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(54) **Fastening device for shoes**

(57) A fastening device (10) for shoes such as clogs (100), sandals (200) and similar, comprising sole (102) and upper (104) which are structured and associated with each other, said device (10) comprising a couple of flexible straps (12, 14) associated, at a end (12a, 14a) of theirs, with the upper (104) of the shoe in respective points (104a) or areas thereof and equipped, at the other ends (12b, 14b) of theirs, with respective means (16) and countermeans (18) so that they are removably connectable together; each of said straps (12, 14) has a wall (12c, 14c) equipped with a respective plurality of teeth (1,6a, 18a) with substantially triangular profile, said teeth

(16a, 18a) extending transversally to the strap itself (12, 14), and: opposite substantially smooth wall (12d, 14d), said straps (12, 14) being associated with said upper (104) in an arrangement such that the teeth (16a) of a strap (12) face towards the teeth (18a) of the other strap (14), and in that it comprises at least one annular through loop (20), removably passed through by both of said straps (12, 14) in sliding contact with the smooth walls (12d, 14d) thereof, so as to determine a substantially harpooning engagement of a part of the teeth (16a) of a strap (12), with a corresponding part of teeth (18a) of the other strap (14).

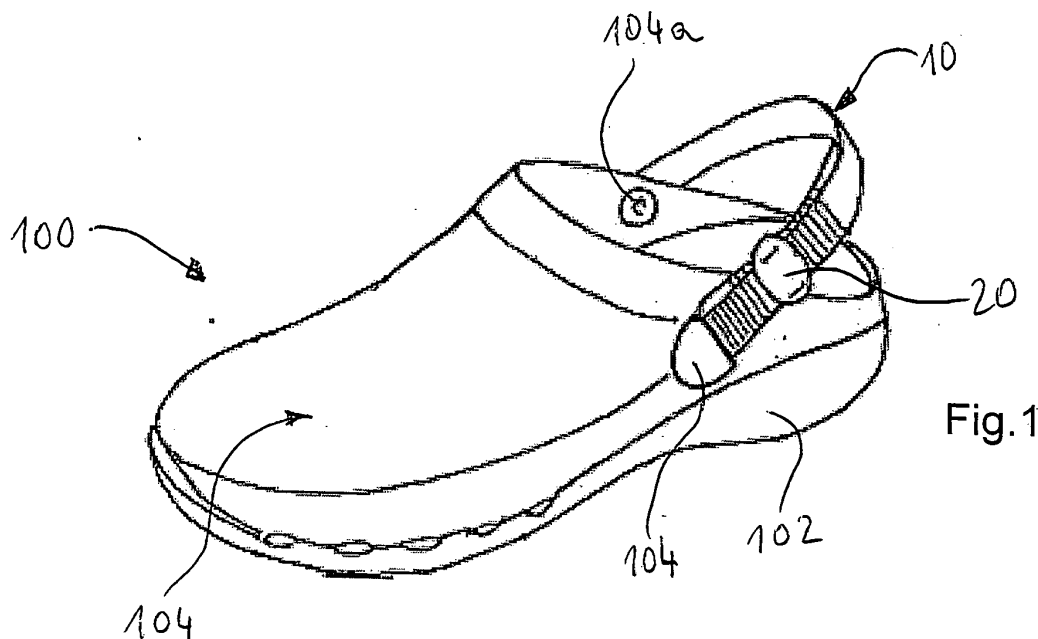


Fig.1

Description

Field of application

[0001] The present invention, in its most general aspect, refers to a fastening device for shoes comprising sole and upper which are structured and associated with each other for an use different from any sporting and/or competitive activity.

[0002] In particular this invention concerns a fastening device substantially of the type in which a couple of flexible straps are associated, at a end of theirs, with the upper of a shoe in respective points or areas thereof and they are equipped, at the other ends of theirs, with respective means and countermeans so that they are removably connectable together.

[0003] The present invention also refers to a shoe as specified above, equipped with at least one fastening device of the type considered.

Prior Art

[0004] There is a well-known need to equip the shoes in general with a fastening that, as well as ensuring a "tightness" that is more than satisfactory, easy to obtain and stable over time, has characteristics such as to allow a good regulation of the force or tension exerted on the upper of the shoe and, therefore, on the foot of the user thereof.

[0005] It is known how in order to satisfy such a need, various fastening systems have been devised, made and provided, including the very widely used and much appreciated fastening devices of the so-called strap type. Thus, for example, there is the conventional strap equipped with a plurality of through holes, regularly spaced apart in an alignment extending from an end of the strap itself, the other end being fixed at an appropriate point of the upper, a respective tongue of a buckle being intended to cooperate with said holes, said tongue being mounted on a through buckle, in turn fixed to another point of the same upper. Then there is the strap having an end portion, equipped with teeth having a triangular profile, equally spaced apart, extending transversally to the strap itself and intended to be engaged by a harpoon, also carried by a bridge loop, fixed to the upper of the shoe. There are also straps with fastening allowed by the engagement of means and countermeans of the type for example commercially known by the name "Velcro®" and pull-away opening.

[0006] These fastening devices of the prior art do, however, suffer from recognized drawbacks since they are certainly useful just in their specific applications on shoes with particular structures, or having particular "performance". Some of them, like for example those based upon the use of buckle with tongue and strap with through holes, do not allow a good adjustment of the fastening tension; indeed, this would require that the holes of the strap be in positions very close together, which would

unacceptably reduce the resistance to traction of the strap itself, making it under the clear risk of coming apart. Other devices, if on the one hand allow a satisfactory adjustment of the fastening tension, on the other hand do not ensure that such a tension is constant over time. Others again, like for example those based upon the engagement of a harpoon in a "tooth" of a plurality of teeth formed on a strap, are susceptible to a fairly rapid wearing of the top of such teeth consequently making them rapidly become rounded, which compromises the closing tightness of the fastening itself.

Summary of the invention

[0007] The main aim of the present invention is to devise and make a fastening device for shoes in general having structural and functional characteristics such as to completely and more than satisfactorily satisfy the needs specified above, at the same time overcoming the drawbacks of the similar devices of the prior art.

[0008] This aim and others again that shall become clearer from the following description are accomplished by a fastening device for shoes of the type considered, comprising a couple of flexible straps associated, at a end of theirs, with the upper of the shoe in respective points or areas thereof and equipped, at the other ends of theirs, with respective means and countermeans so that they are removably connectable together, characterized in that each of said straps has a wall equipped with a respective plurality of teeth with substantially triangular profile, said teeth extending transversally to the strap itself, and opposite substantially smooth wall, said straps being associated with said upper in an arrangement such that the teeth of a strap face towards the teeth of the other strap, and in that it comprises at least one annular loop, removably passed through by both of said straps in sliding contact with the smooth walls thereof, so as to determine a substantially harpooning engagement of a part of the teeth of a strap, with a corresponding part of teeth of the other strap.

[0009] Advantageously said annular loop is associated with one of said straps at the respective plurality of teeth.

[0010] Preferably said straps are equipped with an equal number of teeth, all having the same substantially triangular profile.

[0011] The characteristics and the advantages of a fastening device for shoes according to the invention shall become clearer from the following detailed description of an example embodiment thereof, provided hereafter with reference to the attached drawings, given for indicating and not limiting purposes.

Brief description of the drawings

[0012]

Figure 1 schematically represents a perspective view of a shoe that includes a fastening device ac-

cording to the invention.

Figure 2 schematically represents a perspective view of a shoe that includes two fastening devices according to the invention.

Figure 3 schematically represents a perspective view of a fastening device according to the invention.

Figure 4 schematically represents a side elevation view of the fastening device of figure 3.

Figure 5 schematically represents a plan view from above of the fastening device of figure 3.

Figure 6 schematically represents a perspective view of a first component of the fastening device of figure 3.

Figure 7 schematically represents a side elevation view of the first component of figure 6.

Figure 8 schematically represents a plan view from above of the first component of figure 6.

Figure 9 schematically represents a perspective view of a second component of the fastening device of figure 3.

Figure 10 schematically represents a side elevation view of the second component of figure 9.

Figure 11 schematically represents a plan view from above of the second component of figure 9.

Figure 12 schematically represents a perspective view of the second component of figure 9 with which a third component of the fastening device of figure 3 is associated.

Figure 13 schematically represents a side elevation view of the assembly of the second and third component of figure 12.

Figure 14 schematically represents a plan view from above of the assembly of the second and third component of figure 12.

Figure 15 schematically represents a further side elevation view of the assembly of the second and third component of figure 12.

which the fastening device 10 is used, and to be precise they are a clog 100 and a sandal 200.

[0015] In general, the fastening device 10 is used in shoes such as clogs 100, sandals 200 and similar, comprising a sole 102 and upper 104 which are structured and associated with each other for an use different from any sporting and/or competitive activity.

[0016] The fastening device 10 comprises a couple of flexible straps 12 and 14, associated, at a end of theirs (12a and 14a respectively), with the upper 104 of the shoe in respective points 104a or areas thereof and they are equipped, at the other ends of theirs (12b and 14b respectively), with respective means 16 and counter-means 18 so that they are removably connectable together.

[0017] In particular, in accordance with an aspect of the present invention, each of said straps 12 and 14 has a wall (12c and 14c respectively) equipped with a respective plurality of teeth (16a and 18a respectively) having a triangular profile, said teeth extending transversally to the strap itself (12 and 14 respectively), and opposite substantially smooth wall (12d and 14d respectively). Alternatively, the profile of the teeth 16a and 18a can be substantially triangular.

[0018] The straps 12 and 14 are associated with said upper 104 in an arrangement such that the teeth (16a) of a strap (12) face towards the teeth (18a) of the other strap (14).

[0019] In accordance with a further aspect of the present invention, the fastening device 10 comprises an annular loop 20, removably passed through by both of said straps 12 and 14 in sliding contact with the smooth walls 12d and 14d thereof, so as to determine a substantially harpooning engagement of a part of the teeth (16a) of a strap (12), with a corresponding part of teeth (18a) of the other strap (14). Alternatively, more than one annular loop 20 can be provided, having the same functions as described above.

[0020] Advantageously, as shown in figures 12-15, said annular loop 20 is associated with one (14) of said straps at the respective plurality of teeth (18a).

[0021] More specifically, the straps 12 and 14 have a shape which is parallelepiped, elongated and of equal width and thickness, and the respective teeth 16a and 18a extend beyond said thickness of the straps 12 and 14 for a predetermined height, equal for the two teeth 16a and 18a.

[0022] The annular loop 20 has a hole 20a with substantially rectangular section, having a base - for example - slightly greater than the width of the straps 12 and 14 and a height

Detailed description of a preferred embodiment

[0013] With reference to the figures, a fastening device for shoes, in accordance with the present invention is shown, globally indicated with 10.

[0014] Figures 1 and 2 show two types of shoes in

- for example - substantially equal to the sum of the predetermined height of the teeth 16a and 18a and of the double of the thickness of the straps 12 and 14. In this way, the annular loop 20, having a substantially rectangular external size, is able to slide along the strap 14 and, when both of the straps 12

and 14 are passed through it at the teeth 16a and 18a, it determines the aforementioned substantially harpooning engagement.

[0023] Since the straps 12 and 14 and the annular loop 20 are preferably made from thermoplastic material (for example rubber) and therefore have predetermined elastic properties, it is possible to vary the aforementioned dimensions of base and height of the hole 20a in the most suitable way, to improve the tightness of the aforementioned engagement: for example, it is possible to provide a height slightly lower than the sum of the predetermined height of the teeth 16a and 18a and of the double of the thickness of the straps 12 and 14. Alternatively, it is possible to make the annular loop 20 from a material, for example again thermoplastic; that is more rigid than that of the straps 12 and 14. Basically, the annular loop 20 keeps the two opposite pluralities of teeth 16a and 18a in mutual compression, within the elasticity range.

[0024] The tightness of the fastening is linked to the length of the annular loop 20. Excellent results have been achieved by making a loop of length corresponding to four or five teeth 16a or 18b. In the example of figures 1 and 2, the annular loop 20 has top and bottom opposite faces having oval shape, to give a good tightness and not to cause inconvenience to the user's foot.

[0025] Preferably, the strap 14 of figures 12-15, with which the annular loop 20 is associated, has anti-unthreading means 22 that prevent the annular loop 20 from becoming unthreaded from the end 14b of the strap 14, once it has been associated with the upper 104 of the shoe.

[0026] Such means 22 comprise two opposite ridges 24, arranged on the side walls 14e and 14f of the strap 14, the distance between the top of the two ridges 24 being greater than the width of the hole 20a of the annular loop 20. As an alternative to the ridges 24, it is possible to provide an appropriate widening of the opposite side walls 14e and 14f of the end 14b of the strap 14, up to a width greater than the width of the hole 20a of the annular loop 20.

[0027] Preferably, the straps 12 and 14 are equipped with an equal number of teeth 16a and 18a, all having the same substantially triangular profile.

[0028] In order to make it easier to introduce the strap 12 into the annular loop 20, the end 12b can be suitably rounded, as shown in the example of the figures. In the same way, to improve the ergonomics of the shoe on which the device 10 is mounted, also the end 14b of the strap 14 can be similarly rounded.

[0029] In the clog 100 of figure 1, it can be seen how the end 12a of the strap 12 and the end 14a of the strap 14 are hinged to the upper 104 for example through riveting.

[0030] In this way, once the device 10 has been fastened to embrace the user's ankle, it is possible to disengage the device 10 from said ankle, when desired, without having to open it, by simply rotating the hinged

straps 12 and 14 towards the sole 102. In this case the relative position between the two straps 12 and 14, and therefore the fastening tension, is not lost when the aforementioned device is repositioned around the ankle.

[0031] In the sandal 200 of figure 2, two fastening devices 10 of the type described above are used.

[0032] It should be noted that the fastening device 10 can be partially coated (excluding the two ends 12b and 14b where there is the plurality of teeth 16a and 18a) with materials used for the upper 104 of the clog 100 or of the sandal 200, like for example leather.

[0033] It should also be noted that, in certain shoes without upper, the ends 12a and 14a of the two straps 12 and 14 according to the invention can be associated directly with the sole of the shoe, at respective points or areas thereof.

[0034] From the above description it can clearly be seen that the fastening device for shoes according to the invention achieves the aforementioned main aim and obtains numerous advantages the first of which is the fact that it is allowed an extremely precise fastening adjustment, together with an excellent tightness of fastening.

[0035] Moreover, the tightness of the fastening is unusually constant over time.

[0036] Other advantages of the aforementioned device are the cost-effectiveness of the manufacture, the practicality of use, as well as the lightness.

[0037] A further advantage derives from using the aforementioned strap for clogs or sandals for hospital uses, i.e. used in environments where an extreme hygiene is required: indeed, given that the device is preferably made from thermoplastic material, it is possible to effectively wash and sterilize the entire clog or sandal.

[0038] Of course, a man skilled in the art can make numerous modifications and variations to the fastening device for shoes described above in order to satisfy specific and contingent needs, all of which are in any case covered by the scope of protection of the present invention as defined by the following claims.

Claims

1. Fastening device (10) for shoes such as clogs (100), sandals (200) and similar, comprising sole (102) and upper (104) which are structured and associated with each other, said device (10) comprising a couple of flexible straps (12, 14) associated, at a end (12a, 14a) of theirs, with the upper (104) of the shoe in respective points (104a) or areas thereof and equipped, at the other ends (12b, 14b) of theirs, with respective means (16) and countermeans (18) so that they are removably connectable together, **characterized in that** each of said straps (12, 14) has a wall (12c, 14c) equipped with a respective plurality of teeth (16a, 18a) with substantially triangular profile, said teeth (16a, 18a) extending transversally to the strap itself (12, 14), and opposite substantially

smooth wall (12d, 14d), said straps (12, 14) being associated with said upper (104) in an arrangement such that the teeth (16a) of a strap (12) face towards the teeth (18a) of the other strap (14), and **in that** it comprises at least one annular loop (20), removably passed through by both of said straps (12, 14) in sliding contact with the smooth walls (12d, 14d) thereof, so as to determine a substantially harpoon-ing engagement of a part of the teeth (16a) of a strap (12), with a corresponding part of teeth (18a) of the other strap (14).

2. Device (10) according to claim 1, **characterized in that** said at least one annular loop (20) is associated with one (14) of said straps at the respective plurality of teeth (18a). 15
3. Device (10) according to claim 1, **characterized in that** said straps (12, 14) have a shape which is parallelepiped, elongated and of equal width and thickness, and **in that** the respective teeth (16a, 18a) extend beyond said thickness of the straps (12, 14) for a predetermined height, equal for the two pluralities of teeth (16a, 18a). 20
4. Device (10) according to claim 3, **characterized in that** the annular loop (20) has a hole (20a) with substantially rectangular section, having a base greater than the width of the straps (12, 14) and a height substantially equal to the sum of the predetermined height of the teeth (16a, 18a) and of the double of the thickness of the straps (12, 14). 25
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5. Device (10) according to claim 3, **characterized in that** the annular loop (20) has a hole (20a) with substantially rectangular section, having a base greater than the width of the straps (12, 14) and a height lower than the sum of the predetermined height of the teeth (16a, 18a) and of the double of the thickness of the straps (12, 14). 35
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6. Device (10) according to claim 4 or 5, **characterized in that** the annular loop (20) has a length corresponding to four or five teeth (16a, 18b). 45
7. Device (10) according to claim 2, **characterized in that** the strap (14) with which said at least one annular loop (20) is associated has anti-unthreading means (22) that prevent the at least one annular loop (20) from becoming unthreaded from the other end (14b) of the strap (14), once it has been associated with the upper (104) of the shoe. 50
8. Device (10) according to claim 7, **characterized in that** said means (22) comprise two opposite ridges (24), arranged on the side walls (14e, 14f) of the strap (14), the distance between the top of the two ridges (24) being greater than the width of the hole

(20a) of the annular loop (20).

9. Device (10) according to claim 1, **characterized in that** the straps (12, 14) are equipped with an equal number of teeth (16a, 18a), all of the same substantially triangular profile. 5
10. Device (10) according to claim 1, **characterized in that** the straps (12, 14) and the at least one annular loop (20) are made from thermoplastic material. 10
11. Shoe such as a clog (100), a sandal (200) and similar, comprising sole (102) and upper (104) which are structured and associated with each other, **characterized in that** it comprises at least one fastening device according to any one of the previous claims. 15
12. Shoe (100) according to claim 11, **characterized in that** said ends (12a, 14a) of the straps (12, 14) associated with the upper (104), are hinged to the upper (104). 20
13. Shoe (100) according to claim 12, **characterized in that** said ends (12a, 14a) of the straps (12, 14) associated with the upper (104), are hinged to the upper (104) through riveting. 25
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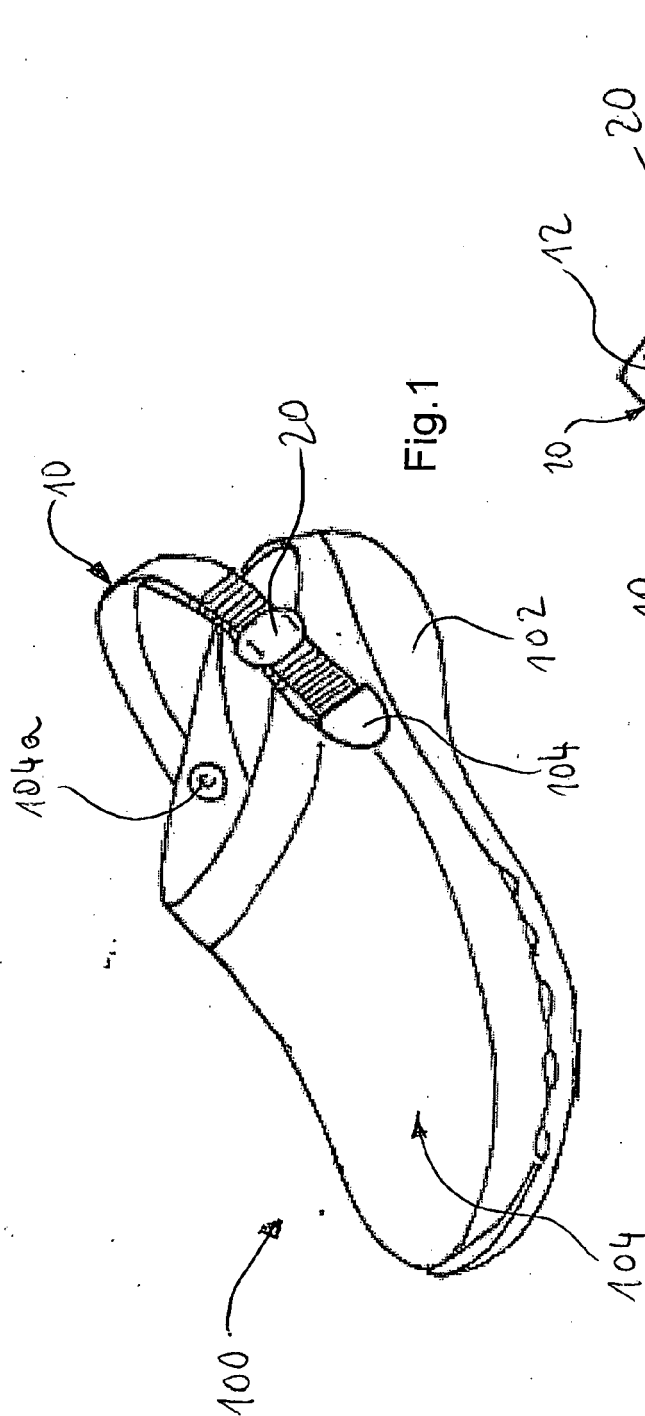


Fig. 1

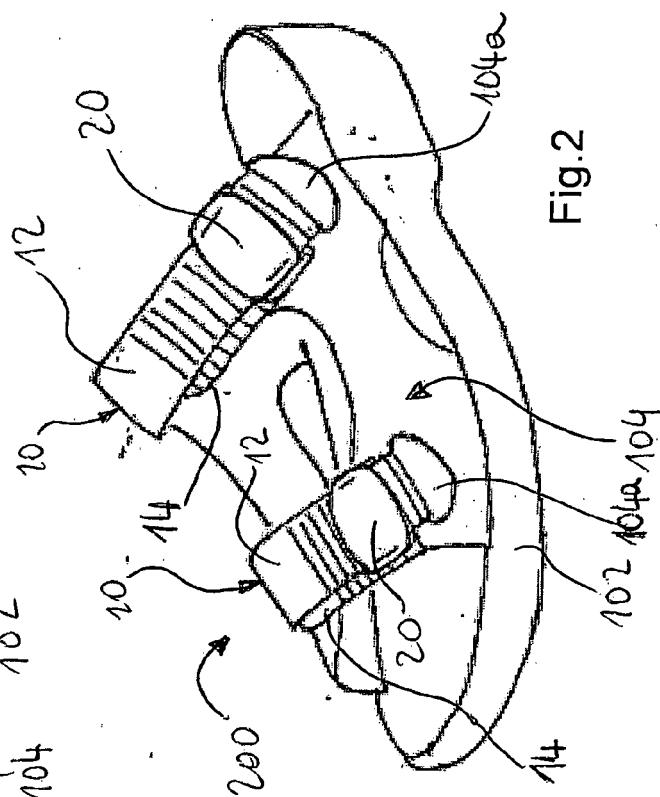
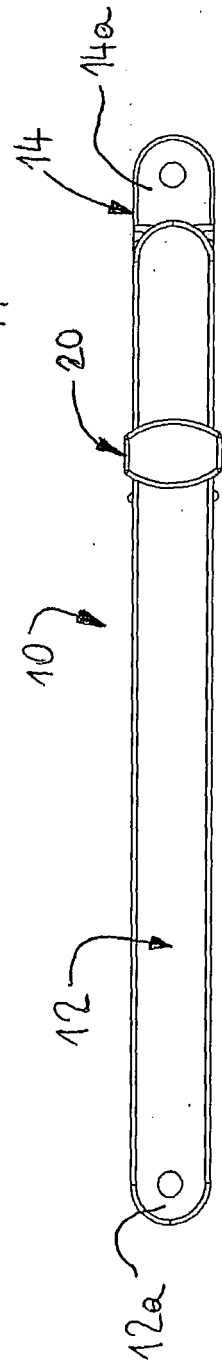
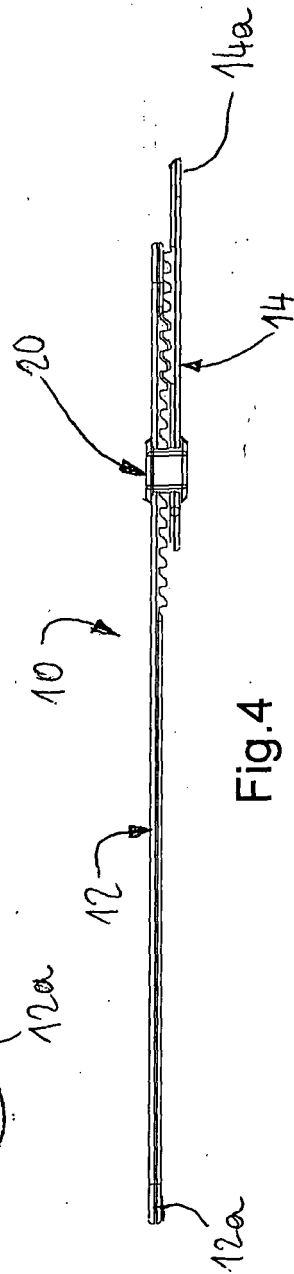
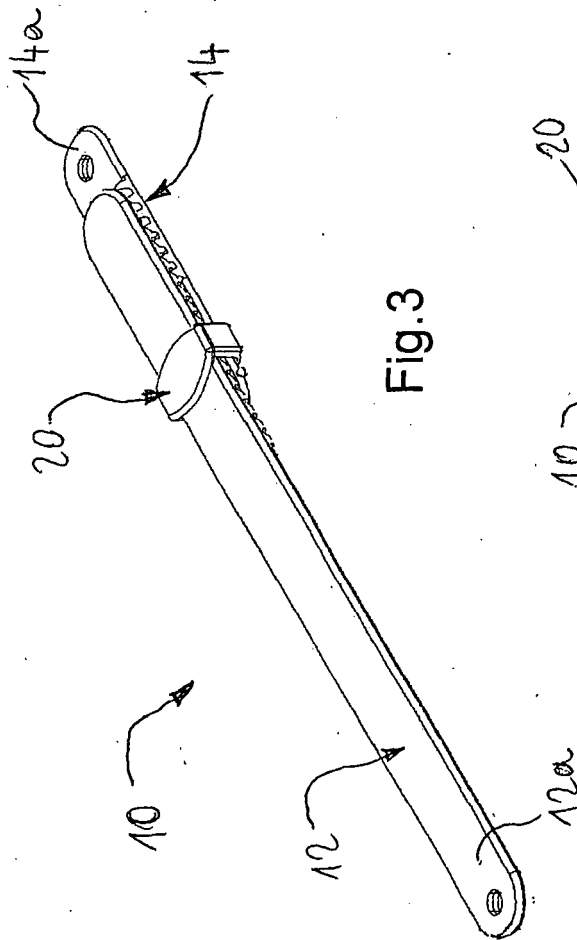
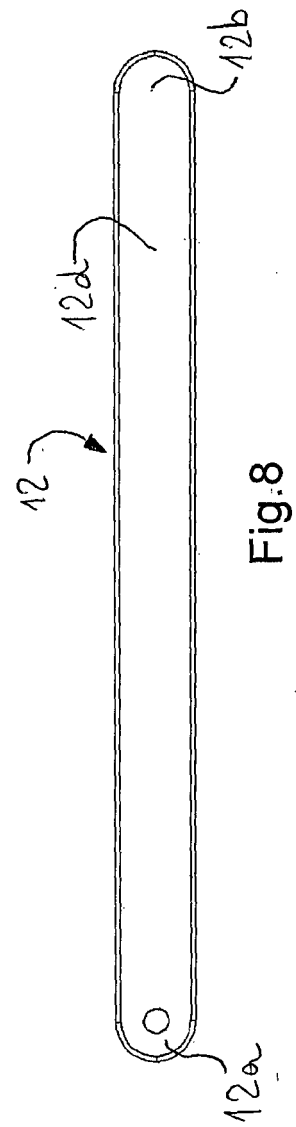
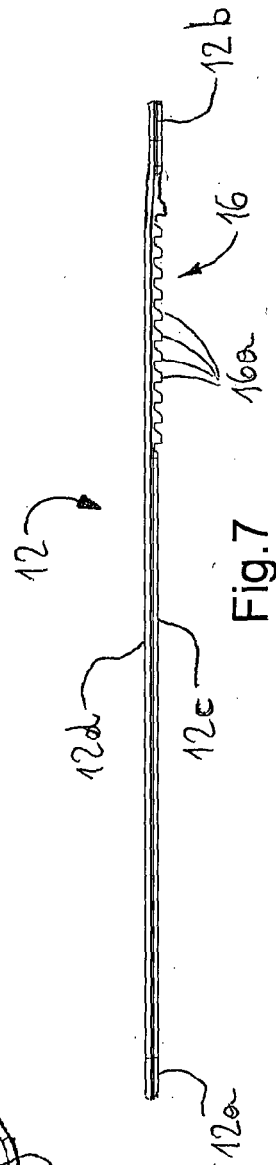
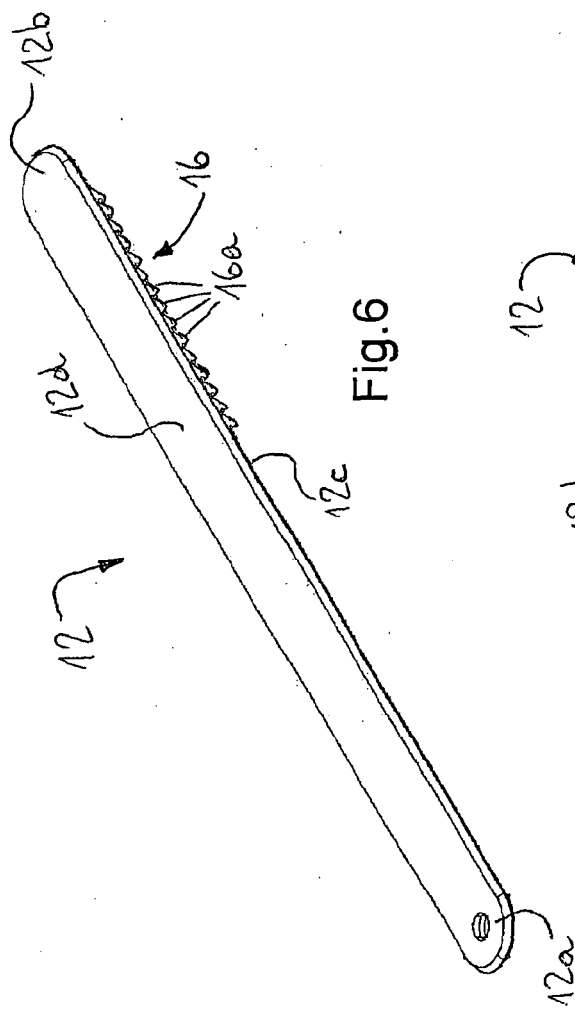
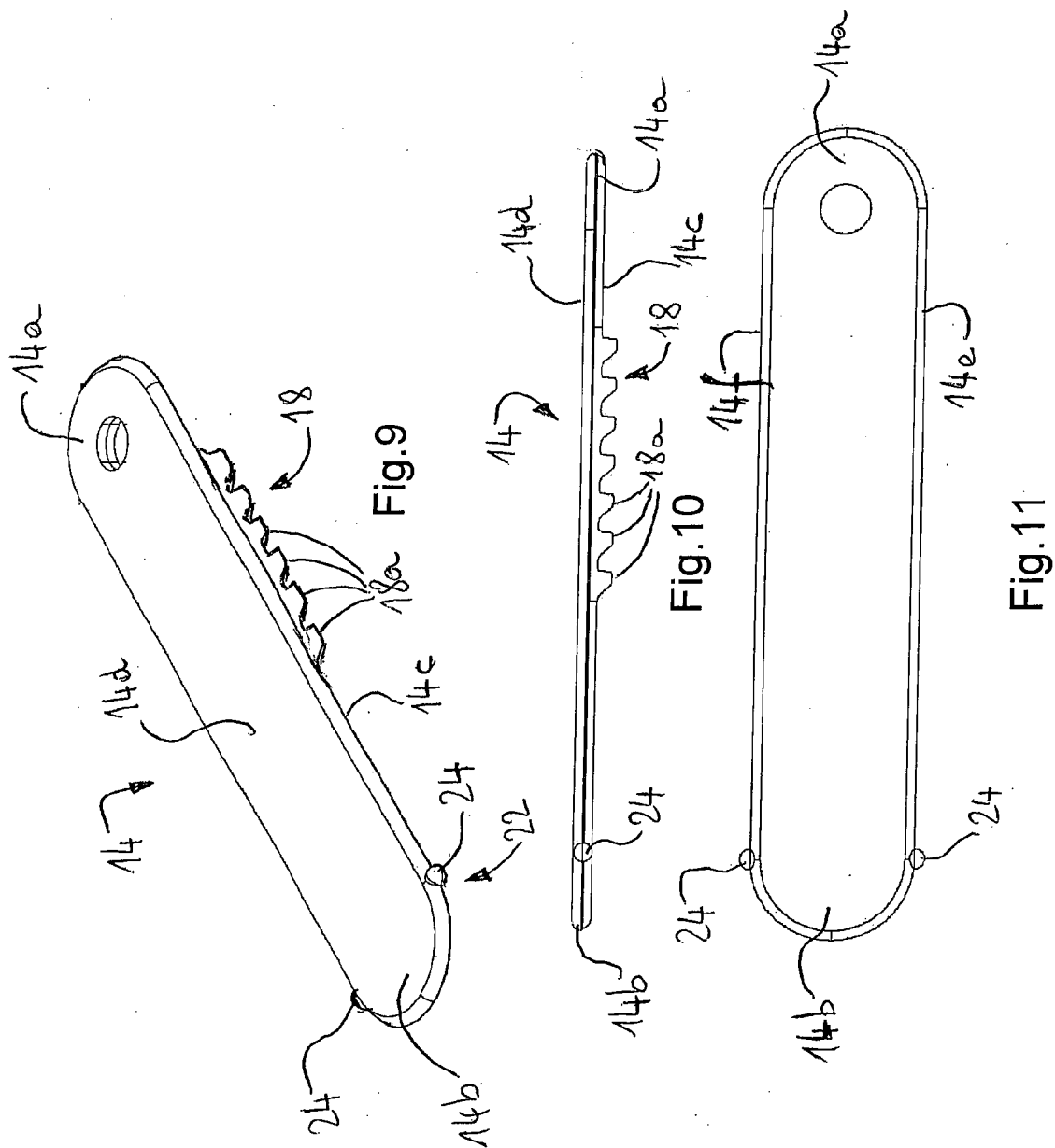
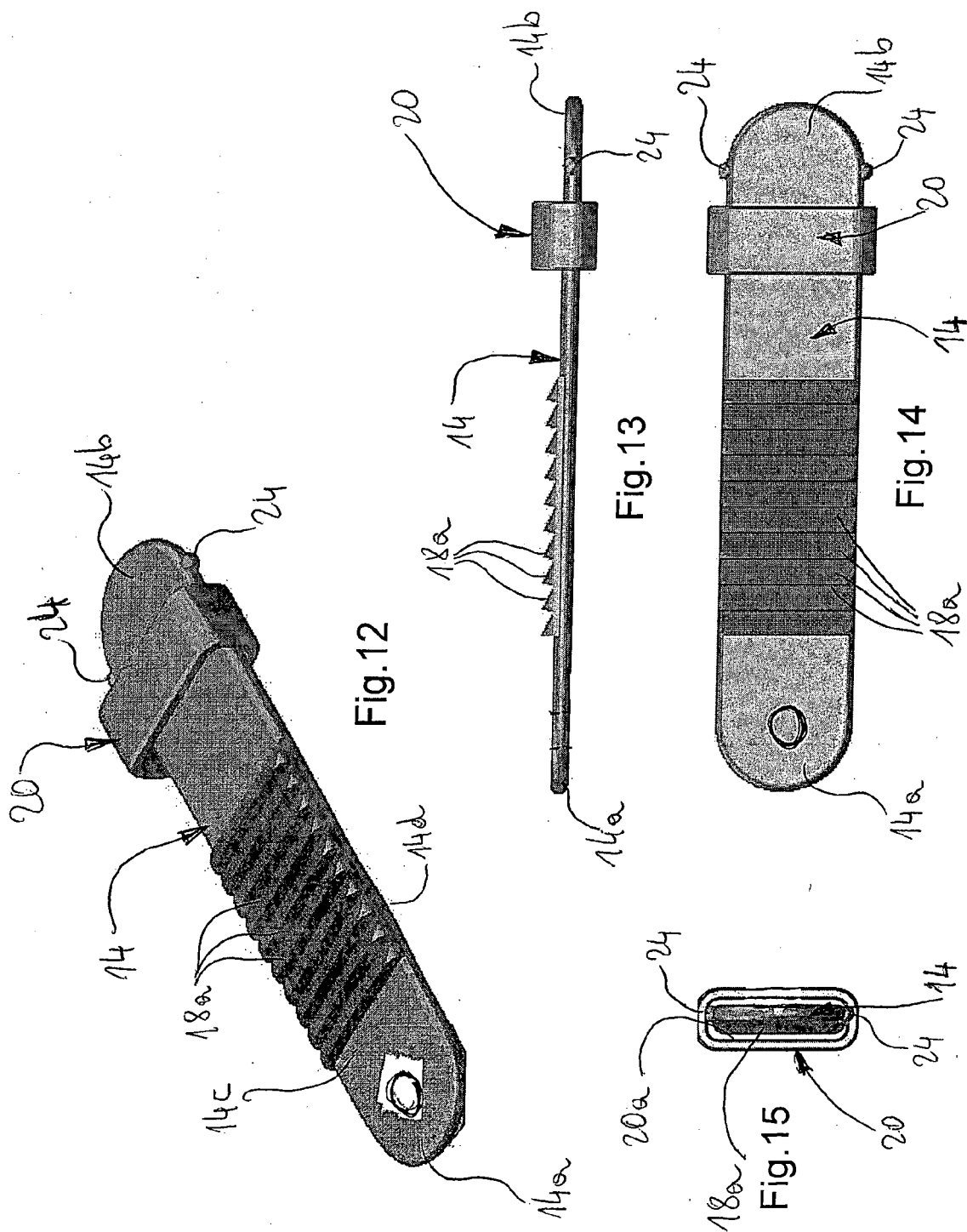


Fig. 2











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Application Number
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CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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