United States Patent

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[54] **FILLING AND DRAIN COUPLER**
7 Claims, 6 Drawing Figs.

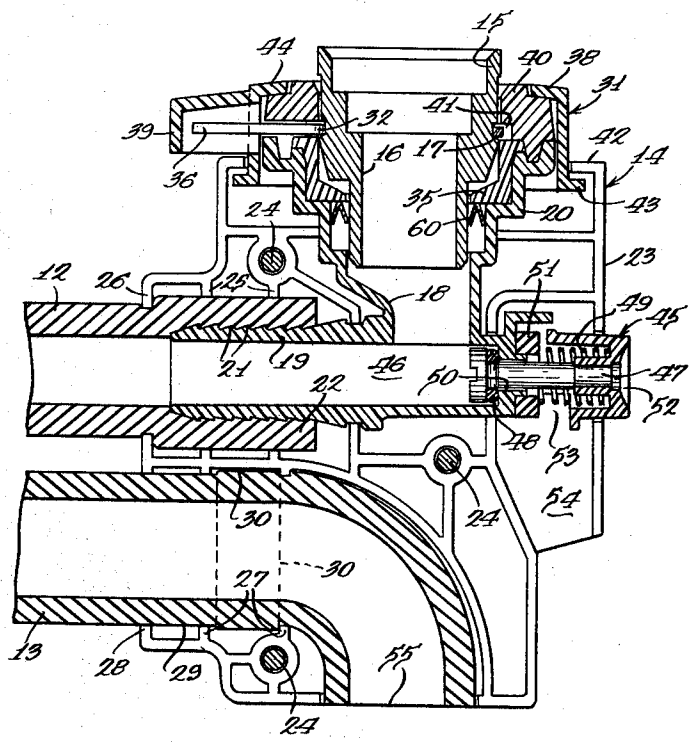
[52] **U.S. Cl.** **137/594,** 285/8, 285/137, 285/321
[51] **Int. Cl.** **F16l 39/00**
[50] **Field of Search** 137/594, 595; 285/8, 137, 242, 308, 321, 373

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ABSTRACT: An improved filling and drain coupler for supplying water to and draining water from an appliance and the like in which the outer casing parts of the coupler serve the dual function of providing a pleasing appearance and also locking the internal operating parts in their proper position so that the entire device is compact, economical and highly reliable.



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Fig. 1.

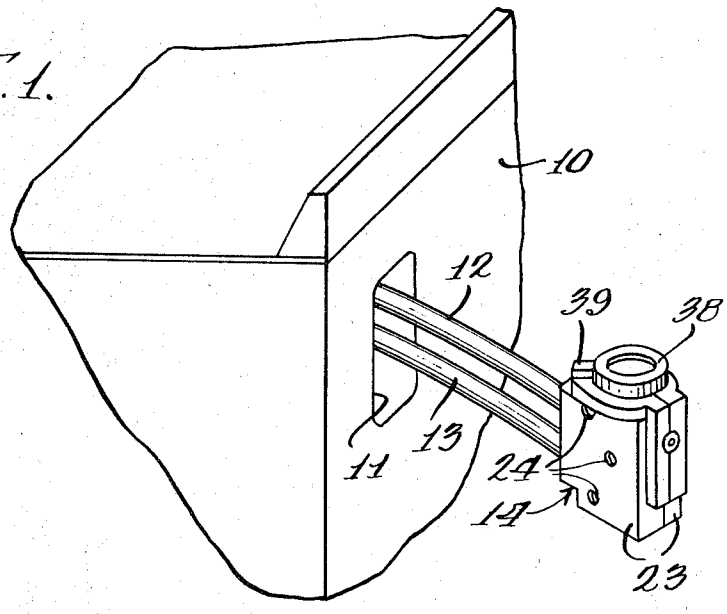


Fig. 3.

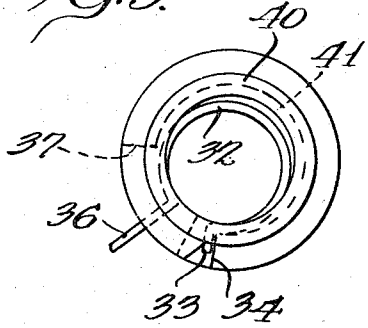


Fig. 5.

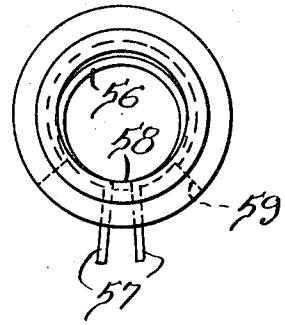


Fig. 4.

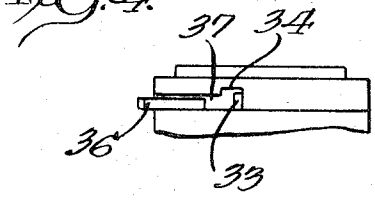
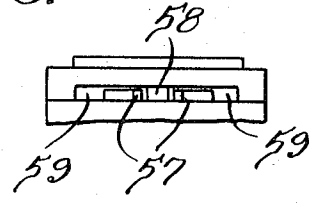
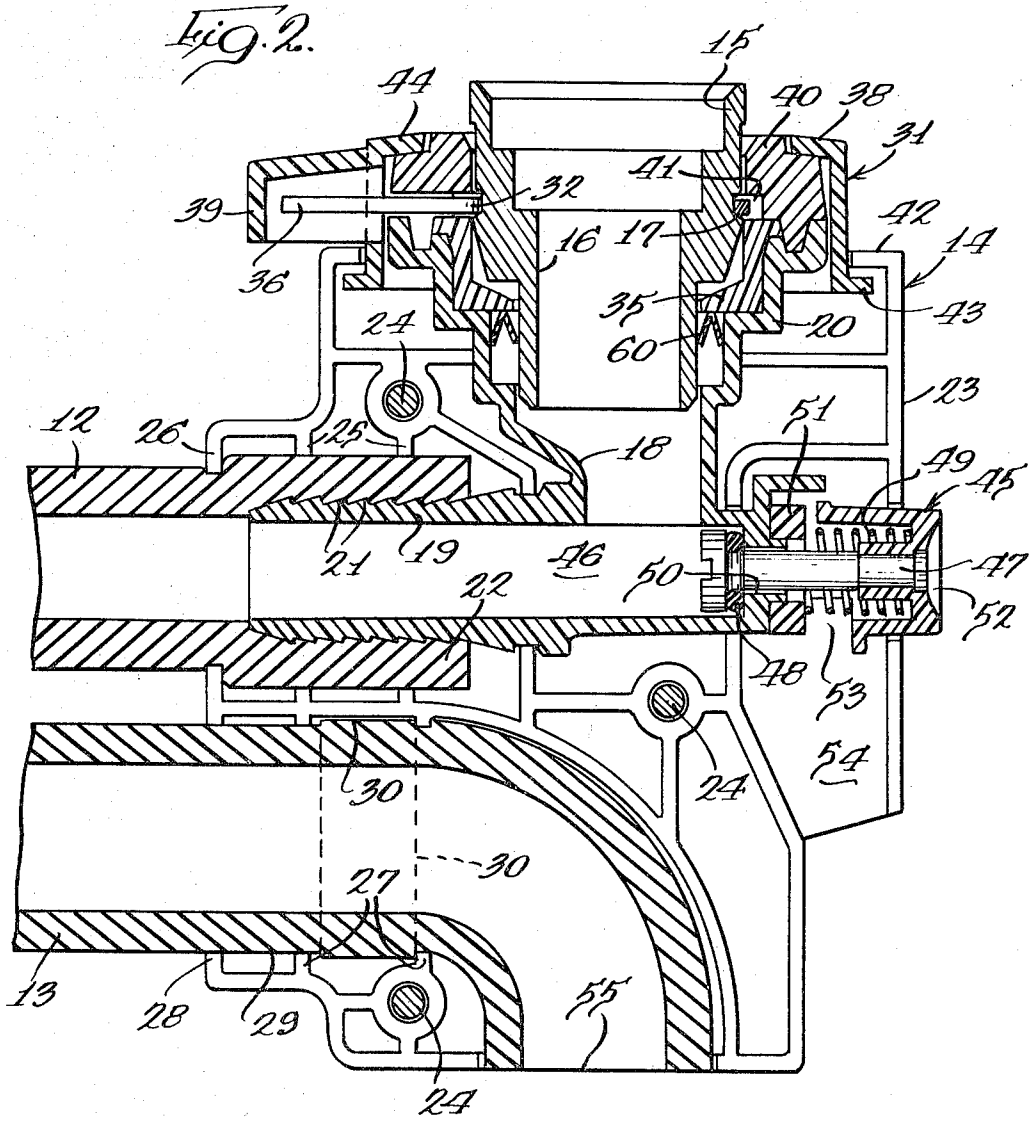


Fig. 6.



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Fig. 2.


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FILLING AND DRAIN COUPLER

One of the features of this invention is to provide a filling and drain coupler for supplying water to and draining water from an appliance such as a laundry device, dishwasher and the like having the above characteristics.

Other features and advantages of the invention will be apparent from the following description of certain embodiments of the invention in conjunction with the accompanying drawings. Of the drawings:

FIG. 1 is a fragmentary perspective view of a dishwasher having a coupler embodying the invention.

FIG. 2 is a vertical enlarged sectional view through the coupler of FIG. 1 in the plane bisecting the two mirror image halves of the outer casing and with the releasing handle turned to the plane of the section.

FIG. 3 is a plan view of the water receiving portion of the coupler with the handle cover removed.

FIG. 4 is a fragmentary side elevational view of FIG. 3.

FIG. 5 is a view similar to FIG. 3 but showing a second embodiment.

FIG. 6 is a view similar to FIG. 4 but also illustrating this second embodiment.

The coupler of this invention is particularly useful on a movable appliance such as a dishwasher **10**. Other appliances that utilize a source of water are laundry devices and the like.

The dishwasher **10** has attached thereto for retraction into the appliance through a rear opening **11** and for extension therefrom a pair of flexible, such as rubber, hoses **12** and **13** with the hose **12** being a water supply hose and **13** being a drain hose. The outer ends of the hoses **12** and **13** are held by a filling and drain coupler **14** embodying the invention and for supplying water to and draining water from the appliance **10**.

As is shown in enlarged section in FIG. **2**, the coupler **14** is intended to be used with an adapter means **15** that has an internal bore **16** for releasable attachment to a water supply such as a sink faucet (not shown). The adapter **15** has an external shoulder **17** in the form of a peripheral groove around the outer periphery of the adapter. Within the body of the coupler **14** there is provided an inlet tubular member **18** having one end **19** that is generally cylindrical and another end **20** at right angles thereto that is generally conical in steps of increasing radius. The tubular member end **20** is intended to receive the adapter **15**, as shown in FIG. **2**, for supplying the appliance **10** with water.

The end of the cylindrical portion **19** is annularly serrated as shown at **21** for receiving the inner end of the upper or water supply hose **12**. This inner end **22** is shown somewhat enlarged as a result of being forced on the serrations **21**.

The coupler **14** comprises a pair of opposite side or body members **23** that are substantially mirror images of each other and with these body members being held in assembled relationship by a plurality, here shown as three, of fastening screws **24**. Each body member **23** is provided with substantially semicircular ribs **25** and **26** which tightly grip the outer surface of the hose end **22** and press it against the serrations **21**. Thus the side or body members **23** which provide substantially all of the aesthetic outer appearance of the coupler **14**, as can be seen in FIG. **1**, are clamped together by the fastening means screws **24** to press the hose engaging areas thereof which include the ribs **25** and **26** in locking engagement with the one end **19** of the internal tubular member **18** of the coupler. This also serves to lock the second or water drain hose **13** to the coupler, as the lower ends of the body members are provided with similar ribs **27** and **28** that clamp against the outer surface **29** of this hose. The end of the drain hose is firmly locked in position by providing it with a square enlargement **30** within the coupler and between the pair of ribs **27**.

In order to attach the coupler **14** to the adapter **15** at the annular groove **17** there is provided a latch device **31**. This latch device comprises an arcuate spring **32** having one end **33** fixed against rotation by positioning it in a groove **34** that is located at one edge of a ring **35** that is positioned within the upper end of the top of the tubular member portion **20**. The other end **36** of this arcuate spring **32** projects outwardly through an elongated arcuate groove **37**. This end **36** of the spring functions as a handle and is normally covered as shown in FIG. **2** with a rotatable ring cover **38** that is provided with a hollow radially extending extension **39** which receives the handle end **36** of the arcuate spring **32**. Thus the radial extension **39** itself serves as the spring operating handle. The cover **38** also conceals the end **33** and its groove **34**.

As can be seen in FIG. **2** the ring **35** is in two parts with the upper part **40** containing an inner peripheral groove **41** which cooperates with the groove **17** to provide a retaining space for the arcuate spring **32**. The parts **35** and **40** are attached together at their contacting surfaces for function as a single unit.

Each cooperating side or body member **23** is provided with a top inwardly directed flange **42** which overlies a bottom flange **43** on the cover **38** to hold the cover in position and this cover in turn is provided with an inwardly directed flange **44** which overlies an annular top edge portion of the upper part **40** to in effect from a guide for the cover **38**. The cover **38** and its projecting extension **39** operating as a handle are thereby movably mounted on the coupler **14**.

The pair of cooperating side or body members **23** are also shaped at their adjacent areas to provide a retainer for a bleed valve **45** that communicates with the interior **46** of the cylindrical end **19** to which the inner end **22** of the water supply hose is fastened in the manner previously described. As shown in FIG. **2**, this bleed valve **45** comprises a stem **47** extending inwardly into this interior **46** and provided with an O-ring gasket **48** on its inner end. The stem **47** is urged in an outward direction, or to the right in FIG. **2**, by a spring **49** which surrounds the stem **47**. When the stem **47** is in the position shown in FIG. **2** the gasket **48** seals an annular passage **50** around the inner end of the stem **47**. When in the position shown the spring **49** has its inner end bearing against a resilient ring **51** and its outer end received in the annular groove in a finger engageable operating button **52**. The lower end of this button **52** within the confines of the body member **23** is cut away as indicated at **53**.

The operation of the device is as follows. The tension in the spring **32** is such that it is normally in position to engage the peripheral groove **17** in the adapter **15** and hold the coupler **14** firmly attached thereto. Water from the faucet (not shown) or the like to which the adapter is attached then flows through the interior **46** of the adapter and then laterally through the supply hose **12** into the appliance **10**. The water pressure within the coupler after being attached to the adapter **15** is sealed against escape by the internal expansible gasket **60**. Then, at the conclusion of operation of the appliance the handle **39** containing the projecting handle end **36** of the spring is moved to expand the spring (or clockwise from the position viewed in FIG. **3**) and thus hold the arcuate portion of the spring clear of the annular groove **17**. The coupler **14** can then be removed from the adapter **15** which remains attached to the faucet or similar liquid supply.

Before this is done, however, in order to prevent accidental spillage or spraying from within the adapter the operating button **52** on the bleed valve **45** is depressed inwardly with the result that the O-ring **48** opens the inner end of the annular passage **50** to bleed water from the interior **46**. Any water that would tend to flow outwardly through the passage **50** would be directed downwardly into the sink where the filling faucet is ordinarily located by flow outwardly through the annular passage **50** and then downwardly through the cutaway portion **53** and the bottom opening chamber **54** in the cooperating body members **23**. As stated earlier, the coupler **14** not only contains the water supply hose **12** and the described associated structure but also provides a firm lock for the water drain hose **12** so that water directed therethrough the customary manner will flow downwardly through the bottom opening lower end **55** of the drain hose into the sink or other place of disposal.

FIGS. **5** and **6** illustrate a second embodiment of the arcuate retaining spring. In this embodiment the retaining spring **56**

has a pair of projecting handle ends **57** that are positioned on opposite sides of a projection **58**. Thus in this embodiment an operating cover (not shown) similar to the cover **40** may be turned in either direction within the arcuate groove **59** to release the coupler **14** from the adapter.

Having described our invention as related to the embodiments shown in the accompanying drawings, it is our intention that the invention be not limited by any of the details of description, unless otherwise specified.

We claim:

1. A filling and drain coupler for supplying water to and draining water from an appliance and the like, comprising: adapter means for attachment to a water supply, said adapter means having an external shoulder member; an input hose; an inlet tubular member having one end portion surrounding said adapter means at said shoulder member when in position on said adapter means and an opposite end portion externally receiving an end of said hose; a pair of opposite side members adapted to be clamped together and having hose engaging areas for pressing said hose end on said opposite end portion of said tubular member; and a drain hose and spaced elements on each said side member for engaging on the outer surface of said drain hose, said drain hose having an enlarged outer surface section engaged by said spaced elements.

2. A filling and drain coupler for supplying water to and draining water from an appliance and the like, comprising: adapter means for attachment to a water supply, said adapter means having an external shoulder member; an input hose; an inlet tubular member having one end portion surrounding said adapter means at said shoulder member when in position on said adapter means and an opposite end portion externally receiving an end of said hose; a pair of opposite side members adapted to be clamped together and having hose engaging areas for pressing said hose end on said opposite end portion of said tubular member; a latch device having a displaceable member engaging said shoulder member to retain said coupler on said adapter means; and flange means on said side members engaging said latch device.

3. The coupler of claim **2** wherein said displaceable member comprises an arcuate spring having one end fixed and the other end extending outwardly as a handle for flexing said spring from its coupler retaining engagement with said shoulder member.

4. The coupler of claim **3** wherein there is provided a rotatable cover for said spring having a handle section receiving and concealing said other end of said arcuate spring.

5. The coupler of claim **4** wherein said flange means engages said cover thereby rotatably retaining the cover in assembly.

6. A filling and drain coupler for supplying water to and draining water from an appliance and the like, comprising: adapter means for attachment to a water supply, said adapter means having an external shoulder member; an input hose; an inlet tubular member having one end portion surrounding said adapter means at said shoulder member when in position on said adapter means and an opposite end portion externally receiving an end of said hose; a pair of opposite side members adapted to be clamped together and having hose engaging areas for pressing said hose end on said opposite end portion of said tubular member; a bleed valve leading into said tubular member normally closed but displaceable to open position; and means on said side members for retaining said bleed valve between the side members.

7. The coupler of claim **6** wherein said bleed valve has a downwardly opening water passageway means therein leading from said tubular member.