

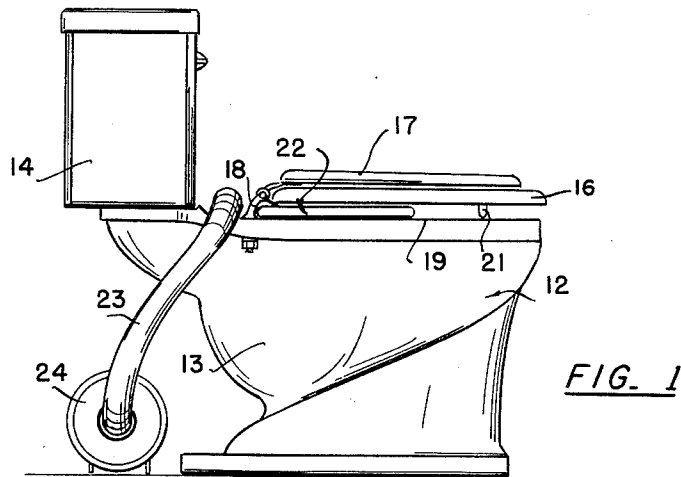
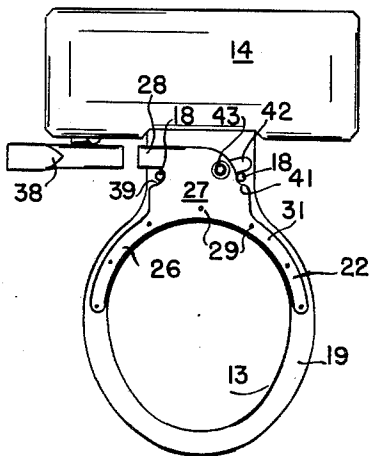
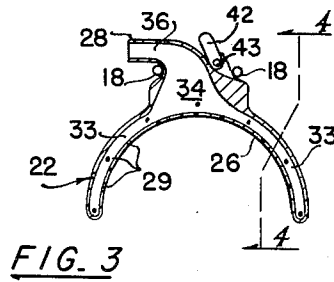
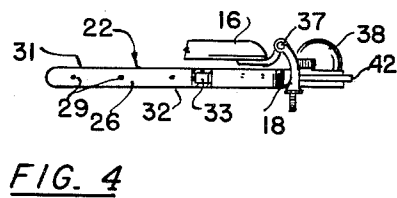
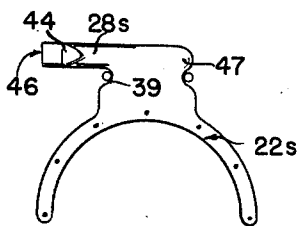
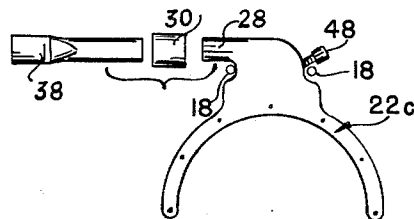
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3,069,696

TOILET VENTILATION DEVICE

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3,069,696

TOILET VENTILATION DEVICE

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4 Claims. (Cl. 4-213)

The present invention relates to a toilet ventilation device and, more particularly, to a vacuum collector for use in conjunction with toilets and toilet seats to evacuate fumes away from a toilet for discharge out of the bathroom.

It is recognized that others have previously designed and provided various types of vacuum apparatus for the purpose of eliminating bathroom and toilet odors. The prior devices in general have required the provision of modified types of toilets, toilet seats and other such equipment. Accordingly, to enjoy the benefits of the overall idea it has previously been necessary to make a substantial replacement of bathroom equipment. In some cases the systems proposed would require the rebuilding of almost the entire bathroom installation.

Recognizing the fact that the elimination of odors from a bathroom could very well be attractive to many people if such benefit could be provided economically, the present inventor has devised a vacuum collector device which is intended to satisfy the following objects:

To provide a vacuum attachment for toilets that may be readily installed without the necessity for repair, removal or replacement of the present toilet components;

To provide such attachment of size and configuration so that it may be easily connected to conventional types of vacuum equipment presently used in homes;

To provide a toilet ventilation device which may be readily applied to conventional types of toilets for secure retention thereon;

To provide various locking means for holding a vacuum attachment on conventional toilets; and

To provide an economic and efficient structural unit particularly adapted to the satisfaction of the foregoing objects.

Further objects and advantages of the present invention will be apparent from the appended description and drawings, in which

FIG. 1 is a side elevation showing the application of a typical vacuum device applied to a previously installed toilet,

FIG. 2 is a top plan view further showing the detailed features of a specific installation,

FIG. 3 is an elevation in partial cross-section further illustrating detailed features of the embodiment shown in FIG. 2,

FIG. 4 is a side elevation in partial and enlarged cross-section taken along the line 4-4 of FIG. 3,

FIG. 5 is a plan view of a modified embodiment of the invention, and

FIG. 6 is a plan view of a further modification of said invention.

Briefly stated, the present invention provides a hollow segmental ring collector device formed unitarily with and in flow connection with a hollow support structure particularly adapted for placement on the top rim of a toilet structure for retention thereon. The device includes locking means for selectively engaging the hinge supports of a toilet seat to assure proper positioning and retention of said device and further includes a connector adapted for engagement to the vacuum hose or hose attachment of conventional types of household vacuum equipment. The collector ring is provided with a plurality of openings whereby unwanted fumes and odors may be induced into the interior of said device for movement through the attached vacuum equipment to a point

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of discharge away from the bathroom. Specific structural features and examples of the economic and utilitarian advantages of the present invention are further described in connection with an explanation of the accompanying figures and drawings.

FIG. 1 is provided to show the positioning and application of an embodiment of the invention to a conventional type of toilet 12. The toilet structure is provided with a toilet bowl 13, a water supply tank 14, a toilet seat 16 and cover 17. The seat and cover 16 and 17 are attached to the toilet bowl 13 by hinge supports 18 in such manner that the seat 16 will be held above the bowl rim 19 by the hinge supports 18 and further by a rubber bumper 21. A toilet ventilation device 22 made in accordance with this invention is designed and adapted to fit in the space between the bowl rim 19 and the toilet seat 16 and is further designed to engage the hinge supports 18 so that it will be held in such desired position.

While the particular type of vacuum unit to be used is not a part of this invention, FIGURE 1 illustrates a possible positioning for a vacuum collector hose 23 which is interconnected to the ventilation device 22 and to a motor powered vacuum cleaner unit 24. Again, while the vacuum unit 24, the connective hose 23 and such other discharge devices as may be used are not specifically a part of this invention, it will subsequently be noted that the present invention provides different types of discharge channels which are of a size and shape to be readily engaged with commonly used types of vacuum hose or vacuum cleaner attachments. These features are incorporated in the invention so that individual users may economically install and use the present device through the application and use of conventional types of vacuum cleaning apparatus.

The detailed features of a first embodiment of the invention are shown in FIGURES 2, 3 and 4. In these figures it will be noted that the ventilation device 22 comprises three main structural portions joined together and flow connected each to each so that a direct flow pattern may be established from the segmental collector ring element 26 through the hollow support structure 27 to the discharge connector 28. As illustrated, the collector ring is provided with a plurality of openings 29 through its top and bottom surfaces 31 and 32, respectively. Openings 29 are further provided on the inner face of the collector ring 26. With this arrangement discharged gases and fumes will be induced by vacuum influences through the openings 29 for passage through the channels 33 of the collector ring 26 to the hollow trunk 34 of the support structure 27 and out through passage 36 of the discharge connector 28. A structure of the type shown in these figures may be made economically as a molded product of plastic or similar materials. The channels, trunk and passages may be formed either by core segments or, if preferred, upper and lower halves of the device may be individually formed for later joinder.

In the embodiment shown the discharge connector 28 is preferably of a flat rectangular cross-section so that the entire structure may be easily inserted under the toilet seat 16 and the hinge pin 37. When the discharge passage 28 is of the illustrated flat rectangular cross-section, it may be connected to a conventional vacuum cleaner attachment 38 which provides a transition from the round tubular configuration of conventional vacuum hose to an elongated flat rectangular passage of the same type used for discharge connector 28. With this arrangement a rubber sleeve 30 or other similar device may be used to interconnect the vacuum attachment 38 and the discharge connector 28 as shown in FIGURE 6.

Since the ventilation device 22 is intended to be positioned on the top rim 19 of the toilet bowl 13, it is desirable to provide means for accurately positioning and

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holding such device in its desired and operative position. The hollow support structure 27 as illustrated is formed to provide means for engaging the toilet seat hinge supports 18. At one side adjacent to the discharge connector 23 a notch 39 is provided to engage one of the seat hinge supports 18. The opposite side of the hollow support structure 27 provides a shoulder 41 positioned to engage the other seat hinge support 18. The device 22 further provides a locking bar 42 which is adapted to swing about pivot 43 to engage the back of the hinge support 18. Pivot 43 may be loosened or tightened to hold the lock bar 42 in desired position. With this structure the device 22 may be installed or removed from the toilet as desired.

A modified form of the device is shown in FIGURE 5. This figure illustrates provision of a ventilation device 22 that is made from a deformable type of material such as polyethylene plastic. When these materials are used, the discharge connector 28s may itself provide a transition segment 44 having a discharge passage 46 of circular cross-section. When this modified device 22s is being engaged with or removed from the toilet bowl 13, the transition segment 44 and a bulb extension 47 on support structure 27 may be collapsed and deformed as necessary to pass under the toilet seat 16, hinge pin 37 of the toilet seat or about hinge support 18. Usually the hinge pin 37 is the obstacle determining the minimum clearance above the top rim 19 of the toilet bowl 13. In installations where these dimensional relationships, as shown in FIGURE 4, are present, only minor deformation of the discharge segment 46 or of the bulb extension 47 is necessary when the ventilation device 22s is being positioned for use.

A further modified type of lock for holding the device on the toilet bowl is shown in FIGURE 6. Here a threaded lock 48 is provided for direct engagement with the ventilation device 22c in order to hold such device against the hinge supports 18.

In all of the embodiments of the invention either a flat or round discharge connector may be provided so that the ventilation devices may be easily connected to various types of vacuum units. Because of the fact that many householders have older and unused vacuum cleaners, the discharge connectors are preferably of a size and conformation similar to that for vacuum cleaning attachments. While the actual connection and structure of the vacuum unit is not a part of this invention, it may be pointed out that many present bathroom installations provide a convenient means for the discharge of unwanted gases through inspection openings and toilet vent stacks or through powered bathroom ventilators.

Further, it should be realized that while various modifications of the device have been shown and described, the invention is adaptable to various modifications and changes. All such modifications as come within the scope of the hereunto appended claims are considered to be a part of this invention.

I claim:

1. A toilet ventilation device for use with a vacuum system and adapted for positioning on the rim of a toilet bowl in engagement with the hinge supports of the toilet seat comprising a hollow collector of shape and curvature conforming to a portion of said toilet bowl rim to provide a channel and a plurality of openings through the exterior walls of said collector for the passage of air into said channel, a hollow trunk support structure in flow communication with the channel of said collector, a discharge connector in circuit arrangement with said collector and support structure adapted for engagement to a source of vacuum influence whereby air may be inducted through the openings of said collector to be

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moved toward a point of discharge along a path through said collector, support structure and discharge connector, said support structure further providing a notch for engagement with a toilet seat hinge support, and a lock member on said ventilation device for selective engagement with an opposite toilet seat hinge support.

2. A toilet ventilation device for use with a vacuum system and adapted for positioning on the rim of a toilet bowl in engagement with the hinge supports of the toilet seat comprising a hollow collector of shape and curvature conforming to a portion of said toilet bowl rim to provide a channel and a plurality of openings through the exterior walls of said collector for the passage of air into said channel, a hollow trunk support structure in flow communication with the channel of said collector, a discharge connector in circuit arrangement with said collector and support structure adapted for engagement to a source of vacuum influence whereby air may be inducted through the openings of said collector to be moved toward a point of discharge along a path through said collector, support structure and discharge connector, said support structure further providing a notch for engagement with one toilet seat hinge support and a shoulder member for engagement with the other of said toilet seat hinge supports, and a pivotally mounted lock member on said ventilation device for selective engagement with the other of said toilet seat hinge supports to hold said ventilation device in desired position with respect to said toilet bowl and seat.

3. A toilet ventilation device for use with a vacuum system and adapted for positioning on the rim of a toilet bowl in engagement with the hinge supports of the toilet seat comprising a hollow segmental ring collector of shape and curvature conforming to a portion of said toilet bowl rim to provide a channel and a plurality of openings through the exterior walls of said ring collector for the passage of air into said channel, a hollow trunk support structure in flow communication with the channel of said ring collector, a discharge connector in circuit arrangement with said ring collector and support structure adapted for engagement to a source of vacuum influence whereby air may be inducted through the openings of said ring collector to be moved toward a point of discharge along a path through said ring collector, support structure and discharge connector, said support structure further providing a notch for engagement with a toilet seat hinge support, and a movable lock member on said ventilation device for selective engagement with an opposite toilet seat hinge support.

4. A toilet ventilation device for use with a vacuum system and adapted for positioning on the rim of a toilet bowl in engagement with the hinge supports of the toilet seat comprising a hollow collector of shape and curvature conforming to a portion of said toilet bowl rim to provide a channel and a plurality of openings through the exterior walls of said collector for the passage of air into said channel, a hollow trunk support structure in flow communication with the channel of said collector, and a discharge connector in circuit arrangement with said collector and support structure adapted for engagement to a source of vacuum influence whereby air may be inducted through the openings of said collector to be moved toward a point of discharge along a path through said collector, support structure and discharge connector, said support structure further providing opposed notches for engagement with the toilet seat hinge supports, said ventilation device being made of a deformable plastic material whereby the structure adjacent at least one notch is resiliently movable to permit the desired engagement.

No references cited.