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(56) Documents Cited:  
 CN 203483384 U CN 201143195 Y  
 CN 104398228 A CN 002555766 Y  
 CN 002261229 Y RO 000128899 A0  
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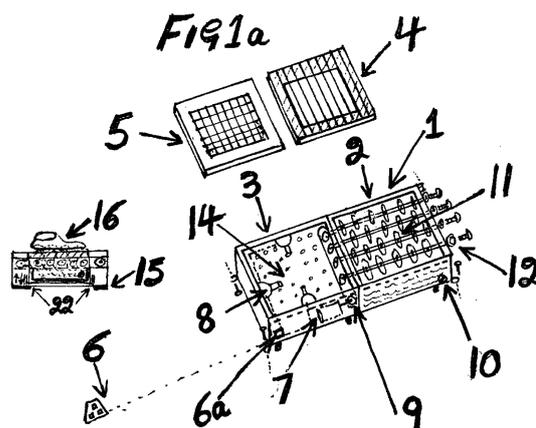
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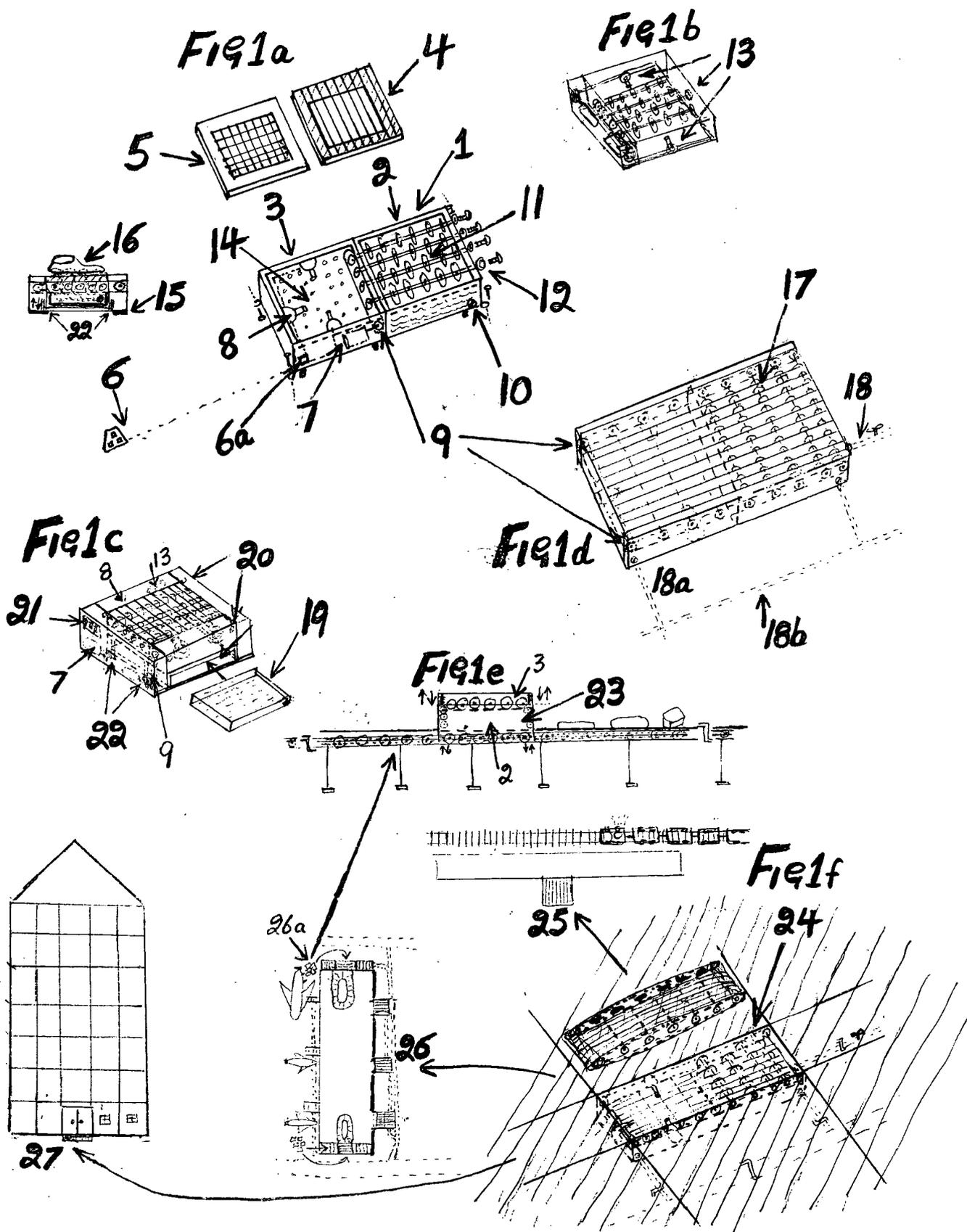
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(54) Title of the Invention: **Hygienic wash and dry door mat**  
 Abstract Title: **Footwear Washing and Drying Device**

(57) A doormat style washing and drying device for cleaning shoes or other footwear, having a tray 1 with a washing section 2 and a drying section 3. The washing section is equipped with cleaning solution, motorised rotating circular brushes 11, drain plug 10, and a slot grill 4 for the user to stand on. The drying section contains a mesh grill surface 5, a power source 6, electrical components which may include a motor 7, warm air blower fans 8, an air suction vacuum pump, sensors, or timers. The apparatus may have a sensor to identify that a user has stepped onto the grill, which then actuates the electrical motor to drive the rotating brushes, and to turn off the apparatus either when the user steps off, or after a certain time has elapsed. The device is operable without cleaning solution using dry brushes and a vacuum pump. In one embodiment there is a conveyor belt to automatically move the user between the washing and drying sections. The shoe cleaning device is intended for use at the entrance or doorway of a premises, and may be alternatively be used for cleaning baggage.





(1)

## Hygienic Wash and Dry Door Matt.

The invention relates to cleaning foot ware in a hygienic way before entering any premises.

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Foot ware is directly in contact with the ground at all times, therefore the main source of Germs, Bacteria, disease, and all unwanted guests hitching a ride to wonderful, warm paradise of your home, office, factory, shopping malls, Airport terminals, etc, etc, where they can live and flourish happily without any body even thinking about it, and or taking the matter seriously with a common excuse that the floors are cleaned every day or the shoes are kept in the porch, lobby, in the entrance, but that is already one step into the premises.

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The invention seeks to provide a solution whereby everyone entering any premises will automatically be obliged to step onto the wash and dry door matt situated immediately outside or inside the entrance taking only few minutes to wash and dry foot ware.

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According to one aspect of the invention there is provided two part sections plastic tray container, one section for washing and one section for drying, and/or alternatively multi-functions carried out in a single section, low voltage power source with safety cut-out trip switch, warm air blower fans, air suction vacuum pumps, electrical motor driving the belt rotating the spindles on which are the circular roller brushes partly submerged in the washing solution consisting of anti-bacterial chemicals, rotating through the slots of the top grill cleaning underside of shoes.

Advantageously the apparatus is operable manually by stepping on each section or semi-automatically controlled by sensors and timers or a fully automatic escalator/conveyor driven by belt and pulleys or chain and cogs, auto-cleaning solutions inlet/outlet valves and apparatus embedded floor/ground level covering a large entrance such as the Airport, train station, schools, shopping malls, and or alternatively air suction system without any liquids.

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Advantageously waterside section has a dirty water release drain plug valve, or automatic inlet/outlet top up/release pipe network leading to nearest sewer pipe or removable water container tray, and drying side housing all electrical equipment has perforated base.

Advantageously the hygienic door matt apparatus is of plastic material, but can be of any suitable material, such as for example nylon, rubber, synthetic fabric, metal, wood, marble, and/or a combination of materials and or embedded into concrete and similar at floor level.

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Advantageously washing, drying and vacuuming can be achieved within one section computer controlled digital circuits and programing, various sensors, 1,water tray screw pinion up/down to the circular brushes, 2,dry rollers, 3,blowers, 4,air suction vacuum pumps for border crossing, airports, train and bus stations, ports, baggage and foot ware cleaning.

It will be apparent to the skilled person that modifications can be made to the above embodiment that still fall within the scope of the invention, for example all in one single section having only dry operation with powerful air suction vacuum pumps.

Embodiments of the invention will now be described by way of example, with reference to the accompanying drawings, wherein;

Figure 1a – f are schematic views of the embodiment of the invention;

5 Figure 1 shows hygienic wash and dry door matt in accordance with the invention. The apparatus includes two part sections container tray 1, washing section 2, having top slot grill 4, drying section 3, having top middle mesh grill 5, and optional rain cover 4a, 5a, power source 6, having a cut-out switch 6a, electric motor 7, warm air blower fans 8, drive belt and pulleys 9, dirty water/cleaning solutions release drain plug 10, rotating spindle with circular brushes 11, secured in by bearing, washer and screw bolts 12, vacuum pumps 13, perforated water escape base 14, foot stool stand 15, side wash view 16, escalator / conveyor 17, water/cleaning solution inlet valve 18, dirty water/cleaning solutions outlet valves 18a, leading to sewer pipe 18b, removable water/cleaning solution tray container 19, various sensors 20, on/off switch 21, screw/pinion assembly 22, chains, belts, pulleys and cogs driven escalator/conveyor 23, embedded floor level 24, used for large entrances train station 25, Airport terminal building 26, baggage cleaning 26a, offices 27.

15 The electrically operated door matt comprises of container tray 1, having two sections, one for washing 2, and one for drying and housing all electrical equipment 3, and in some embodiments a single container tray will be able to achieve multiple functions in a single section, and or a single dry operation only with air suction vacuum pumps 13, aided by new technology, computers, micro-motors, closing aides, digital circuits, programed timers, operational timers, laser detectors, automatic function sensors and so on.

20 The apparatus having two sections wherein washing side 2, is filled with any one of the cleaning solutions such as anti-bacterial solution, detergents, chemicals, washing up liquids, or soapy water and so on, in which partly submerged circular roller brushes on spindles 11, are resting until someone steps on the top grill 4, sensors 20, , switch setting 21, will switch on electrical motor 7, driving the belt 9, and belt drive system will start rotating the spindles 11, to which the circular brushes are fixed or attached, thereby rotating brushes soaked in cleaning solution will rotate in arrangement through the slot grill 4, washing underside and the side of the shoes 16, for few minutes or as required before switching off automatically with control timer, and step on to the grill 5, of drying side 3, with warm air blowers 8, for further few minutes. Alternatively each section used independently entering or exiting the premises for example winter months warming your shoes, clean environment facility, etc, etc.

Figure 1c, all in one single container, removable water tray 19, screw/pinion assembly 22.

25 Figure 1d, one step conveyor escalator 17, drive belt system combining washing and drying by simply stepping onto washing side and automatically ending up on drying side and to the end of the apparatus, auto-cleaning solutions inlet 18, outlet 18a, valves leading to sewer 18b

Fig 1e, wet 2, and dry 3, conveyor baggage cleaning system 23, Fig 1f, embedded floor level 24.

## Claims

- 1, Hygienic wash and dry door mat, including two sections container tray, comprising washing side section having cleaning solutions, circular brushes attached/ fixed to rotating spindles operating in arrangement to the top slot grill driven by belt drive system located in the drying side section as are all the electrical components such as power source, cut-out switch, electrical motor, warm air blower fans, air suction vacuum pumps, sensors, timers, and so on allowing a person to stand on each section for few minutes washing and drying underside of foot ware before entering any premises, and in some embodiments having a fully automatic external full length belt/chain drive system moving the escalator from start to finish, or all in one section apparatus washing/drying/vacuuming, or completely dry operation in a single container having dry rollers, powerful air suction vacuum pumps.
- 2, Apparatus according to claim 1, wherein washing section is filled with any one of cleaning solutions, detergents, washing liquids, anti-bacterial chemicals and similar upto the required level or at least partly submerging circular brushes.
- 3, Apparatus according to claim 1 or 2, wherein upon stepping onto the grill the sensor will switch on electrical motor driving belt/chain rotating circular brushes on spindles.
- 4, Apparatus according to claims 1, 2, or 3, wherein circular brushes will rotate in between the slotted top grill cleaning underside and the side of foot ware.
- 5, Apparatus according to claim 4, wherein after washing section the person steps onto top grill of drying section, thereby few minutes on each section.
- 6, Apparatus according to any one of the preceding claims, wherein sensors and timers will switch on / off the apparatus.
- 7, Apparatus according to any one of the preceding claims, wherein either section is used independently to one another entering or exiting, example winter time, clean facility in/out.
- 8, Apparatus according to claim 8, wherein the apparatus primarily is of plastic material but can be of metal, wood, concrete, marble, synthetics, rubber or a combination of materials and in some embodiments embedded within floor up to ground level.
- 9, Apparatus according to any one of the preceding claims, wherein the size, shape, width, depth, length, brushes, rotation movement of spindles, power source required, will depend on size of the doorway entrance.
- 10, Apparatus according to claim 9, wherein the apparatus is operable without any cleaning solutions having dry rotating brushes and powerful air suction vacuum pumps all in one container, and or complete process washing/drying/vacuuming within one container.
- 11, Apparatus according to claim 10, wherein alternatively apparatus is used for baggage cleaning at airports, border crossing, bus and train stations, ports, and similar.



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**Examiner:** Miss Lisa Robinson

**Claims searched:** 1-11

**Date of search:** 2 June 2016

**Patents Act 1977: Search Report under Section 17**

**Documents considered to be relevant:**

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-9, 11	CN 203483384 U (TIANJIN TIANBAOLOU FOOD RES DEV CO LTD) See abstract and claims
X	1-9, 11	CN 2555766 Y (LI QISONG) See abstract
X	1, 3-11	RO 128899 A0 (UNIV TRANSILVANIA DIN BRASOV) See abstract and figure
X	1-2, 4-5, 7-9, 11	CN 104398228 A (LIU CHONGCHONG) See abstract and figures
X	1-2, 4-5, 7-9, 11	CN 201143195 Y (HAIZHEN ZHU) See abstract and figures
X	1-2, 4-5, 7-9, 11	CN 2261229 Y (YIN QING) See abstract and figures
X	1, 4-6, 8-11	US 2007/0271723 A1 (JUNELL COREY) See paragraph [0060-0061] and claims

**Categories:**

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

**Field of Search:**

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup> :

Worldwide search of patent documents classified in the following areas of the IPC

A47L

The following online and other databases have been used in the preparation of this search report



WPI, EPODOC

**International Classification:**

<b>Subclass</b>	<b>Subgroup</b>	<b>Valid From</b>
A47L	0023/02	01/01/2006
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