United States Patent

Serowiecki

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[54] CLAMPING UNIT AND DRAIN FILTER FOR WASHING MACHINE DRAIN LINES

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[52] **U.S. Cl.** **210/462**, 210/474

[51] **Int. Cl.** **B01d 23/00**

[58] **Field of Search** 210/448, 451, 452, 459–463, 210/473, 474

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[57] **ABSTRACT**

A clamping unit and drain filter for washing machine drain lines including a three-walled frame, a bracket for detachably mounting the frame to a laundry tray, a filter basket with a screen element for trapping lint, and an adjustable clamp for securing the drain line to the frame above the filter basket, including a concave support mounted to the frame with a backface and a concave front face forming a seat for the drain line and an adjustable ring clamp for securing the drain line to the concave support. The concave support includes a narrow width clamping portion at the top and a relatively wider width seat portion at the bottom so as to accommodate various sizes of washing machine drain lines.

5 Claims, 7 Drawing Figures

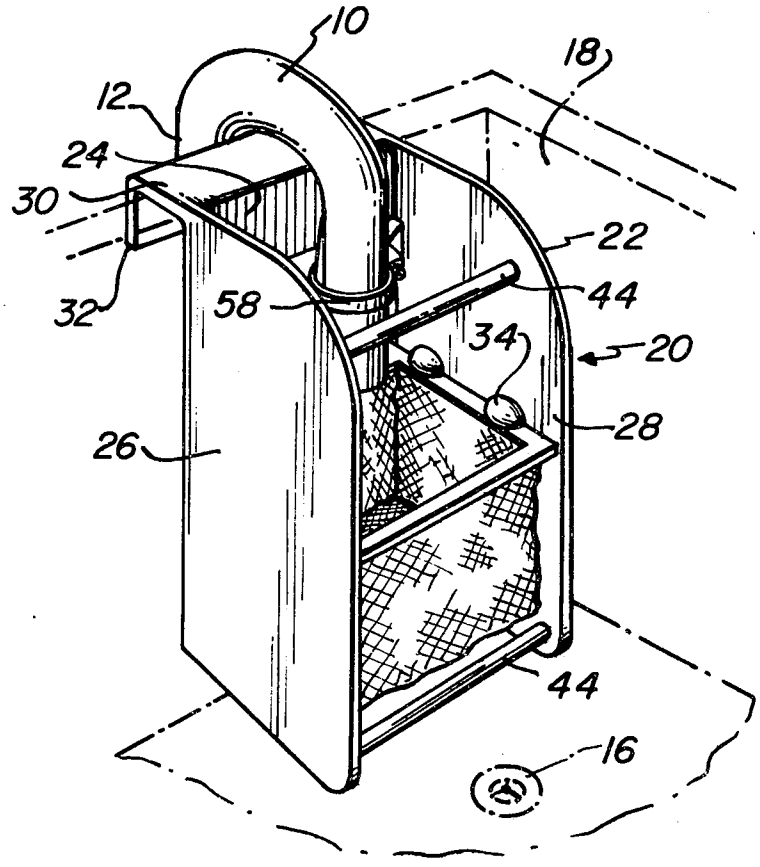


FIG. 1

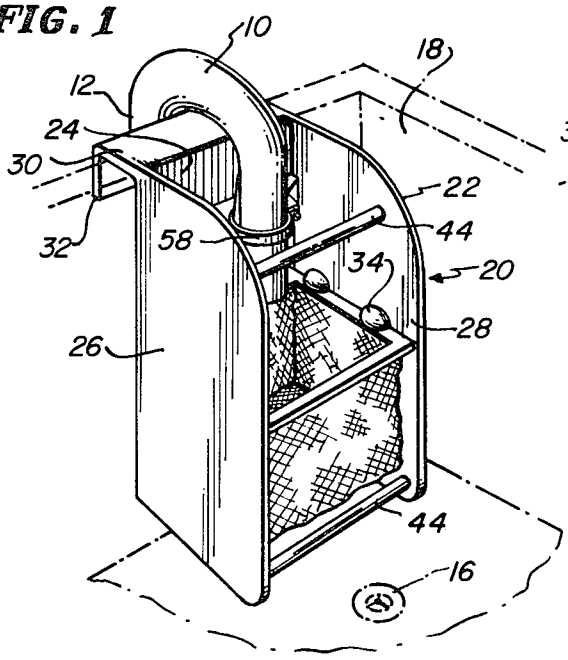


FIG. 2

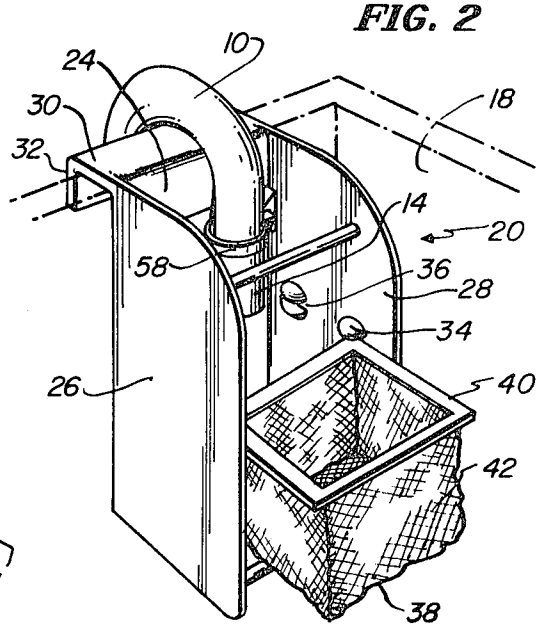


FIG. 3

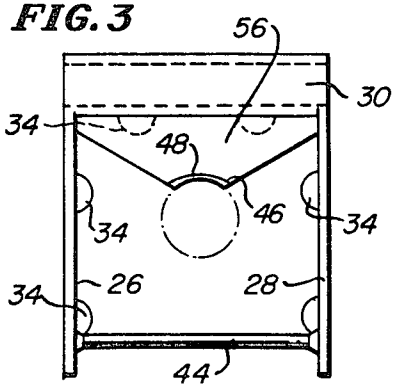


FIG. 6

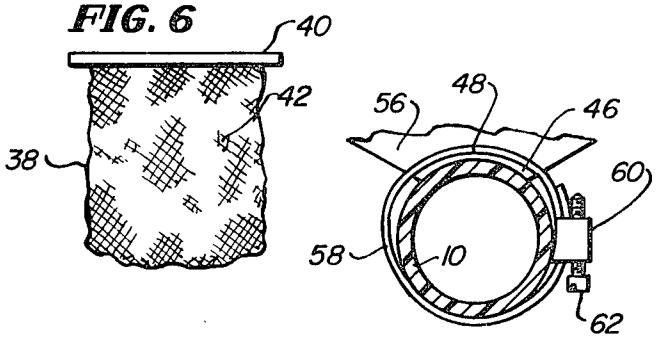


FIG. 4

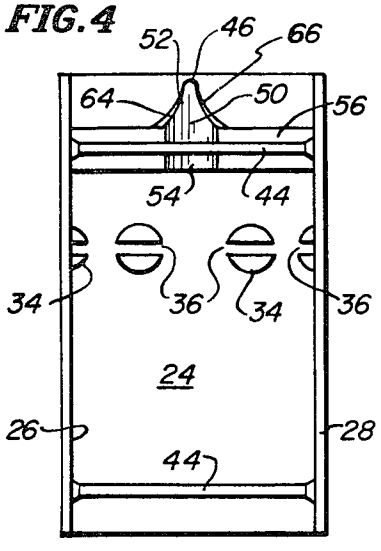


FIG. 5

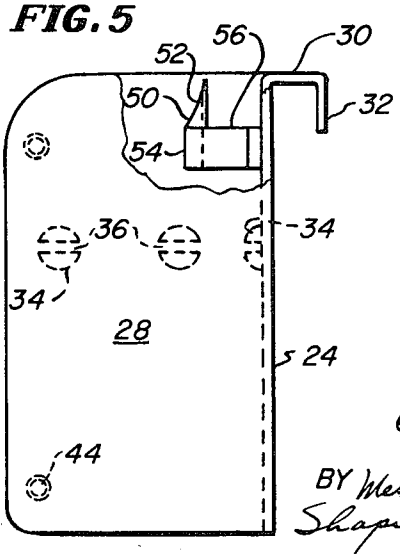


FIG. 7

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CLAMPING UNIT AND DRAIN FILTER FOR WASHING MACHINE DRAIN LINES

This invention relates to drain filters and in particular to a filter and clamping unit for washing machine drain lines.

Present washing machine drain lines or hoses are ordinarily provided with a hooked end for hooking onto a laundry tray and discharging the drain water therein. During discharge of washing machine drain water, lint, strings, etc., normally present are discharged into the laundry tray and accumulate to obstruct the laundry tray drain outlet. After a certain amount of time, depending of course on the amount of usage of the washing machine, the laundry tray drain outlet must be cleared of the lint and other accumulated drain obstructions to prevent over flowing of the laundry tray during the drain cycle of the washing machine. In addition, during the drain cycle, the drain water is pumped through the drain hose and out the discharge end in to the laundry tray with high velocity. Since prior art drain hoses are not secured in place, but merely hooked onto the laundry tray, the hoses and high-velocity stream of drain water discharging therefrom tends to move with pumping pressure variations, thereby rebounding water in all directions from the laundry tray and splashing and spraying drain water on walls, floors, and objects near the laundry tray. Because of various sizes of drain hoses used on washing machines, various types and sizes of clamping units would be required to secure the hoses in position.

Therefore, in accordance with the principles of the present invention, there is provided a universal drain filter clamping unit useful for a variety of washing machine drain hoses, including a lint filter intermediate the drain hose discharge end and the laundry tray drain outlet, and an adjustable clamp to secure various sizes of drain hoses in position with respect to the laundry tray.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1 and 2 are perspective drawings illustrating the construction of a universal drain filter clamping unit in accordance with the principles of the present invention in position on a laundry tray, the filter basket being removable for cleaning as shown in FIG. 2;

FIG. 3 is a plan view of the drain filter clamping assembly with the lint filter basket removed;

FIG. 4 is a front elevational view of the drain filter clamping unit illustrating in particular a concave support for drain hoses;

FIG. 5 is a side elevational view of the drain filter clamping unit with one sidewall fragmented to illustrate a side view of the concave support;

FIG. 6 is an elevational view of the removable lint filter basket; and

FIG. 7 is a fragmentary sectional view of the adjustable clamp for securing the washing machine drain hose to the concave support in the filter unit.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIGS. 1 and 2 there is illustrated a washing machine drain hose **10** having one end **12** extending to and coupled to the drain pump in the washing machine, and discharge end **14** for discharging water during the washing machine drain cycle into the drain **16** of the laundry tray **18**. A drain filter clamping unit **20** constructed in accordance with the principles of the present invention includes a three-sided frame **22** including a rear wall **24** and substantially parallel sidewalls **26, 28** extending orthogonally therefrom.

At the top of the rear wall **24**, a bracket is formed of a substantially flat portion **30** extending continuously from rear wall **24** and orthogonal thereto and a downwardly depending portion **32**. The bracket portions **20** and **32** are provided to enable the drain filter unit **20** to be hooked onto laundry tray **18** as indicated in FIGS. **1** and **2**. As illustrated, the bracket portion **30** extends over the top of the laundry tray and the depending bracket portion **32** extends along the outer edge of the laundry tray so as to support unit **20** within the laundry tray.

Referring now to the remaining FIGS. **3–7**, there is illustrated the construction details of a preferred embodiment of the filter unit **20**. The inner faces of sidewalls **26** and **28** include guide and support means such as the illustrated series of convex protrusions **34** each having a groove **36** for receiving the filter basket **38**. The filter basket **38** is formed of a top frame portion **40** and a filter section **42** depending from the frame **40**. The frame **40** is sized so as to slidably engage the convex protrusions **34** on each sidewall **26, 28** so as to be suitably supported by the convex protrusions **34** when in the engaged filter position shown in FIG. **1**. As noted, for instance, in FIG. **4** the rear wall **24** also includes a pair of convex protrusions **34** with grooves **36** so that when the filter basket **38** is fully inserted into the assembly, it can also be supported on the rear wall **24**, although it is to be understood that sufficient support can be provided by the sidewall protrusions **34**. Furthermore, instead of the double convex protrusions with a groove, other support and guide means such as a ledge on each sidewall or only the bottom halves of each protrusion can be utilized.

The filter basket **38** can most conveniently be formed of nylon screening for the filter **42** to pass water but trap lint etc., and with a fused plastic portion forming the frame **40**, although it is to be understood that other manufacturing techniques can be employed to provide a suitable filter basket. Support rods **44** extend between sidewalls **26, 28** to maintain the sidewalls apart and in position in order that the filter basket **38** can be slidably inserted between the sidewalls and maintained in the proper filter engaged position.

Adjustable clamping means are provided on the rear wall **24** of the filter assembly for clamping the drain hose **10** in position so that the discharge end **14** discharges the drain water into the filter basket **38**. A concave support **46** is formed to include a backface **48** and a concave front face **50**. As shown in FIGS. **4** and **5**, the concave front face **50** has a narrow width clamping position **52** which becomes wider as it extends downwardly to a relatively wider width seat portion **54** at the bottom of concave front face **50**. A mounting block **56** secures the concave support **46** to the rear wall **24**.

When drain hose **10** is placed in the clamping position as shown in FIGS. **1** and **2**, the hose is seated in the seat portion **54** and extends up and over the clamping portion **52** of the front face **50**. Referring to FIG. **7**, ring clamp **58** extends around the backface **48** of the concave support and around the drain hose **10**, with both ends of the ring clamp **58** secured by locking nut **60** including a screw **12** threadably engaging the nut **60** for securing the drain hose on the concave support.

The concave support **46** is formed such that it can accommodate any of the variety of sizes of drain hoses associated with the various washing machines commercially available. The wider width seat portion **54** at the bottom of the concave support serves as a seat for any of the drain hose sizes, while the narrower width clamping portion **52** at the top of the support enables the adjustable ring clamp to suitably secure various hoses on the support. For instance, as illustrated in FIGS. **1** and **2**, a relatively wide and large size drain hose **10** is seated snugly on the seat portion **54** (see FIG. **3**) and the ring clamp **58** can be adjusted on and along the edges **64, 66** of the clamping portion **52** to secure the hose to the support. As can be seen most clearly from FIG. **4**, the width of clamping portion **52**, which is defined by the distance between edges **64, 66**, increases from the top of clamping portion **52** towards the bottom as it merges into the wider seat portion **54**. If a smaller size drain hose **10** is to be secured in position, the hose can still be seated properly on the bottom seat portion **54** and the ring clamp **58** moved along edges **64, 66**, closer to the top thereof so as to still be able to secure the smaller size hose to the concave support. Thus, various sizes of drain hoses can be accommodated.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, as modifications will be obvious to those skilled in the art.

What is claimed is:

1. A drain filter clamping unit for washing machine drain lines discharging into a laundry tray, said drain filter clamping unit comprising:

a three-walled frame having a backwall and a pair of substantially parallel sidewalls extending from one face of said backwall;

a bracket defined by a frame portion extending from the other face of said backwall in a direction opposite from said sidewalls detachably mounting said frame to said laundry tray with said sidewalls extending within the interior of said laundry tray;

a filter basket including a screen element for trapping lint slidably insertable between said frame sidewalls;

guide means on said sidewalls for engaging said filter basket during slidable insertion thereof, including support means for supporting said filter basket on said sidewalls;

adjustable clamping means for securing said washing machine drain line to said frame above said filter basket, said adjustable clamping means including,

a concave support mounted to said frame and having a backface and a concave front face forming a seat for said drain line, said concave front face including a narrow width clamping portion at the top thereof and a relatively wider width seat portion at the bottom thereof, and

an adjustable ring clamp extending around the backface at the narrow width clamping portion of said concave support for surrounding and securing said drain line seated on said concave support to enable the discharge from said drain line to pass through said filter basket before entering into said laundry tray.

2. A drain filter clamping unit as claimed in claim 1, wherein said clamping portion includes opposite downwardly extending edges from the top of said clamping position to the bottom thereof and defining said narrow width clamping portion therebetween.

3. A drain filter clamping unit as claimed in claim 2, wherein the distance between said opposite downwardly extending edges corresponding to the width of said clamping portion on said concave front face increases from the top to the bottom of said clamping portion.

4. A drain filter clamping unit as claimed in claim 3, wherein said opposite downwardly extending edges merge into said seat portion at the bottom of said concave support.

5. A drain filter clamping unit as claimed in claim 1, wherein said guide means and support means on said sidewalls comprises convex protrusions from said sidewall each having a groove therebetween, said filter basket slidably engageable with said groove and supported between each of said convex protrusions to maintain said basket in position intermediate the discharge end of said drain line and said laundry tray.

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