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(54) **Toilet ventilation apparatus and installations**

(57) Toilet ventilation apparatus in the form of a kit of parts including:

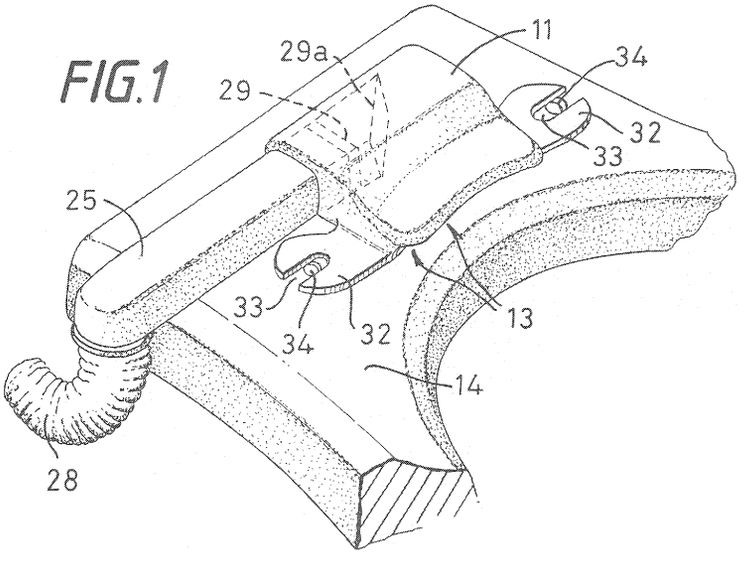
(1) a hollow body providing a chamber therein and having at one end an opening to provide an inlet to the chamber, said body being dimensioned to suit it for fitment onto a w.c. pan below the pan's seat; and
(2) at least first and second mounting means for the body and of which selectively all but one may be rendered redundant for said fitment.

The first and second mounting means comprise:

(a) one or more double-sided adherent pads for disposition between the rim of the w.c. pan and the underside of the hollow body, and
(b) a pair of laterally extending lugs integral with, but separable from the hollow body and to be clamped between the pan and the seat by seat mounting bolts.

The mounting means (b) may comprise a pair of hollow bushes of generally T-shaped axial cross-section serving as hollow "bolts" to fasten the lateral lugs of (b) to the w.c. pan and to permit independent attachment of the seat by separate seat mounting bolts extending through the hollow bushes.

FIG.1



EP 1 607 533 A2

Description

Technical Field

[0001] The present invention relates to toilet ventilation apparatus to vitiate foul smelling air.

Background

[0002] The most usual ventilation installation currently in use in toilets comprises a wall-mounted extractor fan with an inlet to the bathroom or toilet, i.e. to the room containing a w.c. (water closet) pan, and with an outlet to outside of that room. In order to extract quickly a substantial volume of air from the room, e.g. at least 6 litres/sec, such installations require large and/or powerful fans which are noisy, expensive and often unsightly. Alternative installations have been proposed which include a pan-mounted hollow body providing a chamber having an air inlet to the rear of the w.c. pan and below the seat (and any seat cover or lid thereon), this chamber being connected to the inlet of an extractor fan. Examples of such proposed installations have been described in WO-0042262, GB-2136030, GB-2330152 and GB-0845992. These suffer a number of disadvantages such as being unable to suit a wide variety of differently-dimensioned and/or differently constructed seat mounts, or of requiring modified forms of seat. These disadvantages arise especially where retrofitting of such an installation is to be effected onto an existing w.c. installations and which may, but usually does not, comply with British Standard BS EN 37:1999 "Pedestal W.C. Pans with independent water supply-connecting dimensions". Under this BS — which is intended to provide some standardisation and is applicable only to new installations, i.e. it is not retroactive — the pan is provided at its rear with two laterally spaced holes for fixing of the seat, these holes having a diameter of 15mm ± 2mm and a spacing between their centres of 155mm ± 10mm.

[0003] It is therefore considered desirable to provide toilet ventilation apparatus that can overcome or at least minimise the above-mentioned and/or other disadvantages of prior art arrangements, and/or can enable the apparatus to be readily used in conjunction with a range of toilet installations.

Summary of the Invention

[0004] According to this invention there is provided toilet ventilation apparatus in the form of a kit of parts including:

a hollow body providing a chamber therein and having at one end an opening to provide an inlet to the chamber, said body being dimensioned to suit it for fitment onto a w.c. pan below the pan's seat; and
at least first and second mounting means for the body and of which selectively all but one may be rendered redundant for said fitment.

[0005] This enables a range of different possible mounting arrangements to be available to an installer of the kit and permits that installer to choose or select the arrangement most suited to the existing or new w.c. installation.

[0006] Preferably said first and second mounting means comprise:

(a) one or more double-sided adherent pads for disposition between the rim of the w.c. pan and the underside of the hollow body, and
(b) a pair of laterally extending lugs integral with, but separable from the hollow body and to be clamped between the pan and the seat by seat mounting bolts.

[0007] Optionally, the mounting means (b) may further comprise a pair of hollow bushes of generally T-shaped axial cross-section serving as hollow "bolts" to fasten the lateral lugs of (b) to the w.c. pan and to permit independent attachment of the seat by separate seat mounting bolts extending through the hollow bushes.

Brief Description of the Drawings

[0008] By way of example one embodiment of this invention will now be described with reference to the accompanying drawings of which:

Figure 1 is a perspective view of apparatus embodying this invention and mounted on a w.c. pan,
Figure 2 is an exploded perspective view of the apparatus shown in Fig 1 (minus the pan) viewed from another direction, and
Figure 3 is a side view of the embodiment of Fig 1 as mounted below a pan seat.

Detailed Description of Example(s) of the Invention

[0009] The illustrated toilet ventilation apparatus 10 consists of a kit of parts which comprises a hollow body 11, generally "h" shaped in side view, providing a chamber 12 therein. The longer (and "thinner") limb of the "h" has an opening 13 in its wall that provides an air inlet to the chamber 12. The kit also comprises means for mounting the hollow body 11 onto a w.c. pan 14 below the rear of a pan seat 16 (shown in Fig 3), and conduit means 18 for connection between the chamber 12 and an extractor fan 20 (see Fig 2). The wall(s) of hollow body 11 of the illustrated example have two exit apertures 22 (on right and left of body 11) for noxious air collected by the chamber, and one blanking member 24 to close the exit aperture 22 that is not in use. The conduit means 18 comprises a rigid conduit element 25 selectively connectable to the unblanked one of the exit ap-

ertures 22 to convey noxious air from the chamber 12 towards the extractor fan 20.

[0010] As illustrated, the blanking member 24 is grooved around its periphery to slide fittingly and substantially sealingly into the bounding edge of the exit aperture 22 not in use.

[0011] As illustrated, the conduit element 25 comprises an elongate tubular member of generally rectangular cross-section having a depending circular outlet 26 at one end that can be snap-fit coupled to one end of a flexible hose 28 that is coupled by its other end (not shown) to the inlet of the extractor fan 20 in a conventional fashion. The end of conduit element 25 remote from outlet 26 has external dimensions providing a tight sliding fit within either of the chamber's two exit apertures 22. The mouth 29 of conduit element 25 may — as shown — be in a plane at right-angles to the general longitudinal direction of conduit element 25 or, as is preferred, may be selectively cut by the end user at an angle (preferably 45 ° or 135°) to that longitudinal direction along pre-scored or otherwise marked cutting lines 29a, 29b.

[0012] Where the mouth 29 is at right-angles to the general longitudinal direction of conduit element 25, the latter is not inserted fully into the hollow body 11 so as not to close off air flow from the chamber's air inlet 13, through chamber 12, and into mouth 29 of the rigid conduit element 25 from whence it can pass through outlet 26 and flexible hose 28 to the extractor fan.

[0013] Where the mouth 29 is at 45 ° following cutting along line 29a, the air flow path just mentioned is not impeded even if the rigid conduit element is inserted fully into hollow body 11 until the leading edge of conduit element 25 abuts against the opposite wall of the hollow body or the blanking member 24 closing off the opposite exit aperture 22. This is the arrangement illustrated in broken lines in Fig 1.

[0014] In the exploded view of Fig 2, the blanking member 24 is shown removed from right-hand-side exit aperture 22, and the rigid conduit element 25 has been cut along score line 29b before insertion into hollow body 11 through this right-hand-side exit aperture 22. Again, the air flow from air inlet 13 to the flexible hose 28 and extractor fan 20 is unimpeded even if the leading edge of the thus cut conduit element 25 abuts against the left-hand-side wall of the chamber 12 or blanking member 24 closing off the opposite exit aperture 22 in that left-hand-side wall.

[0015] The apparatus 10 may be mounted on the upper face of the rear rim of the w.c. pan 14 by one or other of two different mounting means 30. Both means 30 are shown in Fig 3. One of the mounting means 30 comprises one or more double-sided adherent pads 31 disposed between the rim of the w.c. pan 14 and the underside of the hollow body 11. The adherent material for pads 31 may be that known as "RA25" available from R A International Ltd. of Kings Hill Business Park, Darlaston Road, Wednesbury, West Midlands WS10 7SH. The other mounting means 30 may be provided as lateral lugs or flanges 32 protruding outwards from each side of the hollow body 11, each flange 32 having an open (or closed) slot 33 therein to overlie the laterally spaced seat fixing holes 34 that are provided as standard through the rear rim of the w.c. pan. According to B.S. EN37:1999 these two holes 34 should have a diameter of 15mm ± 2mm and a spacing between their centres of 155mm ± 10mm. However, the slots 33 allow for greater variation than these tolerances and enable the body 11 to be fixed in position using seat fixing holes 34 of substantially greater and lesser spacing and/or diameter.

[0016] Such fixing may be by the bolts used to fasten the existing, conventional, or new-style mounting trunnions to the w.c. pan 14, those bolts passing through the seat fixing holes 34 with tightening being effected by wing nuts threaded onto the bolts underneath the rim of the w.c. pan 14.

[0017] Alternatively such fixing may be by means of a pair of externally threaded, hollow bushes of generally T-shaped cross-section. These serve as hollow "bolts" inserted through the slots 33 and the seat fixing holes 34, and held in position by the "crossbar" of the "T". Nuts screwed on to the externally threaded depending "web" of the "T" fasten the hollow body 11 in position and the seat can then be positioned independently thereon by its own seat fixing bolts inserted through the hollow bushes and, as before, tightened by wing nuts threaded onto these seat fixing bolts from underneath the rear rim of the w.c. pan 14. Such an arrangement allows for the seat to be fastened independently of the ventilation apparatus 10 and potentially with little or no load thereon — as from a user sitting on the seat being — imparted onto the hollow body 11.

[0018] Adjacent the main body 11, the integral lugs or flanges 32 are provided with lines of weakness which permit the flanges to be broken off where circumstances require — e.g. on certain older seat mounting arrangements to which the apparatus is retro-fitted

— and allow mounting of the hollow body 11 solely by the adherent pads 31.

[0019] It will be appreciated that any number N of exit apertures 22 can be provided for noxious air collected by the chamber (not just two as for the above-described and illustrated embodiment), and that a corresponding N-1 blanking member 24 would then be provided to close each of the one or more of the exit apertures 22 that is not in use.

[0020] In a modification, the (or each) blanking member 24 may be initially provided as an integral part of the wall of the hollow body 11 but be readily frangible therefrom, e.g. as by suitable lines of weakness, to permit fitment into the resultant exit aperture 22 of the conduit element 25.

[0021] Other modifications and embodiments of the invention, which will be readily apparent to those skilled

in this art, are to be deemed within the ambit and scope of the invention, and the particular embodiment(s) hereinbefore described may be varied in construction and detail, e.g. interchanging (where appropriate or desired) different features of each, without departing from the scope of the patent monopoly hereby sought.

Claims

1. Toilet ventilation apparatus in the form of a kit of parts including:

a hollow body providing a chamber therein and having at one end an opening to provide an inlet to the chamber, said body being dimensioned to suit it for fitment onto a w.c. pan below the pan's seat; and
at least first and second mounting means for the body and of which selectively all but one may be rendered redundant for said fitment.

2. Toilet ventilation apparatus according to Claim 1, wherein said first and second mounting means comprise:

(a) one or more double-sided adherent pads for disposition between the rim of the w.c. pan and the underside of the hollow body, and
(b) a pair of laterally extending lugs integral with, but separable from the hollow body and to be clamped between the pan and the seat by seat mounting bolts.

3. Toilet ventilation apparatus according to Claim 2, wherein the mounting means (b) further comprises a pair of hollow bushes of generally T-shaped axial cross-section serving as hollow "bolts" to fasten the lateral lugs of (b) to the w.c. pan and to permit independent attachment of the seat by separate seat mounting bolts extending through the hollow bushes.

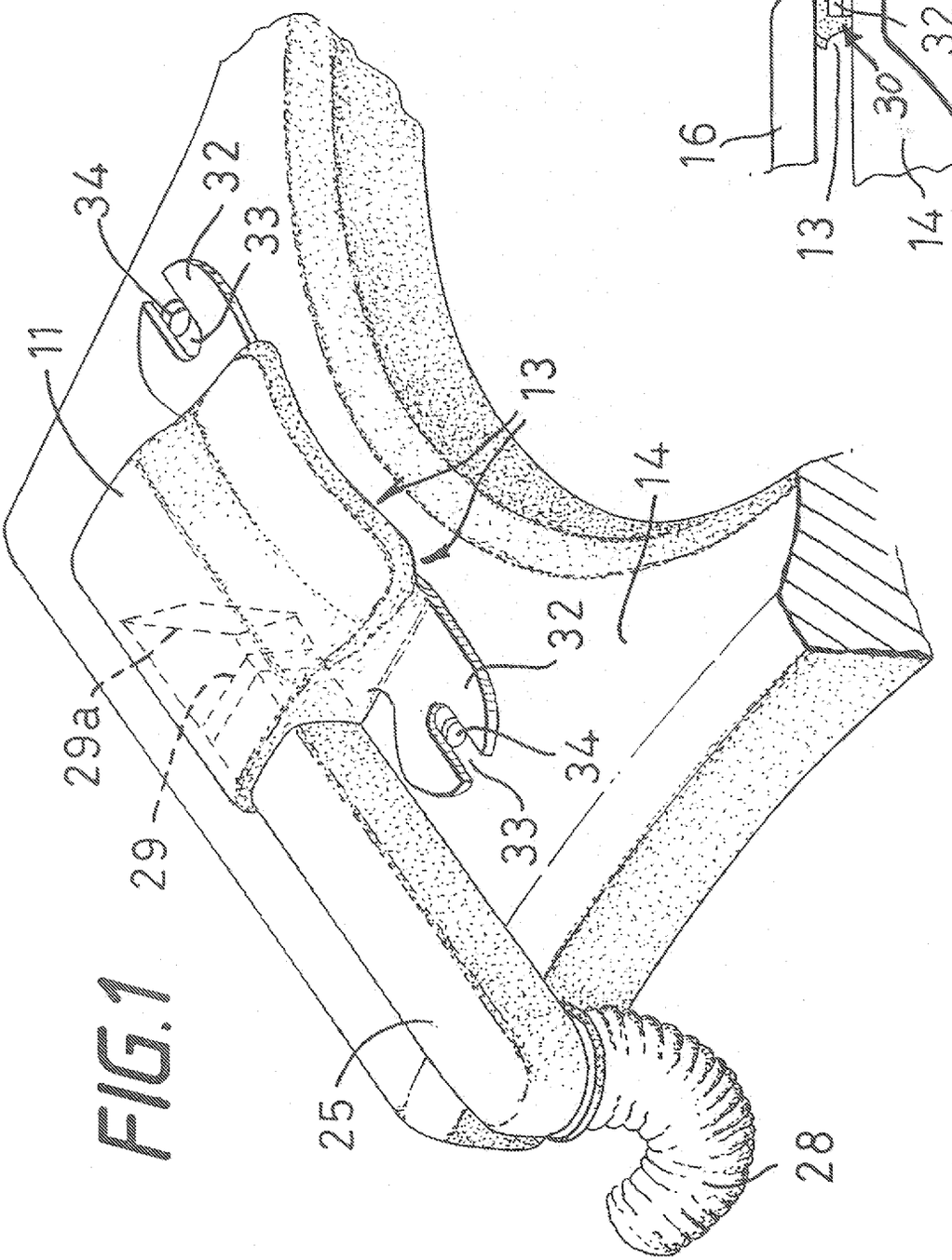


FIG. 1

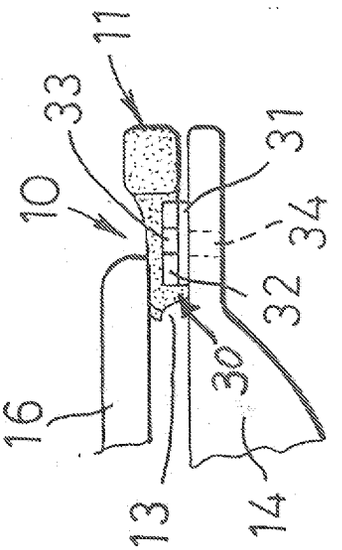


FIG. 3

FIG. 2