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(54) **APPARATUS FOR IN-WALL STORAGE OF BATHROOM IMPLEMENTS**

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(57) **ABSTRACT**

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An in-wall storage apparatus for the sanitary storage of bathroom implements such as a plunger, toilet brush and cleansers is comprised of three primary components, namely: a housing mounted within a wall; a door assembly hingedly mounted to the housing; and a removable implement caddy slidably received within the door assembly. In a preferred embodiment, the caddy is slidably received within caddy receiving means located on the interior surface of the door. Caddy receiving means is preferably, but not essentially comprised of a shoe attached to the interior of the door and sized to accommodate at least a portion of the caddy. When in its open position, the door is preferably oriented at an incline of approximately 45 degrees to prevent the caddy and other contents from becoming accidentally dislodged and to provide a convenient position for removal of either the caddy or the implement stored therein. At least one additional storage shoe may be optionally attached to the interior of the door for storage of cleansers, disinfectants, deodorizers and the like.

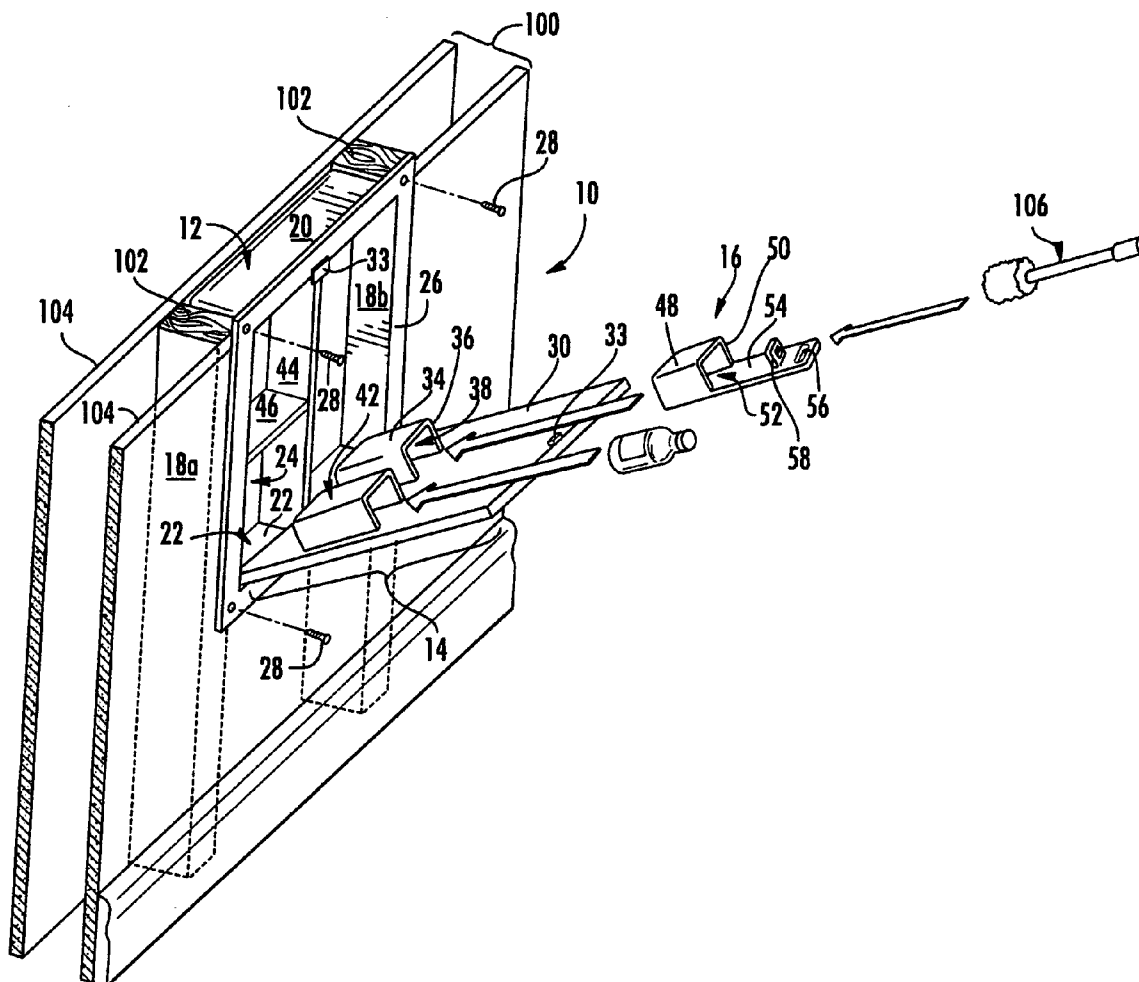
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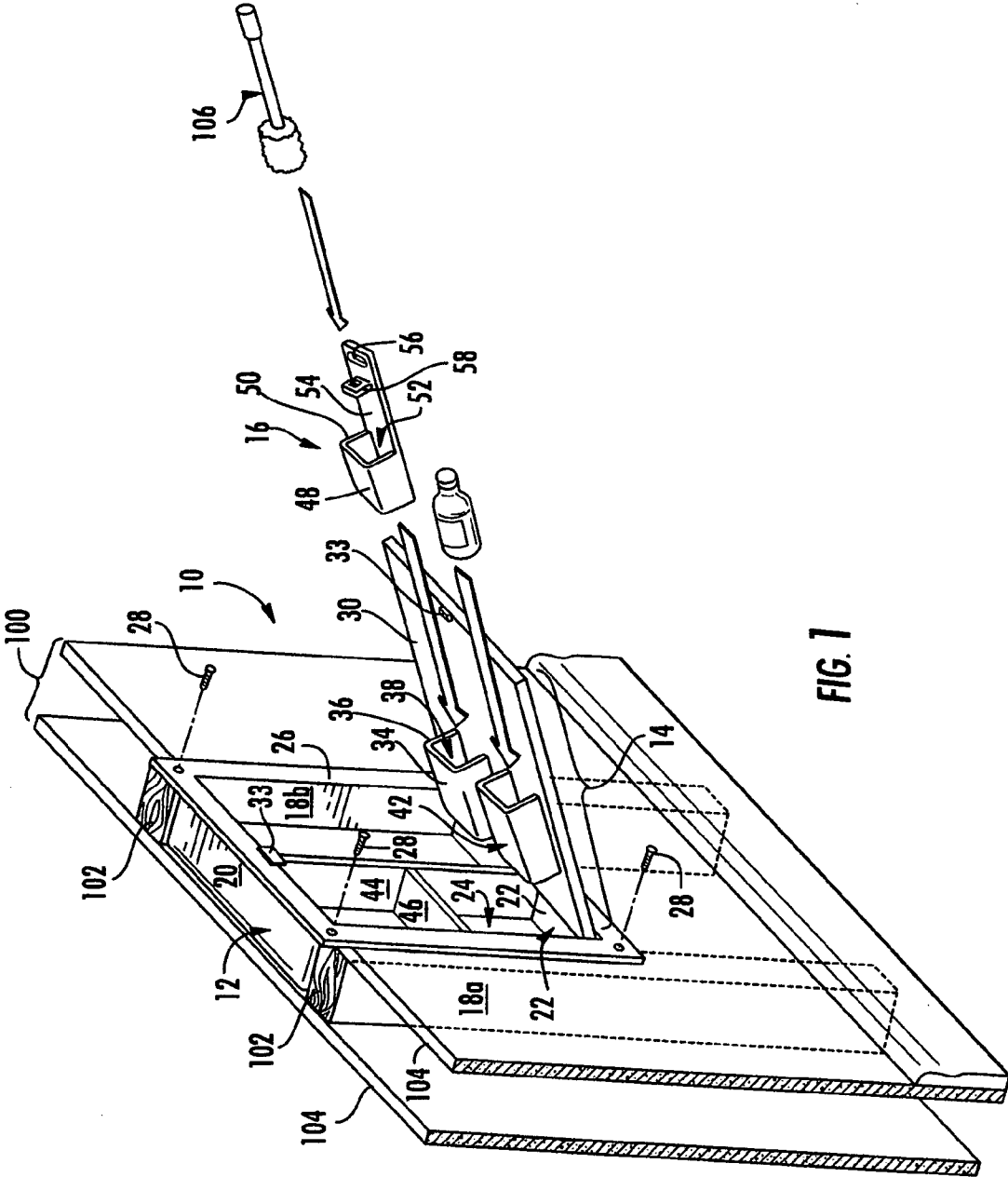


FIG. 7

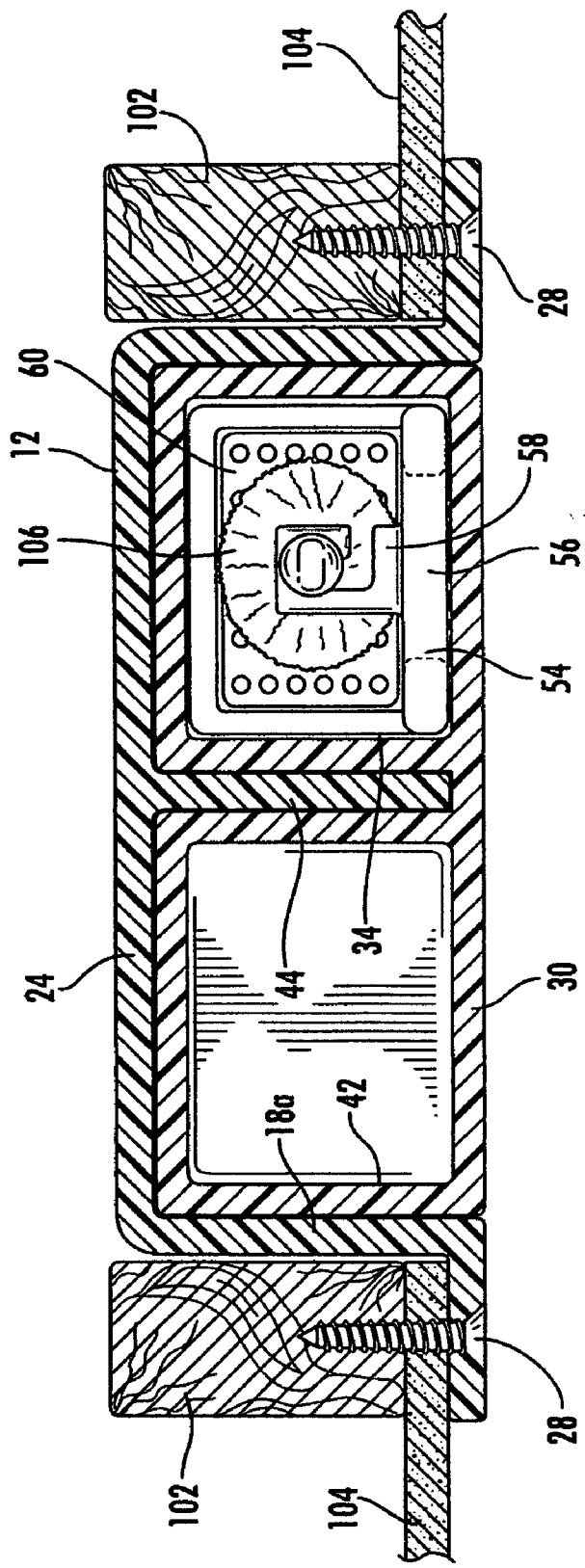


FIG. 2

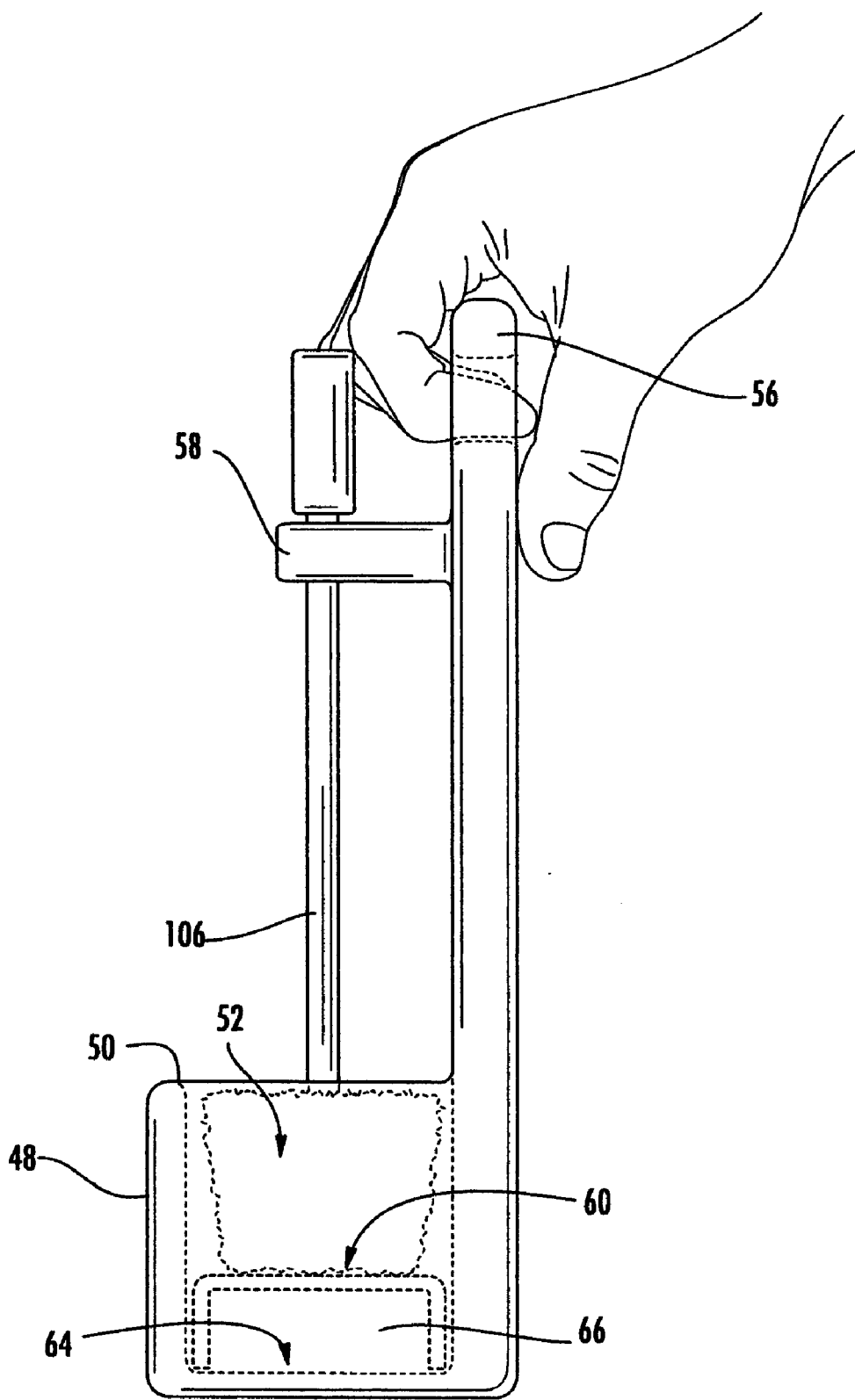


FIG. 3

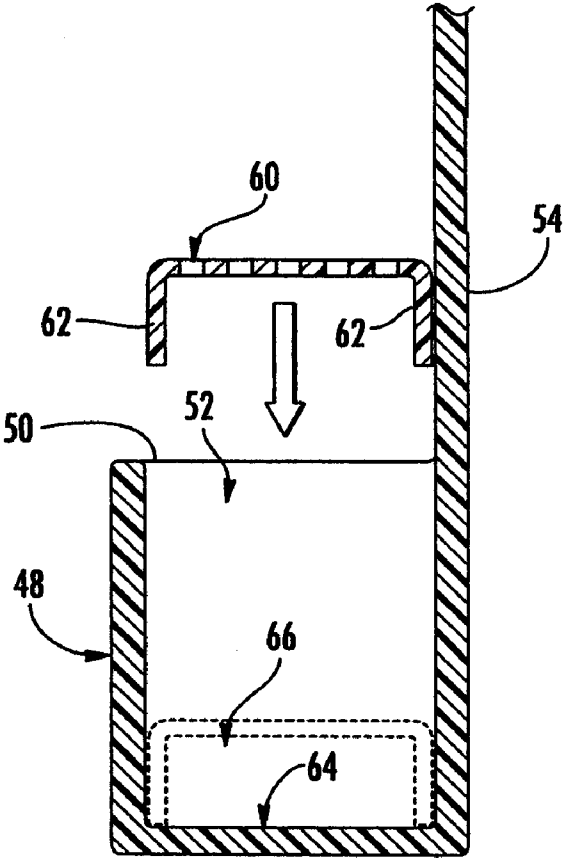


FIG. 4

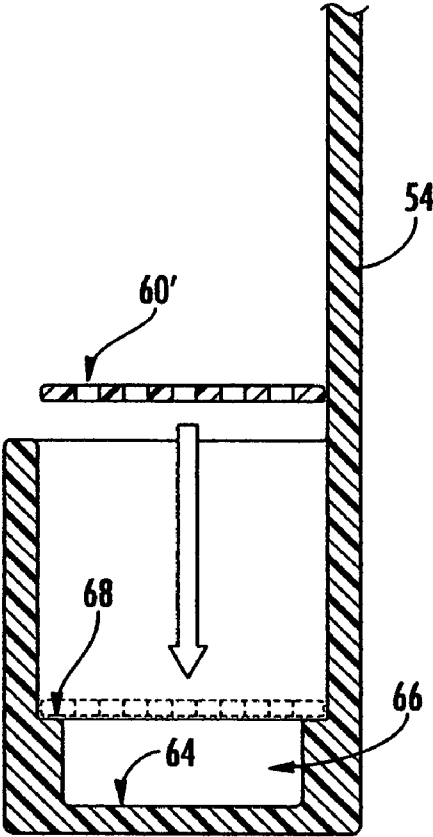


FIG. 5

APPARATUS FOR IN-WALL STORAGE OF BATHROOM IMPLEMENTS

FIELD OF THE INVENTION

[0001] The subject invention relates to the storage of bathroom cleaning and servicing implements generally, and to an apparatus for the in-wall storage and concealment of a toilet brush and/or toilet plunger in particular.

BACKGROUND OF THE INVENTION

[0002] Common bathroom cleaning and servicing implements such as toilet brushes and plungers are important to have readily at hand when needed, but are generally considered too unsightly and unsanitary to store in the bathroom itself. One solution is to store such accouterments in vasselike containers which offer some concealment of the tools, but which themselves suffer from various shortcomings and limitations. Specifically, floor-based storage containers are typically placed in a corner of the water closet and do not entirely eliminate the implement from view. Purchasers of such storage containers often resort to placing the device in a cabinet to hide it from view thus occupying valuable storage space and commingling an unsanitary item with personal items typically stored in the cabinet. Another shortcoming of floor-based storage containers is that they are susceptible to being knocked over necessitating immediate cleanup of any liquid accumulated therein from brush or plunger drainage. Still another shortcoming is that such containers are not without an unpleasant odor which can worsen with the presence of moisture and lack of ventilation.

[0003] A known alternative to using floor-based storage units is to mount a storage cabinet adapted to receive bathroom implements either on or within a wall. U.S. Pat. No. 2,539,838 issued to Hurley in 1951, for example, teaches a wall mountable bathroom cabinet capable of receiving therein a toilet brush and other articles. U.S. Pat. No. 3,095,249 issued to Albrecht in 1960 teaches an in-wall cabinet for the storage of a toilet bowl cleaning brush. The Albrecht device is constructed so that it has neither a top nor a fixed bottom making it possible for long handles and the like to protrude above the cabinet into the space in the wall. The bottom panel has holes in it to provide ventilation and drip from the brush inside the wall. More recently, pending U.S. Patent Application Number 2003/0015946 filed by Helber in 2002 teaches an apparatus for in-wall storage of a toilet plunger. Each of these inventions, however, suffer from a common and serious shortcoming, namely they either collect at their base toilet water that drips from the brush or plunger after use, or allow it to leak through the base ending up on the floor between two wall studs. In either case, the accumulation of toilet water and attendant germs after even a single use of the toilet brush or plunger creates an unsanitary condition, even when routine cleaning of the cabinet is performed. Cleaning is difficult because the cabinets are not removable and are often mounted close to the floor. Accordingly, both wall mounted and in-wall storage units of the prior art present with significant sanitation issues and require difficult cleaning regimens.

[0004] Certainly there exists a longstanding need for an improved apparatus for storage of bathroom cleaning and

servicing implements which obviates the heretofore described problems associated with prior art storage devices.

SUMMARY OF THE INVENTION

[0005] The subject invention more specifically relates to an in-wall storage apparatus for the sanitary storage of bathroom implements such as a plunger or toilet brush. The subject apparatus is comprised of three primary components, namely: 1) a housing mounted within a wall, 2) a door assembly hingedly mounted to the housing, and 3) a removable implement caddy slidably received within the door assembly. In a preferred embodiment, the caddy is slidably received within caddy receiving means located on the interior surface of the door. Caddy receiving means is preferably, but not essentially comprised of a shoe attached to the interior of the door and sized to accommodate therein in frictional engagement at least a portion of the caddy. When in its open position, the door is oriented at an incline of approximately 45 degrees to prevent the caddy and other contents from becoming accidentally dislodged and to provide a convenient position for removal of either the caddy or the implement stored therein. At least one additional storage shoe may be optionally attached to the interior of the door for storage of cleansers, disinfectants, deodorizers and the like.

[0006] An important advantage of the subject apparatus over prior art storage units is that the caddy may be easily removed for cleaning and disinfecting, and may be held over the toilet when returning the implement therein to avoid dripping on the floor. No water comes into contact with the housing itself which remains in a sanitary condition.

[0007] There has thus been outlined, rather broadly, the more important components and features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto. In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting. As such, those skilled in the art will appreciate that the conception, upon which this disclosure is based, may readily be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

[0008] Further, the purpose of the foregoing abstract is to enable the U.S. Patent and Trademark Office and the public generally, and especially the scientists, engineers and practitioners in the art who are not familiar with patent or legal terms or phraseology, to determine quickly from a cursory inspection the nature and essence of the technical disclosure of the application. The abstract is neither intended to define the invention of the application, which is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

[0009] It is, therefore, a primary object of the subject invention to provide an apparatus for the in-wall storage and concealment of bathroom cleaning and servicing implements such as a toilet brush, toilet bowl cleanser, toilet bowl plunger and the like.

[0010] Another primary object of the subject invention is to provide an apparatus for the in-wall storage and concealment of bathroom cleaning and servicing implements wherein the apparatus includes a caddy for wet implements such as a toilet brush or toilet plunger, the caddy being removable for cleaning and disinfecting and for transporting of the implements.

[0011] Another primary object of the subject invention is to provide an apparatus for the in-wall storage and concealment of bathroom cleaning and servicing implements wherein the removable caddy includes a removable drainage insert which permits drainage of the brush or plunger and elevates the implement above any standing liquid thereby permitting it to dry and reduce or eliminate dripping upon removal.

[0012] It is another primary object of the subject invention to provide an in-wall bathroom implement storage and concealment apparatus that is fabricated from materials that are durable, corrosion-resistant, and non-absorbent.

[0013] Another object of the subject invention is to provide an in-wall bathroom implement storage and concealment apparatus that is fabricated from materials that may be finished to possess a smooth, easily cleanable surface.

[0014] Still another object of the subject invention is to provide an in-wall bathroom implement storage and concealment apparatus that is fabricated from materials that are resistant to pitting, chipping, crazing, scratching, scoring, distortion and decomposition.

[0015] It is also an object of the subject invention is to provide an in-wall bathroom implement storage and concealment apparatus that is constructed to be free of breaks, open seams, cracks, chips, inclusions, pits, and similar imperfections.

[0016] Still another object of the subject invention is to provide an in-wall bathroom implement storage and concealment apparatus with minimal sharp internal angles, corners, and crevices which could retain moisture, bacteria, molds and other deleterious substances.

[0017] An additional object of the subject invention is to provide an in-wall bathroom implement storage and concealment apparatus that, except for portions which are permanently wall mounted, is accessible and transportable for cleaning and inspection without being disassembled.

[0018] Another object of the subject invention is to provide an in-wall bathroom implement storage and concealment apparatus that is relatively simple in design and therefore capable of rapid construction and installation at relatively low costs.

[0019] These together with other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its advantages and the specific objects attained by its uses, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The invention will be better understood and objects other than those set forth above will become apparent when

consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

[0021] FIG. 1 is an exploded perspective view of the in-wall bathroom implement storage apparatus according to the present invention shown mounted to a vertical surface and further showing the principal components thereof, including a removable implement caddy;

[0022] FIG. 2 is a plan view of the subject apparatus mounted to a vertical surface illustrating the door in the closed position;

[0023] FIG. 3 is a side view of the removable caddy component of the subject storage apparatus;

[0024] FIG. 4 is a side sectional view of a first embodiment of the removable caddy component; and

[0025] FIG. 5 is a side sectional view of a second embodiment of the removable caddy component.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0026] Reference is now made to FIG. 1 in which there is illustrated a perspective view of the in-wall bathroom implement storage apparatus according to the present invention (hereinafter sometimes also referred to as simply "storage apparatus"), designated generally by reference numeral **10** and shown flush mounted within a wall **100**. A typical wall construction is comprised of a plurality of parallel 2x4 studs **102** oriented vertically and spaced 16" on center which support sheets of drywall **104** on at least one side of the studs.

[0027] The subject apparatus is comprised of three primary components, namely: 1) a housing **12** mounted within a wall, 2) a pivotable door assembly **14**, and 3) a removable implement caddy **16** slidably received within door assembly **14**.

[0028] Housing **12** is preferably but not essentially comprised of side walls **18A** and **18B**, top **20**, bottom **22** and rear panel **24**, all of which are preferably of unibody construction forming a pan-like structure. A mounting flange **26** is attached around the perimeter of housing **12** in parallel relation to rear panel **24**. Flange **26** is relatively thin so as to achieve a nearly flush mounting. Storage apparatus **10** may be mounted within wall **100** through an opening in the drywall **104** and between two studs **102** using a variety of fastening means such as screws **28** driven through flange **26** and drywall **104** and into studs **102** (FIG. 2). As may be appreciated, screws **28** may alternately be driven through side walls **18A,B** and into adjoining studs **102** to maintain a more finished appearance of flange **26**. Still another alternative is to mount housing **12** within the wall using construction adhesive applied to the rear surface of the flange for bonding to the drywall **104**.

[0029] Door Assembly **14** is comprised of door **30** and caddy receiving means as described below. Door **30** is pivotably mounted to housing assembly **12** along a horizontal axis using at least one hinge **32**. Hinge **32** preferably but not essentially includes tensioning means which control the rate of descent of door **30** when opened. Hinge **32** is also preferably adapted to limit the degree of travel of door **30** such that when opened it is disposed at a 45 degree angle relative to wall **100**. Other means of limiting the degree of travel of door **30** may also be employed such as stops or hinge assemblies (not shown) the construction of which are well known to those skilled in the art. Door closure means **33**, preferably of the push button magnate type, are also mounted to the interior surface of door **30** and a corresponding location of housing **12** also in a manner well known in the art.

[0030] Implement caddy 16 is preferably but not essentially slidably received within caddy receiving means which is fixedly attached to or integrated with the interior surface of door 30. In a preferred embodiment, caddy receiving means is preferably comprised of a shoe 34 attached to or integrated with the interior surface of door 30. Shoe 34 is of pocket-like configuration having an open end 36 providing access to interior pocket 38. Implement caddy 16 is slidably inserted through open end 36 so that the base portion of caddy 16 rests within pocket 38. At least one additional storage shoe 42 may be optionally attached to the interior of door 30 for storage of cleansers, disinfectants, deodorizers and the like. Note that housing 12 may further include one or more dividing walls 44 and adjustable shelves 46 to define additional storage compartments therein. It should readily be appreciated that caddy 16 may be removably engaged with the interior of door 30 in multiple other ways or may alternatively be removably attached to housing 12.

[0031] An important feature of the subject in-wall storage apparatus 10 is its removable implement caddy 16 which is suitable for storage and transport of bathroom cleaning implements such as a toilet brush 106 or plunger (not shown). Implement caddy 16 includes a base 48 sized and shaped to fit in slidably engagement within pocket 38 of shoe 34. Base 48 has an open end 50 providing access to implement receiving chamber 52 which is sized and shaped to accommodate the working end of conventional toilet brushes and plungers (if the latter is compressed). Implement caddy 16 further includes a backsplash panel 54 fixedly attached at one end to base 48 and terminating at its opposite end in handle 56 which facilitates removal of caddy 16 from shoe 34 and transport of the bathroom implement (FIG. 3). It should be appreciated that backsplash panel 54 aids in preventing water from dripping onto the interior surface of door 30 upon removal or insertion of a wet implement into the implement receiving chamber 52. Another important feature of caddy 16 is that base portion 48 has a flat bottom and is therefore capable of maintaining an upright position when placed on horizontal surfaces such as a floor. Implement retention means 58 is fixedly attached to backsplash panel 54 for securing the handle of the implement in place to prevent the implement from becoming accidentally dislodged from caddy 16. Implement retention means 58 may be any form of clip, clamp or other device suitable for holding an elongated handle in place and is attached to backsplash panel 54 in perpendicular fashion.

[0032] Referring now to FIG. 4, a cross sectional view of a first embodiment of the base portion 48 of caddy 16 is shown. A drainage insert 60 sized and shaped to conform to the interior size and shape of implement receiving chamber 52 is slidably received therein until its feet 62 come into contact with chamber floor 64 (see also FIG. 3). Drainage insert 60 is generally comprised of a perforated panel and is situated in parallel relationship to, and at a predetermined height above, floor 64. Thusly oriented, drainage insert 60 and the interior walls of base 48 define a reservoir 66 for the receipt of any waste water that drips from the wet implement. As should be readily appreciated, the elevation of the implement above chamber floor 64 assures that it will not lie in standing waste water and increase air circulation around the implement to facilitate drying. In a second embodiment (FIG. 5) the interior walls of base 48 may be adapted with a shoulder 68 at a distance above chamber floor 64 upon which drainage insert 60' rests. Such a configuration obviates the need for feet 62

which may be eliminated resulting in a simplified drainage insert 60'. In yet another embodiment, shoulder 68 may be widened to create a ledge upon which the implement may rest, again keeping it elevated above any standing waste water within reservoir 66.

[0033] An important advantage of the subject apparatus over prior art storage units is that caddy 16 may be easily removed for cleaning and disinfecting, and may be held over the toilet when returning the implement therein to avoid dripping on the floor. No water comes into contact with the housing itself which remains in a sanitary condition.

[0034] Given that removable caddy 16 is intended to support bathroom implements which come into contact with unsanitary liquids and surfaces, such contaminants will come into direct contact with its surfaces, particularly the implement receiving chamber 52. When it comes to keeping surfaces sanitary, non-porosity is key. Using porous materials that can absorb water and subsequently hold onto it promotes microbial growth. Moreover, because the surfaces of the subject apparatus will be exposed to splash, spillage, or other soiling and will require frequent cleaning, said surfaces shall be constructed of a corrosion-resistant, nonabsorbent, and smooth material. Such materials may not allow the migration of deleterious substances and under normal use conditions shall be: safe; durable, corrosion-resistant, and nonabsorbent; sufficient in weight and thickness to withstand repeated washing; finished to have a smooth, easily cleanable surface; and resistant to pitting, chipping, crazing, scratching, scoring, distortion, and decomposition. Particularly when employed in a water closet setting the subject apparatus is preferably constructed to be free of breaks, open seams, cracks, chips, inclusions, pits, and similar imperfections; free of sharp internal angles, corners, and crevices; finished to have smooth welds and joints; and except for the mounting means, accessible for cleaning and inspection without being disassembled.

[0035] For example, the subject apparatus may be fabricated from high density polyethylene, a clean, white, high-impact plastic material that is almost unbreakable. As an alternative, the subject apparatus may be fabricated from polypropylene to exhibit very high corrosion-resistance to acidic, alkaline and saline solutions. In this embodiment, the apparatus can be sterilized. The polypropylene construction has high tensile strength and tremendous impact strength and very importantly has virtually no water absorption. Another viable alternative is to fabricate the apparatus from fiberglass which will provide a smooth surface with rounded corners for easy cleaning. Sturdy fiberglass won't dent, chip, bend, peel, crack or warp. Fiberglass is suitable for coloring the apparatus and is resistant to industrial cleaners. Other suitable materials may also be employed such as galvanized steel polished to a smooth finish.

[0036] Although the present invention has been described with reference to the particular embodiments herein set forth, it is understood that the present disclosure has been made only by way of example and that numerous changes in details of construction may be resorted to without departing from the spirit and scope of the invention. Thus, the scope of the invention should not be limited by the foregoing specifications, but rather only by the scope of the claims appended hereto.

What is claimed as being new, useful and desired to be protected by letters: Patent of the United States is as follows:

1. An apparatus for storage of bathroom implements in a wall, comprising:

- a) a housing for providing storage space interior of a wall,
 - b) housing cover means pivotally attached to said housing and substantially flush with the wall, said housing cover means having an interior surface and an exterior surface,
 - c) an implement caddy removably mounted to said interior surface of said housing cover means.
2. The in-wall storage apparatus of claim 1, wherein said housing is comprised of:
- a) a top,
 - b) a bottom,
 - c) two side walls,
 - d) a rear panel, and
 - e) a flange around the perimeter of said housing and parallel to said rear panel.

3. The in-wall storage apparatus of claim 2, wherein said housing cover means is pivotally attached to said bottom along a horizontal axis.

4. The in-wall storage apparatus of claim 3, wherein said housing cover means has a limited degree of travel.

5. The in-wall storage apparatus of claim 1, wherein said interior surface of said housing cover means further includes caddy retention means comprising a pocket-like shoe having an open end for the slidable receipt of said implement caddy.

6. The in-wall storage apparatus of claim 5, wherein said caddy is comprised of a panel having a first end and a second end, a base connected to said first end, said base being sized and shaped for slidable engagement within said caddy retention means, and a handle located at said second end.

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