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(54) **A HOOK AND EYE FASTENER**

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Description

Technical Field:

[0001] This invention relates to a fastener for a garment and more specifically to a fastener for items of lingerie such as a brassiere.

Background Art:

[0002] Although there are many types of fasteners for brassieres perhaps the most commonly used is the hook and eye fastener where one or more hooks engage in complementary eyes to secure the straps of the brassiere in a closed configuration around the wearer's torso. However, as brassieres with such fasteners typically fasten behind the wearer's back, it can prove relatively difficult for the wearer to line up and engage the hooks with the corresponding eyes. They can also prove difficult to fasten for wearers who are elderly or suffering from conditions such as arthritis that affect the dexterity or mobility of the wearer. Additionally, a number of rows of eyes can be provided according to the size of the garment, the amount of support required or to allow the brassiere to be adjusted to the size of the wearer and this can make it increasingly difficult for the wearer to correctly engage the hooks with the corresponding eyes.

[0003] Another significant problem with the known hook and eye fasteners is that they tend to protrude noticeably from the wearer's body and can be visible through an outer garment causing an unsightly appearance, particularly if the hooks and eyes have not been aligned correctly. Typically, the known hook and eye fasteners when closed have a thickness of the order of between 0.005m (5.0 mm) and 0.0065m (6.5 mm) which makes them clearly noticeable beneath many garments. Furthermore, hook and eye fasteners can make the straps of the brassiere quite rigid, causing irritation by rubbing against the skin and discomfort for the wearer.

[0004] Typically hook and eye fasteners comprise metal hooks and eyes however a number of alternative hook and eye fasteners are also known. One such alternative hook and eye fastener is that described in the applicant's own U.S. Patent No. 8,230,559. Advantageously, the hook and eye fastener described in US8,230,559 is relatively easy to fasten and overcomes many of the problems with the known hook and eye fasteners in that regard however the fastener is not substantially thinner than the alternative arrangements of hook and eye fasteners and may be noticeable beneath many garments. PCT Patent Application Publication No. WO2009/034378, in the name of Pitman, discloses a hook and eye fastener with hooks and eyes that are configured to be aesthetically pleasing. It is believed however that the hooks and eyes of WO2009/034378 may be difficult for some wearers to align and fasten together. UK Patent Application Publication No. GB2420586, also in the name of Pitman, discloses an alternative configura-

tion of hook and eye fastener.

[0005] It is an object of the present invention to provide a fastener that overcomes at least some of the above-identified problems and provides a useful choice to the consumer.

Summary of Invention:

[0006] According to the invention there is provided a hook and eye fastener according to claim 1.

[0007] By having such a fastener, the fastener will have a thinner profile than the previously known fasteners. The fastener according to the invention will have a closed thickness of the order of between 4.0 mm and 5.0 mm and therefore will be less noticeable under many garments. This is a substantial improvement on many of the existing fasteners. Advantageously, the fastener will be relatively simple to fasten as the outer portion and the open mouth are dimensioned to promote engagement between the hook and the eye into an intermediate finder position before the hook and eye are secured together. The chevron shape will help guide the hook into a central location in the eye, ensuring correct alignment and engagement of the hook and eye. By having a pentagonally shaped open mouth, the outer portion of the hook will be able to slot into the open mouth with ease and by having an upstanding lip, the lip will further facilitate location of the hook portion in the eye portion. The boss and dimple will co-operate with each other to more securely fasten the hook and eye parts together and prevent inadvertent release of the fastener. These are relatively simple to manufacture and can be moulded into the hook and eye components.

[0008] In one embodiment of the invention there is provided a hook and eye fastener in which the boss is mounted on the abutment surface of the hook part.

[0009] In one embodiment of the invention there is provided a hook and eye fastener in which the complementary abutment surface on the underside of the frame for engagement of the abutment surface of the hook part is chevron-shaped. Again, this will promote correct location of the hook in the eye and a secure engagement therebetween.

[0010] In one embodiment of the invention there is provided a hook and eye fastener in which the hook part and eye part each comprise a magnet for location of the hook part outer portion in the open mouth of the eye part. This is seen as advantageous as the magnets will further simplify the engagement of the hook and eye into the finder position thereby simplifying the closure of the fastener. Alternatively, one of the hook part and the eye part is provided with a magnet and the other of the hook part and the eye part is provided with a ferromagnetic member.

[0011] In one embodiment of the invention there is provided a hook and eye fastener in which the magnet on the hook part is located on the body rearward of the arm and the magnet on the eye part is located in the frame

rearward and remote from the abutment surface. By placing the magnets in these areas, the dimensions of the hook and eye can be kept relatively narrow to ensure that the overall thickness of the fastener is not increased. Furthermore, a ferromagnetic member may be provided instead of one of the magnets to good effect.

[0012] In one embodiment of the invention there is provided a hook and eye fastener in which there are provided a plurality of eye parts mounted in a row along the piece of garment.

[0013] In one embodiment of the invention there is provided a hook and eye fastener in which the piece of the garment comprises a pair of sheets of fabric and the eye part is sandwiched between the pair of sheets of fabric. Preferably, the fabric sheet positioned above the eye part will be clear of the open mouth thereby permitting insertion of portion of the hook part therethrough.

[0014] In one embodiment of the invention there is provided a hook and eye fastener in which a pocket is formed between the abutment surface on the underside of the frame and the face of the piece on which it is mounted.

[0015] In one embodiment of the invention there is provided a hook and eye fastener in which there is provided only one hook. This is advantageous as it will facilitate the closure of the fastener about the wearer. This is made possible in part due to the structural integrity of the configuration of hook.

[0016] In one embodiment of the invention the up-standing lip will protrude of the order of 0.001m (1mm) upwardly from the surface of the substantially planar frame.

[0017] In one embodiment of the invention there is provided a hook and eye fastener in which at least one of the pieces is elasticated.

[0018] In one embodiment of the invention there is provided a hook and eye fastener in which the fastener has a maximum thickness of less than 0.0055m (5.5mm).

[0019] In one embodiment of the invention there is provided a hook and eye fastener in which the fastener has a maximum thickness of less than 0.005m (5.0mm).

[0020] In one embodiment of the invention there is provided a hook and eye fastener in which the inner portion of the hook part has at least one rib extending upwardly from the body to the outer portion along a rear face of the inner portion. Preferably, there are a plurality of spaced apart ribs along the rear face of the inner portion.

[0021] In one embodiment of the invention there is provided a hook and eye fastener in which the maximum width of the open mouth of the eye part is no less than 1.5 times the maximum width of the outer portion of the hook part.

[0022] In one embodiment of the invention there is provided a hook and eye fastener in which the fastener has a maximum tensile strength of greater than or equal to 11.36kgs.

Brief Description of the Drawings:

[0023] The invention will now be more clearly understood from the following description of some embodiments thereof given by way of example only with reference to the accompanying drawings, in which:-

Figure 1 is a rear view of one embodiment of an eye part of a fastener according to the invention;

Figure 2 is a rear view of a hook part of a fastener according to the invention;

Figure 3 is a front view of the hook part of Figure 2;

Figure 4 is a cross-sectional view of the hook part and another embodiment of an eye part of the fastener according to the invention in a finding position prior to full engagement;

Figure 5 is a front view of the hook part without a piece connected thereto;

Figure 6 is a rear view of the hook part of Figure 5;

Figure 7 is a left hand side view of the hook part of Figure 6;

Figure 8 is a perspective view of the hook part of Figure 6;

Figure 9 is a front view of the eye part without a piece connected thereto;

Figure 10 is a side view of the eye part of Figure 9;

Figure 11 is a rear view of the eye part of Figure 9;

Figure 12 is a perspective view of the eye part of Figure 9;

Figure 13 is a cross sectional view of the eye part along the lines XIII-XIII of Figure 11;

Figure 14 is a perspective view of the eye part of Figure 9;

Figure 15 is a rear view of an alternative construction of an eye part of a fastener according to the invention;

Figure 16 is a rear view of an alternative construction of hook part of a fastener according to the invention for engagement of the eye part of Figure 15;

Figure 17 is a front view of the hook part of Figure 16;

Figure 18 is a cross-sectional view of the hook part and eye part of Figures 15 to 17 in a finding position

prior to full engagement;

Figure 19 is a front view of an alternative embodiment of hook part according to the invention without a piece connected thereto;

Figure 20 is a rear view of the hook part of Figure 19;

Figure 21 is a left hand side view of the hook part of Figure 20;

Figure 22 is a cross sectional view of the hook part along the lines XXII-XXII of Figure 20;

Figure 23 is a rear view of an alternative configuration of eye part of a fastener according to the invention;

Figure 24 is a side view of the eye part of Figure 23; and

Figure 25 is a cross sectional view of the eye part along the lines XXV-XXV of Figure 11.

Detailed Description of the Drawings:

[0024] Referring to Figures 1 to 14 inclusive, there is shown a hook and eye fastener, indicated generally by the reference numeral 1, comprising a hook part 3 and an eye part 5. Typically, the eye part will be mounted closest to the body of the wearer and the hook part will be mounted further from the body of the wearer. Furthermore, the fastener will typically be located to one side or more usually to the rear of the wearer's torso. Therefore, throughout this specification the examples have been described in terms where the fastener is located at the back of a wearer with the eye part located adjacent the wearer's body and the hook part rearward of the eye part. It will be understood that front, back, forward and rearward and equivalent terms have been used with such an embodiment in mind. However, this embodiment is not limiting and indeed the fastener could be at the wearer's side or front of their torso and indeed the hook part could be mounted closest to the wearer's skin in which case the terms front, back, forwards, rearwards will be altered accordingly.

[0025] Referring specifically to Figures 2 to 8 inclusive, the hook part 3 comprises a substantially flat body 7 having an arm 9 extending outwardly therefrom. The arm comprises an inner portion 11 and an outer portion 13. The inner portion 11 is connected at one end to the planar body 7 and extends outwardly substantially perpendicular to the body and the outer portion 13 is connected to the other end of the inner portion 11 and extends substantially perpendicular to the inner part 11 and parallel to the remainder of the body 7. The side of the outer portion 13 facing towards the body 7 forms an abutment surface 14.

[0026] Referring specifically to Figures 2 to 4 inclusive,

the hook part 3 is mounted flat on one of a pair of pieces 15 of a garment (not shown) to be secured together. The hook part 3 is laid flat on the face of the piece 15 and the piece overlaps the hook along the entire length of the hook part 3. The piece 15 in turn comprises a pair of sheets of fabric 17, 19 and the hook part 3 is partially sandwiched therebetween. The hook part 3 is joined to the pair of sheets of fabric by heat welding, pressing, bonding, a combination of the above or other method known in the art.

[0027] Referring now to Figures 9 to 14 inclusive, the eye part 5 comprises a substantially flat frame 21 defining an open mouth 23. In the embodiments shown, the open mouth 23 is pentagonal shaped and is dimensioned to receive the outer portion 13 of the hook part 3. The flat frame 21 has a complementary abutment surface 25 on the front of the frame 21 for engagement of the abutment surface 14 of the hook part 3. In addition to the foregoing, there is provided an upstanding lip 26 adjacent to the abutment surface 25. The upstanding lip acts as an end stop for the hook part when the hook and eye are brought into engagement with each other to assist location of the hook and eye into the finding position. In the embodiment shown, the upstanding lip 26 rises upwardly from the sides towards a central peak.

[0028] Referring specifically to Figures 1 and 4, the eye parts 5 are mounted on the other piece 27 of the garment. The eye parts 5 are laid flat on the face of the piece 27 and the piece overlaps the eye part 5 along the entire length of the eye part 5. In the embodiment shown in Figure 1, there are four eye parts 5 mounted on the other piece of the garment however in the embodiment shown in Figure 4 there are only two eye parts 5 shown for clarity. It will be understood that more or less eye parts could be provided if desired. The other piece 27 comprises a pair of sheets 29, 31 and the eye parts 5 are sandwiched between the pair of sheets 29, 31. The fabric sheet 29 positioned above the eye part will be clear of the open mouth thereby permitting insertion of portion of the hook part therethrough. As mentioned above, a plurality of eye parts 5 are provided on the piece 27 shown in Figure 1. The eye part 5 is joined to the pair of sheets of fabric by heat welding, pressing, bonding, a combination of the above or other method known in the art. It can be seen from Figure 4 that the abutment surface 14 of the hook part 3 has a boss 33 and the abutment surface 25 on the front of the frame 21 of the eye part 5 has a complementary dimple 35 for reception of the boss therein.

[0029] In use, in order to engage the fastener parts, the hook part 3 is brought into juxtaposition with the eye part 5 by moving the hook part and the eye part towards each other in the direction of the nearest arrow A in Figure 4. As the hook part and the eye part are brought into engagement, the outer portion 13 of the hook part 3 will pass through the open mouth of the eye part 5 until the outer portion is housed in a cavity 37 of the eye part. Once in the cavity 37, the hook part is slid in the direction

of the arrow B and the eye part is slid in the direction of the arrow C, i.e. in a direction parallel to the faces of the pieces to fasten the two pieces of the garment together. By sliding the hook part and the eye part in this manner the boss 33 will form a friction fit in the dimple 35 which will be sufficient to prevent inadvertent release of the hook part 3 from the eye part 5. In order to release the hook part 3 from the eye part 5, the hook part is slid in the direction opposite to arrow B and the eye part 5 is slid in the direction opposite to arrow C in order to release the boss 33 from the dimple 35 and the hook part 3 and eye part 5 are then separated by moving them apart against the direction of the nearest arrow A. When the two parts 3, 5 of the fastener 1 are joined together, the fastener has a maximum thickness of the order of 0.0047m (4.7mm).

[0030] Referring now to Figures 1 and 5, the outer portion of the hook part 3 may be chevron shaped or indeed may be pentagonal shaped and the open mouth 23 of the eye part 5 is pentagonal shaped. The advantage of this is that it will be relatively simple to get the outer portion of the hook part 3 to engage with the open mouth 23 of the eye part 5. Furthermore, once the outer portion 13 of the hook part 3 has passed through the open mouth and is slid in the direction of the arrow B, the pointed face of the outer part will have a centering effect.

[0031] Referring now to Figures 15 to 18 inclusive, there is shown an alternative embodiment of fastener according to the invention, indicated generally by the reference numeral 101, where like parts have been given the same reference numeral as before. The fastener 101 is similar to the embodiment shown in Figures 1 to 14 inclusive with the exception that there is provided a magnet 43 in the hook part 103 and a magnet 45 in the eye part 105. The magnet 43 in the hook part 103 is located rearward of the inner portion 11 of the arm 9 and the magnet 45 on the eye part 105 is located in the frame 21 rearward and remote from the abutment surface 25. The magnets 43, 45 are polarized so as to attract each other when brought into proximity with each other. In this way, when the hook part 103 and the eye part 105 are brought into juxtaposition with each other, the magnet 45 will attract the magnet 43 and the hook part and the eye part will be brought into engagement with each other. The magnets will have an aligning effect in that the magnets will centre the hook part and act to draw the outer portion of the hook part 103 into the open mouth 23 of the frame.

[0032] The force of the magnet when the parts of the fastener 101 are engaged will be less than the tension force on the brassiere straps and/or the frictional force of the boss in the dimple. The fastener 101 shown in Figures 15 to 18 inclusive will have a maximum thickness that is marginally thicker than the fastener shown in Figures 1 to 14 inclusive due to the incorporation of the magnets. In the embodiment shown in Figures 15 to 18, when the two parts 103, 105 of the fastener 1 are joined together the fastener will have a maximum thickness of the order of 0.0052m (5.2mm).

[0033] It will be seen that the magnets 43 and 45 are sealed in pockets (i.e. are waterproof embedded) in their respective parts to prevent rusting. Furthermore, by positioning the magnets in the spaces identified, the magnets 43, 45 can be relatively thin and will not result in a thicker fastener.

[0034] Referring now to Figures 19 to 25 inclusive, there is shown the hook 203 and eye 205 components of an alternative embodiment of fastener 201 according to the invention, where like parts have been given the same reference numeral as before. The hook part 203, as illustrated in Figures 19 to 22 inclusive is provided with a plurality of ribs 51 which extend along the rear face of the inner portion 11. The ribs may be triangular in cross section. The ribs 51 provide additional rigidity to the hook portion obviating the likelihood of the hooks deflecting under load and the inadvertent release of the fastener. Furthermore, it can be seen from Figure 19 in particular that the outer portion 13 has a more rounded front edge 53 than the previous embodiments. The outer portion 13 will preferably have a width from one side of the rounded edge to the other side of the rounded edge of the order of between 0.013m (13mm) to 0.016m (16mm) and in the embodiment shown, the outer portion has a width of the order of 0.01414m (14.14mm). Referring specifically to Figure 22, the boss 33 is more pronounced than in the previous embodiments and protrudes upwards of the order of 0.0005m (0.5mm) from the abutment surface 14.

[0035] Referring specifically to Figures 23 to 25, there is shown a number of views of the eye part 205 to complement the hook part of Figures 19 to 22. The eye part 205 differs in that the dimple 35 is more pronounced to facilitate reception of the larger boss 33. It is envisaged that the dimple will be of the order of up to 0.0006m (0.6mm) deep. The upstanding lip 26 protrudes upwardly from the substantially planar body by approximately 0.001m (1mm) and this is deemed advantageous as it provides an effective means for the wearer to locate the hook in the eye. It is envisaged that the open mouth 23 of the eye part 205 will have a maximum width of the order of between 0.0215m (21.5mm) and 0.0245m (24.5mm) and in the embodiment shown, the open mouth 23 of the eye part has a maximum width from one extreme side of the open mouth 23 to the other extreme side of the open mouth 23 of 0.02298m (22.98mm). In this way, the maximum width of the open mouth 23 of the eye part 205 is of the order of 1.6 times the width of the outer portion 13 of the hook part 203 and this will facilitate insertion of the hook part 203 into the eye part 205. Advantageously, the fastener of Figures 19 to 25 inclusive has a maximum tensile strength of 13.6kg (approx. 30lbs) which provides greater strength than comparable, thicker fasteners and peace of mind to the wearer.

[0036] It will be seen from the foregoing examples, that the hook and eye fasteners according to the embodiments shown have only a single hook as opposed to a plurality of hooks as is common in the known fasteners. This is seen as a highly advantageous aspect of the

present invention. Generally speaking, the hook and eye fasteners known in the art comprise a column of two or more hooks and several columns of two or more corresponding eyes depending on the width of the back of the garment. In some cases, five or more hooks may be provided aligned in a vertical column. These hooks have to be closed "one by one" which is difficult and cumbersome for the wearer and it is often difficult to align the hooks correctly with the corresponding eyes. As a consequence, the hooks and eyes are often misaligned or the hooks and eyes have to be located first into the outermost position before the hooks are thereafter adjusted and inserted into the desired correctly fitting position.

[0037] In this specification the terms "include, includes, included and including" and the terms "comprise, comprises, comprised and comprising" are all deemed totally interchangeable and should be afforded the widest possible interpretation.

[0038] The invention is in no way limited to the embodiment hereinbefore described but may be varied in both construction and detail within the scope of the claims.

Claims

1. A hook and eye fastener (1, 101, 201) for securing two pieces (15, 27) of a garment together, the hook part (3, 103, 203) being mounted on a face of one of the pieces (15) and the eye part (5, 105, 205) being mounted on a face of the other of the pieces (27), in which:

the hook part (3, 103, 203) comprising a substantially planar body (7) laid flat on the face of the piece (15) and having an arm (9) extending outwardly therefrom, the arm comprising an inner portion (11) connected at one end to the body and extending outwardly substantially perpendicular to the body and an outer portion (13) connected to the other end of the inner portion and extending substantially parallel to the planar body, the side of the outer portion facing the planar body defining an abutment surface (14); and the eye part (5, 105, 205) comprising a substantially planar frame (21) laid flat on the face of the other of the pieces (27); the frame defining an open mouth (23) dimensioned to receive the outer portion (13) of the hook part's arm and having a complementary abutment surface (25) on the underside of the frame for engagement of the abutment surface (14) of the hook part, and, with the faces of the garment pieces closely juxtaposed, the eye part slidably engageable in a direction parallel to the faces of the garment pieces with the hook part to fasten the two pieces (15, 27) of the garment together; **characterised in that:**

the outer portion (13) of the arm of the hook part

is chevron shaped, the open mouth of the frame of the eye part is pentagonally shaped, and the eye part (5, 105, 205) further comprises an upstanding lip (26) on the top side of the frame adjacent the complementary abutment surface (25), the upstanding lip (26) being operable as an end stop for the hook part when the hook part and eye part are brought into engagement with each other to assist location of the hook part and eye part into a finding position; and in which there is provided a boss (33) on one of the abutment surfaces and a complementary dimple (35) on the other of the abutment surfaces; and in which the inner portion (11) of the hook part (3) has at least one rib (51) extending upwardly from the body (7) to the outer portion (13) along a rear face of the inner portion (11).

2. A hook and eye fastener (1, 101, 201) as claimed in claim 1 in which the boss (33) is mounted on the abutment surface (14) of the hook part.
3. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which the complementary abutment surface (25) on the underside of the frame for engagement of the abutment surface (14) of the hook part is chevron-shaped.
4. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which the hook part (103) and eye part (105) each comprise a magnet (43) for location of the hook part outer portion (13) in the open mouth (23) of the eye part (105).
5. A hook and eye fastener (1, 101, 201) as claimed in claim 4 in which the magnet (43) on the hook part (103) is located on the body rearward of the arm (9) and the magnet (43) on the eye part (105) is located in the frame rearward and remote from the abutment surface (25).
6. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which there are provided a plurality of eye parts (5) mounted in a row along the piece (27) of garment.
7. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which the piece (27) of the garment where the eye part is mounted comprises a pair of sheets of fabric (29, 31) and the eye part (5) is sandwiched between the pair of sheets of fabric.
8. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which a pocket is formed between the abutment surface (25) on the underside of the frame (21) and the face of the piece (31) on

which it is mounted.

9. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which at least one of the pieces (15, 27) is elasticated. 5
10. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which there is provided only one hook (3). 10
11. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which the upstanding lip has a height of the order of 0.001m (1.0mm).
12. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which the fastener has a maximum thickness of less than 0.0055m (5.5mm). 15
13. A hook and eye fastener (1, 101, 201) as claimed in claims 1 to 11 in which the fastener has a maximum thickness of less than 0.005m (5.0mm). 20
14. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which the maximum width of the open mouth (23) of the eye part (205) is no less than 1.5 times the maximum width of the outer portion (13) of the hook part (203). 25
15. A hook and eye fastener (1, 101, 201) as claimed in any preceding claim in which the fastener has a maximum tensile strength of greater than or equal to 11.36kgs. 30

Patentansprüche 35

1. Haken- und Ösenverschluss (1, 101, 201) zum Befestigen von zwei Stücken (15, 27) eines Bekleidungsgegenstands aneinander, wobei der Hakenteil (3, 103, 203) auf einer Oberfläche eines der Stücke (15) angebracht ist und der Ösenteil (5, 105, 205) auf einer Oberfläche des anderen der Stücke (27) angebracht ist, wobei: 40

der Hakenteil (3, 103, 203) einen im Wesentlichen ebenflächigen Körper (7) umfasst, der flach auf die Oberfläche des Stücks (15) gelegt ist und einen sich davon nach außen erstreckenden Arm (9) aufweist, wobei der Arm Folgendes umfasst: einen inneren Abschnitt (11), der an einem Ende mit dem Körper verbunden ist und sich im Wesentlichen senkrecht zu dem Körper nach außen erstreckt, und einen äußeren Abschnitt (13), der mit dem anderen Ende des inneren Abschnitts verbunden ist und sich im Wesentlichen parallel zu dem ebenflächigen Körper erstreckt, wobei die dem ebenflächigen Körper zugewandte Seite des äußeren Abschnitts eine 45 50 55

Anlagefläche (14) definiert; und der Ösenteil (5, 105, 205) einen in Wesentlichen ebenflächigen Rahmen (21) umfasst, der flach auf die Oberfläche des anderen der Stücke (27) gelegt ist; wobei der Rahmen eine offene Öffnung (23) definiert, die dazu bemessen ist, den äußeren Abschnitt (13) des Arms des Hakenteils aufzunehmen und eine komplementäre Anlagefläche (25) an der Unterseite des Rahmens für den Eingriff der Anlagefläche (14) des Hakenteils aufweist, und wobei, wenn die Oberflächen der Bekleidungsgegenstandstücke nah aneinander liegen, der Ösenteil in einer zu den Oberflächen der Bekleidungsgegenstandstücke parallelen Richtung gleitend mit dem Hakenteil in Eingriff gelangen kann, um die zwei Stücke (15, 27) des Bekleidungsgegenstands aneinander zu befestigen, **dadurch gekennzeichnet, dass:**

der äußere Abschnitt (13) des Arms des Hakenteils chevronförmig ist, die offene Öffnung des Rahmens des Ösenteils fünfeckförmig ist und der Ösenteil (5, 105, 205) weiter eine aufrechte Lippe (26) auf der Oberseite des Rahmens, der komplementären Anlagefläche (25) benachbart umfasst, wobei die aufrechte Lippe (26) als Endanschlag für den Hakenteil wirksam ist, wenn der Hakenteil und der Ösenteil miteinander in Eingriff gebracht werden, um die Positionierung des Hakenteils und des Ösenteils in einer Auffindelage zu unterstützen; und wobei ein runder Vorsprung (33) auf einer der Anlageflächen und eine komplementäre Vertiefung (35) auf der anderen der Anlageflächen bereitgestellt sind; und wobei der innere Abschnitt (11) des Hakenteils (3) mindestens eine Rippe (51) aufweist, die sich von dem Körper (7) entlang einer hinteren Oberfläche des inneren Abschnitts (11) zu dem äußeren Abschnitt (13) nach oben erstreckt.

2. Haken- und Ösenverschluss (1, 101, 201) nach Anspruch 1, wobei der runde Vorsprung (33) auf der Anlagefläche (14) des Hakenteils angebracht ist.

3. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei die komplementäre Anlagefläche (25) auf der Unterseite des Rahmens für den Eingriff der Anlagefläche (14) des Hakenteils chevronförmig ist.

4. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei der Hakenteil (103) und der Ösenteil (105) jeweils einen Magneten (43) zum Positionieren des äußeren Ab-

schnitts (13) des Hakenteils in der offenen Öffnung (23) des Ösenteils (105) umfassen.

5. Haken- und Ösenverschluss (1, 101, 201) nach Anspruch 4, wobei der Magnet (43) an dem Hakenteil (103) hinter dem Arm (9) an dem Körper positioniert ist und der Magnet (43) an dem Ösenteil (105) hinter der Anlagefläche (25) und davon abgelegen in dem Rahmen positioniert ist. 5
6. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei eine Vielzahl von Ösenteilen (5) bereitgestellt ist, die in einer Reihe entlang des Stücks (27) des Bekleidungsgegenstands angebracht sind. 10
7. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei das Stück (27) des Bekleidungsgegenstands, wo der Ösenteil angebracht ist, ein Paar Stoffstreifen (29, 31) umfasst und der Ösenteil (5) sandwichartig zwischen dem Paar Stoffstreifen angeordnet ist. 20
8. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei zwischen der Anlagefläche (25) an der Unterseite des Rahmens (21) und der Oberfläche des Stücks (31), an dem er angebracht ist, eine Tasche gebildet ist. 25
9. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei mindestens eines der Stücke (15, 27) elastisch ist. 30
10. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei nur ein Haken (3) bereitgestellt ist. 35
11. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei die aufrechte Lippe eine Höhe in der Größenordnung von 0,001 m (1,0 mm) aufweist. 40
12. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei der Verschluss eine maximale Dicke von weniger als 0,0055 m (5,5 mm) aufweist. 45
13. Haken- und Ösenverschluss (1, 101, 201) nach Ansprüchen 1 bis 11, wobei der Verschluss eine maximale Dicke von weniger als 0,005 m (5,0 mm) aufweist. 50
14. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei die maximale Breite der offenen Öffnung (23) des Ösenteils (205) nicht weniger als das 1,5-fache der maximalen Breite des äußeren Abschnitts (13) des Hakenteils (203) beträgt. 55

15. Haken- und Ösenverschluss (1, 101, 201) nach einem der vorangehenden Ansprüche, wobei der Verschluss eine maximale Zugfestigkeit von mehr als oder gleich 11,36 kg aufweist.

Revendications

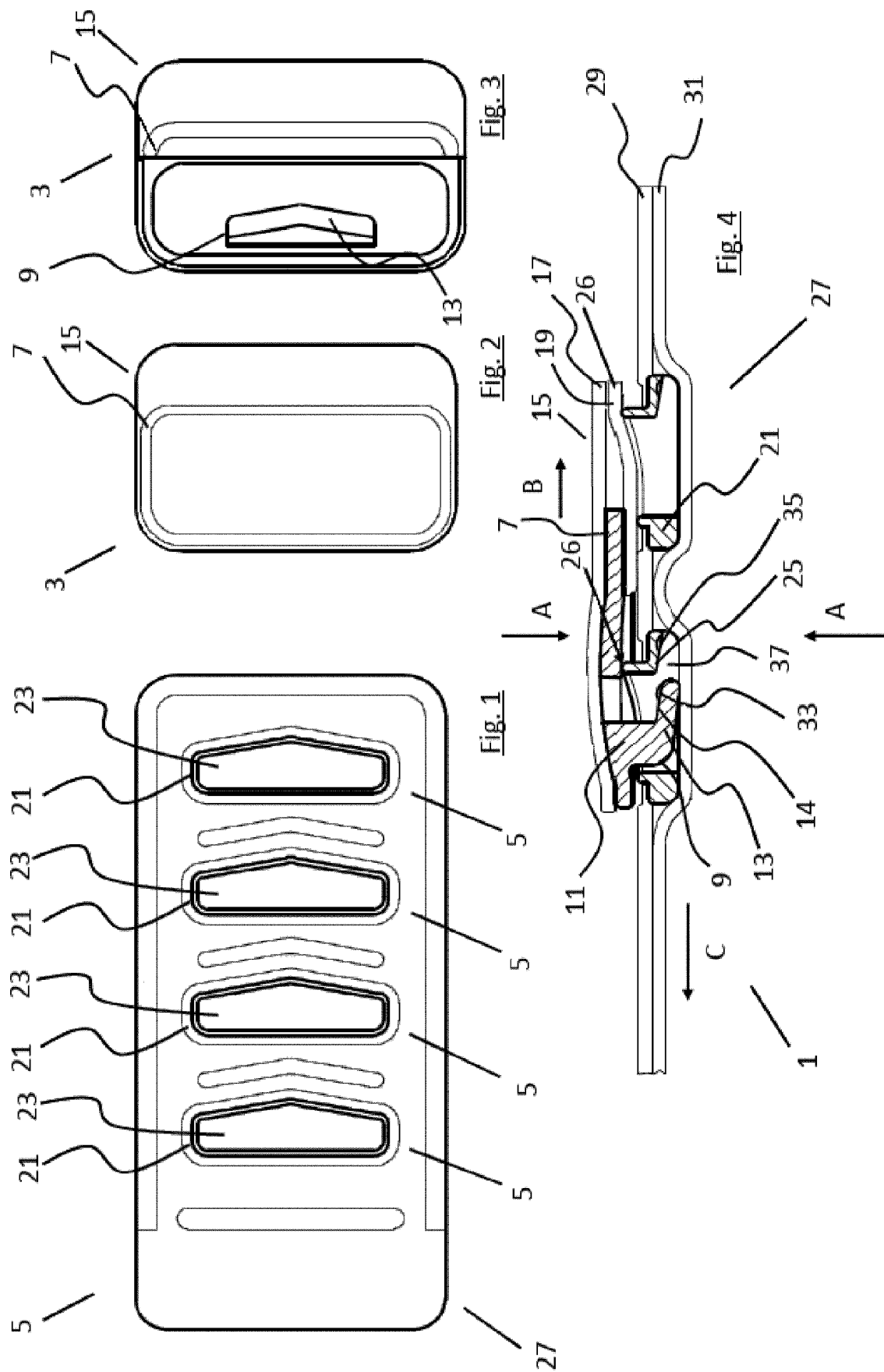
1. Système de fermeture à crochet et porte (1, 101, 201) servant à assujettir deux morceaux (15, 27) d'un vêtement ensemble, la partie formant crochet (3, 103, 203) étant montée sur une face de l'un des morceaux (15) et la partie formant porte (5, 105, 205) étant montée sur une face de l'autre des morceaux (27), dans lequel :

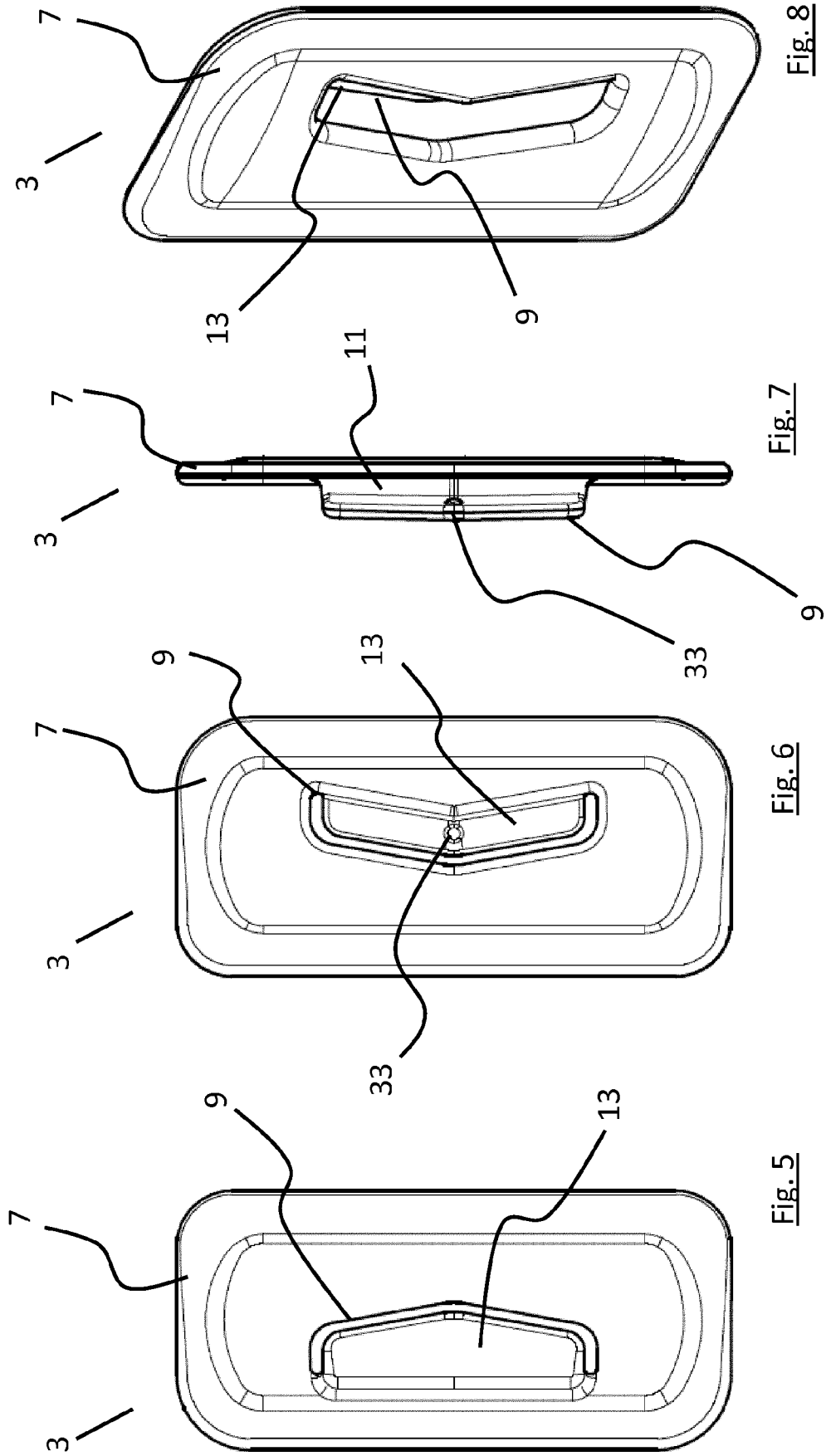
la partie formant crochet (3, 103, 203) comportant un corps sensiblement plan (7) posé à plat sur la face du morceau (15) et ayant un bras (9) s'étendant vers l'extérieur en provenance de celui-ci, le bras comportant une partie intérieure (11) raccordée au niveau d'une extrémité au corps et s'étendant vers l'extérieur de manière sensiblement perpendiculaire par rapport au corps et une partie extérieure (13) raccordée à l'autre extrémité de la partie intérieure et s'étendant de manière sensiblement parallèle par rapport au corps plan, le côté de la partie extérieure orienté vers le corps plan définissant une surface de mise en appui (14) ; et

la partie formant porte (5, 105, 205) comportant un cadre sensiblement plan (21) posé à plat sur la face de l'autre des morceaux (27) ; le cadre définissant une bouche ouverte (23) dimensionnée pour recevoir la partie extérieure (13) du bras de la partie formant crochet et ayant une surface de mise en appui complémentaire (25) sur la partie inférieure du cadre à des fins de mise en prise de la surface de mise en appui (14) de la partie formant crochet, et, les faces des morceaux de vêtement étant étroitement juxtaposées, la partie formant porte étant en mesure de se mettre en prise de manière coulissante dans une direction parallèle par rapport aux faces des morceaux de vêtement avec la partie formant crochet pour fermer les deux morceaux (15, 27) du vêtement ensemble ; **caractérisé en ce que :**

la partie extérieure (13) du bras de la partie formant crochet est en forme de chevron, la bouche ouverte du cadre de la partie formant porte est en forme de pentagone, et la partie formant porte (5, 105, 205) comporte par ailleurs une lèvre redressée (26) sur le côté supérieur du cadre de manière adjacente par rapport à la surface de mise en appui complémentaire (25), la lèvre re-

- dressée (26) servant de butée d'extrémité pour la partie formant crochet quand la partie formant crochet et la partie formant porte sont mises en prise l'une par rapport à l'autre pour faciliter le positionnement de la partie formant crochet et de la partie formant porte dans une position de repérage ; et dans lequel un bossage (33) est mis en œuvre sur l'une des surfaces de mise en appui et une fossette complémentaire (35) est mise en œuvre sur l'autre des surfaces de mise en appui ; et dans lequel la partie intérieure (11) de la partie formant crochet (3) a au moins une nervure (51) s'étendant vers le haut depuis le corps (7) jusqu'à la partie extérieure (13) le long d'une face arrière de la partie intérieure (11).
2. Système de fermeture à crochet et porte (1, 101, 201) selon la revendication 1, dans lequel le bossage (33) est monté sur la surface de mise en appui (14) de la partie formant crochet.
 3. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel la surface de mise en appui complémentaire (25) sur la partie inférieure du cadre à des fins de mise en prise de la surface de mise en appui (14) de la partie formant crochet est en forme de chevron.
 4. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel la partie formant crochet (103) et la partie formant porte (105) comportent chacune un aimant (43) à des fins de positionnement de la partie extérieure (13) de la partie formant crochet dans la bouche ouverte (23) de la partie formant porte (105).
 5. Système de fermeture à crochet et porte (1, 101, 201) selon la revendication 4, dans lequel l'aimant (43) sur la partie formant crochet (103) est positionné sur le corps vers l'arrière par rapport au bras (9) et l'aimant (43) sur la partie formant porte (105) est positionné dans le cadre vers l'arrière et à distance de la surface de mise en appui (25).
 6. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel se trouve une pluralité de parties formant porte (5) montées en une rangée le long du morceau (27) de vêtement.
 7. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel le morceau (27) du vêtement où la partie formant porte est montée comporte une paire de couches de tissu (29, 31) et la partie formant porte (5) est prise en sandwich entre la paire de couches de tissu.
 8. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel une poche est formée entre la surface de mise en appui (25) sur la partie inférieure du cadre (21) et la face du morceau (31) où il est monté.
 9. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel au moins l'un des morceaux (15, 27) est élastique.
 10. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel il n'y a qu'un seul crochet (3).
 11. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel la lèvre redressée a une hauteur de l'ordre de 0,001 m (1,0 mm).
 12. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel le système de fermeture a une épaisseur maximum de moins de 0,0055 m (5,5 mm).
 13. Système de fermeture à crochet et porte (1, 101, 201) selon les revendications 1 à 11, dans lequel le système de fermeture a une épaisseur maximum de moins de 0,005 m (5,0 mm).
 14. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel la largeur maximum de la bouche ouverte (23) de la partie formant porte (205) ne fait pas moins de 1,5 fois la largeur maximum de la partie extérieure (13) de la partie formant crochet (203).
 15. Système de fermeture à crochet et porte (1, 101, 201) selon l'une quelconque des revendications précédentes, dans lequel le système de fermeture a une résistance maximum à la tension supérieure ou égale à 11,36 kg.





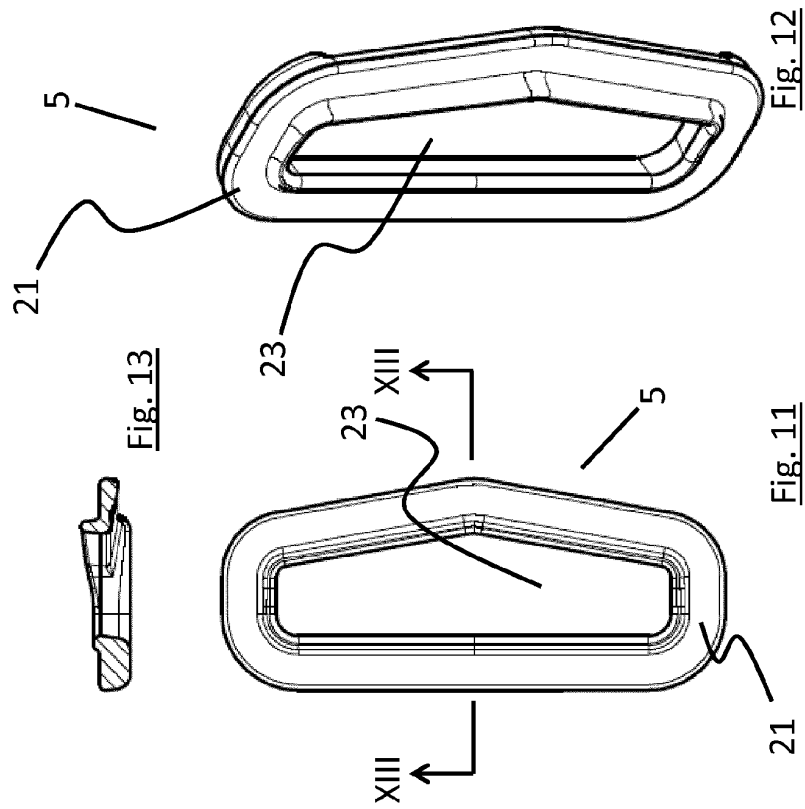


Fig. 9

Fig. 10

Fig. 11

Fig. 12

Fig. 13

Fig. 14

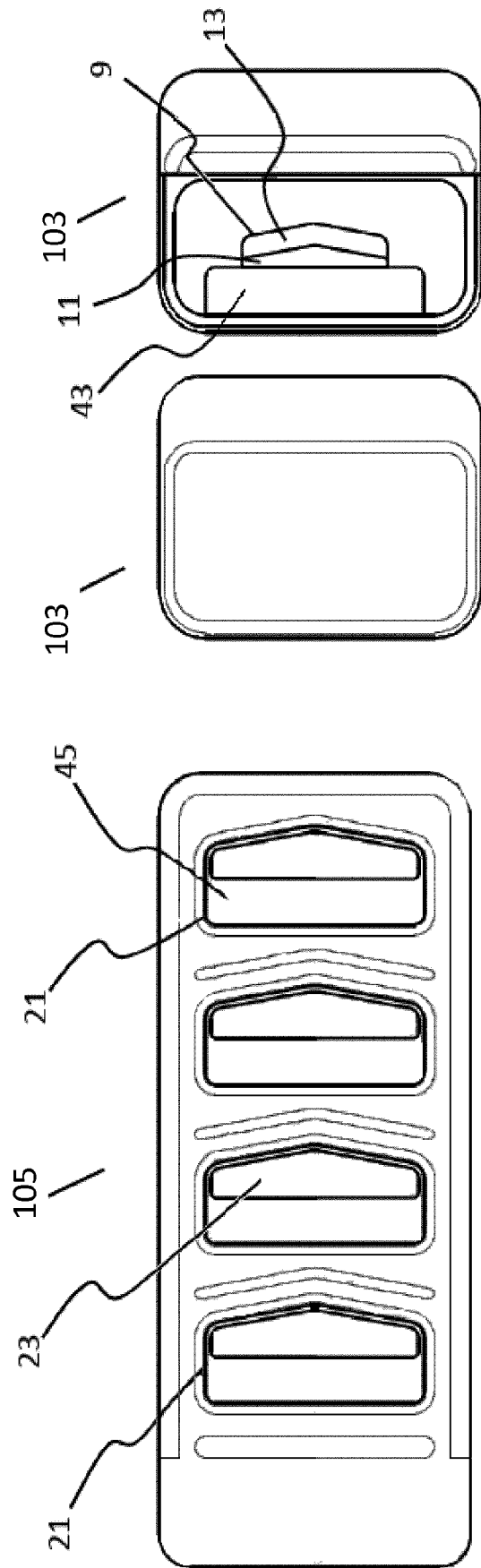


Fig. 15

Fig. 16

Fig. 17

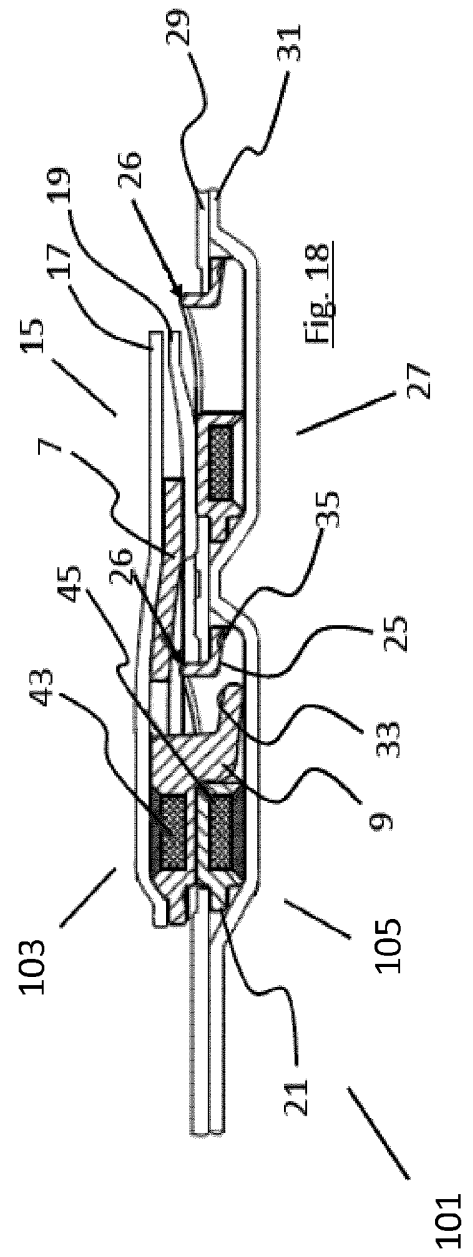


Fig. 18

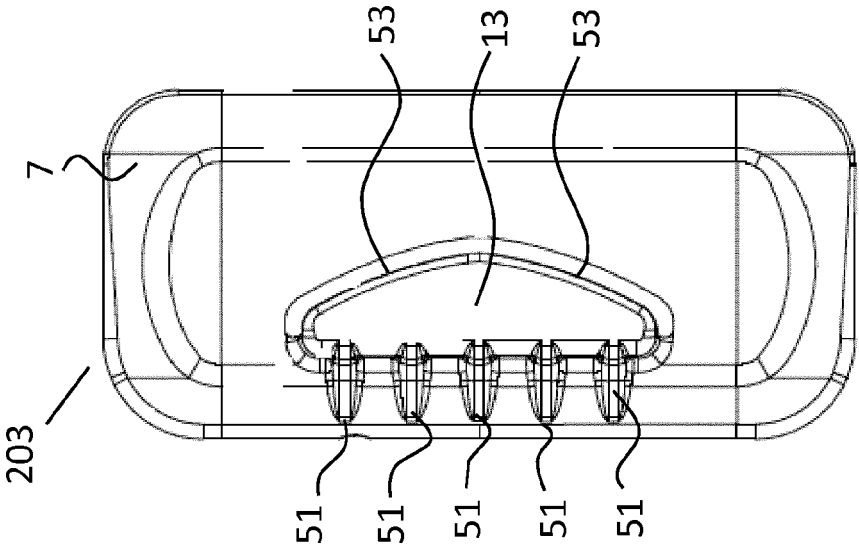
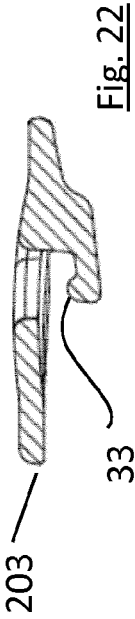


Fig. 19

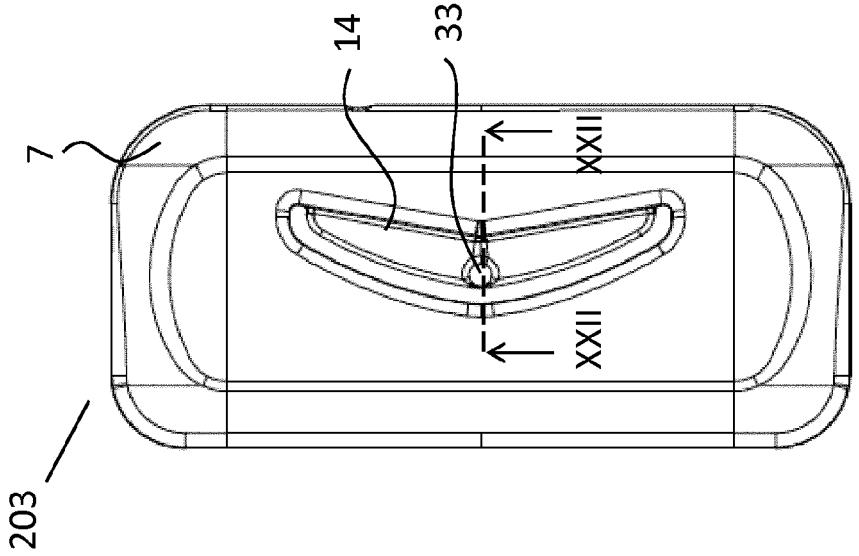


Fig. 20

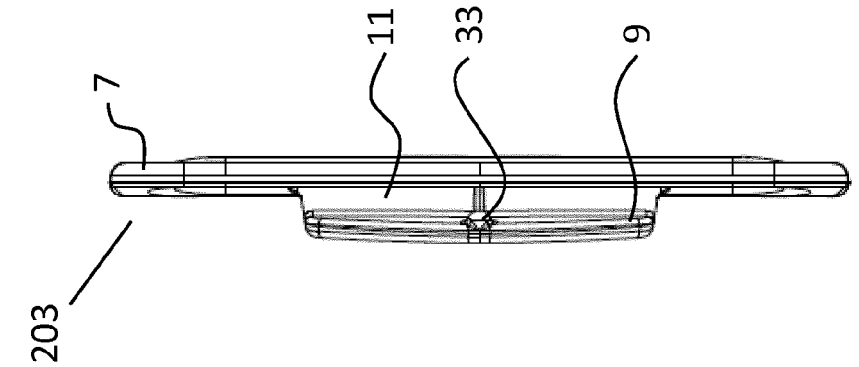


Fig. 21

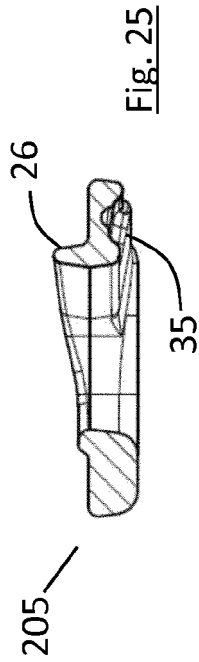


Fig. 25

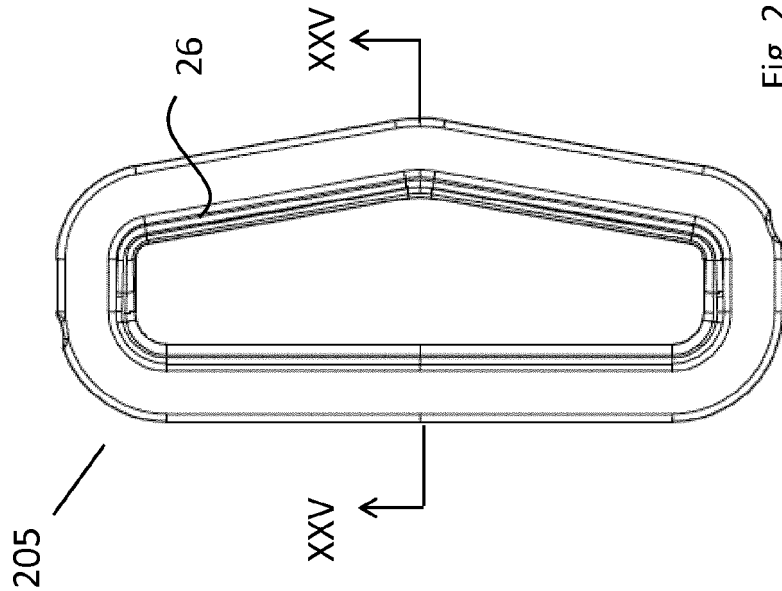


Fig. 23

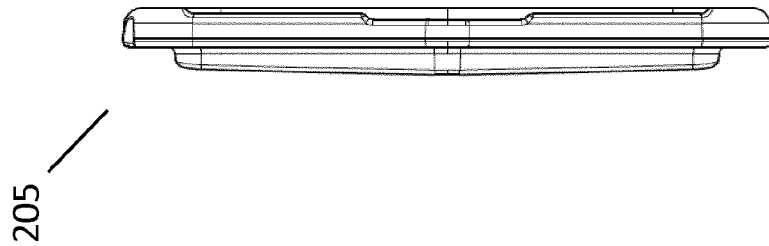


Fig. 24

REFERENCES CITED IN THE DESCRIPTION

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