United States Patent [19]

Parise

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[54] **STEAM CLEANER DUMP BUCKET**

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[73] Assignee: **Parise & Sons, Inc.,** Reno, Nev.

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[52] **U.S. Cl.**..... **15/353;** 15/327 D; 15/327 E; 15/320; 55/320

[51] **Int. Cl.**[2]..... **A47L 9/10;** A47L 9/20

[58] **Field of Search** ..... 15/320, 321, 352, 353, 15/327 D, 327 E; 55/320, 331, 344, 424, 426, 437, 438, 439, 467

[56] **References Cited**

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Attorney, Agent, or Firm—Sughrue, Rothwell, Mion, Zinn & Macpeak

[57] **ABSTRACT**

For use with a steam cleaner, a dump bucket comprising upper and lower cup-shaped members releasably engageable in facing relationship with an air-tight seal, a hollow riser tube extending upwardly from an aperture in the bottom of the lower cup-shaped member, and an L-shaped connector for attachment to a steam cleaner vacuum wand extending first inwardly from the side of the upper cup-shaped member and then upwardly towards the inner surface of the top of the upper cup-shaped member. This configuration causes dirty water forced through the L-shaped connector to be sprayed against the inner surface of the top of the upper cup-shaped member, after which it runs down the sides of the upper and lower cup-shaped members without going down the riser tube.

13 Claims, 4 Drawing Figures

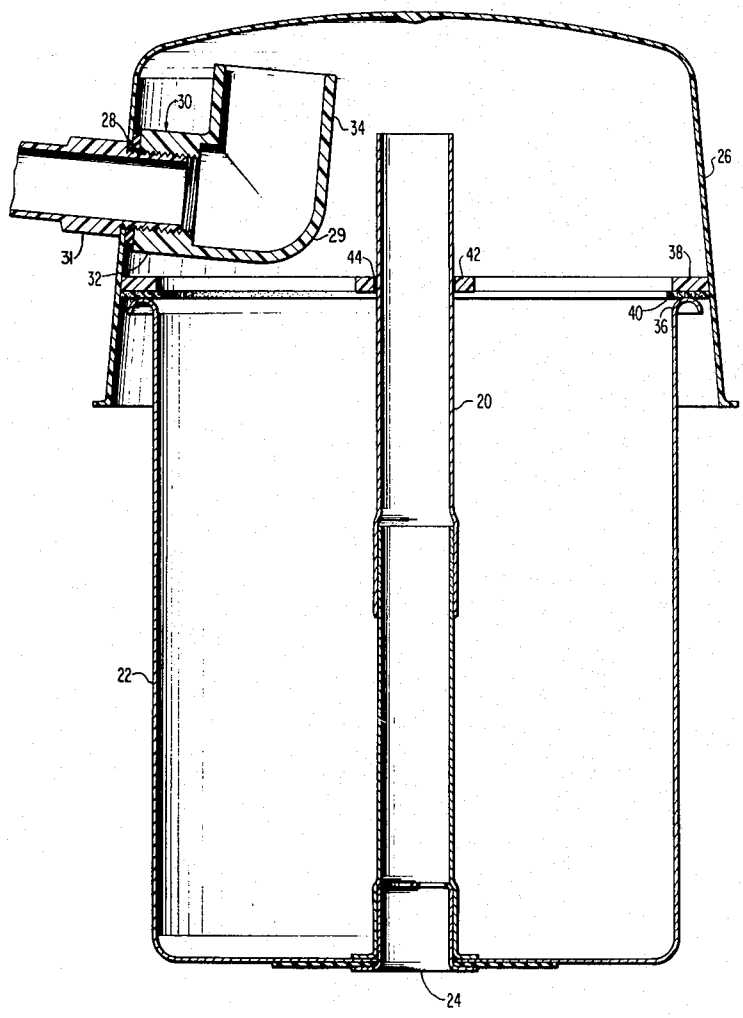
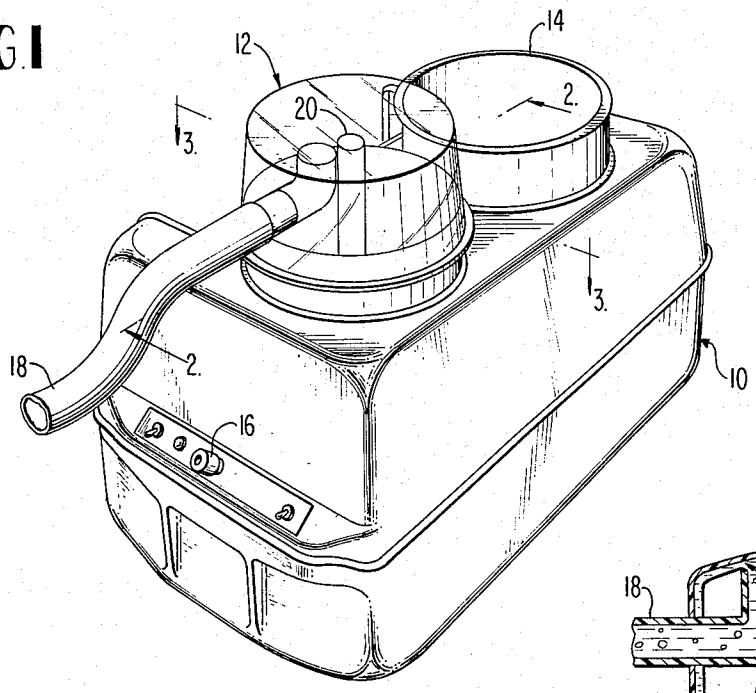


FIG. 1



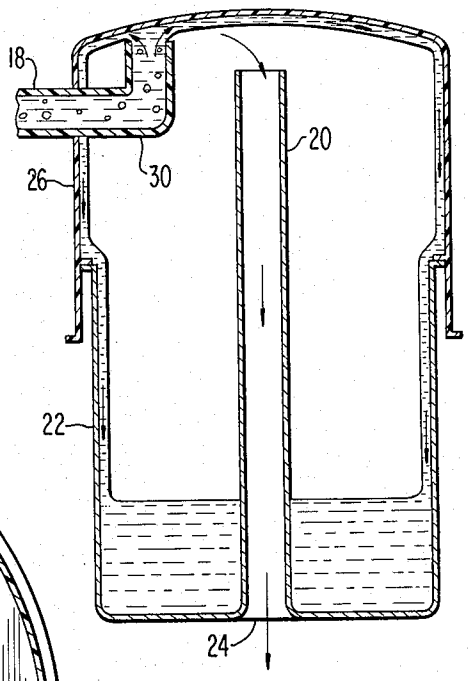
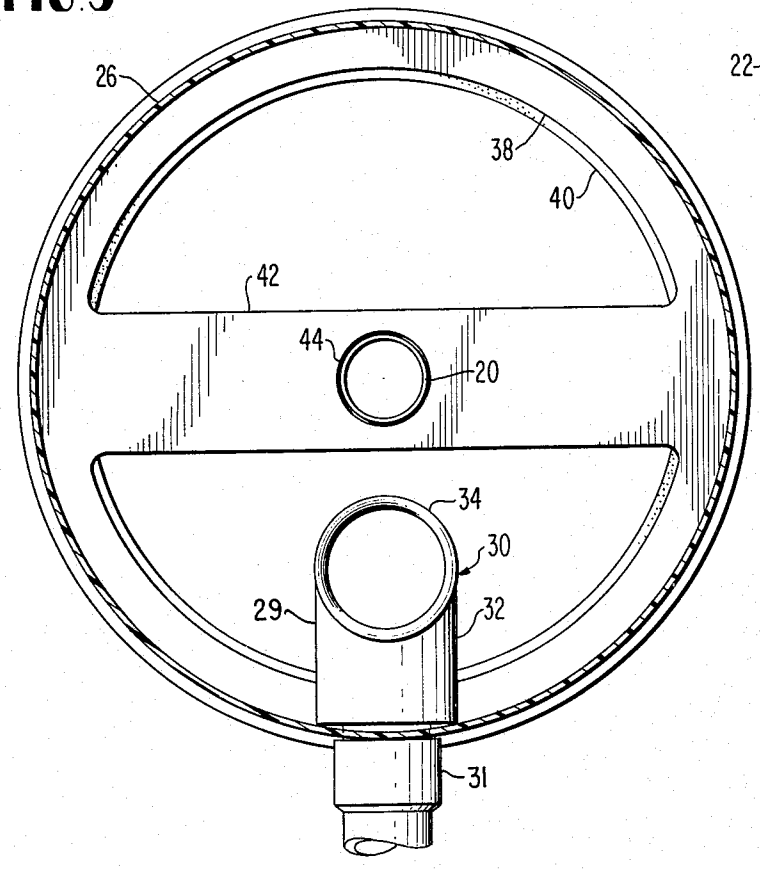


FIG. 4

FIG. 3



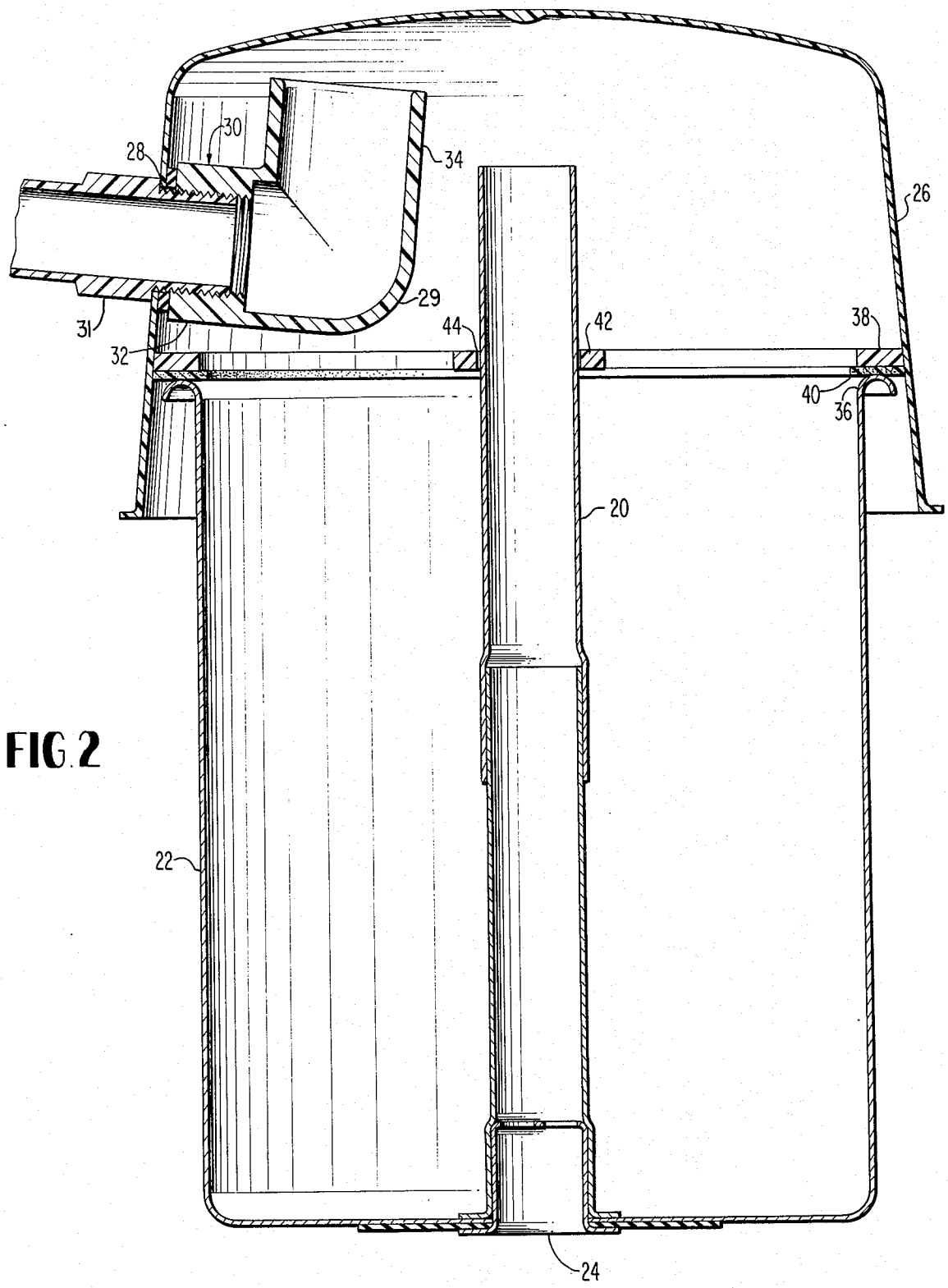


FIG. 2

STEAM CLEANER DUMP BUCKET

FIELD OF THE INVENTION

This invention relates to what are conventionally called "steam cleaners," but which are cleaners which in fact generally cause atomized, detergent-containing hot water, rather than steam, to be sprayed on objects, such as rugs and other floor surfaces, to be cleaned. The hot water is then re-collected into a dump bucket by means of a vacuum wand. The present invention is of an improved new dump bucket for use with such a "steam cleaner."

SUMMARY OF THE INVENTION

The dump bucket according to the present invention comprises upper and lower cup-shaped members releasably engageable in facing relationship with an air-tight seal, a hollow riser tube extending upwardly from an aperture in the bottom of the lower cup-shaped member, and an L-shaped connector for attachment to a steam cleaner vacuum wand extending first inwardly from the side of the upper cup-shaped member and then upwardly towards the inner surface of the top of the upper cup-shaped member. This configuration causes dirty water forced through the L-shaped connector to be sprayed against the inner surface of the top of the upper cup-shaped member after which it runs down the sides of the upper and lower cup-shaped members without going down the riser tube.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a steam cleaner employing a dump bucket built in accordance with the present invention.

FIG. **2** is a sectional side view of the presently preferred embodiment of the invention.

FIG. **3** is a sectional top view of the presently preferred embodiment of the invention.

FIG. **4** is a schematical sectional side view of a dump bucket according to the present invention during use.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. **1** shows a steam cleaner **10** employing a dump bucket **12** built in accordance with the present invention. The operation of the steam cleaner **10** is briefly as follows. Water and detergent are placed in the soap tank **14.** An immersion heater (not shown) mounted in the bottom of the soap tank **14** may be used to heat the detergent-containing water to an elevated temperature. An internal water pump (not shown) draws the detergent-containing water from an outlet at the bottom of the soap tank **14** and forces it out through a flexible tube (not shown) which may be coupled to the quick disconnect **16.** An atomizer nozzle (not shown) at the end of the flexible tube causes the stream of detergent-containing water to issue from the flexible tube as a mist, commonly but not strictly accurately referred to as "steam." The mist may be directed at an object to be cleaned by the operator of the steam cleaner. Subsequently, the detergent-containing water and the entrained dirt are picked up by the vacuum wand **18.** An internal vacuum pump (not shown) communicates with the interior of the dump bucket **12** via a hollow riser tube **20,** creating an under pressure in the interior of the dump bucket **12.** External air rushing through the vacuum wand **18** draws the detergent-containing water and the entrained dirt through the vacuum wand **18** and into the interior of the dump bucket **12.**

The presently preferred embodiment of the dump bucket **12** is shown in detail in FIGS. **2** and **3.** It comprises an upwardly open, lower cup-shaped member **22** having an aperture **24** in its bottom. The aperture **24** is shown as centrally located, but that is more for esthetic than functional reasons. Extending upwardly from the aperture **24** is the previously mentioned hollow riser tube **20.** Releasably engaging the open face of the lower cup-shaped member **22** in an air-tight seal is a downwardly open, upper, cup-shaped member **26.** There is an aperture **28** in the side of the upper cup-shaped member **26,** and an L-shaped hollow connector **30** is mounted in the aperture **28.** A first leg **32** of the connector **30** extends inwardly from the aperture **28,** and the second leg **34** extends upwardly from the first leg **32,** stopping short of but in proximity to the inner surface of the top of the upper cup-shaped member **26.**

The height of the riser tube **20** is to some extent arbitrary. However, the higher it extends, the more dirty water can be collected in the dump bucket **12** without running the risk of having the collected water run down the riser tube **20** into the vacuum pump. On the other hand, it is generally not desirable to collect water in the dump bucket **12** higher than the lip of the lower cup-shaped member **22** for the obvious reason that any water above that level will cascade out in an unrestrained fashion when the upper cup-shaped member **26** is removed from the lower cup-shaped member **22.** Also, the riser tube **20** must not extend so close to the inner surface of the top of the upper cup-shaped member **26** that it extends into the turbulent flow of dirty water splashed against that surface by the connector **30** or some of that water will run down the inside of the riser tube **20** and get into the vacuum pump. Thus, the preferred embodiment of the subject dump bucket has a riser tube which extends upwardly past the lip of the lower cup-shaped member but stops well short of the inner surface of the top of the upper cup-shaped member **26.**

In order to permit the operator of the steam cleaner **10** to gauge the level of dirty water in the dump bucket **12** without removing the upper cup-shaped member **26,** at least a part of the upper cup-shaped member **26** is preferably made of transparent material. In the presently preferred embodiment, the entire upper cup-shaped member **26** is molded in one piece from transparent plastic.

As previously stated, the upper and lower cup-shaped members **22** and **26** must be releasably engageable in air-tight relationship, but the exact manner in which this is accomplished is to some extent arbitrary. In the preferred embodiment, this is accomplished by curling over the upper lip **36** of the lower cup-shaped member **22** to provide a bearing surface and providing a cooperating inwardly extending annular shelf **38** mounted on the inner surface of the side of the upper cup-shaped member **26.** A resilient annular seal, or O-ring, **40** is fixed to the bottom surface of the annular shelf **38** to ensure an air-tight seal between the two cup-shaped members. The upper cup-shaped member **26** fits over the upper lip **36** of the lower cup-shaped member **22,** and the annular seal **40** receives the upper lip **36** in an air-tight seal.

While the dump bucket **12** may be built with only the parts described up to this point, it has been found convenient in practice to provide it with an additional member for strengthening the upper cup-shaped member **26** and for locating the upper cup-shaped member **26** relative to the lower cup-shaped member **22.** That additional member is the flat strut **42,** which is preferably fabricated integrally with the annular shelf **38.** It extends diametrically across the upper cup-shaped member **26,** and an aperture **44** therein receives the upper end of the riser tube **20,** locating the upper cup-shaped member **26** relative to the lower cup-shaped member **22.** This locating function serves to ensure that the upper lip **36** of the lower cup-shaped member **22** engages the annular seal **40** in the same place every time, ensuring an air-tight seal even after a groove has been worn in the annular seal **40.**

Having described the construction of the preferred embodiment of the present invention in some detail, I will now describe the operation of my dump bucket with the aid of the partially schematic FIG. **4,** which shows a dump bucket according to the present invention during use. At this time, vacuum is applied to the aperture **24,** in effect "sucking" air through the vacuum wand **18** and down the riser tube **20.** The rush of air through the vacuum wand **18** picks up dirty water, which is forced through the L-shaped connector **30** and sprayed against the inner surface of the top of the upper cup-shaped member **26.** There, the air and the dirty water separate to a large degree, the air rushing into the riser tube **20** and the water running down the side of the upper cup-shaped member **26,** over the annular joint between the upper and lower cup-shaped members, and down the side of the lower cup-shaped member **22** to its bottom, where it collects. The dump bucket **12** is, of course, removable from the steam cleaner **10,** and when the desired amount of cleaning is completed or the level of water in the lower cup-shaped member **22** approaches its lip, the dump bucket **12** may be removed from the steam cleaner **10,** the upper cup-shaped member **26** disengaged from the lower cup-shaped member **22,** and the contents of the latter dumped.

CAVEAT

While the present invention has been illustrated by a detailed description of a preferred embodiment thereof, it will be obvious to those skilled in the art that various changes in form and detail can be made therein without departing from the true scope of the invention. For that reason, the invention must be measured by the claims appended hereto and not by the foregoing preferred embodiment.

What is claimed is:

1. A dump bucket for a steam cleaner, said dump bucket comprising:

a. an upwardly open, lower, cup-shaped member having an aperture in the bottom thereof, the upper edge of said upwardly open, lower, cup-shaped member hereinafter being referred to as the lip thereof;

b. a hollow riser tube extending upwardly from the aperture in said lower cup-shaped member;

c. a downwardly open, upper, cup-shaped member adapted to releasably engage said lower cup-shaped member in an air-tight seal, said upper cup-shaped member having an aperture in the side thereof;

d. an L-shaped hollow connector, a first leg of which extends inwardly from the aperture in said upper cup-shaped member and the second leg of which extends upwardly from the first leg, stopping short of but in proximity to the inner surface of the top of said upper cup-shaped member;

e. means for supporting the first leg of said L-shaped hollow connector adjacent to and in alignment with said aperture; and

f. a diametrically extending strut joint opposite sides of the inner surface of the side of said upper cup-shaped member,

whereby, if a vacuum is applied to the aperture in said lower cup-shaped member and a steam cleaner vacuum wand is connected to the exterior end of the first leg of said L-shaped hollow connector, dirty water will be forced through said L-shaped hollow connector and sprayed against the inner surface of the top of said upper cup-shaped member, after which it will run down the sides of said upper and lower cup-shaped members without going down said hollow riser tube.

2. A dump bucket as claimed in claim **1** wherein said riser tube extends upwardly past the lip of said lower cup-shaped member.

3. A dump bucket as claimed in claim **1** wherein said upper cup-shaped member is, at least in part, transparent.

4. A dump bucket as claimed in claim **1** wherein said upper cup-shaped member fits over the lip of said lower cup-shaped member.

5. A dump bucket as claimed in claim **4** and further comprising an inwardly extending annular seal mounted on the inner surface of the side of said upper cup-shaped member, said annular seal being shaped to receive the lip of said lower cup-shaped member.

6. A dump bucket as claimed in claim **1** wherein said riser tube extends upwardly to the vicinity of the inner surface of said upper cup-shaped member, said strut has an aperture therein, and said riser tube passes through the aperture in said strut.

7. A dump bucket as claimed in claim **2** wherein said riser tube extend upwardly to the vicinity of the inner surface of said upper cup-shaped member, said strut has an aperture therein, and said riser tube passes through the aperture in said strut.

8. A dump bucket for a steam cleaner, said dump bucket comprising:

a. an upwardly open, lower, cup-shaped member having an aperture in the bottom thereof, the upper edge of said upwardly open, lower, cup-shaped member hereinafter being referred to as the lip thereof;

b. a hollow riser tube extending upwardly from the aperture in said lower cup-shaped member;

c. a downwardly open, upper, cup-shaped member adapted to releasably engage said lower cup-shaped member in an air-tight seal, said upper cup-shaped member having an aperture in the side thereof;

d. a connector;

e. means for mounting said connector in the upper cup-shaped member adjacent to and in alignment with said aperture, the combination of said means and said connector constituting a path of fluid communication between the exterior and the interior of said upper cup-shaped member, said connector comprising a generally horizontal portion and a generally vertical portion, the generally vertical portion of said connector having an inner surface portion which is posi-

tioned in the path of incoming fluid from the horizontal portion, located within said upper cup-shaped member, and oriented to deflect upwardly fluid coming into said upper cup-shaped member through said connector; and

f. a diametrically extending strut joining opposite sides of the inner surface of the top of said upper cup-shaped member

whereby, if a vacuum is applied to the aperture in said lower cup-shaped member and a steam cleaner vacuum wand is connected to the exterior end of said connector, dirty water will be forced through said connector and sprayed against the inner surface of the top of said upper cup-shaped member, after which it will run down the sides of said upper and lower cup-shaped members without going down said hollow riser tube.

9. A dump bucket as claimed in claim **8** wherein said riser tube extends upwardly past the lip of said lower cup-shaped member.

10. A dump bucket as claimed in claim **8** wherein said upper cup-shaped member is, at least in part, transparent.

11. A dump bucket as claimed in claim **8** wherein said upper cup-shaped member fits over the lip of said lower cup-shaped member.

12. A dump bucket as claimed in claim **11** and further comprising an inwardly extending annular seal mounted on the inner surface of the side of said upper cup-shaped member, said annular seal being shaped to receive the lip of said lower cup-shaped member.

13. A dump bucket as claimed in claim **8** wherein said riser tube extends upwardly to the vicinity of the inner surface of said upper cup-shaped member, said strut has an aperture therein, and said riser tube passes through the aperture in said strut.

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