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Device for cleaning and drying soles of shoes being worn.

A device for cleaning and drying soles of shoes being worn comprises a movable cleaning belt (7) connected with driving means (9) and having an accessible portion through an opening on the upper face (2) of a box-shaped body (1). There is provided an actuation means (12, 33) which is responsive to the pressure of the user's foot or simply to the presence of the latter for the energization of the driving means (9). The dirt is collected in an extractable drawer (17) upon suction by a fan means (16). Further fan means (19) as well as heating means are provided for generating a hot air stream along the belt.

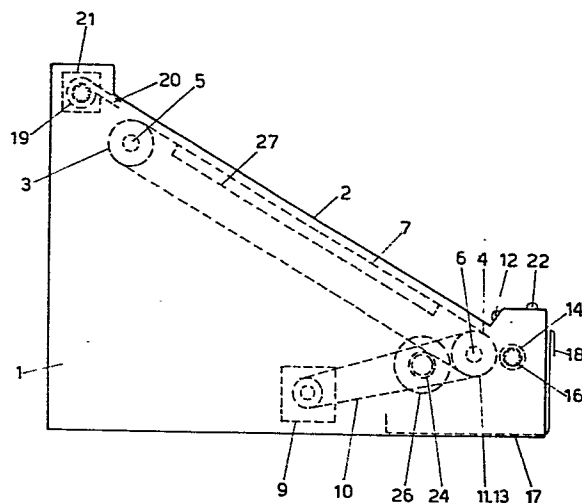


Fig.1

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"Device for cleaning and drying soles of shoes
being worn"

The present invention is directed to a device for cleaning and drying soles of shoes being worn, for household or public use.

It is known that the present method of cleaning shoe
5 soles by means of mats is unsatisfactory and also the mats do not provide for the sole drying.

It is the object of the present invention to provide a device which is suitable to give a complete cleaning as well as drying of shoe soles.

10 The device according to the invention is for this purpose characterized by comprising, on a support frame, a cleaning movable belt connected to driving means, there being provided means responsive to the pressure and/or the presence of the user's foot for operating said cleaning
15 belt driving means, at the ends of the cleaning belt there being also provided a fan means capable to being operated to drain away the dirt removed from a sole and to blow air on the cleaning belt.

Characteristics and advantages of the device according to the invention will be apparent by the following detailed description of some embodiments thereof, made by way of a non-limiting example with reference to the drawings in 5 which:

FIGURE 1 is a side view of a first embodiment of the device according to the invention;

FIGURE 2 is a plan top view of the device shown in Fig. 1;

FIGURE 3 is a side view of a second embodiment of the 10 device according to the invention; and

FIGURES 4 and 5 are respectively a perspective view and a side view, partially in section, of a further different embodiment of the device.

With reference in particular to Figs. 1 and 2, the device 15 according to the invention comprises a support frame 1 formed of a substantially box-shaped body, an upper face 2 of which is sloping. Two rollers or cylinders 3, 4 are mounted for rotation at both ends of the upper face 2 of the box-shaped body 1 and have the rotation axes 5, 6 20 supported at their ends on the side walls of the support frame 1.

A cleaning belt 7 is wound on the rollers 3, 4 and is accessible through an opening 8 provided on the upper face 2 of the box-shaped body 1, thus enabling the shoe 25 sole to be cleaned to rest on the belt 7.

The forward movement of the belt 7 is provided by a known motor and gear reduction unit 9 which is placed at the inside of the box-shaped body 1 and is connected through a belt 10 to a pulley 11 which is fixedly mounted on the 30 shaft 6 of cylinder 4, which as a consequence is the driving cylinder, whereas the other cylinder is driven.

The unit 9 is operated by means of a microswitch 12 positioned on the lower portion of surface 2 of the box-shaped body 1, this micro-switch being directly actuated by the shoe heel when the user causes the shoe to rest on the belt 7. A gear 13 is fixedly mounted on the shaft 6 of the cylinder 4 and meshes with another gear 14 integral with a shaft 15 which is rotatably mounted on the frame 1 and having thereon known fan means 16 of the centrifugal type being capable of removing the dirt from the belt 7. For example the fan means 16 could be a suction means, so that the dirt is drawn away from the belt 7 and brought towards the lower part of the box-shaped body 1. The latter is provided at the inside with a collecting member or drawer 17 which is extractable from the support frame 1 to be emptied out and, for this purpose, it has an operating handle 18.

In case that the shoe sole is wet, another fan means 19, again of a known type, is provided at the other end of the cleaning belt 7, but in this case being capable of generating an air stream directed toward the cleaning belt 7 through an oriented nozzle 20. In the latter there are provided suitable electrical resistors (not shown) for the air heating in order to enhance the drying operation. The fan means 19 is driven by its own motor means 21 the actuation of which is controlled by a switch 22 positioned near the switch 12 for the actuation of the cleaning belt 7. The position of air heating resistors 23 is schematically indicated in Fig. 2 by a broken line.

The device according to the invention is also provided with means for cleaning the belt 7, arranged at the lower portion thereof and comprising a roller 24 fixedly

mounted on a shaft 25 also having fixedly mounted thereon a gear 26 which is in a meshing engagement with the gear 13 on shaft 6, thus transmitting the rotation movement of the driving pulley 11 to the roller 24 which engages at each time the belt 7 and rotates in a direction opposite to the forward movement of the latter.

To support the weight of a foot resting on the cleaning belt 7, there is provided a plate 27, such as of plastic material, which is placed on the underside of the outer face of the belt 7 and rests with its edges 27a on the side walls of the box-shaped body 1.

Figure 3 shows an alternative embodiment in which those elements being the same as in Figs. 1 and 2 bear the same reference numerals and are not described again. In this embodiment the driving roller is roller 3, which is directly in movement transmission relationship with the motor-gear reduction unit 9 through belt 10 without the presence of intermediate gears as in the previously described embodiment. The motor and gear reduction unit 9 is operated by means of a plate 28 which is in contact with a wall 29 from which the microswitch 12 projects, the latter being actuated by the pressure of the user's shoe. A brush 30, positioned against the lower branch of the cleaning belt 7, causes the dirt to be removed therefrom and to fall in the container 17 as in the previously described embodiment. Also in this case the same fan means with electrical resistor as in the first embodiment (not shown) is provided, being actuated by the push button 22.

As shown in Fig. 3 in this embodiment there is provided no plate contrasting the pressure exerted by the foot, the belt 7 being made of a suitable material to react

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to this pressure. Thus a contact on the substantially whole surface is obtained between a sole and the belt 7.

With reference to Figs. 4 and 5 is now described another preferred embodiment of the invention, with reference to 5 which there is described further control means of the device, which have not been represented, also when existing, for the first two embodiments. In this figure the same elements of the already considered figures are designated with the same reference numerals.

10 The device according to the invention is in this case so arranged that the upper face 2 of the box-shaped body 1 and consequently also the accessible portion of the cleaning belt 7, are horizontally positioned. The motor and reduction gear unit 9 has a central position at the 15 inside of the box-shaped body 1 and is mounted on known supporting means, not shown. The unit 9 is directly connected with the driving roller 4 by means of at least a belt 10 passing along a peripheral slot 4a formed in the roller 4. In this manner the width of the device is 20 reduced since the transmission belt 10 is directly wound on the driving roller 4 under the cleaning belt 7, with the consequent elimination of the pulley transmission of the first described embodiments.

The device is also provided with means for the periodical 25 tension adjustment of the cleaning belt 7 and the transmission belt 10. To this end the shafts 5 and 6 of the rollers 3 and 4 respectively, are supported through a bearing 5a, 6a respectively, by a plate 5b, 6b which is adjustably positionable within a respective inner 30 cavity 31 provided on each side wall of the body 1. In particular the plates 5b, 6b are moved outwards of the

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body 1 in order to stretch again, when necessary, the cleaning belt 7 and transmission belt 10. Such a movement is controlled by means of adjustment screws 32 which engage plates 5b, 6b and are screwed in the frame 1 so as to be able to be operated from the outside through their projecting head.

The motor and reduction gear unit 9 is actuated by means of a plate 33 which is positioned under the belt 7 and is the sensor element of an electronic control circuit 33a, per se known, which is connected in series with the feeding circuit of the unit 9. In particular the plate 33 is responsive to the presence of the user's shoe which, when resting on the belt 7, causes the motor and reduction unit 9 to start through the circuit 33a.

Like in the previously described embodiments, the box-shaped body 1 at both inlet and outlet ends of the belt 7 is provided with a wall 34 forming a support ledge for the rear portion of the shoe heel, thus being a stop against the movement which would be caused by the belt 7 running in the direction of the arrow F.

Also in this embodiment it is possible to provide means for generating a hot air flow, it being possible that this means, not shown, is housed in the hollow side walls 35 of the body 1, which will be provided with such as a grate on their upper edge for the air intake. The air will be conveyed, through the inner space comprised between the walls 35 towards the edge 36 from which the belt 7 exits, thus generating a constant air stream which can be heated by means of suitable resistors provided on the same edge 36.

The energization of the electrical resistor for the

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air heating may be controlled either directly by means of plate 33 or a separate control push button as in the previously described embodiment.

The cleaning belt will be of whichever known material, provided that it is formed with substantially rough working surface for a deep cleaning of the soles. Furthermore the plate 27 contrasting against the foot pressure could be replaced with a plurality of freely rotating rollers, supported by the box-shaped body 1.

Finally the starting of the motor means driving the cleaning belt 7 could be controlled by different known devices, such as photocell devices.

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C L A I M S

1. . Device for cleaning and drying soles of shoes being worn, characterized in that it comprises, on a support frame (1) a cleaning movable belt (7) connected to driving means (9), means (12) responsive to the pressure
5 and/or means (33) responsive to the presence of the user's foot for operating said cleaning belt driving means, there being also provided suction means (16) for removing the dirt from the cleaning belt (7) and means (19) for generating a hot air flow along said cleaning belt (7).
- 10 2. Device according to claim 1, characterized in that the cleaning belt (7) is movable and is accessible through an opening (8) of the upper face (2) of the said box-shaped body (1), said upper face (2) being sloping.
3. Device according to claim 1, characterized in that
15 the upper face (2) of the box-shaped body (1) is horizontal.
4. Device according to claim 1, characterized in that it comprises rubbing means (24, 30) for the complete removal of dirt from the cleaning belt.
5. Device according to claim 1, characterized in that
20 said cleaning belt (7) is wound on two rollers (3, 4), one of which has at least a peripheral slot (4a) in which passes a belt (10) for the transmission to a motor and gear reduction unit (9), said two rollers (3,4) being adjustably supported on said body (1) for the tensioning
25 of both the cleaning belt (7) and the transmission belt (10).
6. Device according to claim 1, characterized in that it comprises an extractable drawer (17) for collecting and discharging the dirt.

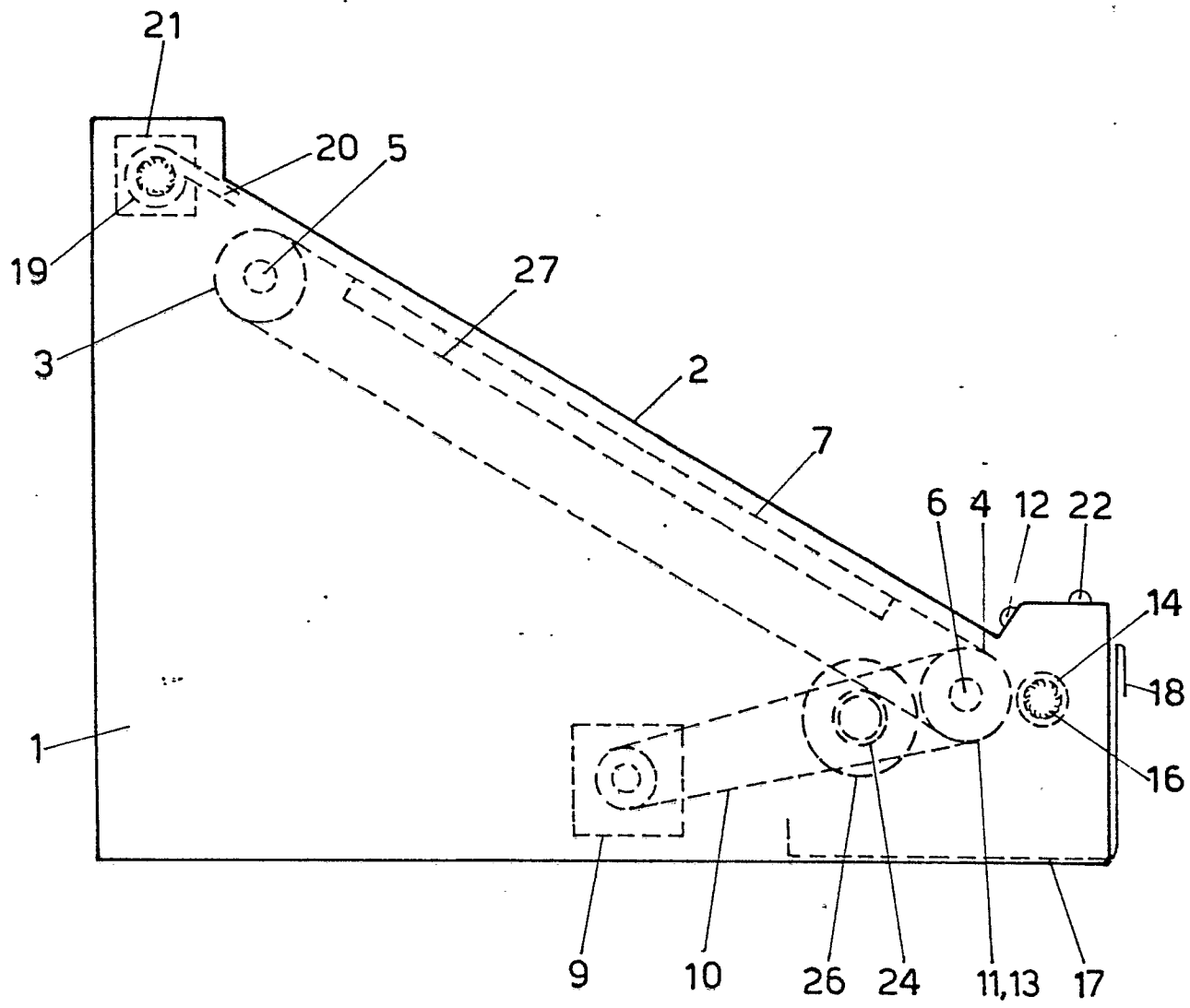


Fig.1

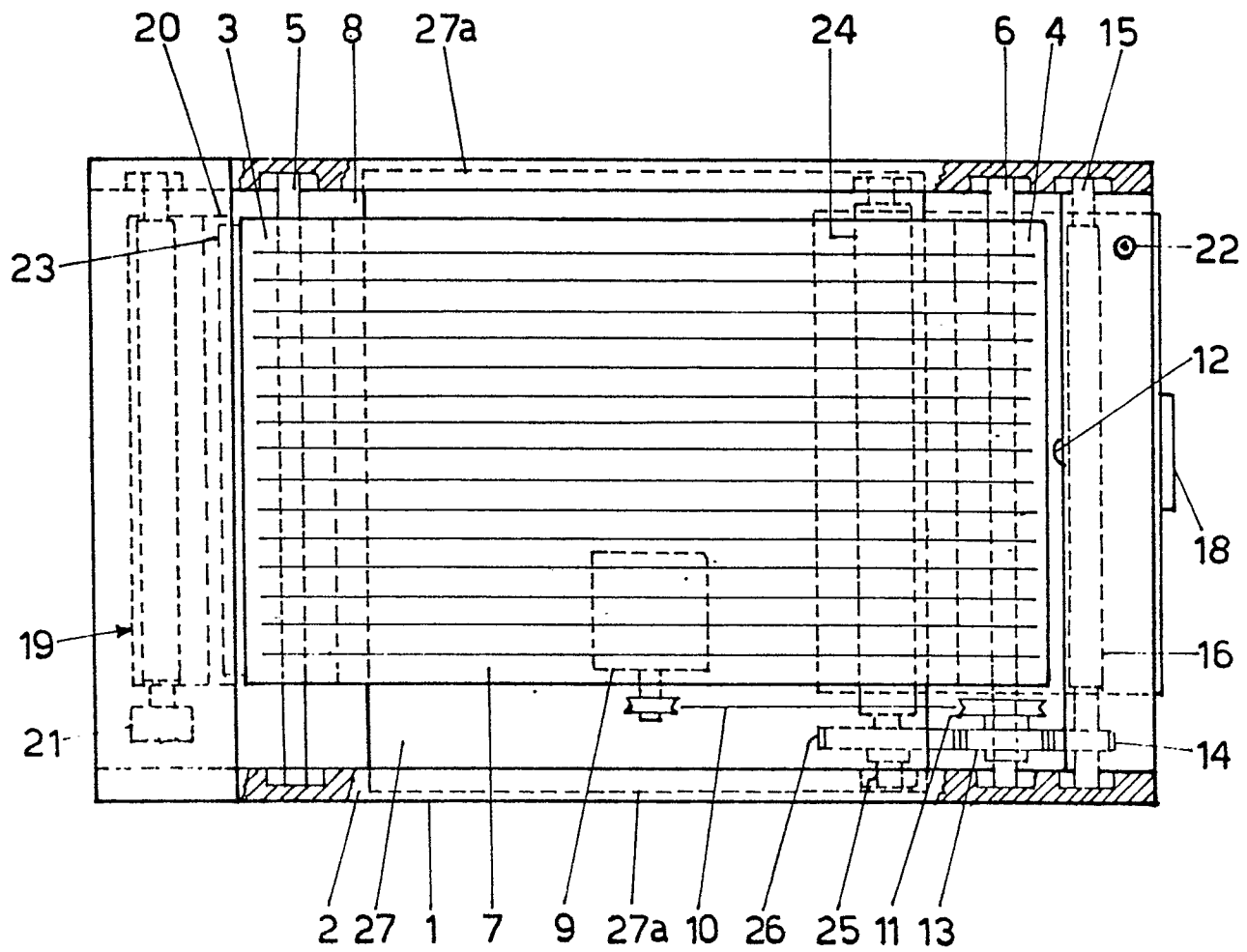


Fig. 2

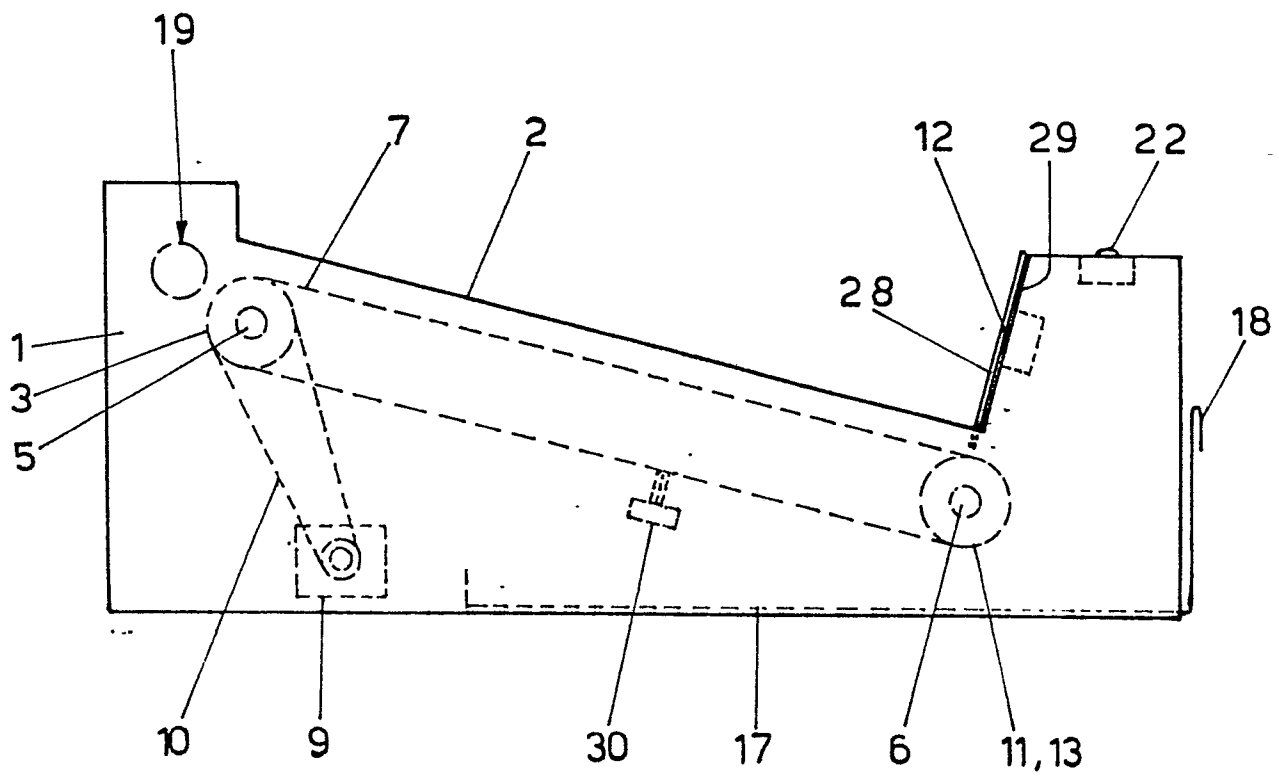
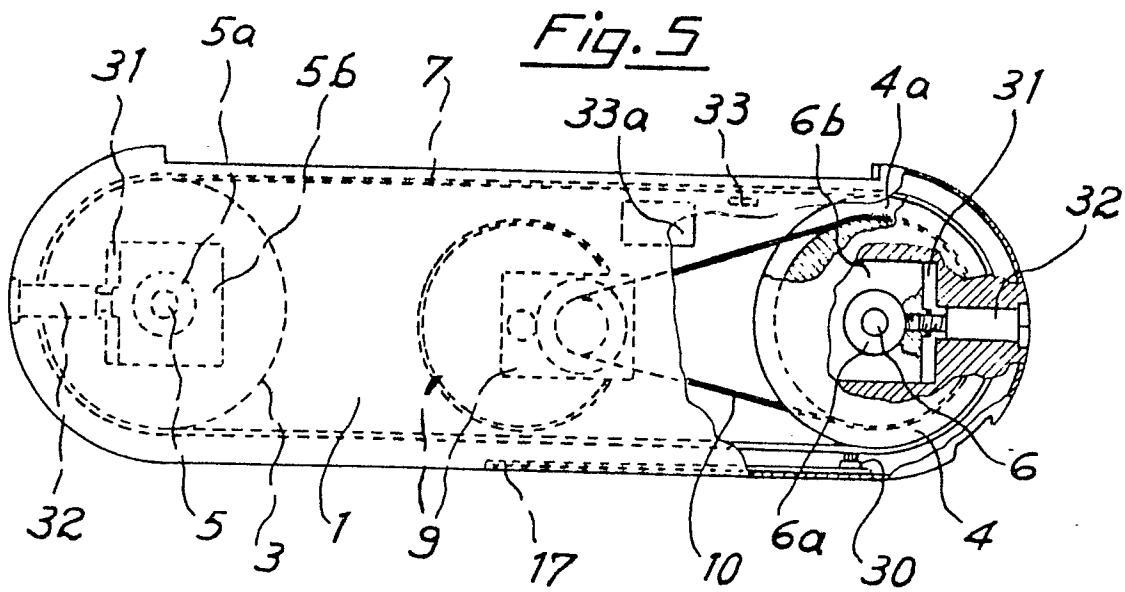
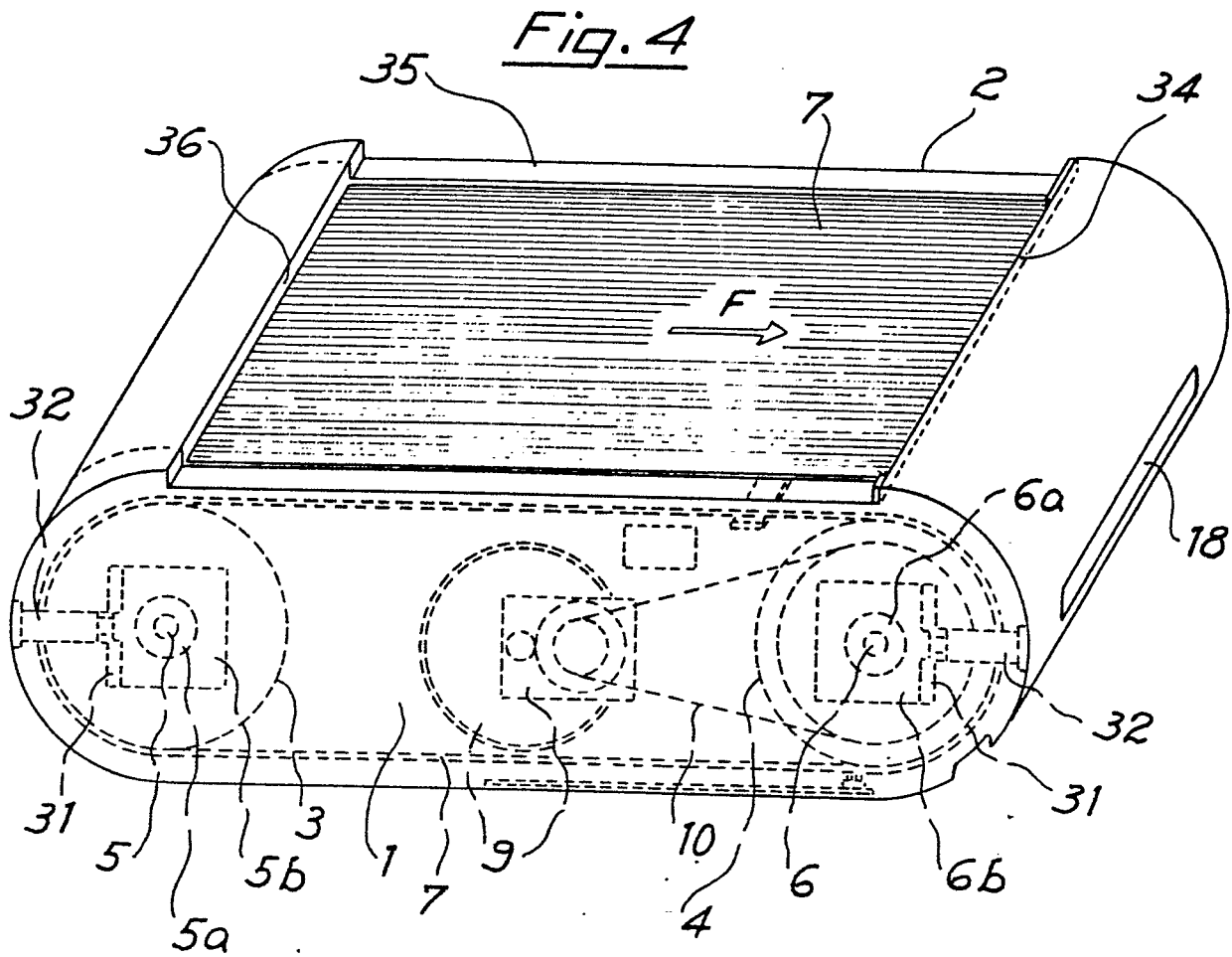


Fig. 3





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EUROPEAN SEARCH REPORT

0054523

Application number

EP 81 83 0245.7

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	DE - C - 1 108 869 (MÜLLER) * claims 1, 8, 13 * --	1,3,6	A 47 L 23/26
Y	GB - A - 1 094 259 (LIGHTOWLER) * fig. 1, 2 * --	2,4	
Y	FR - E - 54 222 (LUCAROBBI) * fig. 1 * --	4	
A	FR - A - 1 108 114 (JAPY) * fig. 1 * ----	2	TECHNICAL FIELDS SEARCHED (Int.Cl. ³) A 47 L 23/00
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons
☒ The present search report has been drawn up for all claims			&: member of the same patent family, corresponding document
Place of search Berlin		Date of completion of the search 26-02-1982	Examiner KLITSCH