

①② **EUROPEAN PATENT APPLICATION**

②① Application number: **90108422.8**

⑤① Int. Cl.⁵: **A43D 11/14, A43D 21/00,**
A43D 23/04, A43D 49/00

②② Date of filing: **04.05.90**

③③ Priority: **05.05.89 IT 4159189**

④③ Date of publication of application:
07.11.90 Bulletin 90/45

⑧④ Designated Contracting States:
DE ES FR

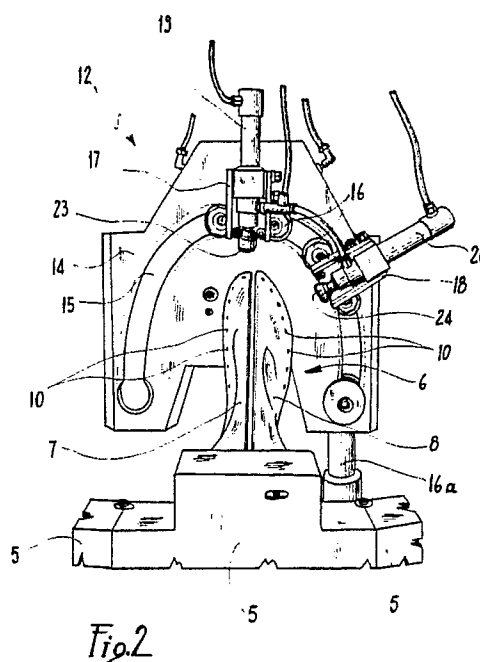
⑦① Applicant: **Calzaturificio F.lli DANIELI S.p.A.**
Via Mazzini 20
I-31031 Caerano San Marco Treviso(IT)

⑦② Inventor: **Danieli, Diego**
Via Beolco
I-31031 Caerano San Marco (TV)(IT)
Inventor: **Gatto, Bruno**
Via Unione 123
I-31050 Fanzolo (TV)(IT)
Inventor: **Piccolo, Nedo**
Via Campagna Maser 10
I-31010 Maser (TV)(IT)

⑦④ Representative: **Modiano, Guido et al**
MODIANO, JOSIF, PISANTY & STAUB
Modiano & Associati Via Meravigli, 16
I-20123 Milano(IT)

⑤④ **Rotary preforming machine for uppers.**

⑤⑦ The invention relates to a rotary preforming machine particularly suitable for the shaping of uppers before the operation of injecting the soles. The machine comprises a stepwise rotary carousel (4) on which a series of openable upper-holder lasts (6) is perimetally fixed. Each last (6) has a series of holes (10) connected to a water vapor generator by means of tubes. The rotating carousel (4) cooperates with at least two consecutive fixed workstations (12), each comprising a movable carriage (16) guided so as to slide around the upper-holder last (6) which is located thereat by the movement of the carousel (4). Elements (23,24) for beating uppers fitted on the lasts (6) are coupled to the movable carriage (16).



ROTARY PREFORMING MACHINE FOR UPPERS

The present invention relates to a rotary preforming machine for uppers.

The machine is suitable for shaping uppers before the operation of injecting the sole.

It is known that the operation of shaping the uppers is currently performed with linear machines which have a plurality of lasts on which the uppers are fitted.

Specialized operators, with round-headed hammer-like tools, perform a manual beating operation on each upper the leather whereof is softened by pressurized steam which arrives from a small boiler and exits from holes provided in each upper-holder last.

The beating action, which particularly affects the tip region of the shoe, is performed manually, as mentioned, with blows having a certain force, with a very high beating frequency and at well-calculated intervals.

Particularly expert personnel, capable of ensuring a good quality of the product, is therefore required for this process.

Despite this, like all manual operations beating is characterized by low productivity and non-uniform results which are linked in particular to the degree of fatigue during the workday of each operator.

Furthermore, though round-headed hammers are used, some uppers may be struck by blows which ruin the leather.

The aim of the present invention is to provide a preforming machine for uppers which automates the operations which are currently performed manually in known types of machines.

A consequent primary object is to provide a preforming machine which can obtain an extremely uniform product with great processing speed and with no irregularities among products.

Another important object is to provide a preforming machine which allows to reduce the personnel currently used for the upper preforming operation.

Still another object is to provide a preforming machine which consequently also allows better qualitative results for the sole injection operation.

A not least object is to accelerate the upper preforming operation and to make it more economical.

This aim, these objects and others which will become apparent hereinafter are achieved by a rotary preforming machine for uppers, characterized in that it comprises a stepwise rotary carousel to which a plurality of openable upper-holder lasts is perimetally fixed, each last having a series of holes connected to a water vapor generator, said

rotating carousel co-operating with at least two consecutive fixed workstations, each of which comprises a movable carriage guided so as to slide around the upper holder last which, by virtue of the movement of the carousel, is located at said station, elements for beating the uppers fitted on the lasts being rigidly associated with said carriage.

Further characteristics and advantages of the invention will become apparent in the detailed description of a preferred embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a general perspective view of the machine according to the invention;

figure 2 is an enlarged perspective detail view of an upper workstation with a corresponding upper-holder last in storing position;

figure 3 is a perspective view of the station of figure 2 during processing; the same figure illustrates jets of steam which exit from holes of a last on which an upper, conveniently illustrated in cutout view, is fitted.

With reference to the above figures, a rotary preforming machine for uppers is generally indicated by the reference numeral 1 and comprises a base 2 from which an upright 3 extends vertically.

A carousel 4 is rotoidally coupled to said upright 3, and supports 5 are arranged mutually side by side in a perimetral region thereof so as to form a regular polygon; each support bears an upper-holder last 6 which is arranged substantially horizontally toward the inside of the carousel 4.

Each upper-holder last 6, conveniently made of metallic material, is longitudinally divided into two half-lasts, respectively 7 and 8, which can be mechanically spaced from one another after fitting an upper 9, so as to tension the material of which said upper is made.

Each upper-holder last 6 has a series of holes 10 from which steam, arriving from a small boiler 11 connected to the last, is expelled.

By striking the upper fitted on the corresponding last, the steam softens it and facilitates the successive preforming operation.

According to the invention, two consecutive workstations, respectively 12 and 13, are located in a fixed position with respect to the carousel 4; said workstations are adapted to preform each upper which is positioned thereat by the stepwise rotation of the carousel.

Figures 2 and 3 illustrate the first workstation 12 which is substantially identical to the station 13 as it comprises a vertical supporting plate 14 on which a cam-shaped guiding slot 15 is provided and in practice surrounds the tip portion of an

upper 9 fitted on a corresponding upper-holder last 6.

An articulated carriage 16, moved by a rear piston 16a, is slidable in said guiding slot 15.

Two spaced supporting elements, respectively 17 and 18, for corresponding double-action pistons 19 and 20, are rigidly associated with said carriage 16; the stems 21 and 22 of said pistons bear, at their ends, respective rounded beating heads 23 and 24 conveniently made of plastic material.

As can be seen in figure 1, said pistons 19 and 20 maintain, by virtue of the translatory motion of the carriage 16, a position which is substantially orthogonal to the lower edge of the upper 9.

The actuation of the pistons 19 and 20, combined with the movement of the carriage in the guiding slot 15, achieves a powerful and frequent beating of the heads 23 and 24 around the upper 9, which, since it is softened by the steam, assumes the exact shape of the last 6.

The beating action, combined with the translatory motion of the carriage in one direction, produces on the leather of the upper 9 a translatory component which results in small surface wrinkles.

Due to this reason two workstations 12 and 13 are provided; beating with translatory motion of the carriage in one direction is provided in the first, whereas the operation is performed in the opposite direction in the second one so as to compensate the action, thereby evening the surface of the processed leather.

As can be seen in figure 1, above said carousel 4 there is another carousel 25 which is rotatively rigidly associated therewith and is divided into a series of compartments 26, each at an upper holder last 6.

Uppers to be processed, of a size which corresponds to the underlying last, are conveniently placed in each compartment 26 so as to facilitate loading and unloading by the operator after processing, eliminating the risk that he might fit an upper of a different size on a last.

In order to further facilitate these loading and unloading operations, each last 6 and each corresponding compartment 26 are marked by a same identification number located in a visible region.

From what has been described above it is therefore evident that the adoption of the machine according to the invention has automated and accelerated the upper preforming operation, which is currently obtained manually.

The use of the machine according to the invention, besides allowing a considerable reduction in personnel, since a single operator for loading and unloading is required for it, allows high processing speeds with uniform results.

This consequently provides advantages for the subsequent operation of injecting the sole as well,

for which a well-made, finished and uniform upper edge is necessary.

In practice, therefore, the intended aim and objects are achieved.

The invention thus conceived is susceptible to numerous modifications and variations, all of which are within the scope of the inventive concept; thus, for example, the carousel with compartments for storing the uppers before loading may be replaced with an external carousel which rotates in sequence with the machine, so that in the loading region a corresponding compartment in which uppers of a corresponding size are placed is always arranged at a given upper-holder last.

All the details may furthermore be replaced with other technically equivalent elements.

In practice, the materials employed, as well as the dimensions, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Rotary preforming machine for uppers, characterized in that it comprises a stepwise rotary carousel to which a plurality of openable upper-holder lasts is perimetally fixed, each last having a series of holes connected to a water vapor generator, said rotary carousel co-operating with at least two consecutive fixed workstations, each of which comprises a movable carriage which is guided so as to slide around the upper-holder last which is positioned thereat by virtue of the movement of the carousel, elements for beating the upper fitting on the lasts being rigidly associated with said carriage.

2. Preforming machine according to claim 1, characterized in that it comprises a base from the center whereof there extends an upright to which said carousel is rotationally coupled.

3. Preforming machine according to claims 1 and 2, characterized in that said rotating carousel perimetally comprises a series of adjacent supports which form a polygonal figure, each of said supports bearing one of said upper-holder lasts directed toward the inside in a substantially horizontal position.

4. Preforming machine according to one or more of the preceding claims, characterized in that each openable upper-holder last, preferably made of metallic material, is longitudinally divided into a

half-lasts which can be spaced from one another after fitting an upper so as to obtain a tensioning action thereon.

5. Preforming machine according to claim 1, characterized in that each of said at least two consecutive workstations is fixed on the machine in a region internal to said carousel and comprises a vertical supporting plate which has a cam-shaped guiding slot which in practice surrounds the tip region of the upper-holder last which is located thereat, an articulated carriage, moved by a piston, being slidable in said guiding slot.

6. Preforming machine according to claims 1 and 5, characterized in that spaced supporting elements are fixed on said articulated carriage and support respective double-action pistons which are positioned, by virtue of the movement of the carriage, substantially orthogonal to the profile of the tip of said upper-holder last, the stem of each piston bearing a rounded beating head preferably made of plastic material.

7. Preforming machine according to one or more of the preceding claims, characterized in that the preforming action of each workstation is composed of a translatory motion of said carriage and of a high-frequency beating action of said heads which are rigidly associated with said pistons, the translatory motion of the carriage being, in each workstation, in the reverse direction with respect to that of the preceding one.

8. Preforming machine according to one or more of the preceding claims, characterized in that another carousel is arranged on said carousel and is rotatively rigidly associated therewith, said other carousel being divided into upper loading compartments each of which is located at a lower upper-holder last.

9. Preforming machine according to one or more of the preceding claims, characterized in that it can be associated with an external carousel which rotates in sequence therewith and is divided into compartments so that each compartment is arranged in the loading region always at a given last.

5

10

15

20

25

30

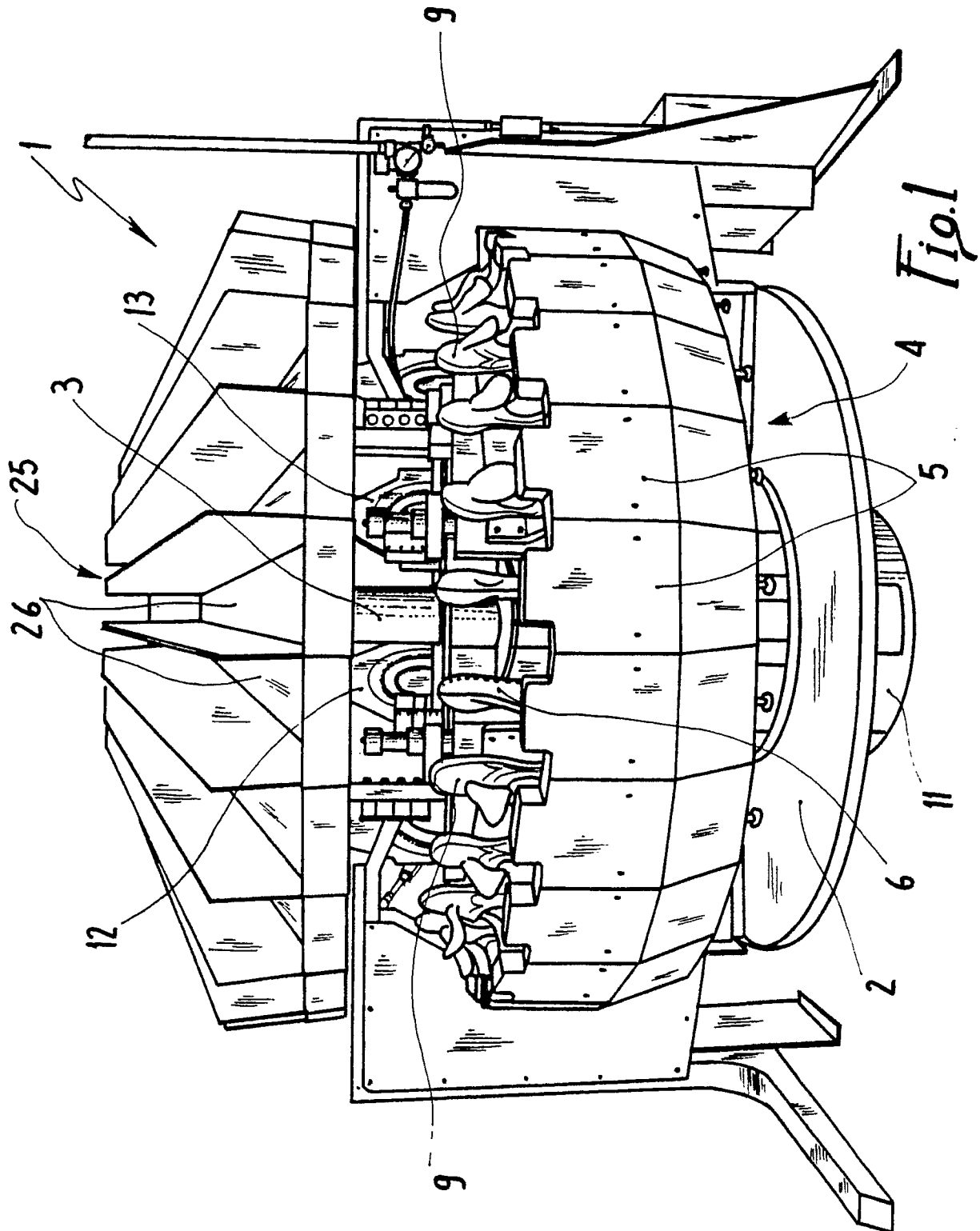
35

40

45

50

55



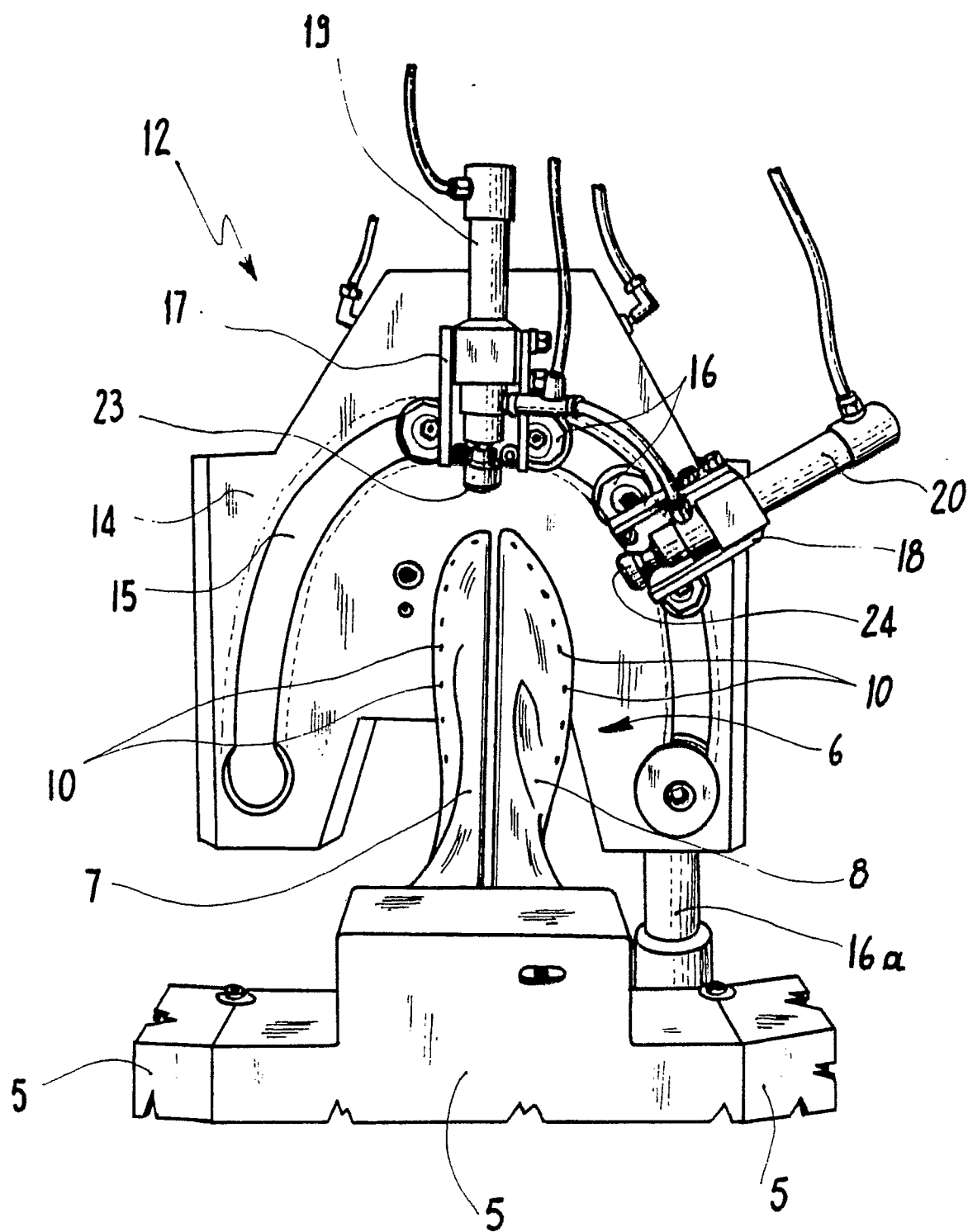


Fig. 2

