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(54) APPARATUS AND PROCESS FOR SPRAYING GLUE ON SHOE COMPONENTS

VORRICHTUNG UND VERFAHREN ZUM SPRÜHEN VON KLEBSTOFF AUF
SCHUHKOMPONENTEN

APPAREIL ET PROCÉDÉ DE PULVÉRISATION DE COLLE SUR DES COMPOSANTS DE
CHAUSSURE

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Description

[0001] The present invention regards the technical field of the machines for the footwear industry and relates to an apparatus for spraying glue and a process for bonding shoes.

[0002] In the present description, the term glue will be used to indicate any adhesive substance or mixture of substances usable to bond parts or components of a shoe.

[0003] It is known the use of glue to join two or more parts of a shoe during its production. For example, for joining the upper to the sole, glue is sprayed along a path that defines the junction/overlay line between the sole and the upper.

[0004] ES 2 320 945 A1 discloses an apparatus for spraying glue to a portion of a shoe and discloses that said apparatus includes a shielding element and means to mechanically clean said shielding element.

[0005] The bonding of shoe portions involves the use of spray glue dispensers which direct a glue jet on the portions of the footwear to be glued.

[0006] The glue distribution needs to be performed with great precision and the higher is the quality of the footwear, the higher is the degree of precision required for gluing. In practice, high-quality footwear must be free from imperfections due to incorrect glue distribution.

[0007] To obtain a precise line of glue applied on the shoe portions to be joined, the latter is protected by an adhesive tape that defines a separation line between the glued part and the non-to glue part. At the end of the gluing process, the tape must be detached from the shoe portion which has been glued.

[0008] This type of intervention is related to the experience of the operator and results in a considerable loss of time. In other words, it is necessary to use specialized manpower for a relatively large period of time which may decrease the yield of the production process. Among the objects of the present invention is to eliminate the aforementioned drawbacks with an apparatus and a process as defined in the independent claims. Other features of the invention are the subject of the dependent claims.

[0009] Among the advantages of the present invention, the following can be listed: the bonding process is extremely simplified, accurate and effective; the productivity can be increased because the gluing speed is increased; it is possible to employ non-highly skilled operators, thanks to the operational simplicity of the apparatus; the apparatus keeps its characteristics unaltered even after prolonged periods of use; the apparatus is simple from a constructive point of view and requires limited maintenance.

[0010] These and further advantages and features of the present invention will be more and better understood by each branch technician from the following description and with the help of the accompanying drawings, given as a practical example of the invention, but not to be considered in a limitative sense in which:

Fig. 1 is a schematic side view with parts in see-through of a possible embodiment of an apparatus according to the invention;

Fig. 2 is a schematic side view with parts in see-through of the embodiment shown in Fig. 1, in which the apparatus is represented in conjunction with a shoe being formed;

Fig. 3 is an enlarged detail of Fig. 2;

Fig. 4 is a front view of the apparatus in question;

Fig. 5 is a schematic lateral view of the apparatus, with portions removed according to the section line indicated by V-V in Fig. 4;

Fig. 6 shows schematically a possible example of conformation of the distal part of a shielding element that is part of the apparatus in question.

[0011] Referred to the accompanying drawings, the present invention relates to an apparatus (1) for spray-dispensing glue on a shoe portion. For example, as shown in the drawings, the shoe portion (100) is the upper of a shoe to be manufactured.

[0012] The apparatus (1) can be used to spray glue on the shoe portion (100). The apparatus (1) comprises a support structure (10) which is fixed to a plate (11), which is provided with connection and / or supply means (12) enabling it to be used in a unit for forming footwear. The structure (10) comprises a sliding stem (13) supporting a tool holder (14) on which the active components of the apparatus (1) are arranged as further disclosed below.

[0013] In particular, the apparatus (1) comprises a first nozzle (2), that is supported by a corresponding supporting body (22), and is capable of spraying a glue jet (20) towards the shoe portion (100) to be treated. By appropriately moving the nozzle (2) with respect to the shoe portion (100), i.e. by turning the shoe portion (100) on itself or turning the structure (10) around the shoe in a known manner, the glue is distributed around the shoe along a path (101) extending along the peripheral development (edge) of the shoe portion. The nozzle (2) itself is of the known type and it is connected to a corresponding glue supply circuit not described in further details because it is also known in the art.

[0014] Advantageously, the apparatus (1) comprises a shielding element (3) and at least one second nozzle (4).

[0015] The shielding element (3) is supported by an arm (33) connected to the structure (10) so as to place the shielding element (3) in an area crossed by the glue jet (20) produced by the nozzle (2), the shielding element being positioned between the nozzle (2) and the portion of the footwear (100). As shown in Figs. 2 and 3, the shielding element (3) can be positioned close to the shoe portion (100).

[0016] The shielding element (3) is capable of intercepting the glue jet (20) sprayed by the nozzle (2) to define a boundary line (30) for the glue distribution on said shoe (100). In practice, the shielding element (3) forms a barrier that intercepts the glue jet (20) leaving a

shoe area free from the glue beyond the path marked with (101) in the drawings. In this way, the sprayed glue covers only the part (102) on which it is to be applied. When the upper (100) is positioned as shown in Figs. 2 and 3, said area free from glue is below line (101). The path (101) is predetermined by the shoe designer. The boundary line (30) is determined by the shielding element (3). In operation, the boundary line (30) overlaps the path (101).

[0017] The apparatus (1) has an additional nozzle (4) which faces the shielding element (3) and directs a pressurized fluid jet (40) towards the same shielding element (3) to interact with any glue residues present there. In this way, the shielding element (3) is always cleaned by any residues and the bonding process can proceed without drawbacks due to the glue accumulations that after a certain period of use would limit the function of the shielding element.

[0018] The additional nozzle (4) is preferably supplied with compressed air. For this reason the additional nozzle (4) is connected to a source (41) of compressed air.

[0019] The use of air as a pressurized fluid has proved to be a very suitable choice because the compressed air has a high cleaning effect and, in addition, it is possible to use the compressed air system normally provided in a machine for making footwear.

[0020] For a greater cleaning effect it can be foreseen that the second nozzle may increase the air pressure for predetermined periods of time. In practice, according to predetermined operative cycles or when a more intensive cleaning is appropriate, the nozzle (4) can emit very high pressure air jets, while maintaining a lower pressure in the other parts of the bonding cycle.

[0021] Another feature of the invention is the structure of the shielding element (3), which is made and / or coated with a low friction material. The shielding element (3) can be coated, for example, with Teflon or any other low friction material, to interfere with the footwear material as little as possible.

[0022] The edges of the distal end (31) of the shielding element (3) can also be rounded to overcome any superficial irregularities presented by the shoe (100).

[0023] To better convey the flow emitted by the second nozzle (4), the shielding element (3) can be concave, with the concavity facing the second nozzle (4). In Fig.5, the jet of compressed air emitted by the nozzle (4) is indicated by (40) and the reference (40A) indicates the part which is diverted by the shield element (3).

[0024] In the attached drawings, the apparatus (1) has one additional nozzle (4). Other embodiments of the invention, which are not illustrated, may include a plurality of additional nozzles for directing multiple air flows towards the shielding element.

[0025] The present invention also relates to a method for gluing a shoe portion by means of a sprayed glue. The method involves the use of a first nozzle (2) for spraying a glue jet (20) towards said shoe portion (100). Advantageously, the process involves screening the shoe

portion by means of a shielding element (3) for intercepting said glue jet (20) and defining a glue line (30) for the glue distribution on said shoe (100), and to direct a pressurized fluid jet (40) towards said shielding element (3) by means of at least one additional nozzle (4) to interact with any glue residues present therein.

[0026] According to the present method, it is advantageous to use compressed air for the jet of said at least one additional nozzle (4).

[0027] In addition, the process may vary the pressure of the pressurized fluid (compressed air in the example) that forms the jet (40) emitted by the extra nozzle (4).

Claims

1. Apparatus for dispensing a spray of glue on a portion of a shoe, apparatus comprising a first nozzle (2) adapted to spray a jet of glue (20) towards said portion of shoe (100), wherein said apparatus (1) comprises a shielding element (3), adapted to intercept said jet of glue (20) to define a limit line (30) for the distribution of the glue on said shoe (100), the apparatus (1) **characterized in that** it further comprises at least one additional nozzle (4) facing said shielding element (3) and adapted to direct a jet of fluid under pressure (40) towards the same shielding element (3) to interact with any glue residue present therein.
2. Apparatus according to claim 1, **characterized in that** said fluid is compressed air and that said at least one additional nozzle (4) is connected to a compressed air source (41).
3. Apparatus according to claim 1 and/or 2, **characterized in that** said shielding element (3) is realized and/or coated with a low friction coefficient material.
4. Apparatus according to one or more of the preceding claims, **characterized in that** distal end edges (31) of said shielding element (3) are rounded to better overcome any surface non-uniformities presented by the shoe (100).
5. Apparatus according to one or more of the preceding claims, **characterized in that** said shielding element (3) is shaped concave, with the concavity facing said second nozzle (4).
6. Apparatus according to one or more of the preceding claims, **characterized in that** said first nozzle (2), said shielding element (3) and said second nozzle (4) are supported by a structure (14) sliding along a stem (13) so as to vary the distance between the apparatus (1) and the shoe (100).
7. A process for bonding a portion of shoe by the dis-

pensing of sprayed glue by means of a first nozzle (2) for spraying a jet of glue (20) towards said shoe portion (100), the process comprising the step of shielding said portion of the shoe by means of a shielding element (3) to intercept said jet of glue (20) and define a limit line (30) for the distribution of glue on said shoe (100), the process being **characterised in that**, it comprises the step of directing towards said shielding element (3), by means of at least one additional nozzle (4), a pressurized fluid jet (40) to interact with any glue residue present therein.

8. Process according to claim 7, **characterized in that** compressed air is used for the jet of said at least one additional nozzle (4).
9. Process according to claim 7 and/or 8, **characterized in that** the pressure of the pressurized fluid of the jet of said at least one additional nozzle (4) is varied during the process.

Patentansprüche

1. Einrichtung zum Abgeben eines Sprays von Klebstoff auf einen Abschnitt eines Schuhs, wobei die Einrichtung eine erste Düse (2) umfasst, die angepasst ist, einen Klebstoffstrahl (20) zu dem Abschnitt von Schuh (100) zu sprühen, wobei die Einrichtung (1) ein Abdeckelement (3) umfasst, das angepasst ist, den Klebstoffstrahl (20) abzufangen, um eine Grenzlinie (30) für die Verteilung des Klebstoffs auf dem Schuh (100) zu definieren, wobei die Einrichtung (1) **dadurch gekennzeichnet ist, dass** sie weiter mindestens eine zusätzliche Düse (4) umfasst, die zu dem Abdeckelement (3) zeigt und angepasst ist, einen Fluidstrahl unter Druck (40) zu demselben Abdeckelement (3) zu richten, um mit jeglichem darin vorhandenen Klebstoffrest zu interagieren.
2. Einrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Fluid Druckluft ist und dass die mindestens eine zusätzliche Düse (4) mit einer Druckluftquelle (41) verbunden ist.
3. Einrichtung nach Anspruch 1 und/oder 2, **dadurch gekennzeichnet, dass** das Abdeckelement (3) mit einem Material mit niedrigem Reibungskoeffizienten hergestellt und/oder beschichtet ist.
4. Einrichtung nach einem oder mehreren der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** distale Endkanten (31) des Abdeckelements (3) abgerundet sind, um jegliche Oberflächenunebenheiten besser zu überwinden, die der Schuh (100) darstellt.
5. Einrichtung nach einem oder mehreren der vorste-

henden Ansprüche, **dadurch gekennzeichnet, dass** das Abdeckelement (3) konkav geformt ist, wobei die Konkavität zu der zweiten Düse (4) zeigt.

6. Einrichtung nach einem oder mehreren der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die erste Düse (2), das Abdeckelement (3) und die zweite Düse (4) von einer Struktur (14) getragen werden, die entlang eines Stiels (13) gleitet, um den Abstand zwischen der Einrichtung (1) und dem Schuh (100) zu variieren.
7. Verfahren zum Verkleben eines Abschnitts vom Schuh durch das Abgeben von Sprühkleber mittels einer ersten Düse (2) zum Sprühen eines Strahls von Klebstoff (20) zu dem Schuhabschnitt (100), wobei das Verfahren den Schritt zum Abdecken des Abschnitts des Schuhs mittels eines Abdeckelements (3) umfasst, um den Strahl von Klebstoff (20) abzufangen und eine Grenzlinie (30) für die Verteilung von Klebstoff auf dem Schuh (100) zu definieren, wobei das Verfahren **dadurch gekennzeichnet ist, dass** es den Schritt zum Leiten eines unter Druck gesetzten Fluidstrahls (40) zu dem Abdeckelement (3) mittels mindestens einer zusätzlichen Düse (4) umfasst, um mit jeglichem darin vorhandenen Klebstoffrest zu interagieren.
8. Verfahren nach Anspruch 7, **dadurch gekennzeichnet, dass** Druckluft für den Strahl der mindestens einen zusätzlichen Düse (4) verwendet wird.
9. Verfahren nach Anspruch 7 und/oder 8, **dadurch gekennzeichnet, dass** der Druck des unter Druck gesetzten Fluids des Strahls der mindestens einen zusätzlichen Düse (4) während des Verfahrens variiert wird.

Revendications

1. Appareil de pulvérisation de colle sur une partie d'une chaussure, appareil comprenant une première buse (2) adaptée pour pulvériser un jet de colle (20) vers ladite partie de chaussure (100), dans lequel ledit appareil (1) comprend un élément de protection (3), adapté pour intercepter ledit jet de colle (20) pour définir une ligne limite (30) pour la distribution de la colle sur ladite chaussure (100), l'appareil (1) **caractérisé en ce qu'il** comprend en outre au moins une buse supplémentaire (4) faisant face audit élément de protection (3) et adaptée pour diriger un jet de fluide sous pression (40) vers le même élément de protection (3) pour interagir avec tout résidu de colle présent dans celui-ci.
2. Appareil selon la revendication 1, **caractérisé en ce que** ledit fluide est de l'air comprimé et **en ce que**

ladite au moins une buse supplémentaire (4) est raccordée à une source d'air comprimé (41).

3. Appareil selon la revendication 1 et/ou 2, **caractérisé en ce que** ledit élément de protection (3) est réalisé et/ou revêtu avec un matériau à faible coefficient de frottement. 5
4. Appareil selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** des bords d'extrémité distale (31) dudit élément de protection (3) sont arrondis pour mieux franchir toute non-uniformité de surface présentée par la chaussure (100). 10
5. Appareil selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** ledit élément de protection (3) est de forme concave, avec la cavité faisant face à ladite seconde buse (4). 15
6. Appareil selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** ladite première buse (2), ledit élément de protection (3) et ladite seconde buse (4) sont soutenus par une structure (14) coulissant le long d'une tige (13) de façon à moduler la distance entre l'appareil (1) et la chaussure (100). 20
25
7. Processus d'encollage d'une partie de chaussure par la pulvérisation de colle au moyen d'une première buse (2) pour pulvériser un jet de colle (20) vers ladite partie de chaussure (100), le processus comprenant l'étape consistant à protéger ladite partie de la chaussure au moyen d'un élément de protection (3) pour intercepter ledit jet de colle (20) et définir une ligne limite (30) pour la distribution de colle sur ladite chaussure (100), le processus étant **caractérisé en ce qu'il** comprend l'étape consistant à diriger vers ledit élément de protection (3), au moyen d'au moins une buse supplémentaire (4), un jet de fluide sous pression (40) pour interagir avec tout résidu de colle présent dans celui-ci. 30
35
40
8. Processus selon la revendication 7, **caractérisé en ce que** de l'air comprimé est utilisé pour le jet de ladite au moins une buse supplémentaire (4). 45
9. Processus selon la revendication 7 et/ou 8, **caractérisé en ce que** la pression du fluide sous pression du jet de ladite au moins une buse supplémentaire (4) est modulée au cours du processus. 50

55

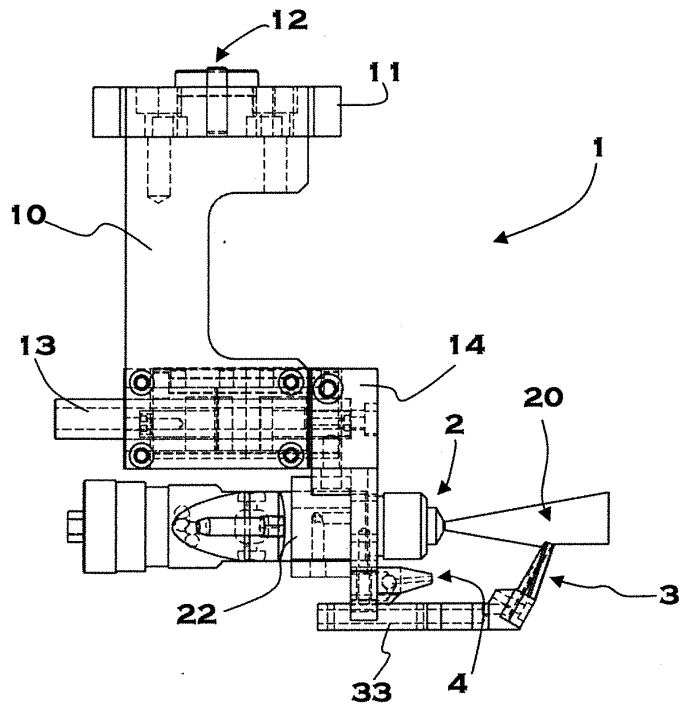


FIG. 1

FIG. 2

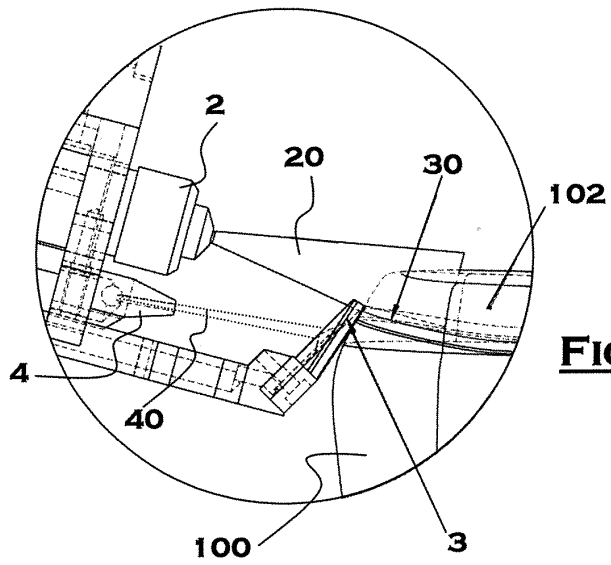
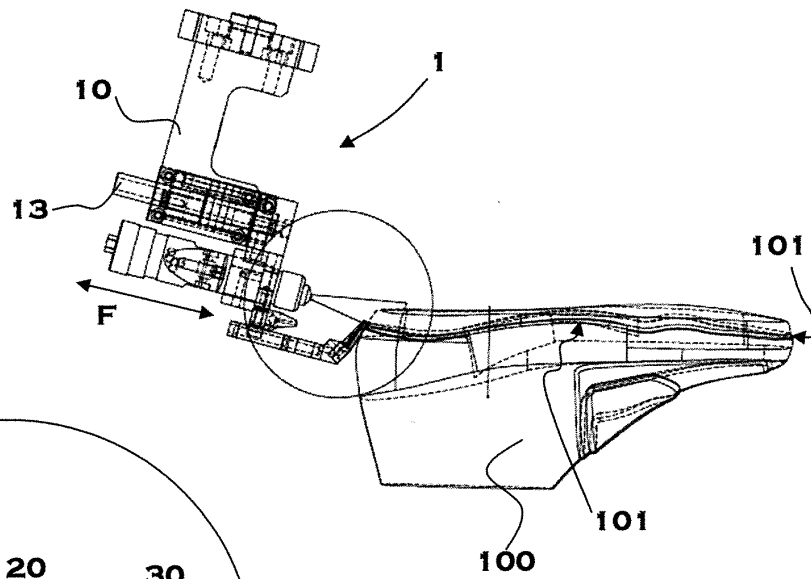


FIG. 3

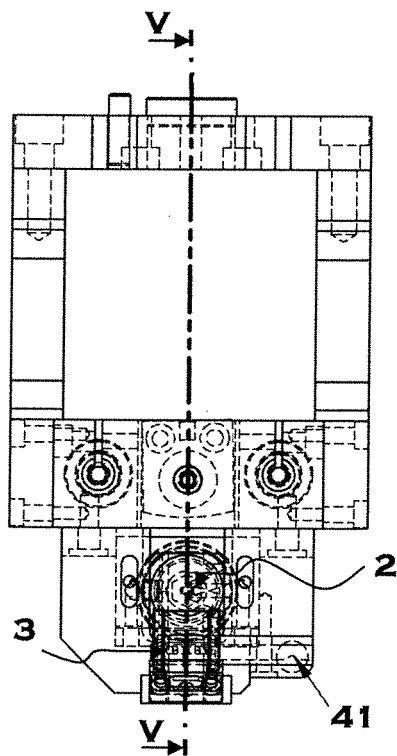


FIG. 4

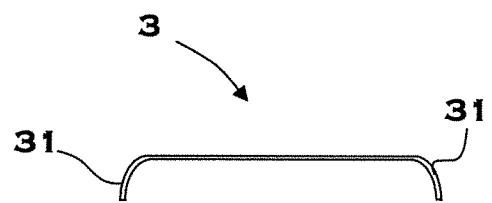


FIG. 6

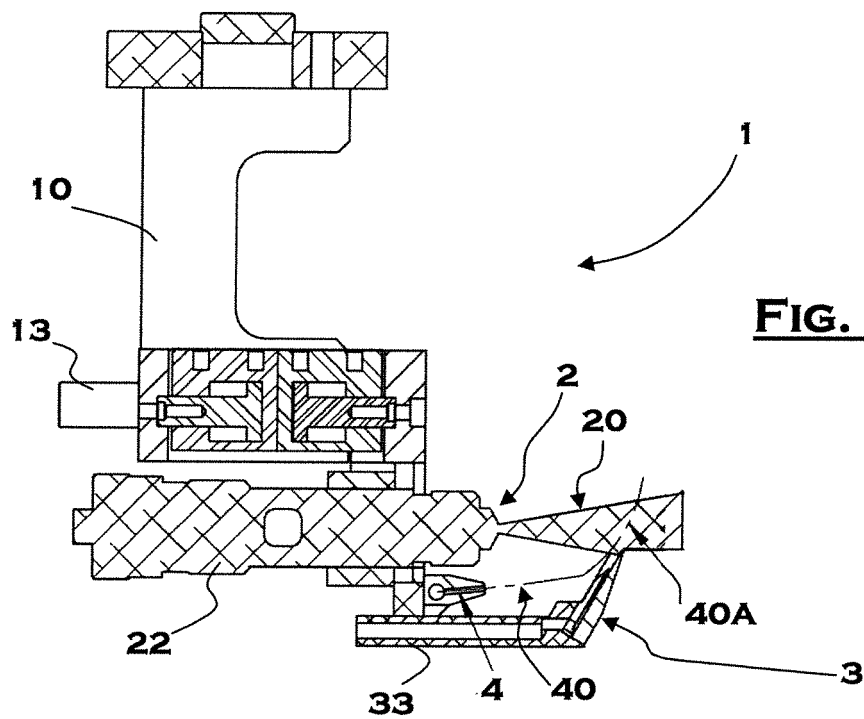


FIG. 5

REFERENCES CITED IN THE DESCRIPTION

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