(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 574 792 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
06.01.2021 Bulletin 2021/01

(51) Int Cl.:
A43B 13/41 *(2006.01)* ***A43B 23/22*** *(2006.01)*

(21) Application number: **18425040.5**

(22) Date of filing: **28.05.2018**

(54) SHANK FOR REINFORCEMENT OF FOOTWEAR INSOLES

SCHAFT ZUR VERSTÄRKUNG VON SCHUHEINLAGEN

CAMBRION DE RENFORCEMENT POUR SEMELLES INTÉRIEURES

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(43) Date of publication of application:
04.12.2019 Bulletin 2019/49

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Description

TECHNICAL FIELD

[0001] The present invention is inserted in the footwear sector and concerns, in particular, the shoe shank inserted for reinforcement purposes in the insoles of footwears, both of those having a pronounced heel, including those mainly intended for the female public, and of those with modest height heel, including men's models.

STATE OF THE ART

[0002] Said shoe shanks have a strip shape, which is suitably arched longitudinally and provided with stiffening ribs in a variable number from one to three / four; near the ends, respective holes are provided for fixing the shoe shank to the footwear insole, for example with rivets.

[0003] The stiffening ribs, made by drawing, are usually protruding from the concave side of the arch formed by the shoe shank, and their function is obviously to allow the latter contributing to maintain the ascending shape of the insole towards the rear part that it must have depending on the height of the heel.

[0004] For example, US 2280440A discloses a shoe shank with stiffening ribs protruding from the concave side.

[0005] Some models of shoe shank require the rear end to be affected by a longitudinally elongated hole, which can be closed or opened at the back, giving the same end a fork shape.

[0006] A footwear insole is normally made up of several overlapped and pressed layers, including a lower one made of paper fibrate and an upper one made as well of a cellulose material commercially known as Texon® from the name of the manufacturer, which has good pliability performance.

[0007] The known art provides the shoe shank to be inserted and locked in an intermediate position between the upper and lower layers, positioned starting from the heel's connection area towards the insole's front part, oriented with its concave side facing the lower layer.

[0008] Fixing to the paper fibrate or the Texon layer occurs in correspondence with said fixing holes, usually by means of rivets, as already mentioned; alternatively, some shoe shanks have the holes cut and drawn in such a way that on one side there is a protruding crown of sharp teeth suitable to stick in the paper fibrate or Texon layer.

[0009] The presence of the elongated hole or the fork shaped end allows the shoe shank to affect the heel's connection area of the insole, giving it greater strength, but leaving space for the passage of fastening means (screws or the like) with which the heel is mounted to the shoe.

[0010] As easily understood, the need to strengthen the insole in the heel's connection area is as much felt as more the heel is high and thin at the bottom.

[0011] The so-called spike heels are therefore those that are constructively more problematic in terms of oscillation stability, in particular when combined with very thin uppers or even posteriorly open uppers.

[0012] Since a sudden and unmotivated breakage of a heel can involve the consumer's safety, it has become necessary to introduce a European legislation, ratified also in Italy (UNI EN 12875) which prescribes, among other things, a traction stress test to which is submitted the heel and insole assembly of the footwear so that minimum resistance requirements of the fixing area are guaranteed.

[0013] Shoe shanks of known art have proved to be not very effective in contributing to the strength of the heel's connection area, also due to certain constructive characteristics:

- in the models in which there are only central stiffening ribs, included between the fixing holes and said elongated hole or fork, the shoe shank is not rigid enough in the rear area (where the elongated hole or the fork extends) and therefore increases almost nothing the insole strength where the heel is fixed;
- the stiffening ribs protruding downward, which cause an inprint in the lower layer of the insole, for example the paper fibrate one, hinder the proper mounting of the heel, making it less stable;
- the same ribs protruding downward, with the induced deformation of the lower layer, affect the width of the upper head of the heel and consequently its stability to the oscillation.

[0014] Basically, shoe shanks currently in use in some cases do not bring tangible benefits regarding the ability of a footwear with heel, especially if it is a high one, to overcome the stress tests required by said legislation.

[0015] Another negative aspect, resulting from the fact that the stiffening ribs protrude downward and inprint the lower layer of the insole, concerns the design phase, which must take into account the imprints in the 3D model of the insole and therefore requires to be allowed to detect the geometry of the imprints, which can probably be slightly variable, during production, from one sample to another.

[0016] Still a drawback given by said constructive characteristic, consists in having to provide, in the pressing mold of the insole, appropriate steps to receive said protruding imprints, with the obvious complications and relative costs increase.

SUMMARY OF THE INVENTION

[0017] It is therefore an object of the present invention to provide an improved shoe shank for reinforcing insoles of footwear with heel which, thanks to its original shape, is capable of significantly improving the insole strength in the area where the heel is fixed.

[0018] Another object of the invention is to obtain a

shoe shank which does not interfere with the correct support of the upper head of the heel under the insole, regardless of the shape and/or the dimensions of the head itself.

[0019] Another object of the invention is to propose a shoe shank which does not generate imprints protruding from the lower layer of the insole, so as not to complicate either the design or manufacturing of the mold used for the pressing phase of the insole manufacturing process.

[0020] A further object of the invention relates to the intention of substantially adopting, for the shoe shank proposed, the same construction techniques used for the known types of shoe shank, therefore with almost identical costs.

[0021] Another further object of the invention is to avoid additional processing steps of the insole due to said protruding imprints.

[0022] These and other objects are fully achieved by an improved shoe shank for reinforcing insoles of footwear with heel, with said shoe shank having a constant thickness and longitudinally curved strip shape, provided with: at least one fixing hole near each of its longitudinal ends; a heel fixing opening provided near the rear end and suitable for the passage of the heel fixing means; at least one longitudinal stiffening rib obtained by drawing, the same shoe shank being provided to be longitudinally associated to an insole of a footwear with heel, inserted and locked in an intermediate position between upper and lower layers of said insole and positioned starting from the fixing area of the heel towards the front part of said insole, oriented with its concave side facing said lower layer, with said improved shoe shank comprising at least two of said longitudinal stiffening ribs projecting form the convex side of the same improved shoe shank, that is towards said upper layers of said insole, with the same at least two stiffening ribs symmetrically arranged on the sides of said heel fixing opening and extending longitudinally starting from the rear end of the same improved shoe shank towards said front part of the insole.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] The characteristics of the invention will be clear from the following description of a preferred embodiment of the improved shoe shank for reinforcing footwear insoles of the invention, in accordance with what is proposed in the claims and with the aid of the attached drawings, in which:

- Fig. 1 shows, according to a plan view, a first embodiment of the shoe shank according to the invention;
- Fig. 2 shows a side view of the shoe shank of Fig. 1;
- Fig. 3 shows a sectional view of the shoe shank according to section plane III-III of Fig. 1;
- Fig. 4 illustrates, in a view similar to Fig. 1, a second embodiment of the shoe shank;
- Fig. 5 illustrates, in a view similar to Fig. 1, a third embodiment of the shoe shank;
- Fig. 6A shows, in section, a first constructive variant of the shoe shank of Fig. 5, according to section plane VI-VI of the latter;
- Fig. 6B illustrates, in a further section according to section plane VI-VI, a second constructive variant of the shoe shank of Fig. 5;
- Fig. 7 illustrates, in a view similar to Fig. 1, a fourth embodiment of the shoe shank;
- Fig. 8 is an exploded schematic side view of a footwear with heel's part in which the shoe shank in question is inserted;
- Fig. 9 illustrates, on an enlarged scale, a partial plan view of Fig. 8 to highlight the positioning of the rear part of the shoe shank.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0024] In the above figures, it is pointed as a whole with 1 the improved shoe shank object of the invention.

[0025] The improved shoe shank 1, like those of a known type, is used to reinforce the insoles 2 of footwears C with heel T, both of those having a pronounced heel T, mainly including those intended for the female public, and also of those with a modest height heel T including men's models, as already mentioned in the introduction.

[0026] The improved shoe shank 1 has, in a per se known manner, a constant thickness and a longitudinally curved strip shape and is provided with:

- a fixing hole 3 near each of its front 1A and rear 1P ends;
- a heel fixing opening 4 provided near the rear end 1P and adapted to the passage of the fixing means of the heel T;

[0027] The opening 4 for fixing the heel T, in a possible constructive solution according to the first, third and fourth embodiments (Figs. 1, 5, 7), is posteriorly communicating with the outside, providing a fork shape 40 of the rear end 1P of said shoe shank 1; alternatively, the opening 4 is provided as a longitudinally elongated hole 41, arranged substantially central, as shown in Fig. 4 pertaining to the second embodiment of the shoe shank 1.

[0028] In a not illustrated variant, the fork shaped end 40 or the elongated hole 41 incorporates said fixing hole 3 of the rear end 1P.

[0029] According to known techinques, the improved shoe shank 1 is provided to be associated to the insole 2, inserted and locked in an intermediate position between upper 2A and lower 2B layers of said insole 2 and positioned starting from the rear area 2P of the latter, where the fixing of the heel T is made, for longitudinally extending towards the front part of the insole 2, oriented so that its concave side is directed downwardly towards said lower layers 2B.

[0030] The upper layers 2A comprise a Texon layer of adequate thickness, that is an elastically soft synthetic

material as mentioned above, while in the lower layers 2B there is provided a paper fibrate layer, of the type normally used in the footwear industry.

[0031] According to the invention, the improved shoe shank 1 provides two longitudinal stiffening ribs 5, obtained by drawing, and which, contrary to the known type shoe shanks' ribs, protrude from the convex side of the shoe shank 1, so that they are projecting towards the upper layers 2A of the insole 2 (see Figs. 2 and 8).

[0032] The Texon layer, or equivalent material, "absorbs" in its soft thickness the upward relief of the stiffening ribs 5, preventing to feel its presence when the footwear is worn.

[0033] The two stiffening ribs 5 are symmetrically arranged on the sides of said opening 4 for fixing the heel T and in particular, according to the shape of the same opening 4:

- along the respective prongs 40R of said fork 40, provided in the first, third and fourth embodiments of the shoe shank 1 (Figs.1, 5, 7),
- at the sides of the elongated hole 41, provided in the second embodiment of the shoe shank 1 (Fig. 4).

[0034] The two stiffening ribs 5 are longitudinally extended starting from the rear end 1P of the same shoe shank 1 towards the front end 1A and they have a predefined length which, according to parameters known to those skilled in the art which depend on the type of footwear, may partially (Fig. 7) or totally (Figs. 1, 4, 5) affect the lenght of the improved shoe shank 1.

[0035] In both the above-mentioned solutions, the two stiffening ribs 5 are effective at counteracting the bending of the rear portion of the shoe shank 1, which is the most important portion for stabilizing the rear area 2P of the insole 2 where the fixing of the upper head Ts of the heel T is performed (see Fig. 9 in particular), much more than in the prior art shoe shanks.

[0036] The improved shoe shank 1 can advantageously provide, as illustrated with reference to the third and fourth embodiments (Figs. 5 and 7) at least one additional central stiffening rib 6 interposed between the two lateral stiffening ribs 5 described above.

[0037] In a constructive variant illustrated in Fig. 6A, the additional central stiffening rib 6 protrudes towards the convex side of the arched improved shoe shank 1, like the two lateral stiffening ribs 5.

[0038] Alternatively, it is also possible to provide the same additional central stiffening rib 6 to protrude towards the concave side of the shoe shank 1, opposite with respect to the two lateral stiffening ribs 5.

[0039] It is here clarified that the combinations illustrated between the features of the shape of the opening 4, the length of the stiffening ribs 5, the presence or the absence of the additional central stiffening rib 6 as well as the drawing direction of the latter, are only indicative and not binding, therefore any other combination of the above features can be provided coming within the ambit of scope of protection of the present invention, as defined by the appended claims.

[0040] From the above description, all the advantageous aspects of the improved shoe shank are immediately evident, as proposed, despite a simple constructive solution and apparently not too different from the prior art.

[0041] In fact, it is obtained a noticeable improvement of the insole resistence to bending, in the area where the heel is fixed, without interfering with the correct support of the upper head of the same, regardless of the shape and/or the dimensions of the heel head itself.

[0042] This is made possible by the fact that the upper head of the heel can advantageously find support on a flat surface, rather than corrugated by the imprints present in the prior art insoles due to the deformations induced by the ribs protruding downwards.

[0043] Consequently, the fixing of the heel is more stable and it is increased the resistance to bending stresses of the same, among which those required by the EU regulations, so that the assembly made of the insole and the heel can be tested with positive result.

[0044] As already anticipated in the description, the upward projections of the ribs are not felt under the foot thanks to an upper layer of the insole made of soft material.

[0045] Beyond the purely functional and regulatory level, the lack of protruding imprints from the lower part of the insole offers interesting advantages both in the design phase and in the manufacturing of the mold for pressing the insole, since it is not necessary to take into account such projections.

[0046] This is also beneficial to the insole production process, as accessory processes such as the grinding and smoothing of the protruding imprints are eliminated.

[0047] If the production costs of the proposed improved shoe shank can be quantified as substantially identical to those of a known art shoe shank, there are instead not negligible cost reductions both in the design and in the production of the molds.

[0048] However, it is understood that the above description has an exemplifying and nonlimiting value, the invention being defined by the appended independent claim 1. Preferred embodiments are defined in the dependent claims.

Claims

1. Improved shoe shank for reinforcing insoles (2) of footwear (C) with heel (T), with said improved shoe shank (1) having a constant thickness and longitudinally curved strip shape, provided with: at least one fixing hole (3) near each of its own ends (1A, 1P); an opening (4) provided near the rear end (1P) and suitable for the passage of the heel fixing means (T); at least one longitudinal stiffening rib obtained by drawing, the same shoe shank (1) being provided to be associated to the insole (2) of a footwear (C) with

heel (T), inserted and locked in an intermediate position between upper (2A) and lower (2B) layers of said insole (2) and positioned starting from the fixing area of the heel (T) towards the front part of said insole (2), and oriented with its concave side facing towards said lower layer (2B), with said improved shoe shank (1) providing at least two of said longitudinal stiffening ribs (5) protruding from the convex side of the same improved shoe shank (1), that is towards said upper layers (2A) of said insole (2), with the same at least two stiffening ribs (5) symmetrically arranged on the sides of said opening (4) for fixing the heel (T) and extending longitudinally starting from the rear end (1P) of the same improved shoe shank (1) towards said front part of the insole (2).

2. Improved shoe shank according to claim 1 or 2, **characterized in that** said opening (4) for fixing the heel is posteriorly communicating with the outside, providing a fork shape (40) of the rear end (1P) of said shoe shank (1), with said at least two stiffening ribs (5) arranged to affect the respective prongs (40R) of said fork (40).

3. Improved shoe shank according to the claim 2, **characterized in that** the fork shaped end (40) incorporates said fixing hole (3) of the rear end (1P).

4. Improved shoe shank according to the claim 1, **characterized in that** said opening (4) for fixing the heel (T) is a longitudinally elongated hole (41), arranged substantially central, with said at least two stiffening ribs (5) arranged at the sides of said elongated hole (41).

5. Improved shoe shank according to the claim 1 or 2 or 4, **characterized in that** said at least two stiffening ribs (5) have a predetermined length, for partially affecting the improved shoe shank (1) itself.

6. Improved shoe shank according to the claim 1 or 2 or 4, **characterized in that** said at least two stiffening ribs (5) have a predetermined length, for almost completely affecting the improved shoe shank (1) itself.

7. Improved shoe shank according to any of the preceding claims, **characterized in that** at least one additional central stiffening rib (6) is provided, interposed between said at least two lateral stiffening ribs (5).

8. Improved shoe shank according to the claim 7, **characterized in that** said at least one additional central stiffening rib (6) protrudes from the convex side of the improved shoe shank (1).

9. Improved shoe shank according to the claim 7, **characterized in that** said at least one additional central stiffening rib (6) protrudes from the concave side of the improved shoe shank (1).

Patentansprüche

1. Verbesserter Schuhschaft zur Verstärkung der Einlegesohlen (2) von Schuhwerk (C) mit Absatz (T), wobei der verbesserte Schuhschaft (1) eine konstante Dicke und eine in Längsrichtung gekrümmte Bandform hat, und das Folgendes umfasst: mindestens ein Befestigungsloch (3) in der Nähe jedes seiner eigenen Enden (1A, 1P); eine Öffnung (4), die sich in der Nähe des hinteren Endes (1P) befindet und für den Durchgang der Fersenbefestigungsmittel (T) geeignet ist; mindestens eine durch Ziehen erhaltene Längsversteifungsrippe, wobei der Schuhschaft (1) vorgesehen ist, um mit der Einlegesohlen (2) eines Schuhwerks (C) mit der Ferse (T) verbunden, in einer Zwischenposition zwischen einer oberen (2A) und einer unteren (2B) Schicht der Einlegesohlen (2) eingesetzt und verriegelt und ausgehend vom Befestigungsbereich der Ferse (T) und in Richtung des vorderen Teils der Einlegesohlen (2) positioniert und mit ihrer konkaven Seite in Richtung der unteren Schicht (2B) ausgerichtet zu werden, , wobei der verbesserte Schuhschaft (1) **dadurch gekennzeichnet ist, dass** er mindestens zwei der Längsversteifungsrippen (5), die von der konvexen Seite desselben verbesserten Schuhschaftes (1) vorstehen, d.h. in Richtung der oberen Schichten (2A) der Einlegesohlen, (2) aufweist, und wobei dieselben mindestens zwei Versteifungsrippen (5) symmetrisch auf den Seiten der Öffnung (4) zur Befestigung der Ferse (T) angeordnet sind und sich in Längsrichtung ausgehend vom hinteren Ende (1P) desselben verbesserten Schuhschaftes (1) in Richtung des vorderen Teils der Brandsohle (2) erstrecken.

2. Verbesserter Schuhschaft nach Anspruch 1 oder 2, **dadurch gekennzeichnet daß** die Öffnung (4) zum Befestigen der Ferse posterior mit der Außenseite in Verbindung steht und eine Gabelform (40) des hinteren Endes (1P) des Schuhschaftes (1) bereitstellt, und dass die mindestens zwei Versteifungsrippen (5) so angeordnet sind, dass sie auf die jeweiligen Zinken (40R) der Gabel (40) einwirken.

3. Verbesserter Schuhschaft nach Anspruch 2, **dadurch gekennzeichnet daß** das gabelförmige Ende (40) das Befestigungsloch (3) des hinteren Endes (1P) enthält.

4. Verbesserter Schuhschaft nach Anspruch 1, **dadurch gekennzeichnet daß** die Öffnung (4) zur Befestigung der Ferse (T) ein in Längsrichtung verlaufendes Langloch (41) ist, und die Öffnung im We-

sentlichen zentral angeordnet ist, wobei die mindestens zwei Versteifungsrippen (5) an den Seiten des Langlochs (41) angeordnet sind.

5. Verbesserter Schuhschaft nach Anspruch 1 oder 2 oder 4, **dadurch gekennzeichnet daß** die mindestens zwei Versteifungsrippen (5) eine vorbestimmte Länge haben, um den verbesserten Schuhschaft (1) teilweise zu beeinflussen.

6. Verbesserter Schuhschaft nach Anspruch 1 oder 2 oder 4, **dadurch gekennzeichnet daß** die mindestens zwei Versteifungsrippen (5) eine vorbestimmte Länge haben, um fast vollständig auf den verbesserten Schuhschaft (1) einzuwirken.

7. Verbesserter Schuhschaft nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet daß** mindestens eine zusätzliche zentrale Versteifungsrippe (6) vorgesehen ist, die zwischen den mindestens zwei seitlichen Versteifungsrippen (5) angeordnet ist.

8. Verbesserter Schuhschaft nach Anspruch 7, **dadurch gekennzeichnet daß** die mindestens eine zusätzliche zentrale Versteifungsrippe (6) von der konvexen Seite des verbesserten Schuhschaftes (1) vorsteht.

9. Verbesserter Schuhschaft nach Anspruch 7, **dadurch gekennzeichnet daß** die mindestens eine zusätzliche zentrale Versteifungsrippe (6) von der konkaven Seite des verbesserten Schuhschaftes (1) vorsteht.

Revendications

1. Tige de chaussure améliorée pour renforcer les semelles intérieures (2) des chaussures (C) à talon (T), avec ladite tige de chaussure améliorée (1) ayant une épaisseur constante et une forme de bande incurvée longitudinalement, et comprenant: au moins un trou de fixation (3) près de chacune de ses propres extrémités (1A, 1P); une ouverture (4) située près de l'extrémité arrière (1P) et convient au passage du moyen de fixation du talon (T); au moins une nervure de raidissement longitudinale obtenue par étirage, la même tige de chaussure (1) étant prévue pour être associée à la semelle intérieure (2) d'une chaussure (C) à talon (T), la semelle intérieure étant insérée et verrouillée dans une position intermédiaire entre les couches supérieure (2A) et inférieure (2B) de ladite semelle intérieure (2) et positionnée en partant de la zone de fixation du talon (T) vers la partie avant de ladite semelle intérieure (2), et orientée avec son côté concave tourné vers ladite couche inférieure (2B), la tige de chaussure améliorée (1) étant **caractérisée en ce que** elle comprend au moins deux desdites nervures longitudinales de renforcement (5) faisant saillie du côté convexe de la même tige de chaussure améliorée (1), c'est-à-dire vers lesdites couches supérieures (2A) de ladite semelle intérieure (2), les mêmes au moins deux nervures de renforcement (5) sont disposées symétriquement sur les côtés de ladite ouverture (4) pour fixer le talon (T) et s'étendant longitudinalement en partant de l'extrémité arrière (1P) de la même tige de chaussure améliorée (1) vers ladite partie avant de la semelle intérieure (2).

2. Tige de chaussure améliorée selon la revendication 1 ou 2, **caractérisée en ce que** ladite ouverture (4) de fixation du talon communique postérieurement avec l'extérieur, donnant une forme de fourche (40) de l'extrémité arrière (1P) de ladite tige de chaussure (1), et les au moins deux dites nervures de renforcement (5) sont disposées de manière à affecter les dents respectives (40R) de ladite fourche (40).

3. Tige de chaussure améliorée selon la revendication 2, **caractérisée en ce que** l'extrémité en forme de fourche (40) comprend ledit trou de fixation (3) de l'extrémité arrière (1P).

4. Tige de chaussure améliorée selon la revendication 1, **caractérisée en ce que** ladite ouverture (4) pour la fixation du talon (T) est un trou allongé longitudinalement (41), et l'ouverture est disposée substantiellement au centre, avec lesdites au moins deux nervures de raidissement (5) disposées sur les côtés dudit trou allongé (41).

5. Tige de chaussure améliorée selon la revendication 1 ou 2 ou 4, **caractérisée en ce que** lesdits au moins deux nervures de renforcement (5) ont une longueur prédéterminée, pour affecter partiellement la tige de chaussure améliorée (1) elle-même.

6. Tige de chaussure améliorée selon la revendication 1 ou 2 ou 4, **caractérisée en ce que** au moins deux nervures de renforcement (5) ont une longueur prédéterminée, pour affecter presque complètement la tige améliorée de la chaussure (1) elle-même.

7. Tige de chaussure améliorée selon l'une des revendications précédentes, **caractérisée en ce que** au moins une nervure de renforcement centrale supplémentaire (6) est prévue, qui est interposée entre lesdites au moins deux nervures de renforcement latérales (5).

8. Tige de chaussure améliorée selon la revendication 7, **caractérisée en ce que** ladite au moins une nervure centrale de renforcement supplémentaire (6) fait saillie sur le côté convexe de la tige de chaussure

améliorée (1).

9. Tige de chaussure améliorée selon la revendication 7, **caractérisée en ce que** au moins une nervure centrale de renforcement supplémentaire (6) dépasse du côté concave de la tige de la chaussure améliorée (1).

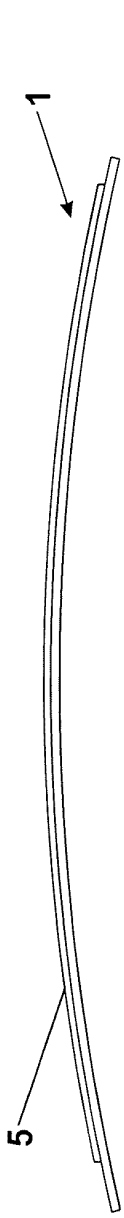


FIG. 2

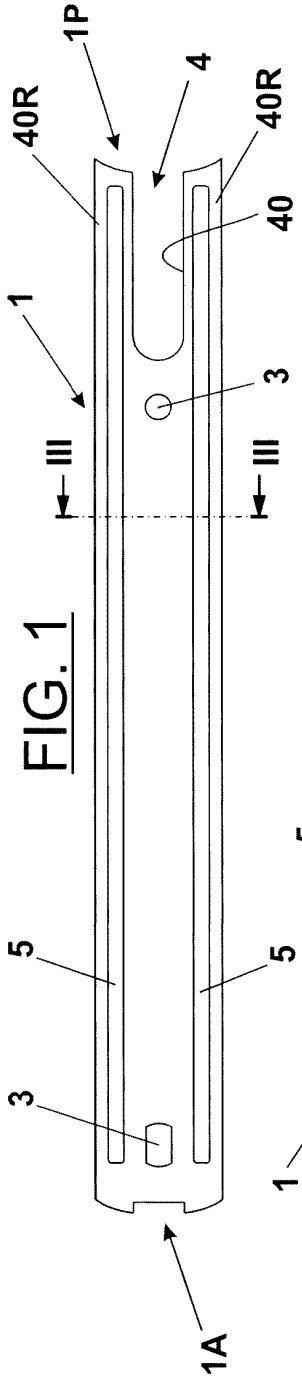


FIG. 1

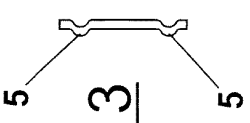


FIG. 3

FIG. 4

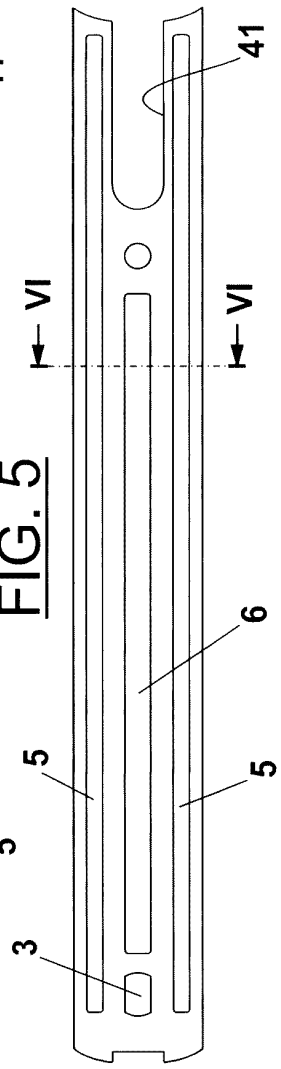


FIG. 5

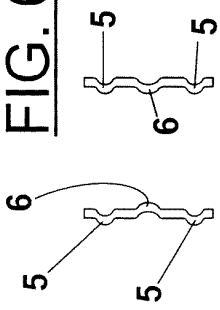


FIG. 6A

FIG. 6B

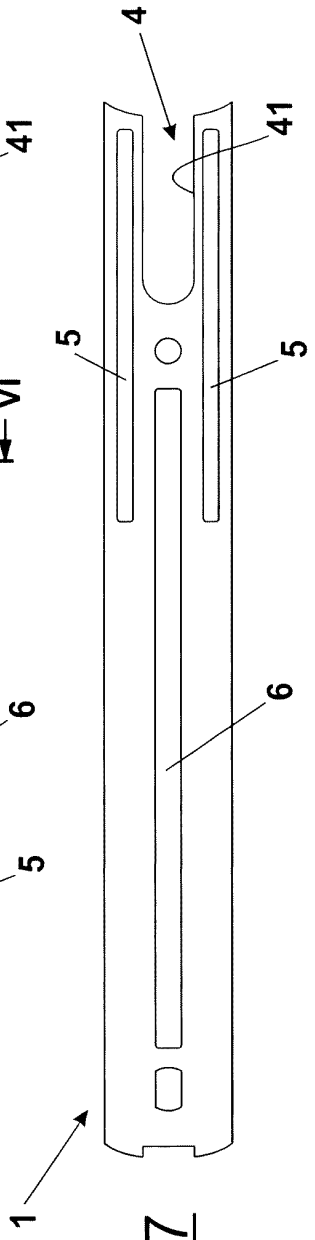


FIG. 7

FIG. 8

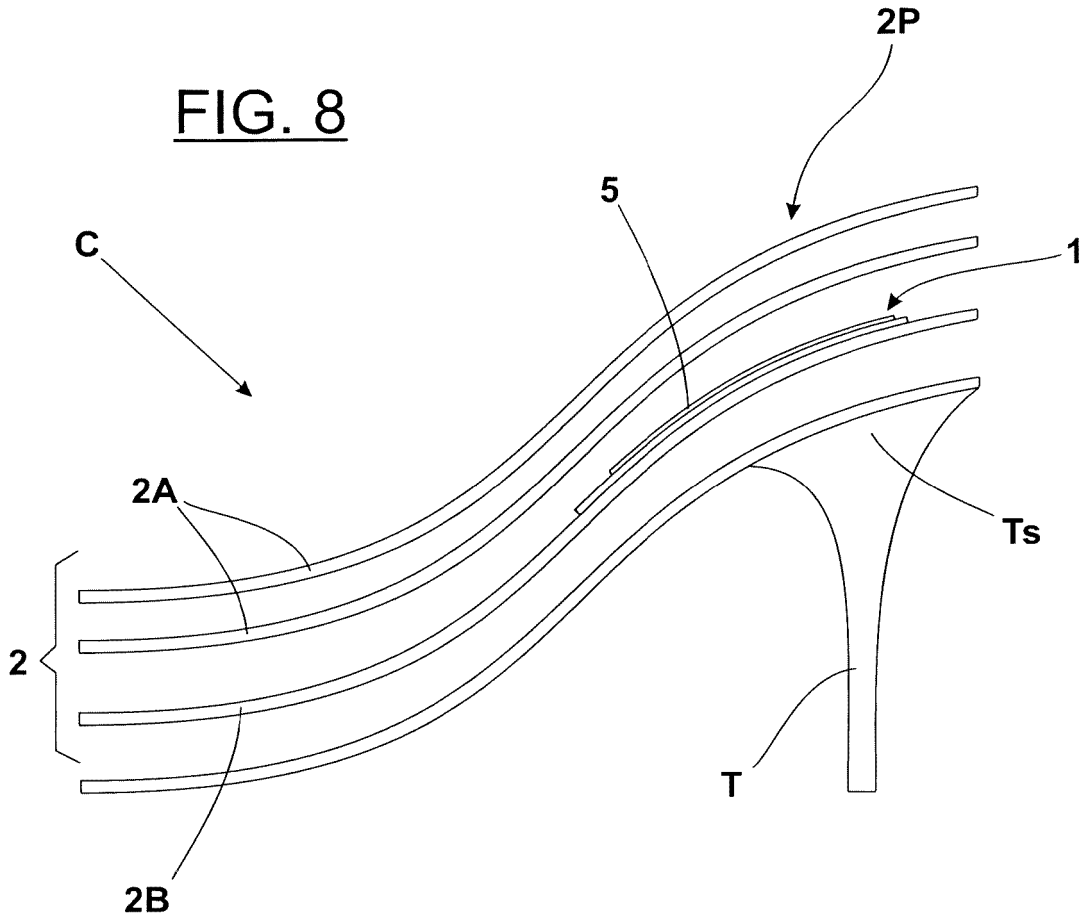
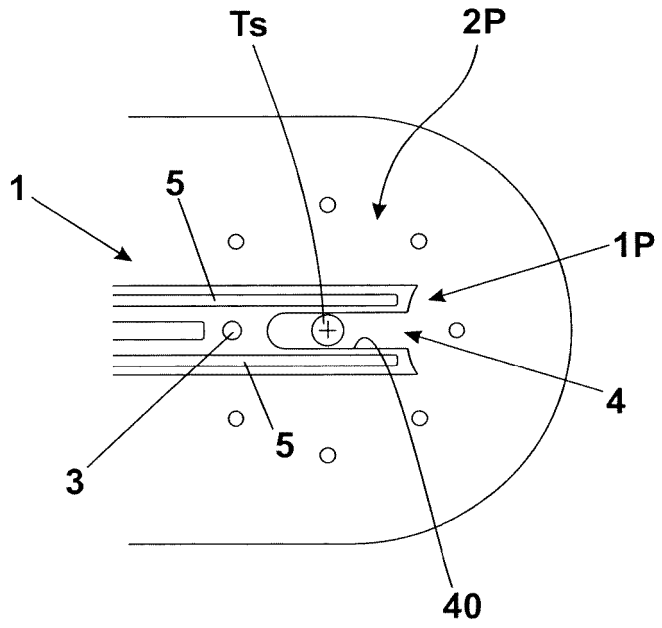


FIG. 9



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Patent documents cited in the description

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