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(54) **ANTI-SPRAIN SHOCK-ABSORBING BALANCE AIR-CUSHION SHOE**

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Description

FIELD OF THE INVENTION

[0001] The present disclosure relates to a shoe field, in particular, relates to an anti-sprain shock-absorbing balance air-cushion shoe.

BACKGROUND OF THE INVENTION

[0002] With the development of people's living standards, more and more people begin to think much of their health and exercises. As one of the most popular exercises, running is gradually changing people's daily leisure life. With the national rise of marathon fever, more and more young people, even middle-aged and old people, have joined the running movement, which makes the social penetration rate increasing year by year. However, running may also bring harm to one's knees or ankles. Once the harm occurred, it may take one week or even longer for the runner to recover, which will further cause physiological and psychological damages to him.

[0003] A shoe is mainly constituted of a vamp and a sole. When in use, the sole directly contacts with the ground, whether the shoe is comfortable or not mainly depends on the sole, because it is directly subjected to a friction from the ground, and simultaneously conveys a reacting stress from the ground to one's feet. Therefore, sufficient shock-absorbing is necessary for the sole, since it effectively protects one's feet and reduces fatigue feeling, and further avoids any injury brought by exercise impact, and facilitates to realize exercise or competitive sports.

[0004] Hence, an air-cushion shoe is invented. Such shoe can act as a buffer to the impact between the foot and the ground, and can reduce the injury to one's knees or ankles. However, when the shoe steps on a stone or other's foot, the sole will roll over for a certain angle, which will sprain one's ankle, commonly known as ankle sprain. In view of the above, since the air-cushion shoe has better buffer effect, it is practical and efficient to provide an anti-sprain shock-absorbing balance air-cushion shoe.

[0005] EP1209992 discloses an article of footwear according to the preamble of claim 1.

SUMMARY OF THE INVENTION

[0006] The present invention is defined in and by the appended claims and provides an anti-sprain shock-absorbing balance air-cushion shoe, which has better shock-absorbing effect and can effectively avoid the occurrence of spraining one's ankles during exercises.

[0007] The anti-sprain shock-absorbing balance air-cushion shoe provided by the embodiment of the present invention includes a shoe insert and a sole, the air-cushion shoe further includes two airbags communicating with each other, two airbag rooms are formed in the upper

surface of the sole, which are used to contain the two airbags, respectively. The two airbag rooms are distributed in the sole along the left-to-right direction. The combination of the shoe insert and the sole fixes the two airbags in the two airbag rooms, respectively, and the two airbag rooms are stretchable and compressible. The two airbags are communicated through a connecting tube, and the two airbags and the connecting tube which communicates the two airbags together constitute a row of shock-absorbing system. There are multiple rows of the shock-absorbing system which are only arranged at the heel part of the sole.

[0008] In one embodiment, the multiple rows of the shock-absorbing system are sequentially distributed in the sole along the fore-to-aft direction, and both airbags in each row of the shock-absorbing system are arranged in the sole along the left-to-right direction.

[0009] In one embodiment, the multiple rows of the shock-absorbing system are arranged in the sole separately from one another.

[0010] In one embodiment, a thickness of the heel part of the sole is larger than that of the forefoot part.

[0011] In one embodiment, a shallow groove is formed in the bottom surface of the shoe insert, the shallow groove is used to contain the top of each airbag separately.

[0012] In one embodiment, a connecting tube groove is formed in the bottom surface of the shoe insert, the connecting tube groove is used to contain the connecting tube.

[0013] In one embodiment, a connecting tube groove is formed in the upper surface of the sole, the connecting tube groove is used to contain the connecting tube.

[0014] In one embodiment, a recess is formed between the two airbag rooms in the bottom surface of the sole.

[0015] In one embodiment, a shape of the airbags and the airbag rooms is circular, elliptical, square or irregular.

[0016] In one embodiment, the shoe insert is made of hard materials uneasy to deform, and the sole is made of soft material easy to deform.

[0017] In one embodiment, the air-cushion shoe further includes a vamp which connects with the shoe insert.

[0018] The anti-sprain shock-absorbing balance air-cushion shoe provided by the embodiment of the present invention at least has the following advantages: first, the arrangement of the shock-absorbing system in the sole, which includes the airbags and the connecting tube which communicates the airbags, can buffer the impact from the ground to the foot, and performs better shock-absorbing effect. Second, when the airbag room on one side of the sole steps onto something like stones, the airbag room on the same side will be compressed and further the airbag in the same airbag room will be compressed correspondingly. Since the airbags are communicated by a connecting tube, gas in the compressed airbag will flow into the other airbag and drive the other airbag to inflate. Further, the inflation drives the other airbag room to stretch and exerts an influence to the ground, and

therefore forms a torque opposite to the tendency of the rollover of the sole. Because of this, the rolling over of the sole is prevented and the sole is kept balance relatively, therefore the sprain is effectively avoided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The above objects and advantages of the present invention will become more readily apparent to those ordinarily skilled in the art after reviewing the following detailed description and accompanying drawings, in which:

FIG. 1 is a front view of the anti-sprain shock-absorbing balance air-cushion shoe in the first embodiment not in accordance with the invention.

FIG. 2 is an exploded schematic view of the air-cushion shoe in FIG. 1, wherein the vamp is not included. FIG. 3 is a top view of the sole in the air-cushion shoe in FIG. 1.

FIG. 4 is a bottom view of the shoe insert in the air-cushion shoe in FIG. 1.

FIG. 5 is a three-dimensional view of the air-cushion shoe after the combination of the sole and the shoe insert in FIG. 1.

FIGS. 6a-6c are cross-sectional views of FIG. 5 along the VI-VI direction.

FIG. 7 is a front view of the anti-sprain shock-absorbing balance air-cushion shoe in embodiment 2 not in accordance with the invention.

FIG. 8 is a top view of the sole in the air-cushion shoe of FIG. 7.

FIG. 9 is a bottom view of the shoe insert in the air-cushion shoe of FIG. 7.

FIG. 10 is a front view of the anti-sprain shock-absorbing balance air-cushion shoe in embodiment 3 of the present invention.

FIG. 11 is a top view of the sole in the air-cushion shoe of FIG. 10.

FIG. 12 is a bottom view of the shoe insert in the air-cushion shoe of FIG. 10.

FIG. 13 is a front view of the anti-sprain shock-absorbing balance air-cushion shoe in embodiment 4 of the present invention.

FIG. 14 is a top view of the sole in the air-cushion shoe of FIG. 13.

FIG. 15 is a bottom view of the shoe insert in the air-cushion shoe of FIG. 13.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0020] The present invention will now be described more specifically with reference to the following embodiments. It is to be noted that the following descriptions of preferred embodiments of this invention are presented herein for purpose of illustration and description only. It is not intended to be exhaustive or to be limited to the

precise form disclosed.

Embodiment 1 not in accordance with the invention

[0021] FIG. 1 is a front view of the anti-sprain shock-absorbing balance air-cushion shoe in embodiment 1, FIG. 2 is a exploded schematic view of the air-cushion shoe in FIG. 1 without the vamp, FIG. 3 is a top view of the sole in the air-cushion shoe of FIG. 1, FIG. 4 is a bottom view of the shoe insert in the air-cushion shoe of FIG. 1, FIG. 5 is a three-dimensional view of the air-cushion shoe in FIG. 1 after the combination of the sole and the shoe insert, please referring to FIGS. 1-5, the air-cushion shoe in the embodiment includes a shoe insert 11 and a sole 12, the air-cushion shoe further includes two airbags 21 communicating with each other. Two airbag rooms 121 are formed in the upper surface of the sole 12 used to contain the two airbags 21, and are arranged in the sole 12 along the left-to-right direction, the two airbag rooms 121 are stretchable and compressible. Further, the combination of the shoe insert 11 and the sole 12 fixes the two airbags 21 in the two airbag rooms 121, respectively. By arranging the intercommunicated airbags 21 in the sole 12, the air-cushion shoe can be prevented from rolling over to the left or to the right.

[0022] FIGS. 6a-6c are cross-sectional views the air-cushion shoe along the VI-VI direction in FIG. 5, wherein FIG. 6a is a schematic view of the air-cushion shoe in FIG. 1 wherein the airbags are not compressed, FIG. 6b is a schematic view of the air-cushion shoe in FIG. 1 wherein the airbags are compressed, and FIG. 6c is a schematic view of the air-cushion shoe in FIG. 1 wherein the airbags are stepped onto uneven ground. Please refer to FIGS. 6a-6c, when people exercise on flat ground with the air-cushion shoes, the loads to the two airbags 21 on the left or right side of the sole are essential the same, at this circumstance, the air pressure in the two airbags 21 is essential the same, and the deformation of the two airbags 21 is also identical, and there is no obvious difference with ordinary air-cushion shoes in the above aspects, as shown in FIG. 6b. However, when an airbag room 121 on one side of the sole 12 steps onto a foreign matter 30 such as a stone, the airbag room 121 on the side will be compressed, and correspondingly the airbag 21 in the airbag room 121 will be compressed. Since the airbags 21 on both sides are intercommunicated with each other, the gas in the compressed airbag 21 flows to the other airbag 21, in order to make sure the air pressure in both airbags 21 are kept identical, which drives the airbag 21 on the other side to inflate, and the inflation drives the other airbag room 121 to stretch, therefore a stress to the ground is produced by the inflation of the other airbag room 121 and a torque opposite to the rolling tendency of the sole 12 is produced, which will prevent the sole 12 from rolling over and keep the sole 12 to be in a balance state, in this way, anti-sprain to the ankles is realized.

[0023] In one embodiment, the two airbags 21 are com-

municated through a connecting tube 22. The two airbags 21 and the connecting tube 22 which communicates the two airbags 21 together constitute a row of shock-absorbing system 20. In this embodiment, there is only one row of the shock-absorbing system 20 shown in the figures, but it is not intended to be limited.

[0024] In one embodiment, the air-cushion shoe further includes a vamp 13, which connects with the shoe insert 11 by a method of such as adhesion or sewing.

[0025] In one embodiment, as shown in FIG. 4, a shallow groove 111 is formed in the bottom surface of the shoe insert 11, and the top of each airbag 21 is separately contained in the shallow groove 111, therefore the airbags 21 will be more stably located in corresponding airbag rooms 121, and the combination of the shallow grooves 111 and the airbag rooms 121 together can limit the airbags 21 to be stretched or compressed along the vertical direction.

[0026] In one embodiment, as shown in FIG. 4 and FIG. 6a, a connecting tube groove 112 is arranged in the bottom surface of the shoe insert 11, which is used to contain the connecting tube 22 communicating the two airbags 21. Since the bottom surface of the shoe insert 11 matches with the upper surface of the sole 12, the connecting tube groove 112 formed in the bottom surface of the shoe insert 11 can contain the connecting tube 22, and there is no need to form groove in the sole 12, which can improve the strength of the sole 12.

[0027] In one embodiment, as shown in FIG. 2 and FIG. 6a, a recess 120 is formed in the bottom surface of the sole 12 between the two airbag rooms 121, wherein the two airbag rooms 121 are separated by the recess 120. Because of this, the two airbag rooms 121 can be stretched and compressed separately.

[0028] In one embodiment, the sole 12 and the shoe insert 11 can be prepared by such as an injection process separately. The sole 12 can be prepared simultaneously with the airbag rooms 121, and the shoe insert 11 can be prepared simultaneously with the shallow grooves 111 and the connecting tube groove 112. The airbags 21 of the shock-absorbing system 20 are contained in the airbag rooms 121 of the sole 12 separately, and the connecting tube 22 of the shock-absorbing system 20 is contained in the connecting tube groove 112. In this embodiment, the shock-absorbing system 20 is designed and prepared separately from the sole 12 and the shoe insert 11, therefore the combination of the shoe insert 11 and the sole 12 will not affect the sealing performance of the shock-absorbing system 20. Compared with the airbag rooms 121, there is little chance for leakage to occur on the airbags 21, even leakage occurs on the airbag rooms 121 due to un-tight combination between the shoe insert 11 and the sole 12, the shock-absorbing system 20 will not be affected, therefore the life-span of the air-cushion shoes is prolonged.

[0029] In one embodiment, as shown in FIG. 1, the shock-absorbing systems 20 are merely arranged at the heel part 12a of the sole 12, wherein the shock-absorbing

system 20 includes two airbags 21 and a connecting tube 22 which communicates the two airbags 21. At this circumstance, a thickness of the heel part 12a of the sole 12 is larger than that of the forefoot part 12b. That is, this embodiment is suitable for those air-cushion shoes having heel parts. Please note that even there is only one row of the shock-absorbing system 20 shown in the heel part 12a of the sole 12 in the figures used to illustrate this embodiment, but it is only for illustration purpose, and not intend to limit. The arrangement of the shock-absorbing systems 20 at the heel part 12a of the sole 12 can not only reduce the volume and weight of the air-cushion shoes, but also can lead to shock-absorbing and balance effect and avoid the occurrence of sprain during exercises, therefore solving the problem that the heel part bears most of the stress.

[0030] In one embodiment, the airbags 21 and the airbag rooms 121 are circular, elliptical, square or irregular. The airbags 21 can be rubber or other materials having good elastics.

[0031] In one embodiment, the shoe insert 11 is made of hard material not easy to deform, and the sole 12 is made of soft material easy to deform. Since the sole 12 is soft enough, it can keep the balance of the shoe in slightly uneven grounds. However, when the sole 12 steps onto a larger object, the deformation of the sole 12 becomes larger, which drives the airbag 21 to be compressed. In this way, the rolling over of the sole 12 is restricted, and one avoids spraining his ankles. Meanwhile, the shoe insert 11 is made of hard materials, which can help maintain the horizontal stress to the foot.

Embodiment 2 not in accordance with the invention

[0032] FIG. 7 is a front view of the anti-sprain shock-absorbing balance air-cushion shoe in embodiment 2; FIG. 8 is a top view of the sole in the air-cushion shoe of FIG. 7, and FIG. 9 is a bottom view of the shoe insert in the air-cushion shoe of FIG. 7. Please referring to FIGS. 7-9, a connecting tube groove 122 is formed in the upper surface of the sole 12, the connecting tube groove 122 is used to contain the connecting tube 22 which communicates the two airbags 21. That is, in this embodiment, the connecting tube groove is not arranged in the bottom surface of the shoe insert 11, but arranged in the upper surface of the sole 12. The arrangement of the connecting tube groove 122 in the upper surface of the sole 12 can facilitate the installation of the airbags 21 and the placement of the connecting tube 22, and there is no requirement for size match. Other structures or working principles of the present embodiment are the same as described above in embodiment 1 and will be omitted herein, please refer to the description above if needed.

Embodiment 3

[0033] FIG. 10 is a front view of the anti-sprain shock-absorbing balance air-cushion shoe in embodiment 3 of

the present invention, FIG. 11 is a top view of the sole in the air-cushion shoe of FIG. 10, and FIG. 12 is a bottom view of the shoe insert in the air-cushion shoe of FIG. 10. Please referring to FIGS. 10-12, multiple rows of the shock-absorbing system 20 are arranged in the heel part 12a of the sole 12, and there is no shock-absorbing system 20 arranged in the forefoot part 12b of the sole 12. For illustration purpose, there are only two rows of the shock-absorbing system 20 shown in FIGS. 10-12, but it is not limited. That is, the shock-absorbing systems 20 are merely arranged in the heel part 12a in this embodiment, wherein a thickness of the heel part 12a is larger than that of the forefoot part 12b. The air-cushion shoe in this embodiment is suitable for that having a heel part.

[0034] Each row of shock-absorbing system 20 is constituted of two airbags 21 and a connecting tube 22 which communicates the two airbags 21. The multiple rows of the shock-absorbing system 20 are sequentially arranged in the sole 12 along the fore-to-aft direction, and the two airbags 21 in each row of the shock-absorbing system 20 are distributed in the sole 12 along the left-and-right direction. In this embodiment, the arrangement of the multiple rows of shock-absorbing system 20 in the heel part 12a of the sole 12 improves the shock-absorbing balance effect of the air-cushion shoe. Meanwhile, since multiple rows of the shock-absorbing system 20 are distributed in the sole 12 separate with each other, even one row of the shock-absorbing system 20 goes wrong such as leakage occurs, other rows of the shock-absorbing system 20 will go on working and will not be affected, and this arrangement improves the endurance of the air-cushion shoe. Other structures or working principles of the present embodiment are the same as described above in embodiment 1 and will be omitted herein, please refer to the description above if needed.

Embodiment 4

[0035] FIG. 13 is a front view of the anti-sprain shock-absorbing balance air-cushion shoe in embodiment 4 of the present invention, FIG. 14 is a top view of the sole in the air-cushion shoe of FIG. 13, and FIG. 15 is a bottom view of the shoe insert in the air-cushion shoe shown in FIG. 13. Please referring to FIGS. 13-15, in this embodiment, there are multiple rows of the shock-absorbing system 20 which are arranged in the heel part 12a and the forefoot part 12b of the sole 12 simultaneously, wherein a thickness of the heel part 12a of the sole 12 is the same as that of the forefoot part 12b, that is, the air-cushion shoe of the embodiment is suitable for flat air-cushion shoe. Each row of the shock-absorbing system 20 includes two airbags 21 and a connecting tube 22 which communicates the two airbags 21. The multiple rows of the shock-absorbing system 20 are sequentially distributed in the sole 12 along the fore-to-aft direction, and the two airbags 21 in each row of the shock-absorbing system 20 are distributed in the sole 12 along the left-to-right direction. By this arrangement, the anti-sprain

and shock-absorbing effect will occur at the heel part 12a and the forefoot part 12b of the sole 12 simultaneously, which will distribute the stress to the whole sole 12 and therefore solve the problem that only the heel part 12a bears the stress. Further, the multiple rows of the shock-absorbing system 20 are distributed in the sole 12 separate with each other, even one row of the shock-absorbing system 20 goes wrong such as leakage occurs, other rows of the shock-absorbing system 20 will go on working and will not be affected, and this arrangement improves the endurance of the air-cushion shoe.

[0036] The anti-sprain shock-absorbing balance air-cushion shoes provided by the aforementioned embodiments can be applied in various shoes such as sports shoes, basketball shoes, running shoes, casual shoes or leather shoes.

[0037] In view of the above, the anti-sprain shock-absorbing balance air-cushion shoes provided by the aforementioned embodiments of the invention have at least the following advantages: first, the arrangement of the shock-absorbing system in the sole, which includes the airbags and the connecting tube which communicates the airbags, can buffer the impact from the ground to the foot, and performs better shock-absorbing effect. Second, when the airbag room on one side of the sole steps onto something like stones, the airbag room on the same side will be compressed and further the airbag in the same airbag room will be compressed correspondingly. Since the airbags are communicated by a connecting tube, gas in the compressed airbag will flow into the other airbag and drive the other airbag to inflate. Further, the inflation drives the other airbag room to stretch and exerts an influence to the ground, and therefore forms a torque opposite to the tendency of the rollover of the sole. Because of this, the rolling over of the sole is prevented and the sole is kept balance relatively, therefore the sprain is effectively avoided.

Claims

1. An anti-sprain shock-absorbing balance air-cushion shoe, comprising a shoe insert (11) and a sole (12), wherein the air-cushion shoe further comprises two airbags (21) communicating with each other, two airbag rooms (121) are formed in the upper surface of the sole (12) and used to contain the two airbags (21) respectively, the two airbag rooms (121) are distributed in the sole (12) along the left-to-right direction, the combination of the shoe insert (11) and the sole (12) fixes the two airbags (21) in the two airbag rooms (121) respectively, and the two airbag rooms (121) are stretchable and compressible, wherein the two airbags (21) are communicated through a connecting tube (22), the two airbags (21) and the connecting tube (22) which communicates the two airbags (21) constitute a row of shock-absorbing system (20), **characterized in that** there are multiple

rows of the shock-absorbing system (20) which are only arranged at the heel part (12a) of the sole (12).

2. The anti-sprain shock-absorbing balance air-cushion shoe of claim 1, wherein the multiple rows of the shock-absorbing system (20) are sequentially arranged in the sole (12) along the fore-to-aft direction, and both airbags (21) in each row of the shock-absorbing system (20) are arranged in the sole (12) along the left-to-right direction. 5
3. The anti-sprain shock-absorbing balance air-cushion shoe of claim 1, wherein the multiple rows of the shock-absorbing system (20) are arranged in the sole (12) separately from one another. 10
4. The anti-sprain shock-absorbing balance air-cushion shoe of claim 1, wherein a thickness of the heel part (12a) of the sole (12) is larger than a thickness of the forefoot part (12b). 15
5. The anti-sprain shock-absorbing balance air-cushion shoe of claim 1, wherein a shallow groove (111) is formed in the bottom surface of the shoe insert (11), and a top of each airbag (21) is separately contained in the shallow groove (111). 20
6. The anti-sprain shock-absorbing balance air-cushion shoe of claim 1, wherein a connecting tube groove (112) is formed in the bottom surface of the shoe insert (11), and the connecting tube groove (112) is used to contain the connecting tube (22). 25
7. The anti-sprain shock-absorbing balance air-cushion shoe of claim 1, wherein a connecting tube groove (122) is formed in the upper surface of the sole (12), and the connecting tube groove (122) is used to contain the connecting tube (22). 30
8. The anti-sprain shock-absorbing balance air-cushion shoe of claim 1, wherein a recess (120) is formed between the two airbag rooms (121) in the bottom surface of the sole (12). 35
9. The anti-sprain shock-absorbing balance air-cushion shoe of claim 1, wherein the shoe insert (11) is made of hard materials un-easy to deform, and the sole (12) is made of soft materials easy to deform. 40
10. The anti-sprain shock-absorbing balance air-cushion shoe of claim 1, wherein the air-cushion shoe further comprises a vamp (13) which connects with the shoe insert (11). 45

Patentansprüche

1. Schuh mit stoßdämpfendem ausgleichendem Luft-

kissen gegen Verstauchung, umfassend einen Schuheinsatz (11) und eine Sohle (12), wobei der Luftpolsterschuh ferner zwei miteinander verbundene Luftkissen (21) aufweist, wobei zwei Luftkissenräume (121) in der Oberseite der Sohle (12) ausgebildet sind und die beiden Luftkissen (21) aufnehmen, wobei die beiden Luftkissenräume (121) in der Sohle (12) entlang der von links nach rechts verlaufenden Richtung verteilt sind, wobei die Kombination aus Schuheinsatz (11) und Sohle (12) die beiden Luftkissen (21) in den beiden Luftkissenräumen (121) fixiert und wobei die beiden Luftkissenräume (121) dehnbar und komprimierbar sind, wobei die beiden Luftkissen (21) über ein Verbindungsrohr (22) verbunden sind, wobei die beiden Luftkissen (21) und das die beiden Luftkissen (21) verbindende Verbindungsrohr (22) eine Reihe von Stoßdämpfungssystemen (20) bilden, die **dadurch gekennzeichnet sind, dass** es mehrere Reihen des Stoßdämpfungssystems (20) gibt, die nur im Fersenteil (12a) der Sohle (12) angeordnet sind.

2. Schuh mit stoßdämpfendem ausgleichendem Luftkissen gegen Verstauchung gemäß Anspruch 1, wobei die mehreren Reihen des Stoßdämpfungssystems (20) in der Sohle (12) entlang der von vorne nach hinten verlaufenden Richtung hintereinander angeordnet sind und beide Luftkissen (21) in jeder Reihe des Stoßdämpfungssystems (20) in der Sohle (12) in der von links nach rechts verlaufenden Richtung angeordnet sind.
3. Schuh mit stoßdämpfendem ausgleichendem Luftkissen gegen Verstauchung gemäß Anspruch 1, wobei die mehreren Reihen des Stoßdämpfungssystems (20) in der Sohle (12) getrennt voneinander angeordnet sind.
4. Schuh mit stoßdämpfendem ausgleichendem Luftkissen gegen Verstauchung gemäß Anspruch 1, wobei eine Dicke des Fersenteils (12a) der Sohle (12) größer ist als eine Dicke des Vorfußteils (12b).
5. Schuh mit stoßdämpfendem ausgleichendem Luftkissen gegen Verstauchung gemäß Anspruch 1, wobei in der Unterseite des Schuheinsatzes (11) eine flache Nut (111) ausgebildet ist und eine Spitze jedes Luftkissens (21) separat in der flachen Nut (111) enthalten ist.
6. Schuh mit stoßdämpfendem ausgleichendem Luftkissen gegen Verstauchung gemäß Anspruch 1, wobei in der Unterseite des Schuheinsatzes (11) eine Verbindungsrohrnut (112) ausgebildet ist und die Verbindungsrohrnut (112) dazu dient, das Verbindungsrohr (22) aufzunehmen.

7. Schuh mit stoßdämpfendem ausgleichendem Luft-

kissen gegen Verstauchung gemäß Anspruch 1, wobei in der Oberseite der Sohle (12) eine Verbindungsrohrnut (122) ausgebildet ist und die Verbindungsrohrnut (122) dazu dient, das Verbindungsrohr (22) aufzunehmen.

8. Schuh mit stoßdämpfendem ausgleichendem Luftkissen gegen Verstauchung gemäß Anspruch 1, wobei in der Unterseite der Sohle (12) zwischen den beiden Luftkissenräumen (121) eine Aussparung (120) ausgebildet ist.
9. Schuh mit stoßdämpfendem ausgleichendem Luftkissen gegen Verstauchung gemäß Anspruch 1, wobei der Schuheinsatz (11) aus harten und schwer zu verformenden Materialien und die Sohle (12) aus weichen und leicht zu verformenden Materialien hergestellt ist.
10. Schuh mit stoßdämpfendem ausgleichendem Luftkissen gegen Verstauchung gemäß Anspruch 1, wobei der Luftpolsterschuh ferner ein mit dem Schuheinsatz (11) in Verbindung stehendes Vorderblatt (13) umfasst.

Revendications

1. Une chaussure à coussin d'air d'équilibre anti-entorse absorbant les chocs, comprenant un insert de chaussure (11) et une semelle (12), dans laquelle la chaussure à coussin d'air comprend en outre deux coussins gonflables (21) communiquant l'un avec l'autre, deux chambres de coussin gonflable (121) sont formées dans la surface supérieure de la semelle (12) et utilisées pour contenir les deux coussins gonflables (21) respectivement, les deux chambres de coussin gonflable (121) sont réparties dans la semelle (12) le long de la direction gauche-droite, la combinaison de l'insert de chaussure (11) et de la semelle (12) fixe les deux coussins gonflables (21) dans les deux chambres de coussin gonflable (121) respectivement, et les deux chambres de coussin gonflable (121) sont étirables et compressibles, dans laquelle les deux coussins gonflables (21) sont mis en communication à travers un tube de raccordement (22), les deux coussins gonflables (21) et le tube de raccordement (22) qui met en communication les deux coussins gonflables (21) constituent une rangée de système absorbant les chocs (20), **caractérisé en ce qu'il y a de multiples rangées du système absorbant les chocs (20) qui sont disposées uniquement au niveau de la partie talon (12a) de la semelle (12).**
2. La chaussure à coussin d'air d'équilibre anti-entorse absorbant les chocs selon la revendication 1, dans laquelle les multiples rangées du système absorbant

les chocs (20) sont disposées séquentiellement dans la semelle (12) le long de la direction avant-arrière, et les deux coussins gonflables (21) dans chaque rangée du système absorbant les chocs (20) sont disposés dans la semelle (12) le long de la direction gauche-droite.

3. La chaussure à coussin d'air d'équilibre anti-entorse absorbant les chocs selon la revendication 1, dans laquelle les multiples rangées du système absorbant les chocs (20) sont disposées dans la semelle (12) séparément les unes des autres.
4. La chaussure à coussin d'air d'équilibre anti-entorse absorbant les chocs selon la revendication 1, dans laquelle une épaisseur de la partie talon (12a) de la semelle (12) est plus grande qu'une épaisseur de la partie avant-pied (12b).
5. La chaussure à coussin d'air d'équilibre anti-entorse absorbant les chocs selon la revendication 1, dans laquelle une rainure peu profonde (111) est formée dans la surface inférieure de l'insert de chaussure (11), et un haut de chaque coussin gonflable (21) est contenu séparément dans la rainure peu profonde (111).
6. La chaussure à coussin d'air d'équilibre anti-entorse absorbant les chocs selon la revendication 1, dans laquelle une rainure de tube de raccordement (112) est formée dans la surface inférieure de l'insert de chaussure (11), et la rainure de tube de raccordement (112) est utilisée pour contenir le tube de raccordement (22).
7. La chaussure à coussin d'air d'équilibre anti-entorse absorbant les chocs selon la revendication 1, dans laquelle une rainure de tube de raccordement (122) est formée dans la surface supérieure de la semelle (12), et la rainure de tube de raccordement (122) est utilisée pour contenir le tube de raccordement (22).
8. La chaussure à coussin d'air d'équilibre anti-entorse absorbant les chocs selon la revendication 1, dans laquelle un évidement (120) est formé entre les deux chambres de coussin gonflable (121) dans la surface inférieure de la semelle (12).
9. La chaussure à coussin d'air d'équilibre anti-entorse absorbant les chocs selon la revendication 1, dans laquelle l'insert de chaussure (11) est constitué de matériaux durs non faciles à déformer, et la semelle (12) est constituée de matériaux souples faciles à déformer.
10. La chaussure à coussin d'air d'équilibre anti-entorse absorbant les chocs selon la revendication 1, dans laquelle la chaussure à coussin d'air comprend en

outre une empeigne (13) qui est reliée à l'insert de chaussure (11).

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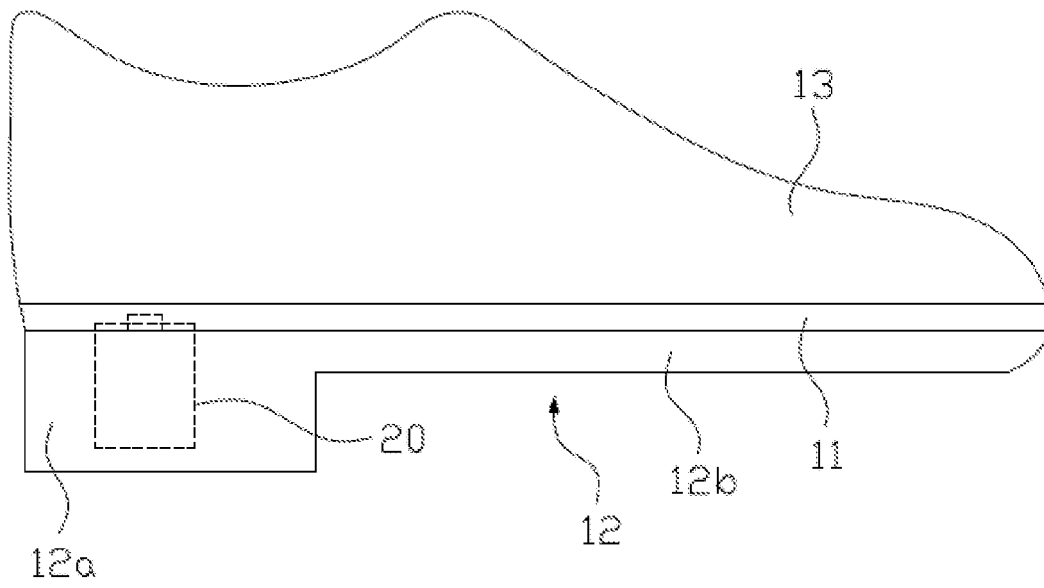


FIG. 1

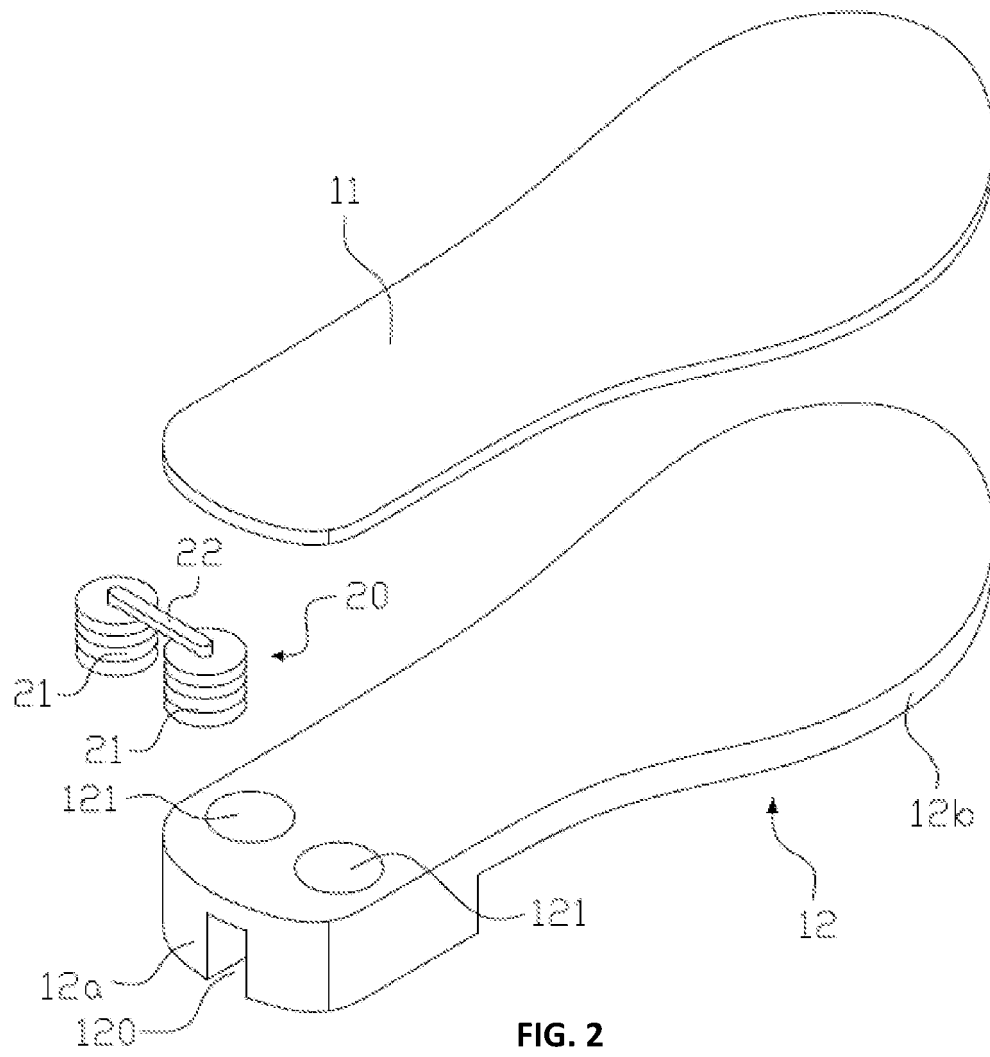


FIG. 2

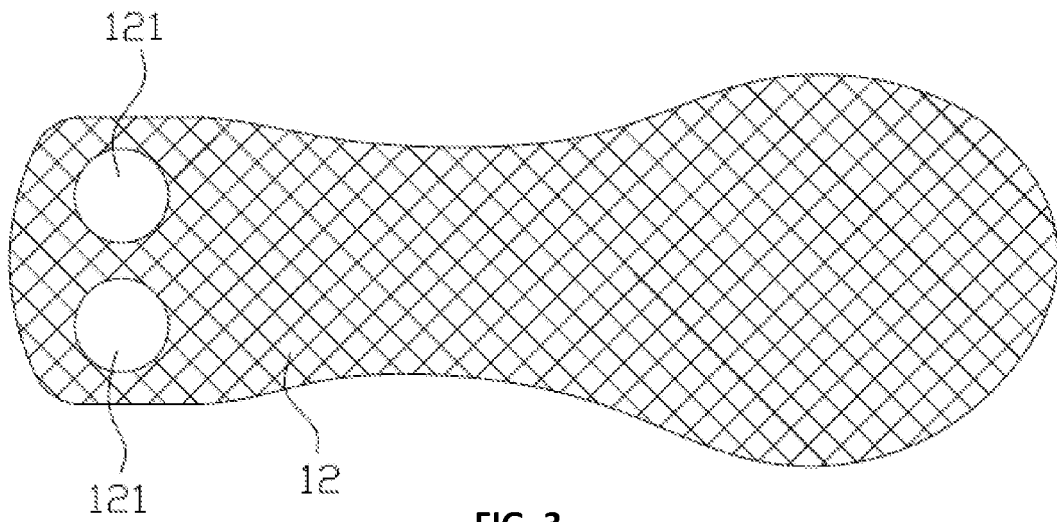


FIG. 3

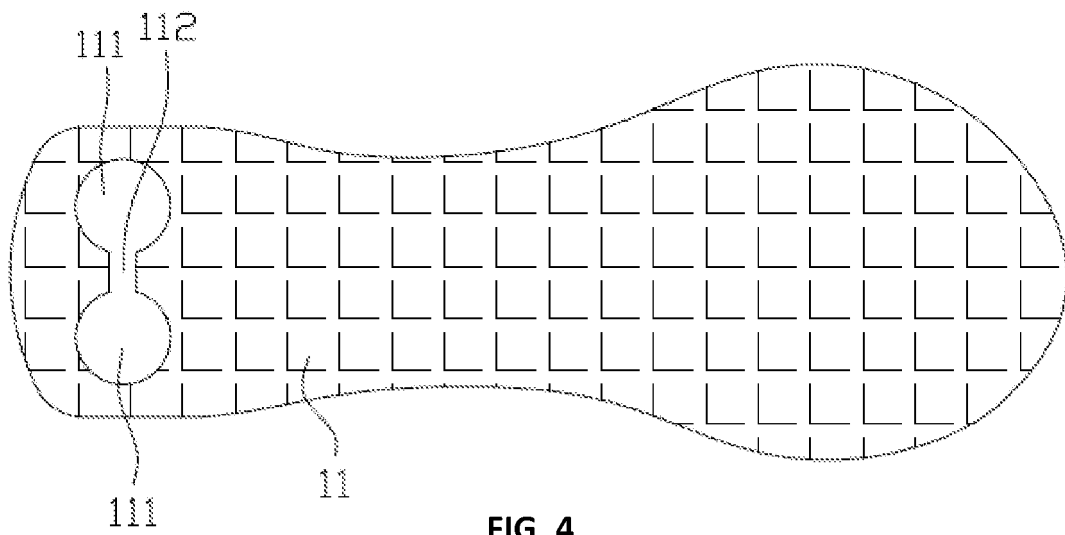


FIG. 4

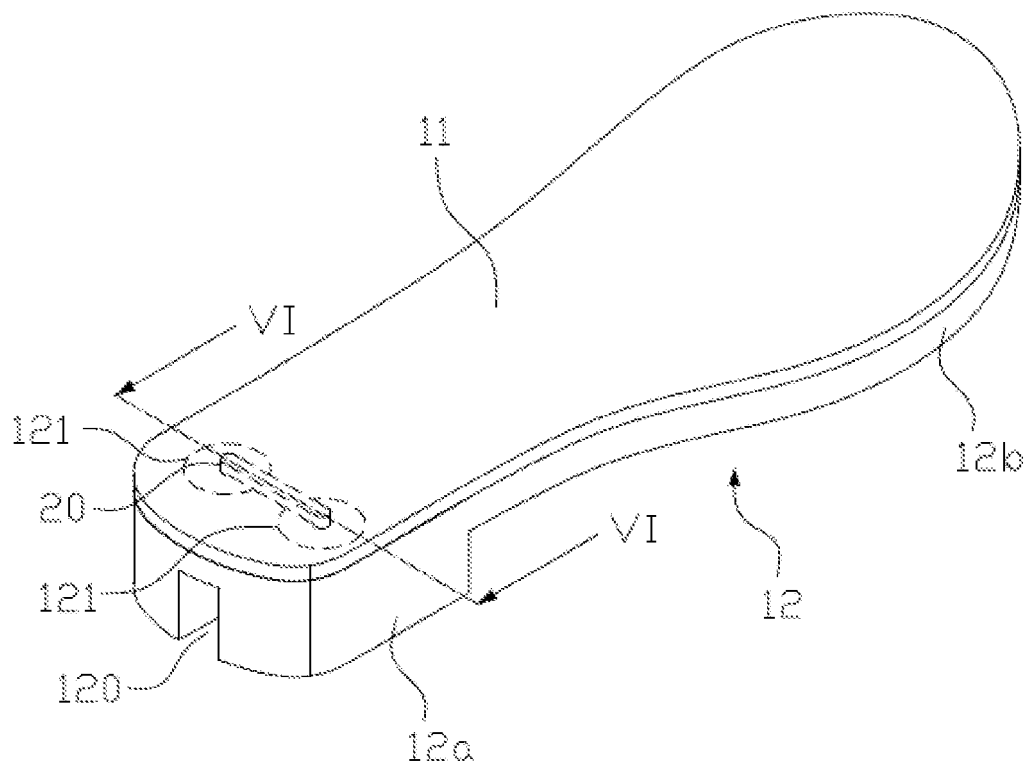


FIG. 5

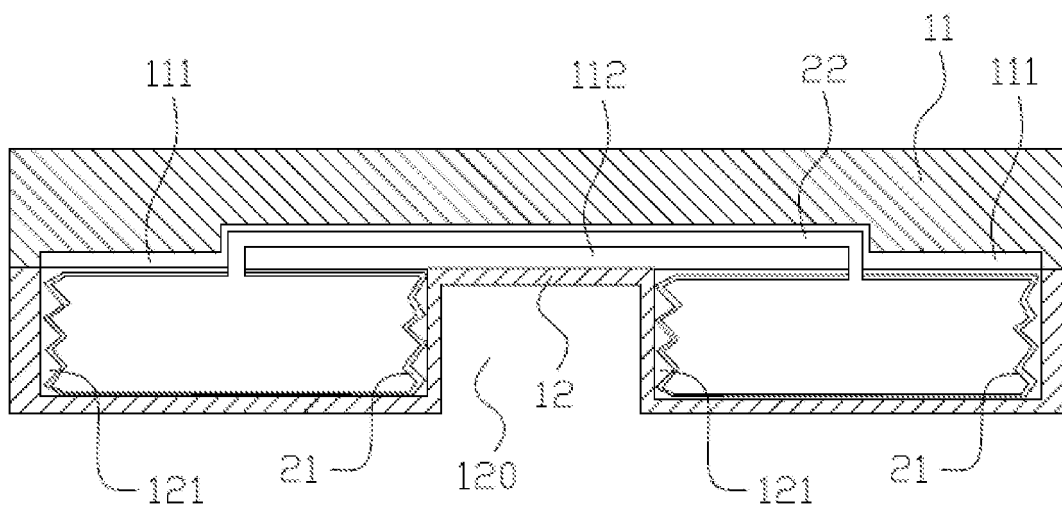


FIG. 6a

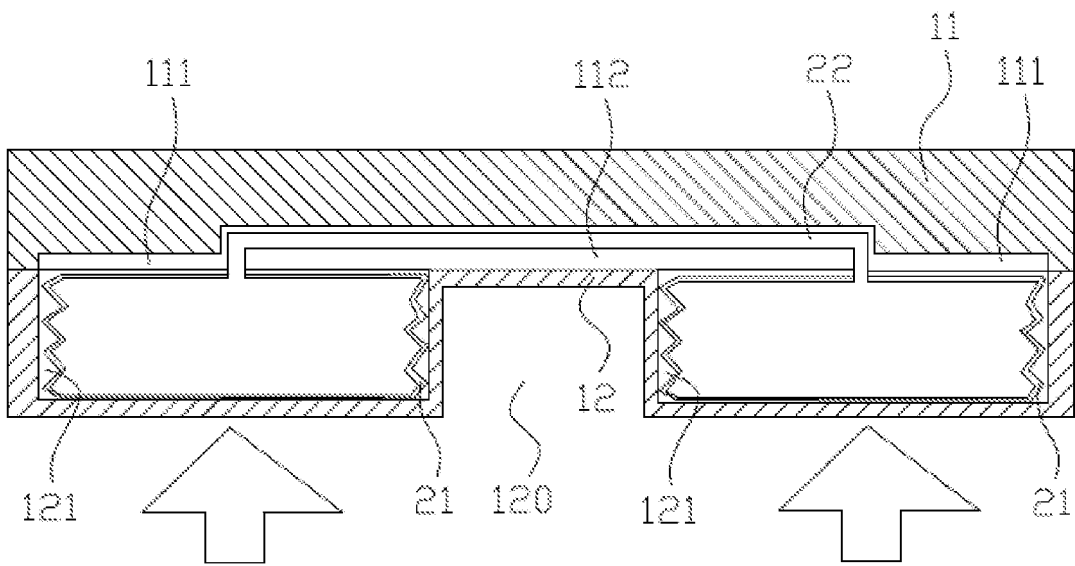


FIG. 6b

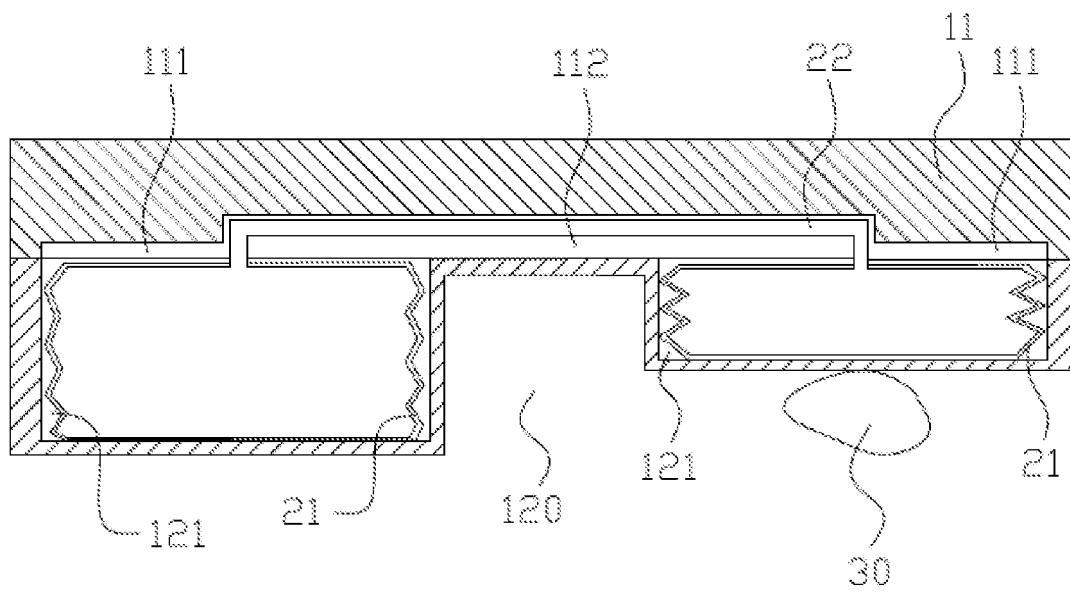


FIG. 6c

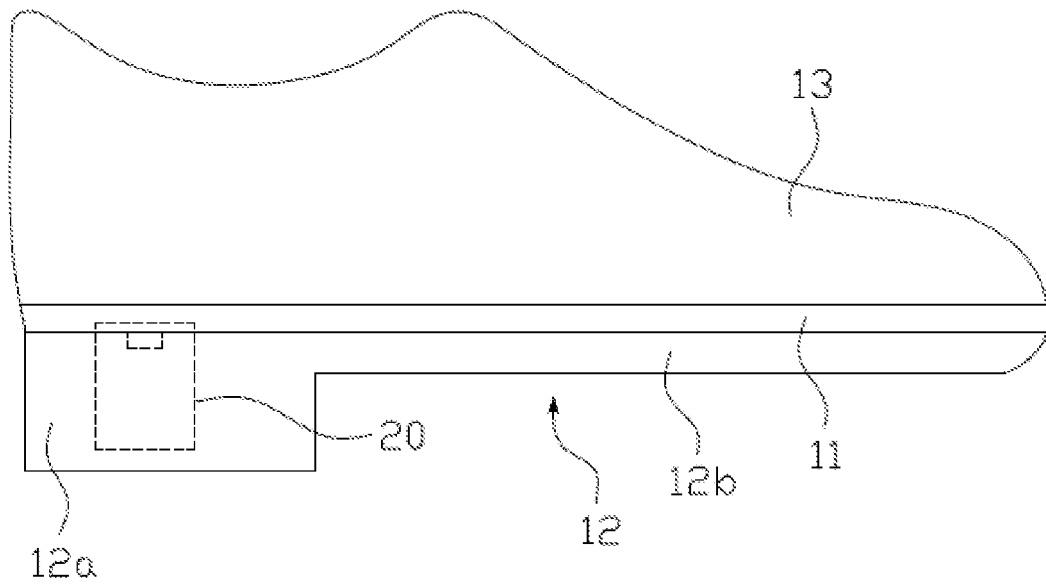


FIG. 7

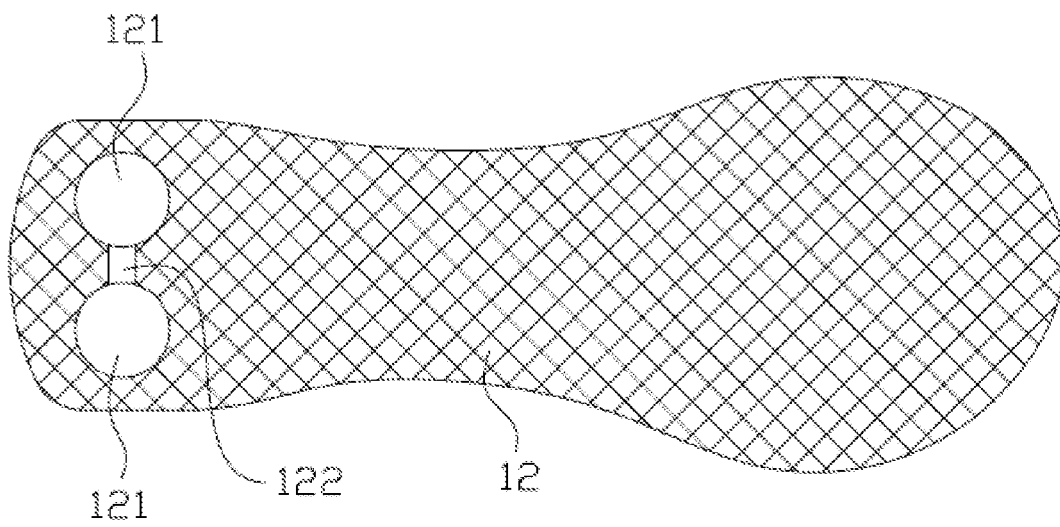


FIG. 8

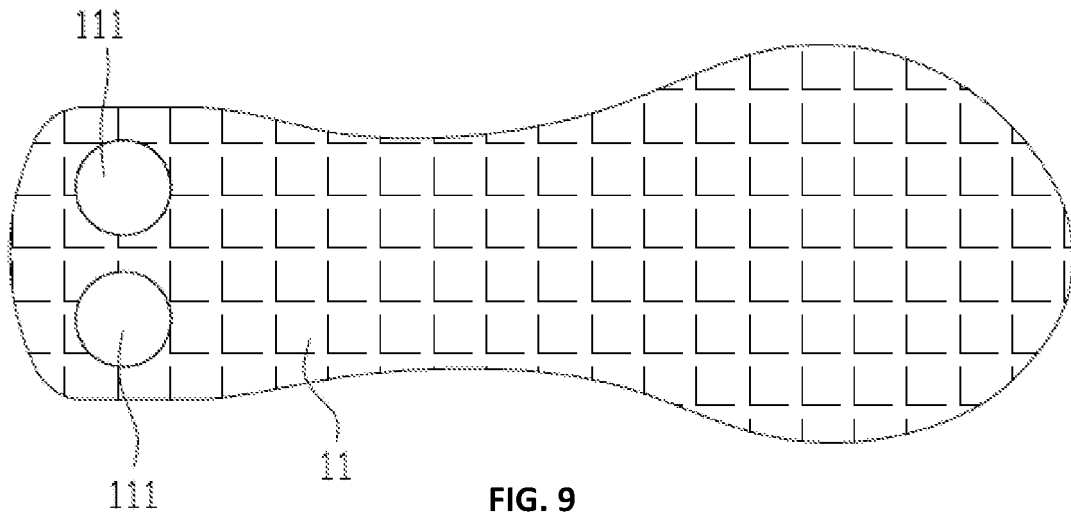


FIG. 9

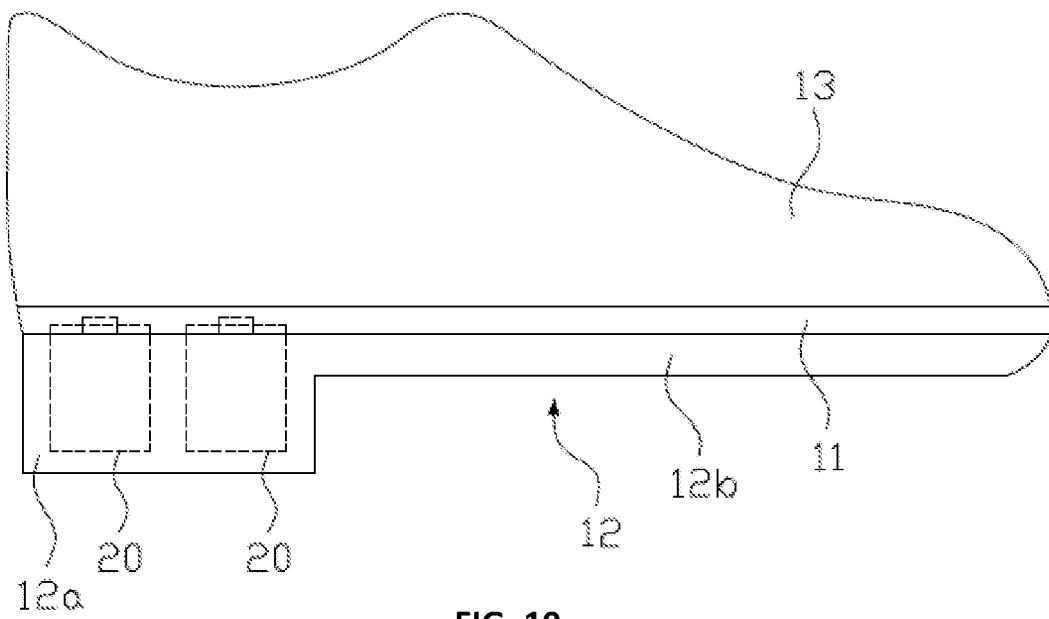


FIG. 10

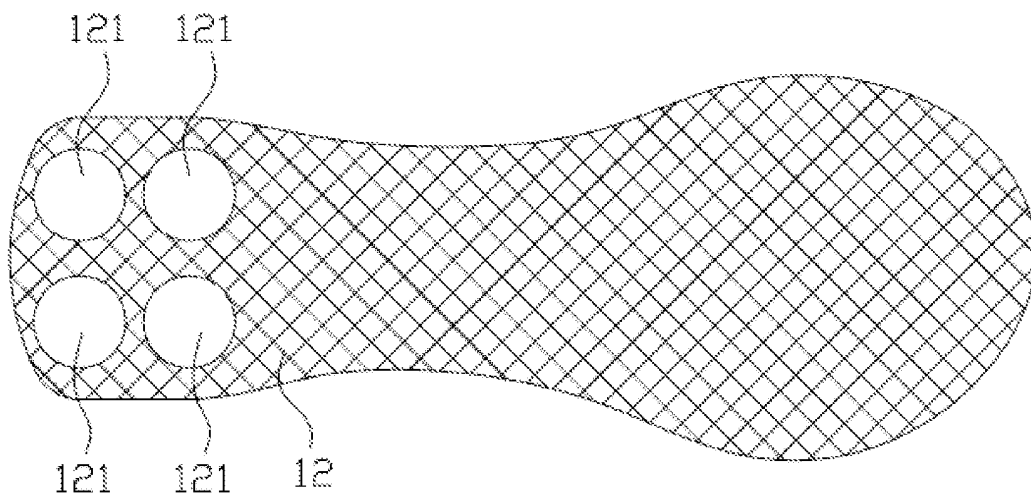


FIG. 11

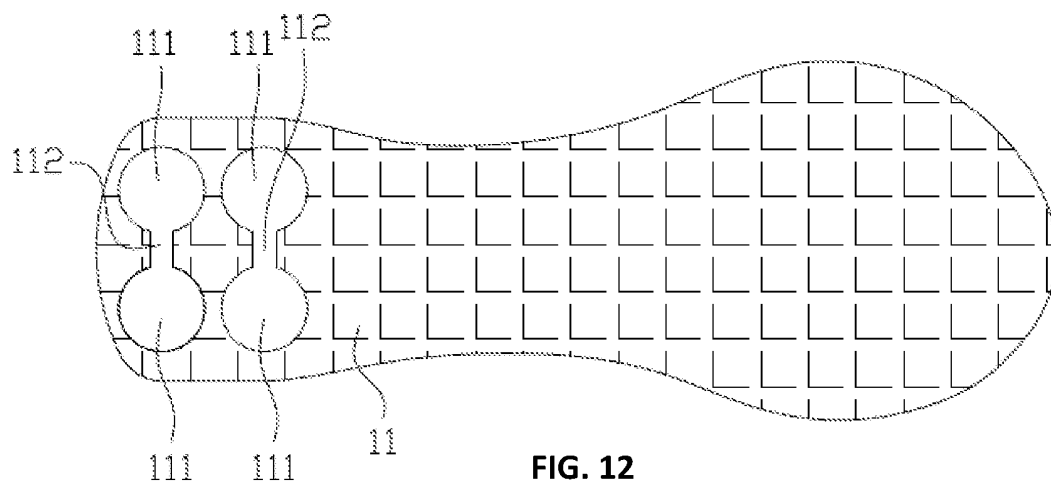


FIG. 12

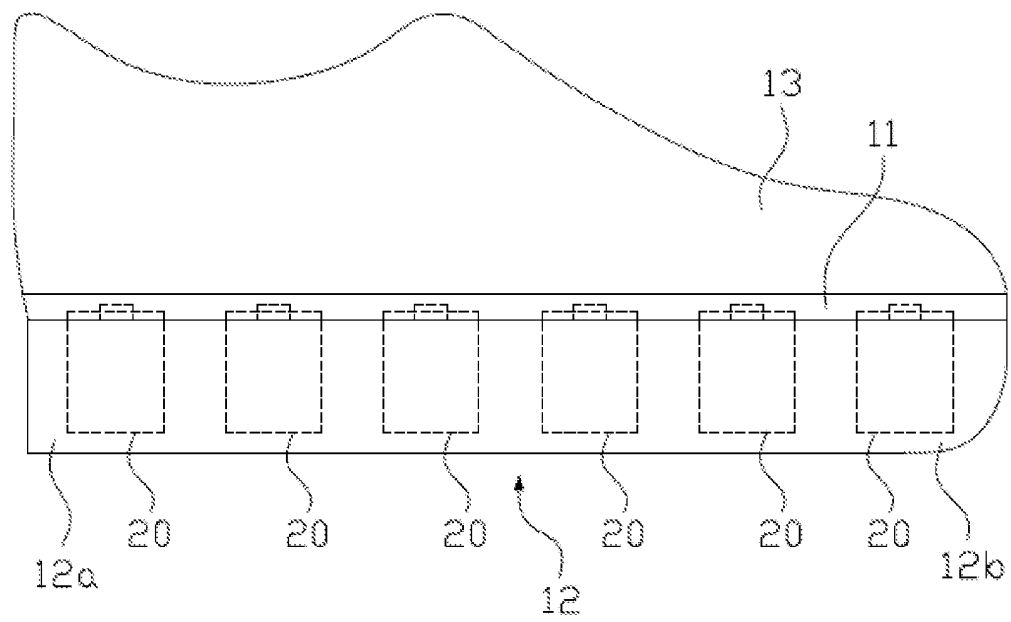


FIG. 13

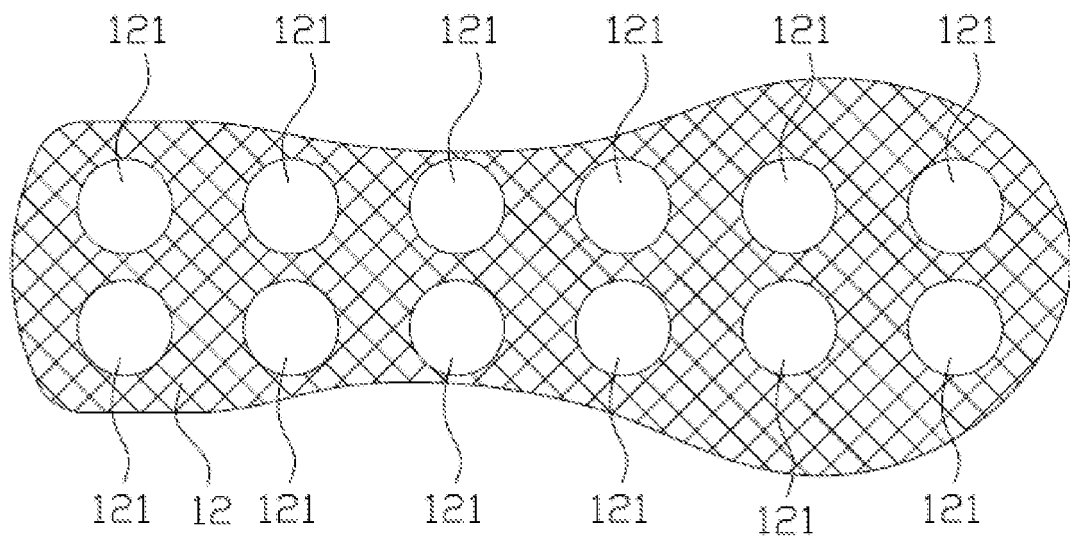


FIG. 14

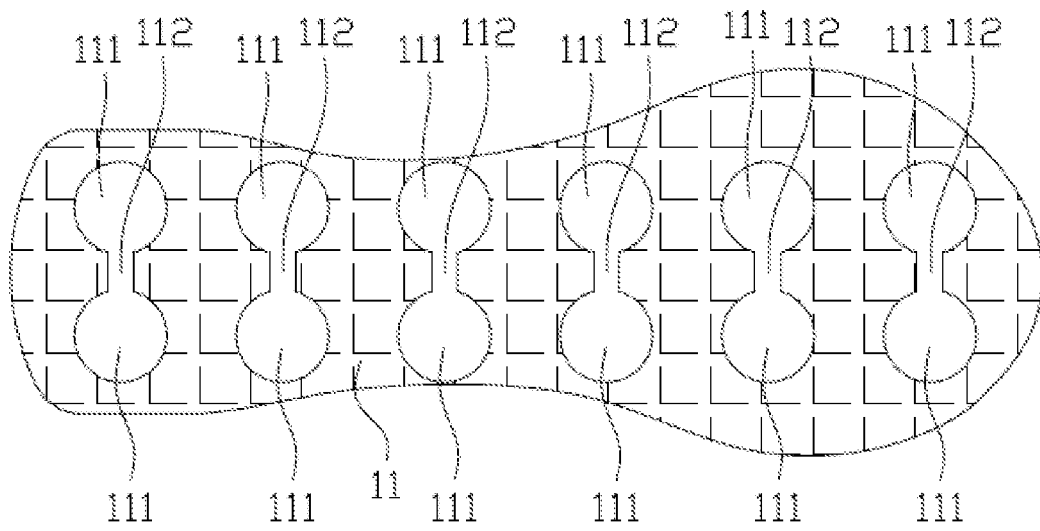


FIG. 15

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1209992 A [0005]