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(54) **Shoe cleaning device**

(57) A shoe cleaning device (1), comprising a platform (2) provided with two parallel channels (3,4) which are adapted to contain movable means (6,7) for supporting and conveying the two shoes worn by at least one user; the movable means have discontinuities at the sole supporting surface, and means (8,9) adapted to clean the shoes are provided at the two channels (3,4).

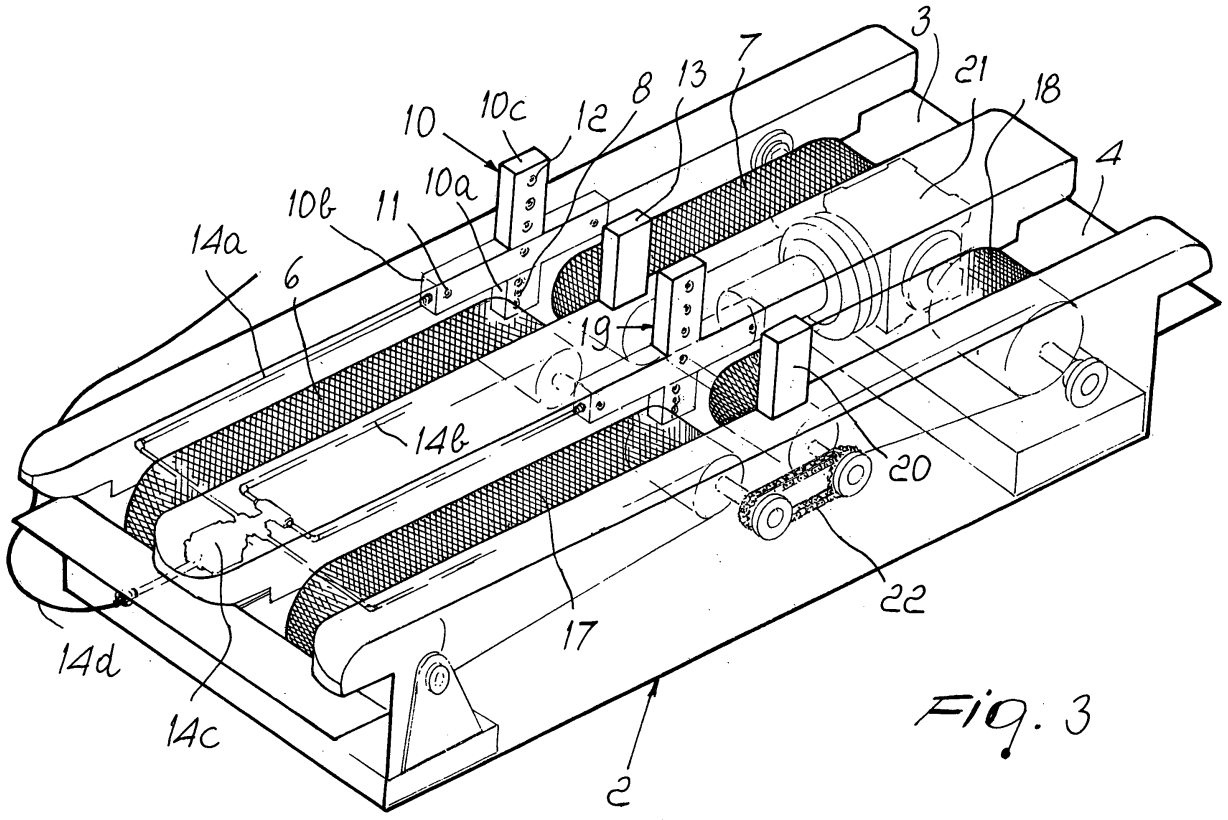

Fig. 3

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Description

[0001] The invention relates to a shoe cleaning device.

[0002] It is known that the need is often felt to clean shoes of the type provided with flat soles with antislip grooves while they are worn by users: this is the case, for example, of sports facilities, of locations which have particular cleanliness requirements, and of communities.

[0003] The aim of the present invention is to provide a device which can clean quickly and effectively any type of shoe worn by a user, including boots.

[0004] This aim is achieved by a shoe cleaning device according to the invention, characterized in that it comprises a platform provided with two parallel channels which are adapted to contain movable means for supporting and conveying the two shoes worn by at least one user, said means having discontinuities at the sole supporting surface, means adapted to clean said shoes being provided at the two channels.

[0005] Further characteristics and advantages of the present invention will become better apparent from the description of some preferred but not exclusive embodiments of the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of the shoe cleaning device;
Figure 2 is a sectional view of the device, taken along the line II-II of Figure 1;
Figure 3 is a view of a detail of the platform of the device, with parts shown in phantom lines;
Figure 4 is a plan view of a detail of Figure 3;
Figure 5 is a view of the platform of the device according to a first variation;
Figures 6, 8, 10 are plan views of a detail of the device according to further variations;
Figures 7, 9, 11 are respectively sectional views taken along the lines VII-VII, IX-IX, XI-XI of Figures 6, 8, 10.

[0006] With reference to Figures 1-4, the reference numeral 1 generally designates the device, which comprises a platform 2 provided with two parallel channels 3 and 4 adapted to contain movable means for supporting and conveying two shoes worn by a user 5.

[0007] The movable means contained in channel 3 comprise two motorized belts 6 and 7, which are provided with a continuous surface and are spaced one another so as to allow support of the sole of a shoe in transit; this produces a discontinuity which allows the installation of nozzles 8 and of corresponding nozzles 9 on the facing wall, as shown in Figure 4, which are arranged at a level below the sole and are adapted to emit jets of water which are directed appropriately against the sole in order to clean it.

[0008] Figure 4 illustrates a suitable arrangement of the nozzles 8 and 9, such as to allow the formation of jets of water which do not interfere and are such as to strike fully the sole of an overlying shoe.

[0009] The nozzles 8 are provided in a portion 10a of a distribution unit 10, which also comprises a portion 10b with three nozzles 11, which are located at a level which is higher than the plane defined by the belts 6 and 7 and are thus designed to clean the upper of shoes, and finally a portion 10c with three nozzles 12 for cleaning the quarters of boots.

[0010] A similar distribution unit, of which only a portion 13 is visible in Figure 3, is installed on the edge of the channel 3 in front of the distribution unit 10, and the nozzles 9 are provided in the lower portion of such distribution unit.

[0011] It should be noted in any case that the nozzles 8 and 9 arranged below the soles of the shoes might be provided at the bottom of the channel.

[0012] The distribution unit 10 and the unit that faces it are supplied with water by means of tubes 14a, 14b, which branch out from a box 14c, which is connected by means of a tube 14d to the delivery of a pump 14e, which draws water from a tank 14f contained in a cabinet 15 together with an electrical panel 16 for controlling the device.

[0013] A perfectly identical situation occurs as regards the channel 4 that contains belts 17 and 18 and comprises a distribution unit 19 and the distribution unit that faces it, of which only an upper portion 20 is visible; it is therefore deemed unnecessary to provide a detailed description.

[0014] With reference to Figure 3, it can be seen that an electric gearmotor 21 powered at low voltage motorizes the belts 7 and 18, while the motion to the belts 6 and 17 is transmitted by means of a chain 22.

[0015] Finally, Figure 2 shows that the protection of the legs of the user against sprays of water is provided by means of two layers of bristles: an upper layer, formed by bristles 23a, 23b, and a lower layer, formed by bristles 24a, 24b, which meet in mutually offset positions.

[0016] Figure 5 is a view of a first variation of the device of the invention, in which a movable support and conveyance means contained in channels 25 and 26 of a platform 27, which are fully similar to the channels 3 and 4 of the platform 2, comprise a plurality of parallel motorized narrow belts closed in a loop, their length being substantially equal to the entire length of the channels: accordingly, reference numerals 28 and 29 designate two narrow belts of the channel 25 and numerals 30, 31 designate two narrow belts of the channel 26.

[0017] The means adapted to clean the shoes as regards the channel 26 comprise nozzles 32 and 33, which are supplied by means of a tube 34a which branches out from a box 34b; such nozzles are located below the narrow belts 30 and 31 and emit upwardly jets of water which, by taking advantage of the discontinuities provided between said narrow belts, wet and clean the soles of the shoes that rest on the belts.

[0018] Motorized brushes 35, inserted in the empty spaces provided by means of the discontinuities between

such narrow belts, also cooperate to clean the soles.

[0019] The uppers of the shoes are cleaned by jets of water, emitted by nozzles 36 and 37 and by nozzles which face them and protrude from the walls of the channel at a level which lies above the narrow belts and are fed by means of tubes 38, and by brushes 39 and 40.

[0020] Blowers 41 and 42 dry the shoes.

[0021] A fully identical situation, which accordingly is not described in detail, occurs as regards the channel 25.

[0022] Figures 6 and 7 illustrate an embodiment of the device of the invention in which the movable support and conveyance means contained in a channel comprise a plurality of bars 43, which are arranged transversely to the direction of motion indicated by the arrow and are connected at their ends to two articulated chains 44, 45, which are closed in a loop and run close to the walls of the channel along its entire length.

[0023] The soles of shoes 46 rest on the bars 43 and are wetted by jets of water emitted by nozzles 47 which pass through the discontinuities that are present between said bars.

[0024] According to a variation of the embodiment described above, each channel can contain two or more contiguous elements, each provided with bars which are connected at their ends to articulated chains, and in the regions located between two contiguous elements it is possible to install at least one motorized brush.

[0025] Figures 8 and 9 illustrate a variation in which the movable support and conveyance means contained in a channel comprise a plurality of bars 48, which are associated with the walls of the channel transversely to the direction of motion indicated by the arrow and are motorized by means of articulated chains 49a, 49b, which act in combination with pinions 48a, which are keyed on each bar, so as to rotate about their own axis as indicated by the arrows in the figures.

[0026] The soles of shoes 50 rest on the bars 48 and are wetted by jets of water emitted by nozzles 51, which pass through the discontinuities provided between the bars.

[0027] Finally, Figures 10 and 11 illustrate a variation of the invention, in which the movable support and conveyance means contained in a channel comprise a plurality of articulated chains 52 which are motorized, are closed in a loop with the upper branch designed to support shoes 53, and are arranged in a parallel configuration, with lengths which are shorter than the entire length of the channel.

[0028] The soles of the shoes are wetted by jets of water emitted by nozzles 54, which pass through the discontinuities of the articulated chains.

[0029] The described invention is susceptible of numerous modifications and variations, in addition to those described, all of which are within the scope of the appended claims: thus, for example, the nozzles can be of the type adapted to emit atomized water, and it is possible to provide means adapted to add disinfectant substances to the water.

[0030] The nozzles may also be adapted to emit a gaseous fluid instead of a liquid one.

[0031] 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 interpretation of each element identified by way of example by such reference signs.

Claims

1. A shoe cleaning device, **characterized in that** it comprises a platform provided with two parallel channels which are adapted to contain movable means for supporting and conveying the two shoes worn by at least one user, said means having discontinuities at the sole supporting surface, means adapted to clean said shoes being provided at the two channels.

2. The device according to claim 1, **characterized in that** the movable support and conveyance means contained in each of the two channels comprise at least two motorized conveyor belts which have a continuous surface and are aligned and spaced one another so as to allow support of the sole and allow the installation, in the space between said belts below the level of the sole, of nozzles adapted to emit fluid which are directed appropriately toward the sole.

3. The device according to claims 1 and 2, **characterized in that** the nozzles are provided at the two walls of the channel in positions which are offset and are adapted to emit fluid so as to avoid mutual interference.

4. The device according to claims 1 and 2, **characterized in that** the nozzles are provided at the bottom of the channel.

5. The device according to claim 1, **characterized in that** the movable support and conveyance means contained in each of the two channels comprise a plurality flexible elements, which are motorized, closed in a loop, arranged in a parallel configuration, with a longitudinal extension which is substantially equal to the full length of the channel.

6. The device according to claim 1, **characterized in that** the movable support and conveyance means contained in each of the two channels comprise a plurality of flexible elements, which are motorized, closed in a loop, arranged in a parallel configuration, and are shorter than the full length of the channel.

7. The device according to claims 5 and 6, **characterized in that** the motorized flexible elements closed in a loop are narrow belts.

8. The device according to claims 5 and 6, **characterized in that** the motorized flexible elements closed in a loop are articulated chains.

9. The device according to claim 1, **characterized in that** the movable support and conveyance means contained in each of the two channels comprise a plurality of bars, which are associated with the wall of the channel, transversely with respect to the direction of motion and are motorized so as to rotate about their own axis.

10. The device according to one or more of claims 5 to 9, **characterized in that** the means adapted to clean the shoes comprise a plurality of nozzles for emitting fluid, which are located within each of the two channels that contain the movable means for supporting and conveying the shoes below the level of the soles of the shoes.

11. The device according to one or more of claims 5 to 9, **characterized in that** the means adapted to clean the shoes comprise a plurality of motorized rotating brushes, which are located in the empty spaces at the supporting surface of the soles of said shoes.

12. The device according to claim 1, **characterized in that** the movable support and conveyance means contained in each of the two channels comprise a plurality of bars, which are arranged transversely to the direction of motion and are connected, at their ends, to two articulated chains, which are closed in a loop and run proximate to the walls of the channel along its entire length, a plurality of nozzles for emitting fluid being provided within each channel below the level of the soles of the shoes.

13. The device according to claim 1, **characterized in that** the movable support and conveyance means contained in each of two channels comprise at least two contiguous elements, each of which comprises a plurality of bars which are arranged transversely to the direction of motion and are connected at their ends to two articulated chains, which are closed in a loop and run proximate to the walls of the channel, a plurality of nozzles for the emission of fluid being located within each channel below the level of the soles of the shoes, at least one motorized brush being inserted in the portion of space between two of said contiguous elements.

14. The device according to one or more of the preceding claims, **characterized by** the presence of a plurality of nozzles which are adapted to emit fluid and are located within each of the two channels that contain movable means for supporting and conveying the shoes, which are located at a higher level than the level at which the soles rest on said movable means.

15. The device according to one or more of the preceding claims, **characterized by** the presence of a plurality of motorized brushes, which are located within each of the two channels that contain movable means for supporting and conveying the shoes, which are located at a higher level than the level at which the soles rest on said movable means.

16. The device according to one or more of the preceding claims, **characterized in that** the nozzles are adapted to emit water in the form of jets.

17. The device according to one or more of the preceding claims, **characterized in that** the nozzles are adapted to emit water in atomized form.

18. The device according to one or more of the preceding claims, **characterized by** the presence of means adapted to add disinfectant substances to the water meant to be emitted by the nozzles.

19. The device according to one or more of the preceding claims, **characterized by** the presence of a plurality of air blowers for drying the shoes.

20. The device according to one or more of the preceding claims, **characterized by** the presence of two layers of bristles which lie above the channels for containing the movable means for supporting and conveying the shoes, each of said layers being formed by bristles which protrude from facing supports which are located at the edge of the channels so as to come into mutual contact at regions which are offset between the two layers.

21. The device according to one or more of the preceding claims, **characterized in that** the movable means for supporting and conveying the shoes are motorized at low voltage.

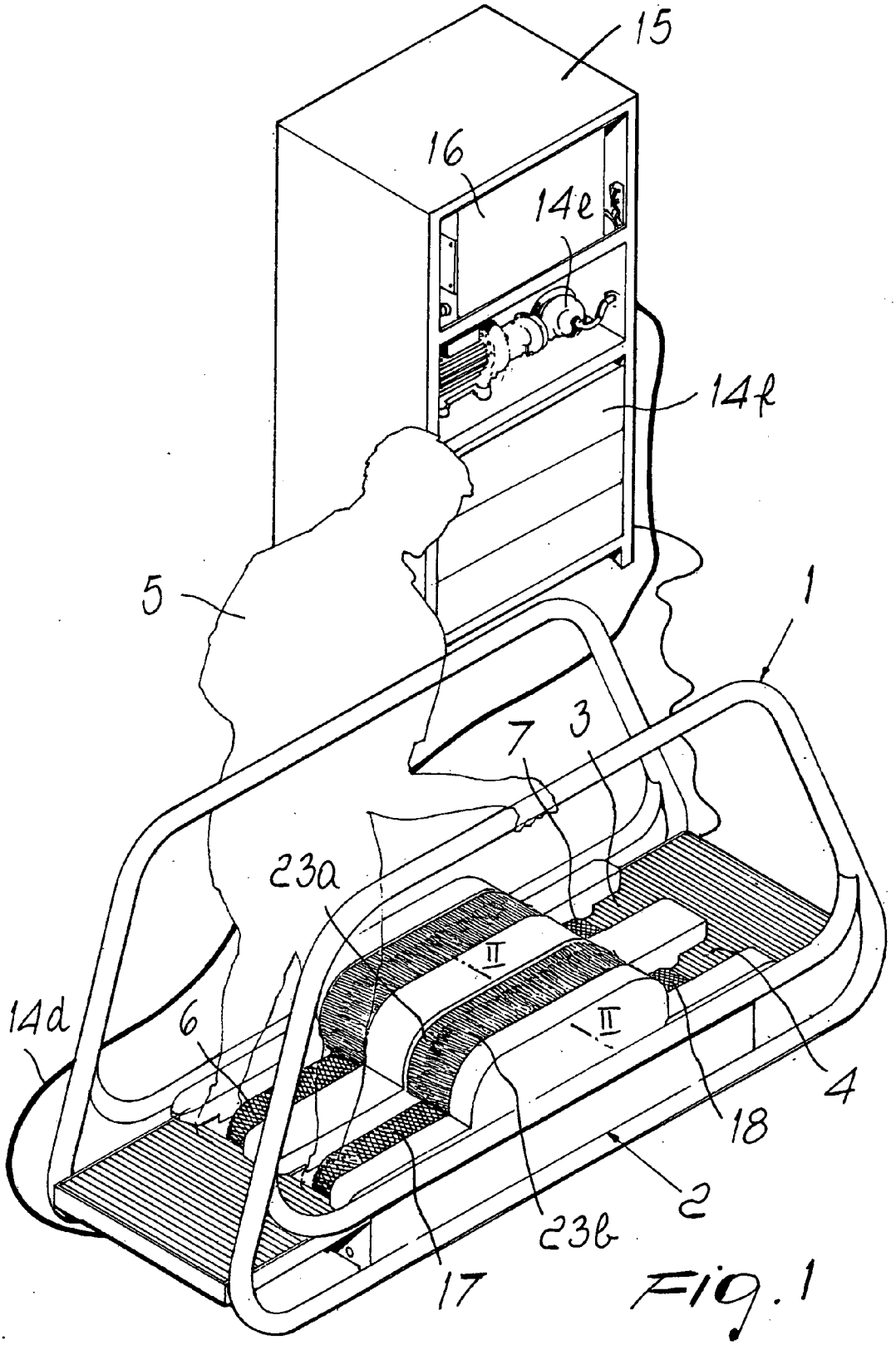

Fig. 1

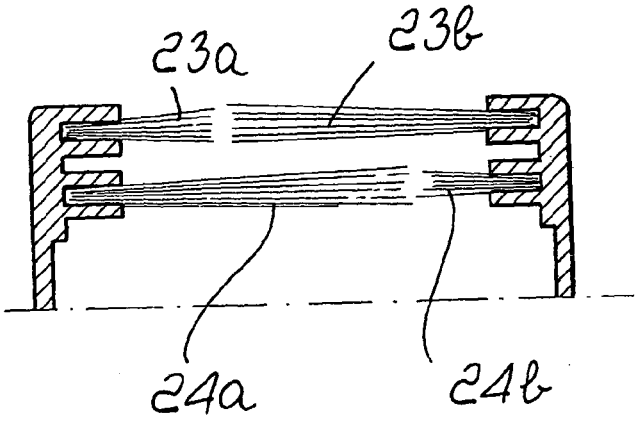

Fig. 2

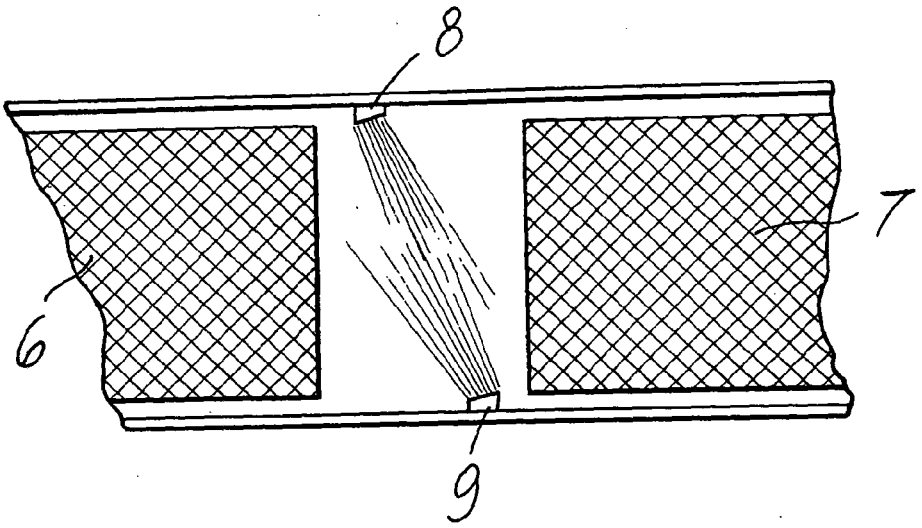

Fig. 4

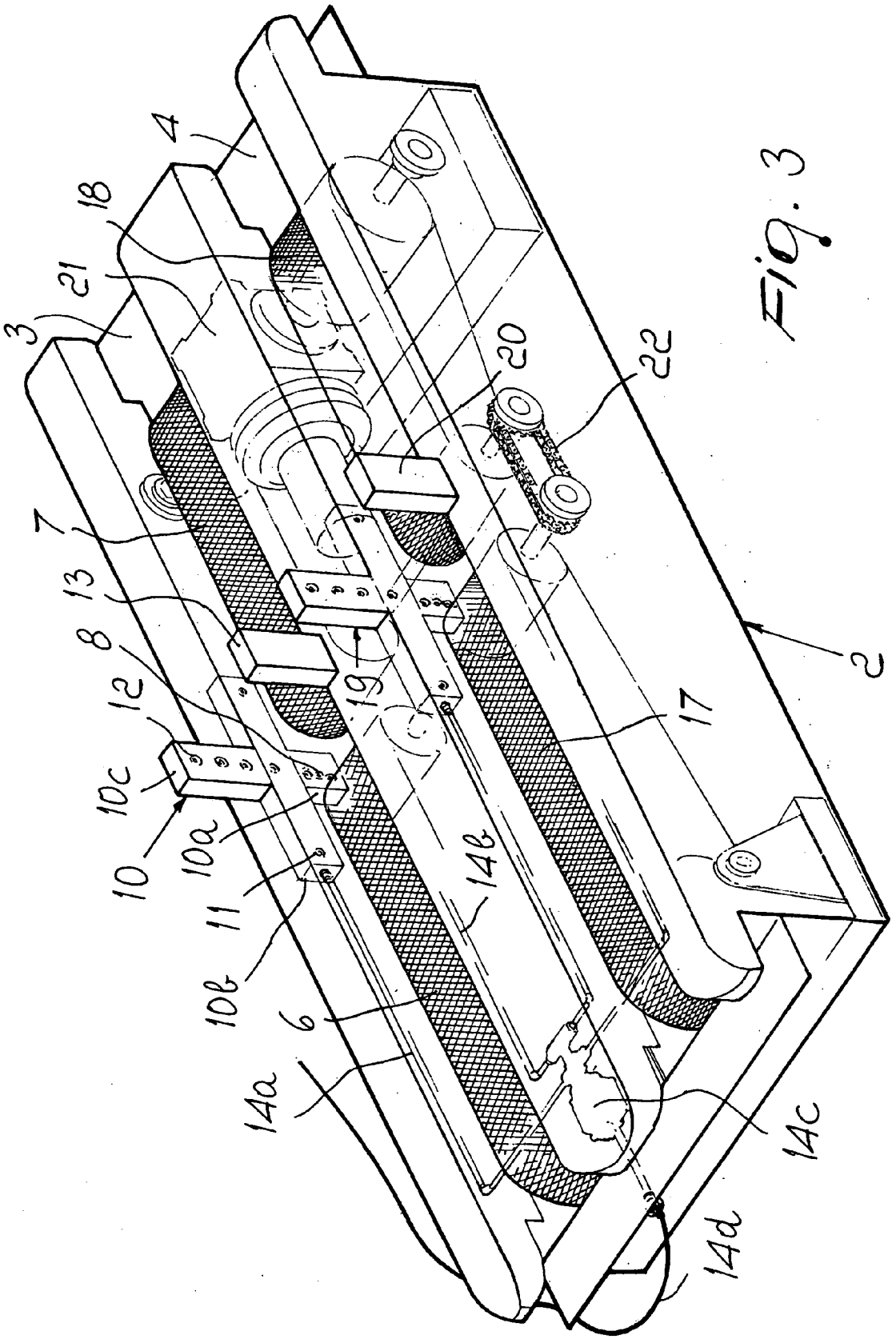

Fig. 3

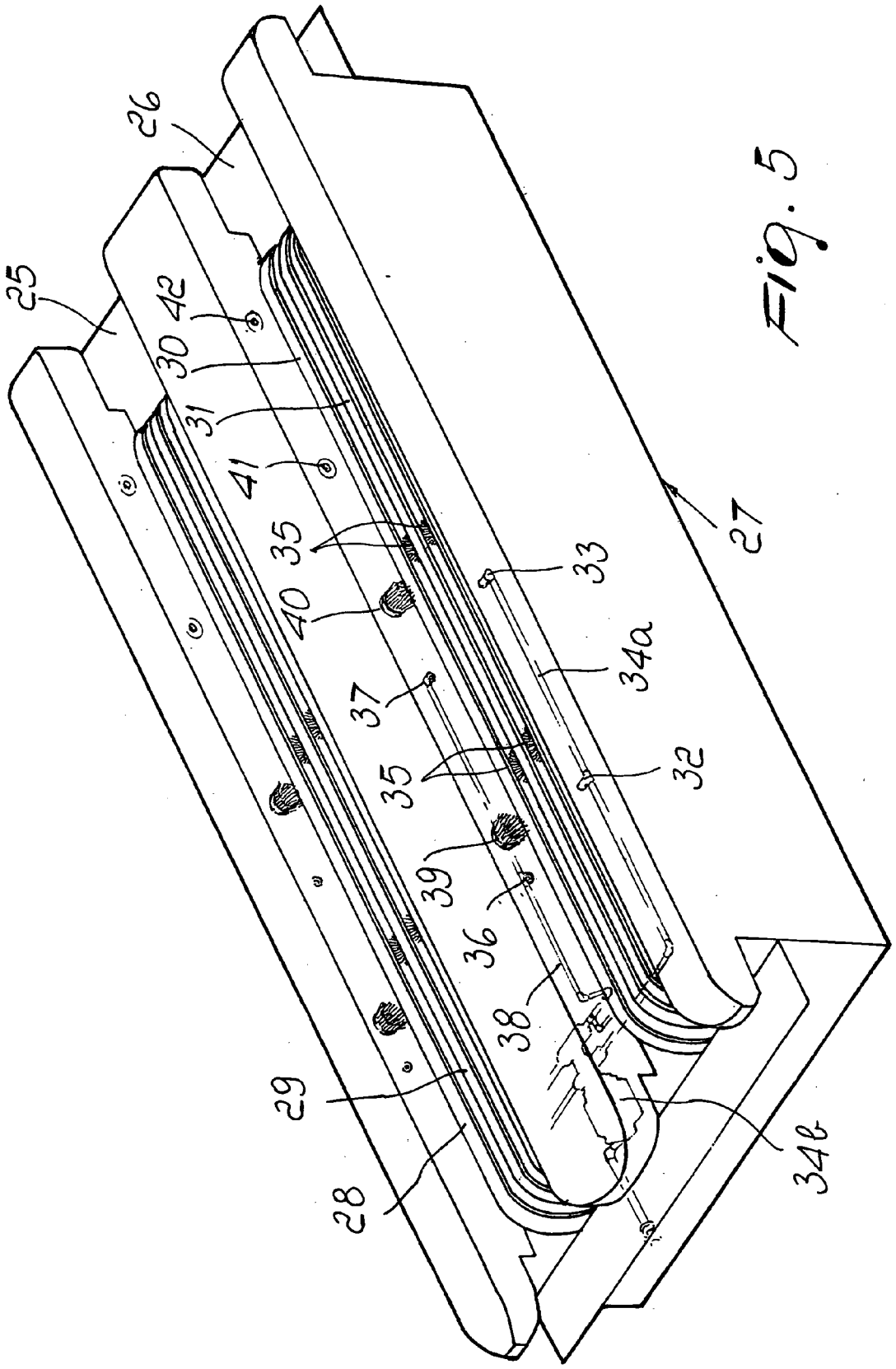

Fig. 5

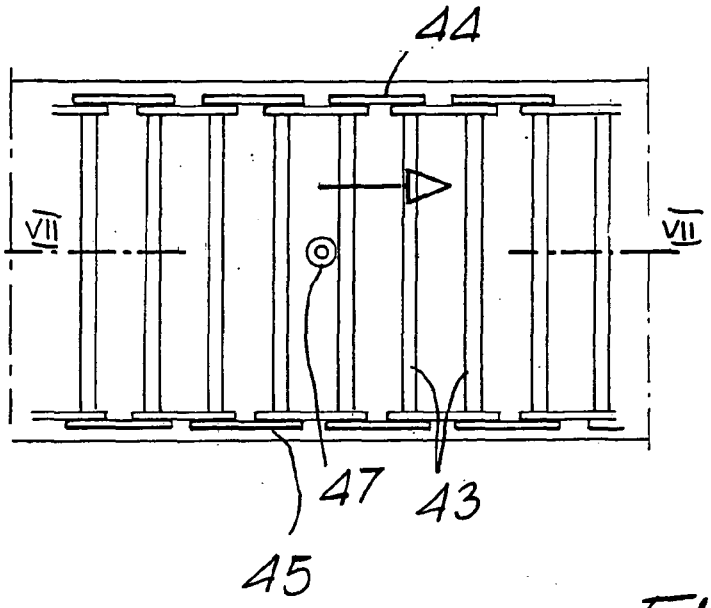

Fig. 6

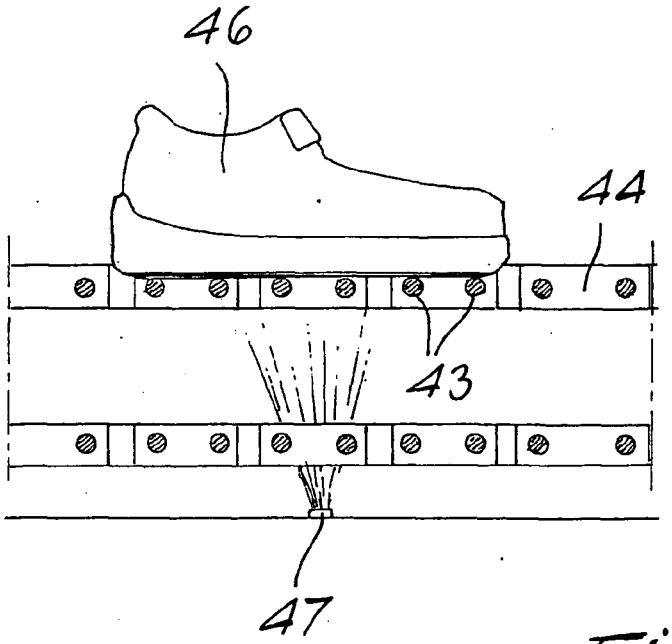

Fig. 7

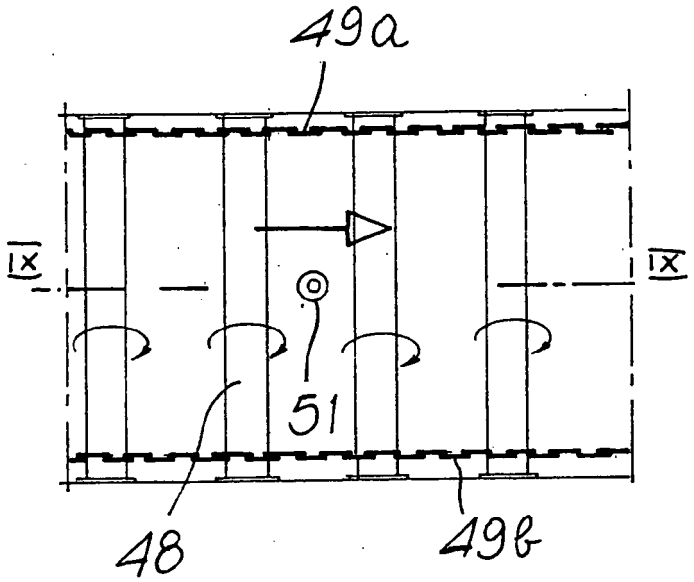

Fig. 8

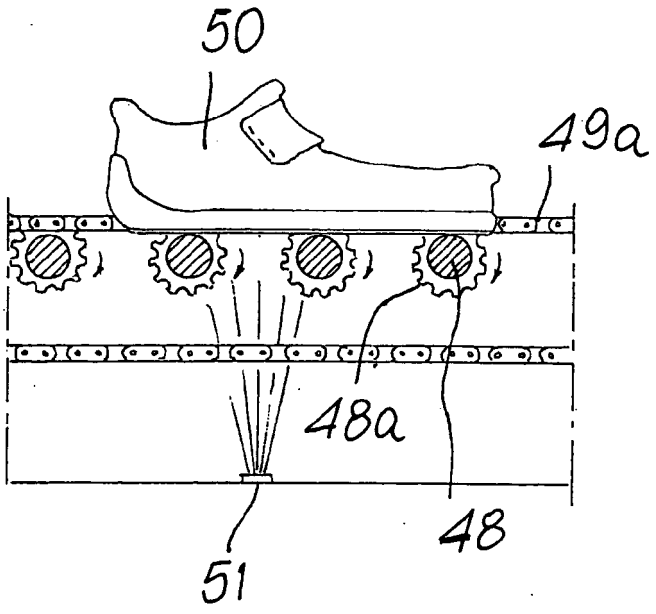

Fig. 9

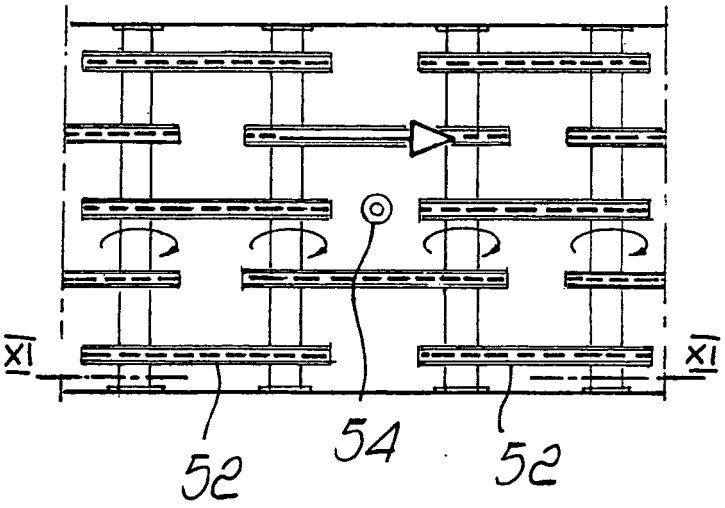

Fig. 10

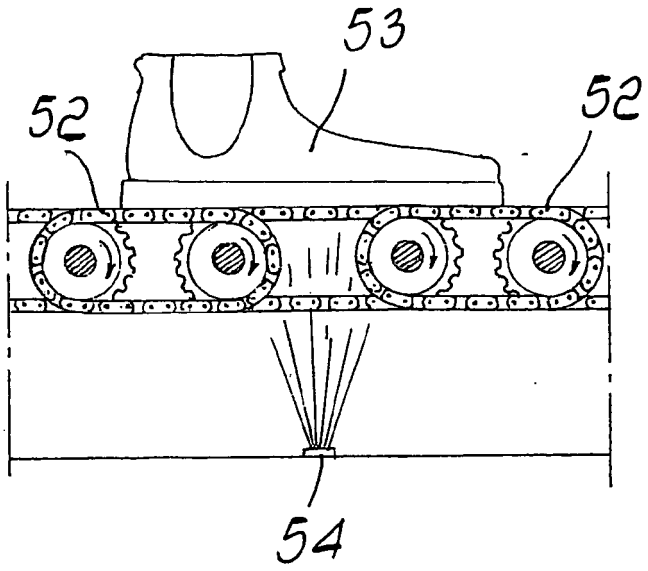

Fig. 11

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 02 0211

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 February 2007	Özsoy, Sevda

CATEGORY OF CITED DOCUMENTS

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