

Dec. 24, 1940.

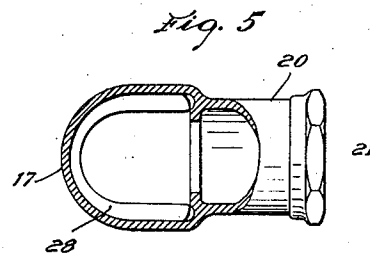
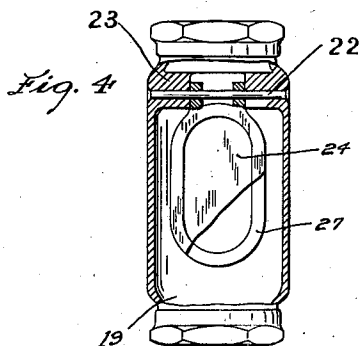
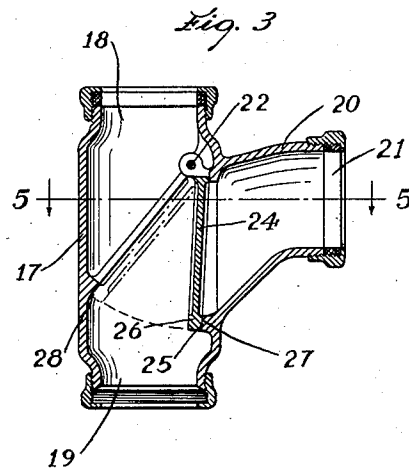
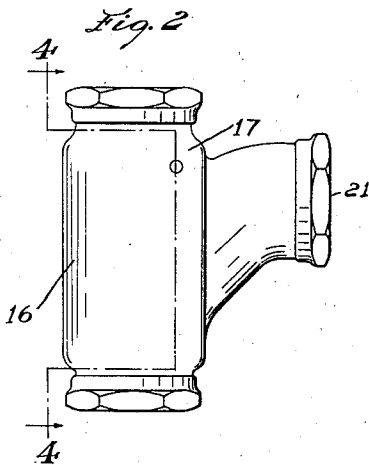
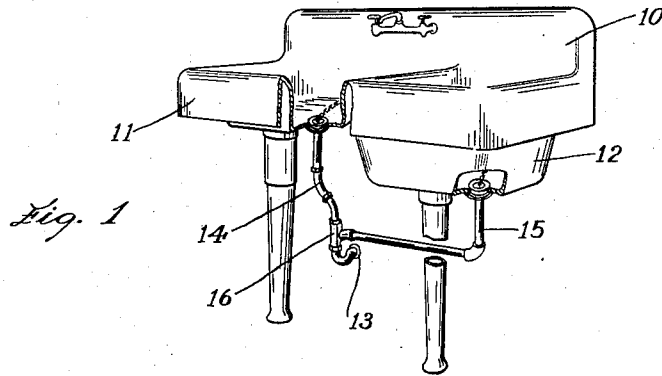
F. NEWTON

2,225,840

DRAIN BACK FLOW CHECK

Filed April 7, 1938

2 Sheets-Sheet 1



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Frank Newton
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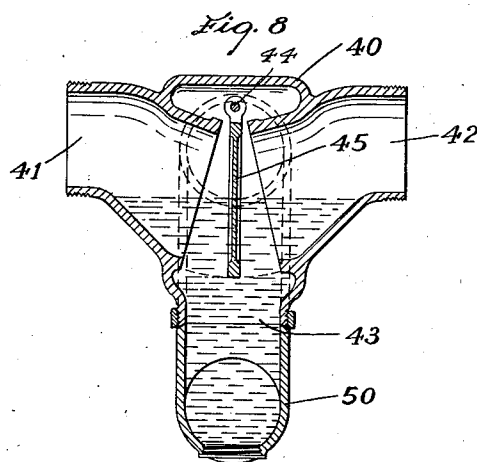
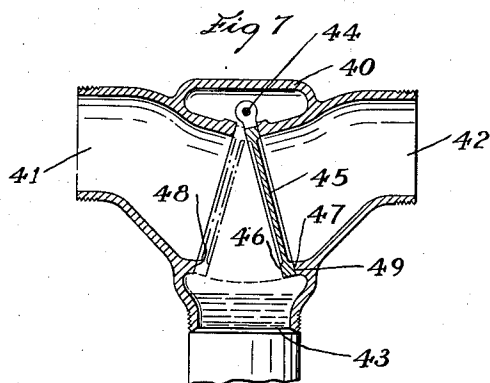
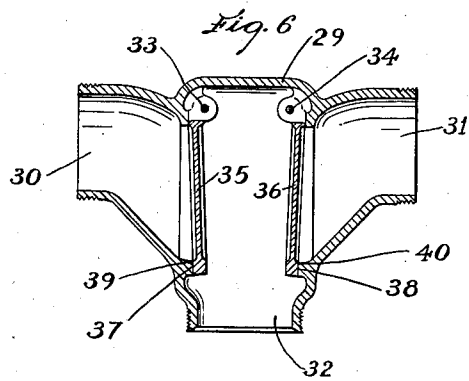
F. NEWTON

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DRAIN BACK FLOW CHECK

Filed April 7, 1938

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,225,840

DRAIN BACK FLOW CHECK

Frank Newton, Bristol, R. I., assignor to Providence Steam Trap Company, Inc., Providence, R. I., a corporation of Rhode Island

Application April 7, 1938, Serial No. 200,600

1 Claim. (Cl. 251—118)

My present invention relates to the plumbing art, and has particular reference to an arrangement for preventing back flow of liquid and foul air into traps or sinks.

It is the principal object of my invention to provide an arrangement for use with trays and sinks positioned at different levels to prevent backing up of fluid into the trays or sinks at the lower level.

It is an additional object of my invention to provide a simple arrangement which may be manufactured and sold at low cost, and which can be included in new installations, or can be readily inserted in existing installations.

It is a further object of my invention to provide an arrangement for preventing back flow which can be combined with a trap so as to further seal the tray or sink against back flow of foul air.

With the above and other objects and advantages in view, my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more specifically defined in the claim appended thereto.

In the drawings;

Fig. 1 is a perspective view, partly broken away, showing the invention as applied to a tray and a sink at different levels;

Fig. 2 is a plan view of a novel back flow check fitting;

Fig. 3 is a vertical section therethrough, the alternative position of the flap valve being indicated in dotted lines;

Fig. 4 is an end view of Fig. 2, parts being broken away to show the mounting of the flap valve;

Fig. 5 is a view on the line 5—5 of Fig. 3;

Fig. 6 is a sectional detail showing a modified construction;

Fig. 7 is a sectional detail showing a further modified construction; and

Fig. 8 is a sectional detail showing a combination of the modification of Fig. 7, with a trap.

It has been found desirable to provide a back flow check in the pipe lines connecting a sink and a tray to a drain pipe, the tray being at a lower height, in order to prevent back flow of liquids and of foul air into the tray. To this end I have provided a novel back flow check fitting which is positioned in the pipe lines, and has a flap valve mounted so as to swing downwardly under the influence of gravity so as to close the tray pipe line against entrance of liquid and of

foul air. I have further provided modified forms suitable for different types of tray and sink installations, and I have combined a trap therewith so as to maintain the valve in a water seal, to additionally prevent flow of foul air upwardly to either tray or sink, or both.

Referring to the drawings, the installation designated 10 includes a sink 11 and a tray 12, the tray being at a lower level than the sink, and a drain pipe 13 of standard form, the sink 11 being connected to the drain pipe by means of a pipe or conduit 14 as shown, and the tray having a conduit 15 as shown. Positioned in the conduits so as to be common to both piping or conduits is a back flow check fitting 16, see Fig. 2, which includes a generally cylindrical body portion 17, threaded at its upper inlet end 18 and at its lower outlet end 19 and having a lateral inlet branch 20 threaded at its inlet end 21. A pivot pin 22, see Figs. 3 and 4, preferably of brass, is mounted in the body 17 in two relatively large clearance passages in spaced bosses 23 so as to provide a mounting for a flap valve 24, pivotally positioned between the bosses 23, the flap valve being preferably of the tongue type and having raised seating portions 25 and 26 which are ground flat and which respectively cooperate with a seat 27 for the inlet branch 20 and a seat 28 in the body 17, similarly ground flat whereby downward flow through either inlet 18 or 21 is freely permitted, but back flow into the inlet branch 20 is prevented by the free swing flap branch valve 24. Back flow from the tray into the sink is also prevented by engagement of the valve with the seat 28.

Although the preferred back flow check fitting is illustrated and described as a T Y type, a twin elbow type fitting may also be used for different installations, as illustrated in Figs. 6, 7 and 8, the twin elbow type fitting comprising a body 29 having two branch inlets 30 and 31 which are respectively connected to sinks and trays, and a common outlet 32, the body being provided at its upper end or having mounted in its upper end two pivot rods 33, 34 on which flap valves 35, 36 are respectively mounted for pivotal swinging, the flap valves having seating faces 37, 38 for seating engagement with valve seats 39, 40, whereby back flow of liquids or gases from the drain pipe or either inlet into the other inlet is effectively prevented by engagement of the valves 35 and 36 with their respective seats under the influence of the weights of the valves.

Instead of using two separate valves 35 and 36, which respectively seal each inlet, a common

valve may be provided to prevent back flow into one inlet, this construction being illustrated in Fig. 7, in which the body 40 is of twin elbow shape, and has two inlets 41 and 42 and a common outlet 43, the body having a single pivot pin 44 mounted thereon on which is swingingly mounted a flap valve 45 having seating surfaces 46 and 47 which are adapted to seat on valve seats 48, 49, associated with the inlets 41 and 42.

10 In this construction, the flap valve 45 normally hangs vertically downward, but will prevent cross flow from either inlet into the other.

If desired, a further seal can be obtained, note Fig. 8, by connecting the outlet 43 with a trap construction 50, so positioned that the water level is always above the lower end of the flap valve 49, whereby a water seal is obtained for preventing back flow of foul air into inlet 41 or 42.

The parts are preferably made of cast metal, the flap valve being of cast metal or of a non-corrodible material, aluminum being preferred because of its lightness, and having its faces ground so as to form perfect contact with the correspondingly ground face or faces of the seat or seats cooperating therewith.

While I have described specific construction embodiments of my invention, it is obvious that changes in the sizes and proportions of the parts, in the relative positioning of the fittings, and in

the type of valve arrangements used, may be made to suit the requirements for different installations, without departing from the spirit and the scope of the invention as defined in the appended claim.

I claim:

A drain check fitting comprising a generally cylindrical body having an upper threaded inlet and a lower threaded outlet, a lateral inlet branch entering said cylindrical body having the upper portion of its inner surface sloping gently towards the cylindrical body and the lower portion of its inner surface sloping sharply towards the cylindrical body to provide a communicating oval passageway, said branch having a threaded inlet, the cylindrical body at the injunction of the branch therewith being formed to provide an oval valve seat inclined towards the cylindrical body axis, the cylindrical body being formed to provide a second oval valve seat extending across the cylindrical body, said body having an integral block provided with a central cut-out and extending inwardly at the intersection of said valve seats, and an oval valve having integral ears extending inwardly from the valve body and pivotally mounted in said block cut-out and adapted to seat on either oval valve seat.

FRANK NEWTON.