

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 748 902 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

18.12.1996 Bulletin 1996/51(51) Int Cl.⁶: **E03D 9/052**(21) Application number: **96500073.0**(22) Date of filing: **12.06.1996**(84) Designated Contracting States:
DE FR GB IT PT(30) Priority: **13.06.1995 ES 9501607 U**
09.02.1996 ES 9600320 U(71) Applicant: **SAROIZ 96, S.L.**
50016 Zaragoza (ES)

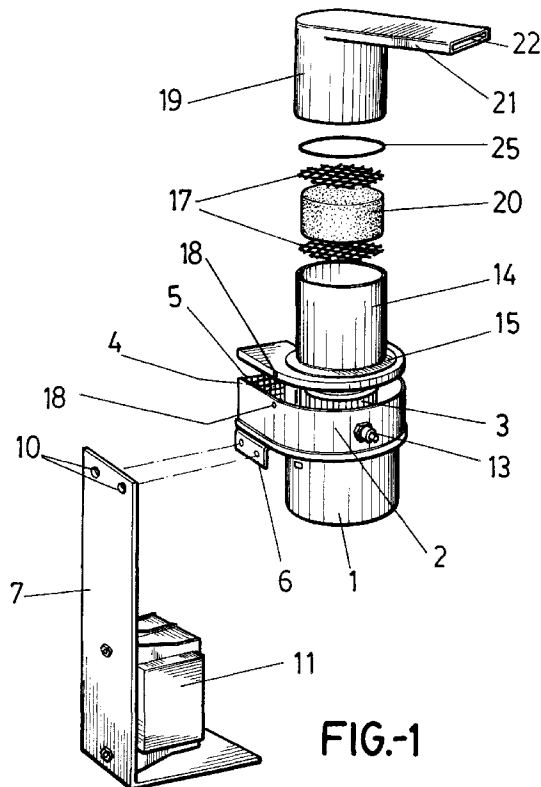
(72) Inventors:

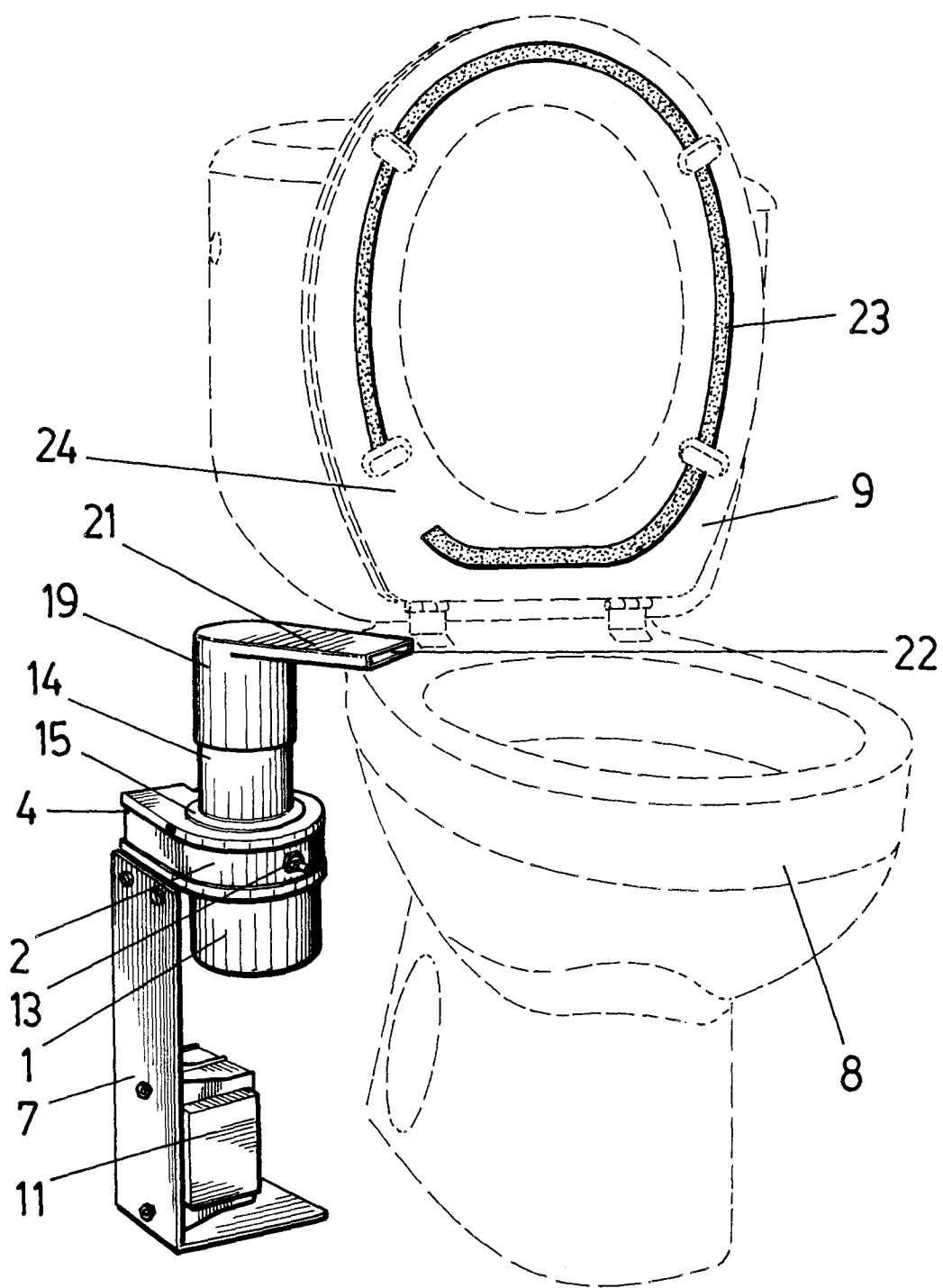
- **Sopelana Iza, Jose Ignacio**
50016 Zaragoza (ES)

- **Alonso Salvador, Eugenio**
50016 Zaragoza (ES)
- **Lana Romeo, Miguel**
50016 Zaragoza (ES)

(74) Representative: **Carpintero Lopez, Francisco**
HERRERO & ASOCIADOS, S.L.
Alcalá, 21
28014 Madrid (ES)(54) **A device for eliminating smells from toilets**

(57) The device includes a housing with two parts (1) and (2), the bottom part housing the relevant motor and the top part housing the fan (3), the top part of the housing (2) extending into an axial neck or bushing (14) wherein an activated carbon filter (20) is housed, the bushing (14) having an aspirating nozzle (19) telescopically coupled thereto which has a flat side extension (21) that is located between the top edge of the toilet (8) and its respective ring (24), in order for the nozzle (24) of the flat lateral extension (21) to take in the smells which will, after passing through the filter (20) and being appropriately deodorised, be expelled to the outside by means of the fan (3) and through a side outlet (4). The device is designed to be located collaterally with the relevant toilet (8), being either mounted upon a support (7) fixed on the floor or on the wall, or being supported directly on the floor through a bottom extension of the housing, which extension would house the relevant transformer supplying the motor fan.

**FIG.-1****EP 0 748 902 A1**



Description

OBJECT OF THE INVENTION

The invention relates to a device which has been specifically devised to eliminate bad smells from inside a toilet, when the toilet is used.

More specifically, the device subject hereof has been devised and structured so as to absorb air from inside the toilet, consequently carrying away bad smells, and newly returning the air to the environment once the air has been duly filtered and deodorised.

The device is structured in such a way that the entire unit forms a body which may be fixed on a wall, or be kept simply supported on the floor, and located at all times collaterally to or behind the toilet to which it is applied.

BACKGROUND OF THE INVENTION

Spanish utility model application number 9500551 describes a device for eliminating smells from a toilet, constructed with an electric motor fan fitted with a support which may, depending on the specific conditions of each toilet, enable said support to be fixed to the actual toilet, on the floor or on the wall. The motor fan has an axial inlet and a tangential outlet, the outlet having an expeller nozzle coupled to it which may house within a filter, specifically an activated carbon filter. A cylindrical bushing is coupled to the motor fan inlet which extends said inlet vertically upwards, the bushing in turn having a telescopically coupled aspirating nozzle which, with the assistance of an o-ring seal, may adjust its position in height with respect to said bushing, in order for a radial, lateral and rather flat extension constituting the nozzle as such, to be located in each particular case precisely level with the mouth of the toilet, to be arranged specifically between such mouth and the classic ring or annular seat.

The structure described is complemented with a seal designed to be fixed to the underside of the annular seat, establishing a perimetric seal between the seat and the toilet, which is only discontinued in a small sector where the flat extension of the aspirating nozzle is coupled.

This device, albeit effectively discharging the function for which it was devised, has had some of its features improved in order to optimise its performance.

DESCRIPTION OF THE INVENTION

The device of the invention, which is based upon the structure described in the utility model referred to in the previous paragraph, offers a number of innovations which result in respective advantages, such as a greater user safety, a greater reduction of the device as a whole which is furthermore more compact and linear insofar as its aesthetics is concerned, and indeed a more ra-

tional structure of the device as such.

These benefits are achieved based upon improvements applied to the subject device, and which can be summed up as follows:

- The activated carbon filter serving as the purifying means is no longer located at the outlet of the expeller nozzle but above the actual fan, and in actual fact within the cylindrical projection which may be plugged into the aspirating nozzle, the filter as such being moreover smaller in size than that provided in the previous model.
- A transformer is included mounted upon the general support of the device, allowing the latter to work at 24 volts, i.e. within the most stringent safety limits, avoiding all user risks, for if it were to work at the mains voltage of 220 volts, a potential contact with water, not to be ruled out, could have serious user consequences.
- The device is fitted with an on/off switch.

In a different embodiment, the device is conveniently particular in that the transformer is arranged inside the actual housing of the motor driving the fan, right under such motor, and supported by dividers projecting from the bottom of the housing, allowing a bottom venting which will logically favour cooling of the actual transformer.

In this second embodiment of the device, dividers are provided arranged out of phase with each other at the outlet mouth for purified air, forming a labyrinth which makes the inflow of foreign particles or objects towards the fan difficult.

Furthermore, this second embodiment of the device is also characterised because the general housing therefor is formed by two axially couplable parts, one housing the transformer and the motor, and another one housing the fan and the actual activated carbon filter.

The innovations of this second embodiment of the device of the invention provide it with an optimum compactness which allows it to be supported directly on the floor to discharge its function and be located next to or behind the toilet proper, and all the elements are moreover duly protected and concealed, whence it is much more decorative and has a better aesthetic appearance.

DESCRIPTION OF THE DRAWINGS

In order to provide a fuller description and contribute to the complete understanding of the features of this invention, a set of drawings is attached to the specification which, while purely illustrative and not fully comprehensive, shows the following:

Figure 1. - Is a perspective exploded view of the device for eliminating smells from a toilet, made in accordance with the object of the invention.

Figure 2.- Is a perspective view of the same unit of the preceding figure, duly mounted and coupled to a toilet.

Figure 3.- Is a cross-sectional close view of the device, showing the path of the air from inside the toilet until it newly reaches the outside through the expeller nozzle.

Figure 4.- Is a general perspective view of a second embodiment of the device applied to the relevant toilet, shown in phantom.

Figure 5.- Is a close view of the outlet mouth for purified air included in the device shown in the preceding figure, clearly showing the out-of-phase dividers forming a labyrinth that prevents the inflow of dirt, objects or any type of foreign bodies which might affect the fan, which is located facing such inlet.

Figure 6.- Is a sectional close view of the lower portion of the housing of the device, showing the bottom dividers provided to support the relevant transformer.

Figure 7.- Is finally a sectional view along a vertical plane of the device shown in figure 4, illustrating all the components and their arrangement in the device as a whole.

PREFERRED EMBODIMENT OF THE INVENTION

With reference to the figures, the device for eliminating smells from a toilet subject hereof can be seen to be constructed with a housing (1) for an electric motor fan, of suitable power, in which the motor as such is arranged facing down, whereas the other part (2) of the housing has a fan (3) located at the top, which housing part (2) has an axial inlet facing vertically down, and a tangential outlet (4) which, in the practical embodiment shown in the figures, is quadrangular in section and has a grid (5) at the outlet mouth (4). This outlet (4) can clearly have any other suitable geometric shape.

The housing of the unit, and in particular part (2) where the fan (3) is housed, has a bracket (6) with which the unit may be fixed to a support (7) which may be fixed on the wall, on the floor or indeed have suitable means allowing the unit to be mounted and fixed on the top of the toilet (8), in particular with the bolts fixing the ring (9) to the toilet.

The support (7) will at all events carry a pair of holes (10) facing the holes with which the bracket (6) is provided to such end for the fixing bolts to be inserted, as is clearly illustrated in the figures, thereby for the device as a whole to be perfectly mounted on the support (7) and the support fixed on the floor.

A transformer (11) is in turn fixed to this support (7) supplying the actual motor fan lying within housing part (1), which transformer (11) is in turn supplied directly from the mains, through the relevant lead (12).

The motor fan is switched on and off manually by means of a duly positioned switch (13).

The inlet to housing part (1) for the motor fan is fitted with a bushing (14) that is cylindrical in shape and has

a flange (15) for adjustment to the housing (1) of the motor fan (3), such being fixed by welding or else forming a single element, in which case holes (18) will be provided facing other holes (18) of the general housing, for both parts to be bolted to each other.

Said bushing (14) receives an aspirating nozzle (19) telescopically, the position of the nozzle with respect to the bushing (14) being adjustable in height with the assistance of an o-ring seal (25), the aspirating nozzle (19) being provided with a flat radial extension (21), defining a mouth (22) of considerable width and little height, said extension (21) being couplable to the toilet (8) between the mouth of the toilet and the annular seat (9) when such seat or ring (9) is in the operative position.

An activated carbon filter (20), lying between two grids (17), has also been provided to be mounted above the fan (3), and specifically in the cylindrical bushing (14).

The underside of the ring seat (9) has been provided with a seal (23), defining a perimetric seal between such ring seat (9) and the mouth of the toilet (8), such seal (23) being discontinued precisely in a small sector (24) where the flat extension (21) of the aspirating nozzle (19) is coupled.

In accordance with this structure, and once the device has been conveniently fixed either to the toilet (8) or on the floor or on the wall, by using a suitable support for each case, upon the motor fan being switched on by means of the switch (13), there will be an intake within the toilet (8) through the aspirating nozzle (19) and in particular through the mouth (22) defined by the end of the flat extension (21) of the aspirating nozzle (19), and the air and smells taken in will pass through the filter (20) lying in the bushing (14), where the aspirating nozzle (19) is precisely coupled, and the foul air will be expelled to the outside, through the outlet (4), thereby purifying and deodorising such air.

In a second embodiment, shown in figures 4 to 7, the device offers a number of details as concerns different functions within the same concept, and thus in figures 4 to 7 the same numbers have been used for the common parts of the device, albeit followed by an apostrophe.

In particular, figure 4 shows the device in this second embodiment applied to a toilet (8') with its respective ring (9'), the housing of which device is formed by coupling together two parts, a bottom part identified as (1') and a top part identified as (2'), the latter housing the relevant fan (3') and extending at the top into a bushing (14') to receive an aspirating nozzle (19') telescopically, the position of such nozzle with respect to such bushing (14') being adjustable in height with the assistance of the o-ring seal (25'), which aspirating nozzle (19') has a flat radial extension (21') that lies above the top edge of the toilet (8'), below the ring or annular seat (9') of the toilet. The neck (14') of the top part (2') of the general housing of the device, includes the relevant activated carbon filter (20'), the above as in the embodi-

ment described and shown in figures 1 to 3.

Now then, in this second embodiment, the bottom part (1') of the housing, where the relevant motor (27') is housed, is provided with a bottom extension (26') which houses the relevant transformer (11'), this part (26') housing the transformer (11') being polygonal whereas the area (1') where the motor (27') is housed is cylindrical and has a larger contour. Logically, as in the preceding case, the transformer (11') will supply the motor (27') through the relevant lead (12') and will have an on/off switch (13').

For its part, the outlet mouth (4') through which purified air leaves propelled by the motor (3'), has dividers (28'), out of phase with each other, to define a labyrinthine conduit and prevent the inflow of objects and indeed dirt which might damage or be prejudicial to the fan (3') as such.

The transformer (11') is separated from the bottom of the housing part (26') by means of dividers (29') lying on such bottom, and constituting a support for the transformer (11') proper, moreover enabling the transformer to be ventilated, cooling thereof being consequently enhanced.

Claims

1. A device for eliminating smells from toilets, which comprises an electric motor fan fixed to a support suitable to be arranged in an appropriate location close to the relevant toilet to which it is applicable, the motor fan having an axial inlet and a tangential outlet, the inlet being defined by an aspirating nozzle (19-19') coupled to a bushing (14-14') projecting axially from the mouth defining the axial inlet of the motor fan, being moreover provided with a bracket (6) through it may be fixed to the relevant support (7), the support being fixable on the wall or on the floor, provided that a flat lateral portion (21-21') of the aspiration nozzle (19) is located above the toilet (8-8') under the ring (9-9') to be seated thereon, characterised because the axial bushing (14-14') in which the aspirating nozzle (19-19') is coupled is diametrically fitted with an activated carbon filter (20-20') through which foul air passes and is purified and expelled to the outside by means of the actual fan (3-3'), through the relevant outlet (4-4') that is arranged tangentially, the said filter (20-20') being provided to lie right above the actual fan (3-3').
2. A device for eliminating smells from toilets, as in claim 1, characterised because a transformer (11) is mounted on the support (7) for fixing the unit, which allows the motor fan to work at 24 volts.
3. A device for eliminating smells from toilets, as in preceding claims, characterised because an on/off switch (13) is included for the device, arranged at

an area on the side surface of the housing (2) in which the fan (3') is located.

4. A device for eliminating smells from toilets, as in claim 1, characterised because the housing consists of two parts (1') and (2') couplable to each other, the top part (2') housing the fan (3') and the activated carbon filter (20') proper, whereas the lower part (1') houses the motor (27') and the relevant transformer (11') on top of each other, the elements being altogether fully concealed, forming a compact unit which when applied to the respective toilet (8') is directly supported on the floor.
5. A device for eliminating smells from toilets, as in claim 4, characterised because the housing part (1) has a bottom extension (26'), of polygonal contour, which houses the actual transformer (11'), being particular in that the bottom of the extension (26') is provided with dividers (29') defining the means supporting the actual transformer (11'), defining a separation of the latter from such bottom and hence a venting conduit which allows more heat to be carried away, considerably improving the cooling of said transformer (11').
6. A device for eliminating smells from toilets, as in claims 4 and 5, characterised because housing part (1'), where the actual motor (27') is housed, is cylindrical in shape and has a larger contour than the bottom axial extension (26') housing the transformer (11').
7. A device for eliminating smells from toilets, as in claim 4, characterised because dividers (28') are provided at the tangential outlet (4') for deodorised air, out of phase with each other and defining a labyrinthine conduit that prevents the inflow of foreign particles or objects towards the actual fan (3').

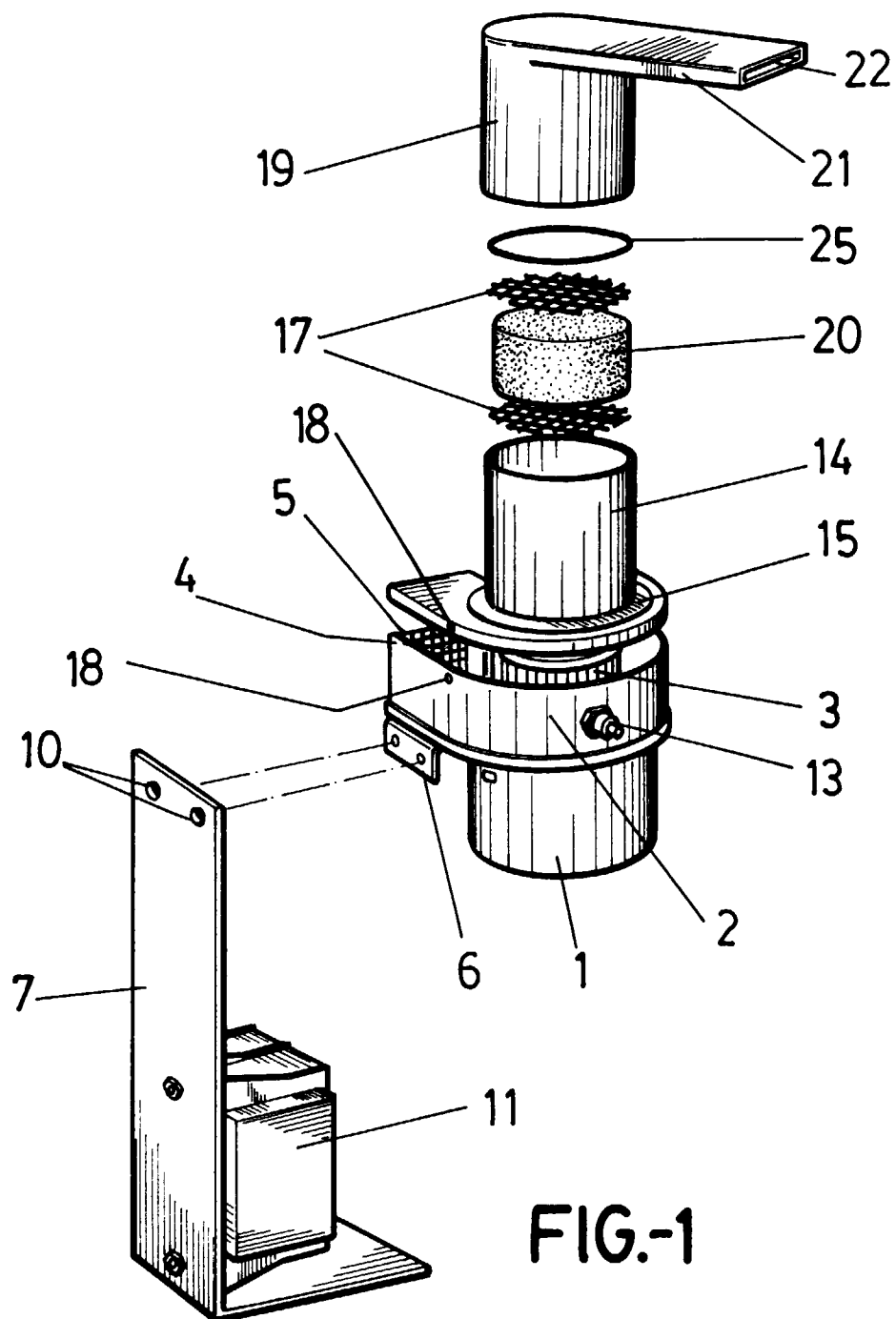


FIG.-1

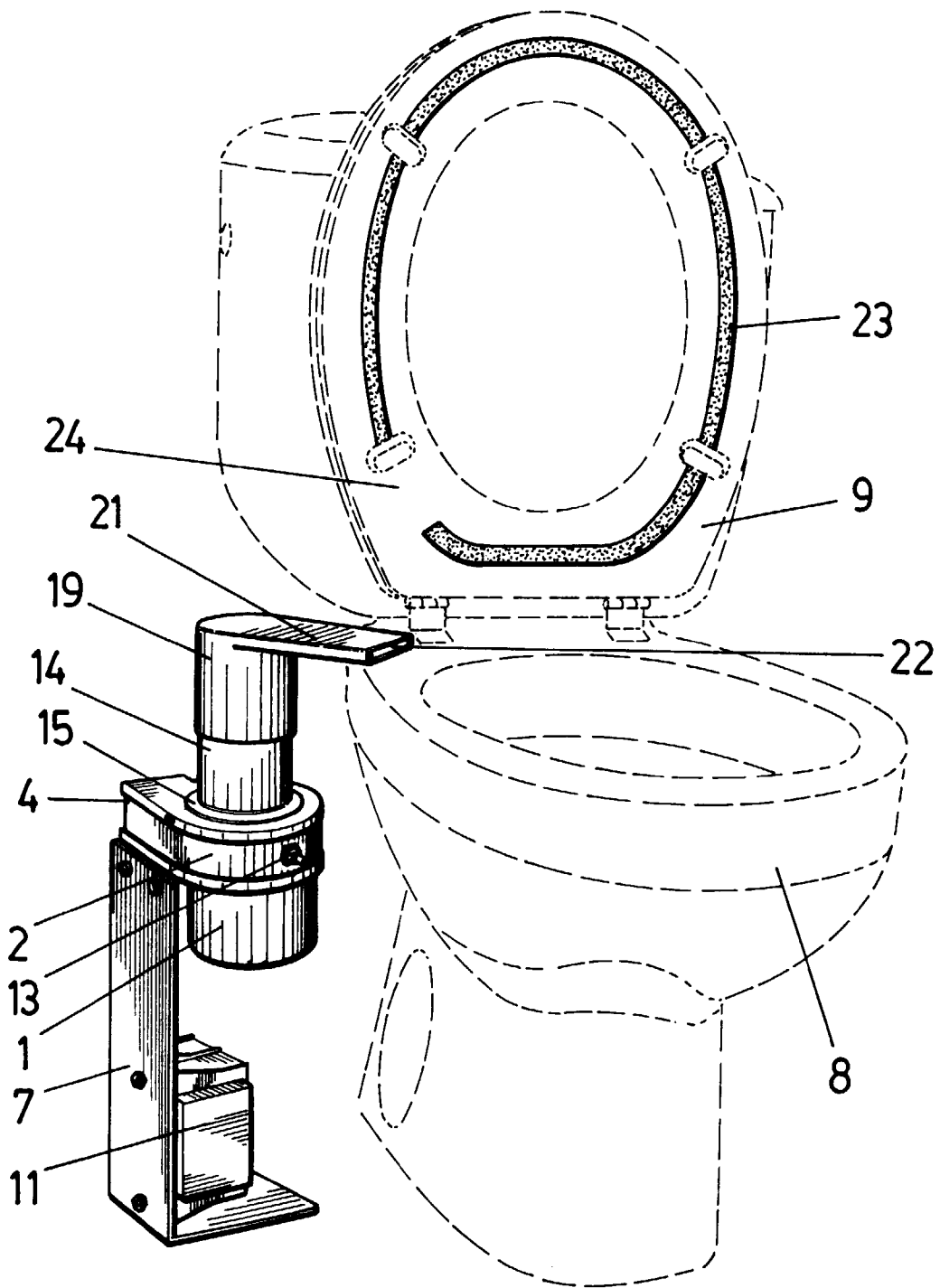


FIG.-2

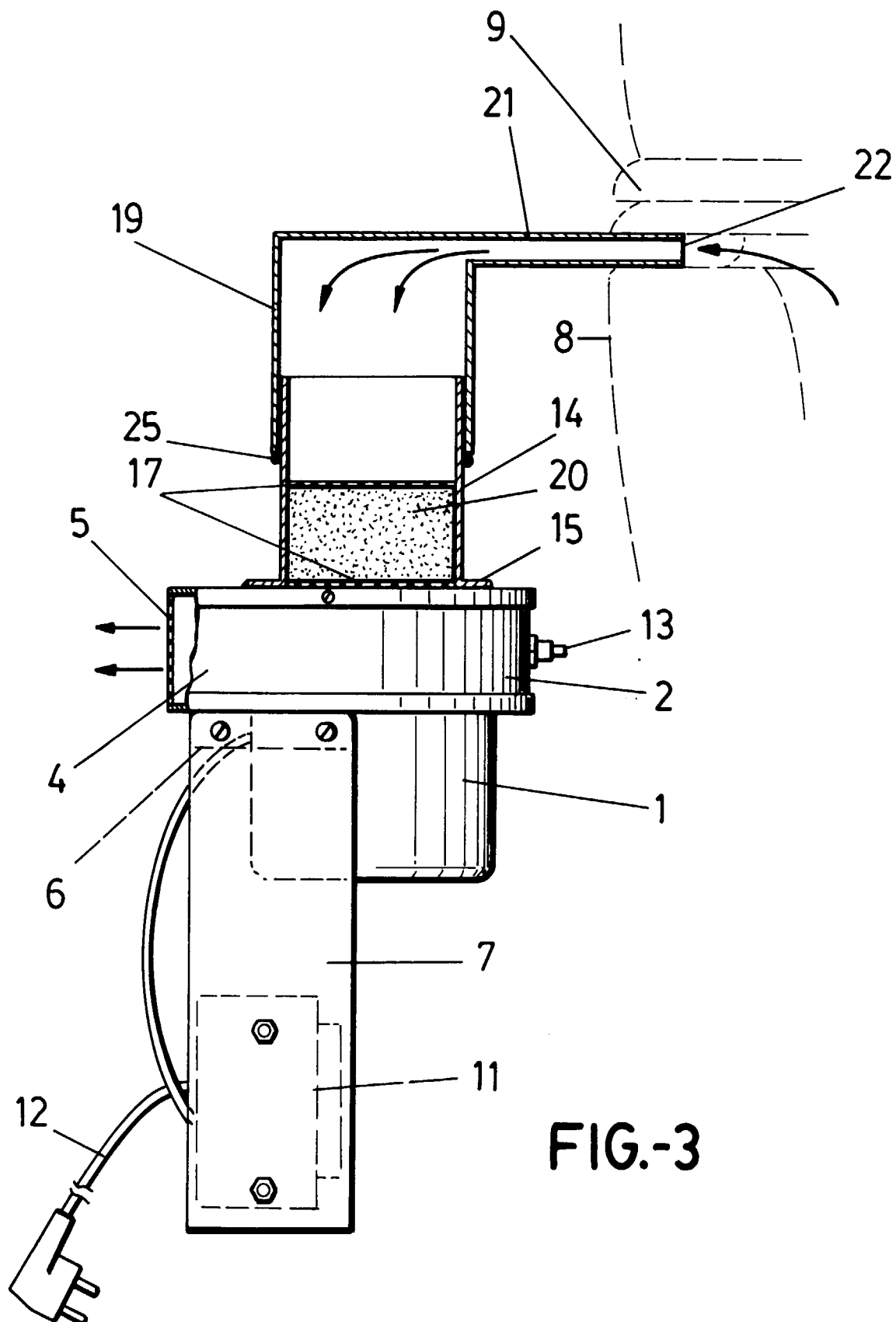


FIG.-3

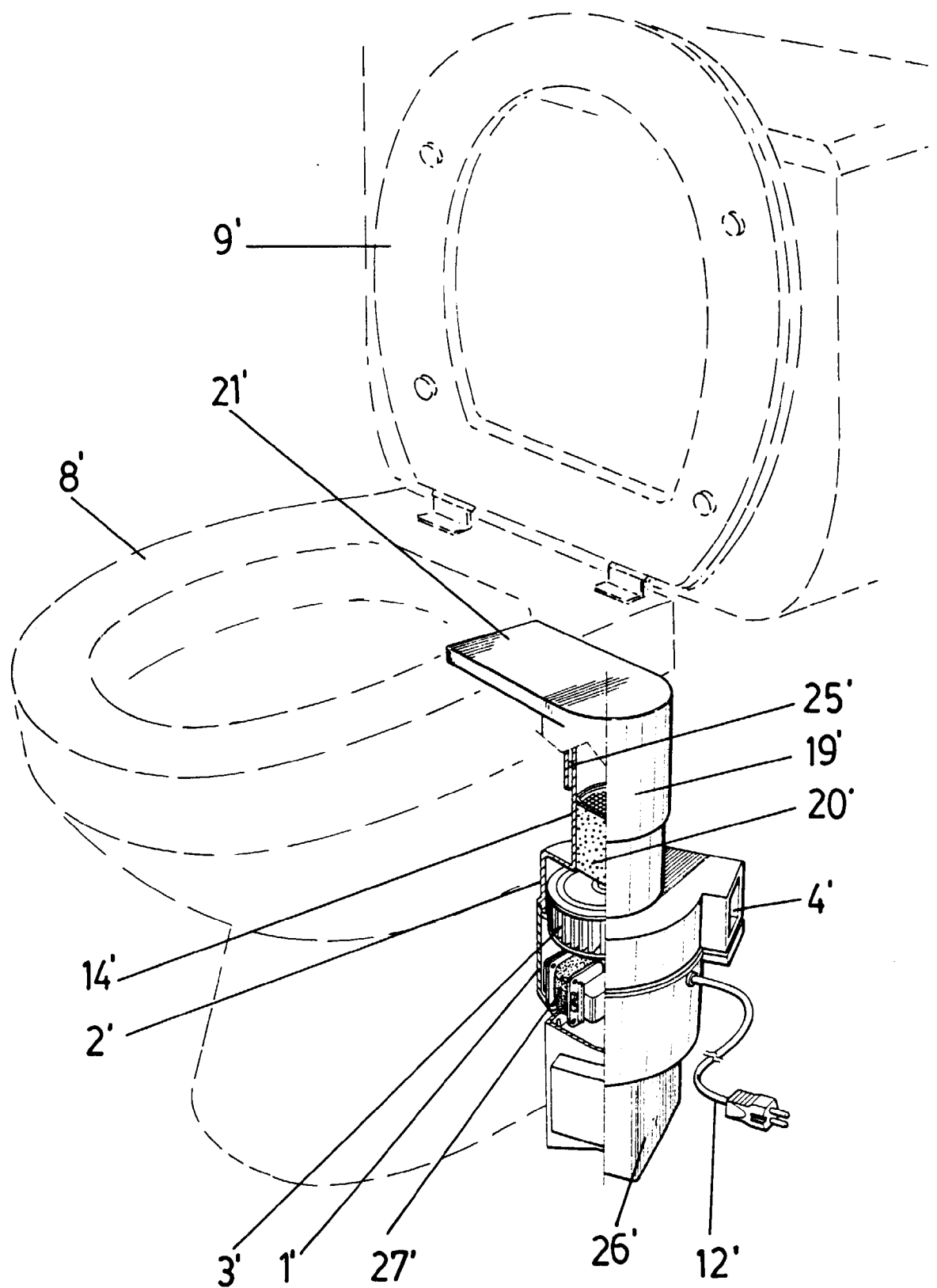


FIG.-4

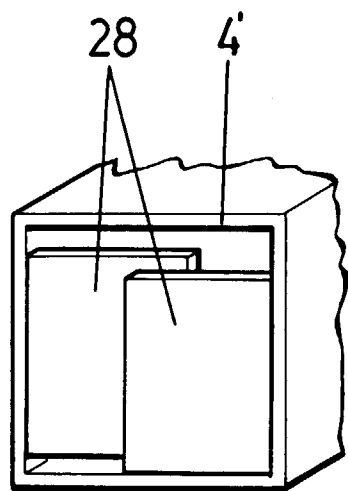


FIG.-5

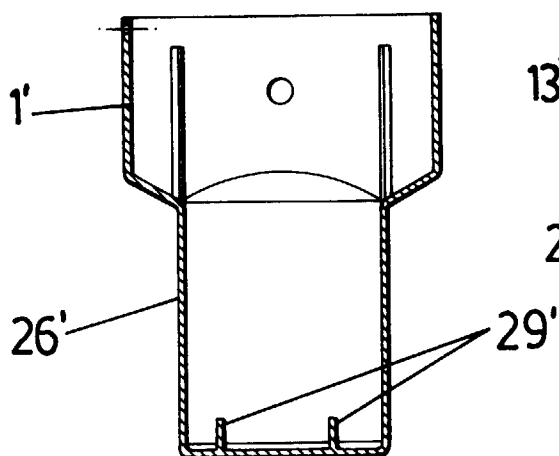


FIG.-6

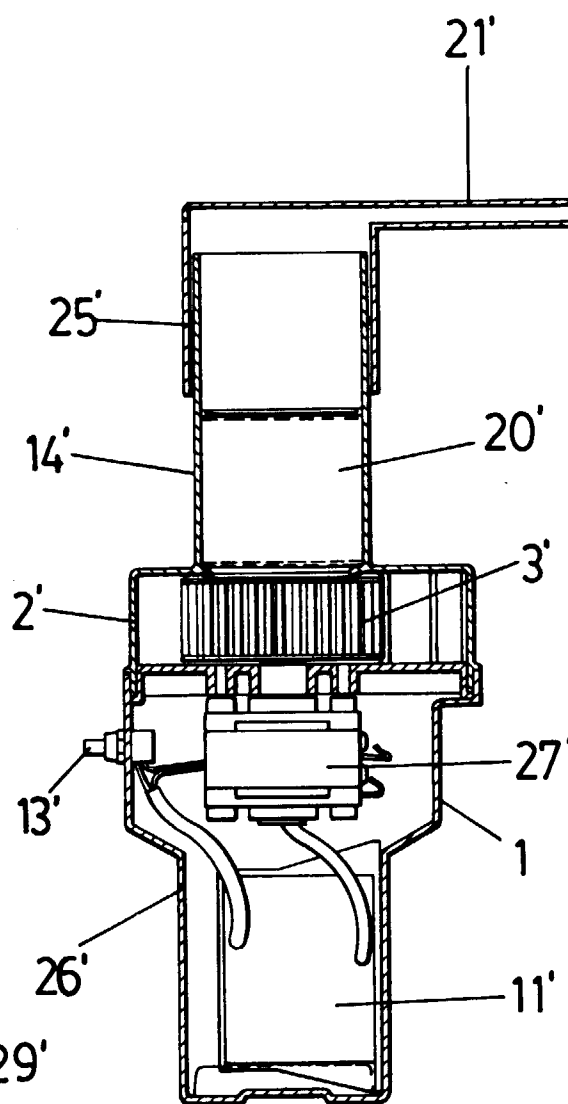


FIG.-7



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 50 0073

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,A	ES-U-9 500 551 (SOPELANA IZA) * the whole document * ---	1	E03D9/052
A	US-A-4 059 857 (POISTER) * column 16, line 16 - column 4, line 13; figures * ---	1,3	
A	DE-U-92 16 561 (PAN) * the whole document * ---	1	
A	US-A-4 375 704 (SMITH) * figures * ---	1,3	
A	US-A-5 054 130 (WILSON) * abstract * * column 6, line 50 - line 65; figures * -----	1-3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E03D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25 September 1996	Examiner De Coene, P
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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 ----- & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P04C01)