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

(11) EP 0 806 156 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.11.1997 Bulletin 1997/46

(51) Int. Cl.[6]: **A43D 111/00**, A43D 119/00

(21) Application number: **96830257.0**

(22) Date of filing: **03.05.1996**

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

(71) Applicant:
OFFICINE MECCANICHE MOLINA & BIANCHI S.p.A.
27029 Vigevano (Pavia) (IT)

(72) Inventors:
- **Molina, Giuseppe**
  27029 Vigevano, Pavia (IT)
- **Bianchi, Carlo**
  27025 Gambolo', Pavia (IT)

(74) Representative:
Siniscalco, Fabio et al
c/o JACOBACCI & PERANI S.p.A.
Via Visconti di Modrone, 7
20122 Milano (IT)

(54) Machine for a shoemaking operation, especially for fixing the upper to the insole

(57) A machine for a shoemaking operation, especially for fixing the upper to the insole, in which suitable mechanical members (12-16) position on a support (11) a shoemaker's last (A) to which is attached the insole (B) and over which is laid the upper (C), grip and stretch the upper (C), clamp the last (A) on the support (11), and fold the upper (C) onto the insole (B) in order to fix the upper to the insole, is also provided with transferring and conveying members (17-21) underneath the support (11), into which the last (A) is discharged under gravity after having been released, and by which the last (A) is passed on for the succeeding operations. This enables the operator to perform the task without the risk of accidents, at high speed, and without damaging the footwear.

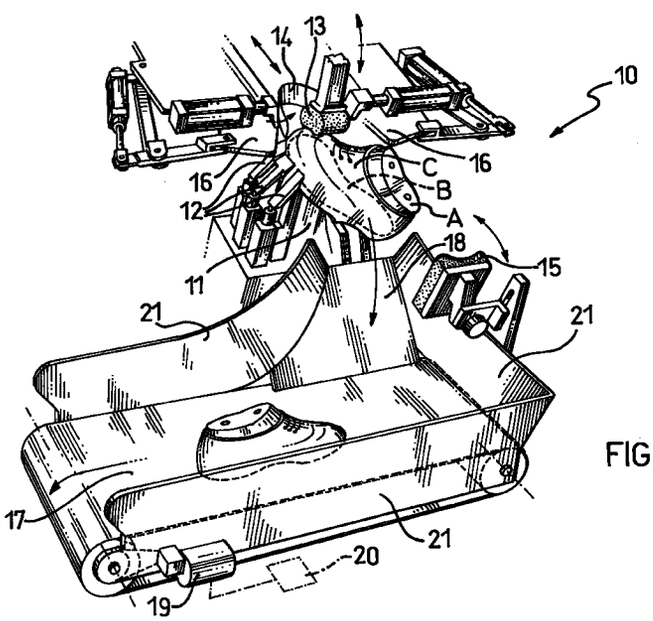

FIG.1

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Description

The present invention relates to a machine for a shoemaking operation, especially for fixing the upper to the insole.

Known machines of this kind usually include support means on which to position a shoemaker's last to which is attached the insole and over which is laid the upper, means for gripping and stretching the upper, means for clamping the last on said support means, and means for folding the upper onto the insole in order to fix the upper to the insole.

Normally the operator positions the last with the upper and the insole on the support means and then operates the machine in such a way that the grasping means grip and stretch the upper, the clamp means clamp the last on the support means, and the folding means fold the upper onto the insole, to which glue has been applied by suitable devices, so fixing the upper to the insole by adhesive bonding. At the end of the operating cycle, the last with the upper glued to the insole is released from the abovementioned grasping, clamping and folding means and drops into a suitable receptacle positioned near the support means. The operator then positions a new last with insole and upper on the support means and recommences the operating cycle. During this new operation the operator removes the previous last from the receptacle and passes it on for the succeeding operations. The process continues in this way, the lasts being used one after the other.

However, this method of working has many drawbacks.

In the first place, when the operator takes the previous last from the receptacle his hands are close to the mechanical parts of the machine that are carrying out the above functions, and therefore there is a high risk of an accident if he is distracted.

Furthermore the operator is losing time in taking the previous last and passing it on for the next operation and may even not be ready to position a new last on the support means. This is obviously to the detriment of productivity.

Lastly, for whatever reason, the operator may not remove the last from the receptacle during each new operating cycle, in which case the following last, on falling into the receptacle, may strike the previous last at some speed sufficient to cause damage to the uppers mounted on the lasts.

It is an object of the present invention to overcome the drawbacks enumerated above.

This object is achieved with a machine for a shoemaking operation of the type described above, characterized by transferring and conveying means underneath said support means, into which the last is discharged under gravity after being released from said grasping, clamping and folding means and by which the last is passed on towards the next operation.

To enable the invention to be understood more clearly, a description will now be provided of a nonlimiting example of an embodiment thereof, illustrated in the accompanying drawings in which:

Fig. 1 is a perspective view of a machine for a shoemaking operation according to the invention, illustrated in its fundamental elements;

Fig. 2 shows the machine of Fig. 1 accompanied by a movable container;

Figs. 3 and 4 show the machine of Fig. 1 accompanied by other means of conveyance.

The machine for a shoemaking operation shown in Fig. 1, denoted as a whole by the numeral 10, is designed to adhesively bond the front part of the upper to the insole, thus carrying out one of the operations that lead to the finished item of footwear. For this operation a last A is used to which the insole B is attached and over which the upper C is laid.

The machine 10 includes: a support 11 for the front part of the last A; a series of grips 12 controlled by actuators for gripping and stretching the upper C; a front pad 13 (illustrated in Fig. 1 only), a resilient front half collar 14 and a rear pad 15, all controlled by individual actuators and movable in the directions indicated by the arrows in order to clamp the last A on the support 11; and plates 16, also controlled by individual actuators, in order to fold the upper C onto the insole B.

All the components listed above are known per se and are not therefore described in detail here.

The machine 10 also includes devices which apply the glue to the front part of the insole B, being arranged in the vicinity of the support 11, but not visible in the figures. These devices will not be further described as they are of known type.

Lower down, below the support 11, is a conveyor belt 17 connected to the support 11 by a sloping wall 18. The conveyor belt 17 is driven by a motor 19 controlled by a central electronic control means 20, the last two items being shown in Fig. 1 only. There are also containment walls 21 along the sides of both the conveyor belt 17 and the sloping wall 18 and against the tail end of the conveyor belt.

The machine 10 thus described and illustrated operates as follows.

The operator positions the last A with the insole B and the upper C on the support 11 and then operates the machine so that the grips 12 grip and stretch the upper C, the pads 13, 15 and the half collar 14 clamp the last A on the support 11, and the plates 16 fold the upper C onto the insole B to which glue has been applied by the appropriate devices, in such a way as adhesively to bond the upper C to the insole B.

When the operating cycle has been completed, the last A with the upper C bonded to the insole B is released from the grips 12, from the pads 13, 15, from the collar 14, and from the plates 16, and drops onto the sloping wall 18 where it slides under gravity down onto the conveyor belt 17, which then carries the used last A away from the machine 10 and on to the next operation.

As shown in Fig. 2, at the end of the conveyor belt 17 it is possible to provide a wheeled container 22 into which the lasts used by the machine 10 drop. When filled, the container is moved manually to take the lasts to the location of the next operation.

Alternatively, as shown in Fig. 3, the conveyor belt 17 can be connected at an angle to another conveyor belt 23 which likewise is provided both with lateral containment walls 24 and with a containment wall for the tail end, which wall is a continuation of the wall 21. In this way the used lasts are passed automatically to the location of the next operation.

As in Fig. 3, Fig. 4 illustrates another conveyor belt 25 with lateral containment walls 26. In this case the connection between the conveyor belt 17 and the conveyor belt 25 is a "T" junction and the belt 25 is intended to collect the used lasts from a plurality of shoemaking machines such as the machine 10 working in parallel, and transferring them to the location of the next operation.

All the containment walls described above and illustrated enable the used lasts to be conveyed as desired along the intended path and prevent the lasts from falling off the edges.

The central control means 20 may cause the motor 19 to drive the conveyor belt 17 continuously. Alternatively the central control means 20 may cause the motor, and hence the conveyor belt, to run intermittently, synchronizing them with the other movements of the machine. If the conveyor belt 17 is connected to another conveyor belt, as in Figs. 3, 4, the central control means may synchronize the movement of the conveyor belt 17 with the movement of the other conveyor belt too.

The machine 10 herein described and illustrated has many advantages which overcome the problems discussed in the introduction, owing to the fact that the operator is no longer required to pick up the already used last and move it so as to direct it towards the next operation, since this is done automatically.

The operator therefore no longer needs to be close to the mechanical parts of the machine while they are working, nor is he distracted by the task of picking up and moving the already used last. There is thus no risk of his having an accident.

Furthermore, the operator does not lose time in picking up and moving the used last, but simply gets ready to position the new last, thereby cutting out unproductive time and so increasing his productivity.

Lastly, it is impossible for a used last following a previous one to strike it because the used last is carried away immediately.

It should be emphasized that all these advantages are achieved by simple, economical and reliable means.

It will be clear that variants and/or additions to that which has been described and illustrated are possible.

The sloping wall, the conveyor belt and the containment walls may be replaced by equivalent transferring and conveying means. The conveyor belt in particular can be replaced with a functionally equivalent conveyor. Moreover, the path defined by the conveyor need not be straight but could, for example, be curved or otherwise shaped.

The various components of the machine can also be replaced by functionally equivalent components.

Instead of having a movable container or another conveyor belt, the machine can be provided with a robot that identifies, picks up and passes to the location of the next operation the lasts carried away by the conveyor belt. The central control means will in this case synchronize the movement of the conveyor belt not only with the movements of the machine but also with the movements of the robot.

Claims

1. Machine for a shoemaking operation, especially for fixing the upper to the insole, including support means (11) on which to position a shoemaker's last (A) to which is attached the insole (B) and over which is laid the upper (C), means (12) for gripping and stretching the upper (C), means (13, 14, 15) for clamping the last (A) on said support means (11), and means (16) for folding the upper (C) onto the insole (B) in order to fix the upper to the insole, which machine is characterized in that it also comprises transferring and conveying means (17-21) underneath said support means (11), into which the last (A) is discharged under gravity (A) after being released from said grasping, clamping and folding means (12-16) and by which the last (A) is passed on towards the next operation.

2. Machine according to Claim 1, in which said transferring and conveying means include a conveyor belt (17).

3. Machine according to Claim 2, in which the conveyor belt (17) is connected to the support means (11) by a sloping wall (18) down which the released last (A) slides onto the conveyor belt (17).

4. Machine according to Claim 2, in which containment walls (21) are provided along the sides and against the tail end of the conveyor belt (17).

5. Machine according to Claim 3, in which containment walls (21) are provided along the sides of both the conveyor belt (17) and of the sloping wall (18) and against the tail end of the conveyor belt (17).

6. Machine according to any one of Claims 2, 3, 4, 5, in which at the head end of the conveyor belt (17) a wheeled container (22) is provided manually that can be moved to the location of the next operation, into which the lasts (A) drop after being used.

7. Machine according to any one of Claims 2, 3, 4, 5, in which the conveyor belt (17) is connected to

another conveyor belt (23; 25) provided with containment walls (24; 26) for passing the lasts (A) automatically to the location of the next operation.

8. Machine according to Claim 7, in which the conveyor belt (17) is connected at an angle to said other conveyor belt (23).

9. Machine according to Claim 7, in which the conveyor belt (17) is connected in a "T" junction to said other conveyor belt (25).

10. Machine according to any one of Claims 2, 3, 4, 5, in which the conveyor belt (17) is driven by a motor (19) controlled by a central control means (20) synchronized with the other movements of the machine.

11. Machine according to Claim 10, in which the central control means (20) controls the motor (19) intermittently to suit the movements of the machine.

12. Machine according to any one of Claims 7, 8, 9, in which the conveyor belt (17) is driven by a motor (19), controlled by a central control means (20) synchronized with the other movements of the machine and with the movement of said other conveyor belt (23; 25).

13. Machine according to any one of Claims 2, 3, 4, 5, provided with a robot that identifies, picks up and passes to the location of the next operation the lasts carried away by the conveyor belt (17).

14. Machine according to Claim 13, in which the conveyor belt (17) is driven by a motor (19) controlled by a central control means (20) synchronized with the other movements of the machine and with the movements of the robot.

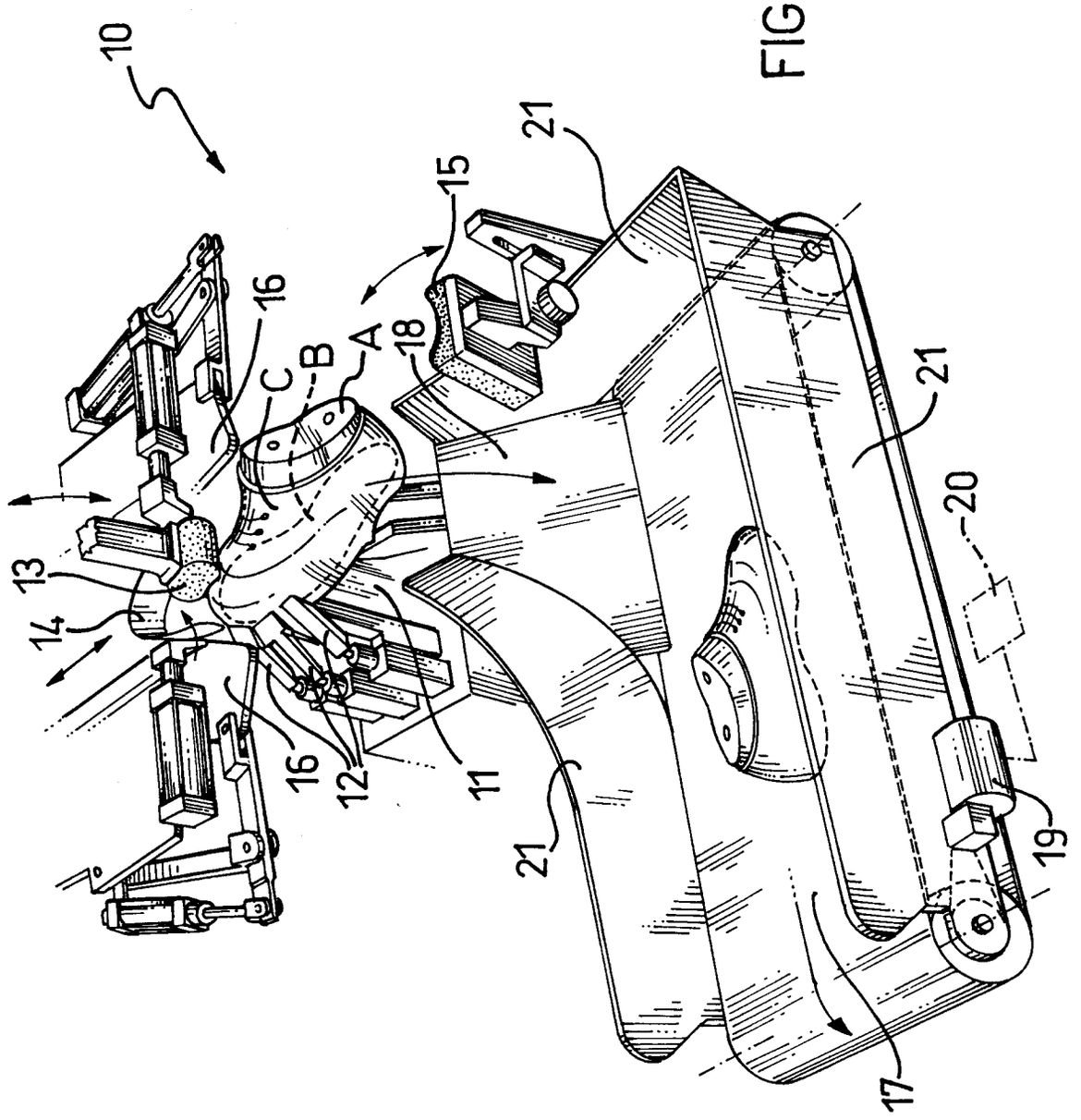

FIG.1

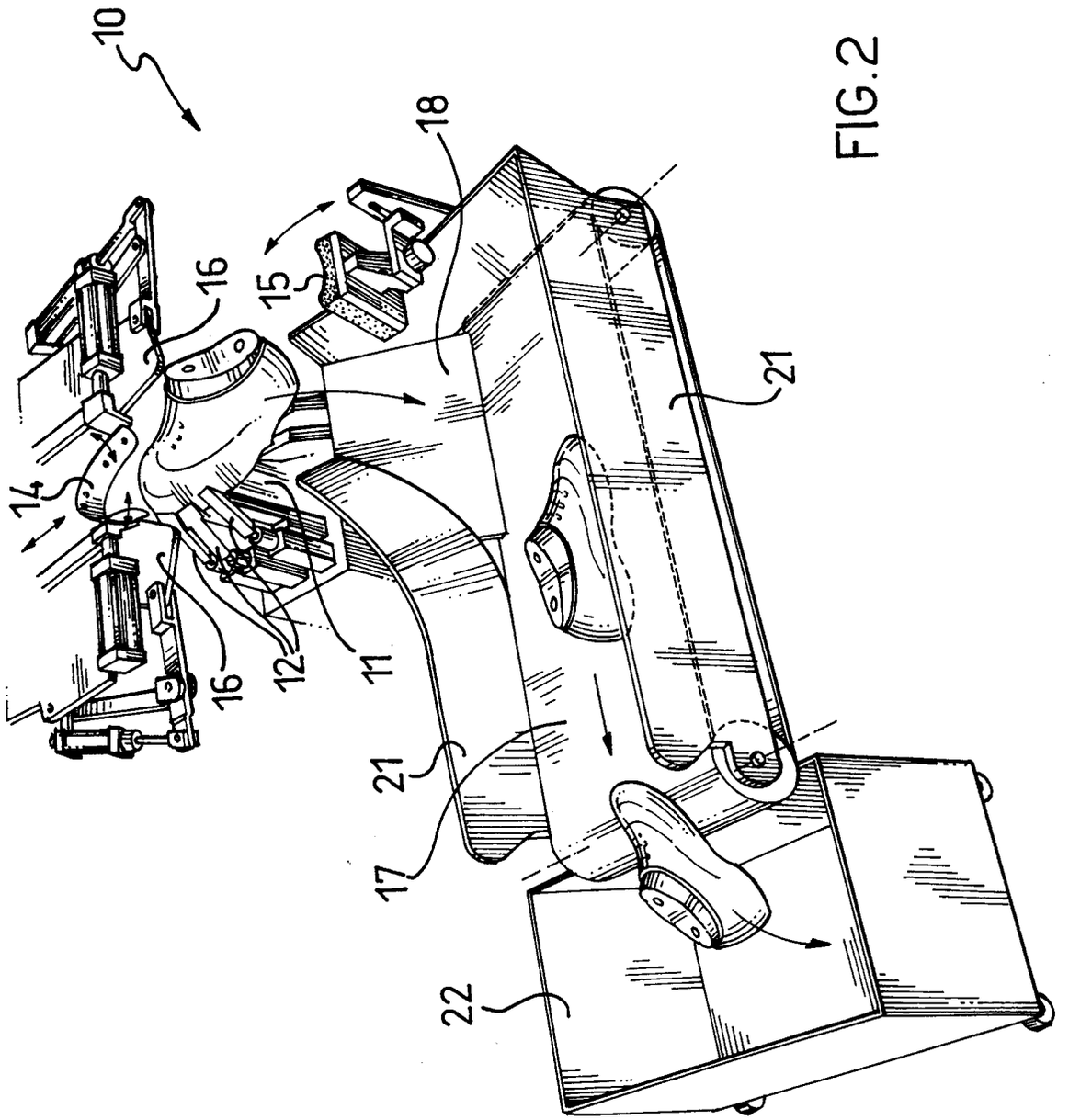

FIG.2

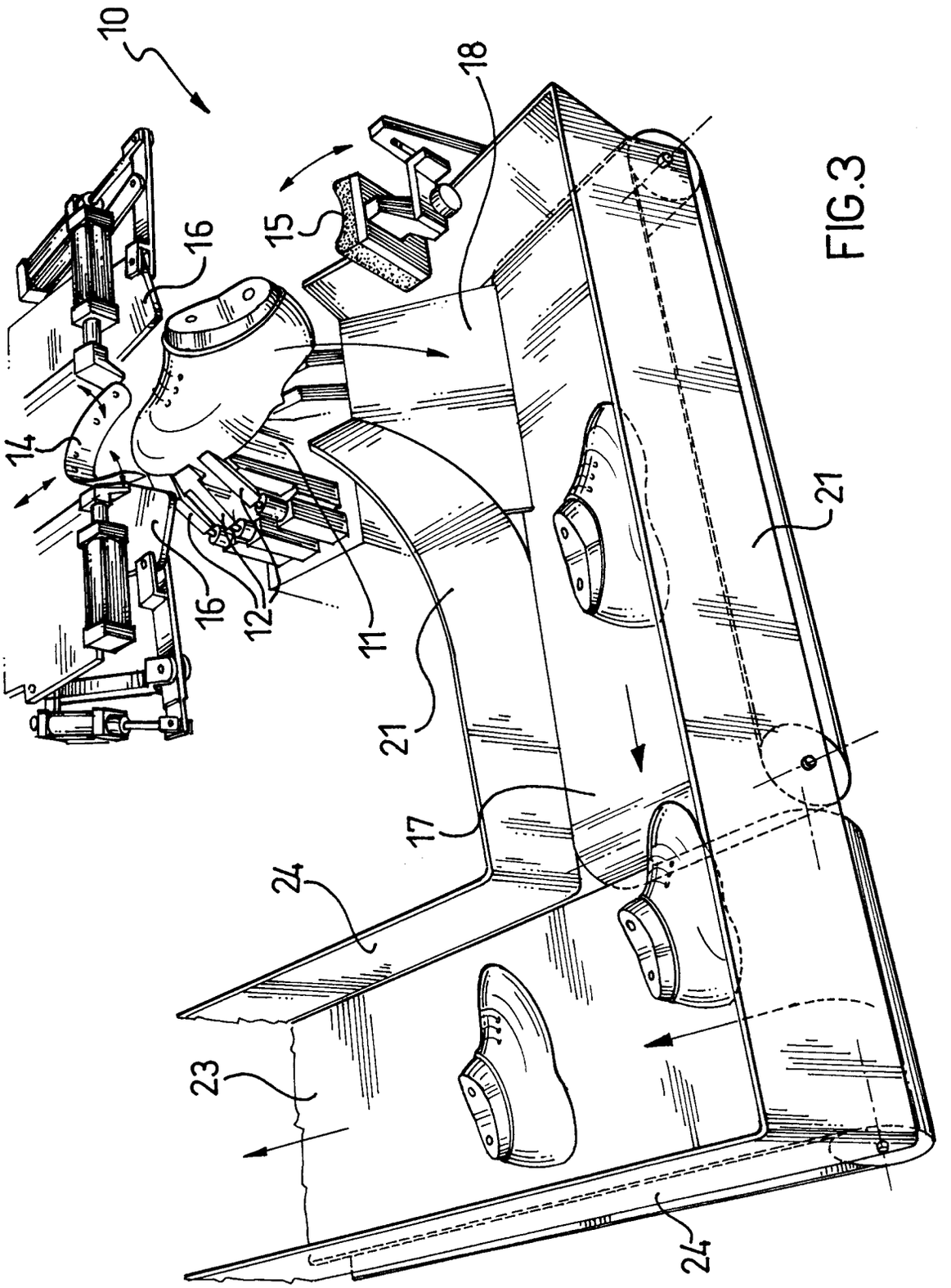

FIG.3

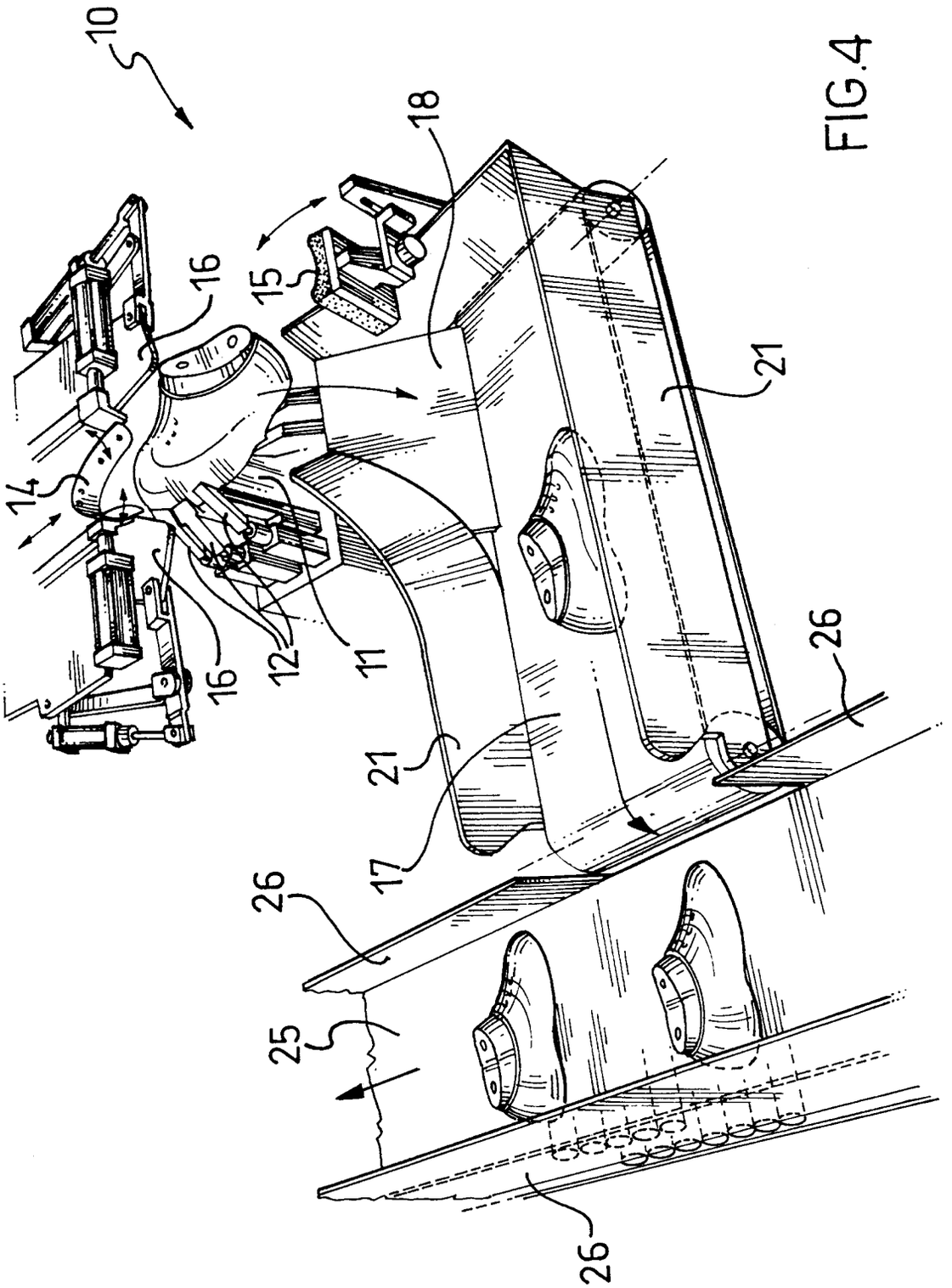

FIG.4

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EUROPEAN SEARCH REPORT

Application Number
EP 96 83 0257

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	EP-A-0 269 333 (INT SHOE MACHINE CORP) 1 June 1988 * abstract; claims; figures *	1-14	A43D111/00 A43D119/00
A	EP-A-0 340 390 (SCHOEN & CIE GMBH) 8 November 1989		
A	EP-A-0 512 526 (IRON FOX SRL) 11 November 1992		
A	GB-A-2 249 707 (YEH SO TOU) 20 May 1992		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A43D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	4 October 1996	Soederberg, J

CATEGORY OF CITED DOCUMENTS

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