighter than conventional magnetic assembly blocks, thereby conveniently carrying the assembly block set.

[Brief Description of Drawings]

[0030]

FIG. 1 is a perspective view of assembly blocks according to a first embodiment of the present invention;

FIG. 2 is a cross-sectional view taken along the line I - I' of FIG. 1;

FIG. 3 is a perspective view of a second block shown in FIG. 1;

FIG. 4 is a front view of FIG. 3;

FIG. 5 is an enlarged view of a portion 'A' shown in FIG. 3;

FIG. 6 is a cross-sectional view taken along the line I - I' of FIG. 5;

FIGS. 7 to 12 are diagrams illustrating assembled states of the assembly blocks according to the first embodiment of the present invention;

FIG. 13 is a diagram illustrating a modified assembled state of first and second blocks;

FIGS. 14 to 17 are diagrams illustrating assembled states of second blocks in the assembly blocks according to the first embodiment of the present invention;

FIG. 18 is a perspective view of a second block of assembly blocks according to a second embodiment of the present invention;

FIG. 19 is a front view of FIG. 18;

FIG. 20 is an enlarged view of a portion 'A' shown in FIG. 18;

FIG. 21 is a cross-sectional view taken along the line I - I' of FIG. 19;

FIGS. 22 to 25 are diagrams illustrating assembled states of the assembly blocks according to the second embodiment of the present invention;

FIGS. 26 to 29 are diagrams illustrating assembled states of second blocks in the assembly blocks according to the second embodiment of the present invention;

FIG. 30 is a diagram illustrating an assembled state of the assembly blocks according to the first and second embodiments of the present invention;

FIG. 31 is a perspective view of a second block in assembly blocks according to a third embodiment of the present invention;

FIG. 32 is a diagram illustrating an assembled state using the second block shown in FIG. 31;

FIG. 33 is a perspective view of a second block of assembly blocks according to a fourth embodiment of the present invention; and

FIG. 34 is a diagram illustrating an assembled state using the second block shown in FIG. 33.

[Best Mode for Carrying Out the Invention]

[0031] Before describing the present invention, it is noted that a first embodiment of the present invention will first be representatively described using the same reference numeral for the same functional element and descriptions of other embodiments will focus on differences between the first embodiment and other embodiments.

[0032] Hereinafter, assembly blocks according to a first embodiment of the present invention will be described in detail with reference to accompanying drawings.

[0033] FIG. 1 is a perspective view of assembly blocks according to a first embodiment of the present invention and FIG. 2 is a cross-sectional view taken along the line I - I' of FIG. 1.

[0034] Referring to FIGS. 1 and 2, the assembly blocks according to a first embodiment of the present invention include a first block 10 and a second block 20.

[0035] The first block 10 is made from a plastic material, such as polycarbonate (PC) consists of a panel-shaped body having a certain thickness, and has a receiving part 11 formed in at least one edge thereof. The first block illustrated in the present embodiment has a body shaped of a substantially tetragonal panel and the receiving part 11 has external ends opened at four edges thereof.

[0036] Letters, numbers or figures of various shapes may be printed or adhered in form of a predetermined sticker to at least one of both surfaces of the panel.

[0037] A protruding or recessed first click coupling part 12 is formed at the receiving part 11. The first click coupling part 12 illustrated in the present embodiment protrudes in form of a rib extending in a lengthwise direction of the receiving part 11. Here, the first click coupling part 12 is formed to be spaced by a predetermined distance apart from the internal end of the receiving part 11. Accordingly, second click coupling parts 21' of the second block 20, which will later be described, may guarantee coupling stability during insert-coupling and may serve as guide parts during slide-coupling.

[0038] In addition, the first click coupling part 12 may have a preset length, but is preferably formed to have a length enough to prevent interference between a second block 20 insert-coupled to one first click coupling part 12 and a second block 20 insert-coupled to a neighboring first click coupling part 12.

[0039] FIG. 3 is a perspective view of a second block shown in FIG. 1, FIG. 4 is a front view of FIG. 3, FIG. 5 is an enlarged view of a portion 'A' shown in FIG. 3, and FIG. 6 is a cross-sectional view taken along the line I - I' of FIG. 5.

[0040] Referring to FIGS. 3 to 6, the second block 20 is made from a plastic material, such as polycarbonate (PC), and is provided to have a shape of a panel having a predetermined thickness. In addition, the second block 20 includes a body part 20' defining a central portion of the panel, and a second click coupling part 21' formed at its at least one edge.

[0041] The body part 20' illustrated in the present embodiment is provided as a panel having a length in one direction larger than a length in the other direction.

[0042] The second click coupling part 21', including a click coupling groove 21 and coupling blades 22, is formed at at least one edge of the body part 20'. The second click coupling part 21' illustrated in the present embodiment is formed at each of four edges of the body part 20'.

[0043] The click coupling groove 21 has a smaller thickness than the body part 20' at the edge side of the body part 20' and is recessed, and coupling blades 22 are positioned at opposite sides of the click coupling groove 21.

[0044] Here, click inserting projections 23 are formed to protrude on facing surfaces of the coupling blades 22, respectively. The click inserting projections 23 are spaced apart from an internal end of the groove to be formed at an external end of the groove, and a mounting part 24 having a smaller height than the click inserting projections 23 is formed between the internal end and the click inserting projections 23.

[0045] In addition, a click inserting groove 25 which is positioned at an interior region of the body part 20' and which is recessed, is formed on an outer surface of each of the coupling blades 22, and an inserting projection 26 positioned outside the click inserting groove 25 is formed on an outer surface of each of the coupling blades 22.

[0046] Here, the inserting projection 26 is formed to have an inclined surface to stably guide a coupling operation

during insert-coupling.

[0047] That is to say, when the second click coupling part 21' is received in the receiving part 11 of the first block 10 to then be insert-coupled to the first click coupling part 12, the coupling blades 22 may be resiliently compressed toward the click coupling groove 21 and restored to then be insert-coupled to the first click coupling part 12 with a "clicking" sound.

[0048] In addition, the second block 20 may be formed to have a lengthwise or widthwise length equivalent to, shorter or longer than a length of an edge of the first block 10

[0049] Here, when two neighboring first blocks 10 are coupled to each other by one second block 20, the second block 20 may be provided to have a widthwise length such that end portions of the receiving part 11 of the respective first block 10 coupled to the second block 20 are contacted to each other so as to prevent the second block 20 from being exposed to the outside.

[0050] In the illustrated embodiment, in order to prevent the second block 20 from being exposed to the outside when the second block 20 is coupled to the two first blocks 10, the widthwise length of the second block 20 is approximately two times a depth of the receiving part 11 of the first block 10.

[0051] In this way, when the first blocks 10 are coupled through the second block 20, only the letters, numerals or figures printed on the outer surface of the first block 10 may be displayed without exposing the second block 20 to the outside.

[0052] That is to say, as distances among the letters, numerals or figures represented on the outer surface of the first block 10 are minimized, Korean letter puzzle, Chinese letter puzzle, picture puzzle, etc. can be played by assembling of the blocks.

[0053] A method of using the assembly blocks according to the first embodiment of the present invention will now be described.

[0054] FIGS. 7 to 12 are diagrams illustrating assembled states of the assembly blocks according to the first embodiment of the present invention. The assembled states of the assembly blocks according to the first embodiment of the present invention will now be described by way of example with regard to a process of assembling the assembly blocks for completing a Korean word "강", which means a river. First, three first blocks 10A, 10B and 10C and two second blocks

20A and 20B, are prepared, the three first blocks 10A, 10B and 10C having Korean letters "ㄱ", "ㄴ" and "ㅇ" printed on their respective panels.

[0055] First, referring to FIG. 7, if the second click coupling part 21' of the second block 20A is inserted into a receiving part 11A of the first block 10A with "ㄱ" printed thereon, coupling blades 22A are resiliently compressed toward the click coupling groove 21A when the first click coupling part 12A of the first block 10A passes an inserting projection 26A formed on an outer surface of the coupling blades 22A of the second click coupling parts 21', and then the coupling blades 22A are resiliently restored when the first click coupling part 12A is mounted in a click inserting groove 25A, thereby the first block and the second block are insert-coupled to each other with a "clicking" sound, as shown in FIG. 8.

[0056] In addition, as shown in FIG. 9, the first block 10B with "ㅇ" printed thereon is prepared to then be insert-coupled to the second block 20A in the same manner as described above.

[0057] Next, as shown in FIG. 10, the second block 20B is prepared, a click inserting groove 25B positioned on the left is insert-coupled to the first block 10A, and a click inserting groove 25B positioned on the right is insert-coupled to the first block 10B,

[0058] Then, as shown in FIG. 11, the first block 10C with "강" printed thereon is prepared to then be insert-coupled to the second block 20B in the same manner as described above, thereby completing the Korean word "강" by assembling the first blocks.

[0059] Using the method described above, combinations of letters or numerals having various shapes may also be assembled.

[0060] Meanwhile, the first block 10 and the second block 20 may be coupled to each other by a modified example of the insert-coupling method, that is, a slidably insert-coupling method. Referring to FIG. 12, if a corner of the second block 20 slides from a corner of the receiving part 11 of the first block 10 so as to couple the second block into the first block, the first click coupling part 12 of the first block 10 is sliding-inserted into a click inserting groove 25 formed on an outer surface of the coupling blade 22 of the second block 20, whereby the first block can be insert-coupled to the second block.

[0061] FIG. 13 is a diagram illustrating a modified assembled state of first and second blocks.

[0062] Referring to FIG. 13, a first click coupling part 12 of the first block 10 may be insert-coupled to a click inserting groove 25 of a second click coupling part 21' positioned on a shorter side of the second block 20.

[0063] Next, assembled states of second blocks of the assembly blocks according to the first embodiment of the present invention will be described. FIGS. 14 to 17 are diagrams illustrating assembled states of second blocks in the

assembly blocks according to the first embodiment of the present invention. For the sake of convenient explanation, an upper second block of two second blocks will be denoted by reference symbol 20A and a lower second block of two second blocks will be denoted by reference symbol 20B in the following description, and subsidiary components of the corresponding second block will also be denoted by the symbol A and B added thereto.

[0064] First, as shown in FIG. 14, two second blocks 20A and 20B are prepared and then positioned such that second click coupling parts 21A' and 21 B' positioned at their longitudinal (lengthwise) ends face each other. In addition, as shown in FIG. 15, one of coupling blades 22B of the second click coupling part 21 B' of the lower second block 20B is insert-coupled to a click coupling groove 21A of the second click coupling part 21A' of the upper second block 20A.

[0065] Here, click inserting projections 23B formed on inner surfaces of the coupling blades 22B of the second click coupling part 21 B' and inserting projections 26B formed on outer surfaces of the coupling blades 22B may pass click inserting projections 23A of the second click coupling part 21A' to then be mounted in mounting parts 24A formed therein, thereby achieving insert-coupling of the second click coupling parts.

[0066] That is to say, while the insert-coupling may be achieved such that the inserting projections 26B of the second block 20B comes into contact with the click inserting projections 23A of the second block 20A and then passes the click inserting projections 23A, and the click inserting projections 23B of the second block 20B comes in contact with the click inserting projections 23A of the second block 20A and then passes the click inserting projections 23A, so that the click inserting projections 23B and the inserting projections 26B of the second block 20B are mounted in the mounting parts 24A, whereby the insert-coupling is achieved with a "clicking" sound. With the "clicking" sound, it can be determined that the insert-coupling has been completed.

[0067] Meanwhile, as shown in FIG. 16, insert-coupling can also be achieved by second click coupling parts 21A' and 21 B' formed on widthwise opposite surfaces of two second blocks. In addition, as shown in FIG. 17, insert-coupling of a second click coupling part 21 B' formed at a lengthwise edge and a second click coupling part 21A' formed at a widthwise edge can also be achieved.

[0068] Next, assembly blocks according to a second embodiment of the present invention will be described. In the second embodiment of the present invention, a configuration of a second block is modified. However, a first block has the same configuration as that of the first embodiment and a detailed description will not be given.

[0069] FIG. 18 is a perspective view of a second block of assembly blocks according to a second embodiment of the present invention, FIG. 19 is a front view of FIG. 18, FIG. 20 is an enlarged view of a portion 'A' shown in FIG. 18, and FIG. 21 is a cross-sectional view taken along the line I - I' of FIG. 19.

[0070] Referring to FIGS. 18 to 21, the second block 20a of the assembly blocks according to the second embodiment of the present invention may include a body part 20', second click coupling parts 21', guide parts 30 and sub-click coupling parts 40.

[0071] Since the body part 20' and the second click coupling parts 21' are formed in the same manner as in the first embodiment, detailed descriptions thereof will not be given.

[0072] Here, since the second block 20a is formed to have a length equivalent to one edge of the first block 10, lengthwise opposite ends can be formed so as to have a width which gradually decreases outwardly. In the present embodiment, shorter side edges are configured to have arc shape (curved line).

[0073] That is to say, since the second blocks 20a is formed to have a width gradually decreasing toward the end, interference may not occur between two neighboring second blocks 20a which are insert-coupled into the first block 10 in such a manner that the ends of the two second blocks 20a are brought into contact with each other.

[0074] The guide parts 30 and the sub-click coupling parts 40 are formed at lengthwise opposite sides where the second click coupling parts 21' are formed, respectively.

[0075] The guide parts 30 are formed to be recessed at lengthwise opposite sides where the second click coupling parts 21' are formed, so as to divide the second click coupling parts 21' into multiple parts. Each of the guide parts 30 illustrated in the present embodiment is formed at a central portion of the second click coupling parts 21' formed at the lengthwise opposite edges so as to divide each of the second click coupling parts 21' into two parts.

[0076] The sub-click coupling part 40 is formed to protrude on the guide parts 30 and has a thickness enough to be inserted and coupled into the second click coupling parts 21'. Here, the sub-click coupling parts 40 are preferably formed to extend from the click coupling grooves 21 of the second click coupling parts 21'. In such a manner, when the second click coupling part 21' of one of two different assembly blocks and the sub-click coupling part 40 of the other assembly block are coupled to each other, two second blocks may constantly have the same thickness.

[0077] In addition, click inserting parts 41 are formed to protrude on both side surfaces of the sub-click coupling part 40. The click inserting parts 41 are formed at external ends of the sub-click coupling part 40, thereby allowing the click inserting parts 41 to be insert-coupled to the second click coupling parts 21' with a "clicking" sound.

[0078] In addition, an internal end of the guide part 30 and an external end of the second click coupling part 21' inserted into the guide part 30 to then be insert-coupled to the sub-click coupling part 40 are formed to have curved faces engaged with each other. Accordingly, the main-click coupling part 20 can be rotated by a predetermined angle about the sub-click coupling part 40, thereby allowing a user to assemble the blocks in a variety of creative manners.

[0079] Next, assembled states of the assembly blocks according to the second embodiment of the present invention will be described.

[0080] FIGS. 22 to 25 are diagrams illustrating assembled states of the assembly blocks according to the second embodiment of the present invention.

[0081] Referring first to FIG. 22, the coupling blades 22 are resiliently compressed toward the click coupling groove 21 while the first click coupling part 12 of the first block 10 passes the inserting projection 26 formed on the outer surface of coupling blades 22 of the second click coupling parts 21', and then the first click coupling part 12A is mounted in the click inserting groove 25 so that the coupling blades 22 are resiliently restored, thereby achieving insert-coupling with a "clicking" sound.

[0082] After one edge of the second block 20a is coupled to the first block 10, as shown in FIG. 23, the other edge of the second block 20a may be insert-coupled to another first block 10 in the same manner.

[0083] In addition, as shown in FIG. 24, when three first blocks 10 are insert-coupled to one another using two second blocks 20a, ends of the two second blocks 20a where the second blocks are in contact with each other are configured to have a width which gradually decreases, thereby enabling insert-coupling without interference.

[0084] Meanwhile, as shown in FIG. 25, while the first blocks 10 are insert-coupled to opposite sides of an upper second block 20a, and the second click coupling parts 21' of a lower second block 20a are insert-coupled to the two first blocks 10 coupled to the upper second block 20a, the second click coupling parts 21' of the upper second block 20a are coupled to the guide parts 30 of the lower second block 20a, thereby achieving insert-coupling.

[0085] Next, insert-coupling between second blocks of the assembly blocks according to the second embodiment of the present invention will be described.

[0086] FIGS. 26 to 29 are diagrams illustrating assembled states of second blocks in the assembly blocks according to the second embodiment of the present invention.

[0087] Referring first to FIG. 26, a second click coupling part 21' of a right second block 20a is positioned to face a sub-click coupling part 40 of a left block 20a.

[0088] In addition, as shown in FIG. 27, the sub-click coupling parts 40 is insert-coupled to a click coupling groove 21 of the second click coupling part 21'. Here, while passing a region of the click coupling groove 21, a click inserting part 41 is inserted into the click coupling groove 21 positioned at an interior portion of the second block 20a, thereby completing the insert-coupling.

[0089] In addition, as shown in FIG. 28, a plurality of second blocks 20a may be insert-coupled to one another in various manners. In addition, as shown in FIG. 29, in a state in which a sub-click coupling part 40 of a second block 20a and a second click coupling part 21' of another second block 20a are coupled to each other, the second click coupling parts 21' are rotated by a predetermined angle about the sub-click coupling part 40, thereby allowing a user to assemble the blocks having creative shapes. Here, since external ends of the second click coupling parts 21' and inner ends of the guide parts 30 are configured to have curved surfaces being in contact with each other, the second click coupling parts 21' and the guide parts 30 may be rotated relative to each other while being supported to each other.

[0090] Meanwhile, as shown in FIG. 30, the second block 20 according to the first embodiment and the second block 20a according to the second embodiment may be combined to assemble blocks in various manners.

[0091] Next, assembly blocks according to a third embodiment of the present invention will be described. In the third embodiment of the present invention, a second block is configured to be rotatable.

[0092] FIG. 31 is a perspective view of a second block in assembly blocks according to a third embodiment of the present invention.

[0093] Referring to FIG. 31, in the assembly blocks according to the third embodiment of the present invention, a body part 20' of the second block 20b may be divided into at least two partial bodies 51a and 51b about a lengthwise extension and the at least two partial bodies 51a and 51b may be coupled to each other so as to pivot relative to each other about a rotation axis.

[0094] Here, the left partial body 51a and the right partial body 51b may be configured to allow the rotation axis to be inserted therebetween.

[0095] In addition, second click coupling parts 21' are formed only at lengthwise outer edges of the respective partial bodies 51a and 51b. When necessary, the second click coupling parts 21' may also be formed at widthwise ends of the respective partial bodies 51a and 51b.

[0096] As shown in FIG. 32, the use of the second block 20b according to the third embodiment allows the divided two partial bodies 51a and 51b to pivot about the rotation axis. Accordingly, the assembly blocks coupled to each other using the second block 20b according to the third embodiment can be assembled in a three-dimensional shape, as well as in a planar shape.

[0097] Next, assembly blocks according to a fourth embodiment of the present invention will be described.

[0098] FIG. 33 is a perspective view of a second block of assembly blocks according to a fourth embodiment of the present invention.

[0099] Referring to FIG. 33, in the fourth embodiment of the present invention, the second block 20c includes second

click coupling parts 21' formed at lengthwise edges, like in the third embodiment, in a body part 20', which is the same as in the first embodiment, and is made from a bendable elastic material, such as silicon. That is to say, the use of bendable assembly blocks allows a user to assemble the blocks in a three-dimensional shape even without such a rotatable structure as in the third embodiment illustrated in FIG. 34.

[0100] While the present invention has been described with reference to the particular illustrative embodiments, it is not to be restricted by the embodiments but only by the appended claims. It is to be appreciated that those skilled in the art can change or modify the embodiments without departing from the scope and spirit of the present invention.

[Industrial Applicability]

[0101] The assembly blocks according to the present invention can be produced by a general injection-molding process.

Explanations of Reference Numerals

10: First block	11: Receiving part
12: First click coupling part	
20, 20a, 20b, 20c: Second block	
20': Body part	
21': Second click coupling part	
21: Click coupling groove	22: Coupling blade
23: Click inserting projection	24: Mounting part
25: Click inserting groove	26: Inserting projection
30: Guide part	
40: Sub-click coupling part	41: Click inserting part
51a, 51b: Partial body	52: Rotation axis

Claims

1. Assembly blocks comprising:

a first block configured to have a shape of a panel and having at least one edge provided with a receiving part; a second block configured to have a shape of a panel and having at least one edge to be received in the receiving part of the first block;

a first click coupling part configured to protrude or to be recessed on the receiving part; and a second click coupling part formed at a portion of the second block received in the receiving part and configured to be sliding-coupled or insert-coupled to the first click coupling part.

2. The assembly blocks of claim 1, wherein the receiving part is formed to have a shape of a groove configured such that a central portion of side surface of the edge of the first block is recessed, and the first click coupling part is formed to have a shape of a rib and configured to be spaced apart from an inner end of the receiving part.

3. The assembly blocks of claim 1, wherein in case that the second click coupling part is formed at opposite edges of the second block, the second block is configured such that ends of receiving parts of two neighboring first blocks coupled to the second block come into contact with each other to prevent the second block from being exposed to outside when the second block is coupled to the two neighboring first blocks.

4. The assembly blocks of claim 1, wherein the second click coupling part comprises:

a click coupling groove formed at at least one edge of the second block, the click coupling groove having smaller thickness than a body part at the side surface of the edge of the first block and being formed to be recessed, and a pair of coupling blades positioned at both sides of the click coupling groove.

5. The assembly blocks of claim 4, wherein the second block consists of at least two partial bodies which are divided about a lengthwise extension and comprises a rotation axis by which the partial bodies are pivotably coupled to each other, and the second click coupling part is formed at lengthwise outer edges of the respective partial bodies.

6. The assembly blocks of claim 4 or 5, wherein click inserting projections are formed respectively to protrude on facing surfaces of the coupling blades.
7. The assembly blocks of claim 6, wherein the click inserting projections are spaced apart from an inner end of the groove to be formed at outer ends of the groove so as to form a mounting part.
8. The assembly blocks of claim 4 or 5, further comprising:
a guide part formed at one of the edges of the second block on which the second click coupling part is formed, the guide part being recessed to divide the second click coupling part into at least two parts; and
a sub-click coupling part protruding on the guide part and configured to be inserted into a click coupling groove of the second click coupling part so as to be insert-coupled to the second click coupling part.
9. The assembly blocks of claim 8, wherein the sub-click coupling part is formed on a line extended from the click coupling groove.
10. The assembly blocks of claim 8, wherein a click inserting part is formed to protrude on both surfaces of the sub-click coupling part.
11. The assembly blocks of claim 10, wherein the click inserting part is formed at an external end of the sub-click coupling part.
12. The assembly blocks of claim 6, wherein a click inserting groove recessed to receive the click inserting projection and an inserting projection positioned away from the click inserting groove are formed on an outer surface of the coupling blades.
13. The assembly blocks of claim 8, wherein the sub-click coupling part is formed at a central portion of the opposite edges of the body part.
14. The assembly blocks of claim 1, wherein the second block is made from a bendable elastic material.
15. The assembly blocks of claim 8, wherein an inner end of the guide part and an outer end of the second click coupling part insert-coupled to the sub-click coupling part through the guide part are formed to have curved surfaces which are engaged with each other.
16. The assembly blocks of claim 4, wherein the second click coupling part positioned at lengthwise opposite ends of the second block is formed to have a width gradually decreasing toward an exterior side.

FIG. 1

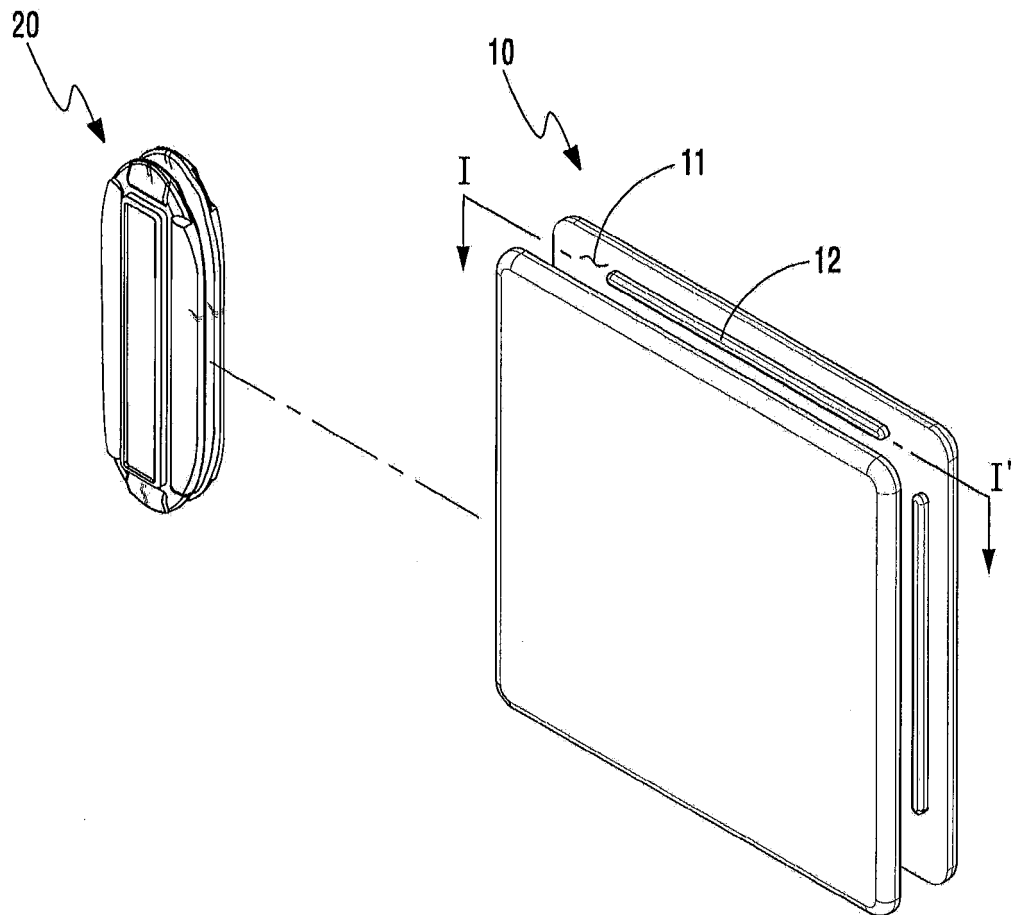


FIG. 2

10

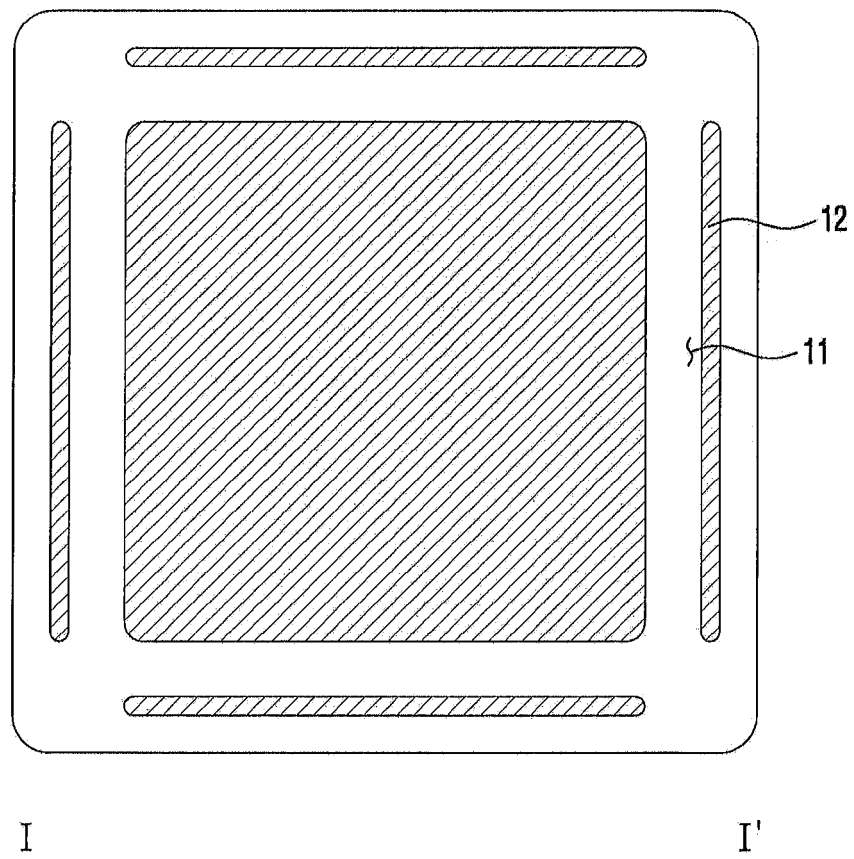


FIG. 3

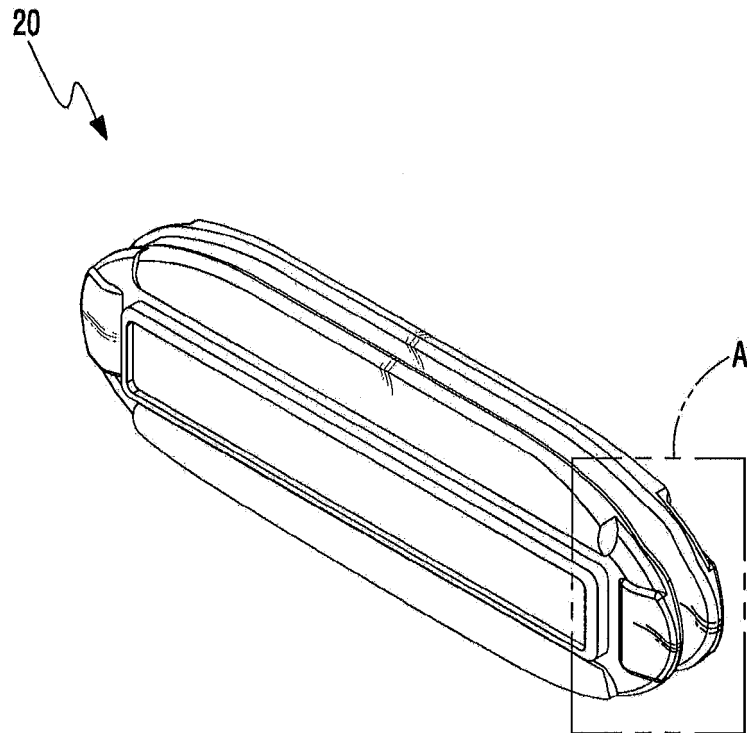


FIG. 4

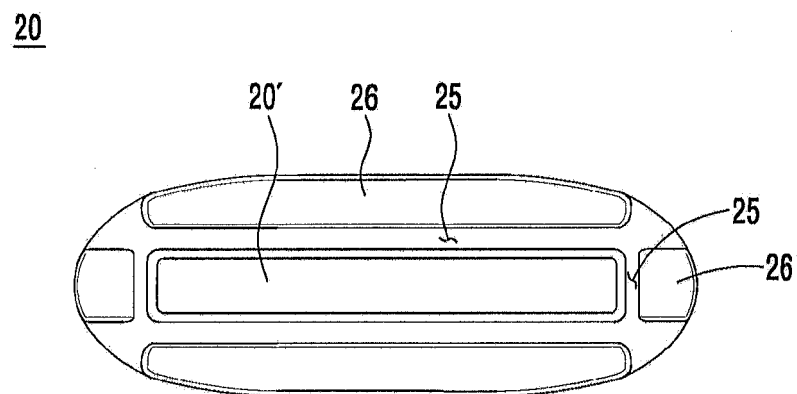


FIG. 5

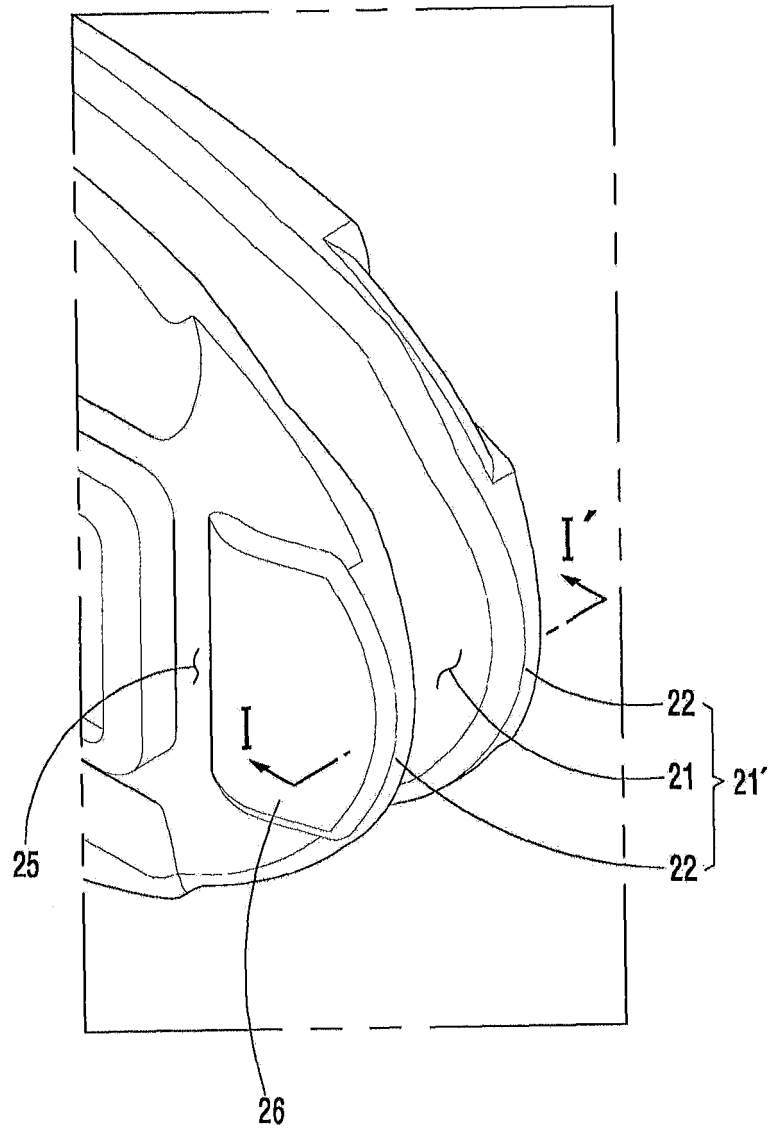


FIG. 6

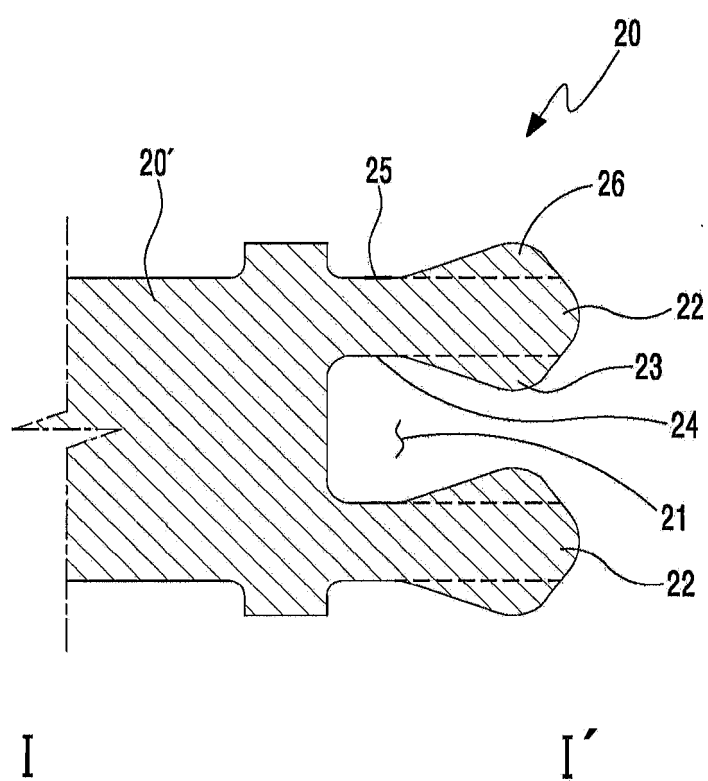


FIG. 7

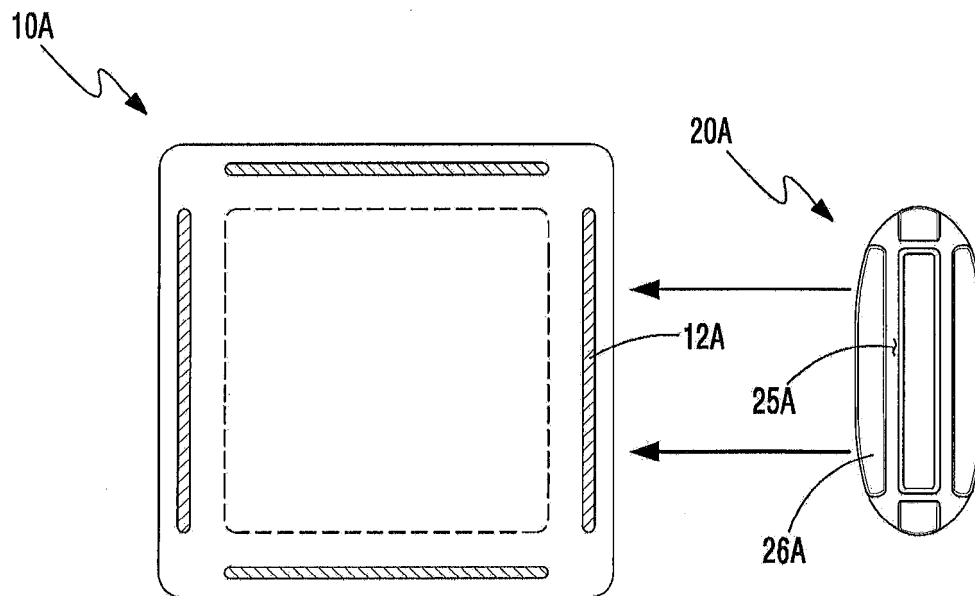


FIG. 8

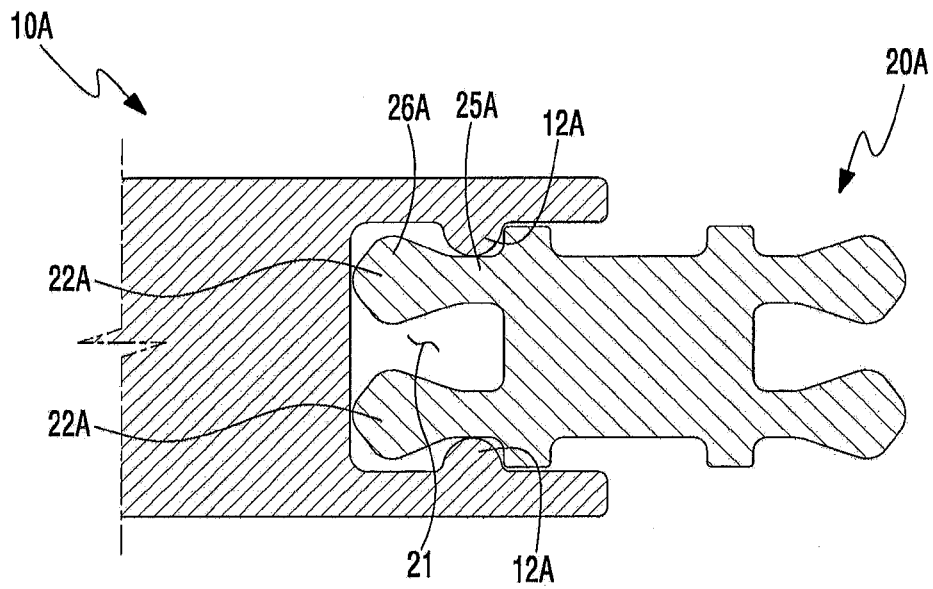


FIG. 9

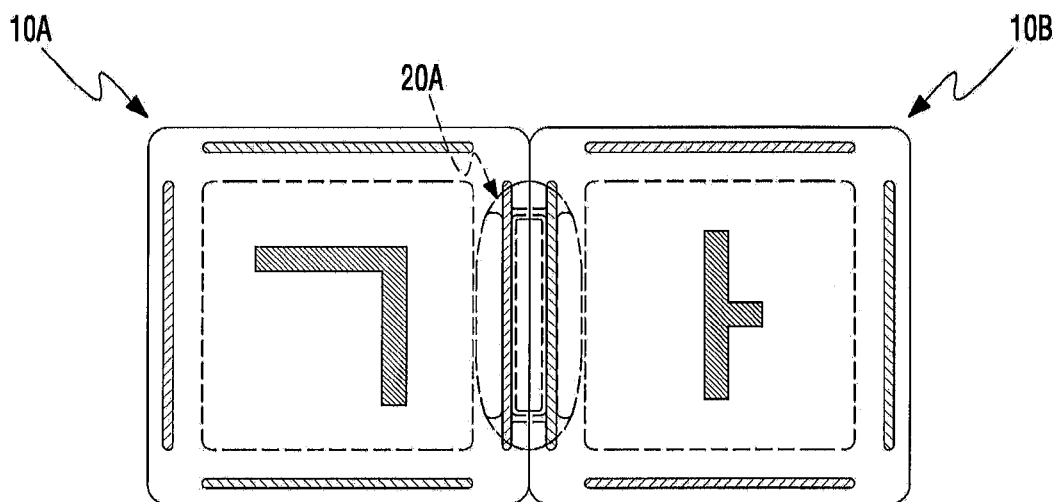


FIG. 10

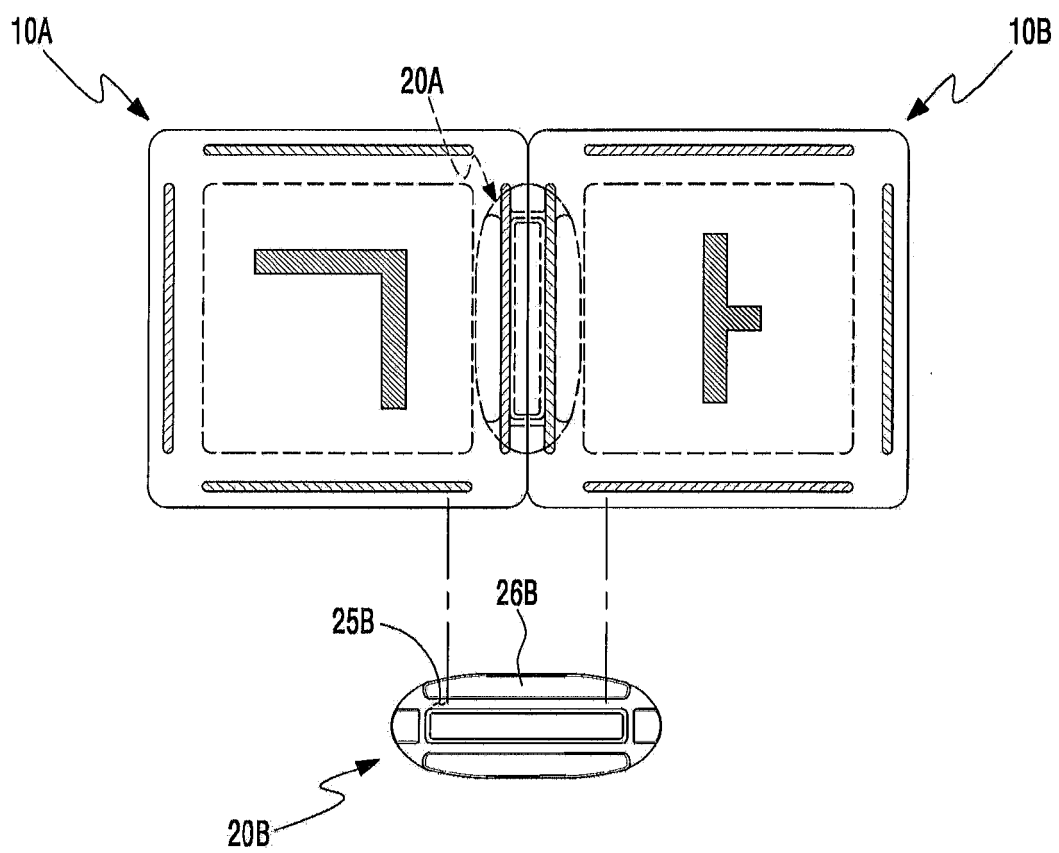


FIG. 11

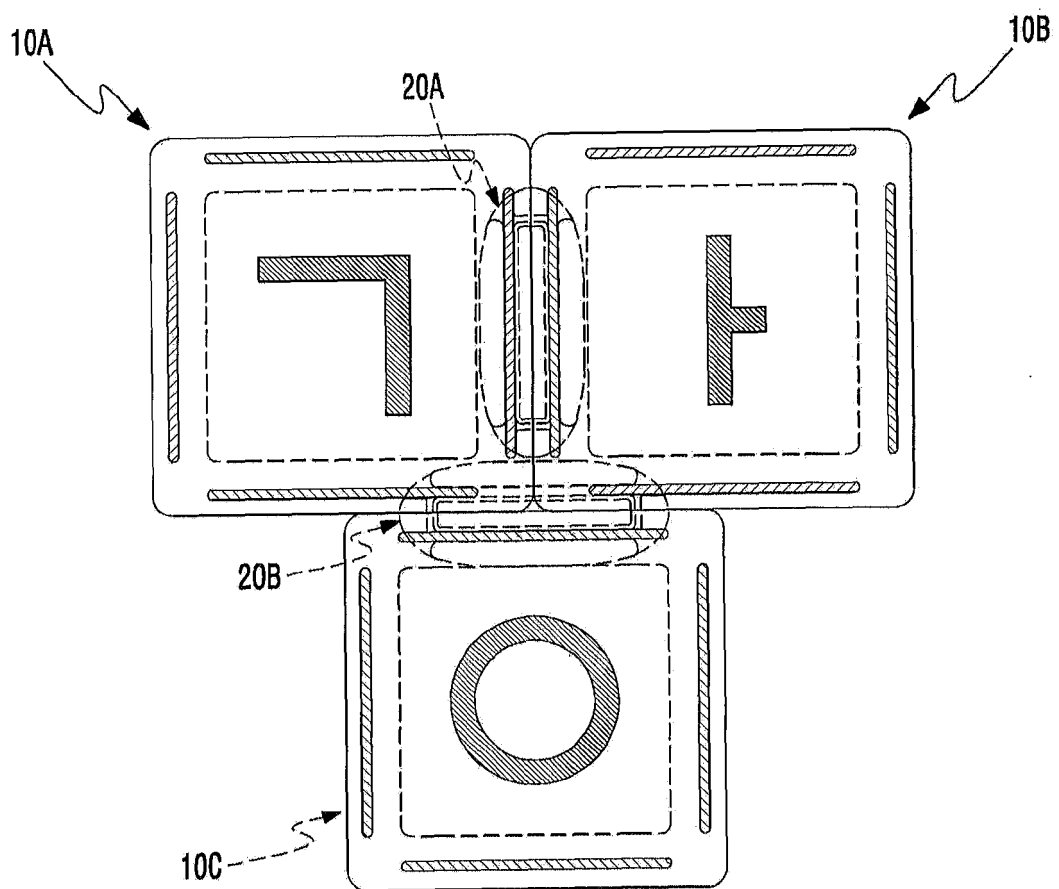


FIG. 12

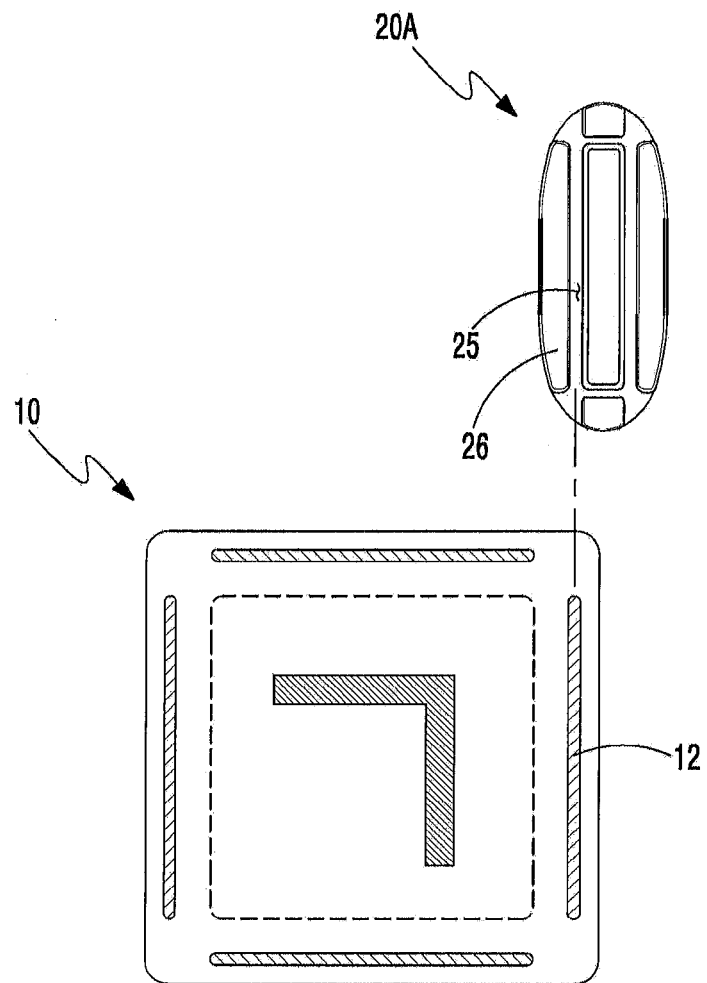


FIG. 13

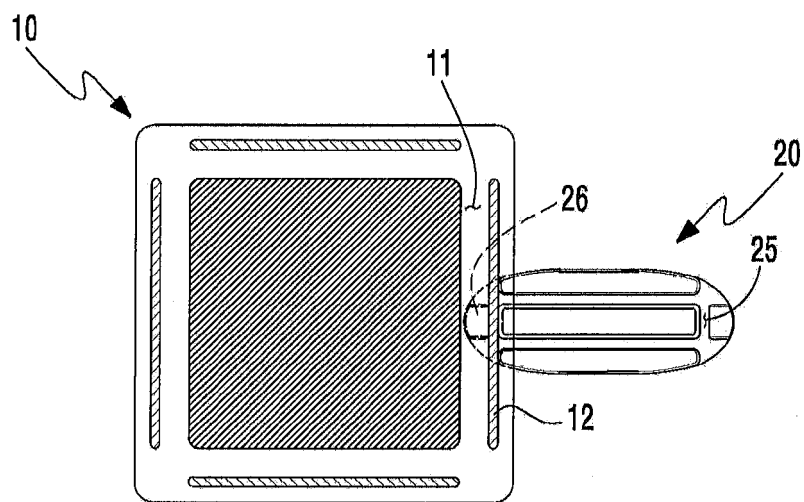


FIG. 14

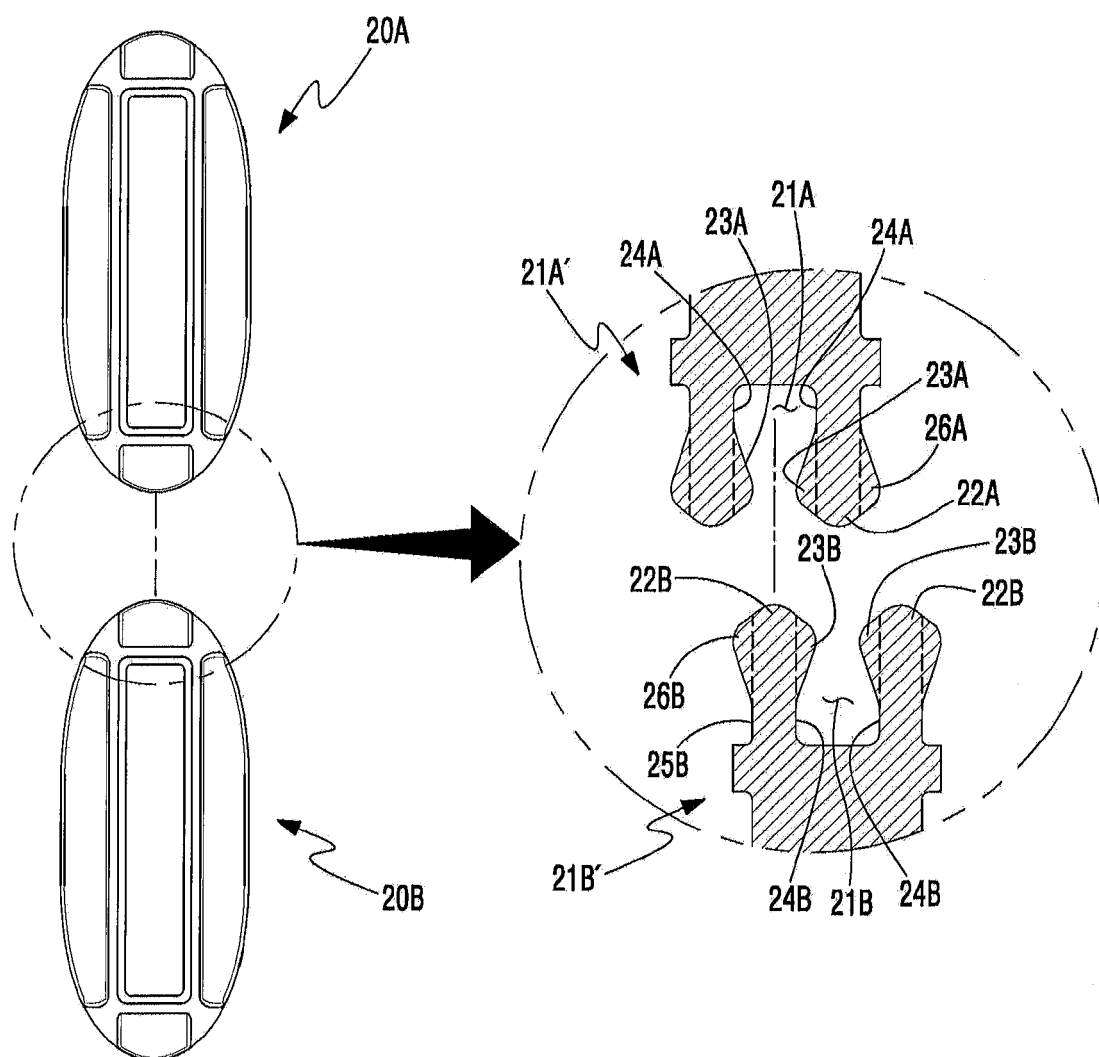


FIG. 15

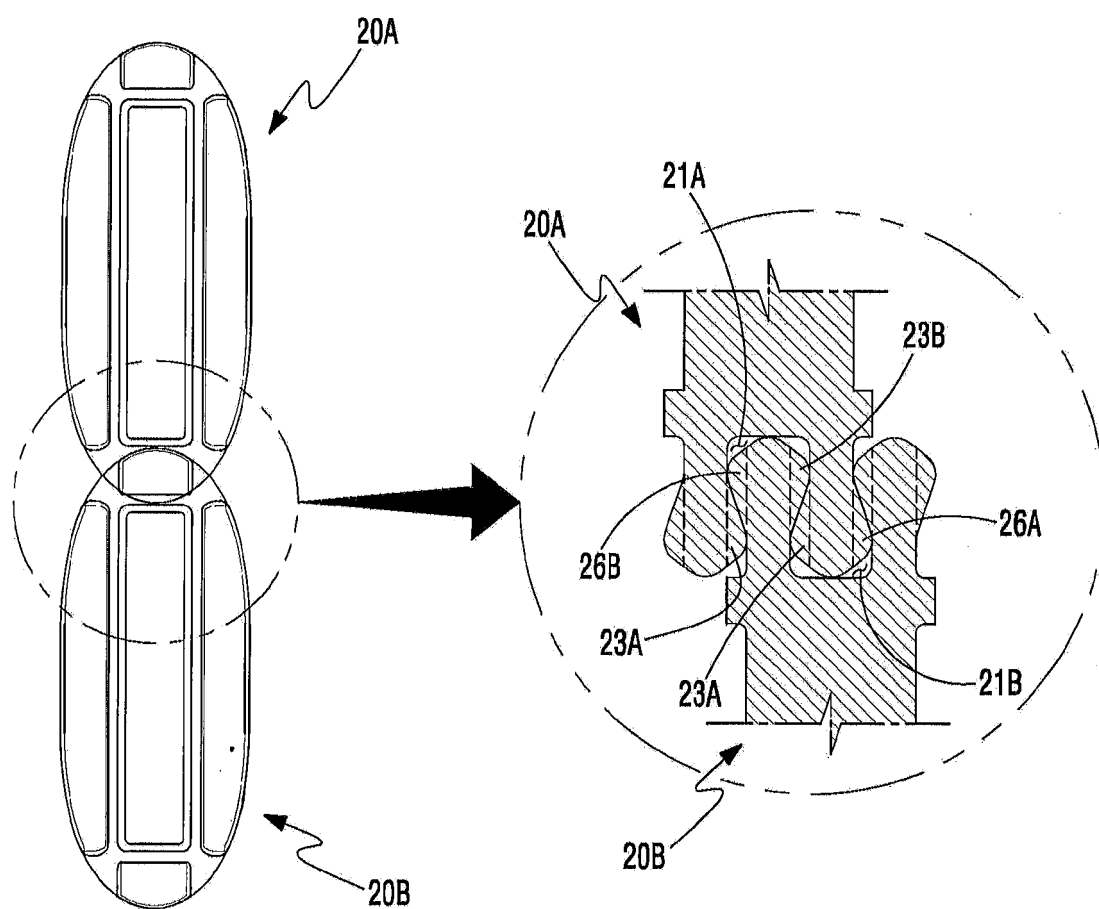


FIG. 16

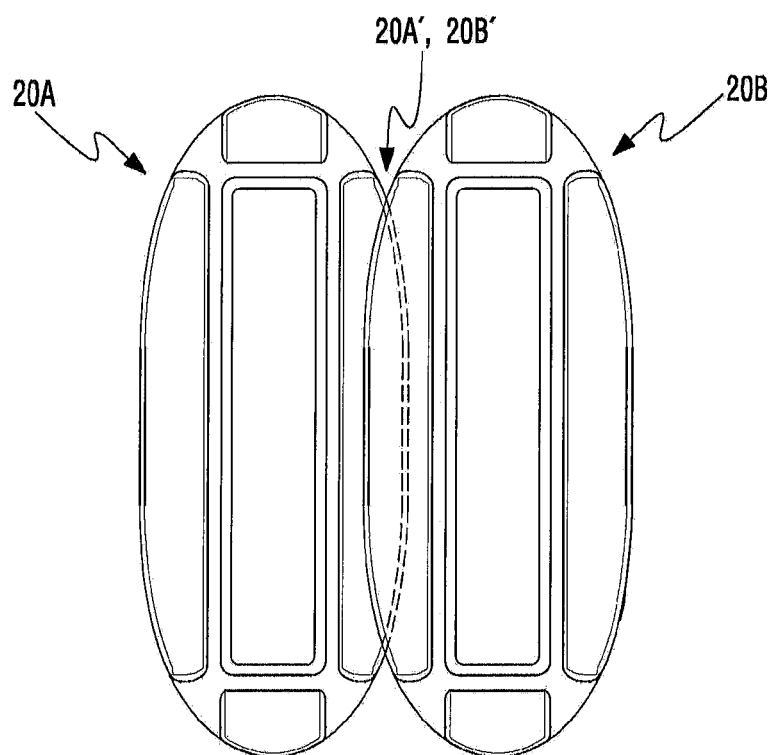


FIG. 17

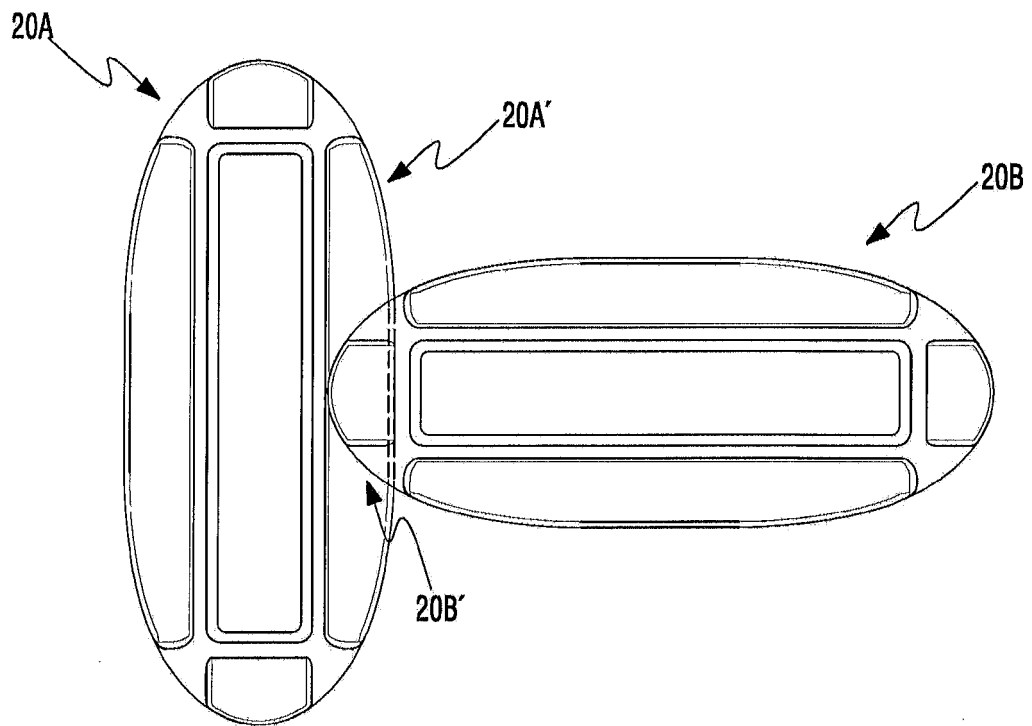


FIG. 18

20a

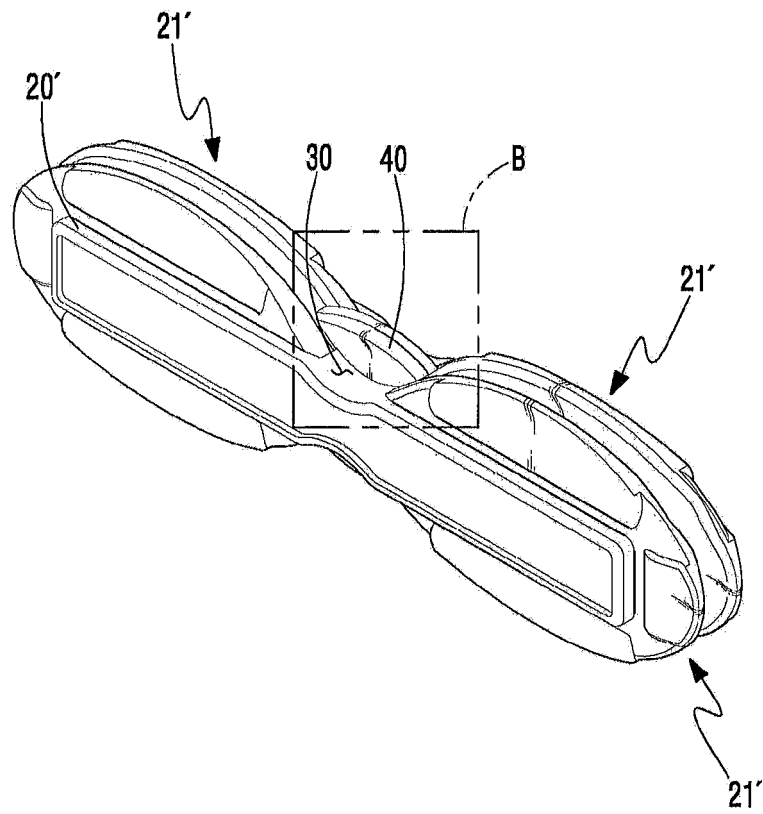


FIG. 19

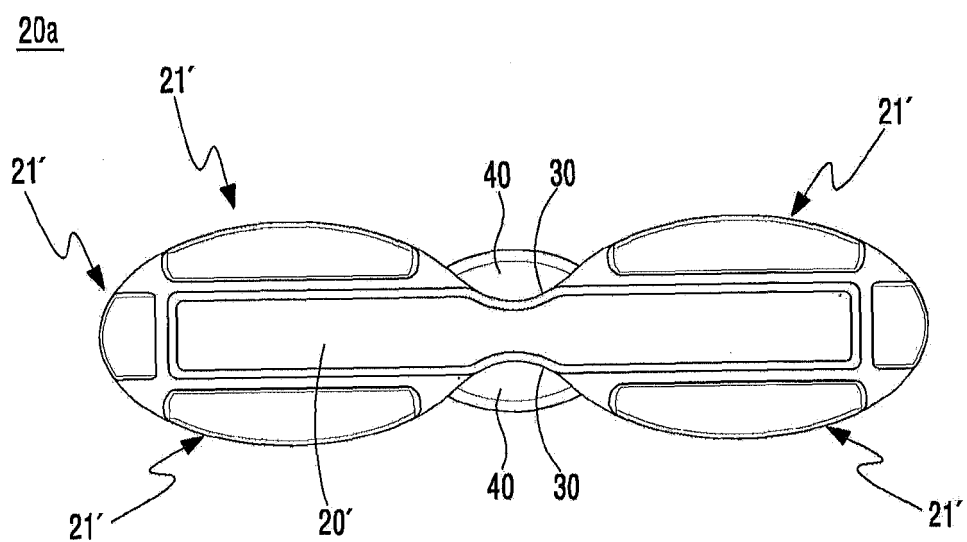


FIG. 20

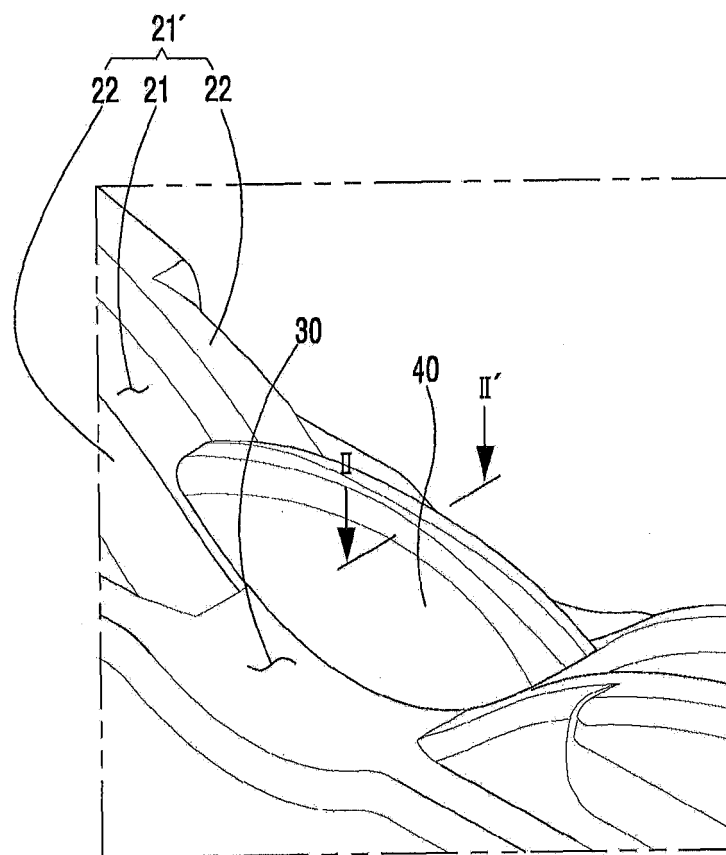


FIG. 21

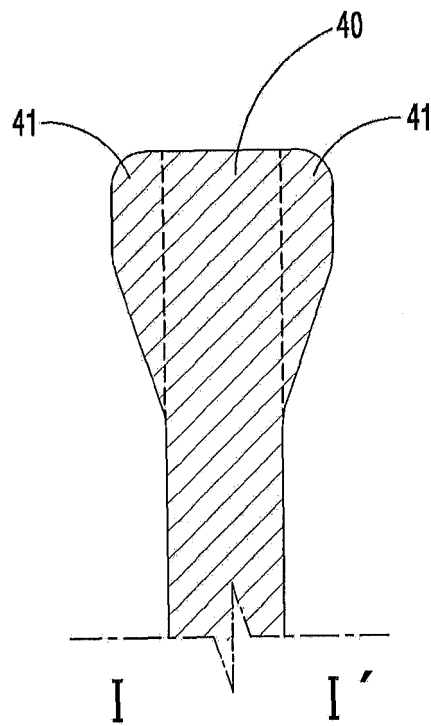


FIG. 22

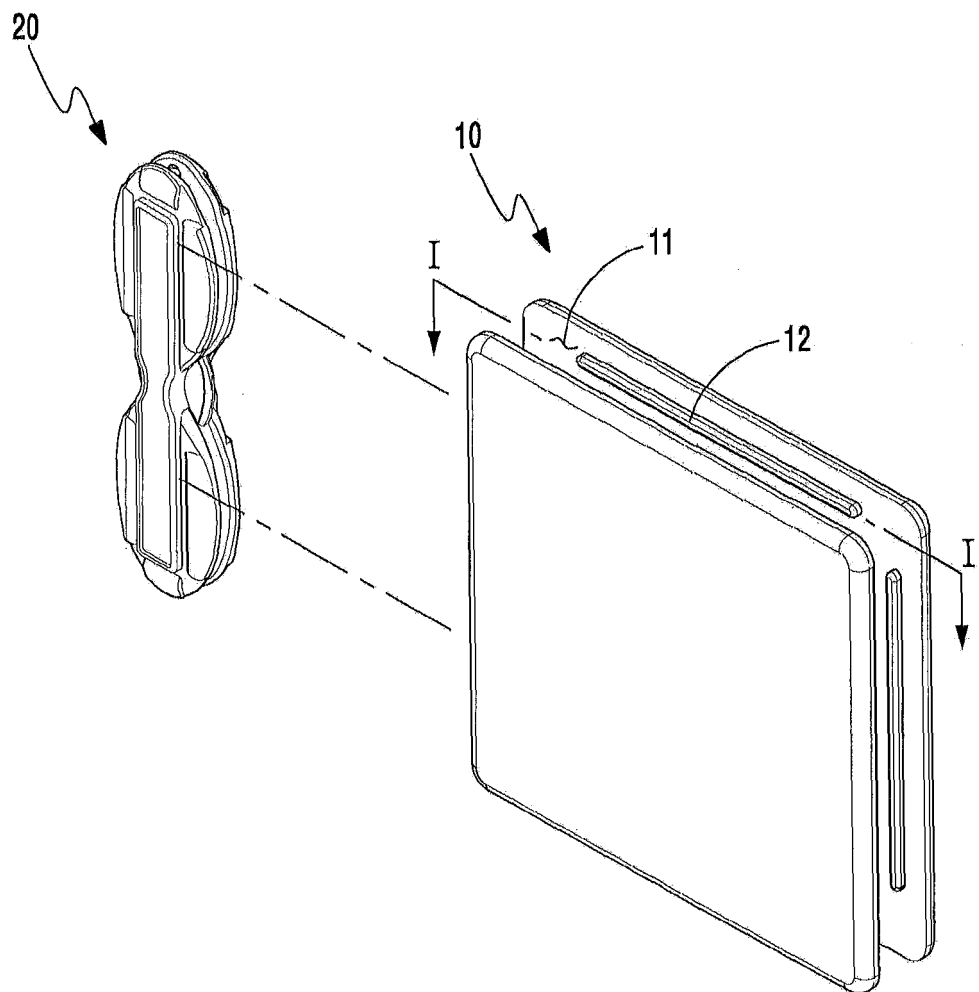


FIG. 23

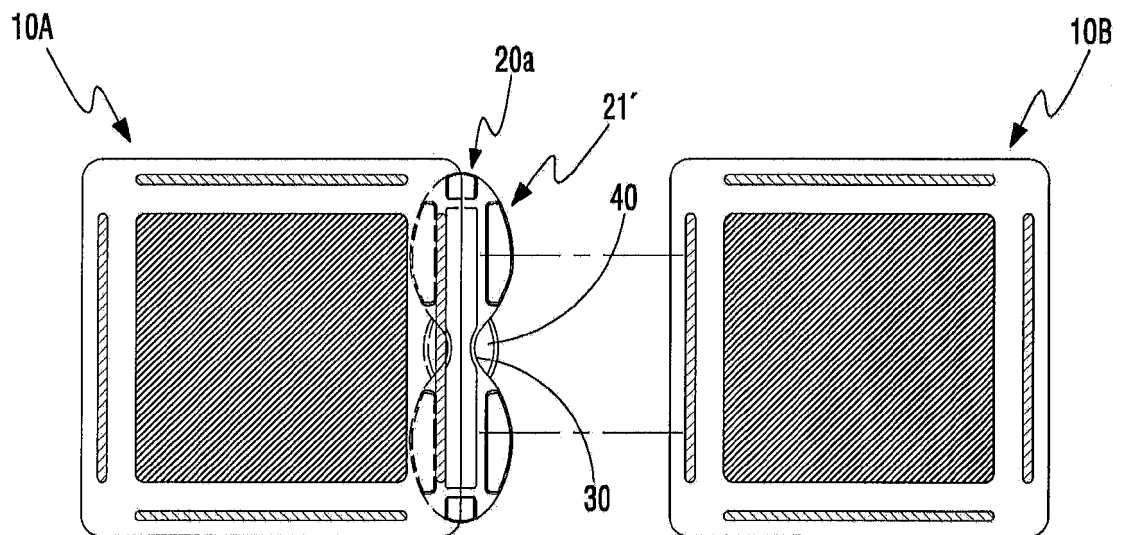


FIG. 24

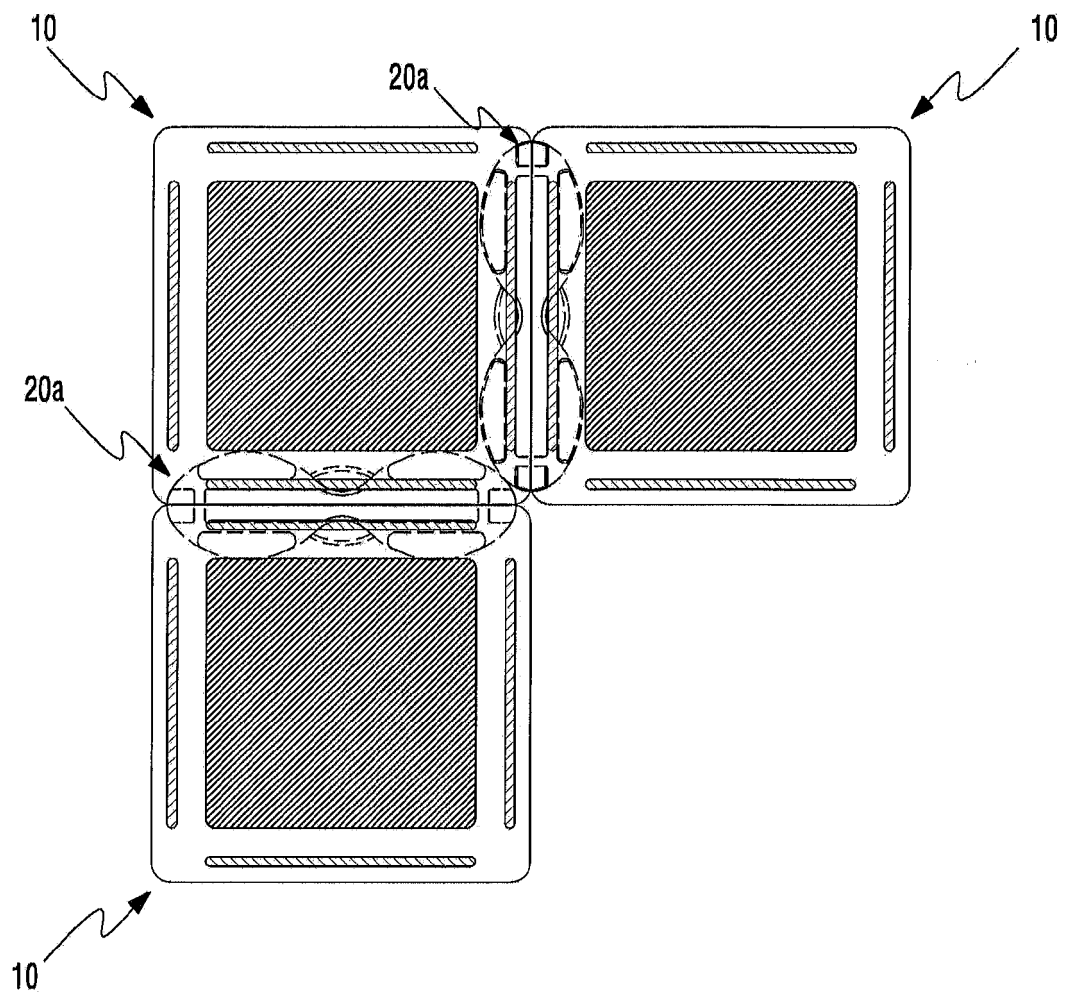


FIG. 25

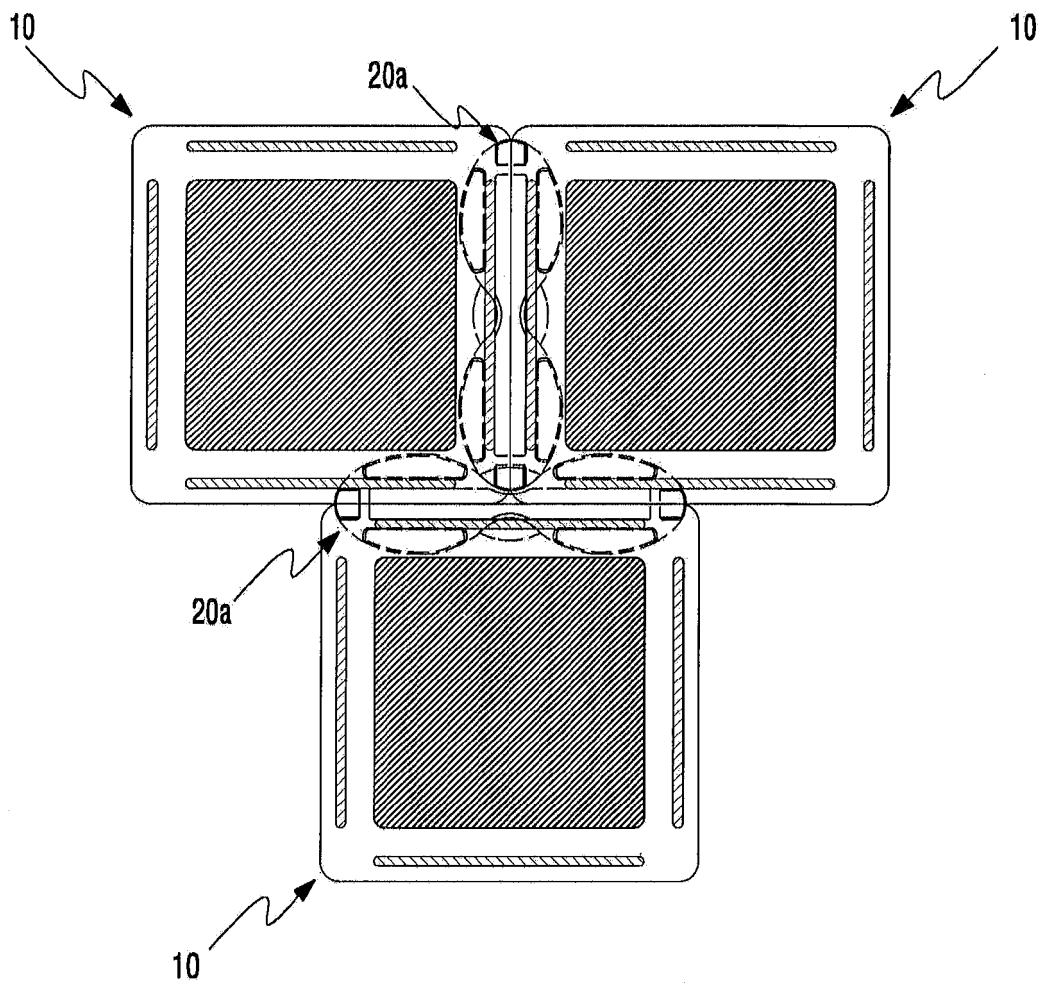


FIG. 26

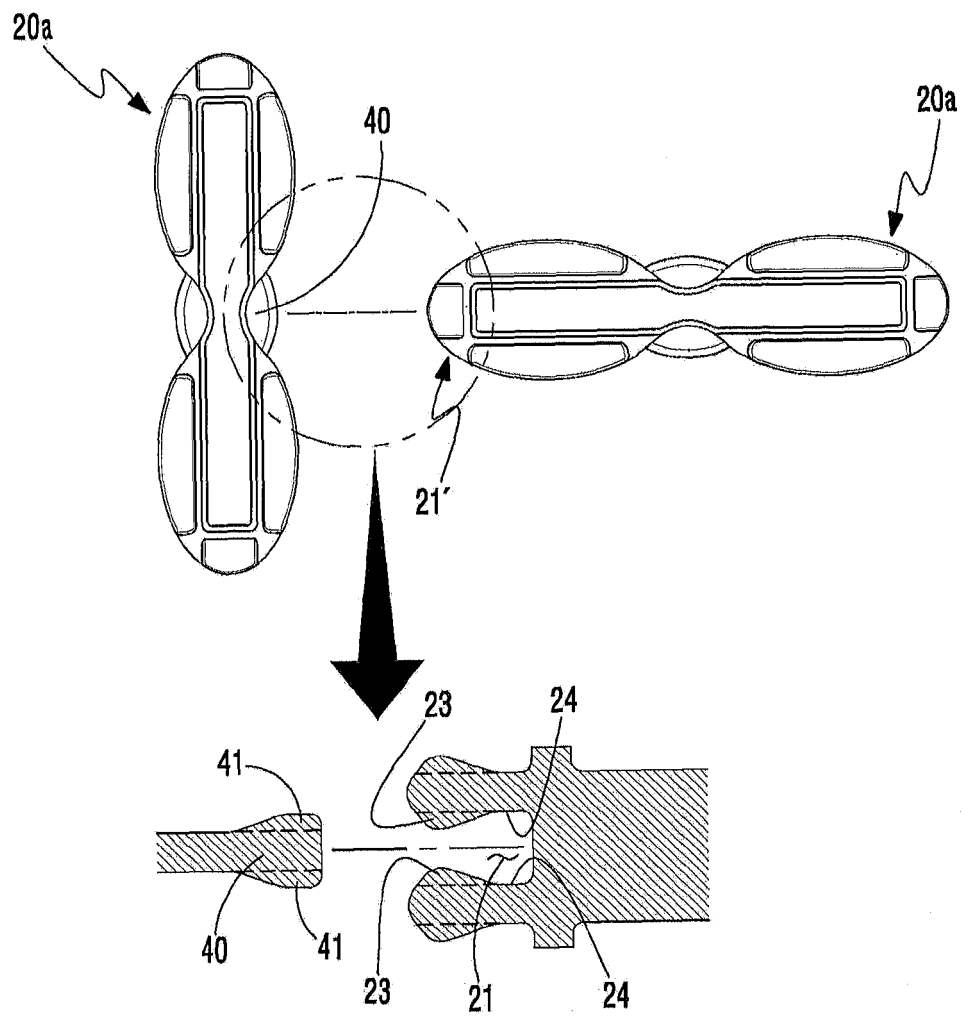


FIG. 27

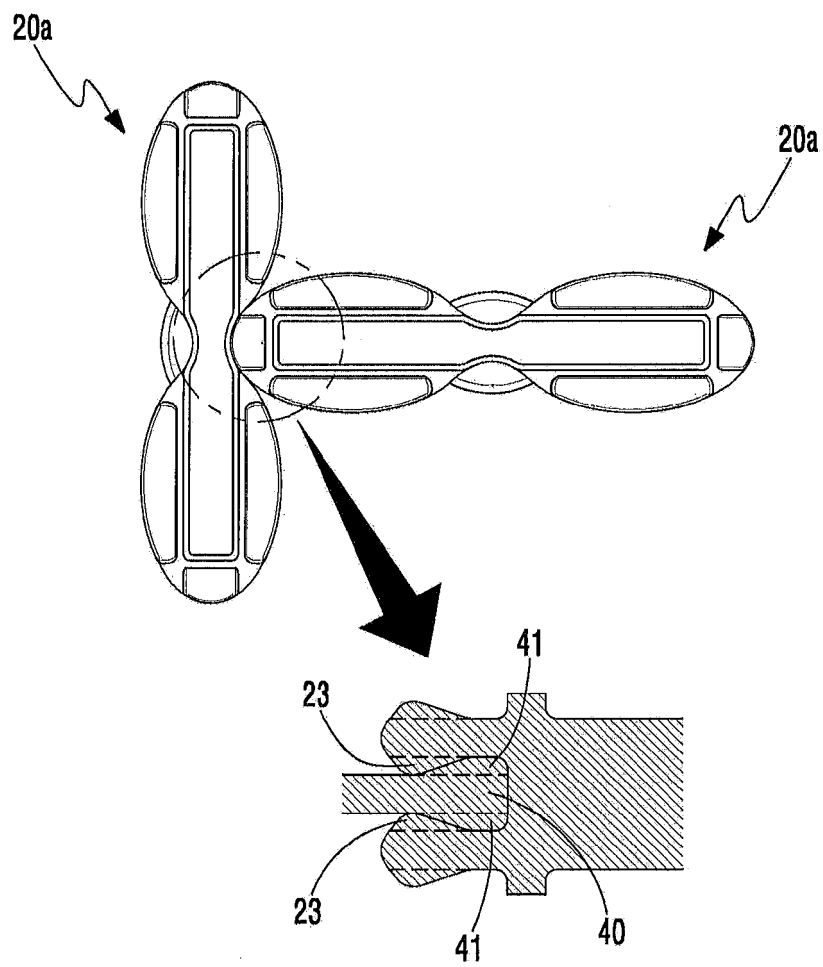


FIG. 28

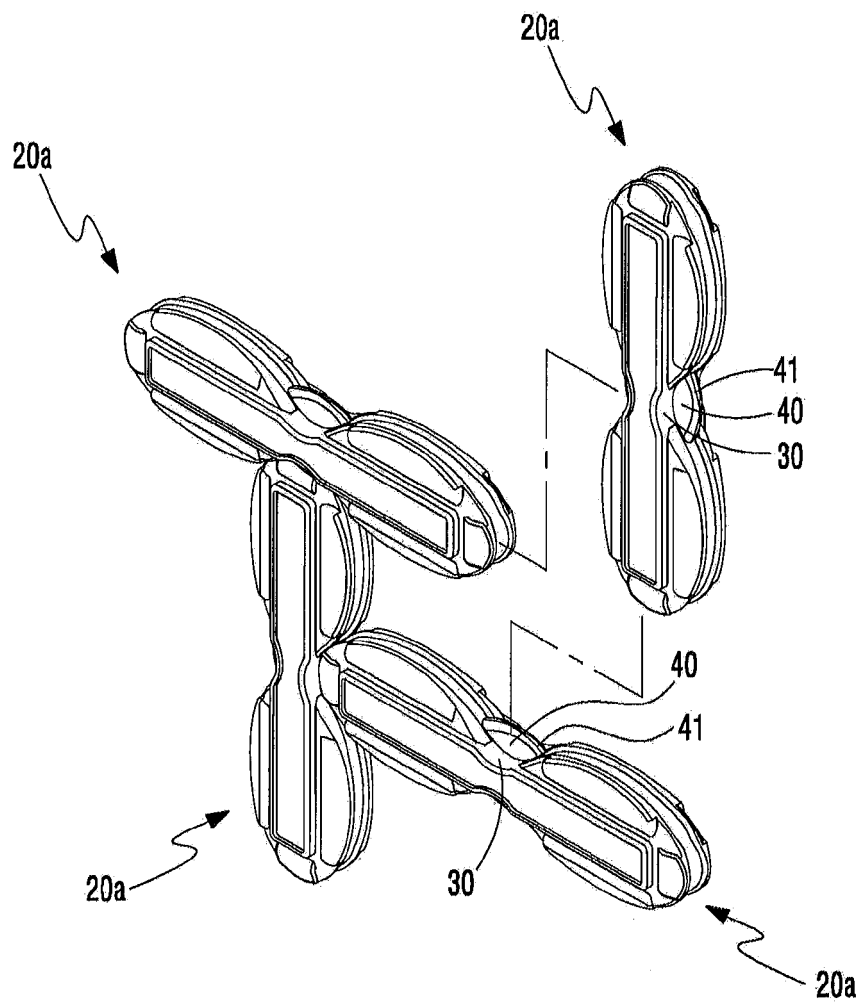


FIG. 29

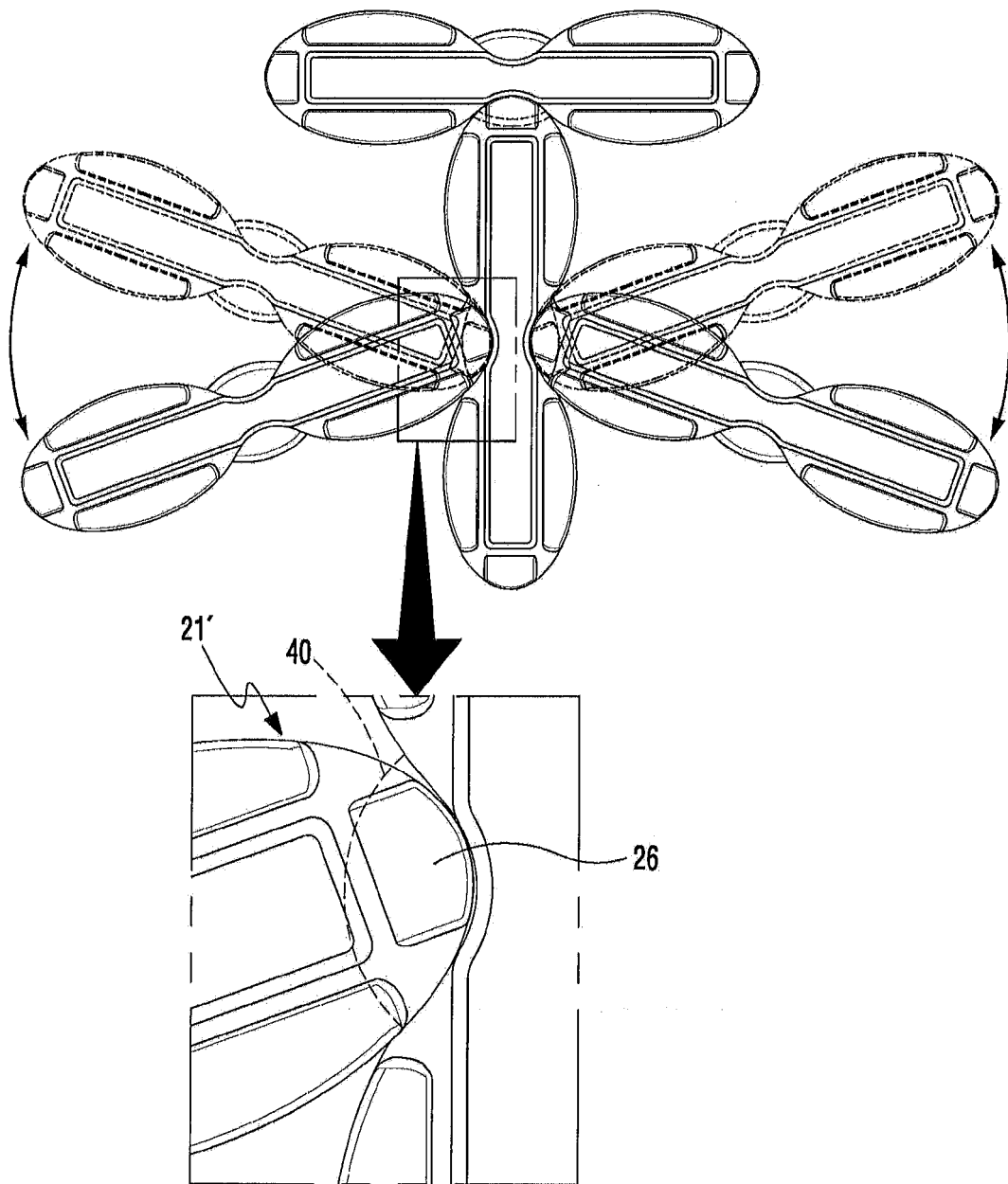


FIG. 30

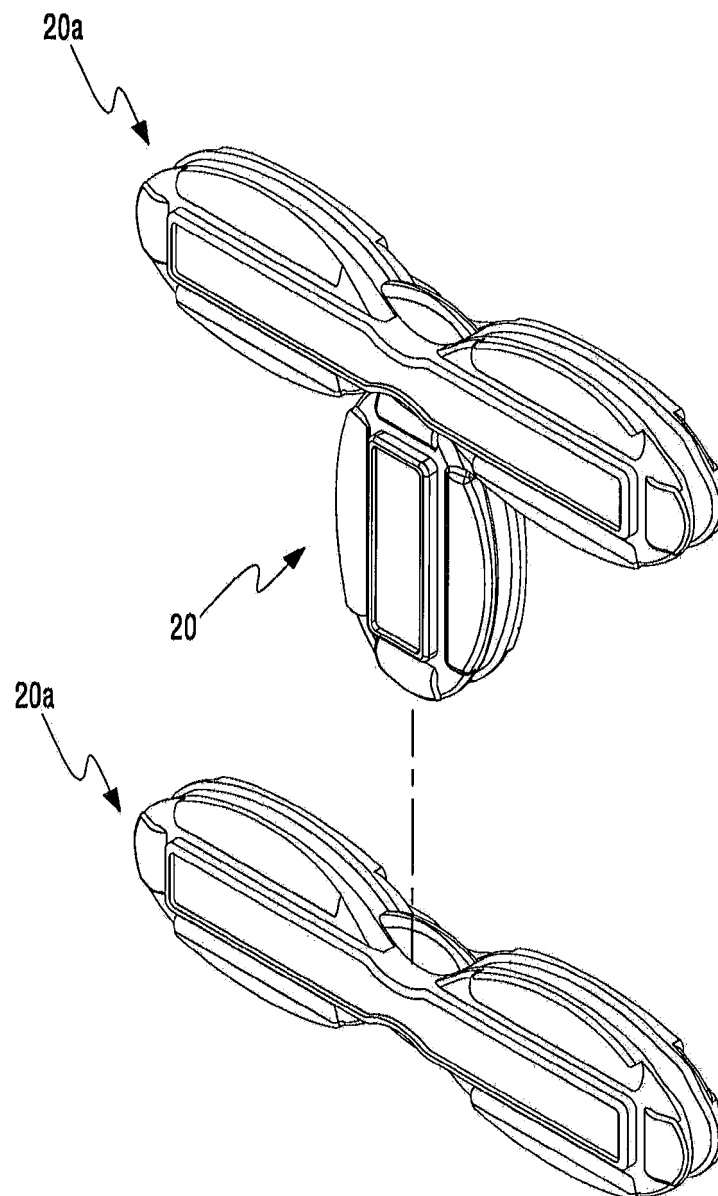


FIG. 31

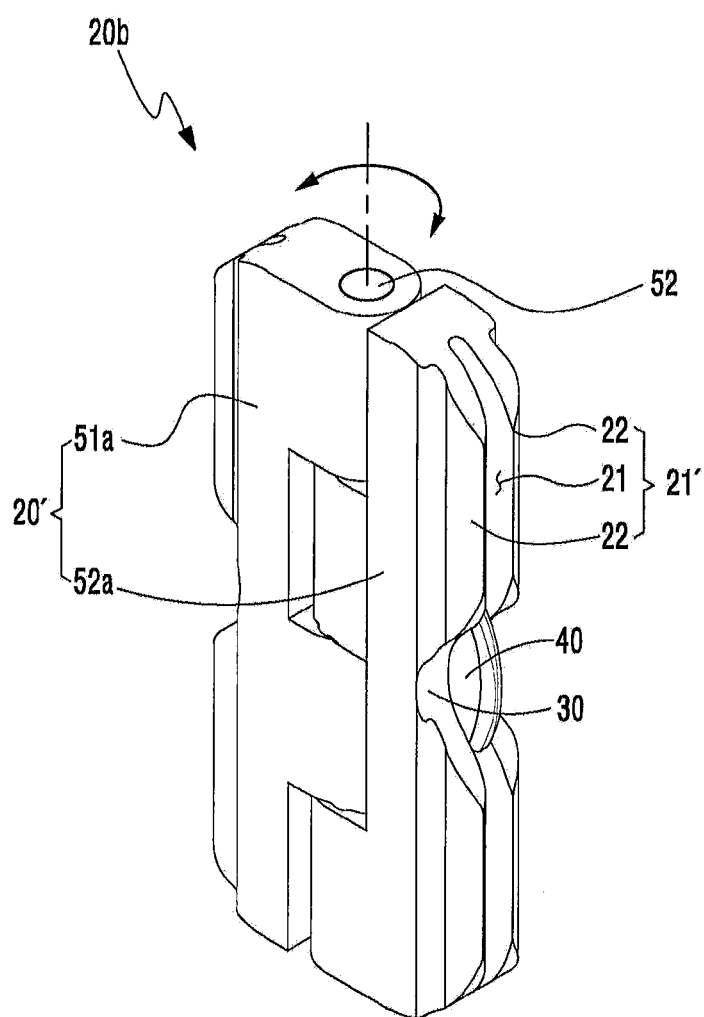


FIG. 32

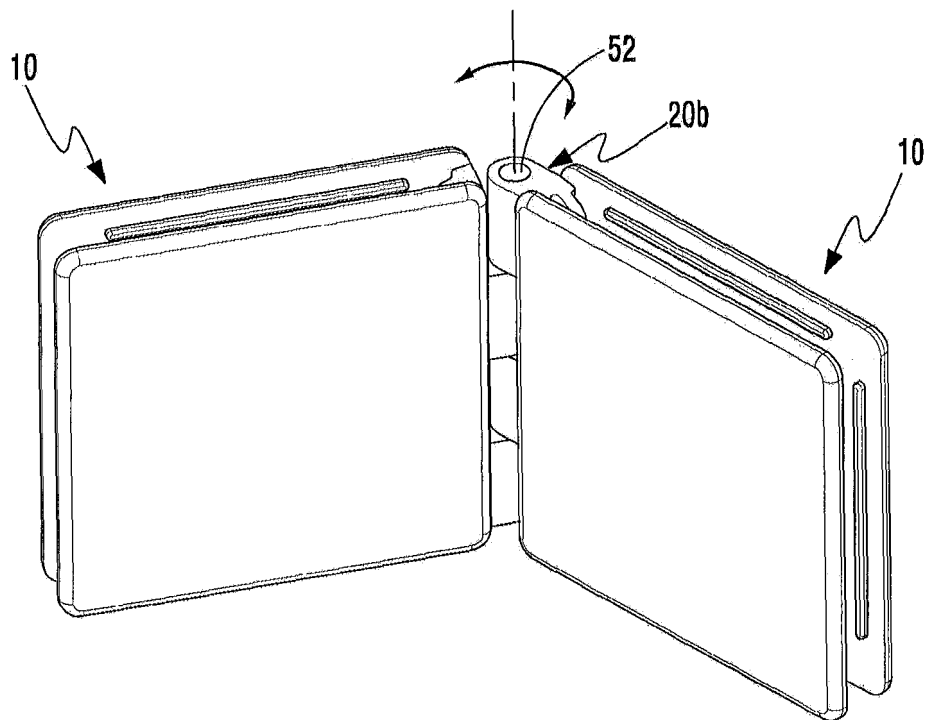


FIG. 33

20c

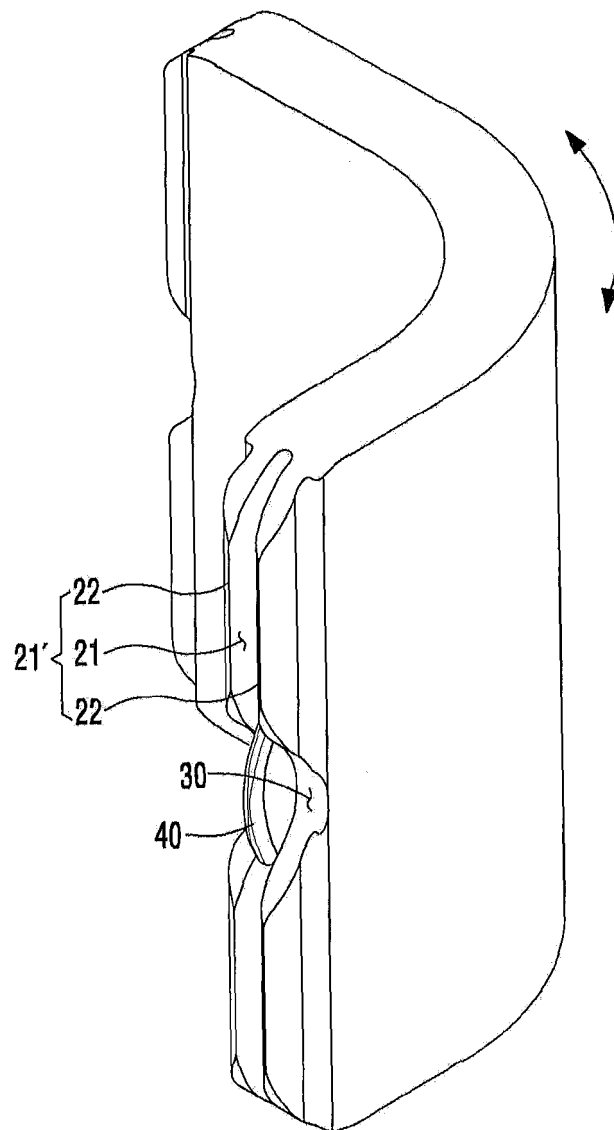
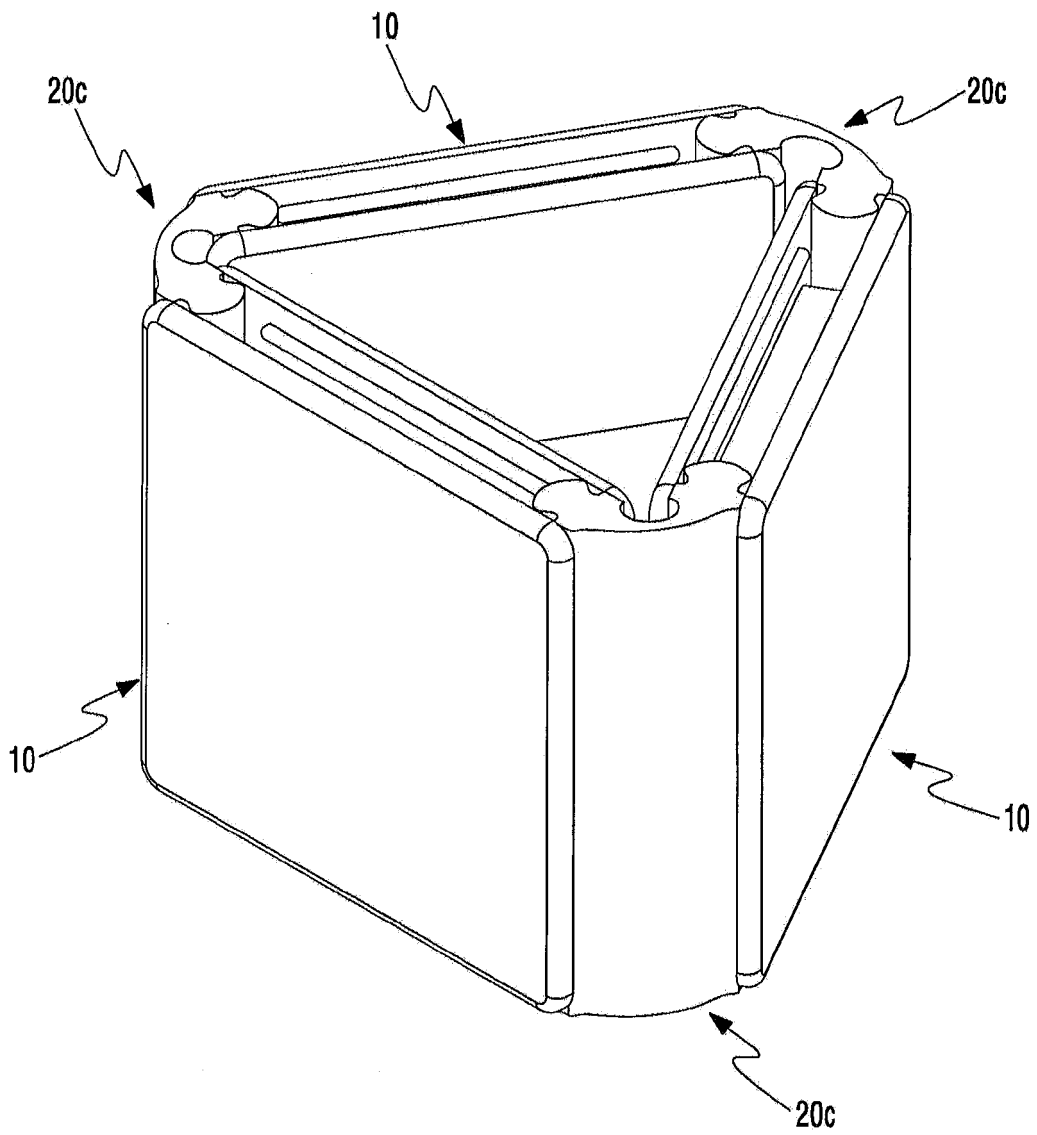


FIG. 34



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2017/005650

A. CLASSIFICATION OF SUBJECT MATTER

A63H 33/10(2006.01)i, A63H 33/06(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A63H 33/10; A63H 33/08; A63F 9/12; A63H 33/12; A63H 33/06; A63H 33/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models: IPC as above
Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: self-assembly block, first block, second block, first click-coupling part, second click-coupling part

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4003144 A (MADDESTRA et al.) 18 January 1977 See column 1, line 6-column 3, line 8; and figures 1-6.	1-4,6-7,12,16
Y		5,8-11,13-15
Y	KR 10-2010-0056822 A (CHANG, Chu-Sib) 28 May 2010 See paragraphs [0001]-[0035]; and figures 3b, 6-7.	5
Y	KR 10-1384492 B1 (LEE, Kyu-Hwi) 10 April 2014 See paragraphs [0001]-[0043]; and figures 1-8.	8-11,13-15
A	KR 10-2012-0094188 A (LEE, Kyu-Hwi) 24 August 2012 See paragraphs [0001]-[0024]; and figures 1, 7-9.	1-16
A	US 5306198 A (FORMAN, STANLEY) 26 April 1994 See column 1, line 5-column 3, line 21; and figures 1-5, 5A, 6-7.	1-16

☐ Further documents are listed in the continuation of Box C.
 ☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

13 SEPTEMBER 2017 (13.09.2017)

Date of mailing of the international search report

13 SEPTEMBER 2017 (13.09.2017)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 189 Soonsa-ro, Daejeon 302-701,
Republic of Korea

Facsimile No. +82-42-481-8578

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2017/005650

5

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member	Publication date
US 4003144 A	18/01/1977	NONE	
KR 10-2010-0056822 A	28/05/2010	KR 10-1048157 B1	11/07/2011
KR 10-1384492 B1	10/04/2014	NONE	
KR 10-2012-0094188 A	24/08/2012	KR 10-1245060 B1	18/03/2013
US 5306198 A	26/04/1994	NONE	

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- KR 101047689 [0004]
- KR 101468130 [0004]