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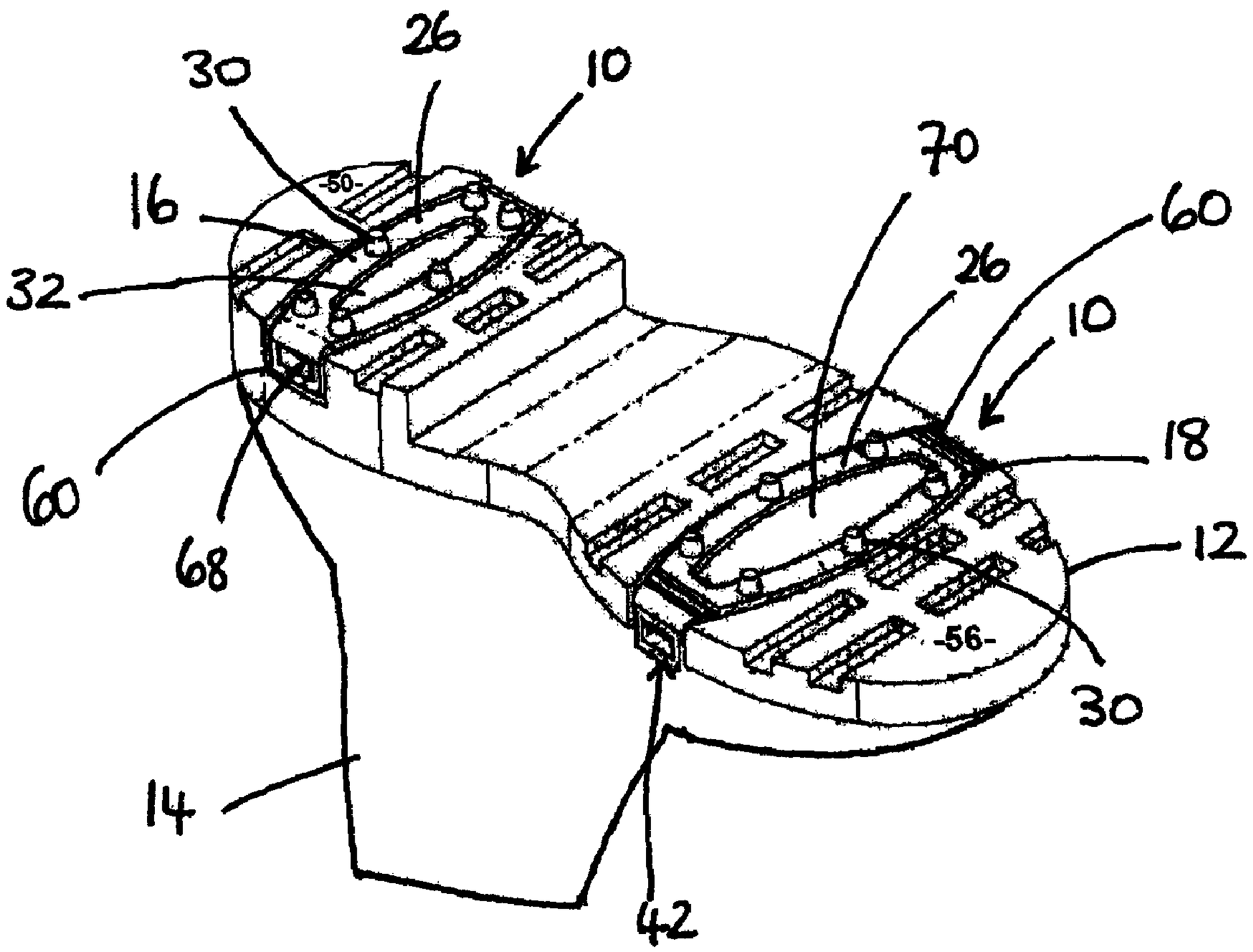

(57) Abrégé/Abstract:
An attachment for an item of footwear having an outsole, the attachment comprising a body having first and second body surfaces, the body being releasably co-operable with the outsole in a first position in which the first body surface is disposable away from the

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(57) Abrégé(suite)/Abstract(continued):
outsole and in a second position in which the second body surface is disposable away from the outsole; an attaching portion which is associated with the body and which includes an inter-engageable member for releasably attaching the attachment in the first and second positions; and a detaching portion which is associated with the body, the detaching portion having an edge portion moveable with respect to the body to allow the body to be released from the item of footwear. The invention also includes an outsole and an item of footwear to which the attachment can be releasably attached.

Abstract

An attachment for an item of footwear having an outsole, the attachment comprising a body having first and second body surfaces, the body being releasably co-operable with the outsole in a first position in which the first body surface is disposable away from the outsole and in a second position in which the second body surface is disposable away from the outsole; an attaching portion which is associated with the body and which includes an inter-engageable member for releasably attaching the attachment in the first and second positions; and a detaching portion which is associated with the body, the detaching portion having an edge portion moveable with respect to the body to allow the body to be released from the item of footwear. The invention also includes an outsole and an item of footwear to which the attachment can be releasably attached.

ATTACHMENTS FOR AN ITEM OF FOOTWEAR

CROSS REFERENCE TO RELATED APPLICATIONS

The Applicants hereby claim priority from Canadian patent application nos. 2,532,705 filed 13 January 2006 and 2,566,875 filed 27 October 2006 .

FIELD OF THE INVENTION

[0001] The present invention generally relates to attachments for items of footwear and more specifically to attachments for use with items of footwear and the outsoles of items of footwear.

BACKGROUND OF THE INVENTION

[0002] It is known to provide outsoles of items of footwear, such as shoes and boots, with ground engaging elements having certain ground-engaging characteristics. For example, hiking and sports shoes having outsoles with spikes, studs or cleats to improve traction and provide anti-skid properties, and tap dancing shoes having taps attached to the outsoles with different sound properties, are known. However, there are circumstances where such ground-engaging elements should be disabled or changed such when a wearer of the item of footwear moves from an outdoor to an indoor location having a surface that could be damaged by spikes, studs or cleats, or when a different frictional characteristic is required. Under such circumstances, it is desirable to disable the ground-engaging elements at will for certain periods of time and thereafter reactivate them as needed. It is also desirable to change the ground-engaging property of the item of footwear without removing that item of footwear and donning another item.

[0003] Accordingly, some solutions have been provided in the prior art which include complex systems providing user activated stud retraction mechanisms. However, these are not found on the market given their generally poor overall performance and high manufacturing cost.

[0004] Other, more practical systems have also been provided which include attachments for outsoles, the attachments being moveable to expose different surfaces having different properties as required.

[0005] In US patent No 6,675,504, granted to Biancucci in January 2004, a shoe sole is provided with spikes projecting from one face of a support means. The support means is pivotably attached to the sole and is movable between a first position in which the support is fully received in a first recess provided in the ground contacting face of the sole with the spikes projecting outwardly, and a second position in which the support is fully received in a second recess with the spikes extending into said second recess. As only one of the recesses is used to receive the support means at any one time, the unused (empty) recess may fill with soil, snow, ice, and other debris while walking with the spike supporting means in the first or second positions. Moreover, the support means has a limited efficient area as it must be half the size of the total recess surface to enable it to flip from one recess to the other.

[0006] International publication No WO2004/041016 (published in May 2004) from the same inventors and applicants as US 6,675,504 describes a similar concept to US 6,675,504 where a sole is provided with a recess together with a support means receivable in the recess and having spikes projecting from one of its surfaces. In WO2004/041016, the support means is pivotably attached to the sole so that it can be lifted into and out of the recess. The attachment mechanism allows the support means to be rotated to expose its other face so that it is moveable between a first position in which the support means is fully received in the sole recess with the spikes facing outwardly, and a second position in which the support means is received in the recess with the spikes extending into the recess. However, it is not clear whether a tool is required to prise the support means out of the recess. If so, it

would mean that a wearer of an item of footwear with this sole would need to carry a tool with them. Furthermore, the pivoting mechanism is set into a recess which must necessarily be larger than the mechanism itself. The recess is likely to fill with soil, snow, ice, and other debris while walking with the spike supporting means in the first or second positions.

[0007] US patent No 6,360,455 entitled "Pack Boot with Retractable Crampons" issued to Seo on March 26, 2002 also teaches a dual cavity flip concept with traction devices of still smaller effective surface than US 6,675,504 and sharing similar disadvantages.

[0008] US patent No 4,745,692, granted to Liao on May 24, 1988, describes an anti-slip device comprising a slip-proof member pivotably mounted to the bottom of a shoe. The slip proof member has prongs extending from one of its faces and is receivable in a recess in the bottom of the shoe in one of two positions: one position with the spikes pointing outwardly and the other position with the spikes being received into the recess. However, the pivoting mechanism of US 4,745,692 is complex and the design of the anti-slip device prone to accumulate dirt, snow or ice in the recess and in the pivoting mechanism which could cause jamming of the device and render operation difficult.

[0009] European patent application No EP1,044,621 (published on October 18, 2000) discloses a shoe having a recess in its heel. The recess contains a receiving member for receiving a reversible element which has one spiked surface and an opposed smooth surface. The reversible element also has a tapered outer edge which corresponds with a similarly shaped groove in the receiving member. The element can be slid into the receiving member in two positions to expose either the spiked or the smooth surface. A hole is provided through the heel and the receiving member into which a locking member (e.g. a screw) is inserted to secure the reversible element in the receiving member. As the locking member is separate from the reversible element and the receiving member, it can become separated and lost. Also, adapting the heel of a shoe to include a receiving member would increase manufacturing costs. Finally, manipulating such a locking member is cumbersome for the wearer of the shoe.

[0010] US patent No 2,776,499 granted to Giuntini on January 8, 1957 provides a reversible plate extending from the heel to the toe of an item of footwear. The plate includes cleats on one of its surfaces and is hingedly attached to the underside of the sole under the arch. The plate can be moved about a transverse axis between two positions: one position in which the plate overlies the front and rear portions of the sole

with the cleats exposed and a second position in which the front portion of the plate is folded back over itself to hide the cleats by nesting the cleated face of the front portion into cleated portion of the rear portion. This necessarily increases the height of the heel portion of the item of footwear. Also, the hinge portion is vulnerable to collect debris which would impair the hinging mechanism.

[0011] Therefore, it is desired to overcome or reduce at least some of the above-described problems.

SUMMARY OF THE INVENTION

[0012] The present invention reduces the difficulties and disadvantages of the aforesaid designs by providing an attachment which can be easily attached and detached from an item of footwear by the user without the use of tools or complex attaching and/or detaching mechanisms. As the attachment is a simple construction it is easy to manufacture with low manufacturing costs. The Applicant has found the surprising discovery that an attachment of the present invention overcomes the problems associated with the aforesaid designs. The present invention obviates the limitations and drawbacks of the prior art devices by improving reversibility, efficient surface area, reliability, durability, clearing of cavities and production costs, thus enabling safe and convenient use in a wide range of applications.

[0013] In a broad sense, the present invention concerns an attachment for an item of footwear, the attachment comprising a body having first and second body surfaces, the body being releasably co-operable with the outsole in a first position in which the first body surface is disposable away from the outsole and in a second position in which the second body surface is disposable away from the outsole; an attaching portion which is associated with the body and which includes an inter-engageable member for releasably attaching the attachment in the first and second positions; and a detaching portion which is associated with the body, the detaching portion being arranged to be manipulatable by a user when in the first and second positions to release the attachment from the item of footwear.

[0014] The detaching portion has an edge portion which is moveable with respect to the body to allow the attachment to be released from the item of footwear. Advantageously, the edge portion is arranged for manipulation by a user's hand when the attachment is in the first or second positions to move the edge portion with respect to the body. The outsole may include a recess, and the body shaped to be receivable in the recess. The first body surface has a first surface-engaging property and the second body surface has a second surface-engaging property, the first or second surface-engaging properties can be selected from frictional sand properties of the surface. surface. In this regard, the first body surface includes at least one protrusion for frictional engagement with a surface which may be an anti-skid cleat. The at least one protrusion is shaped to be receivable in at least one corresponding opening in the outsole when the body is in the second position (the first body surface is disposable towards the outsole when the body is in the second position). The first and second surface-engaging properties may be different to each other. The body has at least one axis of symmetry for positioning in the first and second positions. The attachment may be elongate in which case the axis of symmetry is along a longitudinal axis of the attachment. Further symmetry is also possible.

[0015] In one embodiment of the present invention, the body comprises a main body portion and an outer edge portion, the detaching portion including the outer edge portion. Advantageously, the body is resiliently deformable and includes at least one opening for engageably receiving a protrusion of the outsole. At least one of the first and second surfaces of the body may be substantially planar and the body may be disc-shaped.

[0016] In another embodiment of the present invention, the attaching portion extends from one side of the body and includes an arm having an arm opening. The attaching portion and the body may be integrally formed into a single piece and the single piece may be resiliently deformable. The single piece may include at least a first layer of material forming the body and at least a second layer of material forming the attaching portion, the first layer being less resilient than the second layer. In this embodiment, the detaching portion is integral with the attaching portion and includes an outer edge portion of the attaching portion. The attachment includes a second

attaching portion located at another side of the body from the first attaching portion. The first and second attaching portions may extend from oppositely facing sides of the body from each other.

[0017] The second attaching portion may include an edge defining an opening in the body, the edge being shaped to engage with a protrusion of the outsole. At least a portion of the edge may be tapered. Alternatively, the second attaching portion may include a second arm having an opening, the second arm extending from a different side of the body to the first arm. In this case, the body extends across the outsole when the attachment is in the first or second positions.

[0018] In a further alternative embodiment, the attaching portion includes a first arm having a free end, the free end being arranged to be engageably receivable into an opening of the outsole. The free end is moveable with respect to the body between an engaged position and a retracted position. The first arm may be resiliently biased towards the retracted position. The first arm may be attached to the body by a hinge member. The detaching portion may include an edge portion of the first arm. Advantageously, the attaching portion includes a second arm having a free end, the free end being arranged to be engageably receivable into an opening of the outsole, the second arm being located adjacent the first arm such that moving the first and second arms towards each other disengages their free ends from the outsole, and moving the arms away from each other engages the free ends of the arms with the outsole. The attaching portion may further include a third and a fourth arm, each arm having a free end arranged to be engageably receivable into at least one opening of the outsole and extending from a substantially oppositely facing end of the body from the first and second arms.

[0019] In yet another further alternative embodiment, the detaching portion includes a tab member extending from the body, the tab member having an edge portion for manipulation by a user's hand to detach the attachment from the item of footwear. The tab member may have a recessed holding portion. The body has an opening, and the inter-engageable member includes an edge defining the opening. The outsole includes at least one protrusion and the edge is shaped to engage with the

protrusion. At least a first portion of the edge may be tapered. When a second portion of the edge is tapered, the second edge portion is on a substantially oppositely facing side of the opening to the first edge portion. The first and second edge portions may taper away from each other. The attachment may include a bridging member, having an opening formed therethrough, extending across the opening. The body is resiliently deformable.

[0020] From another aspect, the present invention extends to an outsole for an item of footwear, the outsole having a surface-engaging face and comprising at least one inter-engageable member for releasably attaching an attachment in a first position in which a first body surface of the attachment is disposable away from the outsole and in a second position in which a second body surface is disposable away from the outsole. The outsole may be shaped to allow the detaching portion of the attachment to be manipulatable by a user's hand to detach the attachment from the item of footwear. The outsole may include a recessed portion adjacent the attachment when the attachment is attached to the outsole. The inter-engageable member may include at least one protrusion extending from the outsole for engagement with a corresponding at least one opening in the attachment to releasably attach the attachment to the outsole. The at least one protrusion may be at a toe-end, a heel-end and/or at a side of the outsole. The at least one protrusion is resiliently deformable. Optionally, the at least one protrusion may be integral with a shaft member which is joined to the outsole and which is more rigid than the outsole.

[0021] The surface-engaging face of the outsole may have an edge defining a recess formed therein, the recess being shaped to receive at least a portion of the attachment. A portion of the edge of the recess may be shaped to allow a user to manipulate by hand the attachment when the attachment is in the first or second positions to detach the attachment from the item of footwear. A portion of the edge of the recess may be lipped to allow retention of the attachment in the recess. The recess has a base from which may extend a protrusion, the protrusion being shaped to engage with a corresponding opening in the attachment to releasably attach the attachment to the item of footwear. The recess base may include at least one opening formed therein which is shaped to receive at least one corresponding protrusion of the attachment. The

recess has a side wall, the side wall having at least one opening for engagement with a corresponding protrusion of the attachment.

[0022] According to another aspect of the invention, there is provided an attachment and an outsole as described above.

[0023] According to yet another aspect of the invention, there is provided an item of footwear including an outsole and/or an attachment as described above.

[0024] Advantageously, the invention provides footwear, such as boots or shoes, with multiple functions such as improved grip in slippery surfaces. This is achieved by a reversible attachment which can be fitted to an outsole. A user can switch between two surface-engaging faces of an item of footwear without changing the item of footwear. Of note is that each attachment occupies exactly the same space in either position in its closely mating (conforming) recess such that introduction of ice, snow and/or debris in the recess is prevented. Moreover, removal of an attachment provides self-cleaning of the recess, protrusion and notches surroundings, which ensures ease of repositioning of the attachments. The attachment is essentially maintenance free. Also, substantially the entire first or second surface of the body is useable as part of the surface-engaging face.

[0025] The surface engaging faces of the attachment may be replaced, or the attachment may be moved between the first and second positions when one of the surfaces wears out. In addition, by virtue of the attachment being removable from the outsole, the entire attachment may be replaced once worn through rather than the item of footwear. By virtue of an inter-engageable member of the attachment, the attachment can be releasably attached to the item of footwear. The fastening system can be said to include an inter-engaging formation acting between the attaching portion and the item of footwear. This allows the attachment to be attached to the outsole in both the first and second positions without the need for more complex attachment mechanisms. The inter-engageable member (formation) permits the attachment to remain fastened to the item of footwear when needed and for it to be released when detachment is required. Moreover, by virtue of the attaching and detaching portions being associated with the

body, additional attaching and detaching mechanisms which are separate from the attachment and which can be lost whilst reversing the attachment are not required.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] Further aspects and advantages of the present invention will become better understood with reference to the description in association with the following in which:

[0027] Figure 1 is a perspective view of an item of footwear having an outsole and front and heel attachments, according to an embodiment of the present invention;

[0028] Figure 2(a) is a plan view of the attachments and the outsole of Figure 1;

[0029] Figure 2(b) is a cross-section along line A-A of Figure 2(a);

[0030] Figures 3(a), (b) and (c) are perspective, plan and side views, respectively, of the heel attachment of Figure 1;

[0031] Figures 4(a), (b) and (c) are perspective, plan and side views, respectively, of the front attachment of Figure 1;

[0032] Figure 5 is a perspective view of a heel attachment, a front attachment and an outsole according to another embodiment of the present invention, when the attachments are (a) partially removed from the outsole, and (b) attached to the outsole;

[0033] Figure 6(a) is a plan view of the attachments and outsole of Figure 5(b);

[0034] Figure 6(b) is a cross-section along line A-A of Figure 6(a);

[0035] Figures 7(a) and (b) are perspective and plan views of the front attachment of Figure 5;

[0036] Figure 7(c) is a cross-section along line A-A of Figure 7(b);

[0037] Figures 8(a) and (b) are perspective and plan views of the heel attachment of Figure 5;

[0038] Figure 8(c) is a cross-section along line A-A of Figure 8(b);

[0039] Figure 9(a) is a plan view of an outsole, and heel and front attachments according to a further embodiment of the present invention;

[0040] Figure 9(b) is a cross-section along line A-A of Figure 9(a);

[0041] Figure 10 is an exploded perspective view of a heel attachment, a front attachment and an outsole according to yet another embodiment of the invention;

[0042] Figure 11(a) is a plan view of the attachments and the outsole of Figure 10 when the attachments are attached to the outsole;

[0043] Figure 11(b) is a side view of the attachments and the outsole of Figure 11(a);

[0044] Figure 12(a) is a plan view of the front attachment of Figure 10;

[0045] Figure 12(b) is a cross-section along line A-A of the attachment of Figure 12(a);

[0046] Figure 13(a) is a plan view of the heel attachment of Figure 10;

[0047] Figure 13(b) is a cross-section along line A-A of the attachment of Figure 13(a);

[0048] Figures 14(a) and (b) are perspective and plan views, respectively, of a heel attachment, front attachments and an outsole according to a yet further embodiment of the present invention;

[0049] Figure 14(c) is a cross-section along line A-A of Figure 14(b);

[0050] Figure 15(a) is a plan view of an attachment of Figure 14;

[0051] Figure 15(b) is a cross-section along line A-A of the attachment of Figure 15(a);

[0052] Figure 16 (a) is a plan view of an alternative attachment to that of Figure 15;

[0053] Figure 16(b) is a cross-section along line A-A of the attachment of Figure 16(a);

[0054] Figures 17(a) and (b) are perspective views of a rear attachment, a front attachment and an outsole according to another embodiment of the present invention, when the attachments are attached to the outsole and when they have been released from the outsole, respectively;

[0055] Figures 18(a) and (b) are plan views of Figures 17(a) and (b) respectively;

[0056] Figure 18(c) is a cross-section along line A-A of Figure 18(b);

[0057] Figure 19(a) is a perspective view of a protrusion of an attachment according to the present invention;

[0058] Figure 19(b) is a cross-section along line A-A of Figure 19(a); and

[0059] Figures 20(a) to (c) are side views of alternative protrusions to Figure 19.

DETAILED DESCRIPTION OF THE INVENTION

[0060] Although the present invention will be described with reference to embodiments adapted for improving traction on surfaces, for example slippery or icy surfaces, persons skilled in the art will appreciate other applications of the present invention wherein modification of engaging properties with the ground, floor or any other surface may be desirable. For example, an embodiment of the invention may enable bowling players to change the frictional properties of their footwear without changing the footwear itself. Also, the invention may enable tap dancers to turn taps on or off as desired.

[0061] With reference to Figures 1 to 4, attachments 10 for an item of footwear according to an embodiment of the invention are shown mounted to an outsole 12 of an item of footwear 14. The attachments 10 include a heel attachment 16 and a front attachment 18. Broadly speaking, each attachment 10 includes a body 20, and attaching and detaching portions which are associated with the body. The heel and front attachments 16, 18 are illustrated in a default position, disassembled from the outsole 12, in Figures 3 and 4 respectively. The same reference numerals have been used to illustrate similar parts.

[0062] The body 20 has first and second body surfaces 26, 28 and is releasably co-operable with the outsole 12 in a first position in which the first body surface 26 is disposable away from the outsole 12 and in a second position in which the second body 28 surface is disposable away from the outsole 12. A plurality of ground-engaging protrusions 30 extend from the first body surface 26 whereas the second body surface 28 is substantially planar (flat). Therefore, the first and second body surfaces 26, 28 have different ground-engaging properties. Namely, the first body surface 26 can provide better traction in mud, snow or ice, for example, than the second body surface 28. As will be described in detail later, the attachments 10 can be mounted to the outsole 12 with either body surface 26, 28 facing outwardly and forming part of a ground-engaging surface of the outsole 12. This permits a wearer of the item of footwear 14 to change the ground-engaging property of his or her item of footwear 14 simply by changing the mounting position of the attachment 10 to the outsole 12.

[0063] The body 20 has a body opening 32 formed through a central portion, the purpose of which is to save on material and hence manufacturing costs. Alternatively, the body 20 may also be solid to increase the efficient surface area of the first and second faces 26, 28 according to the intended application. In the embodiment illustrated in Figures 1 to 4, the body 20 is elongate, typically it is elliptical in shape. The body 20 is symmetrical about at least one axis to allow the attachment 10 to be mounted to the outsole 12 in the first and second positions. As can be seen, the body is in fact symmetrical about two axes: a longitudinal axis 34 and a transverse axis 35. This allows the attachment 10 to be mounted to the outsole 12 with either body surface 26, 28 exposed and in both a left to right and in a right to left configuration. The attachments are also interchangeable between left and right foots of the item of footwear. The body 20 is sized to extend across the portion of the outsole 12 to which it is attachable. In this respect, it can be seen that the front attachment 18 is larger in size than the heel attachment 16.

[0064] As best illustrated in Figures 2 to 4, the attaching portion is connected to the body 20. The attaching portion is in the form of a pair of arms extending from different sides of the body 20. Each arm has a free end 40 and a join end 41. The arm is connected to the body 20 at its join end 41. Each arm is independently moveable with respect to the body 20, such as for example, twisting about the join end 41 or hinged about the join end 41, typically towards or away from the body 20. An arm opening 38 is formed near the free end 40 of the arm. The arm opening 38 is shaped to engageably receive a portion of the outsole 12 or item of footwear 14 to secure the attachment 10 to the item of footwear 14. The arms extend from oppositely facing sides of the body and form a single piece with the body. In the embodiment illustrated, the arm openings 38 are tapered but can be of any size or shape suitable for receiving a portion of the outsole or item of footwear.

[0065] The detaching portion comprises an outer edge portion of the attaching portion. Specifically, the detaching portion includes the free ends 40 of the arms. These free ends 40 can be manipulated by a user's hands (finger(s) or thumb(s)) to move them with respect to the body 20 to allow the attachment 10 to be released from the item of footwear 14. The free ends 40 can be manipulated and

moved with respect to the body when the body is attached to the outsole. The detaching portion can be said to have an edge portion moveable with respect to the body 20.

[0066] The above description of the attachment 10 applies equally to the heel attachment 16 and the front attachment 18. The front attachment 18 differs from the heel attachment 16 in its physical dimensions, which have been adapted to fit the larger forefoot location. A further difference is that the arms of the front attachment 18 comprise a ribbed portion 44 at the join end 41. It will be appreciated that this ribbed portion 44 comprises grooves which effectively thin the thickness of the arms in the area where bending is required. Therefore, the ribbed portion 44 serves to improve the bending and flexibility of the arms and aids in stretching the arms away from the body 20 to attach the attachment 10 to the item of footwear 14. The ribbed portion 44 may be formed during the molding of the arms. The arms may also have any other structure suitable for obtaining the desired resilience and deformability required to attach the attachment 10 to the outsole 12. These arm constructions may also be applied to the heel attachment 16.

[0067] The body 20, and the attaching and detaching portions of the attachments 10 are integrally formed from a resiliently deformable material such as for example a polymeric material, for example rubber, polyurethane or neoprene™ and the like. Alternatively, the attachments 10 can be formed from at least two layers of material (i.e. laminated). For example, the body 20 comprising a semi-rigid core joined to a layer of resiliently deformable material which also forms the arms. In this way, the body 20 maintains rigidity while the arms are formed from the resiliently deformable material to enable their easy bending and deformability. The arms may also be multi-layered. Alternatively, the arms and the body 20 may be formed separately and joined together to form the attachment 10. The attachments can be formed using methods known in the art such as by molding (e.g. injection or screw molding). The protrusions 30 which project from the first body surface 26 may be formed separately (for example, from metal) from the body 20 and be joined to the body 20 during or after the formation of the attachment 10.

[0068] Referring now to the outsole 12, illustrated in Figures 1 and 2, which is attached to the item of footwear 14 by conventional means such as by stitching or adhesive. The outsole comprises a heel or rear region 46 at a heel end 48 of the outsole 12, the heel region 46 having a heel ground-engaging surface 50. A forefoot region 52 of the outsole 12 is at a toe-end 54 of the outsole 12, and has a forefoot ground-engaging surface 56. The heel and forefoot regions 46, 52 of the outsole 12 are separated by an arch region 58. A recess 60 is formed at each of the heel and forefoot regions 46, 52 for receiving the attachments 10. Each recess 60 has a bottom surface 62 and extends between a left side 64 and a right side 66 of the outsole 12. The recess 60 is shaped to receive at least the attachment body 20. As can be seen most clearly from Figures 2(a) and (b), an outside recess protrusion 68 extends from both sides 64, 66 of the recess 60 and is shaped to engage with the arm openings 38 of the attachments 10 to hold them in place on the outsole 12. Another protrusion 70 extends from the bottom face 62 of the recess 60 and is sized and shaped to correspond to the size and shape of the body opening 32 such that it is received in the body opening 32. In embodiments of the body 20 which do not have the body opening 32, the outsole recess 60 will be shaped correspondingly by not having the further protrusion 70.

[0069] When the attachment 10 is mounted to the outsole 12 with the first body surface 26 and ground-engaging protrusions 30 facing outwardly (first position), the second body surface 28 lies against the bottom face 62 of the recess 60. The depth of the recess 60 allows the ground-engaging protrusions 30 extending from the body 20 to project beyond the ground-engaging surface 50 or 56 of the outsole when the attachment is in this position. To allow the second body surface 28 of the attachment 10 to lie substantially flush with the ground-engaging surfaces of the heel 50 when the attachment 12 is mounted in the second position (with the second body surface 28 facing outwardly), openings (not shown) for receiving the ground-engaging protrusions 30 of the first body surface 26 are provided in the bottom face 62 of the recess 60. Alternatively, the outsole 12 may not have a recess 60 so that the attachments 10 are mounted over the ground-engaging surfaces of the outsole 12.

[0070] Referring to Figures 1 and 2, the attachments 10 are mounted to the outsole 12 by nesting the attachment body 20 into the corresponding recess 60 of the outsole

12 with one of the body surfaces 26, 28 facing into the recess and the other of the body surfaces 26, 28 facing outwardly. Each arm is then moved towards its corresponding outsole recess protrusion 68 by stretching the arm if required and bending the arm at the join end 41 and engaging the arm opening 38 with the recess protrusion 68. To allow the attachments 10 to be mounted taut onto the outsole 12, the length of the arms are slightly shorter than required so that they must be stretched to engage the arm opening 38 with the recess protrusion 68. Conveniently, a user may grip any portion of the arm such as the free end 40 of the arm to move it into position and to catch the outsole recess protrusion 68 into its respective arm opening 38. The attachments 10 can be completely removed from the outsole 12 by the user gripping the free end 40 of one of the arms and disengaging its arm opening 38 from the outsole recess protrusion 68 by moving the arm free of the outsole recess protrusion 68, typically in a direction towards the exposed face of the attachment 10. Figure 2(b) clearly illustrates how the free end can protrude away from the outsole to allow a user to grip it more easily with his or her hands. To encourage the outsole recess protrusion 68 to disengage from the arm opening 38, a user can also push on a free end 72 of the outsole protrusion.

[0071] As described above, the attachments 10 can be attached to the outsole 12 with either face 26, 28 exposed and forming part of the ground-engaging surfaces 50, 56 of the outsole 12. Thus, the attachments are reversible. In this way, the user may alter the ground-engaging properties of his or her item of footwear by exposing a different body surface 26, 28 of the attachment body 20. For example, the attachment 10 can be mounted to the outsole 12 with the first face 26 facing outwardly when the user requires increased traction whilst walking outdoors and the attachment 12 can simply be reversed to expose the smoother second face 28 when the user moves indoors to prevent damaging interior floors and surfaces.

[0072] The fastening system of the arm opening 38 and the outsole recess protrusion 68 can be replaced by equivalent sets of inter-engaging formations. For example, the protrusions may be associated with the arms and the openings with the outsole 12. Also, the openings can be of any shape and need not be tapered. The protrusions can also have any other shape or configuration other than that shown in Figures 1 and 2 such as a mushroom-headed pin or hook-shaped. Furthermore, the openings may be

slightly smaller than the diameter of the protrusions and either the edges defining the openings or the protrusions themselves may be made of a resilient material to ensure a tight fit. It is also conceivable that the protrusions extend from un-recessed portions of the outsole or from the upper of the item of footwear itself. Alternatively, additional inter-engageable formations may be provided for additional attachment security.

[0073] An alternative embodiment of the invention of Figures 1 to 4 is shown in Figures 5 to 8. This embodiment includes attachments 100 engaged with an outsole 102. The attachments 100 of Figures 5 to 8 differ from those of Figures 1 to 4 in that they have been adapted to be mountable in an orientation transverse to that of the attachments 10 of Figures 1 to 4. The attachments 100 comprise a heel attachment 104 and a front attachment 106 which differ from each other only in size and shape and so will not be described separately.

[0074] Each attachment 100 comprises a body 108, an attaching portion 110 and a detaching portion 112. The body 108 has first and second body surfaces 114, 116. A plurality of protrusions 118 extend from the first body surface 114 and the second body surface 116 is substantially planar. The body 108 has a body opening 120 formed through a central portion and defined by an opening edge 121. The body 108 is symmetrical about a longitudinal axis 122 which allows the attachment 100 to be mounted to the outsole 102 with either body surface 114, 116 exposed.

[0075] The attaching portion 110 includes a first attaching portion 101 and a second attaching portion 123. The first attaching portion 101 is in the form of an arm 124, extending from one side of the body 108, and having an arm opening 126. The structure and function of the arm is essentially identical to that of Figures 1 to 4 and so will not be repeated here. The second attaching portion 123 includes a portion 128 of the opening edge 121 which is shaped to inter-engage a portion of the outsole 102. The second attaching portion 123 is located at an oppositely facing side of the body 108 to the arm 124. The opening edge portion 128 is tapered towards the arm 124 (i.e. gets thinner towards the arm 124).

[0076] The detaching portion 112 is an outer edge portion 130 of the arm 124 and

is as described for the previous embodiment.

[0077] The outsole 102 has a recess 132 for receiving the body 108 of the attachment 100 which differs from that of the previous embodiment in that it includes only a single protrusion 134 for engagement with the arm opening 126. The protrusion 134 is mushroom-shaped but it can have any other equivalent shape. For the heel attachment 104, the protrusion 134 extends from a heel-end 136 of the outsole 102, and for the front attachment 106, the protrusion 134 extends from a toe-end 138 of the outsole 102.

[0078] The outsole recess 132 has a bottom face 140 from which extends a second protrusion 142 corresponding in shape and position to the body opening 120 so that it can be received by the body opening 120. An edge 144 of the protrusion 142 corresponds in position to the second attaching portion 123 of the attachment 100 and is shaped to inter-engage with the second attaching portion 123. Specifically, the protrusion edge 144 is lipped and defines a slot or groove 146 for receiving the opening edge portion 128. The lip or tab may be tapered to ensure that the outwardly facing body surface 114, 116 lies substantially flush with a ground engaging surface 148 of the outsole 102 when the attachment 100 is mounted in either position to the outsole 102.

[0079] As can be seen in Figure 5(a), the attachments 100 can be mounted to the outsole 102 by firstly inserting the second attaching portion 123 of the attachment 100 in the corresponding slot 146 and then nesting the body 108 in the outsole recess 132. The arm 124 must then be moved towards its corresponding protrusion 134 and the arm opening 126 engaged with the protrusion 134, as in the previous embodiment. In this way, both ends of the attachment 100 are firmly anchored to the outsole 102 and the body 108 is properly nested and stable in the recess 132. As for the attachments 10 of Figures 1 to 4, the body opening 120 could be reduced in size or eliminated according to the needs of the envisaged application, as long as an inter-engageable portion is provided to preserve the functionality of the second attaching portion 123 and the reversibility of the attachment. Should such a modification be implemented, the outsole 102 may also be adapted accordingly without affecting the performance of

the invention other than by increasing the areas of the efficient surfaces of the attachments 100.

[0080] The detachment of the attachment 100 from the outsole 102 is initiated in the same way as in the previous embodiment. Namely, the arm opening 126 is disengaged from the outsole protrusion 134 by a user moving the detaching portion 112 with respect to the body 108. The attachment 100 is lifted away from the body 108, pivoting about the second attaching portion 123. Finally, the attachment 100 is moved away from the protrusion 134 to disengage the body opening edge 144 from the slot 146.

[0081] In Figure 9, an alternative outsole 200 is provided for use with the attachment 100 of Figures 5 to 8. The outsole 200 includes a shaft member 202 having a toe-end 204 and a heel-end 206. An outsole recess protrusion 208, corresponding to the protrusion 134 of Figures 5 and 6, is provided at each of the toe- and heel-ends 204, 206 for engagement with the arm opening 126 of the attachment 100. The shaft member 202 is embedded within the outsole 200, and is positioned to extend along the length of the outsole 200 such that the outsole recess protrusions 208 extend beyond the ends of the outsole 200. As can be seen from Figure 9(b), the shaft member 202 comprises a lipped protrusion portion 212 which is equivalent in function to the lipped protrusion edge 144 of Figures 5 and 6. However, in this case, the lipped protrusion portion 212 is integrally joincd to the shaft member 202.

[0082] The shaft member 202, the outsole protrusions 208 and the lipped protrusion edge 212 are made from a harder, tougher or stiffer material than the ground engaging surface of the outsole 200. This outsole structure serves to extend the useful life of the outsole recess protrusions 208 and the lipped protrusion edge 212, which are subjected to stress and wear. In turn, this permits a more secure fastening of the attachment 100 onto the outsole recess protrusion 208.

[0083] The protrusions are integrally formed with the shaft member 202 such as by molding. The shaft member 202 can be joined to the outsole 200 by molding the outsole 200 over the shaft member 202. Alternatively, the shaft member 202 and the

outsole 200 may be joined using adhesive or heat. Instead of the shaft member 202 extending along the entire length of the outsole 200, it could terminate at an arch region 210 of the outsole 200. In this case, two shaft members 202 can be provided. This outsole structure may also be applied to the embodiment illustrated in Figures 1 to 4. In this case, however, the shaft member would extend from side-edge to side-edge of the outsole.

[0084] A further alternative embodiment of the invention is illustrated in Figures 10 to 13 comprising attachments 300 having a body 302, an attaching portion 304 associated with the body 302 and a detaching portion 306 associated with the body 302. The attachments 300 include a heel attachment 308 and a front attachment 310 which include one differing feature which will be described later.

[0085] As with the previous embodiment, the body 302 has a body opening 312 which is defined by an opening edge 314. The body 302 is symmetrical about a longitudinal axis 315 which allows the attachment 300 to be reversible. The body 302 is made from a resiliently deformable material. The body 302 has first and second body surfaces 302a, 302b. Protrusions 303 extend from the first body surface 302a. In this embodiment, the protrusions are made of metal and are particularly suited to improving traction on icy surfaces.

[0086] The attaching portion 304 includes a first attaching portion 316 and a second attaching portion 318. The first attaching portion includes a portion 320 of the body opening edge 314 which is shaped to inter-engage with a portion of an outsole 324. The second attaching portion 318 is located at an oppositely facing side of the body 302 to the first attaching portion 316 and includes another portion 326 of the body opening edge 314 which is shaped to inter-engage with a portion of the outsole 324. It has the same structure as the first attaching portion 316. The edge portions 320, 326 taper towards each other (i.e. both edge portion thin in a direction towards the other edge portion). The structure and function of the first and second attaching portions 316, 318 are the same as that of the second attaching portion of Figures 5 to 8 and so need not be described further here.

[0087] The detaching portion 306 extends from the body, at the same side as the second attaching portion 318, and includes a tab member 328 having a free edge portion which can be manipulated by a user's hand to move the detaching portion 306 with respect to the body 302. The tab member 328 has a recessed portion for improving its gripability.

[0088] The front attachment 310 is larger than the heel attachment to suit its intended location on the outsole. Therefore, to provide stability to the body 302 and to maintain its shape, the body 302 includes a bridging member 331 extending across the body opening 312. The bridging member 331 is provided with a bridging opening 331a to promote the stretchability of the bridging member 331 for ease of attachment and detachment from the outsole 324.

[0089] As with the outsole of Figures 5 and 6, a recess 332, corresponding to each attachment 300, is formed within a ground-engaging surface 334 of the outsole 324 and has a recess bottom face (base) 335. At least one protrusion 336 extends from the recess base 335 and has oppositely facing lipped protrusion edges 336a for engaging with the body opening edges 314, 320 of the first and second attaching portions 304, 306 of the body. The two lipped portions of the protrusion 336 face away from each other to better retain the attachment 300 on the outsole 324. Openings 338 are provided in the recess base 335 for receiving the protrusions 303 extending from the first body surface 302a when that face 302a is nested in the outsole recess 332. As can be seen in Figures 10 and 11, the outsole recess 332 extends beyond the end of the tab member 328 to improve access to the tab member 328 for a user's hands.

[0090] The outsole recess 332 for receiving the front attachment 310 includes two side-by-side protrusions 336. The protrusions 336 are spaced apart to accommodate the bridging member 331 of the front attachment 310. Oppositely facing portions 344 of the protrusions are lipped to retain it in position when the attachment 310 is mounted to the outsole 324.

[0091] The attachments 300 are mounted to the outsole 324 by engaging the body opening edge 320 of the first attaching portion 316 with its corresponding lipped

protrusion edge 336. A user then pulls the attachment 300, for example by gripping the tab member 328 to stretch the body opening edge 326 of the second attaching portion 318 with its corresponding lipped protrusion edge 336. Releasing the tab member 328 yields a securely mounted attachment 300 to the outsole 324. In the case of the front attachment 310, after the tab member 328 has been released, force is applied to an exposed surface of the bridging member 331 to push it past the lipped portions 344 of the recess protrusion 336 and snap it into position.

[0092] To detach the attachment 300 from the outsole 324, a user grips the tab member 328 and moves it with respect to the body. By pulling the tab member 328 away from the body 302, the second attaching portion 318 can be disengaged from its corresponding protrusion edge 336. Moving the tab member 328 towards the body 302 and away from the ground-engaging surface 334 of the outsole 324 disengages the first attaching portion 316 from its corresponding protrusion edge 336. The motion is akin to peeling the attachment 300 from the outsole recess 332.

[0093] A yet further embodiment of the present invention is shown in Figures 14 to 16. There is provided an attachment 400 for mounting to an outsole 402. The attachment can be mounted to a heel portion 404 or a front portion 406 of the outsole 402 and differs only in size and shape according to its intended location. Each attachment 400 includes a body 408, and attaching and detaching portions 410, 412 which are associated with the body 408. The body 408 has first and second body surfaces 414, 416 and is releasably co-operable with the outsole 402 in a first position in which the first body surface 414 is disposable away from the outsole 402 and in a second position in which the second body 416 surface is disposable away from the outsole 402. The body 408 is symmetrical about two axes which allows the attachment 400 to be mounted to the outsole 402 with either body surface 414, 416 exposed and in a left to right and in a right to left configuration.

[0094] The first and second body surfaces have different ground engaging properties such as different material densities yielding different coefficients of friction. The body surfaces 414, 416 may be colored differently to help the user distinguish between the two surfaces. Both the first and second body surfaces 414, 416 are

substantially planar in that they do not have any protrusions extending from them. These surfaces can be considered to be substantially flat. Therefore, the attachments 400 are particularly well suited to sports shoes such as running or basketball shoes. One of the first and second body surfaces 414, 416 may have traction properties suited to indoor sports (e.g. it can be 'tacky') and the other body surface may be better suited to outdoor conditions (e.g. less 'tacky'). In this way, a sports player can switch the attachment between the first and second positions according to the traction required. The body 20 is illustrated as ellipsoid in shape but can be any other shape. The body is made from a resiliently deformable material.

[0095] The attaching portion 410 comprises a plurality of openings 418 formed through the body for engagement with corresponding protrusions of the outsole 402. It will be appreciated that the number, size, shape and arrangement of the openings can vary from the cylindrical openings illustrated in Figure 15 without departing from the scope of the invention.

[0096] The detaching portion 412 includes an outer edge portion 420 of the body 408. The outer edge portion 420 is arranged to be manipulatable by a user using only his or her hands to move the detaching portion 412 with respect to the body 408 when the attachment 400 is mounted to the outsole 402 in the first or second positions. Alternatively, as illustrated in Figure 16, the detaching portion may be recessed 422, on both sides of the attachment, to improve the manual manipulatability of the attachment 400.

[0097] The outsole 402 comprises a recess 424 in a ground-engaging surface 426 for receiving the body 408 of the attachment 400. The recess is sized and shaped to correspond with the size and shape of the body. The outsole recess 424 has a bottom surface (base) 428 from which a plurality of protrusions 430 extend which correspond in size, shape and location to the body openings 418 of the attachment 400. The protrusions 430 are engageably receivable in the body openings 418 to attach the attachment 400 to the outsole 402. The protrusions 430 may be lipped or mushroom-shaped. The outsole recess 424 may also have lipped edges to assist retention of the attachment 400 in the first or second positions.

[0098] Two oppositely facing portions of the ground-engaging surface 426 immediately adjacent the outsole recess 424 are provided with tapered openings 432 to allow a user to access the detaching portion 412 of the attachment 400 when the attachment 400 is mounted in the first or second positions. The portions of the outsole recess 424 can be said to extend beyond the periphery of the body 408 of the attachment 400 when it is attached to the outsole and may taper towards the attachment 400. This provides the attachment 400 with free ends which can be gripped by the user and moved relative to the body 408 to detach the attachment 400 from the outsole recess 424. The tapering may also minimize the amount of debris that can collect in the recess.

[0099] The attachment 400 is attached to the outsole by placing the attachment 400 over the outsole recess 424 and lining up the openings 418 in the attachment 400 with the protrusions 430 of the outsole recess 424 and pressing the attachment 400 into the outsole recess 424 such that the openings 418 engageably receive their corresponding protrusions. The attachment 400 is snap-fitted onto the outsole 402.

[00100] The attachment is detached from the outsole by a user inserting his or her finger or thumb into one of the tapered openings 432 of the outsole 402 and gripping an edge portion of the attachment (i.e. the detaching portion 412). The user then moves the detaching portion 412 with respect to the rest of the body 408 to lift the attachment 400 away from the outsole recess 424 and disengages the protrusions 430 from the openings 418.

[00101] Although the fastening system has been described and illustrated as openings 418 and protrusions 430, they may also comprise other inter-engaging formations such as strips, openings, ridges, pins, etc. or a combination thereof. For example, openings may be provided between studs along the perimeter of the attachment 400, and pins projecting from the recess may penetrate and be received into said openings to hold the attachment in place. A person skilled in the art will appreciate that combinations of such molded fastening members are possible which are contemplated to be technically equivalent and under the scope of the present invention.

[00102] Figures 17 and 18 show a yet further embodiment of the invention in which

there is provided an attachment 500 and an outsole 502. As with previous embodiments, the attachment 500 comprises a body 504, an attaching portion 506 associated with the body and a detaching portion 508 associated with the body 504. The body 504 has first and second body surfaces 510, 512 and an opening 514 formed therethrough. Protrusions 516 extend from the first body surface 510.

[00103] The attaching portion comprises a first pair of arms 518 and a second pair of arms 520 extending from oppositely facing ends of the body 504. Each arm 521 has a free end 522, a connecting end 524 and a main shaft 525. Each arm 521 is moveably joined to the body 504 such that the arm 521 is moveable with respect to the body 504. As can be seen in Figure 17(b), the arm 521 has a modular construction where the free end 522 and the main shaft 525 are moveable with respect to the connecting end 524. The arms 521 could also be rigid along their length and be joined to the body by a hinge, for example, about which they move.

[00104] The attaching portion includes the free end 522 of the arm 521 which is receivably engageable in openings in the outsole 502. The arms 521 in each pair are substantially parallel to each other when the free ends 522 are engageably received in the outsole 502. The free end of the arm may be made from a more rigid material than the rest of the arm for improved retention in the outsole 502. The detaching portion includes an edge portion 526 of each arm 521 which is moveable with respect to the body 504 by virtue of the arm 521 being moveable with respect to the body 504. A user can move the arms 521 and hence the detaching portion 508 using his or hands when the attachment 500 is in position on the outsole 502.

[00105] The outsole 502 of this embodiment comprises a recess 528 in a ground engaging surface at each of the heel and forefoot portions of the outsole 502 for receiving the attachments 500. Each recess has a bottom surface (base) 532 and side walls 534. Openings 536 are provided in the side walls 534 for engageably receiving the free ends 522 of the arms 521. The position of the openings 536 correspond to the location of the free ends 522 of the arms 521 such that, when the body 504 is nested in the recess 528, moving the arms 521 of each pair 518, 520 away from each other, towards the recess side wall 534, inserts their free ends 522 into the openings 536 to

fasten the attachment 500 to the outsole 502 (extended position). Moving the arms 521 of each pair towards each other, away from the recess side wall 534 disengages their free ends 522 from the openings 536 to release the attachment 500 from the outsole 502 (retracted position). Specifically, the recess side wall 534 includes, at one end of the recess 528, a pair of oppositely facing openings 536 corresponding to the first pair of arms 518. At another end of the recess, the recess side wall 534 includes another pair of oppositely facing openings 536 corresponding to the second pair of arms 520. The outsole recess 528 extends beyond the attachment 500 when the attachment 500 is attached to the outsole 502. This provides enough space around the arms 521 of the attachment 500 to allow a user to manually manipulate the arms 521 and the detaching portion 508.

[00106] At least one protrusion 538 extends from the bottom surface (base) 532 of the recess 528 to be receivably engaged in the body opening 514. The protrusion 538 serves the dual purpose of locating the attachment 500 in the correct position in the recess and enhancing the attachment security of the attachment 500 to the outsole. An edge of the protrusion may be lipped to enhance the attachment even further such that the attachment 500 can be snap-fitted over the protrusion 538. As for the previous embodiments, openings (not shown) may be provided in the recess bottom surface (base) 532 for receiving the protrusions 516 extending from the first body surface 510 when the attachment 500 is positioned with its second body surface 512 facing outwardly.

[00107] The attachment 500 is mounted on the attachment by aligning the body opening with the protrusion and nesting the attachment 500 in the recess 528, when the arms 521 are in the retracted position (as illustrated in Figure 17(b)). The arms are then moved to the extended position (as illustrated in Figure 17(a)) by the user pushing each arm 521 of a pair of arms 518, 520 away from each and towards the opening with which it engages.

[00108] The attachment is removed from the outsole by moving the arms 521 of a pair of arms 518, 520 towards each other and away from its mating opening. The moveable connection of the arm 521 to the body 504 may be by means of a spring

and/or latch connection (not shown) such that the arm 521 is resiliently biased to the retracted position and moving it to the extended position locks it in this position. In this case, moving the arm 521 away from the other arm of its pair, and towards its mating opening, will release the latch to spring the arm 521 back into the retracted position. Each of the arms 521 are sequentially released from their corresponding openings in this way to release the attachment 500 from the outsole 502. In an alternative embodiment (not shown) the arms 521 may be arranged to clamp the attachment into position in the recess, instead of engaging with holes in the recess.

[00109] This embodiment of the invention is particularly useful for outsoles assembled by welt stitching since the recesses 528 and the attachments 500 are enclosed within the outer perimeter of the outsole 502. Also, excessive wear is avoided that may result with embodiments in which components extend up to or beyond the outsole perimeter, especially at the toe-end of the outsole.

[00110] Referring now to Figures 1 to 13, and 17 to 18, and particularly to Figures 19 and 20, the various designs of the protrusions will now be described. For example, the protrusions extending from a body surface of the attachment may vary from the form illustrated. Figure 19 shows a cleat 600 of the present invention, attachable to a body 602 of an attachment 604. The cleat 600 has a head 606 having a ribbed outer surface 608 which can also be of any other shape suitable for increasing the traction in ice, snow or mud The head 606 is connected to an anchoring plate 610 via a neck 612. The cleat 600 is intended to be pre-formed and joined to the body 602 of the attachment 604 during the forming of the body 602. As can be seen from Figure 19(b), the cleat 600 is attached to the body 602 such that the cleat head 606 projects beyond a body surface 614 of the body 602. The neck 612 and the anchoring plate 610 are embedded in the attachment body 602. The anchoring plate anchors and stabilizes the cleat 600 within the attachment body 602, and reduces the chance of the cleat 600 being pulled out of the body 602. The cleat 600 may also be provided with a collar (not shown) adjacent its head 606 which will lie on the body surface 614 of the attachment 604 when the cleat 600 is joined to the attachment 604. This collar further stabilizes the cleat and reduces the chance of the cleat becoming further embedded in the attachment body 602. In an alternative embodiment, the neck 612 may extend through

the thickness of the attachment body 602 and protrude from the other body surface 616. It will be appreciated that if the attachment 604 is made from a multi-layer construction, the anchoring plate 610 may be embedded into a stiffer layer and coated with a more resilient material.

[00111] Other shapes of protrusions are contemplated such as those shown in Figure 20. In Figure 20 (a) a protrusion 700 is provided with two teeth 702, 704, one 702 extending further than the other 704 from a body 706 of an attachment. The applicant has found this protrusion to be particularly effective in improving the traction in muddy grass surfaces. Figure 20(b) and (c) illustrate further alternative shapes of protrusions which may be molded integral with the attachment body of an attachment. In addition, since attachments according to the present invention are completely removable, it is contemplated that different types of similarly shaped attachments with different pairs of ground engaging properties may be substituted in a given footwear outsole, to select from other properties.

[00112] The invention encompasses a body having first and second body surfaces. These body surfaces can differ from those illustrated herein, such as for example, the surfaces may also include taps (for tap dancing footwear) having different sounds on engagement with a surface, or surfaces with different degrees of friction as may be desirable for bowling shoes, or other sports shoes. Surfaces with varied texture, such as a sponge-like material, are also envisaged for wet weather condition sports shoes, for example.

[00113] Furthermore, although the present invention has been described and illustrated by reference to two attachments, one mountable to a heel portion of an outsole and the other one to a fore (front) portion of the outsole, the attachments can be provided as a single attachment mounted to either portion of the outsole, or extending from the heel to the metatarsus or toe portions, as directed by the needs of the contemplated application.

[00114] Although the attachment has been described as being releasably attachable to outsoles of footwear, it can also be attachable to knee and elbow pads or anything else

which would require a surface change. The outsole need not be provided with a recess for receiving the attachment. The attachment could be fixed over the ground-engaging surface of the outsole such that the exposed surface of the attachment forms the ground engaging surface.

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[00115] It should be appreciated that the invention is not limited to the particular embodiments described and illustrated but includes all modifications and variations falling within the scope of the invention as defined in the appended claims.

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Reference characters and their features

Reference character	Feature
10	attachment
12	outsole
14	footwear
16	heel attachment
18	front attachment
20	attachment body
26	first body surface
28	second body surface
30	ground-engaging protrusion
32	attachment body opening
34	attachment body longitudinal axis
35	attachment body traverse axis
38	attachment body arm opening
40	attachment body arm free end
41	attachment body arm join end
44	ribbed portion of the front attachment
46	outsole rear region
48	outsole heel end
50	outsole heel ground-engaging surface
52	outsole forefoot
54	outsole toe-end
56	outsole forefoot ground-engaging surface
58	outsole arch
60	outsole recess
62	recess bottom surface
64	outsole left side
66	outsole right side
68	outsole recess protrusion
70	protrusion of the recess bottom surface 62
72	free end of the outsole protrusion
100	attachment
101	first attaching portion of the attachment body
102	outsole
104	heel attachment
106	front attachment

Reference character	Feature
108	body of the attachment 100
110	attaching portion of the attachment 100
112	detaching portion of the attachment 100
114	first body surface of body 108
116	second body surface of body 108
118	protrusion of the body 108
120	body opening
121	opening edge of the body opening 120
122	longitudinal axis
123	second attaching portion of the attachment body
124	arm of the first attaching portion 101
126	arm opening
128	portion of the opening edge 121
130	outer edge portion of the detaching portion 112
132	outsole recess
134	outsole recess protrusion
136	heel-end of the outsole 102
138	toe-end of the outsole 102
140	bottom face of the outsole recess 132
142	second protrusion of the bottom face 140
144	edge of the protrusion 142
146	groove/slot
148	ground engaging surface
200	outsole
202	shaft member of the outsole 200
204	toe-end of the shaft member 202
206	heel-end of the shaft member 202
208	outsole recess protrusion
210	arch region of the outsole 200
212	protrusion of the shaft member 202
300	attachment
302	body of the attachment 300
302a	first body surface
302b	second body surface
303	protrusion of the body surface 302a
304	attaching portion of the body 302
306	detaching portion of the body 302

Reference character	Feature
308	heel attachment of the attaching portion 304
310	front attachment
312	body opening of the body 302
314	opening edge of the body opening 312
315	longitudinal axis
316	first attaching portion of the attaching portion 304
318	second attaching portion of the attaching portion 304
320	portion of the first attaching portion
324	portion of the outsole
326	portion of the second attaching portion 318
328	tab member of second attaching portion 318
331	bridging member of the body 302
331a	opening of the bridging member 331
332	outsole recess
334	ground-engaging surface
335	recess bottom face
336	protrusion of the recess bottom face 335
336a	protrusion edge
338	opening of the recess bottom face 335
344	oppositely facing portion of the protrusion 336
400	attachment
402	outsole
404	heel portion of the outsole 402
406	front potion of the outsole 402
408	body attachment
410	attaching portion of the body 408
412	detaching portion of the body 408
414	first body surface
416	second body surface
418	opening of the attaching portion 410
420	outer edge of the detaching portion 412
422	recess of the detaching portion 412
424	outsole recess
426	ground-engaging surface
428	outsole recess bottom surface
430	protrusion of the outsole recess bottom surface 428
432	tapered opening

Reference character	Feature
500	attachment
502	outsole
504	body attachment
506	body attaching portion
508	body detaching portion
510	first body surface
512	second body surface
514	body opening
516	body protrusion
518	first pair of arms of the body attaching portion 506
520	second pair of arms of the body attaching portion 506
521	arm of the arms of the body attaching portion 506
522	arm free end
524	arm connecting end
525	arm main shaft
526	edge portion of the arm
528	outsole recess
532	outsole recess bottom surface
534	outsole recess side wall
536	outsole recess side wall opening
538	protrusion of the outsole recess bottom surface 532
600	cleat
602	body
604	attachment
606	cleat head
608	cleat outer surface
610	anchoring plate
612	neck
614	body surface
616	second body surface
700	protrusion
702	protrusion teeth
704	protrusion teeth
706	attachment body

Claims:

1. A removable attachment for an item of footwear having an outsole, the attachment comprising:

a body having first and second body surfaces, the body being releasably co-operable with the outsole in a first position in which the first body surface is disposable away from the outsole and in a second position in which the second body surface is disposable away from the outsole;

an attaching portion which is connected to the body and which includes an inter-engageable member for releasably attaching the attachment in the first and second positions; and

a detaching portion which is connected to the body, the detaching portion being arranged to be manipulatable by a user when in the first and second positions to release the attachment from the item of footwear

wherein the first body surface has a first surface-engaging property and the second body surface has a second surface-engaging property different from the first surface-engaging property.

2. An attachment as claimed in claim 1, wherein the detaching portion has an edge portion moveable with respect to the body to allow the attachment to be released from the item of footwear.

3. An attachment as claimed in claim 2, wherein the edge portion is arranged for manipulation by a user's hand when the attachment is in the first or second positions to move the edge portion with respect to the body.

4. An attachment as claimed in any one of claims 1 to 3, wherein the body is arranged to be receivable in a recess of the outsole.

5. An attachment as claimed in any one of claims 1 to 4, wherein the first and second surface-engaging properties are selected from frictional and sound properties of the surface.

6. An attachment as claimed in any one of claims 1 to 5, wherein the first body

surface includes at least one ground-engaging protrusion for frictional engagement with a surface.

7. An attachment as claimed in claim 6, wherein the at least one ground-engaging protrusion is an anti-skid cleat.

8. An attachment as claimed in claim 6 or claim 7, wherein the first body surface is disposable towards the outsole when the body is in the second position and the at least one ground-engaging protrusion is shaped to be receivable in at least one corresponding outsole recess opening in the outsole when the body is in the second position.

9. An attachment as claimed in any one of claims 1 to 8, wherein the body has at least one axis of symmetry for positioning in the first and second positions.

10. An attachment as claimed in claim 9, wherein the attachment is elongate and the axis of symmetry is along a longitudinal axis of the attachment.

11. An attachment as claimed in any one of claims 1 to 10, wherein the body comprises a main body portion and an outer edge portion, the detaching portion including the outer edge portion.

12. An attachment as claimed in claim 11, wherein the body is resiliently deformable.

13. An attachment as claimed in claim 11 or claim 12, wherein the body includes at least one attachment body opening for engageably receiving an outsole protrusion.

14. An attachment as claimed in any one of claims 11 to 13, wherein at least one of the first and second surfaces of the body are substantially planar.

15. An attachment as claimed in any one of claims 11 to 14, wherein the body is disc-shaped.

16. An attachment as claimed in any one of claims 1 to 10, wherein the attaching

portion extends from one side of the body.

17. An attachment as claimed in claim 16, wherein the attaching portion includes an arm having an arm opening.

18. An attachment as claimed in claim 16 or claim 17, wherein the attaching portion and the body are integrally formed into a single piece.

19. An attachment as claimed in claim 18, wherein the single piece is resiliently deformable.

20. An attachment as claimed in claim 19, wherein the single piece includes at least a first layer of material forming the body and at least a second layer of material forming the attaching portion, the first layer being less resilient than the second layer.

21. An attachment as claimed in any one of claims 16 to 20, wherein the detaching portion is integral with the attaching portion.

22. An attachment as claimed in claim 21, wherein the detaching portion includes an outer edge portion of the attaching portion.

23. An attachment as claimed in any one of claims 16 to 22, further including a second attaching portion located at another side of the body from the first attaching portion.

24. An attachment as claimed in claim 23, wherein the second attaching portion includes an edge defining an attachment body opening in the body, the edge being shaped to engage with an outsole protrusion.

25. An attachment as claimed in claim 24, wherein at least a portion of the edge is tapered.

26. An attachment as claimed in claim 23 when dependent on claim 18 wherein the second attaching portion includes a second arm having an arm opening, the second

arm extending from a different side of the body to the first arm.

27. An attachment as claimed in claim 26, wherein the body extends across the outsole when the attachment is in the first or second positions.

28. An attachment as claimed in any one of claims 23 to 27, wherein the first and second attaching portions extend from oppositely facing sides of the body from each other.

29. An attachment as claimed in claim 16, wherein the attaching portion includes a first arm having a free end, the free end being arranged to be engageably receivable into an outsole recess opening of the outsole.

30. An attachment as claimed in claim 29, wherein the free end is moveable with respect to the body between an engaged position and a retracted position.

31. An attachment as claimed in claim 30, wherein the first arm is resiliently biased towards the retracted position.

32. An attachment as claimed in claim 30 or claim 31, wherein the first arm is attached to the body by a hinge member.

33. An attachment as claimed in any one of claims 29 to 32, wherein the detaching portion includes an edge portion of the first arm.

34. An attachment as claimed in any one of claims 29 to 33, wherein the attaching portion includes a second arm having a free end, the free end being arranged to be engageably receivable into an outsole recess opening of the outsole, the second arm being located adjacent the first arm such that moving the first and second arms towards each other disengages their free ends from the outsole, and moving the arms away from each other engages the free ends of the arms with the outsole.

35. An attachment as claimed in claim 34, the attaching portion further including a third and a fourth arm, each having a free end arranged to be engageably receivable

into at least one outsole recess opening of the outsole, the third and fourth arms extending from a substantially oppositely facing end of the body from the first and second arms.

36. An attachment as claimed in claim 16, wherein the detaching portion includes a tab member extending from the body, the tab member having an edge portion for manipulation by a user's hand to detach the attachment from the item of footwear.

37. An attachment as claimed in claim 36, wherein the tab member has a recessed holding portion.

38. An attachment as claimed in claim 36 or claim 37, wherein the body has an attachment body opening, and the inter-engageable member includes an edge defining the attachment body opening.

39. An attachment as claimed in claim 38, wherein the outsole includes at least one outsole protrusion and the edge is shaped to engage with the outsole protrusion.

40. An attachment as claimed in claim 39, wherein at least a first portion of the edge is tapered.

41. An attachment as claimed in claim 40, wherein a second portion of the edge is tapered, the second edge portion being on a substantially oppositely facing side of the attachment body opening to the first edge portion.

42. An attachment as claimed in claim 41, wherein the first and second edge portions taper away from each other.

43. An attachment as claimed in any one of claims 38 to 42, further comprising a bridging member extending across the attachment body opening.

44. An attachment as claimed in claim 42, wherein the bridging member comprises a bridge opening formed therethrough.

45. An attachment as claimed in any one of claims 36 to 44, wherein the body is resiliently deformable.

46. An outsole for an item of footwear, the outsole having a surface-engaging face and comprising at least one inter-engageable member for releasably attaching an attachment in a first position in which a first body surface of the attachment is disposable away from the outsole and in a second position in which a second body surface is disposable away from the outsole, the first body surface has a first surface-engaging property and the second body surface has a second surface-engaging property different from the first surface-engaging property, wherein the inter-engageable member comprises at least one outsole protrusion extending from the outsole for engagement with a corresponding at least one attachment body opening in the attachment to releasably attach the attachment to the outsole.

47. An outsole as claimed in claim 46, the outsole being shaped to allow the detaching portion of the attachment to be manipulatable by a user's hand to detach the attachment from the item of footwear.

48. An outsole as claimed in claim 47, the outsole including a recessed portion adjacent the attachment when the attachment is attached to the outsole.

49. An outsole as claimed in claim 46, wherein the at least one outsole protrusion is at a toe-end, a heel-end or at a side of the outsole.

50. An outsole as claimed in any one of claims 46 to 49, wherein the at least one outsole protrusion is resiliently deformable.

51. An outsole as claimed in any one of claims 46 to 50, wherein the at least one outsole protrusion is integral with a shaft member which is joined to the outsole.

52. An outsole as claimed in any one of claims 46 to 51, wherein the shaft member is more rigid than the outsole.

53. An outsole as claimed in any one of claims 46 to 52, the surface-engaging face

having an edge defining a surface-engaging face recess formed therein, the surface-engaging face recess being shaped to receive at least a portion of the attachment.

54. An outsole as claimed in claim 53, wherein a portion of the edge of the surface-engaging face recess is shaped to allow a user to manipulate by hand the attachment when the attachment is in the first or second positions to detach the attachment from the item of footwear.

55. An outsole as claimed in claim 54, wherein a portion of the edge of the surface-engaging face recess is lipped to allow retention of the attachment in the surface-engaging face recess.

56. An outsole as claimed in any one of claims 52 to 55, wherein the surface-engaging face recess has a base from which extends an outsole protrusion, the outsole protrusion being shaped to engage with a corresponding attachment body opening in the attachment to releasably attach the attachment to the item of footwear.

57. An outsole as claimed in claim 56, wherein the surface-engaging face recess base includes at least one outsole recess opening formed therein which is shaped to receive at least one corresponding ground-engaging protrusion of the attachment.

58. An outsole as claimed in any one of claims 52 to 57, wherein the surface-engaging face recess has a side wall, the side wall having at least one side wall opening for engagement with a corresponding arm of the attachment.

59. An outsole as claimed in any one of claims 46 to 58, including an attachment according to any one of claims 1 to 45.

60. An item of footwear including an outsole according to any one of claims 46 to 59.

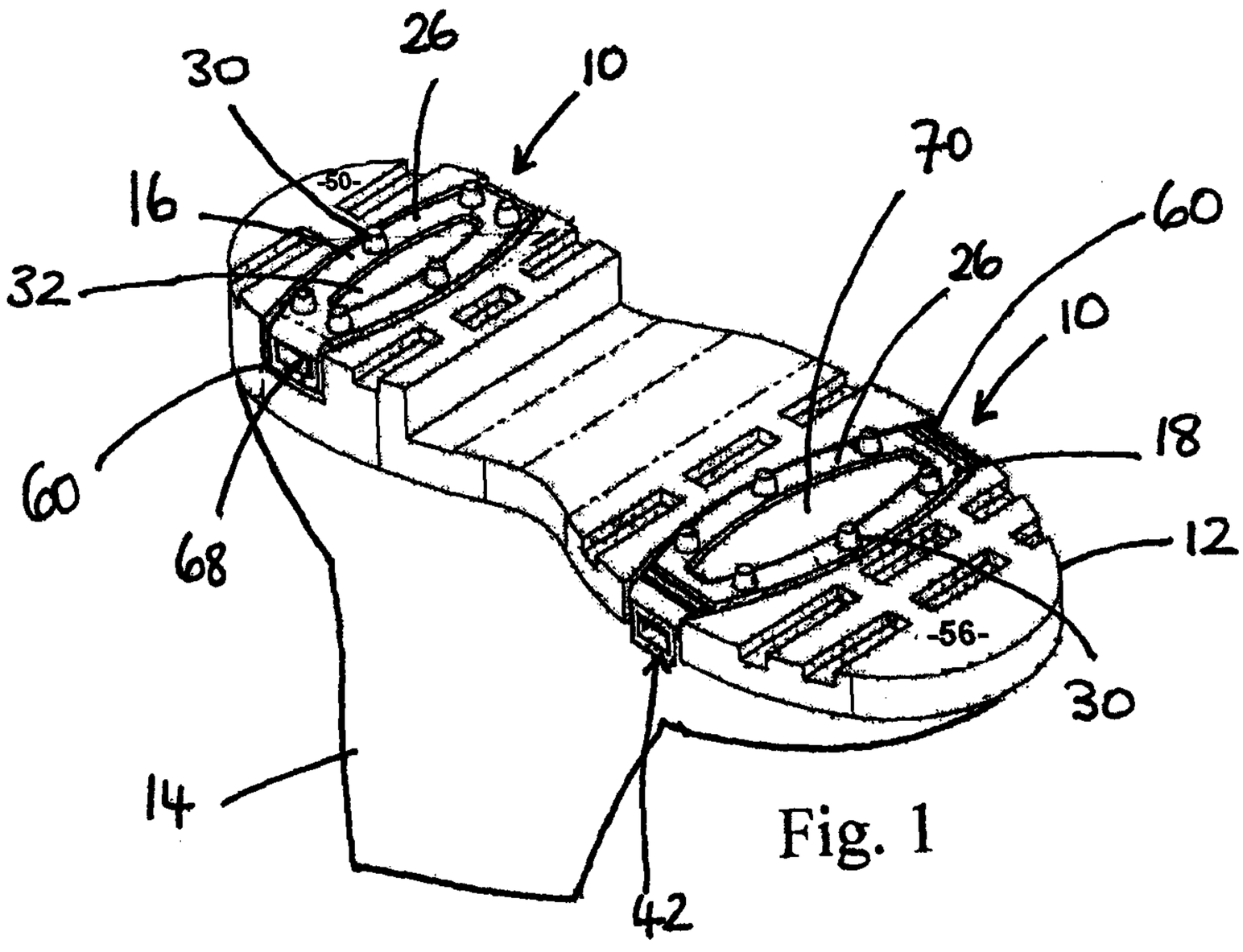

Fig. 1

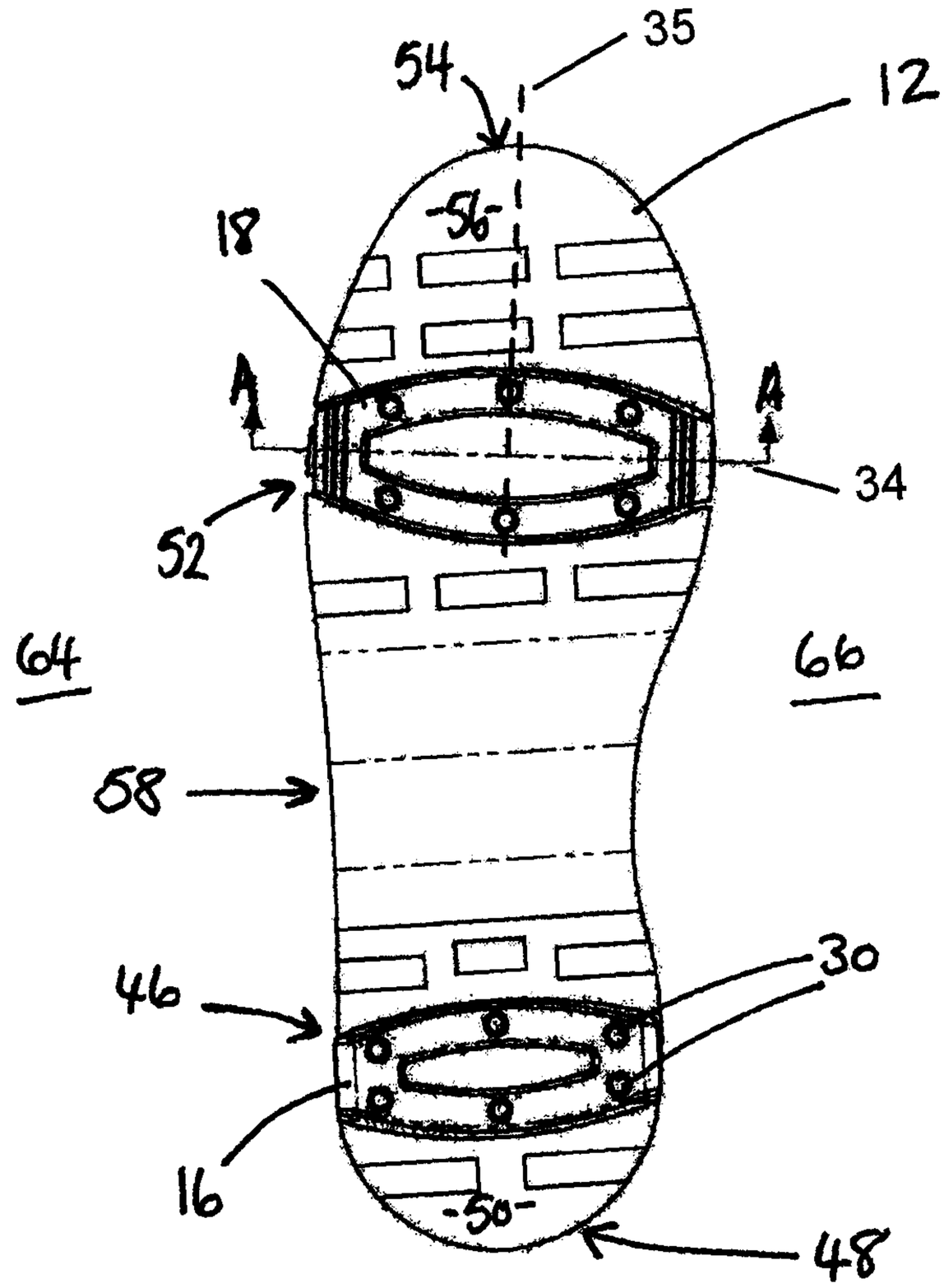
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Fig. 2(a)

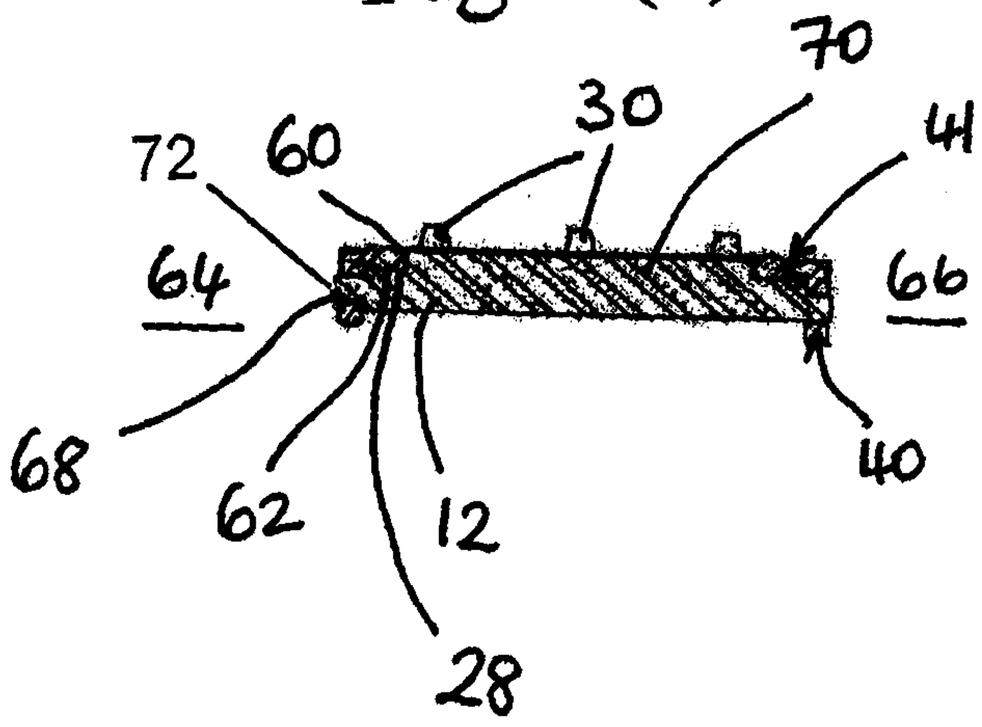
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Fig. 2(b)

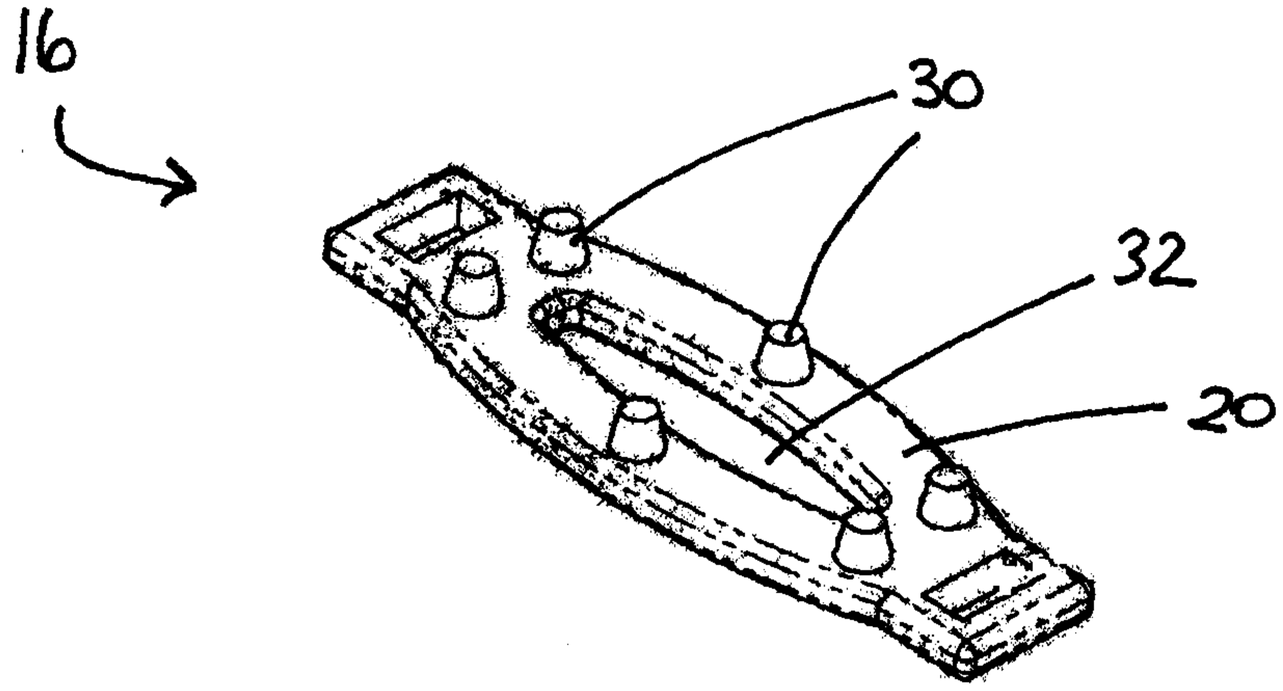

Fig. 3(a)

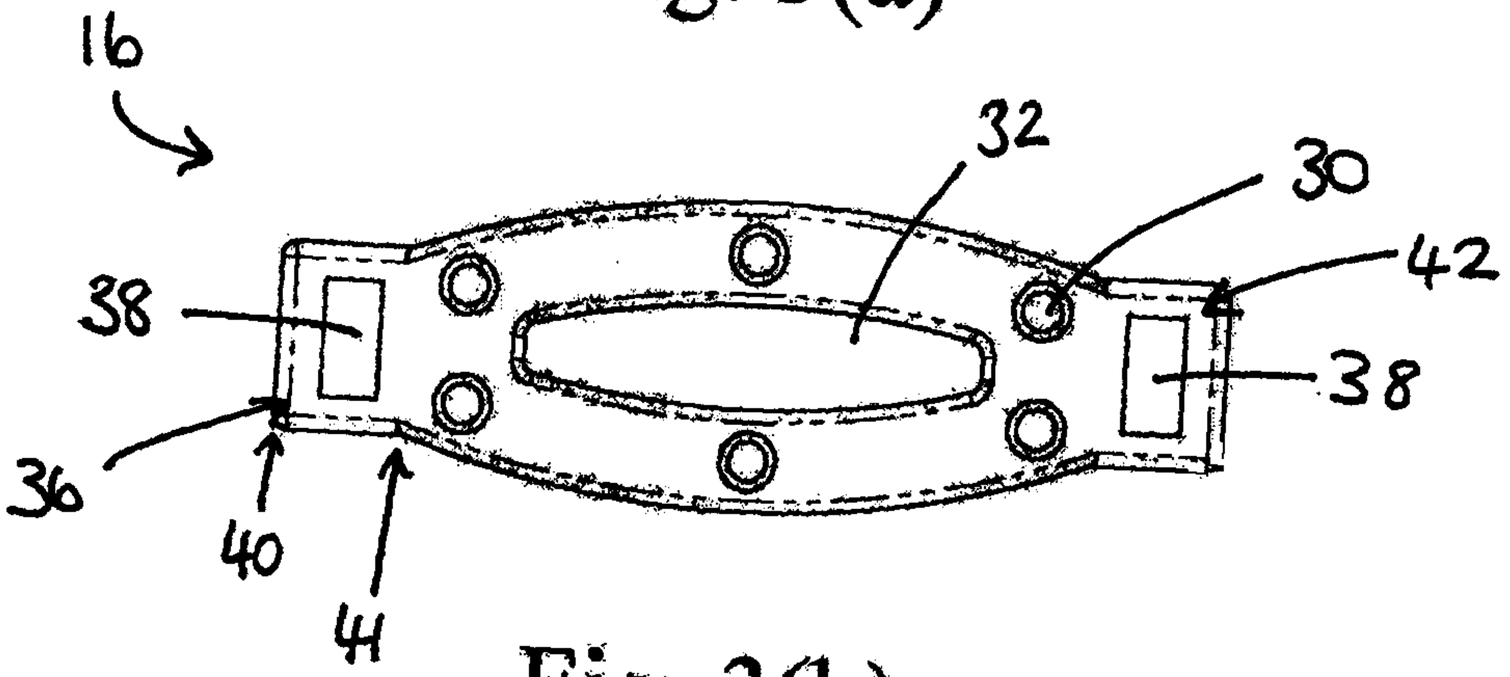

Fig. 3(b)

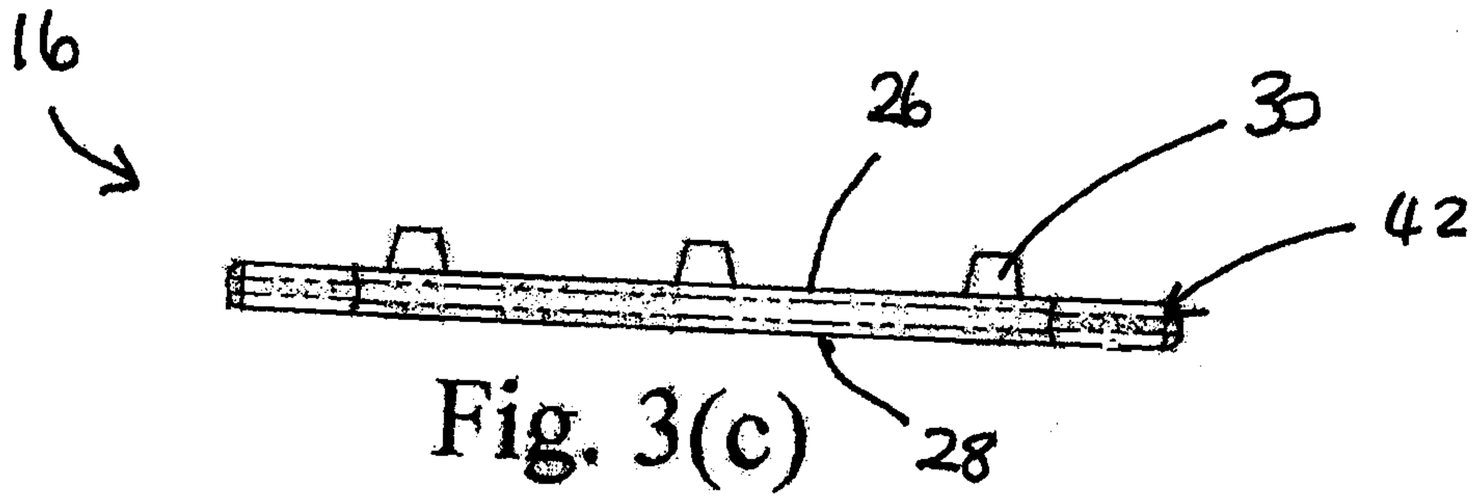

Fig. 3(c)

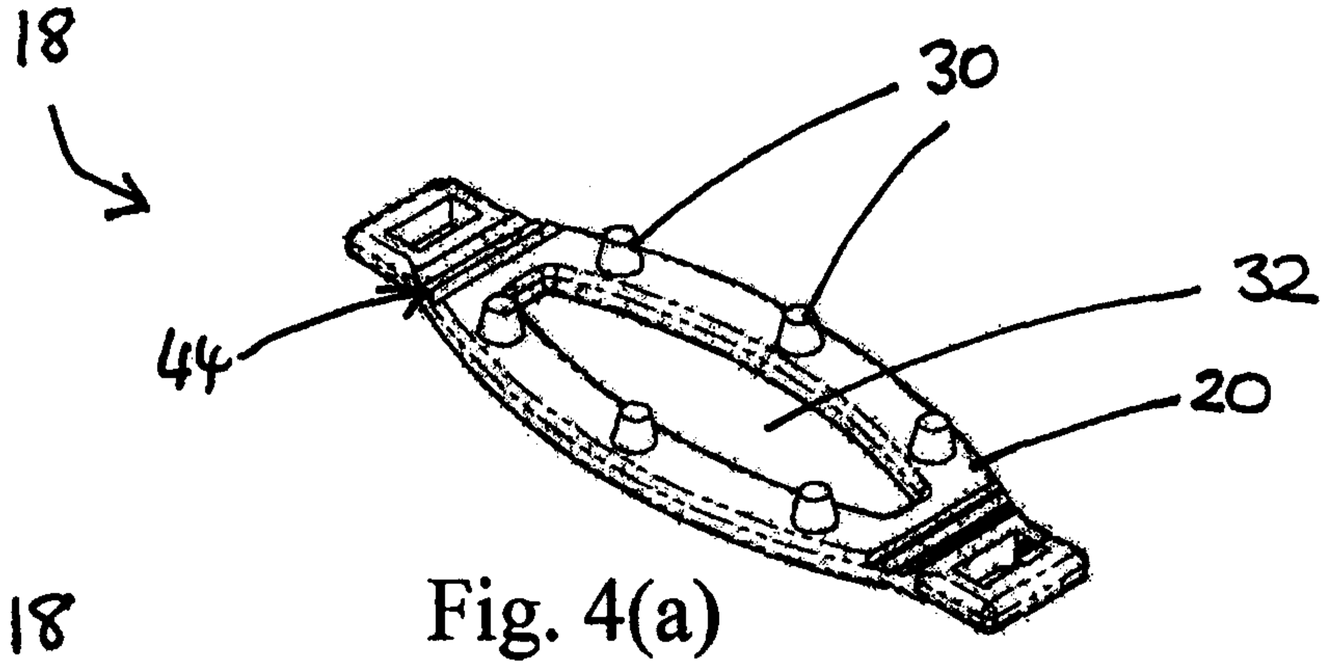

Fig. 4(a)

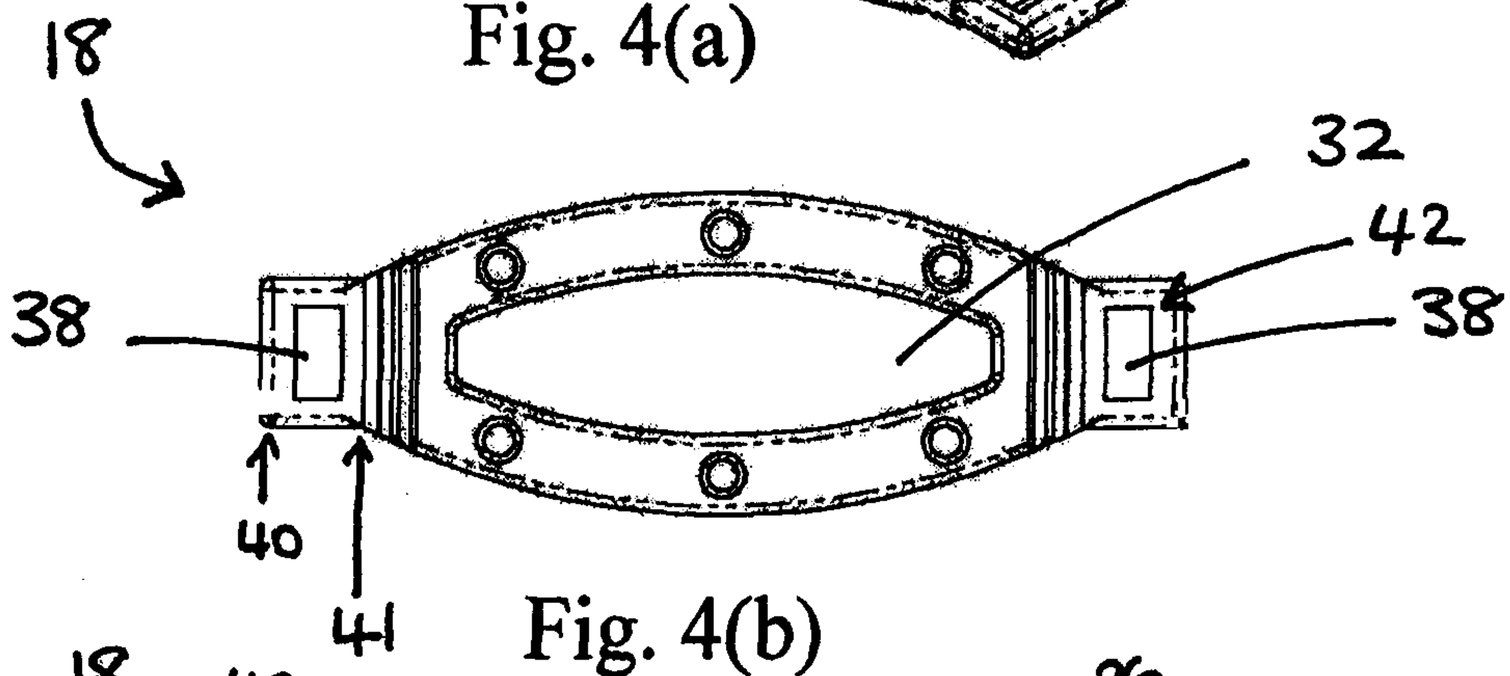

Fig. 4(b)

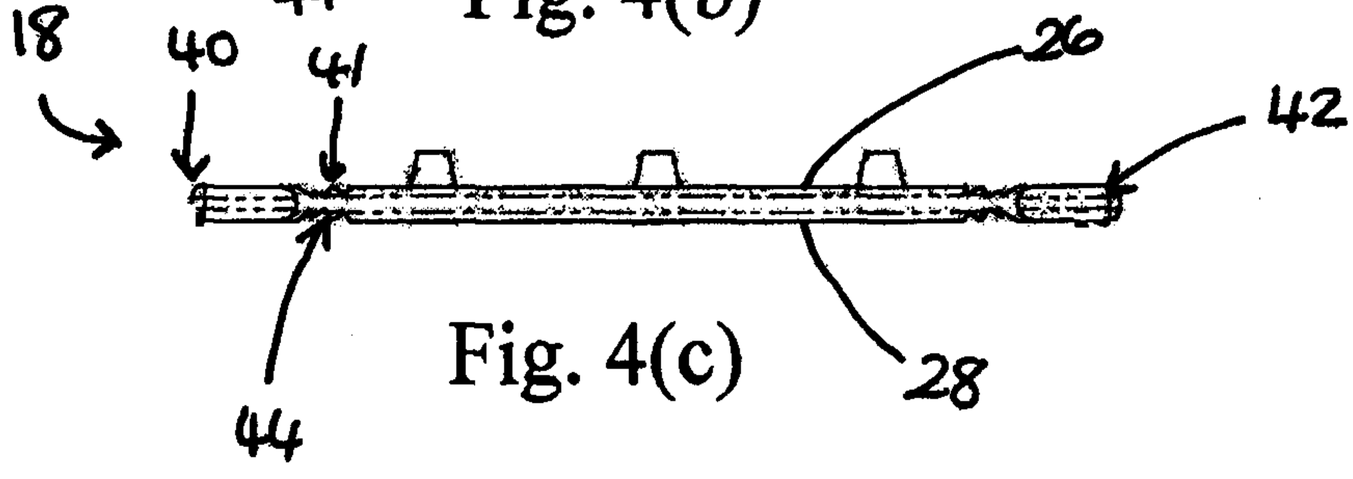

Fig. 4(c)

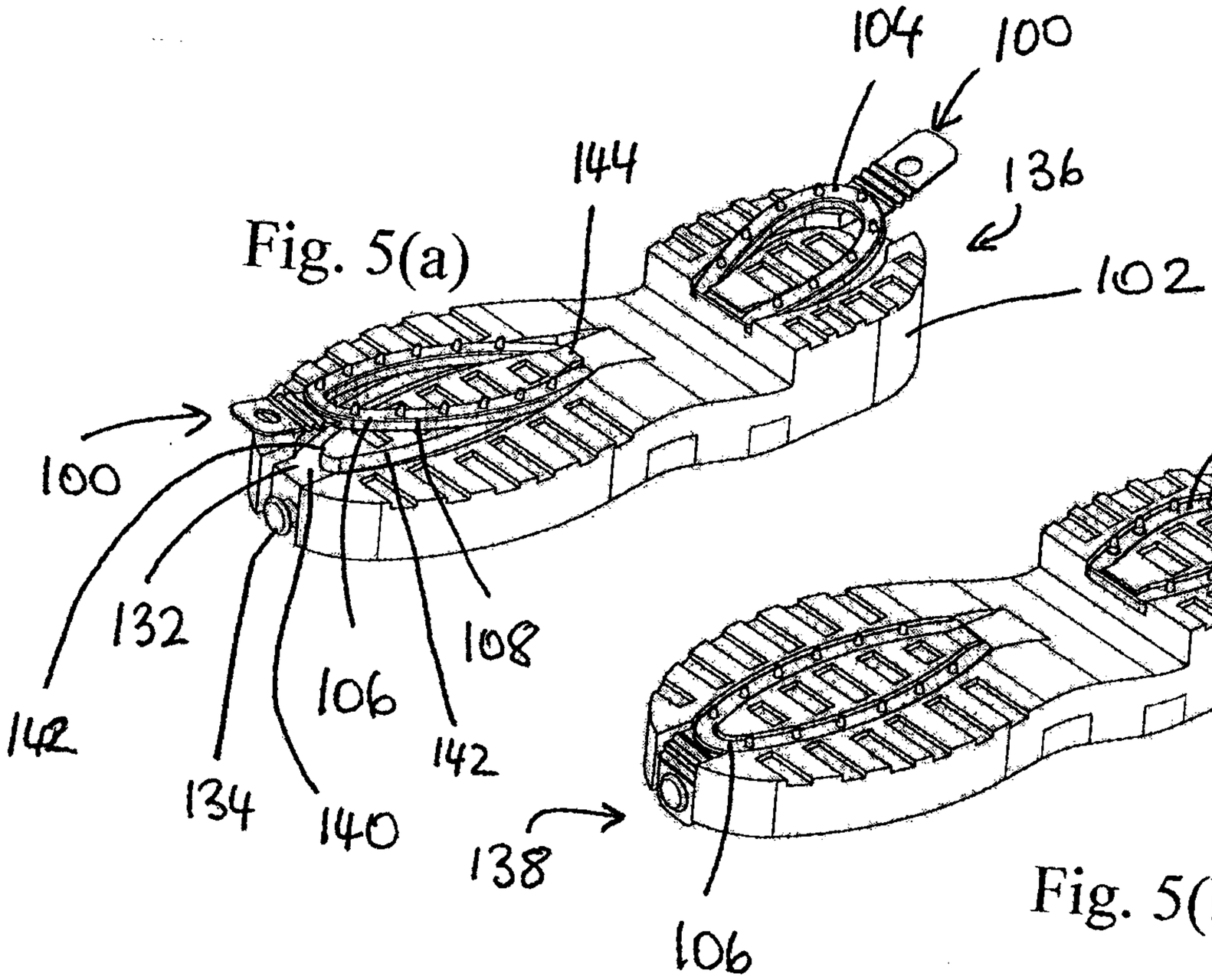
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Fig. 5(a)

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Fig. 5(b)

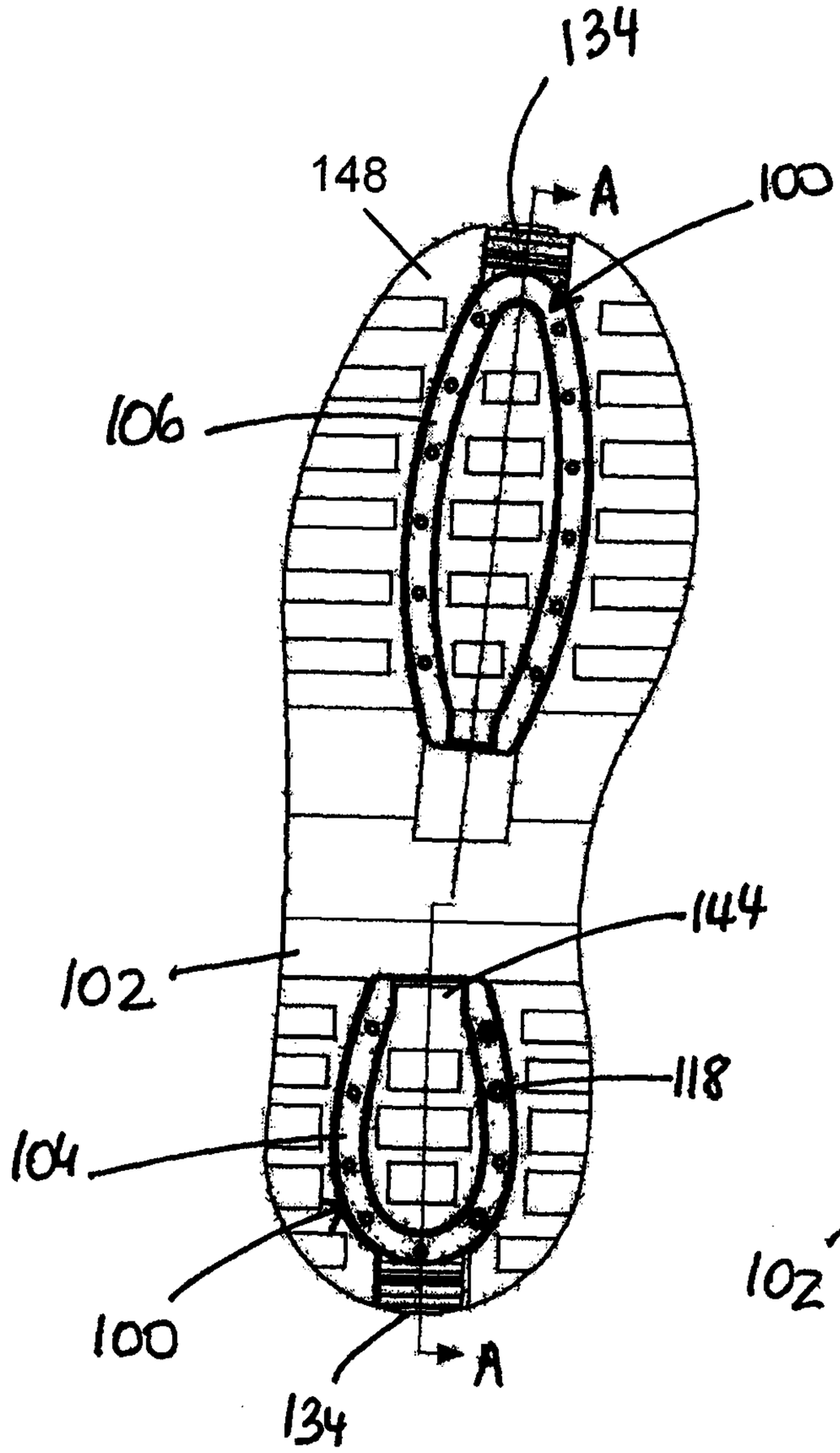
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Fig. 6(a)

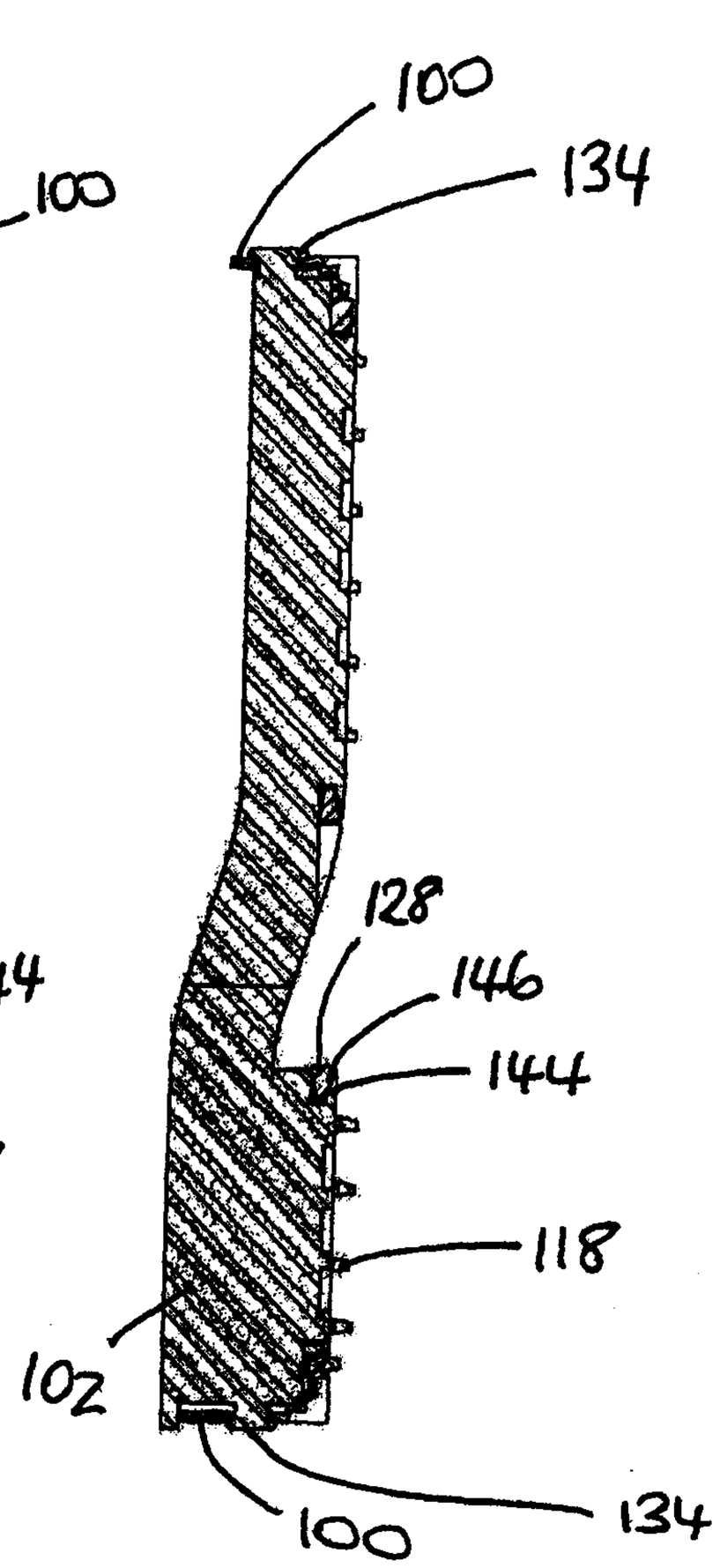
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Fig. 6(b)

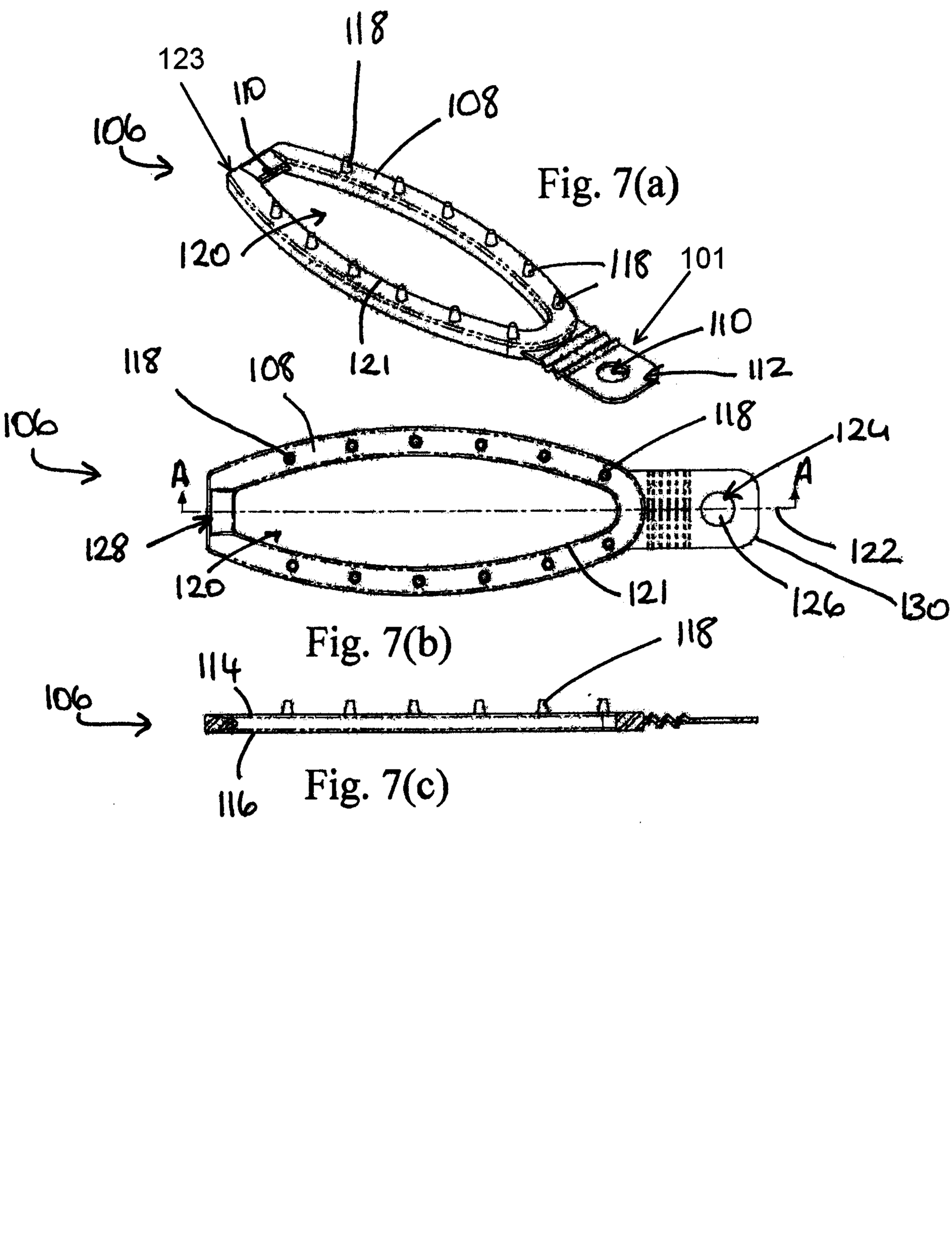

Fig. 7(a)

Fig. 7(b)

Fig. 7(c)

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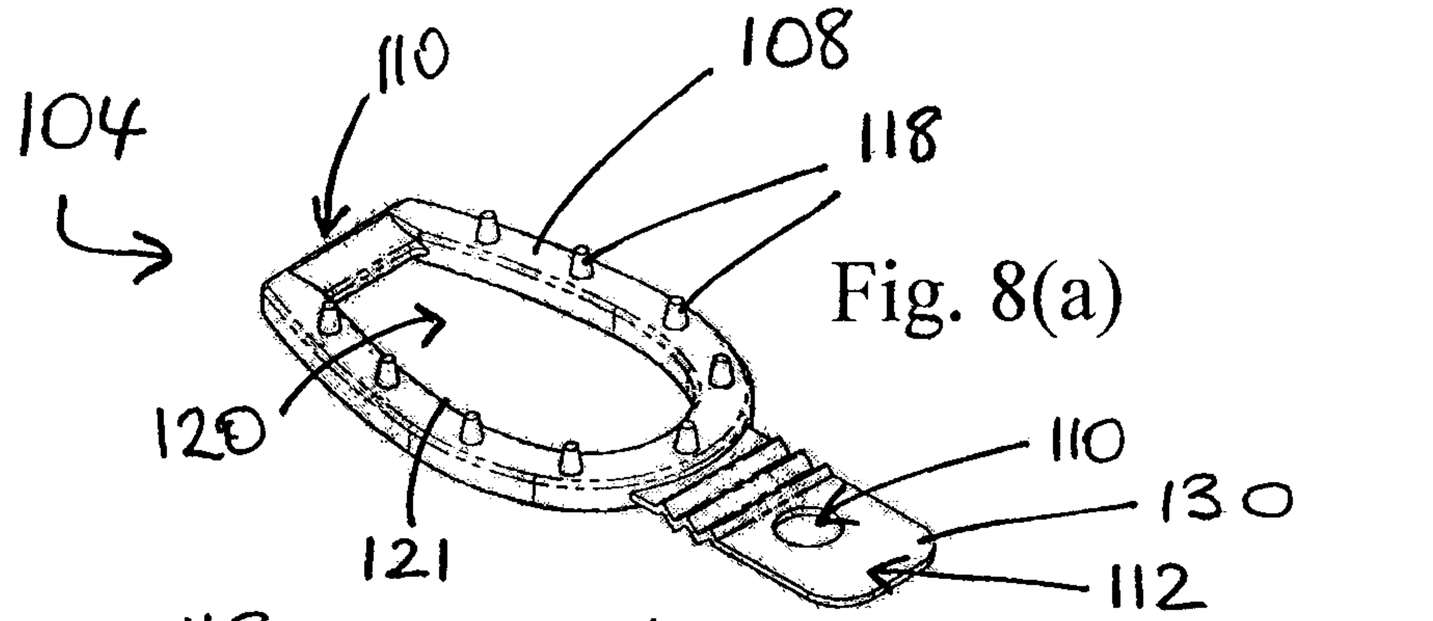

Fig. 8(a)

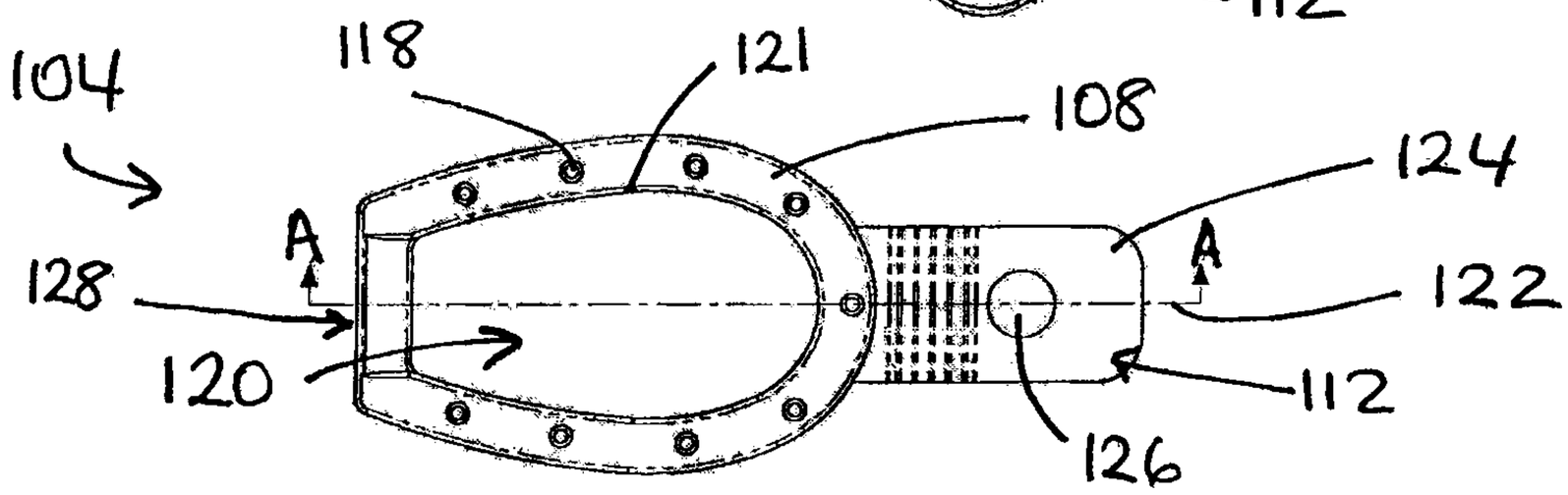

Fig. 8(b)

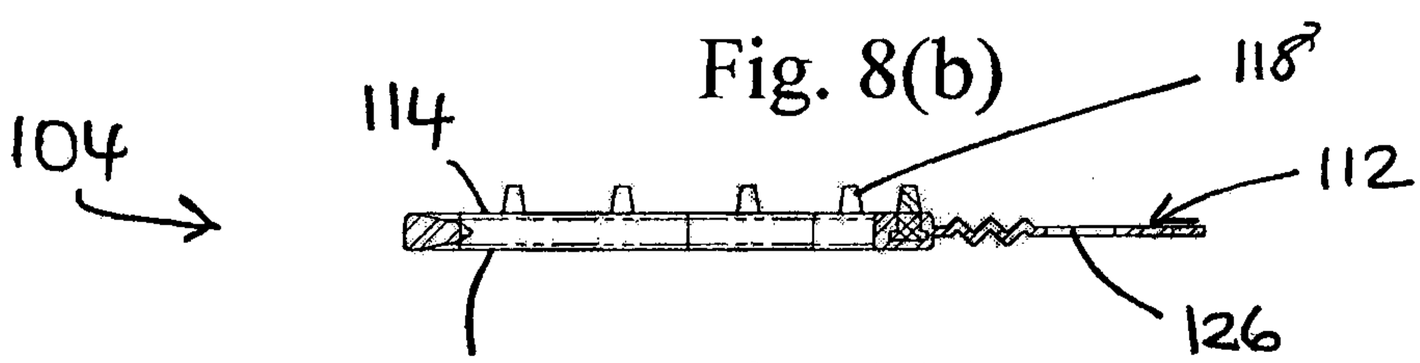

Fig. 8(c)

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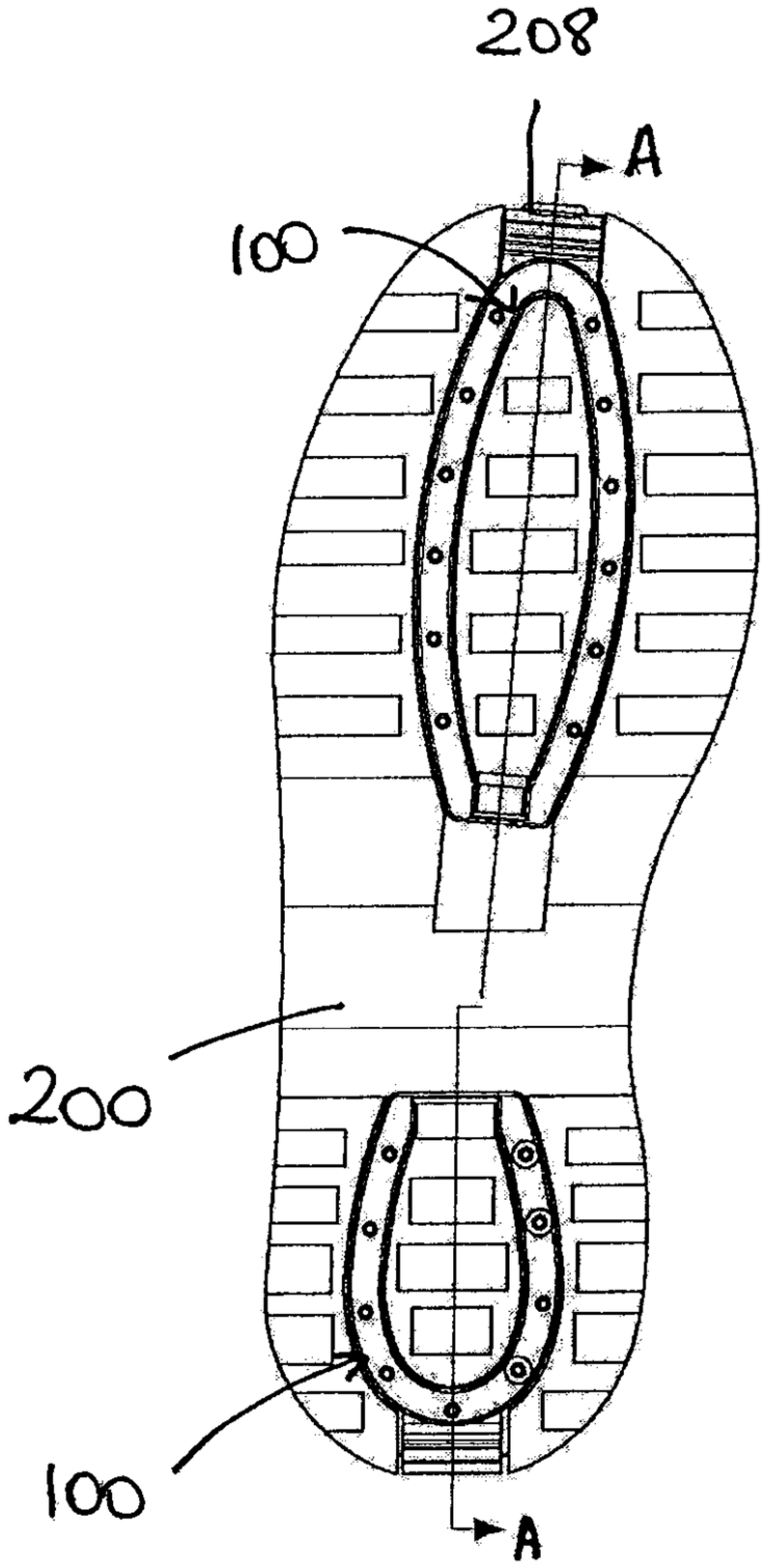

Fig. 9(a)

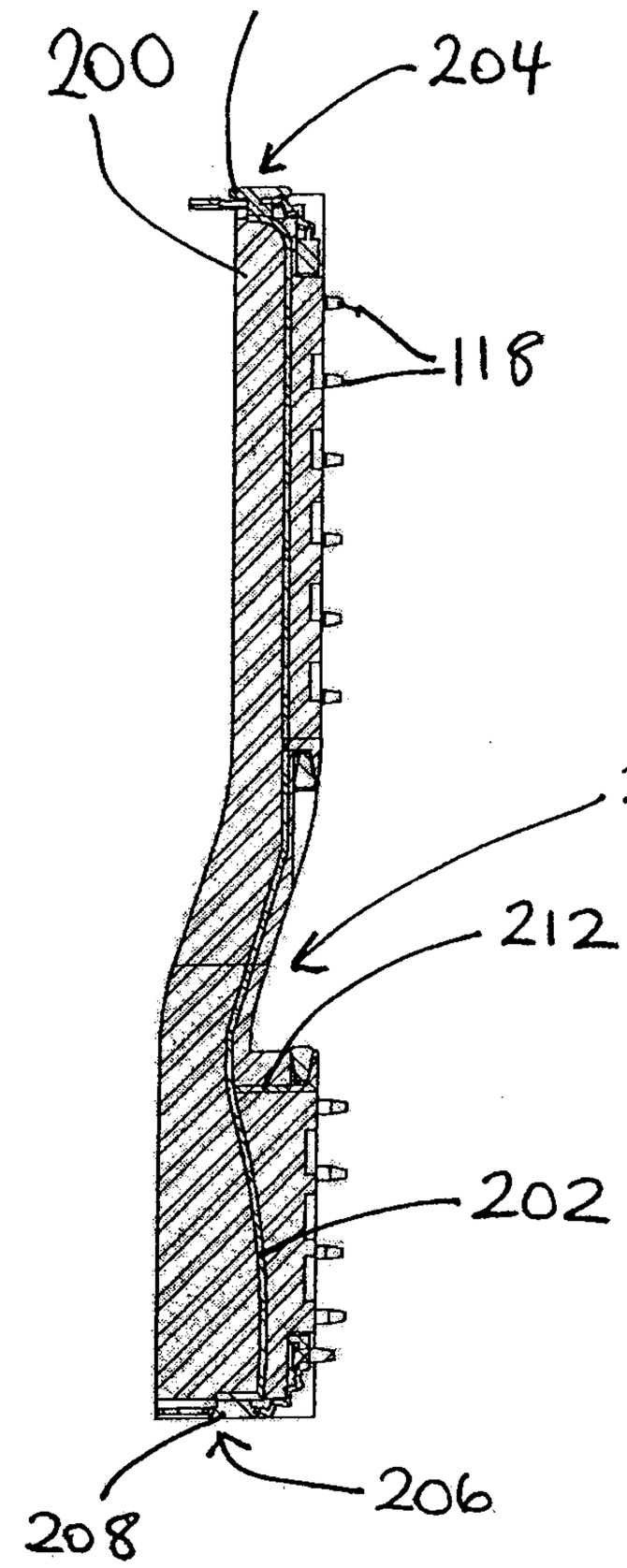

Fig. 9(b)

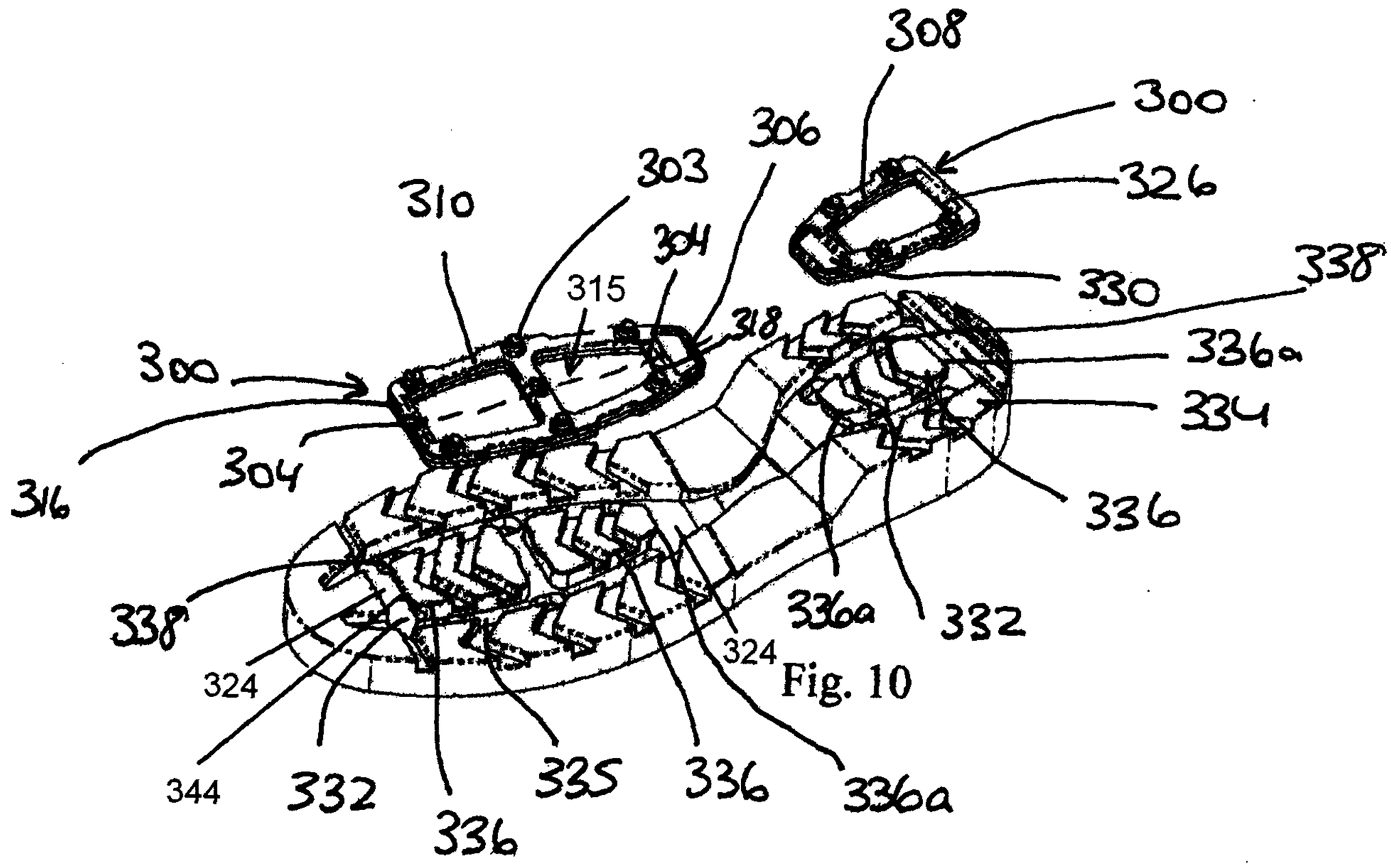
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Fig. 10

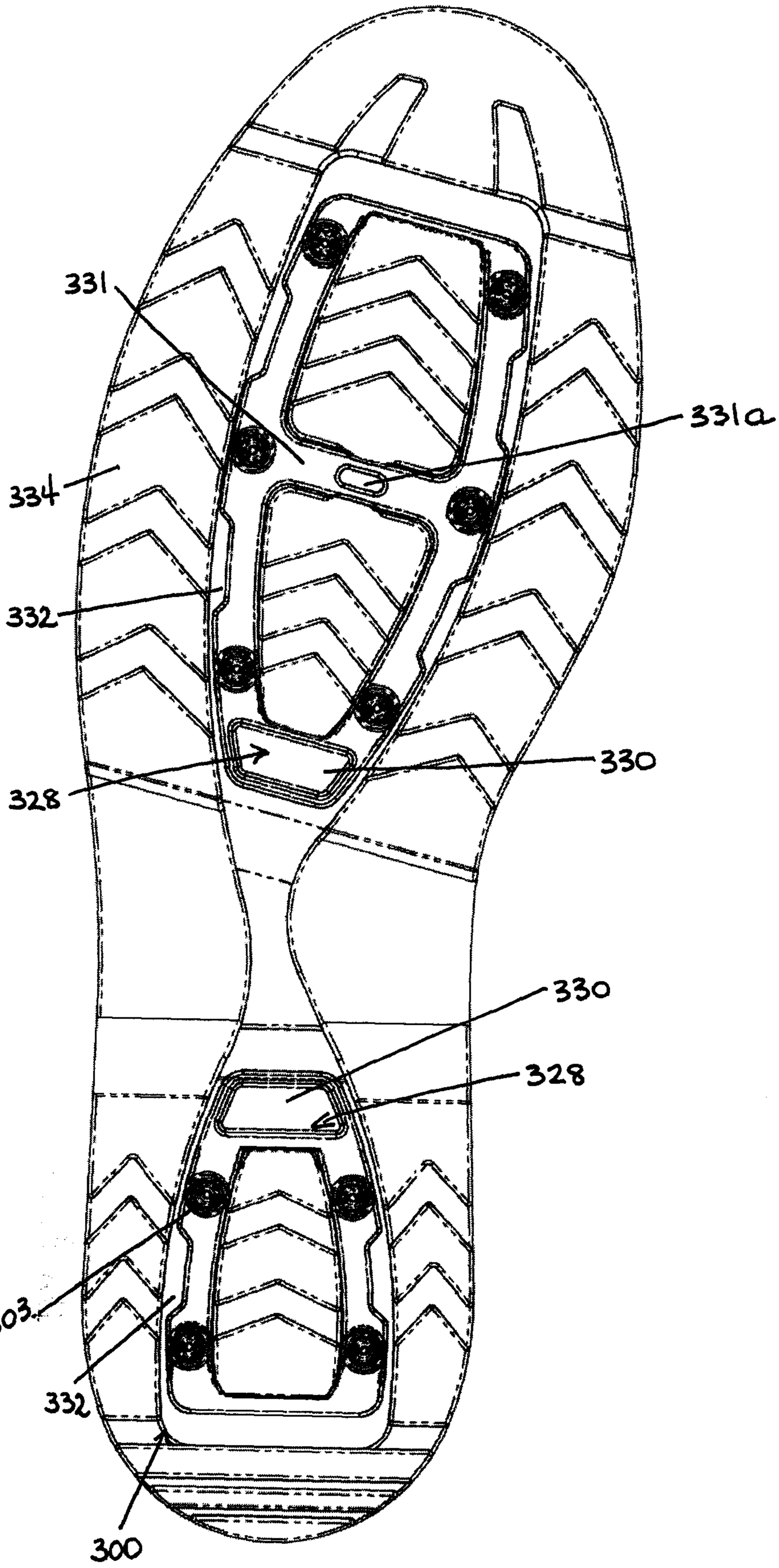


Fig. 11(a)

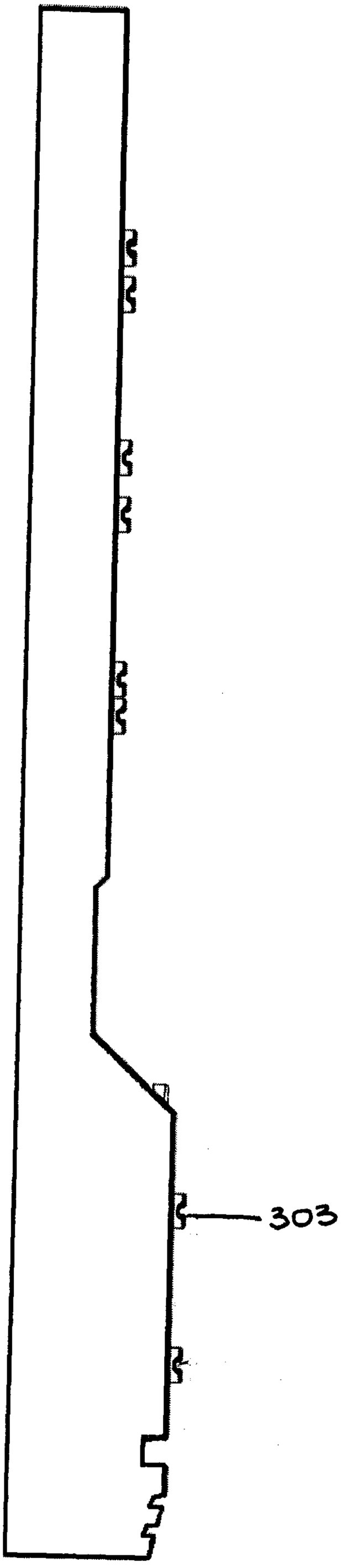


Fig. 11(b)

Fig. 12(a)

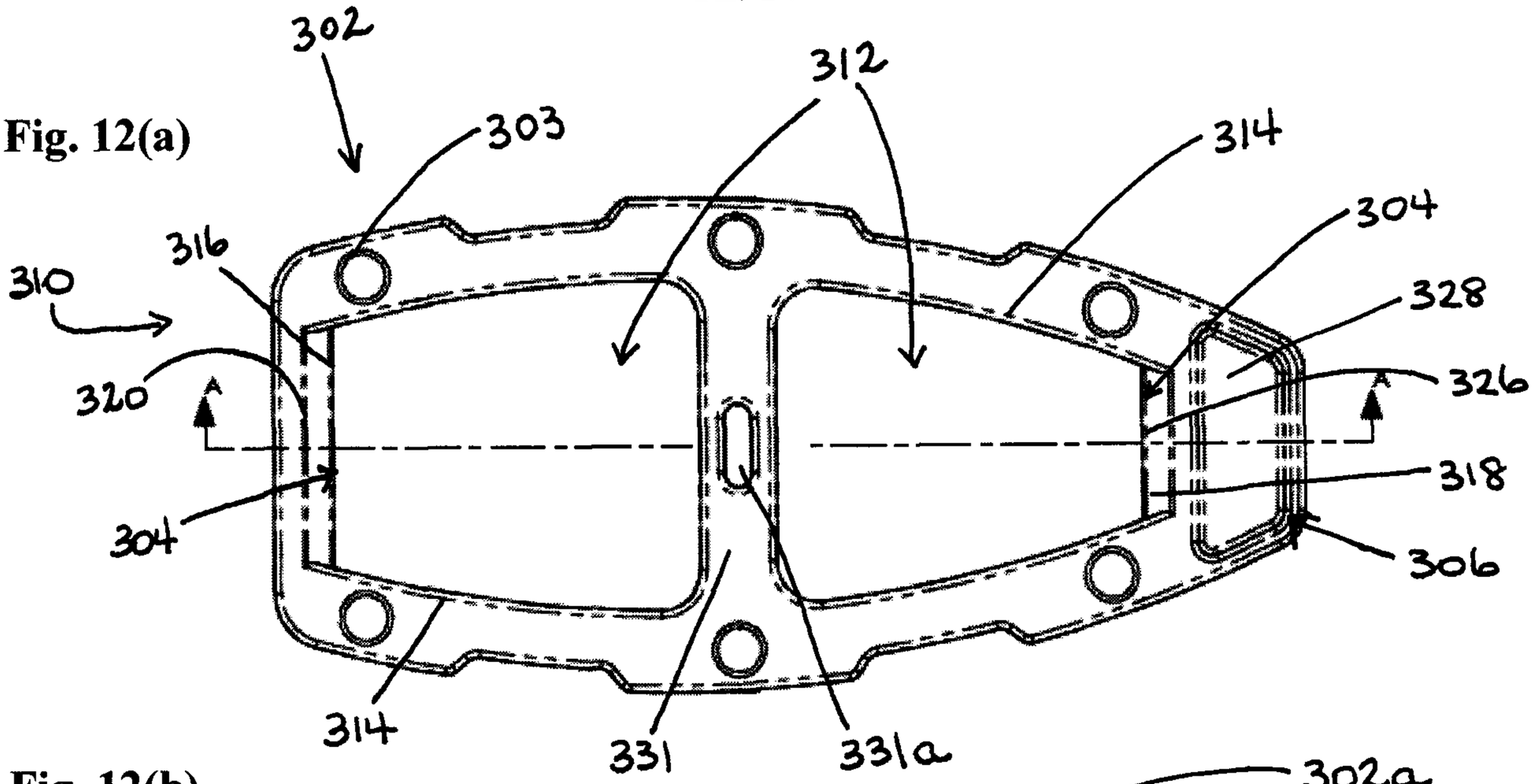


Fig. 12(b)

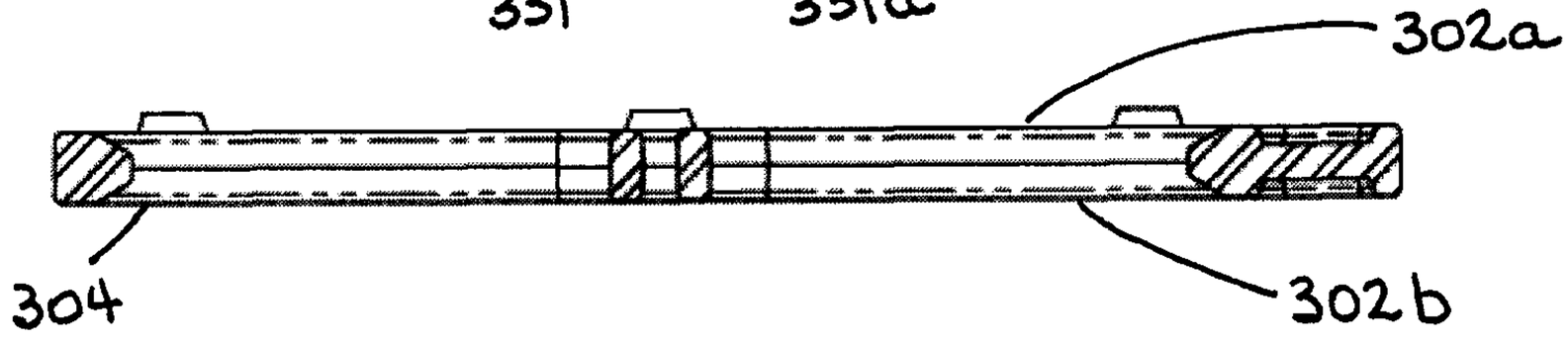


Fig. 13(a)

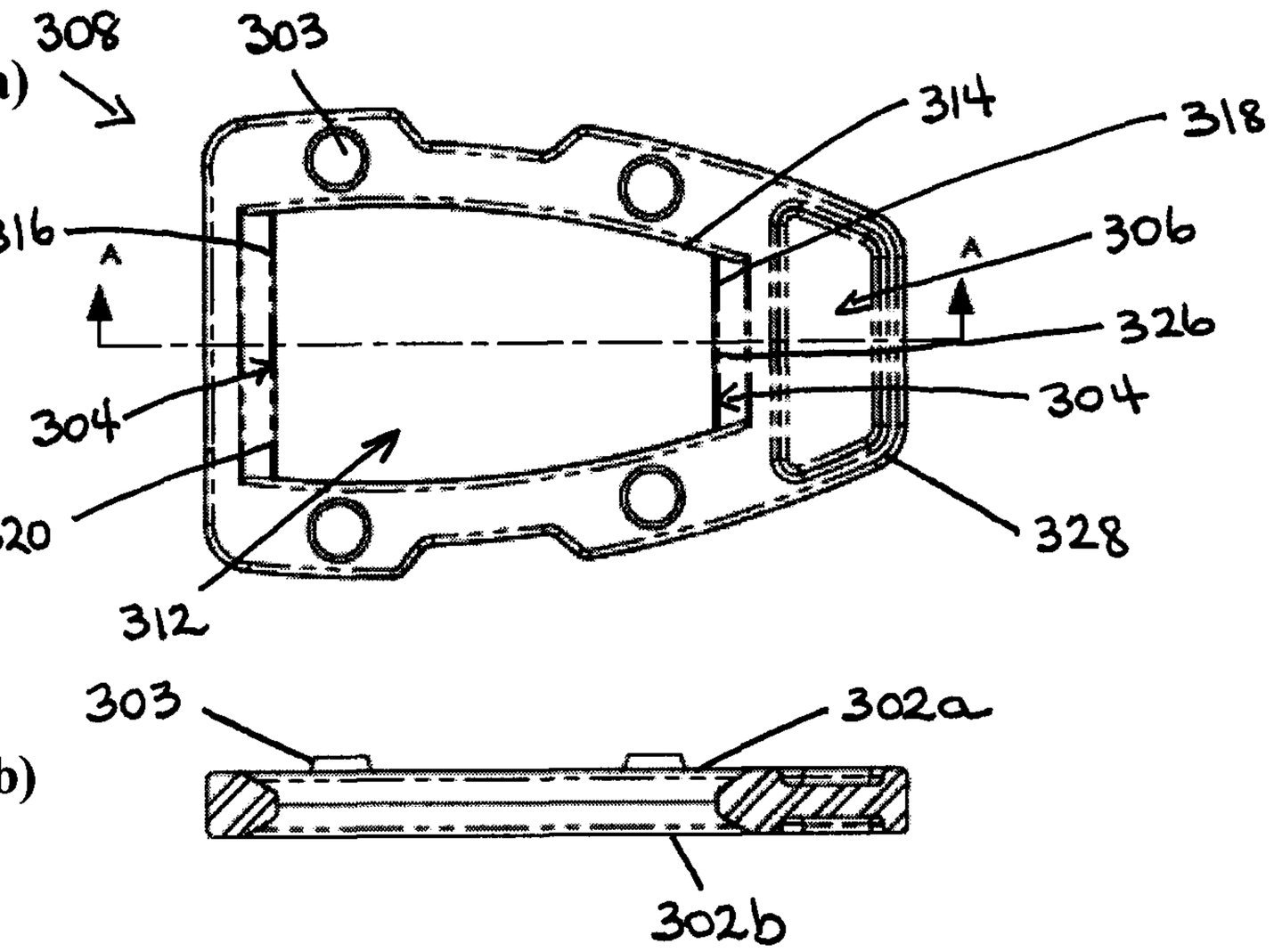


Fig. 13(b)

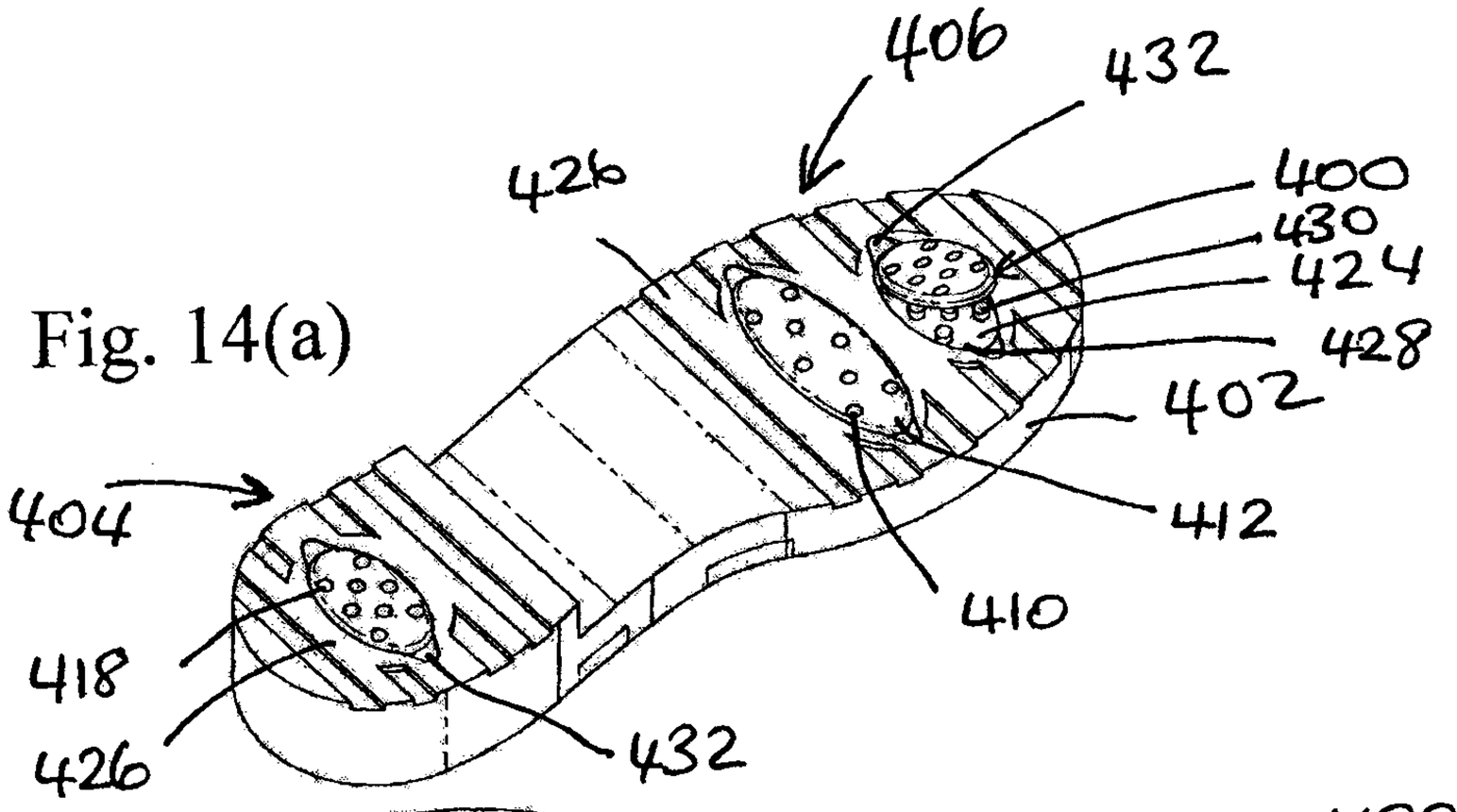


Fig. 14(a)

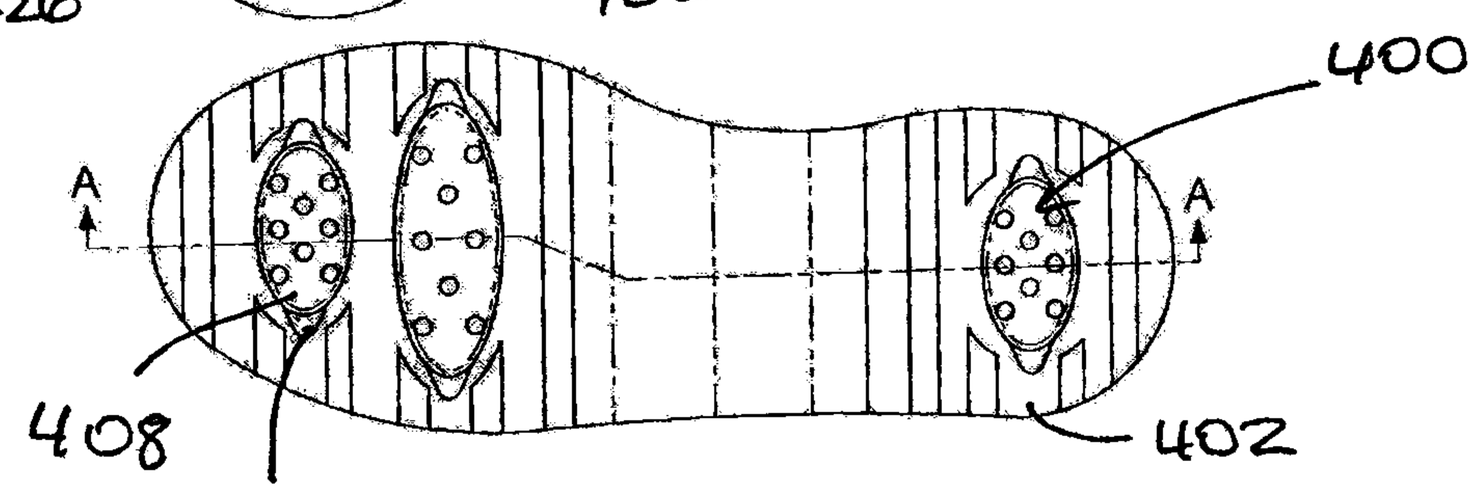
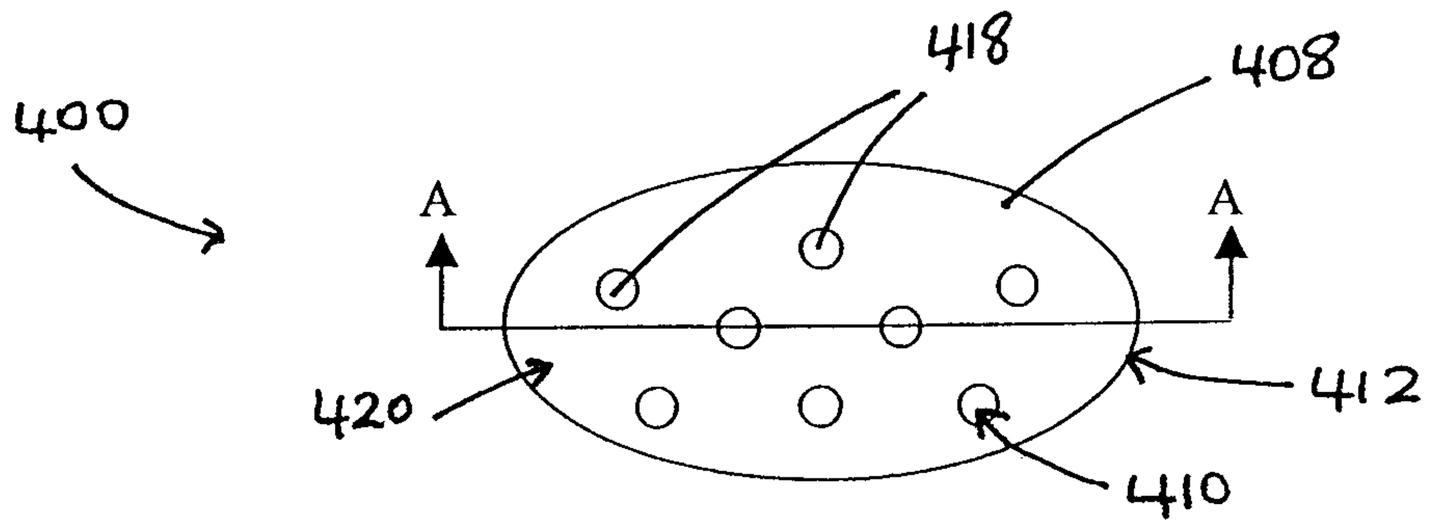


Fig. 14(b)

Fig. 14(c)



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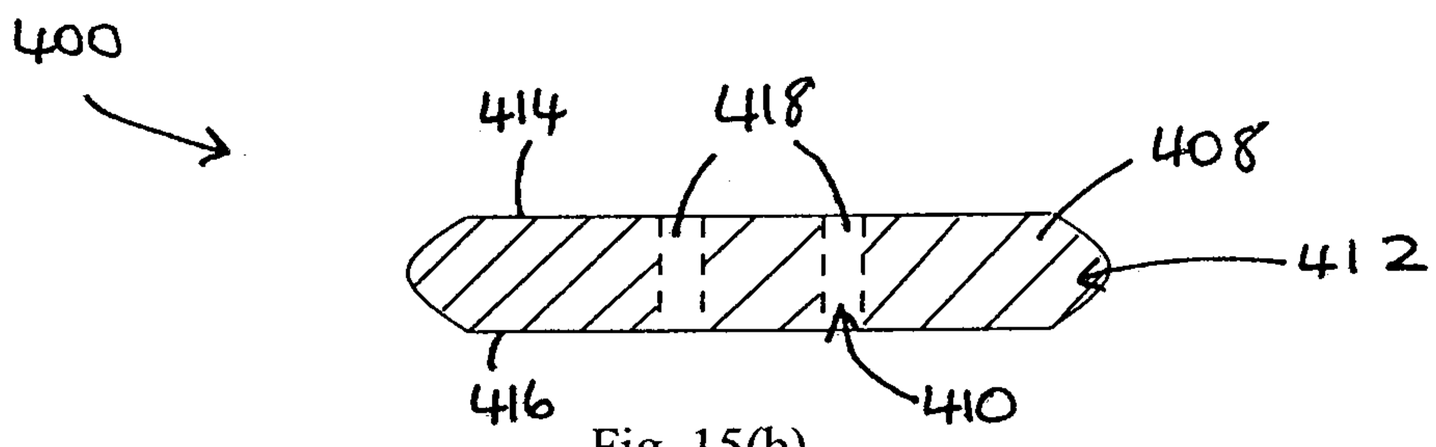

Fig. 15(b)

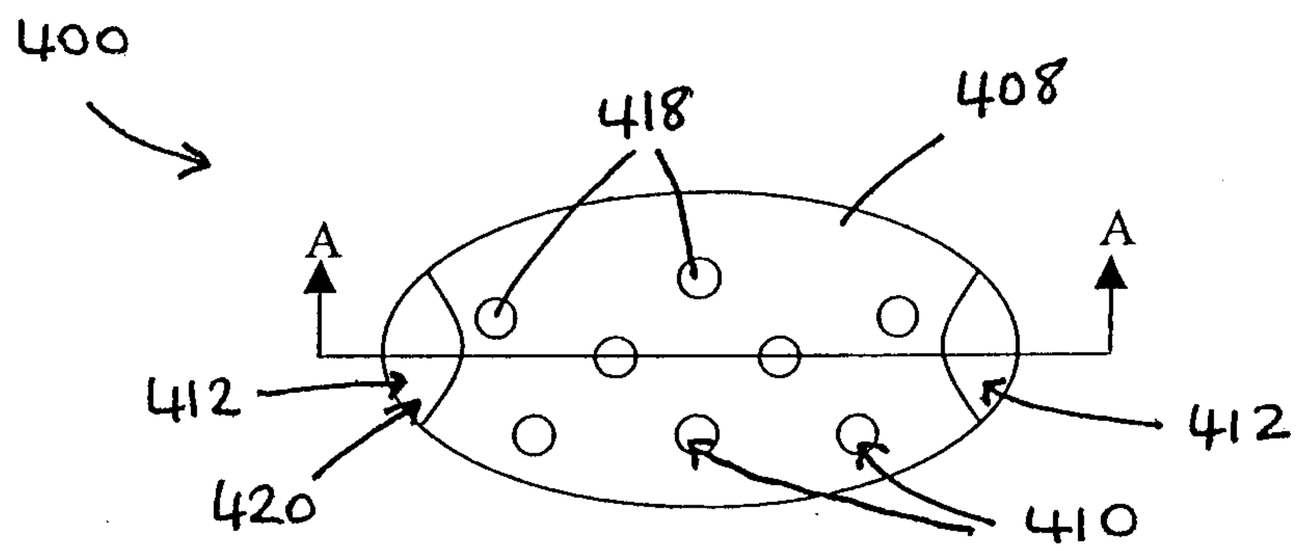

Fig. 16(a)

Fig. 16(b)

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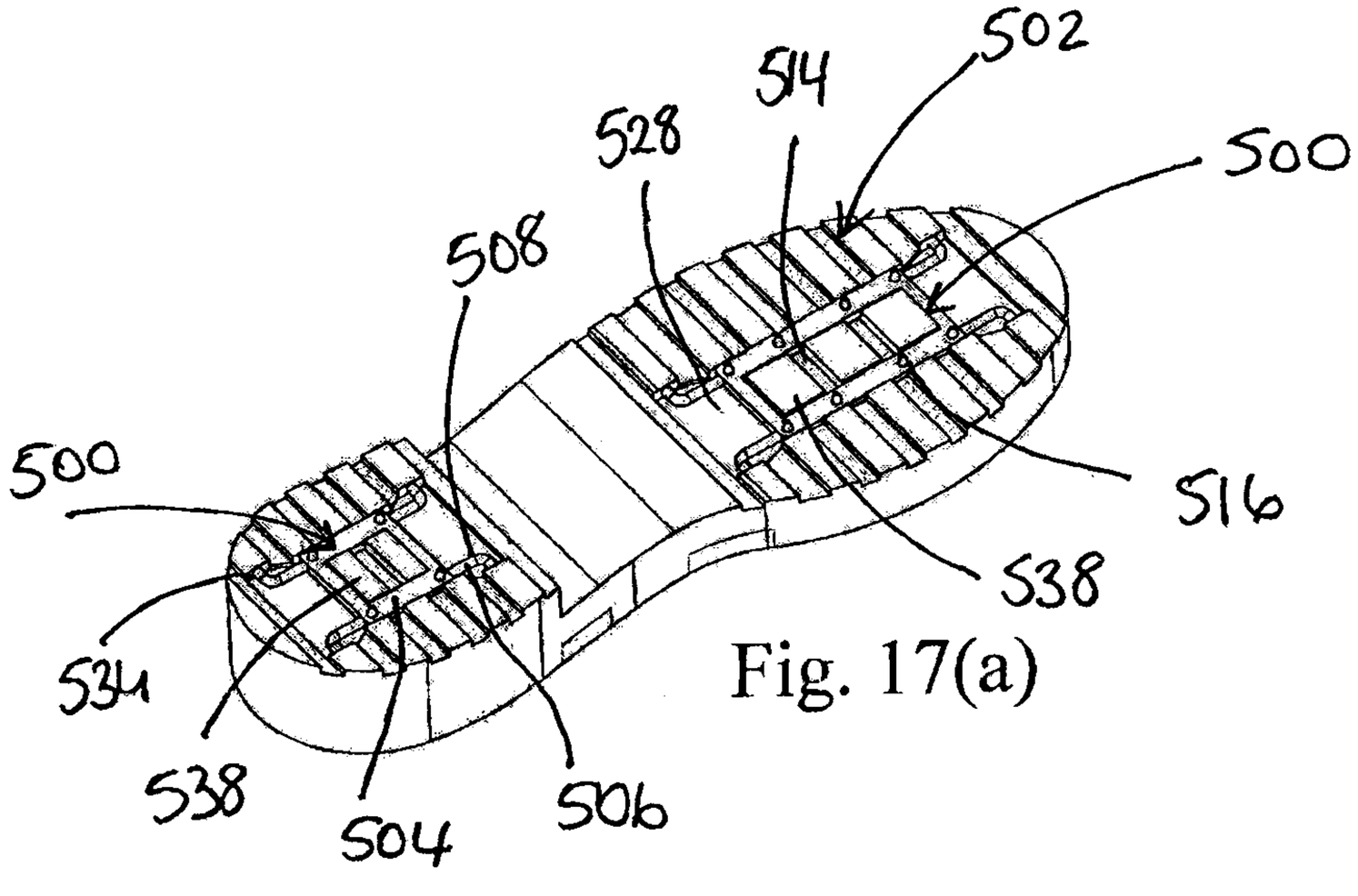

Fig. 17(a)

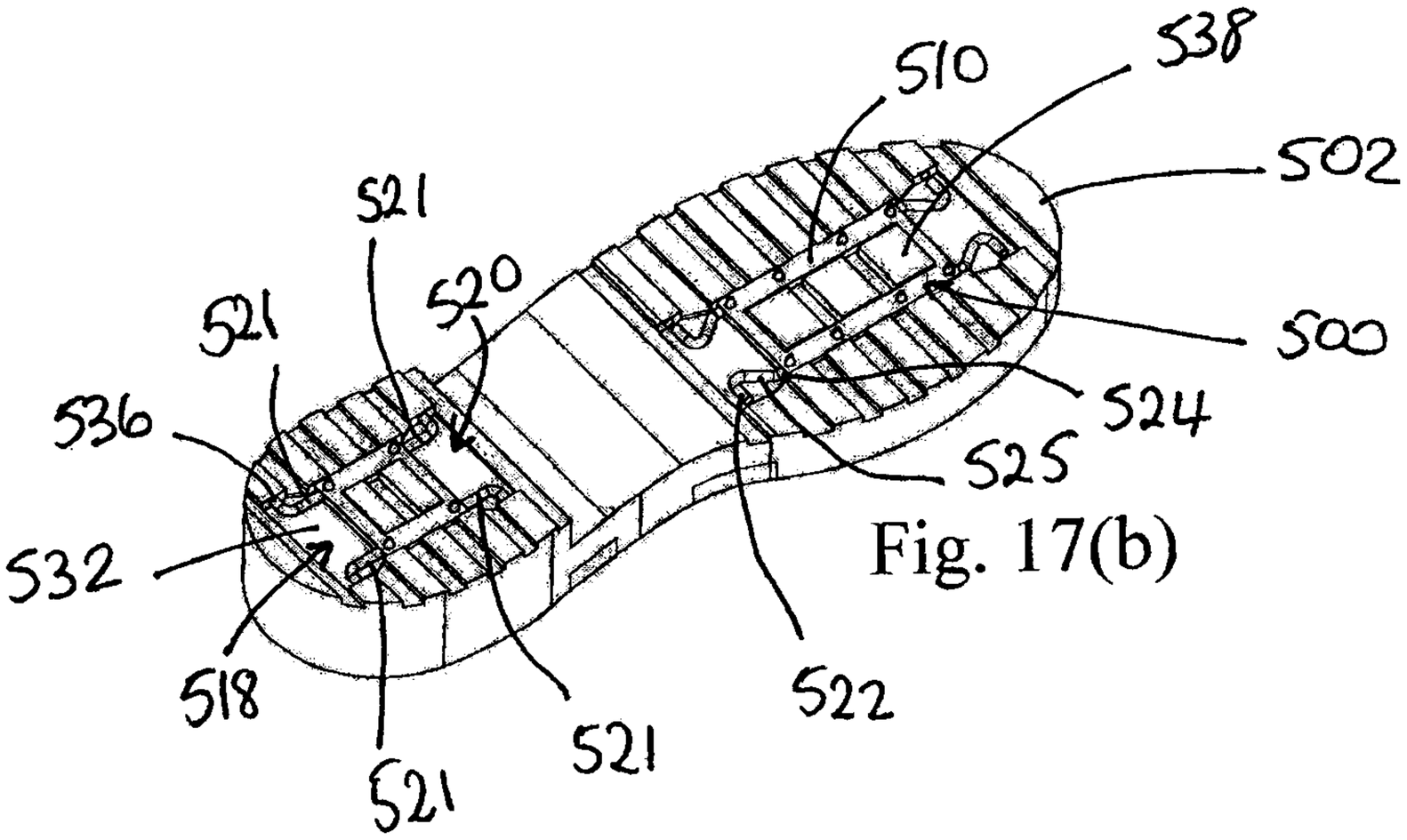

Fig. 17(b)

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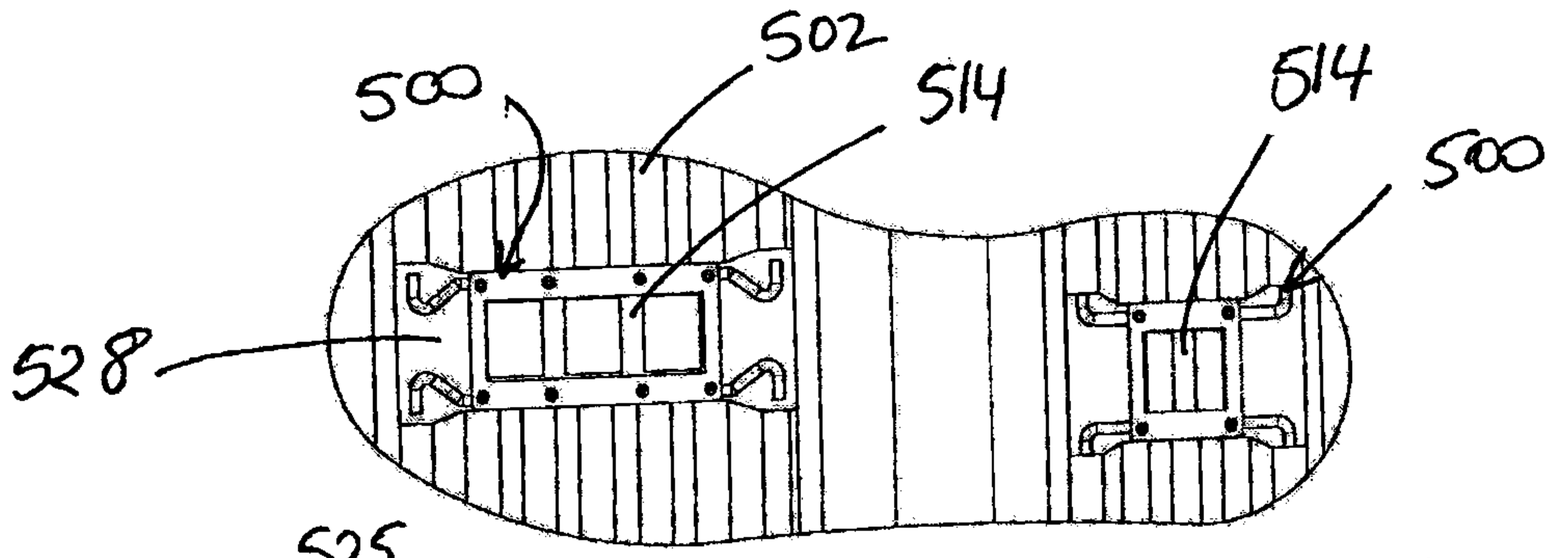

Fig. 18(a)

Fig. 18(b)

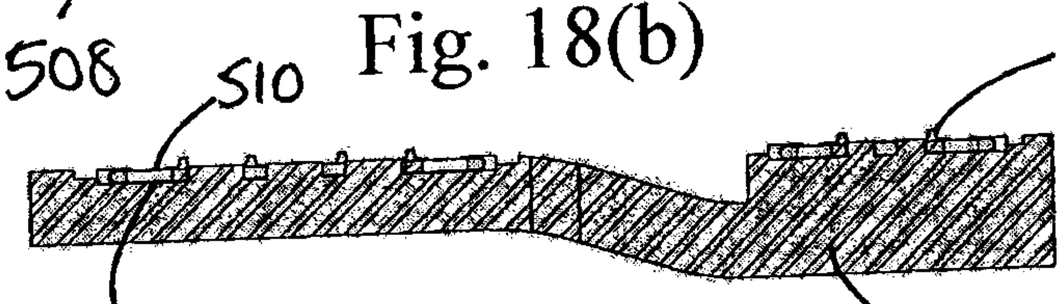

Fig. 18(c)

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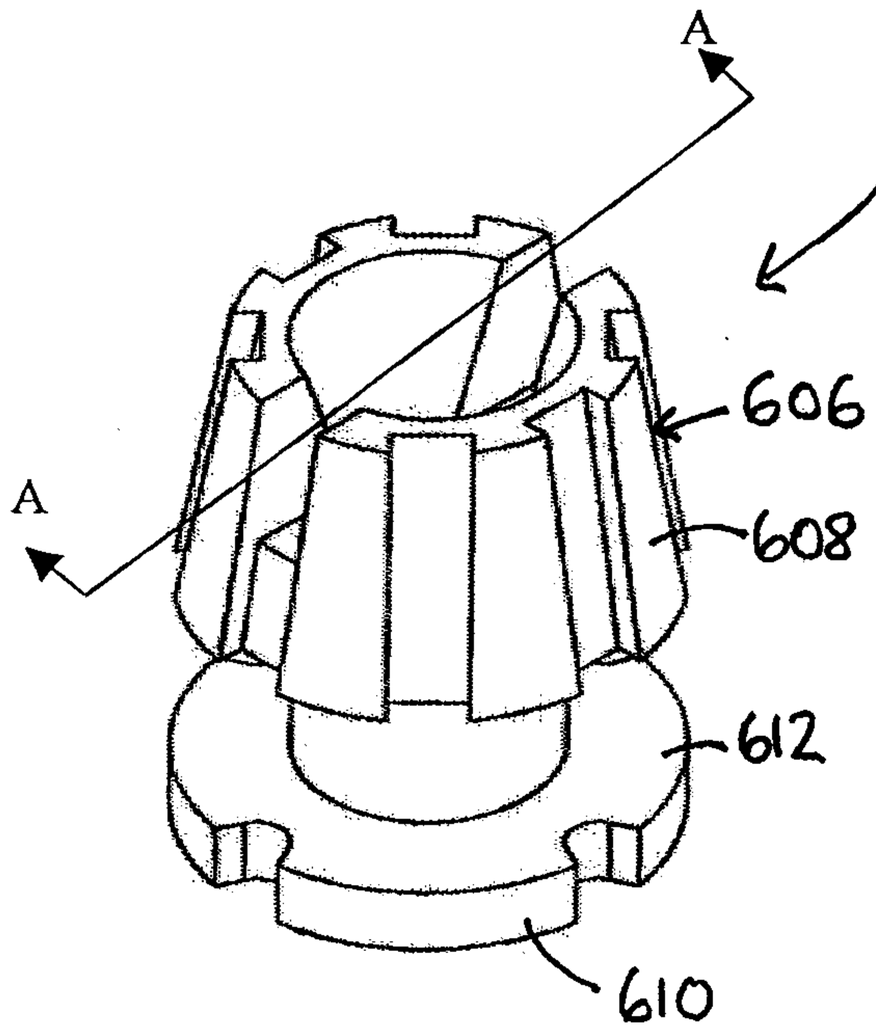


Fig. 19(a)

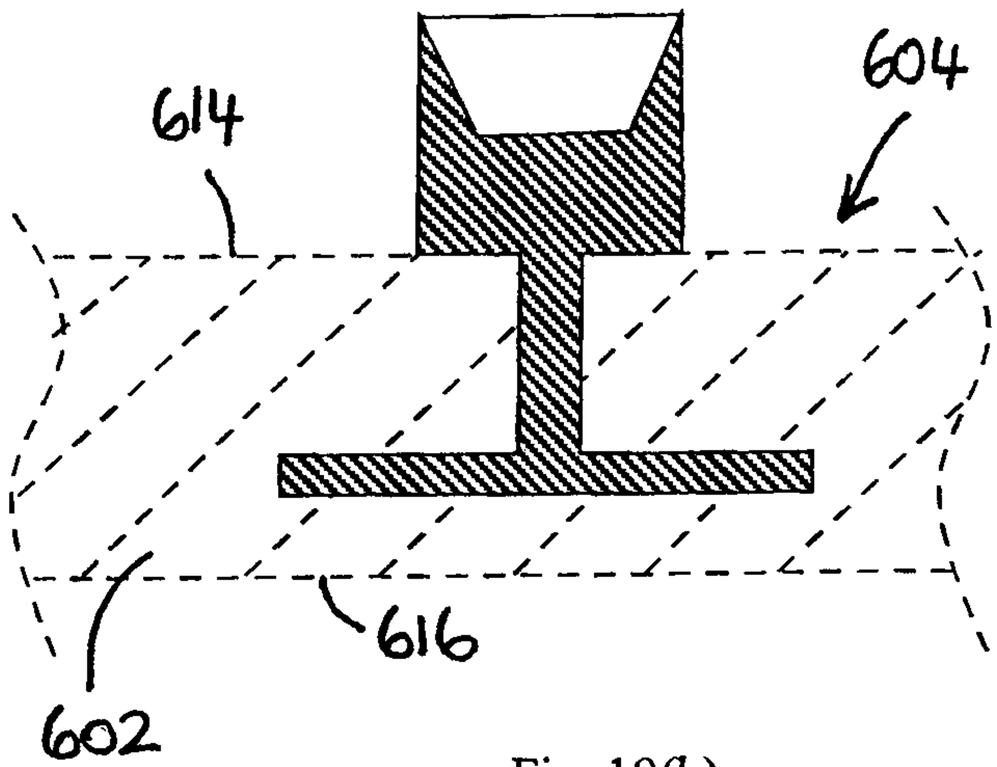
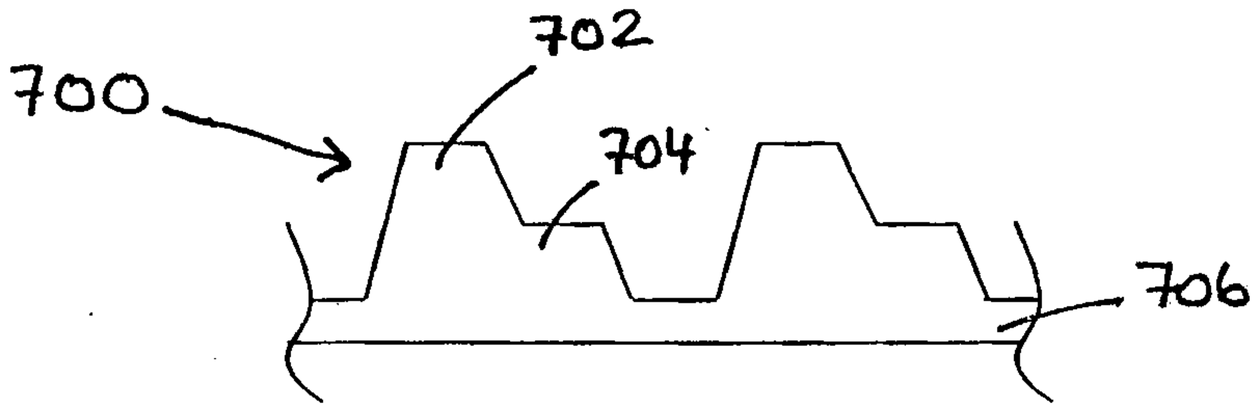


Fig. 19(b)



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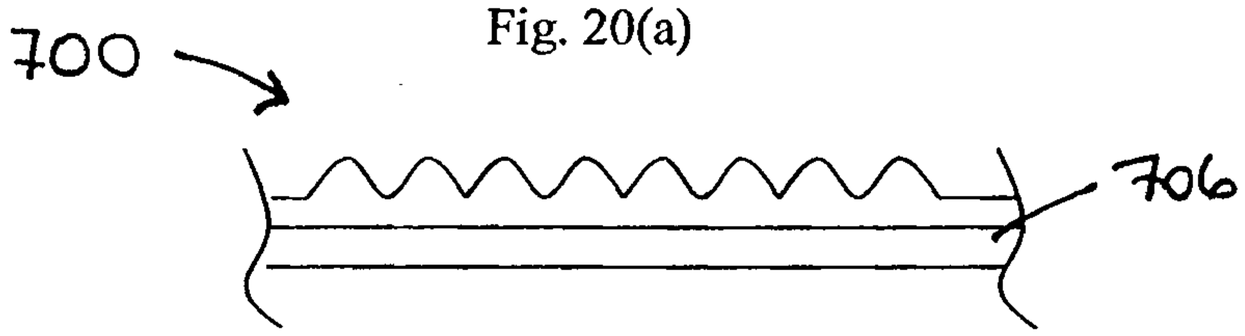


Fig. 20(b)

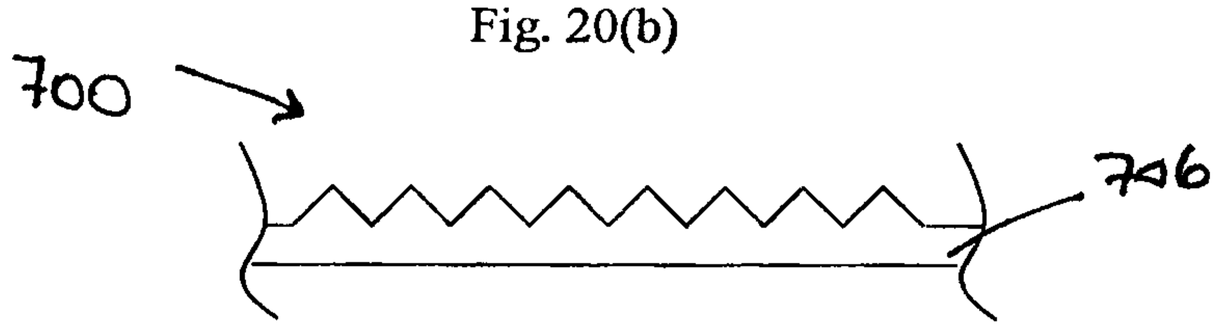
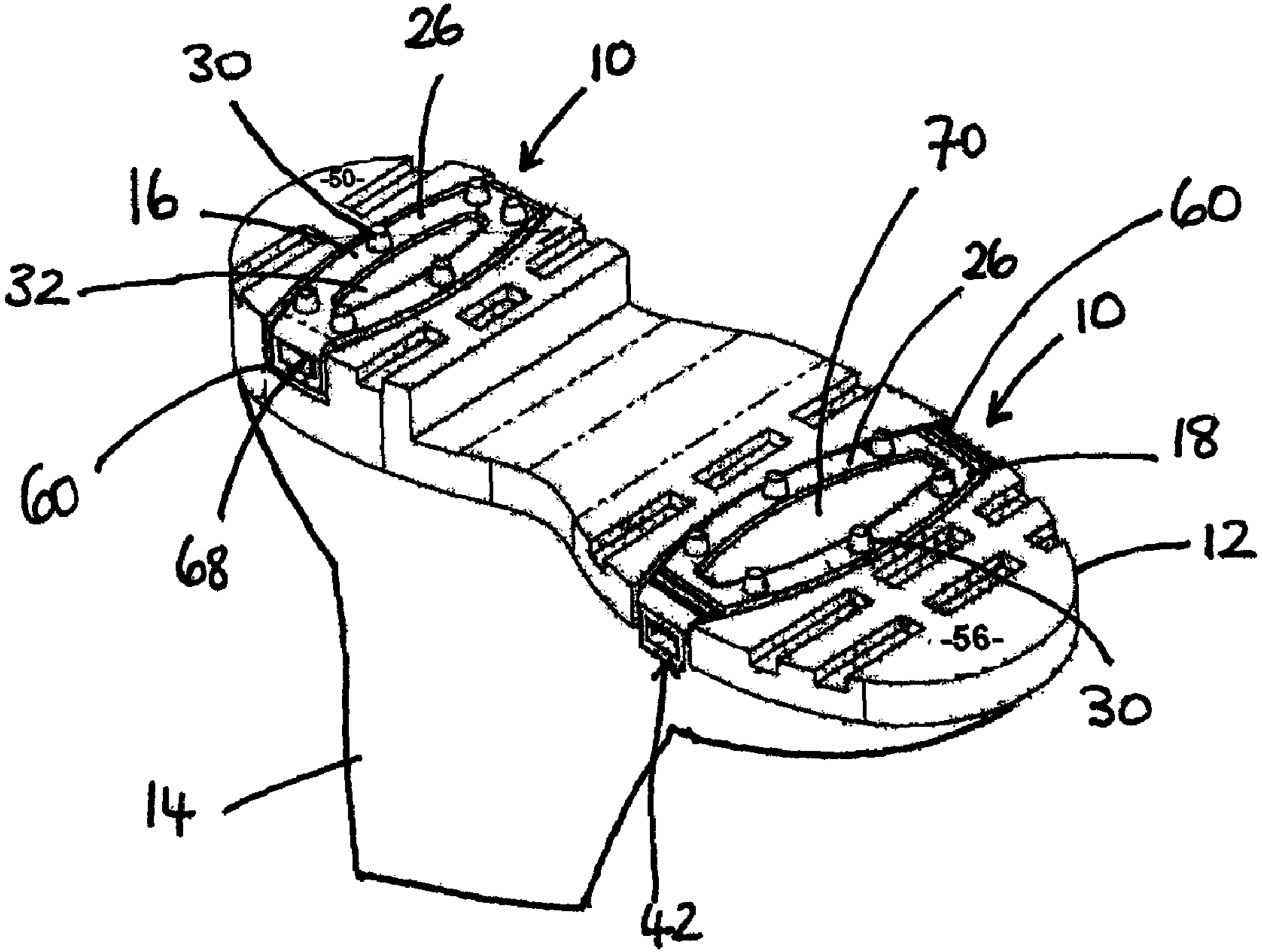


Fig. 20(c)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