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54 **Fluffing and carding device for shoe soles.**

57 A fluffing and carding device for shoe soles comprises a supporting block (1) having incorporated therein a plurality of pneumatically or hydraulically controlled plungers (3), whose rods (4) project from the block (1). The sole (22) is pressed by the plungers (3) against a rigid pressing plane (18). A fluffing and carding unit (20) is disposed at an opening (19) of the pressing plane (18). The supporting block (1) is carried by a carriage (16) adapted to move parallel to the pressing plane (18) so that the whole surface of the sole (22) to be worked comes in contact with the fluffing and carding unit (20).

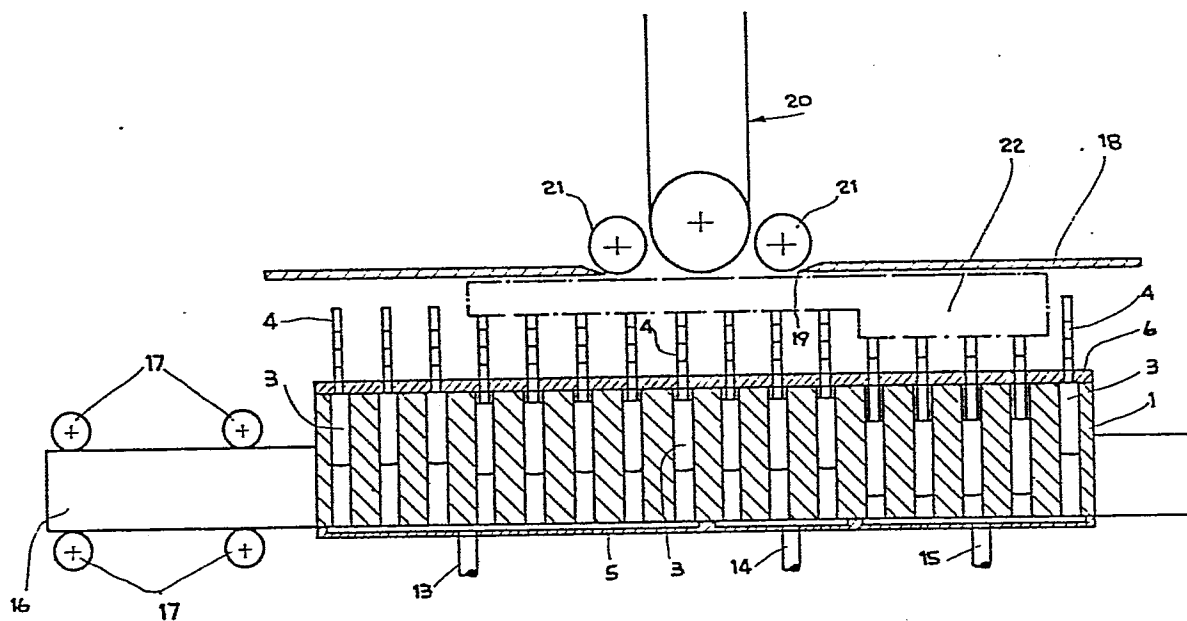


FIG. 2

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Fluffing and carding device for shoe soles

The present invention relates to fluffing and carding devices for shoe soles.

At present fluffing and carding of shoe soles are effected
5 manually or by means of appropriate machines. In both cases, however, a working of the sole is obtained which is not perfectly uniform, also because of the different thickness the sole may have in its different spots and because the sole surface may be non flat. This processing unevenness has as a
10 result a non perfect sticking of the glue on the sole in all parts thereof.

It is an object of the present invention to obviate this disadvantage by providing a fluffing and carding device which
15 enables to obtain a uniform fluffing or carding of the sole.

More particularly the sole fluffing and carding device according to the invention is characterized in that it comprises a sole supporting block having incorporated therein a plurality
20 of pneumatically or hydraulically controlled plungers, whose rods project from the block, a rigid pressing plane against which the sole is pressed by the plungers, and a fluffing or carding unit disposed at an aperture of the pressing plane,

said supporting block being carried by a carriage adapted to move parallel to the pressing plane so that the whole surface of the sole to be worked contacts the fluffing or carding unit.

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By using the device according to the invention the sole is deformed so that its surface to be worked becomes substantially flat enabling to obtain a uniform working of the sole surface.

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The invention will be better understood from the following detailed description, given merely as an example and therefore in no limiting sense, of an embodiment thereof, referring to the accompanying drawings in which:

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Fig. 1 is an exploded perspective view of the sole supporting block according to the invention; and

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Fig. 2 is a vertical longitudinal cross-sectional view of the fluffing and carding device according to the invention during its operation.

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Referring to the figures it is seen that the device according to the invention comprises a supporting block 1 in which there is provided a plurality of cylindrical through chambers 2 for plungers 3 provided with a rod 4. The supporting block 1 is completed by a lower cap 5 and an upper cap 6. In Fig. 1 there is shown the lower cap 5 in which three chambers 7, 8 and 9 are provided each intended to actuate a group of plungers 3 and this with the purpose of exerting different pressures on the various areas of the sole in dependence on the working requirements.

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Each chamber 7, 8 and 9 has an orifice 10, 11 and 12 respectively, with an associated pressure fluid source (not shown). This fluid can be compressed air or oil depending on the specific working requirements.

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The upper cap 6, once assembled, acts as a stop for the plungers 3 (see Fig. 2).

The supporting block 1 is secured at one of its longitudinal sides to a guide 16 which can move on bearings 17 beneath a rigid pressing plane 18. Provided in this pressing plane 18 is an opening 19. A fluffing or carding unit 20 which can consist of a roller on which a fluffing band is wound is disposed at the opening 19. Provided at the two sides of the device 20 are two driving rollers 21 which have the function to accompany the feed of the sole 22.

There will be now briefly described the operation of the illustrated fluffing and carding device.

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Initially the supporting block 1 is not beneath the pressing plane 18, the chambers 7, 8 and 9 of the lower cap 5 communicating through the lines 13, 14 and 15 with the associated pressure sources. Obviously, the pressure in the three chambers can be different in dependence on the working requirements. In this situation the plungers 3 are completely extended. At this point the sole 22 is laid on the top of the rods 4 of the plungers 3 with the surface to be worked turned upwards. The supporting block 1 with the sole carried by it is then pushed beneath the pressing plane 18. As a result the plungers 3 will move back to different extents according to the depth of the sole at the individual plungers. Simulta-

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neously, each plunger 3 will exert such a force on the sole 22 as to compress it against the pressing plane 18 so that the upper surface of the sole becomes substantially flat. Obviously, the force exerted by a plunger 3 will depend on
5 the chamber (7, 8 or 9) with which it communicates. As the supporting block 1 goes on with its advancement the upper surface of the sole 22 will come gradually in contact with the fluffing or carding unit 20 thus causing a uniform working of the sole.

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From the above it will be understood that the fluffing and carding device according to the invention is adapted to work soles of any composition and with variable depth along the sole.

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As to the number of plungers 3 to be used, it is apparent that it should be such as to obtain a possibly uniform pressure distribution on the upper surface of the sole 22 so that the working of said surface is uniform.

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While but one embodiment of the invention has been illustrated and described, it is obvious that a number of modifications and changes can be made without departing from the scope of the invention.

Claims.

1. Fluffing and carding device for shoe soles, characterized in that it comprises a sole supporting block having incorporated therein a plurality of pneumatically or hydraulically controlled plungers, whose rods project from the block, a rigid pressing plane against which the sole is pressed by the plungers, and a fluffing or carding unit disposed at an aperture of the pressing plane, said supporting block being carried by a carriage adapted to move parallel to the pressing plane so that the whole surface of the sole to be worked contacts the fluffing or carding unit.

2. Device as claimed in claim 1, characterized in that the cylindrical plunger chambers are in communication on the bottom of the supporting block with a hollow space connected to a pressure source.

3. Device as claimed in claim 2, characterized in that the hollow space is divided in a plurality of chambers communicating with one another, each chamber being in communication with a group of plungers and being connected to a separate pressure source so that the various chambers of the hollow space can be subjected to different pressures.

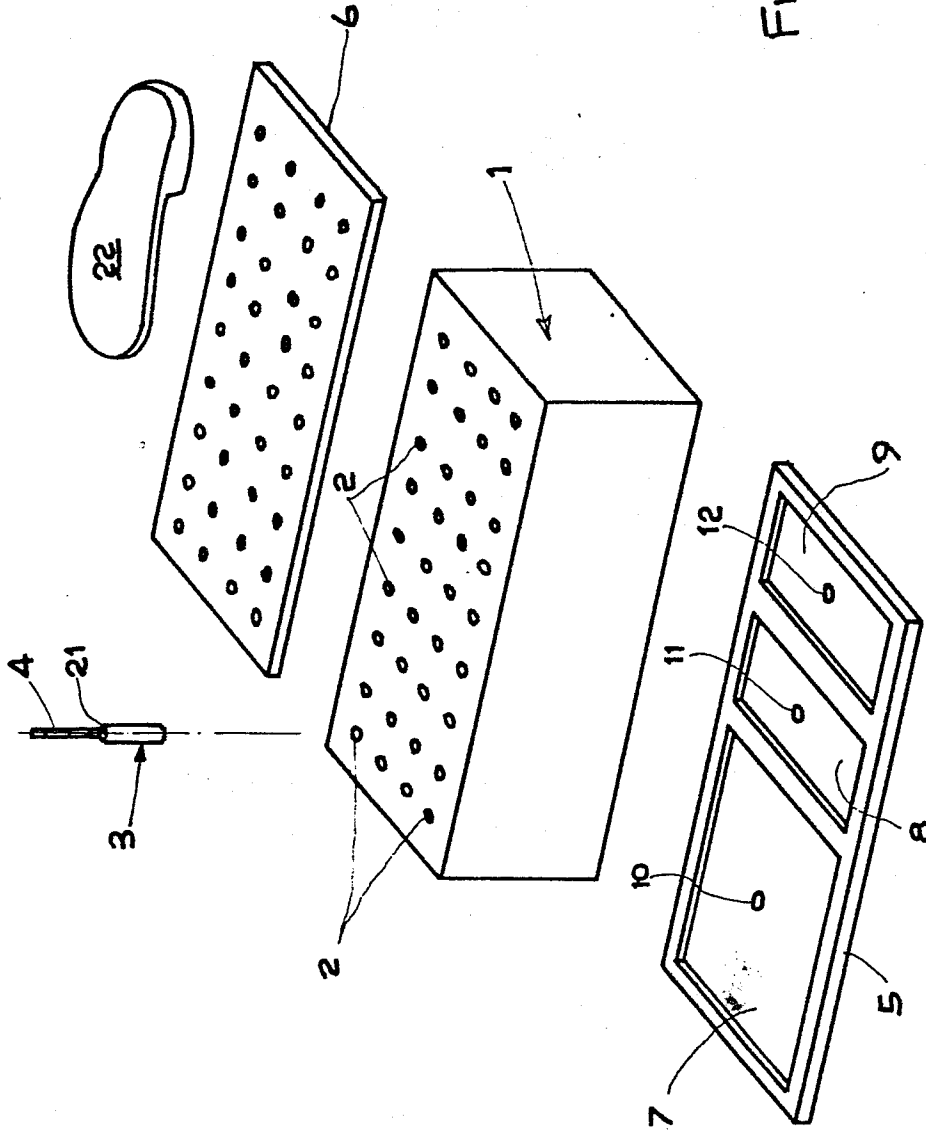


Fig. 1

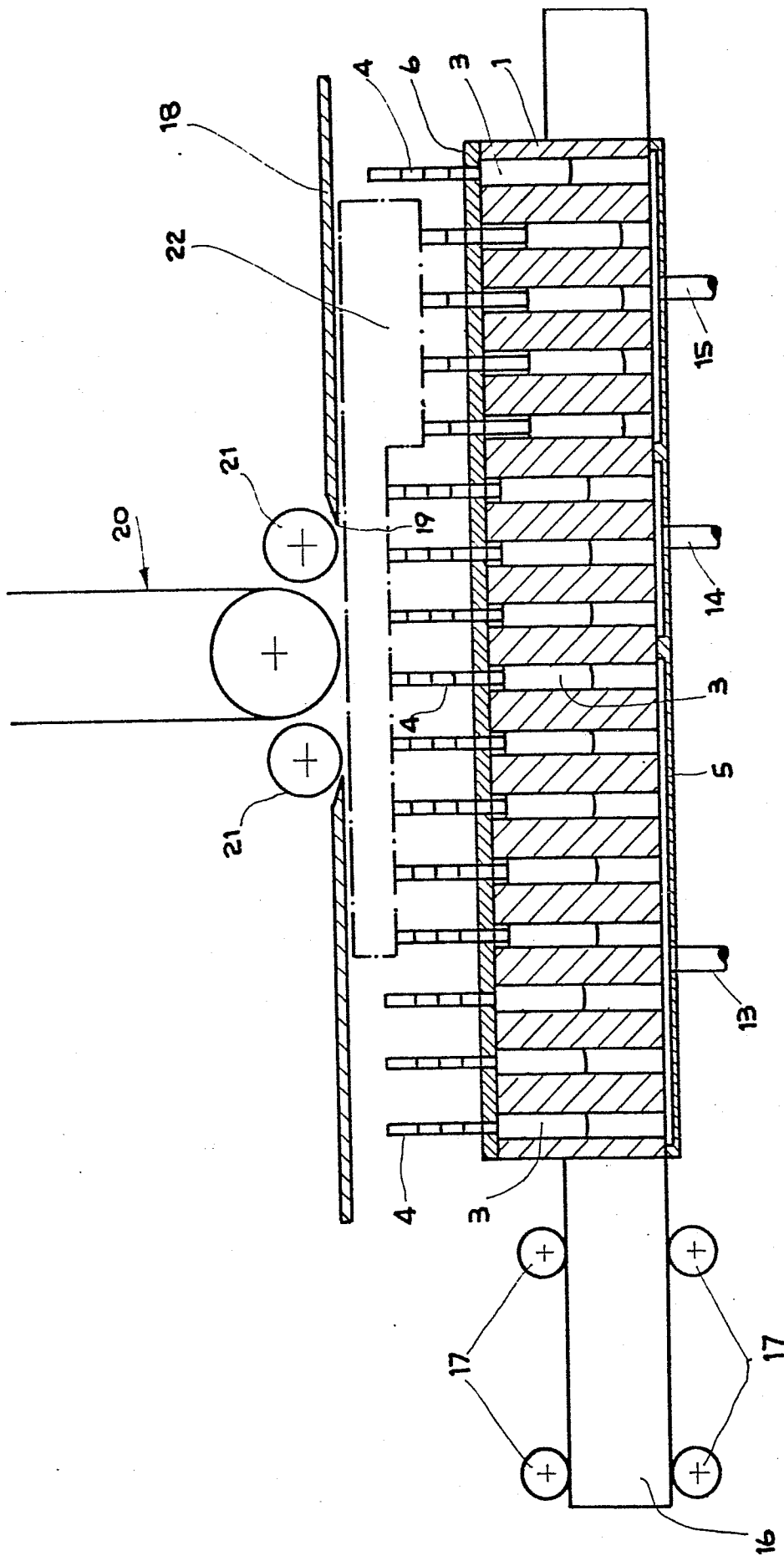


FIG. 2