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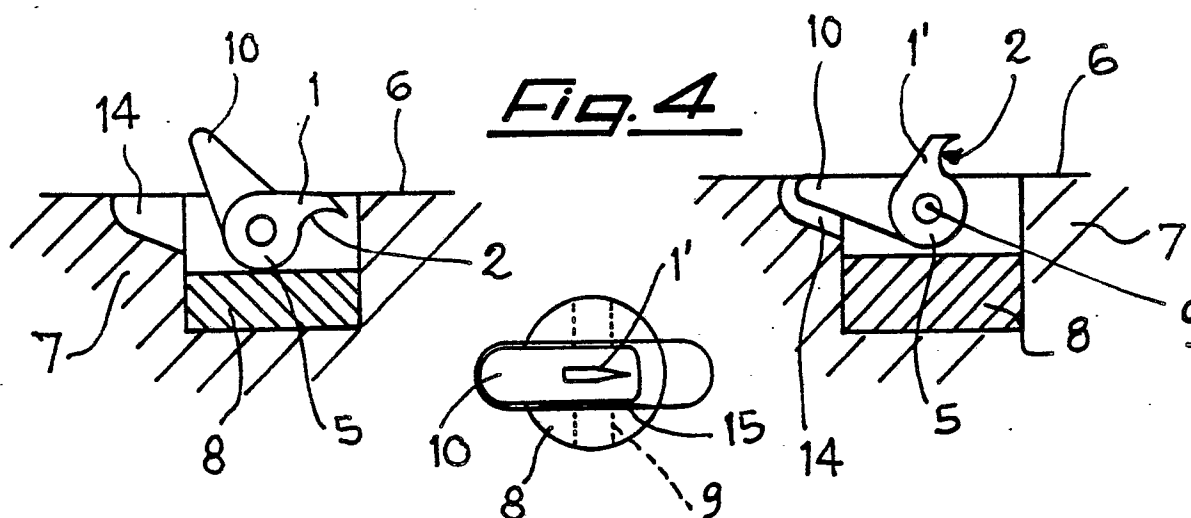
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54 Coupling means for arch-supports, applicable to shoe-trees.

57 Some fixed (1) or mobile (1') lamellar bodies are applied in alignment along the longitudinal axis of the bottoms (6) of the shoe-trees (7).

The bodies (1) and (1') are inclined and present the front part (2) curved and pointed to couple the arch-supports (11) when they are pressed against them.



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COUPLING MEANS FOR ARCH-SUPPORTS, APPLICABLE TO SHOE-TREES

The invention concerns coupling means for arch-supports, applicable to shoe-trees, comprising inclined lamellar bodies, with the front parts curved and pointed and the bases stiffly fixed to the bottom of said shoe-trees or supported on them in seats in which said pointed parts are indented during the idle periods of said shoe-trees.

In the manufacturing technique of shoes, one of the first operating phases provides the application of arch-supports to shoe-trees in order to be able to carry out the following preassembly-assembly phases of the uppers.

At present, said operation, elementary but fundamental, is done by hand, supporting on the bottom of each tree the corresponding arch-support and fixing the parts with a plurality of nails.

Subsequently, when the uppers are fully mounted and carding has been carried out, the arch-supports must be freed from the nails before being fixed to the soles.

To cut working times, and save nails, no longer necessary with this system, and simplify these operations trees are presently used with mobile rods, sliding in tubular bodies with elastic spring elements, at the ends of which are applied a plurality of: pointed, aligned teeth.

The toothed ends slightly project from the bottom surface of the shoe-trees, while the opposite ends of the mobile rods are ready to be aligned by means of pressors, through which said teeth are thrust in the arch-supports which are thus fixed to the trees.

At the end of the preassembly-assembly operations, the rods are withdrawn, the teeth slacken their grip on the arch-supports and the shoe-trees carded with the underside of the upper are sent to the following phases.

Although undoubtedly valid compared to manual procedures, these devices are easy to use in the presence of mechanical pressors but hard to use in other conditions.

The scope of the present invention is to eliminate the above problems. The invention, as characterized by the claims, solves the problem by means of coupling means for arch-supports, application to shoe-trees, with which the following results are obtained:

the lamellar bodies forming the coupling means are inclined and have the front part curved and pointed; the position of said bodies is towards the point of the shoe-trees, in the front zone and in opposite direction in the zone of the heel; the lamellar bodies may be of stiff type, indented type or mixed; they are preferably applied in alignment, along the longitudinal central axis of the base of the shoe-

trees.

The advantages of the present invention mainly consist in the fact that the arch-supports are easily and rapidly fixed to the base of the trees, by simple manual pressure with light longitudinal pull; with the same facility, the uppers complete with arch-supports or finished shoes can be removed from the trees, after the preassembly-assembly and carding operations; said operations, besides being easily and rapidly effectable, do not need any external means for their execution.

The invention is illustrated in greater detail below with reference to the enclosed drawing, in which:

- fig. 1 shows a coupling means of fixed type;
- fig. 2 shows a coupling means of supported, folding type;
- fig. 3 shows a longitudinal section of a shoe-tree, with coupling means, and
- fig. 4 shows a folding coupling means in closing, opening positions and in plan.

The drawings show coupling means for arch-supports, applicable to shoe-trees, essentially comprising inclined lamellar bodies (1) and (1'), with the front parts (2) curved and pointed. The bases of said bodies (1) may be of fixed type (4), or rotating mobile type (5).

The bases of fixed type (4) are substantially engaged directly on the bottom (6) of the shoe-trees (7), while those of rotating type (5) are fixed to a small support, preferably cylindrical (8), by means of a transversal pin (9). The rotating bases (5) are also equipped with small rear lever (10), through which it is possible to make the corresponding lamellar bodies (1') rotate in such a way as to indent them under the level of the bottom (6) of the shoe-trees (7), or make them project above same.

The small rear lever (10) presents the sides and ends rounded and chamfered in order not to produce, in its projected state, any cut or graff to any surrounding trees, when they are stacked in containers.

Each small cylindrical support (8) is pressure-thrust into corresponding, complementary seats, obtained on the bottom (6) of the shoe-trees (7).

In both the version with lamellar bodies (1) fixed and in that with lamellar bodies mobile (1'), they are applied on the bottoms (6), of the shoe-trees (7), so that those present in the arch support zone are positioned with the curved, pointed part (2) forward, while that, or those, in the heel zone are positioned towards the rear part. Preferably, in

standard shoe-trees (7) two lamellar bodies (1) or (1') are applied in the arch support zone and one lamellar body (1) or (1') in the heel zone.

Application may be made with all lamellar bodies (1) of fixed type, or all or mobile type (1'), or also mixed, preferably aligned to one another along the longitudinal axis of each shoe-tree (7).

In working conditions, with the lamellar bodies (1) and/or (1') projecting from the level of the bottom (6) of the shoe-trees (7), the arch-supports (11) are first supported to said lamellar bodies projecting from the arch support zone and pressed on them with a light backward movement. In this way, the lamellar bodies (1) and/or (1') penetrate the arch-supports and are coupled to same by means of their front curved pointed parts. The heel part is then pressed on the corresponding lamellar body, or bodies (1) and/or (1') until it is wedged on same.

After the various operation, including the preassembly-assembly phases of the uppers (12), carding of the overturned sides (13) etc., the shoe-trees (7) may be easily removed from the uppers, removing first the rear part then the point.

In these movements, the lamellar bodies (1) and/or (1') are removed from the notches of the arch-supports, produced by them during application, without causing any tears, and the existing notches are subsequently re-covered with glueing of the lining.

Considering that the solution with the fixed lamellar bodies (1) is the most economical, it may be less preferable since, at the end of use, the shoe-trees (7) are generally stacked in a container. In stacking, the pointed lamellar bodies (1) may cause cuts, scratches or at any rate damage to the surrounding shoe-trees (7). If this must be prevented, on the shoe-trees (7) are applied the mobile lamellar bodies (1'), which, by means of the small rear lever (10), may be made project during use and made indent during stacking periods.

During use, the small rear levers (10) disappear below the level of the bottoms (6) of the shoe-trees (7), in the special niches (14). During idle periods, the cutting lamellar bodies (1') are made disappear below the same level of the bottoms (6), while the small rear levers (10) project from it; this does not cause any damage, however, thanks to their rounded, chamfered shape.

To guarantee the firm position of the lamellar bodies (1') and the corresponding small rear levers (10), at least one return spring (15) is placed between the rotating bases (5) and small supports (8) and put in tension.

Claims

1) Coupling means for arch-supports, applicable to shoe-trees, characterized by the fact of being composed of inclined lamellar bodies (1) and/or (1'), with the front parts (2) curved and pointed.

2) Coupling means for arch-supports according to claim 1, characterized by the fact that the lamellar bodies (1') are of mobile type, applied to rotating bases (5) fixed to small supports (8) by means of transversal pins (9); said small supports being preferably cylindrical and pressure-thrust in corresponding complementary seats obtained on the bottoms (6) of the shoe-trees (7).

3) Coupling means for arch-supports according to claims 1 and 2, characterized by the fact that the mobile lamellar bodies (1') are equipped with small rear rotation levers (10), which, when the bodies (1') are stretched, are comprised in niches (14), while, when the bodies (1') are closed, project from the bottoms (6) of the shoe-trees (7).

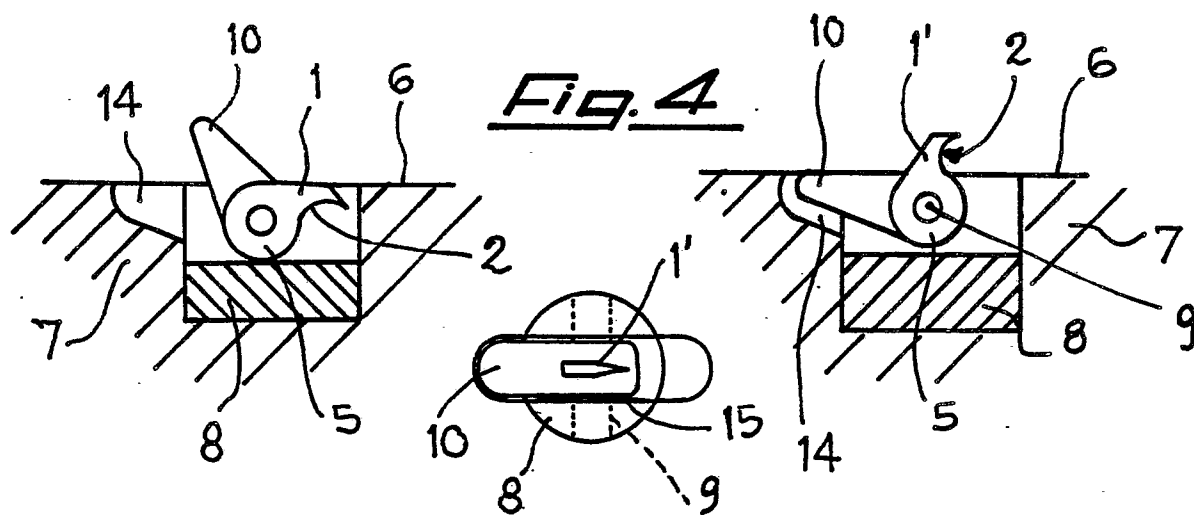
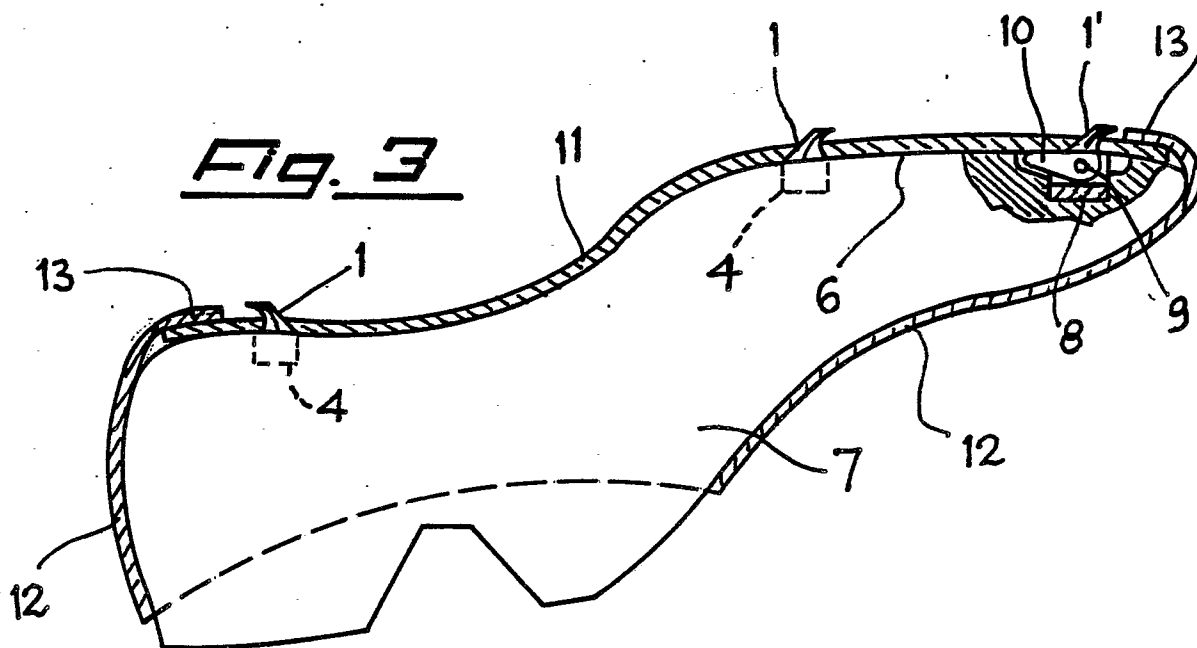
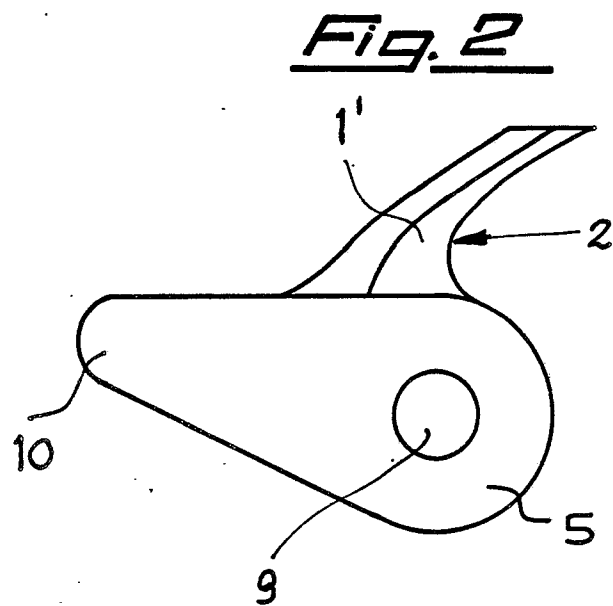
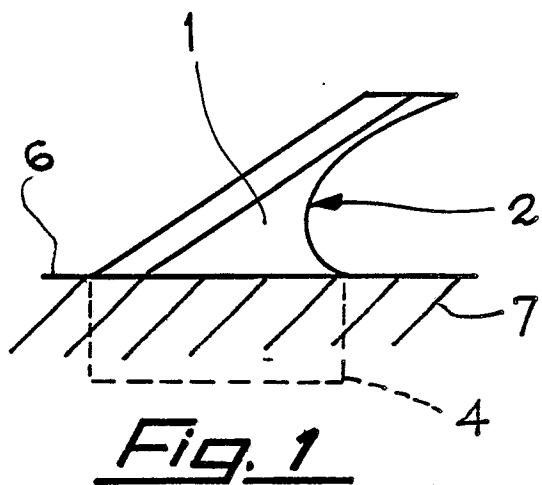
4) Coupling means for arch-supports according to claims 1 to 3, characterized by the fact that the mobile lamellar bodies (1') are equipped with return spring (15).

5) Coupling means for arch-supports according to claim 1, characterized by the fact that the lamellar bodies (1) are of fixed type, applied to bases (4) stiffly fixed to the bottoms (6) of the shoe-trees (7).

6) Coupling means for arch-supports according to claims 1 to 6, characterized by the fact that the lamellar bodies (1) and/or (1') are applied to the bottoms (6) of the shoe-trees (7), inclined towards the point of the trees, in the arch support zone, and inclined in the opposite direction in the heel zone.

7) Coupling means for arch-supports according to claims 1 to 7, characterized by the fact that on the bottoms (6) of the shoe-trees (7) are applied lamellar bodies (1) of fixed type, or lamellar bodies (1') of mobile type, or also mixed.

8) Coupling means for arch-supports according to claims 1 to 8, characterized by the fact that the lamellar bodies (1) and/or (1') are applied in alignment along the longitudinal axis of the bottoms (6) of the shoe-trees (7).





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	US-A-3 935 609 (USM CORP.) * Column 2, lines 27-65 *	1,5	A 43 D 3/02
A	---	7,8	
A	US-A-1 470 651 (USM CORP.) * Page 2, line 94 - page 3, line 12 *	2,7	
A	GB-A- 10 637 (USM CORP.)(A.D. 1911) * Figures *	2,6,8	
A	GB-A-1 243 777 (USM CORP.) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			A 43 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24-05-1988	Examiner RIS M.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			