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(71) Applicant: **Kee (Guangdong) Garment Accessories Ltd**
Guangdong 528244 (CN)

(72) Inventor: **CHEN, Changhua**
Foshan, Guangdong 528244 (CN)

(74) Representative: **Vitina, Maruta et al**
Agency TRIA ROBIT
P.O. Box 22
1010 Riga (LV)

(54) EASY-SLIDE ZIPPER AND ARTICLES USING THE SAME

(57) Disclosed are an easy-slide zipper (100A, 100B, 100C, 100D, 100E) and articles (7a) using the same. The easy-slide zipper comprises a first tape (1a, 1d, 1e), a second tape (2a, 2d, 2e), at least one joining tape (3a, 3a1, 3a2, 3b, 3c, 3d, 3e) and at least one chain set (4a, 4b). Tapes are arranged apart in a direction perpendicular to a longitudinal direction. The first tape and the second tape are respectively arranged on edges at opposite sides of the joining tape. The chain set is arranged between two adjacent tapes and comprises male teeth (10a, 10d, 20a, 31e, 32d, 32e) and female teeth (10e, 20e, 31a, 31d, 32a) which mesh with each other. The female teeth are arranged apart on one tape, and the male teeth are arranged apart on another tape. When two tapes move relative to each other in a longitudinal direction, the male teeth slide longitudinally relative to the female teeth. The male teeth and the female teeth are arranged in different length in the longitudinal direction to form a first chain (5a) and a second chain (5b). An article using the easy-slide zipper is provided with a first fabric edge (71a) and a second fabric edge (72a). The first tape is sewn on the first fabric edge, and the second tape is sewn on the second fabric edge. The invention makes significant improvements on the stuck problem during sliding.

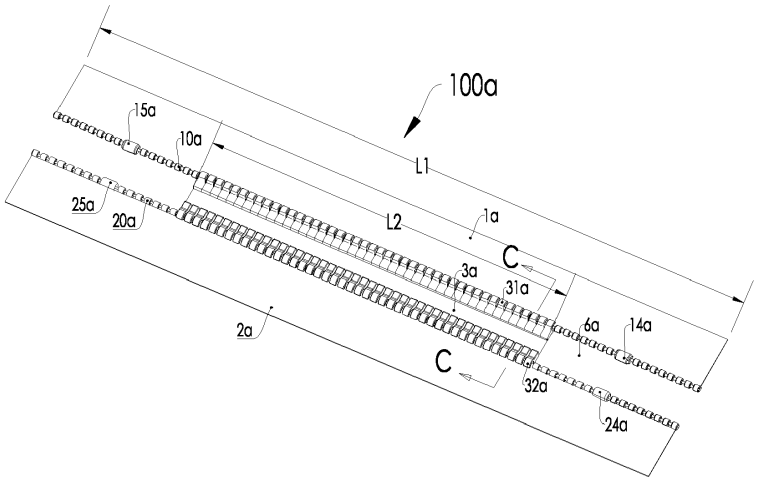

FIG. 2

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Description

TECHNICAL FIELD

[0001] The present invention relates to clothing accessories, and more particularly to an easy-slide zipper and articles using the same.

BACKGROUND OF THE INVENTION

[0002] Zippers are commonly used in everyday life and generally includes a left zipper tape that longitudinally extends, a right zipper tape that longitudinally extends and a slider that is longitudinally slidable. By means of slider's movement, teeth on the left zipper tape and the right zipper tape can be meshed together or separated. The existing chain teeth are mostly rigid structures which are integrally formed, such as cold extruded metal teeth or injection molded resin teeth. When the left and right zipper tapes are pulled together, the left chain teeth and the right chain teeth are pressed to be meshed by the slider. A relatively large pressing force is required to mesh the left chain teeth and the right chain teeth together due to fit dimensional accuracy. Moreover, friction occurs between the slider and the chain teeth or tapes when the slider slides. The above various factors will affect the pulling smoothness of the zipper, which affects the hand feeling and the detachment speed of the zipper to some extent when pulling the slider on the zipper. In order to improve the pulling smoothness of the zipper, various solutions have been proposed. For example, Chinese Patent CN 201410348920.2 discloses an elastic meshing zipper with improved chain structure. Chinese Patent CN 200410030762.2 discloses an injection-moulded hook zip fastener with alternative teeth. Chinese Utility Model Patent CN 201620244875.0 discloses a slider with improved slider structure, which reduces the frictional force between slider and chain teeth. However, in the above solutions, the resistance caused by the pressing between the chain teeth and the slider affects the pulling smoothness of the slider. This problem has still not been solved very well.

[0003] To solve the above problem, Chinese Patent CN 201410658506.1 proposes a safety slide chain including an upper chain body and a lower chain body. The upper chain body includes a plurality of clamping rings arranged on a base cloth. Each clamping ring includes two arc-shaped clamping arms which are connected into a whole. The end of the clamping arm is spherical. The lower chain body includes a strip-shaped slide groove and a base cloth connecting seat arranged at the lower end of the slide groove. The slide groove is an inverted trapezoid, and four edges of the slide groove are provided with a rib. The rib at the top end of the slide groove extends out of the outer end of the slide groove and is provided with a stop. The height of the rib on the top end of the slide groove is greater than that of the ribs on other three edges. The base cloth connecting seat is connected to the base cloth. The upper chain body is connected to the lower chain body in such a way that the slide groove is clamped by the clamping rings. This solution omits the arrangement of slider, so that the pressing of the slider to the chain teeth can be completely avoided. This invention discloses a single-layer easy-slide fit consisting of a clamping ring and a rib. However, the slide chain easily gets stuck between the clamping ring and the slide groove when in use, especially when the slide chain is applied to the article with a ring structure because the clamping ring must move along the ring.

SUMMARY OF THE INVENTION

[0004] In order to solve the above problems, the present application provides an easy-slide zipper and articles using the same.

[0005] In an aspect, the present application provides an easy-slide zipper, including a first tape, a second tape, at least one joining tape, and at least one chain set. The first tape, the second tape and the joining tape are arranged apart in a direction perpendicular to a longitudinal direction. The first tape and the second tape are respectively arranged on edges at opposite sides of the joining tape.

[0006] The chain set is arranged between two adjacent tapes. The chain set includes male teeth and female teeth which match with each other. The female teeth are arranged apart on one tape, and the male teeth are arranged apart on another tape. When two tapes move relative to each other in a longitudinal direction, the male teeth slide longitudinally relative to the male teeth.

[0007] The male teeth and the female teeth are arranged in different length in the longitudinal direction to form a first chain and a second chain. A length of the first chain is greater than a length of the second chain.

[0008] In an embodiment, the chain sets further includes a stop; and the stop is arranged on the first chain and configured to prevent the second chain from disengaging from the first chain.

[0009] In an embodiment, the joining tape is in a form of a strip or a rope.

[0010] In an embodiment, a pair of male tooth and female tooth or a pair of male teeth or a pair of female teeth arranged on the joining tape in a transverse direction perpendicular to the longitudinal direction is integrally formed to form a joining tooth body. Adjacent joining tooth bodies are arranged apart in a longitudinal direction.

[0011] In an embodiment, the pair of male tooth and female tooth or the pair of male teeth or the pair of female teeth arranged on the joining tape in a transverse direction perpendicular to the longitudinal direction is not integrally formed. The pair of male tooth and female tooth or the pair of male teeth or the pair of female teeth are arranged apart in a longitudinal direction.

[0012] In an embodiment, the joining tape is provided with characters or pattern.

[0013] In an embodiment, one joining tape is provided.

The first tape and the second tape are both provided with the first chain. The second chain is arranged on both sides of the joining tape; or the first tape and the second tape are both provided with the second chain. The first chain is arranged on both sides of the joining tape. The joining tape is divided into a plurality of sub-sections sliding independently relative to each other.

[0014] In an embodiment, a male tooth head in an open ring shape and has a female tooth socket and a socket opening.

[0015] Each male teeth is provided with a male tooth head accommodated in the female tooth socket. A height of the male tooth head is greater than a height of the socket opening and smaller than a height of the female tooth socket.

[0016] The male teeth slide into or out of the female tooth socket along a longitudinal direction of the open ring.

[0017] In an embodiment, opposite ends of the male tooth head in a longitudinal direction are respectively provided with a inclined guiding face.

[0018] In an embodiment, a longitudinal cross section of the male tooth head is a substantially elliptic.

[0019] In an embodiment, the male teeth are arranged on both sides of the joining tape;
or the female teeth are arranged on both sides of the joining tape;
or one side of the joining tape is provided with the male teeth, and the other side is provided with the female teeth.

[0020] In an embodiment, the male teeth form the first chain, and the female teeth form the second chain; the stop is arranged on the first chain..

[0021] In a second aspect, the present application provides an article using the easy-slide zipper. The article is provided with a first fabric edge and a second fabric edge. The first tape is sewn on the first fabric edge, and the second tape is sewn on the second fabric edge.

[0022] The at least one technical solution described herein can achieve the following beneficial effects:
The easy-slide zipper and articles using the same disclosed in the present application makes significant improvements on the stuck problem during sliding.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] Here, the drawings included herein provide a further explanation of the present application and constitute a part of this application. The schematic embodiments are for illustration purposes only and not for limitation.

FIG. 1 is a schematic diagram of an easy-slide zipper for an opening portion of a clothing product according to an embodiment of the present application.

FIG. 2 is a schematic diagram of an easy-slide zipper 100a according to an embodiment of the present application.

FIG. 3 is a sectional view taken along C-C in FIG. 2.

FIG. 4 is a schematic diagram of an easy-slide zipper 100b according to an embodiment of the present application.

FIG. 5 is a sectional view taken along B-B in FIG. 4.

FIG. 6 is a schematic diagram of an easy-slide zipper 100c according to an embodiment of the present application.

FIG. 7 is a schematic diagram of an easy-slide zipper 100d according to an embodiment of the present application.

FIG. 8 is a schematic diagram of an easy-slide zipper 100e according to an embodiment of the present application.

FIG. 9 and FIG. 10 schematically show an easy-slide zipper in which a first chain is arranged on a joining tape 3a. In FIG. 9, the first chain is formed by male teeth, and in FIG. 10, the first chain is formed by female teeth.

FIG. 11 is a schematic diagram of an easy-slide zipper in which the first chain and the second chain are arranged on the joining tape 3a.

FIG. 12 is a sectional view of a male tooth and a female tooth.

FIG. 13 is a schematic diagram of the joining tape 3a having a plurality of sub-sections 30a in an easy-slide zipper according to an embodiment of the present application.

FIG. 14 is a transverse schematic diagram of the male tooth according to an embodiment of the present application.

FIG. 15 is a schematic diagram of an easy-slide zipper having two joining tapes according to an embodiment of the present application.

DETAILED DESCRIPTION OF EMBODIMENTS

[0024] The technical solutions of the present application will be clearly and completely described in the following with reference to the embodiments and drawings. Obviously, these embodiments are only a part of the implementations of the present application. All other embodiments obtained by a person of ordinary skill in the art based on the embodiments without creative efforts fall within the scope of the present application.

[0025] The technical solutions provided by the embodiments of the present application are described in detail

below with reference to the accompanying drawings.

[0026] In an embodiment, an easy-slide zipper 100a for connecting two separate fabrics is illustrated. For example, an article of clothing 7a using the easy-slide zipper 100a is shown in FIG. 1.

[0027] The article 7a includes two separate fabrics, a garment body 702a and a hood 701a. A first fabric edge 71a is reserved on the hood 701a, and a second fabric edge 72a is reserved on the garment body 702a.

[0028] The easy-slide zipper 100a includes a first tape 1a, a second tape 2a and at least one joining tape 3a. Referring to FIG. 2, one joining tape 3a is shown. FIG. 15 shows two joining tapes 3a1 and 3a2. The joining tape 3a may be in the form of a strip, for example a strip with a width of, for example 10 cm or 15 cm. There is a space 6a between the first tape 1a and the second tape 2a, and the joining tape 3a is arranged in the space 6a. Each tape extends in a longitudinal direction, and all of the tapes are spaced apart in a transverse direction perpendicular to the longitudinal direction. The first tape 1a and the second tape 2a are respectively arranged on both side edges of the joining tape 3a in a transverse direction. Chain sets are arranged between two adjacent tapes.

[0029] As exemplarily shown in FIG. 2, a first chain set 4a and a second chain set 4b are illustrated. The first chain set 4a is arranged between the first tape 1a and the joining tape 3a, and the second chain set 4b is arranged between the second tape 2a and the joining tape 3a. Each of the first chain set 4a and the second chain set 4b includes male teeth (10a, 20a) and female teeth (31a, 32a) which mesh with each other. The female teeth (31a, 32a) are respectively arranged on the left and right sides of the joining tape 3a in a transverse direction (perpendicular to the longitudinal direction). The male teeth 10a are arranged on an inner side of the first tape 1a. The male teeth 20a are arranged on an inner side of the second tape 2a. When the first tape 1a and the joining tape 3a move relative to each other in a longitudinal direction, the male teeth 10a can slide longitudinally relative to the female teeth 31a. When the second tape 2a and the joining tape 3a move relative to each other in a longitudinal direction, the male teeth 20a can slide longitudinally relative to the female teeth 32a.

[0030] As shown in FIGS. 2 and 3, the female teeth (31a, 32a) arranged on the left and right sides of the joining tape 3a in a transverse direction are spaced apart in the transverse direction rather than integrally formed. Thus, the joining tape 3a can be exposed between the female teeth (31a, 32a) at the left and right sides of the joining tape 3a in the transverse direction. The joining tape 3a provides a space for arrangement where decorative elements such as characters and patterns may be provided. The joining tape 3a becomes a sliding decorative tape between the first tape 1a and the second tape 2a after being provided with the characters or patterns, thereby adding the aesthetic beauty of the zipper.

[0031] In some embodiments, the male teeth and female teeth may be interchangeable, as described in detail below. For the purpose of distinction, different easy-slide zippers are labeled as 100b, 100c, 100d and 100e, respectively, as shown in FIGS. 4-8.

[0032] As shown in FIGS. 4 and 5, the easy-slide zipper 100b is similar in structure to the easy-slide zipper 100a, where the key difference is that the structure of the male teeth and/or female teeth arranged on the joining tape 3b are different from that of the easy-slide zipper 100a. A pair of male tooth and female tooth or a pair of male teeth or a pair of female teeth arranged on the left and right sides of the joining tape 3b in the transverse direction is integrally formed to form a joining tooth body 30b. A front and rear joining tooth bodies 30b are arranged apart in a longitudinal direction. The joining tooth body 30b includes a female tooth head (310b, 320b) arranged on the left and right sides in a transverse direction, and a female tooth body 330b connecting the female tooth heads (310b, 320b). The joining tape 3b is sleeved in the middle of the female tooth body 330b. In this way, the joining tooth body 30b extends to a distance along a transverse direction and covers the joining tape 3b. In the longitudinal direction, the joining tape 3b is exposed between the two adjacent joining tooth bodies 30b. The joining tooth body 30b has a relatively large width to provide a large space for the arrangement og characters or patterns.

[0033] The joining tape 3b may be improved based on the embodiment, for example, a joining tape 3c of the easy-slide zipper 100c shown in FIG. 6. The joining tape 3c is a rope-like cloth strip, plastic strip or wire.

[0034] As shown in FIG. 7, a easy-slide zipper 100d is similar in structure to that of the easy-slide zipper 100a, where the key difference is that female teeth 31d and male teeth 32d are respectively arranged on the left and right sides in a longitudinal direction along the joining tape 3d. The male teeth 10d and the female teeth 20d respectively meshed with the female teeth 31d and the male teeth 32d are arranged on the inner sides of the first tape 1d and the second tape 2d respectively. The female teeth 31d and the male teeth 32d are connected by the joining tape 3d.

[0035] As shown in FIG. 8, a easy-slide zipper 100e is similar in structure to that of the easy-slide zipper 100a, where the key difference is that the female teeth (10e, 20e) are arranged on the left and right sides of the joining tape 3e in a longitudinal direction. The male teeth (31e, 32e) meshing with the female teeth (10e, 20e) are arranged on the inner sides of the first tape 1e and the second tape 2e respectively. The male teeth (31e, 32e) on both sides are connected by the joining tape 3e.

[0036] It is further described with the following easy-slide zipper 100a as an example. Referring to FIG. 1, the first tape 1a is sewn to a first fabric edge 71a, and the second tape 2a is sewn to the second fabric edge 72a. Moreover, the male teeth and female teeth in the same chain set are arranged in different length in the longitudinal direction to form the first chains 5a and the second chains 5b. The length of the first chains 5a is greater than

that of the second chains 5b. The second chains 5b can slide on the first chains 5a, so that the user wearing the hood 701a enables the sliding movement of the hood 701a relative to the garment body 702a while preventing the hood 701a from hindering the vision. In addition, the easy-slide zipper 100a has a double-layer easy-slide sleeve structure. When the first tape 1a get stuck during sliding relative to the joining tape 3a, the sliding of the second tape 2a relative to the joining tape 3a is not significantly affected. The stuck problem during sliding is greatly alleviated, such that a more smooth feeling is achieved.

[0037] In the present embodiment, the first chain 5a may be arranged on the first tape 1a and the second tape 2a, and the second chain 5b is arranged on the joining tape 3a. At this time, a longitudinal length L1 of the first tape 1a and the second tape 2a is greater than a longitudinal length L2 of the joining tape 3a (see FIG. 2). Alternatively, the first chain 5a may be arranged on the joining tape 3a, and the second chain 5b is arranged on the first tape 1a and the second tape 2a (see FIG. 9 and 10). Alternatively, the first chain 5a may be arranged on one side of the first tape 1a and the joining tape 3a respectively, and the second chain 5b is arranged on the other side of the second tape 2a and the joining tape 3a (see FIG. 11). Further, the first chain 5a in the present embodiment may be formed by the male teeth or female teeth. The second chain 5b may be similar to the first chain 5a.

[0038] In order to prevent the second chain 5b from disengaging from the first chain 5a, the embodiment further provides a stop on the first chain 5a. Specifically, as shown in FIG. 2, stops (14a, 24a, 15a, 25a) defining the sliding stroke of the joining tape 3a are respectively arranged at both longitudinal ends of the first tape 1a and the second tape 2a. In FIG. 2, the first tape 1a and the second tape 2a are both provided with the male teeth, so that the stops (14a, 24a, 15a, 25a) are configured to prevent the passage of the female teeth. At this time, the height of the stop (14a, 24a, 15a, 25a) is greater than that of a female tooth socket of the female teeth (31a, 32a). Thus, the joining tape 3a can only slide between the stops (14a, 24a, 15a, 25a) and will not disengage from the first tape 1a and the second tape 2a.

[0039] In some embodiments, if the first chain 5a is arranged on the joining tape 3a, it is only necessary to adjust the stop to the joining tape 3a. For example, the easy-slide zipper shown in FIGS. 9 and 10 has two first chains 5a arranged on the joining tape 3a, so that stops (341a, 342a, 351a, 352a) are arranged on the joining tape 3a respectively. If the first chain 5a consists of female teeth, the stop may close a holding channel formed by the female tooth socket to prevent the male teeth from disengagement. For example, as shown in FIG. 8, the easy-slide zipper has two first chains 5a arranged on the first tape 1e and the second tape 2e. The two first chains 5a are both formed by the female teeth. The outermost female teeth of the first tape 1e and the second tape 2e are designed to have stops (14e, 15e, 24e, 25e) without the female tooth socket.

[0040] For example, referring to FIG. 11 again, the two first chains 5a are respectively arranged on the first tape 1a and the joining tape 3a, so that two stops (14a, 15a) are provided at both ends of the first tape 1a, and other two stops (34a, 35a) are provided at both ends of the third joining tape 3a.

[0041] In some embodiments, it is possible to provide stops only at both longitudinal ends of the first tape 1a or the second tape 2a. For example, in FIG. 7, stops (14d, 15d) are provided only at both ends of the first tape 1d.

[0042] In some other embodiments, limiting structures may be formed at ends of the first chain 5a by, for example sewing, thereby achieving the same limiting effect as the stops.

[0043] In the chain sets of the present embodiment, the male and female teeth can adopt various feasible sliding meshing mechanisms as long as the male and female teeth can slide relative to each other.

[0044] As shown in FIG. 12, the first chain set 4a and the second chain set 4b have similar structures. The structure of the first chain set 4a will be described below as an example. A head of the female teeth 31a in an open ring shape has a female tooth socket 311 a and a socket opening 312a. A plurality of female tooth sockets 311a of the female teeth 31a arranged apart are combined to form the holding channel that extends longitudinally. The male teeth 10a is provided with a male tooth head 100a that is accommodated in the female tooth socket 311a. The height H3 of the male tooth head 100a is greater than the height H1 of the socket opening 312a and smaller than the height H2 of the female tooth socket 311a. Thus, a movable gap is formed between the male tooth head 100a and the female tooth socket 311a to reduce the friction between the male tooth head 100a and the female tooth socket 311 a. The male tooth head 100a is inserted into the female tooth socket 311 a. When the joining tape 3a longitudinally moves, the male tooth head 100a can easily slide from one female tooth socket 311a to an adjacent female tooth socket 311a so as to longitudinally slide in the holding channel. However, the male tooth head 100a inserted into the female tooth socket 311a cannot transversely move through the socket opening 312a to disengage from the female teeth 31a.

[0045] The male teeth 10a and the female teeth 31a are fitted together via an easy-slide sleeve structure. Pressing from a slider is not required to complete the fastening, so that the arrangement of the slider can be omitted, thereby avoiding the sliding resistance during sliding to affect the smoothness of the zipper. It can be seen that the easy-slide sleeve structure between the two adjacent tapes makes it particularly easy during relative movement, leading to a very good easy-slide feeling. The easy-slide zipper 100 completely changes the structure and fitting manner of the traditional zipper, providing the user a better experience.

[0046] In the present embodiment, the first tape 1a and

the second tape 2a are directly connected to the clothes. In order to provide a better flexibility, the first tape 1a and the second tape 2a are preferably provided with male teeth (10a, 20a) with small size, and the joining tape 3a is provided with the female teeth (31a, 32a). In addition, since the female teeth (31a, 32a) are large in size and complicated in structure, the bending flexibility is not good. In a preferred embodiment, the male teeth (10a, 20a) are used as the first chain, and the female teeth (31a, 32a) are used as the second chain.

[0047] As shown in FIG. 13, in order to improve the flexibility of the joining tape 3a, the joining tape 3a may be divided into a plurality of sub-sections 30a sliding independently relative to each other, thereby improving the local bending flexibility of the joining tape 3a.

[0048] Further, as shown in FIG. 14, in order to allow the male tooth head 100a to be inserted into the female tooth socket 311a more easily, the opposite ends of the male tooth head 100a in a longitudinal direction are respectively provided with inclined guiding faces (101a, 102a). The inclined guiding faces (101a, 102a) may be flat or curved. When the inclined guiding faces (101a, 102a) are curved, the male tooth head 100a when viewed in a transverse direction may be substantially elliptic (known as a racetrack shape).

[0049] In a preferred embodiment, the male tooth head 100a is an integrated structure, which can be formed by injection molding or the like and then attached to the tape, or may be integrally formed with the tape.

[0050] In summary, the easy-slide zipper and articles using the same disclosed in the embodiments of the present application can significantly alleviate the stuck problem in the sliding process.

[0051] Differences between the various embodiments are described in the above embodiments of the present application. Various optimal features of the embodiments may be combined to form a preferred embodiment.

[0052] The embodiments are only illustrative of the present application, and are not intended to limit the application. It should be understood that for those of ordinary skills in the art, improvements or variations can be made based on the above descriptions, and such improvements and variations fall within the scope of the appended claims.

Claims

1. An easy-slide zipper, **characterized in that** the easy-slide zipper comprises a first tape, a second tape, at least one joining tape and at least one chain set; the first tape, the second tape and the joining tape are arranged apart in a direction perpendicular to a longitudinal direction; the first tape and the second tape are respectively arranged on edges at opposite sides of the joining tape;
   the chain set is arranged between two adjacent tapes; the chain set comprises male teeth and female teeth which match with each other; the female teeth are arranged apart on one tape, and the male teeth are arranged apart on another tape; when two tapes move relative to each other in a longitudinal direction, the male teeth slide longitudinally relative to the male teeth;
   the male teeth and the female teeth are arranged in different length in a longitudinal direction to form a first chain and a second chain; a length of the first chain is greater than a length of the second chain.

2. The easy-slide zipper of claim 1, **characterized in that** the chain set further comprise a stop; and the stop is arranged on the first chain and configured to prevent the second chain from disengaging from the first chain.

3. The easy-slide zipper of claim 1, **characterized in that** the joining tape is in a form of a strip or a rope.

4. The easy-slide zipper of claim 1, **characterized in that** a pair of male tooth and female tooth or a pair of male teeth or a pair of female teeth arranged on the joining tape in a transverse direction perpendicular to the longitudinal direction is integrally formed to form a joining tooth body; adjacent joining tooth bodies are arranged apart in a longitudinal direction.

5. The easy-slide zipper of claim 1, **characterized in that** a pair of male tooth and female tooth or a pair of male teeth or a pair of female teeth arranged on the joining tape in a transverse direction perpendicular to the longitudinal direction is not integrally formed; the pair of male tooth and female tooth or the pair of male teeth or the pair of female teeth are arranged apart in a longitudinal direction.

6. The easy-slide zipper of claim 1, **characterized in that** the joining tape is provide with characters or patterns.

7. The easy-slide zipper of claim 1, **characterized in that** one joining tape is provided; the first tape and the second tape are both provided with the first chain; the second chain is arranged on both sides of the joining tape; or the first tape and the second tape are both provided with the second chain; the first chain is arranged on both sides of the joining tape; the joining tape is divided into a plurality of sub-sections sliding independently relative to each other.

8. The easy-slide zipper of claim 1, **characterized in that** a male tooth head in an open ring shape has a female tooth socket and a socket opening;
   each male tooth is provided with a male tooth head accommodated in the female tooth socket; a height of the male tooth head is greater than a height of the socket opening and smaller than a height of the fe-

male tooth socket;
the male teeth slide into or out of the female tooth socket along a longitudinal direction of the open ring.

9. The easy-slide zipper of claim 8, **characterized in that** opposite ends of the male tooth head along a longitudinal direction are respectively provided with a inclined guiding face.

10. The easy-slide zipper of claim 9, **characterized in that** a longitudinal cross section of the male tooth head is substantially elliptic.

11. The easy-slide zipper of claim 8, **characterized in that**
the male teeth are arranged on both sides of the joining tape;
or the female teeth are arranged on both sides of the joining tape;
or one side of the joining tape is provided with the male teeth, and the other side is provided with the female teeth.

12. The easy-slide zipper of claim 8, **characterized in that** the male teeth form the first chain, and the female teeth form the second chain; the stop is arranged on the first chain.

13. An article using the easy-slide zipper of claim 1, **characterized in that** the article is provided with a first fabric edge and a second fabric edge; the first tape is sewn on the first fabric edge, and the second tape is sewn on the second fabric edge.

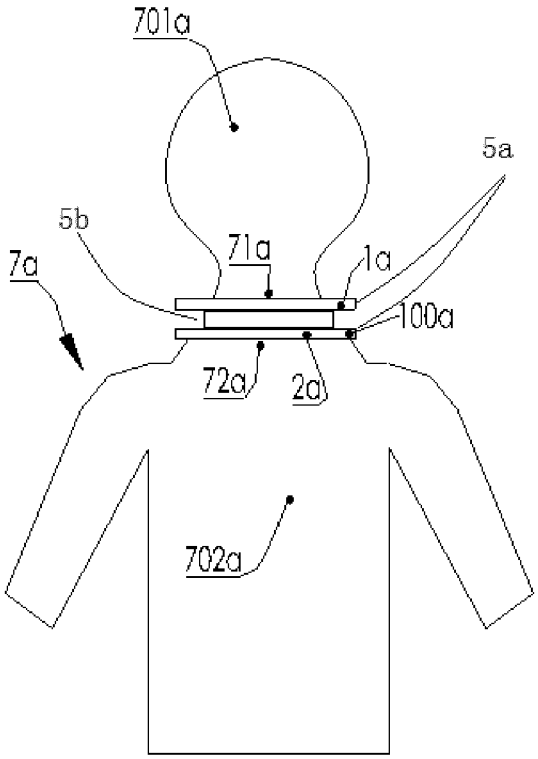
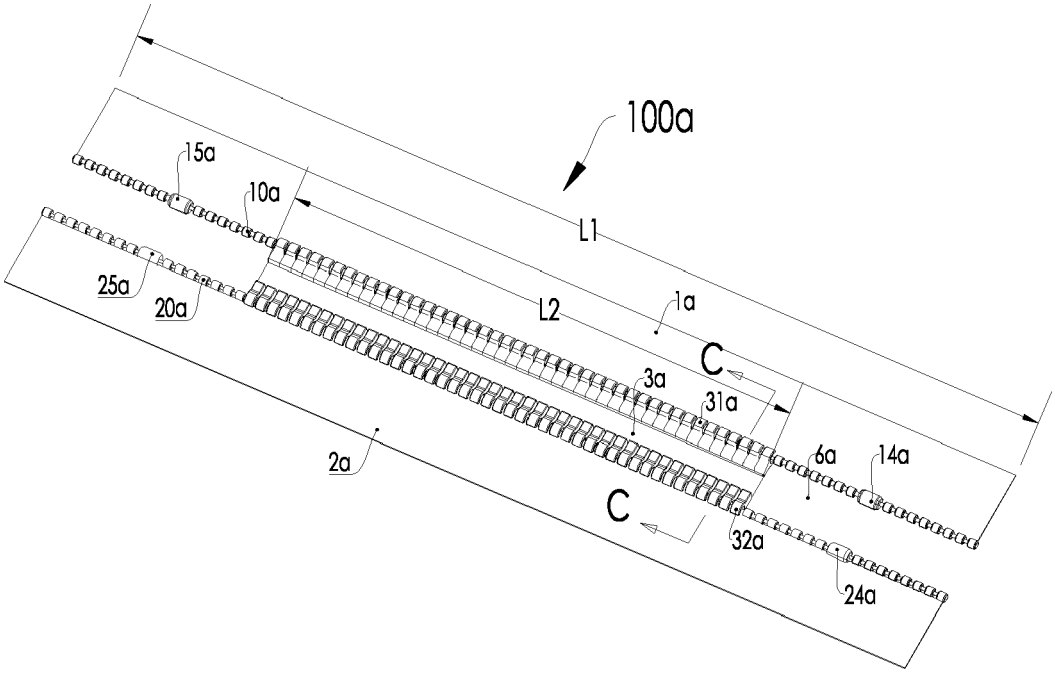

701a
5a
5b
71a
1a
7a
100a
72a
2a
702a

FIG. 1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15a
10a
L1
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20a
L2
1a
C
3a
31a
6a
14a
2a
C
32a
24a

FIG. 2

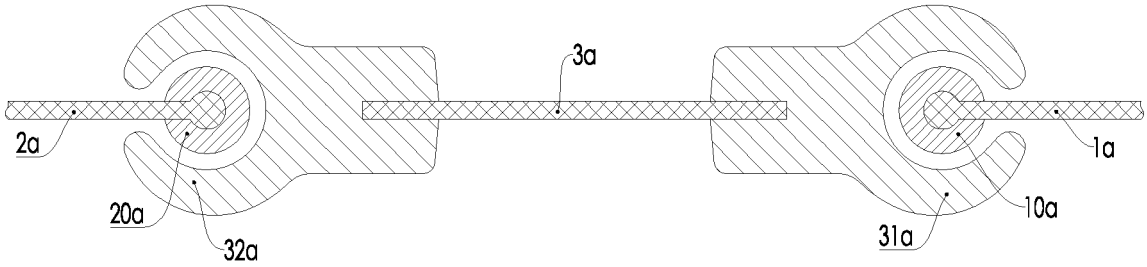


FIG. 3

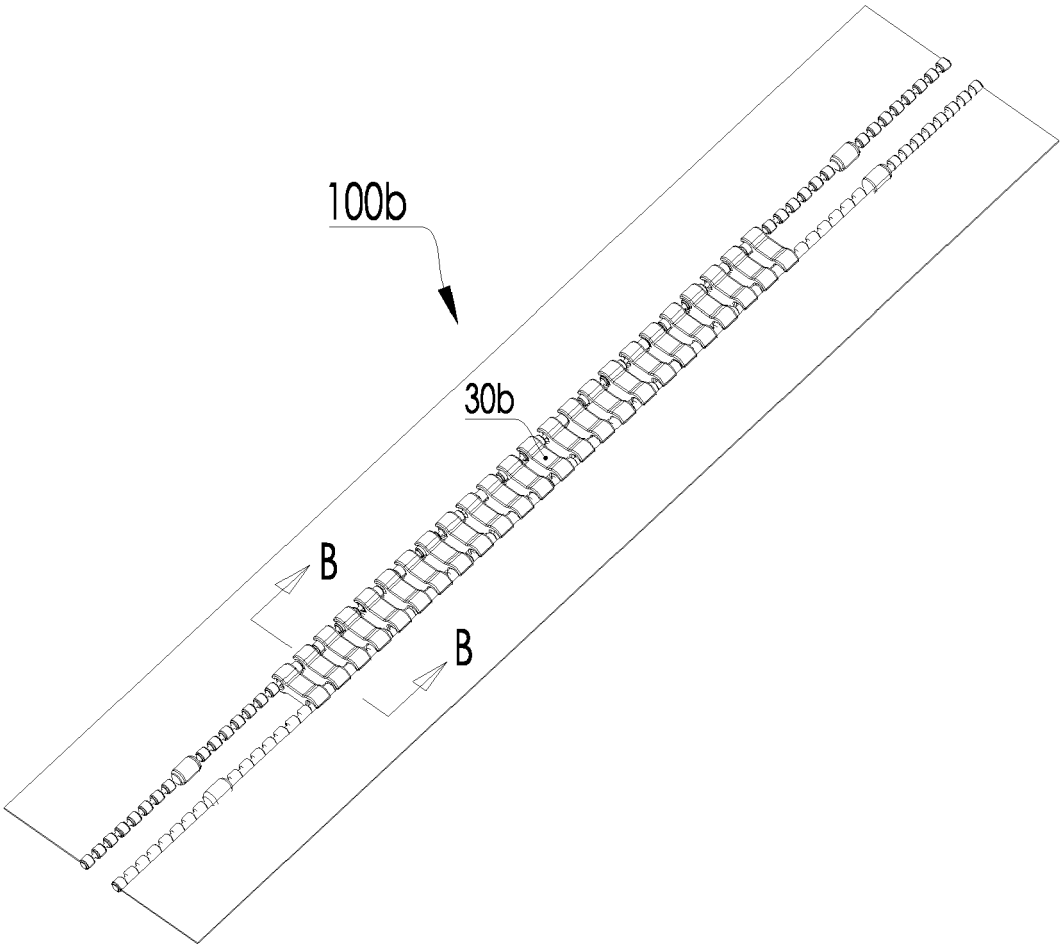


FIG. 4

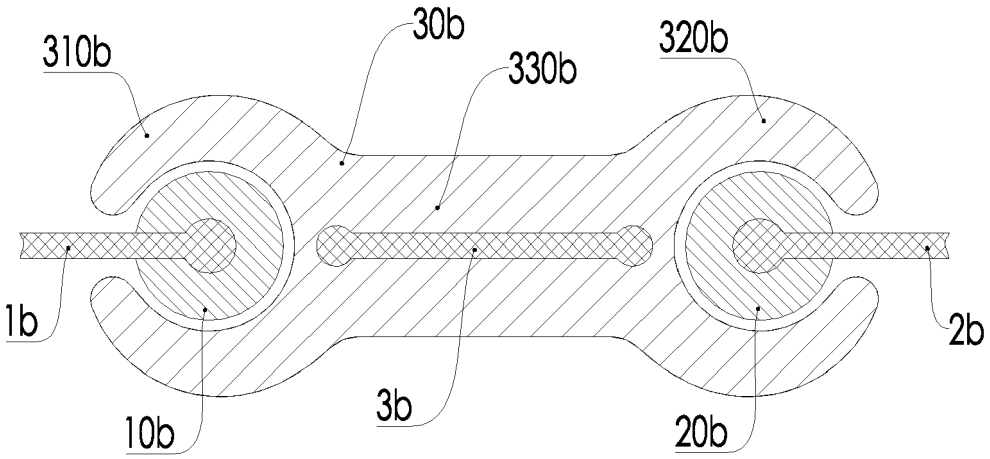


FIG. 5

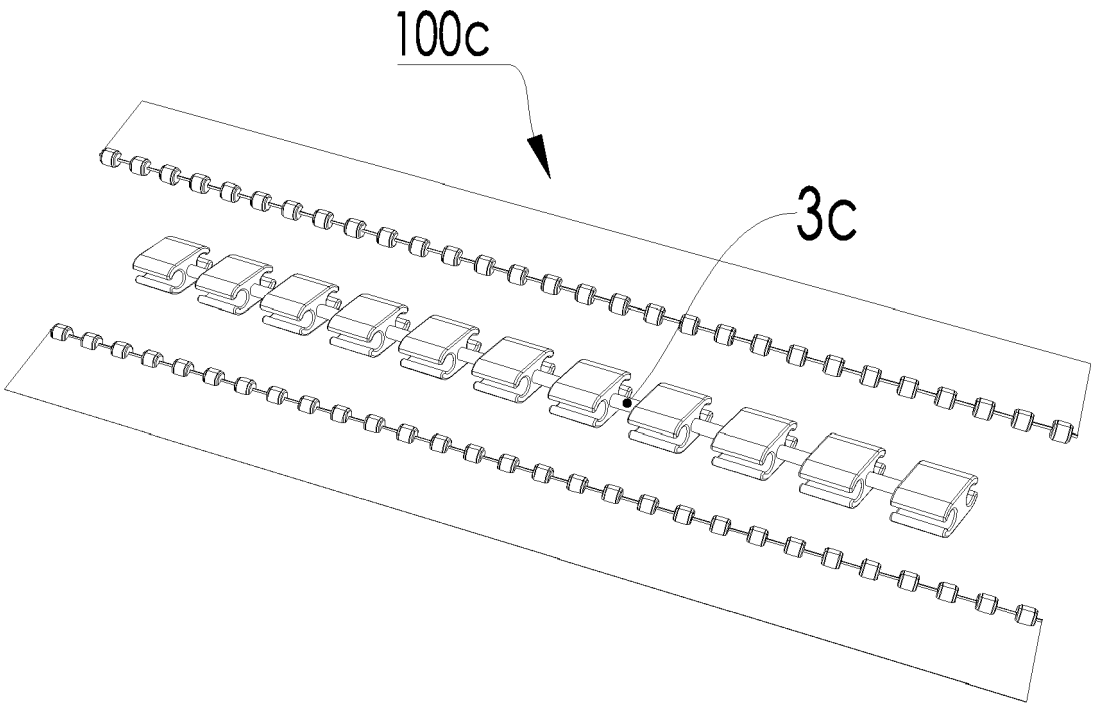


FIG. 6

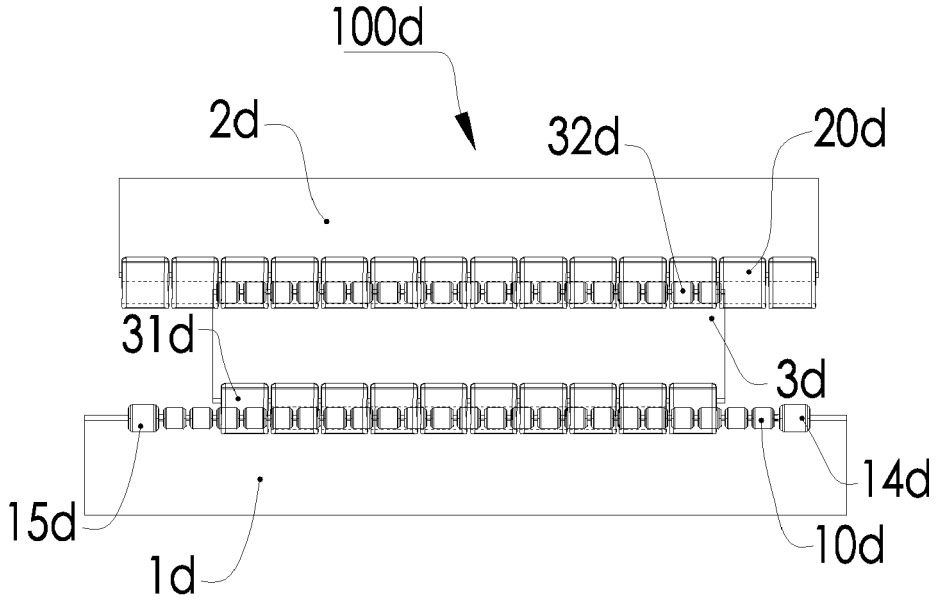

100d
2d
32d
20d
31d
3d
14d
15d
10d
1d

FIG. 7

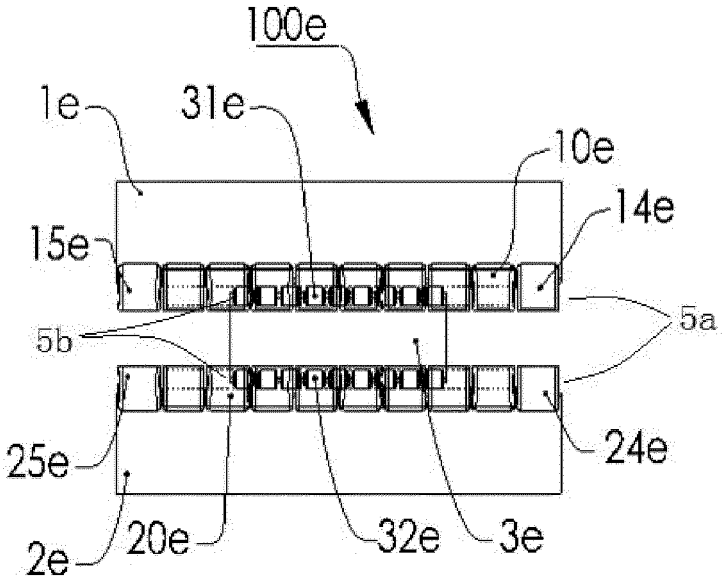

100e
1e
31e
10e
14e
15e
5a
5b
24e
25e
2e
20e
32e
3e

FIG. 8

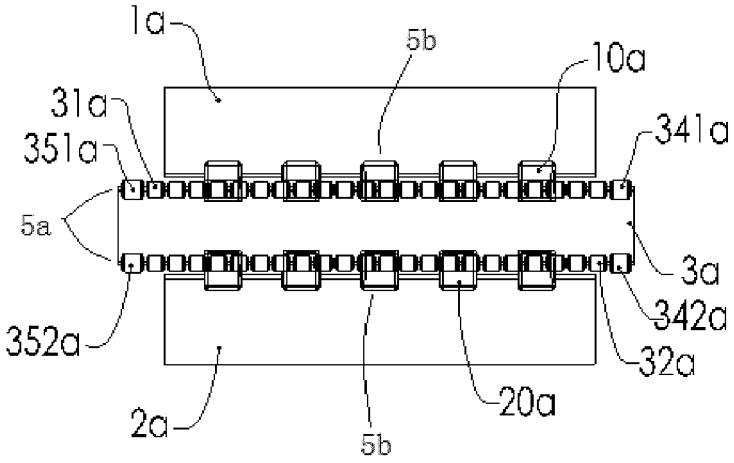
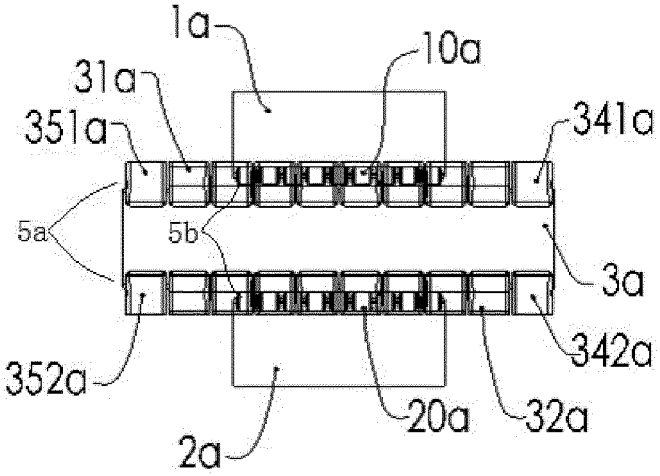

1a
5b
10a
31a
341a
351a
5a
3a
342a
352a
32a
20a
2a
5b

FIG. 9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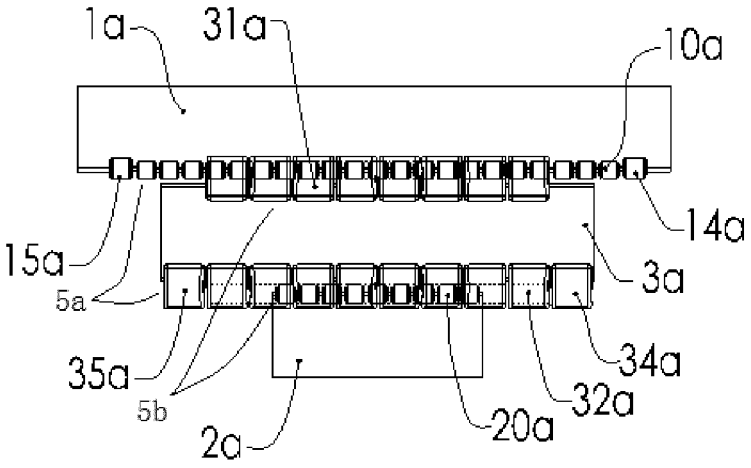
341a
351a
5a
5b
3a
342a
352a
20a
32a
2a

FIG. 10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31a
10a
14a
15a
5a
3a
35a
5b
34a
32a
2a
20a

FIG. 11

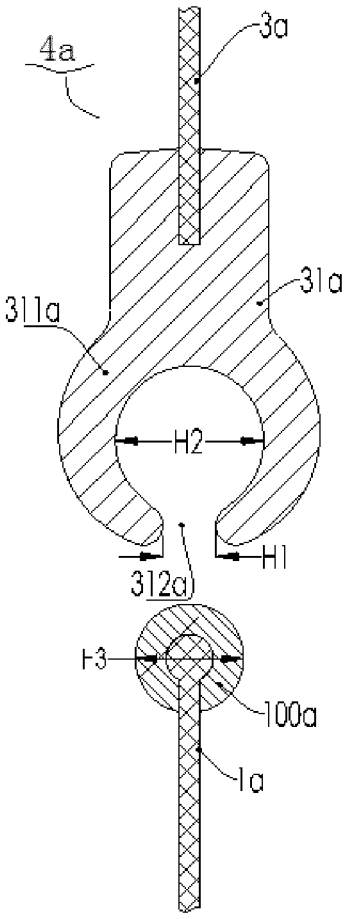
4a
3a
31a
311a
H2
H1
312a
H3
100a
1a

FIG. 12

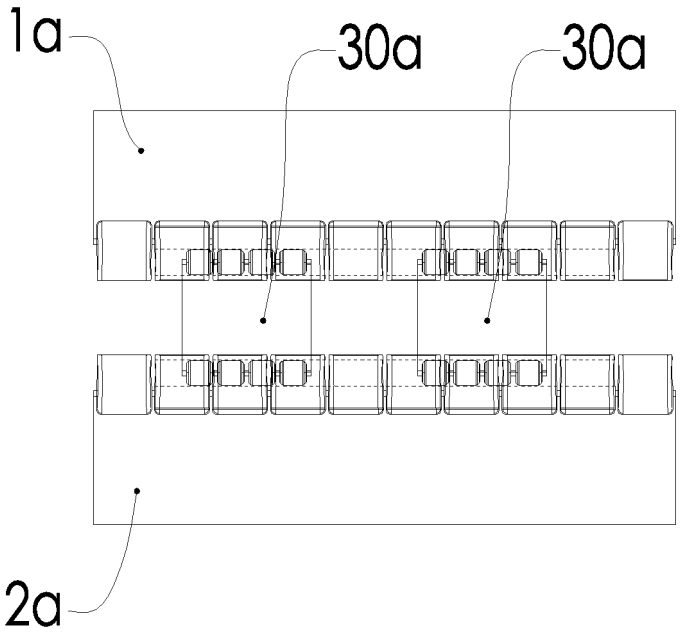

FIG. 13

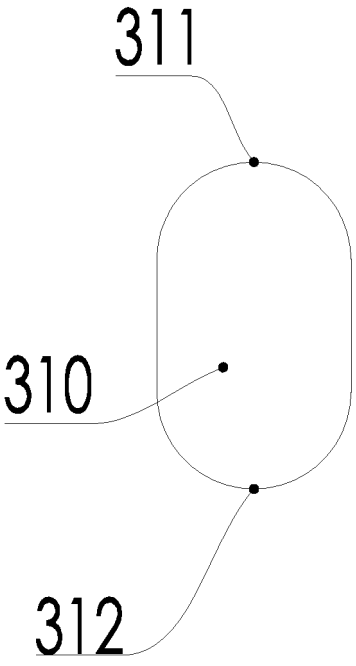

FIG. 14

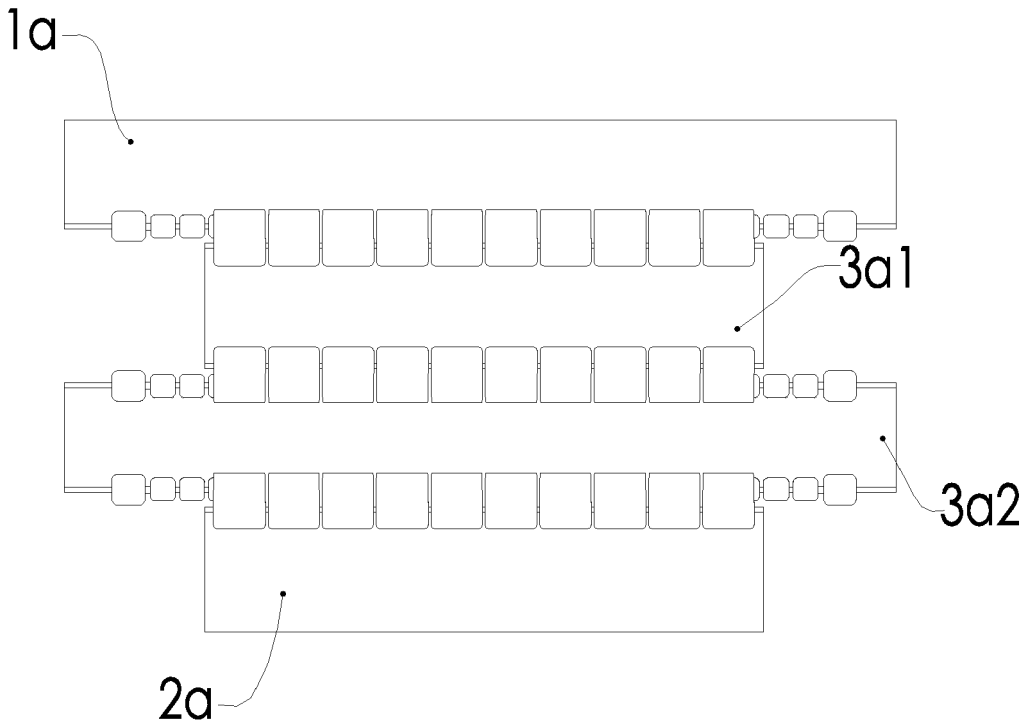

FIG. 15

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EUROPEAN SEARCH REPORT

Application Number
EP 18 21 4825

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,P	CN 207 693 088 U (ZHEJIANG HUAXIN ZIPPER CO LTD) 7 August 2018 (2018-08-07) * the whole document *	1-3,6, 8-10,12, 13	INV. A44B19/06 A44B19/18 A44B19/20
A	US 2007/169319 A1 (CHU GUANN-HUEI [TW]) 26 July 2007 (2007-07-26) * the whole document *	1-13	ADD. A41F1/00
A	JP H08 246208 A (MORITO KK) 24 September 1996 (1996-09-24) * the whole document *	1	
A	DE 26 38 242 A1 (LEE HAENG YONG) 10 March 1977 (1977-03-10) * the whole document *	1	
A,D	CN 104 490 019 A (SHAOXING MINGTAI TEXTILE PRODUCT CO LTD) 8 April 2015 (2015-04-08) * the whole document *	1	
A,D	CN 1 676 053 A (HONG JIANSHE [CN]) 5 October 2005 (2005-10-05) * the whole document *	1	TECHNICAL FIELDS SEARCHED (IPC) A44B A41D A41F
A,D	CN 104 082 913 A (FUJIAN SBS ZIPPER SCI & TECH) 8 October 2014 (2014-10-08) * the whole document *	1	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 April 2019	Contreras Aparicio

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15-04-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 207693088 U	07-08-2018	NONE	
US 2007169319 A1	26-07-2007	TW M294228 U	21-07-2006
		US 2007169319 A1	26-07-2007
JP H08246208 A	24-09-1996	JP 3000194 B2	17-01-2000
		JP H08246208 A	24-09-1996
DE 2638242 A1	10-03-1977	CA 1068477 A	24-12-1979
		CH 611782 A5	29-06-1979
		DE 2638242 A1	10-03-1977
		US 4112552 A	12-09-1978
CN 104490019 A	08-04-2015	NONE	
CN 1676053 A	05-10-2005	NONE	
CN 104082913 A	08-10-2014	NONE	

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 201410348920 **[0002]**
- CN 200410030762 **[0002]**
- CN 201620244875 **[0002]**
- CN 201410658506 **[0003]**