

(19)



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(11)

EP 0 937 419 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
25.08.1999 Bulletin 1999/34

(51) Int. Cl.⁶: **A43D 11/00**

(21) Application number: **99102992.7**

(22) Date of filing: **15.02.1999**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

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(30) Priority: **18.02.1998 IT MI980304**

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(54) **Method for assembling a shoe, device suitable for use with the method**

(57) A method for assembling a shoe, wherein a last and an assembly insole are assembled by virtue of a band, after which the last is covered with an upper; finally, the band may be removed. The device includes

an abutment body (16) and a resting member (22) which is suitable to support a last for the assembly of shoes.

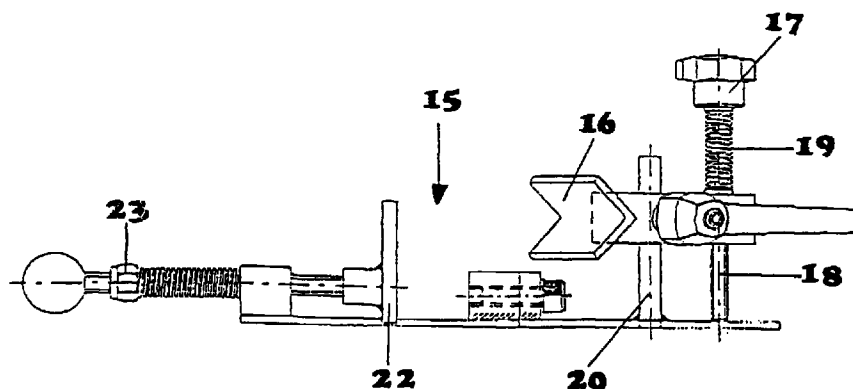


fig. 2

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Description

[0001] The present invention relates to a method for assembling a shoe, to a device suitable for use with the method.

[0002] More particularly, the field of the present invention relates to methods and devices used in the field of the assembly of shoes. Various steps are generally used for this assembly. First of all, an assembly insole is fixed to a last. Then the assembly constituted by the last and the insole is covered with an upper. The upper is then engaged by a plurality of traction means, generally by a plurality of clamps which engage suitable springs, so as to generate adequate traction on the hide of the upper. The last is then pushed upward so as to pull the upper, which is tensioned between the upward thrust of the last and the downward thrust of the above mentioned traction means. At this point, the traction means can be adjusted in terms of its position so as to eliminate any creases occurring on the upper. The upper is then tucked under the insole and made to adhere thereto, generally by virtue of an adhesive, and pressure is applied. At this point the application of the sole, preceded by skiving, completes the assembly of the shoe.

[0003] The above is the field of industrial application of the invention and does not constitute a limitation thereof, since the invention can be applied in equivalent fields.

[0004] Methods and devices according to what has been described above are known in which the assembly insole is fixed to the last by virtue of small tacks, nails, et cetera.

[0005] This system has various drawbacks: first of all, the cost of the tacks, which is significant in the mass-production field to which the present invention relates. Secondly, the assembly insole is provided with tack application holes, which are not desirable. After shoe assembly, the tacks must in fact be extracted from the assembly insole. This entails not only the presence of unwanted holes but also the burden of this tack extraction operation.

[0006] There are also particular markets, for example the British market, in which the use of tacks or nails during the production of a shoe is not accepted, since such metallic bodies might inappropriately remain inside the finished shoe and cause injury to the end user. Finally, wear of the last has been noticed since the continuous application of tacks or nails entails, in the course of time, a significant deterioration thereof.

[0007] US patent 3 092 861, US patent 3 107 376 and US patent 3 238 547 relate to methods and devices to assemble together a last and an assembly insole, by means of a biadhesive band arranged between last and insole. However this arrangement has some drawbacks. First of all it is difficult to properly set the insole on the last because once the insole is laid on the last, the adhesive effect hinders any further adjustment of the

position of the insole with respect of the last. If the particular type of adhesive allows some kind of adjustment between insole and last, then the assembly insole-last is not firm enough to support the subsequent operations and particularly the covering with the upper and the fixing of the upper under the insole.

[0008] The aim of the present invention is therefore to overcome the above drawbacks with a method for assembling a shoe, wherein a last and an assembly insole are assembled by virtue of a band which wraps around said last and said insole, so as to firmly assemble said insole against said last, after which said last is covered with an upper and said upper is tucked under said insole and is then fixed to said insole.

[0009] The invention furthermore relates to a device for banding together a last for the assembly of shoes and an assembly insole, comprising an abutment body (16) which is suitable to support said last, so as to allow to mutually band together said last and said assembly insole, by wrapping a band around said last and said insole, so as to firmly assemble said insole against said last.

[0010] The present invention will become apparent with reference to the description of an embodiment thereof with reference to the accompanying figures, which are provided by way of non-limitative example and wherein:

Figure 1 is a perspective view of a banding machine which can be associated with the device according to the invention;

Figure 2 is a front view of the device according to the invention; and

Figure 3 is a plan view of the device according to the invention.

[0011] With reference to Figures 1 to 3, the device according to the invention comprises a banding machine 10, of a per se known type, which has a frame 11 for applying the band to a body arranged inside the frame 11. The working and construction of the banding machine per se are not described because it is well known to the skilled person in the art. For example, the members 12 for pulling the band are arranged below the resting surface 13, so that the resting surface 13 remains free for the user, which can place the body to be banded freely inside the frame 11.

[0012] The group 15 is fixed, by virtue of the slots 14, to the surface 13 of the banding machine 10. In this manner, the banding machine 10 is modified and can operate according to the invention. Of course, it is possible to use for this purpose standard banding machines which can be commonly found commercially and which can then be modified as described above or in other equivalent manners. Of course the modifications of the commercially available banding machine depend upon

the configuration of the banding machine itself.

[0013] In the exemplified case, the group 15 has an abutment body 16 which is suitable to support a last for the assembly of shoes, so as to allow to band together the last and the assembly insole. More specifically, the abutment body 16 has a concave shape, as shown with particular reference to Figure 2, which is suitable to allow the insertion of the rear part of the last, that is to say, the part that corresponds to the heel of the foot. The abutment body 16 has a vertical adjustment means, constituted in particular by the knob 17, which acts on the abutment body 16 by virtue of the threaded rod 18. The spring 19 keeps the abutment body 16 in position. The vertical adjustment means allows to arrange the abutment body 16 in the most suitable position according to the dimensions and the type of the last to be used for shoe assembly.

[0014] The abutment body 16 furthermore has a horizontal adjustment means 20. The horizontal adjustment means 20 is constituted by a vertical bar 20 on which the abutment body 16 is pivoted so as to allow a rotation of the abutment body 16 on a horizontal plane. The rotation can be locked by acting on the knob 21 when the optimum position is determined. The above described horizontal adjustment means 20 allows to adjust the relative position of the insole with respect to the last. By moving the abutment body 16 on a horizontal plane and simultaneously resting the rear part of the last and the insole against the abutment body 16, the relative position of the assembly insole with respect to the last is also modified as required as a function of the adjustment of the rotation of the abutment means 16.

[0015] There is also a resting member 22 which is suitable to support an intermediate part of the last. In particular, the resting member 22 includes a horizontal adjustment means 23 so as to take into account various dimensions of shoes and lasts. The presence of the resting member 22 allows to have two reference positions, that is to say, the resting member 22 and the abutment body 16, so as to firmly support the last and the assembly insole during the banding operations. The relative position of the abutment body 16 and of the resting member 22 can be adjusted by virtue of the control member 24, which acts by virtue of a threaded bolt, so as to adjust the position and prevent the band from closing the hole provided in the last in the subsequent assembly operations.

[0016] In practice, therefore, the operator merely needs to pick up the last and the insole in his hand, rest the rear part of the last and of the insole on the abutment body 16, whilst the front central part rests on the resting member 22. After this, the banding machine is activated and the band simultaneously wraps around the last and the insole, so as to firmly assemble the insole against the last. The assembly constituted by the last and the insole can then be sent to subsequent operations which have already been described.

[0017] According to a preferred embodiment of the

invention, the banding machine is a strapping and the band is a strap, however many other embodiments are encompassed by the scope of the claims, particularly the band can be formed by an adhesive tape.

[0018] The invention allows to achieve several advantages: in particular, the insole is no longer perforated, since after removing the band the insole is perfectly intact.

[0019] There is a saving in tacks and it is possible to operate even in markets that prohibit the use of metal tacks or nails.

[0020] The operation for extracting the tacks is eliminated, thus simplifying the assembly of the shoe; any risk of injury to the end user with metal parts is eliminated, since there are no metal parts.

[0021] The integrity of the last is ensured, since the last does not have to be perforated with any metallic body.

[0022] With respect to the cited prior art US Patents, the invention has substantial improvements, particularly, according to the invention, the relative position of insole and last can be adjusted as desired, before application of the band. So there is no adjustment problem. This clearly occurs also when the band is an adhesive tape. Also, even if the band is an adhesive tape, the assembly insole-last is very firm and can easily support the subsequent shoe assembly operations, because the band is wrapped around the insole-last assembly and not between last and insole. This difference is very important because, according to the prior art, the tape is stressed by peeling and so cannot withhold a strong stress, while, according to the invention, the tape is stressed by traction and so can support a stress uncomparably higher.

[0023] All this is achieved with a very simple and cheap means, thus ensuring a reduction in operating expenses and an increase in reliability.

Claims

1. Method for assembling a shoe, wherein a last and an assembly insole are assembled by virtue of a band which wraps around said last and said insole, so as to firmly assemble said insole against said last, after which said last is covered with an upper and said upper is tucked under said insole and is then fixed to said insole.
2. Method according to claim 1 in which said band is simultaneously wrapped around said last and said insole.
3. Method according to at least one of the preceding claims in which said band is finally removed.
4. Method according to at least one of the preceding claims in which the operator picks up the last and the insole and rests the last and the insole on an

abutment body (16), so as to allow to band them together.

5. Method according to at least one of the preceding claims in which the operator rests the rear part of said last and of said insole on said abutment body (16). 5
6. Method according to at least one of the preceding claims in which the operator rests the front central part of said last and of said insole on a resting member (22), so as to firmly support said last and said insole during banding. 10
7. Method according to at least one of the preceding claims in which said band is a strap. 15
8. Device, for banding together a last for the assembly of shoes and an assembly insole, comprising an abutment body (16) which is suitable to support said last, so as to allow to mutually band together said last and said assembly insole, by wrapping a band around said last and said insole, so as to firmly assemble said insole against said last. 20
9. Device according to claim 8, wherein said abutment body (16) has a concave shape which is suitable to support the rear part of said last. 25
10. Device according to at least one of the preceding claims, wherein said abutment body (16) has a vertical adjustment means (17,18). 30
11. Device according to at least one of the preceding claims, wherein said abutment body has a horizontal adjustment means (20). 35
12. Device according to at least one of the preceding claims, comprising a resting member (22) for supporting an intermediate part of said last. 40
13. Device according to claim 12, wherein said resting member has a horizontal adjustment means (23).
14. Device according to at least one of the preceding claims in which said band is a strap. 45
15. Each new feature or new combination of features. 50

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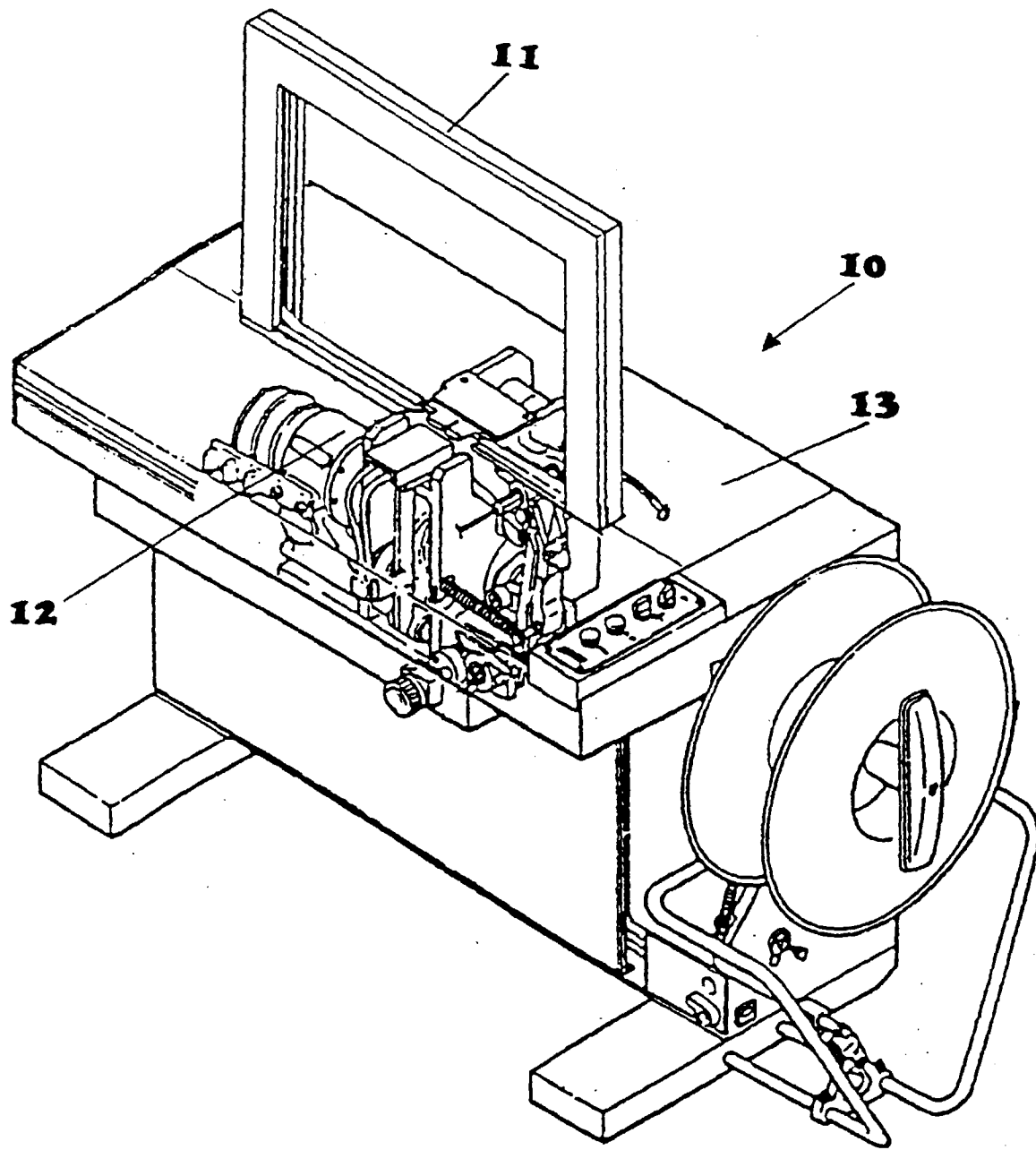


fig. 1

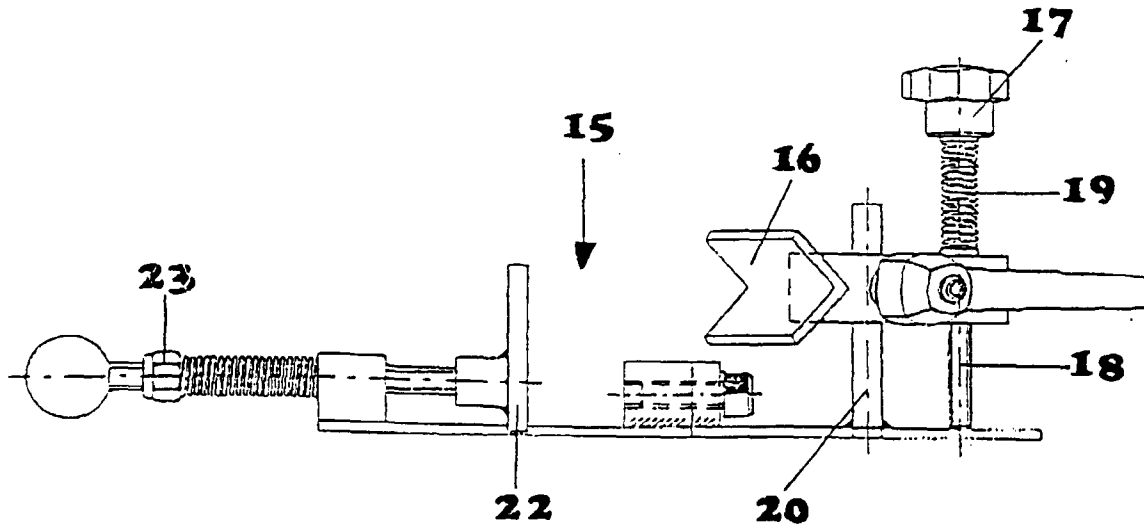


fig. 2

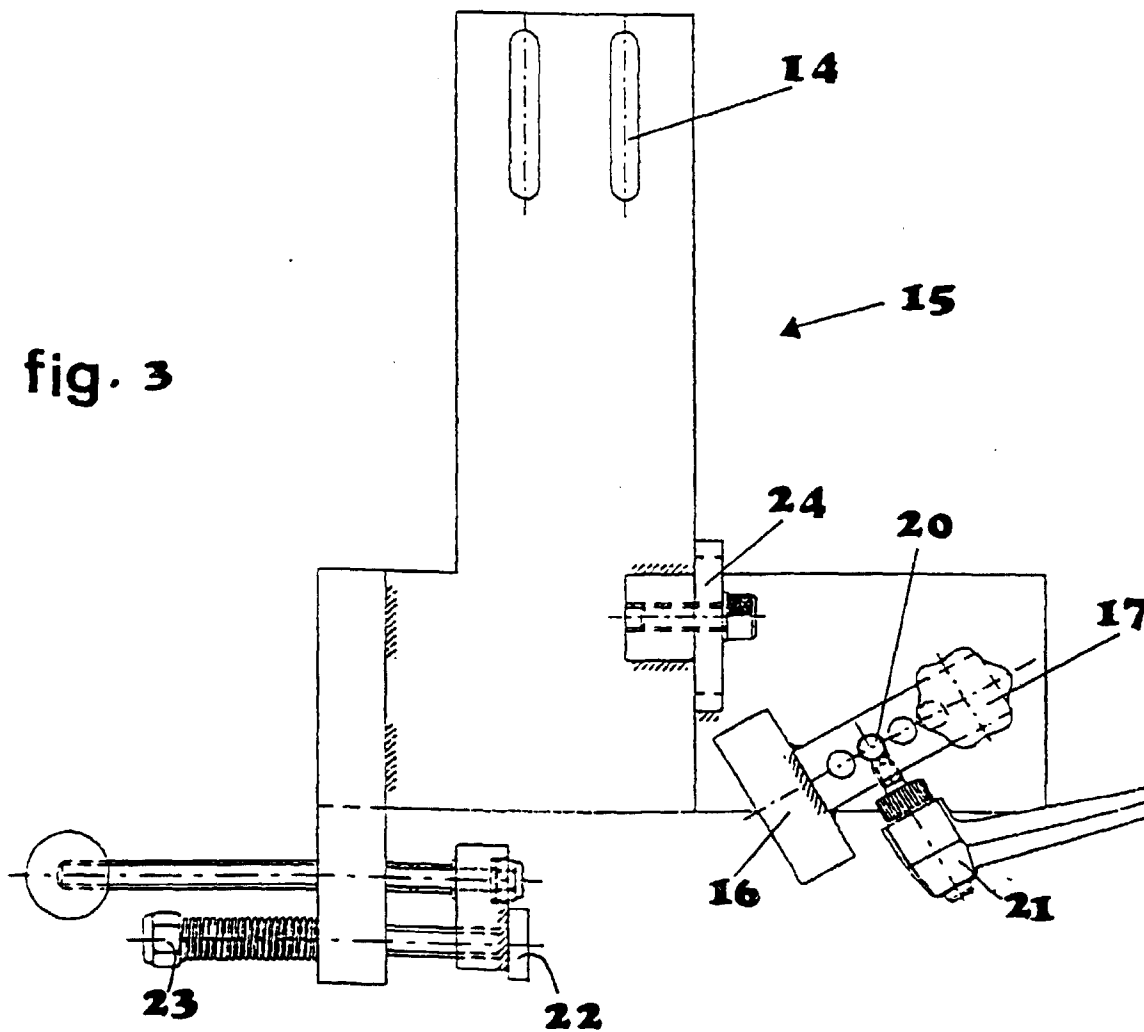


fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 99 10 2992

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.6)
A	US 3 092 861 A (REID ET AL.) 11 June 1963 * column 2, line 50 - column 3, line 12; claims *	1-15	A43D11/00
A	US 3 238 547 A (REID ET AL.) 8 March 1966		
A	US 3 107 376 A (REID ET AL.) 22 October 1963		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A43D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25 May 1999	Examiner Soederberg, J
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			

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 10 2992

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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25-05-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3092861 A	11-06-1963	NONE	
US 3238547 A	08-03-1966	NONE	
US 3107376 A	22-10-1963	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82