May 20, 1969 B. J. RALSTON 3,444,890

MEANS TO CONNECT AN AUTOMATIC WASHING MACHINE TO A WATER FAUCET

Filed May 26, 1966 Sheet 1 of 2

FIG. 1

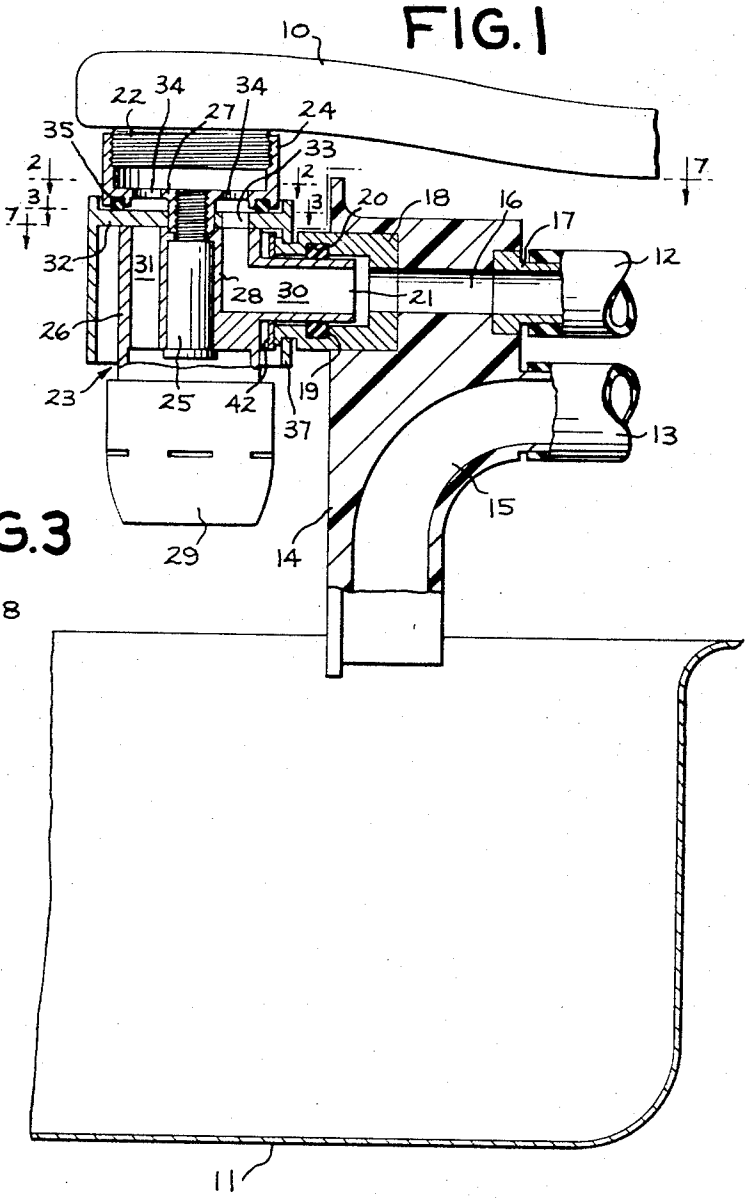


FIG. 2

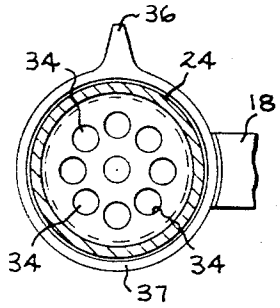
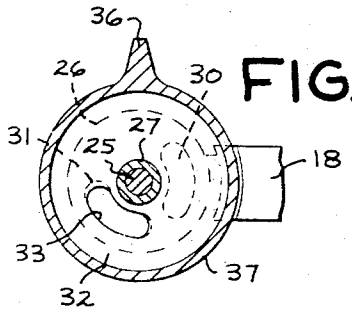


FIG. 3



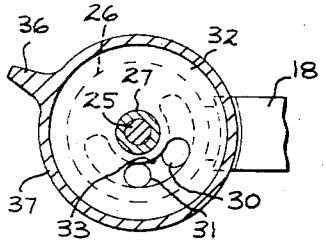


FIG. 4

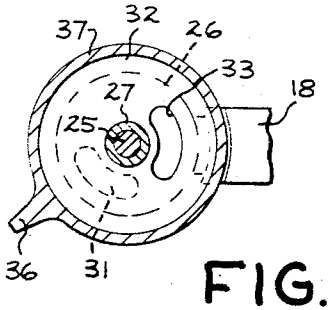


FIG. 5

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Filed May 26, 1966 Sheet 2 of 2

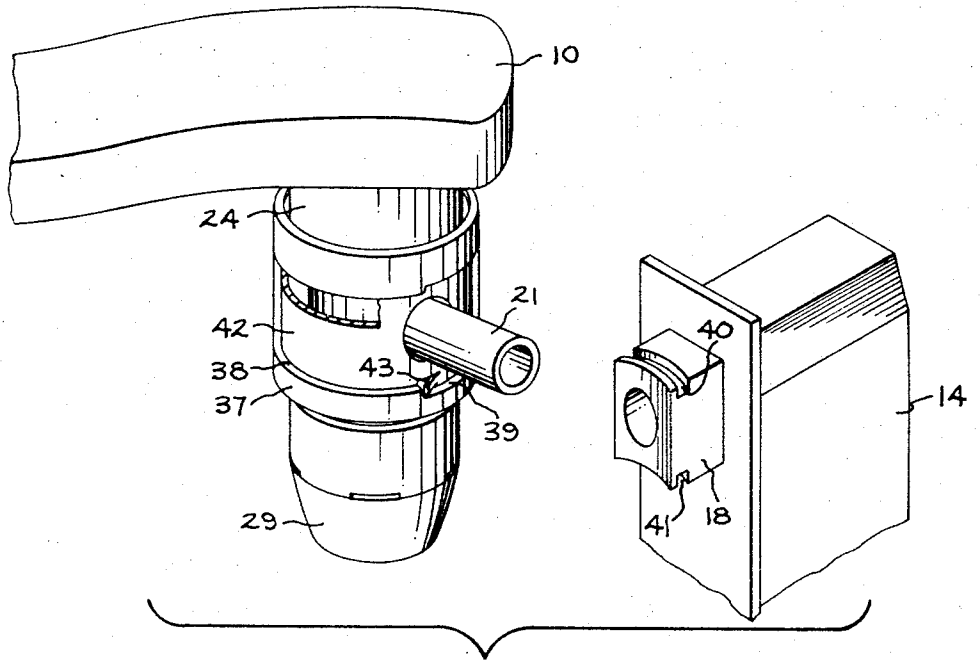
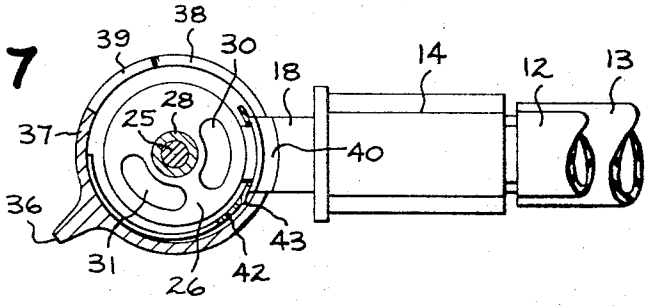


FIG. 6

FIG. 7



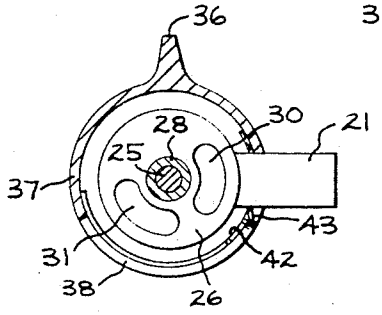


FIG. 8

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3,444,890

MEANS TO CONNECT AN AUTOMATIC WASHING MACHINE TO A WATER FAUCET

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Int. Cl. E03b 7/07; F16k 13/00; F16l 29/00
U.S. Cl. 137—562 7 Claims

ABSTRACT OF THE DISCLOSURE

Improved coupling means for connecting an automatic washing machine to a faucet. The improved means comprises a body portion adapted to be secured to the faucet. At least one passageway extends through the body portion and is adapted to receive liquid from the faucet. The passageway extends to a coupling spout on the body portion that is adapted to be coupled to a washing machine liquid inlet hose. A valve element is provided that is movable relative to the body portion and has an opening that is adapted to be selectively moved into and out of registry with the passageway. Latching means is provided on the movable valve element that is movable with the element to latch the hose against dislodgment from the body portion when the element is in registry with the passageway.

This invention relates generally to a coupling means and, more particularly, to a means to removably connect an automatic washing machine to a water faucet.

Many devices are commercially available for use in connecting a washing machine to a source of liquid. These devices range from a threaded hose coupling to a more elaborate combined water source connector and effluent discharge outlet. The latter, a water source connector having an effluent discharge outlet combined therewith, is the type most commonly used with portable automatic dishwashing machines. This type is particularly useful with a portable diswasher since dishwashers are commonly used in the kitchen at which location the source of liquid (faucet) is almost invariably associated with an effluent discharge receptacle (sink drain). It has therefore become quite common to combine the connector for a portable dishwasher with the effluent discharge outlet so that, with manipulation of a single device, the housewife may set up both the water connection and the effluent discharge connection.

The combination connector and effluent discharge, though obviously advantageous in many respects, presents some disadvantages. For example, the housewife may desire to draw water from the kitchen faucet while the connector is attached thereto. An entire wash cycle of an automatic dishwasher includes several separate admissions of water so that the connector must remain connected to the faucet throughout substantially all of the wash cycle, with the exception of the terminal portion of the cycle at which time the dishes are being dried and no water is required. It is a nuisance to the housewife to be unable to draw water from the kitchen faucet during this time that the dishwasher is connected and, since most present day faucets emit both hot and cold water from the same outlet, the housewife is unable to draw either hot or cold water. Solutions have been suggested to this problem but in most cases, the suggested solutions have created new problems in that the devices proposed have been either difficult to operate or expensive to manufacture.

Another problem frequently encountered with a dishwasher connecting means is that created by the inlet valve to the dishwasher being positioned downstream from the

connection at the water faucet. When the dishwasher has completed operation, the water present at the connection to the faucet is under pressure, and when the connector is uncoupled, liquid is frequently forcedly ejected from either the hose or the faucet creating an obviously unhappy situation.

Also, with many of the connecting devices presently available, it is possible to disconnect the connector from the faucet without previously turning off the faucet so that, as the disconnection is affected, water under pressure may be sprayed from the faucet in a direction wherein it is not readily received by the sink.

Accordingly, it would be desirable to provide means to connect an automatic washing machine to a water faucet which is easy and simple to use, inexpensive to manufacture, allows the housewife to draw water from the faucet while the washing machine is connected thereto, relieves any residual pressure at the coupling before the washing machine is disconnected therefrom, and compensates for the inadvertent failure to turn off the faucet prior to disconnecting the washing machine.

It is therefore a primary object of this invention to provide an improved means to connect an automatic washing machine to a water faucet.

It is also an object of this invention to provide an improved connector means for an automatic washing machine which is simple to operate but yet inexpensive to manufacture.

It is a further object of this invention to provide an improved connector means for an automatic washing machine which bleeds off any residual pressure at the coupling before the washing machine may be disconnected.

It is another object of this invention to provide an improved connector means for an automatic washing machine which compensates for the inadvertent failure to turn off the water faucet prior to disconnecting the washing machine.

It is yet another object of this invention to provide an improved connector means for an automatic washing machine which will allow the operator of the washing machine to draw water from the faucet while the washing machine is connected thereto.

Briefly stated, in accordance with one aspect of the present invention, I provide a coupling to connect an automatic washing machine to a water faucet comprising a body portion with means to secure the body portion to the faucet. Two passageways are provided through the body portion and are adapted to receive liquid from the faucet. A coupling spout extends from the body portion and is adapted to engage in liquid-tight relationship with a fitting on a washing machine inlet hose. One of the passageways extends through the coupling spout to transmit liquid through the fitting and the hose. The other passageway extends through the body portion and is directed to eject water directly from the body portion into a sink or other receptacle disposed therebelow. A movable valve element is provided to selectively open communication between either of the passageways and the faucet. A latching means is provided and is movable with the valve element to latch the fitting against dislodgment from the spout when the valve element opens that passageway extending through the coupling spout.

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention, it is believed the invention will be better understood from the following description taken in connection with the accompanying drawings, in which:

FIGURE 1 is an elevational view, partially cut away

to show details, of the coupling of the present invention;

FIGURE 2 is a sectional view taken along line 2—2 of FIGURE 1;

FIGURE 3 is a sectional view taken along line 3—3 of FIGURE 1;

FIGURE 4 is a view similar to FIGURE 3 but showing the valve element in an operative position different from that of FIGURE 3;

FIGURE 5 is a view similar to FIGURE 3 but showing the valve element in yet another operative position;

FIGURE 6 is an exploded perspective view of the coupling of the present invention;

FIGURE 7 is a sectional view taken along line 7—7 of FIGURE 1 but showing the latching means in the position of FIGURE 5; and

FIGURE 8 is a sectional view taken along line 7—7 of FIGURE 1, showing the latching means in the position of FIGURES 2 and 3.

Referring now to the drawings, and particularly to FIGURE 1 thereof, thereto, there is illustrated a substantially conventional water faucet **10** disposed above a sink **11**, it being understood that controls (not shown) are provided to control the admission of hot and cold water to the faucet **10**. It should also be understood that sink **11** is provided with a drain (not shown) which leads to a conventional household sewer system. A water inlet hose **12** extends from an automatic washing machine (not shown) and is adapted to convey water from faucet **10** to the washing machine. The washing machine is provided with an inlet water valve to control admission of water to the washing machine in predetermined relationship with the sequential operation of the washing machine. An effluent discharge hose **13** similarly extends from the automatic washing machine and is connected to the washing machine to receive the vitiated wash fluid and conduct it from the machine to a receptacle such as sink **11**. Hoses **12** and **13** are secured to a member **14** which may be molded of plastic and which has formed therein a passageway **15** to direct the effluent fluid from hose **13** downwardly into sink **11**. Similarly, member **14** defines passageway **16** which is in alignment with hose **12**. At one side of member **14**, a short cylindrical tube **17** is embedded therein and projects outwardly therefrom to conduct to hose **12**. At the other side of the member **14**, a fitting **18** is similarly embedded in member **14** and is provided with an annular recess **19** adapted to receive a seal **20**. Fitting **18** is adapted to engage a coupling spout **21** in liquid-tight relationship in a manner to be described in greater detail hereinafter.

Faucet **10**, as is conventional, has a screw thread **22** which normally receives an aerator to minimize splashing of water as it discharges from the faucet. Although screw thread **22** is shown as an external thread, it is to be understood that some faucets are provided with an internal thread to be used with an aerator having an external thread. Of course, the present invention may be adapted for use with either type of thread. In accordance with the present invention, a coupling, shown generally at **23**, is secured to faucet **10** by means of a cylindrical threaded element **24**. A bolt **25** is received in a central threaded opening in element **24** and serves to clamp a body portion or member **26** into rigid engagement with element **24**. The central threaded opening in element **24** is disposed in a depending boss **27** which has a cylindrical outer surface. The central portion **28** of member **26** is brought into rigid engagement with the lower end of boss **27** by the bolt **25**. Thus, member **26** and element **24** remain relatively stationary with respect to faucet **10**.

The lower end of member **26** may be provided with external screw threads (not shown) substantially identical to screw threads **22** so that an aerator **29** may be secured thereto. Member **26** has passageways **30** and **31** extending therethrough with passageway **31** opening out the bottom of member **26** and into the aerator **29**. Passageway **30** extends through member **26** and out through coupling spout **21** to be in substantial alignment with passageway **16** of member **14** when fitting **18** is coupled to spout **21**.

Disposed above member **26** is a movable valve element **32** which has a central opening therethrough to receive boss **27**. Valve element **32** is rotatable about boss **27**. Valve element **32** has an elongated opening **33** therethrough which can be brought into registry with either of passageways **30** or **31** by movement of valve element **32**. FIGURE 3 shows valve element **32** positioned such that opening **33** is in registry with passageway **31** and FIGURE 5 illustrates valve element **32** in a position wherein opening **33** is in registry with passageway **30**.

Cylindrical threaded element **24** has a plurality of openings **34** therethrough which allow water to flow from faucet **10** down through opening **33** and then into either passageway **30** or **31** depending upon the relationship of opening **33** with the passageways. An annular seal **35** is provided between element **24** and valve element **32** to prevent water from leaking out through the area between these parts. A handle **36** may be provided to facilitate manual movement of the valve element **32**.

At this point, it should be obvious that the present invention provides selective passage of water from faucet **10** through either of passageways **30** or **31** depending upon the position of valve element **32** and opening **33**. When opening **33** is in registry with passageway **31**, water will pass directly from faucet **10** through aerator **29** and into sink **11** or any other receptacle disposed below aerator **29**. When opening **33** is in registry with passageway **30**, the water will be directed from faucet **10** into hose **12** for admission to the washing machine.

Referring now to FIGURES 6, 7 and 8, it can be seen that valve element **32** has a generally cylindrical latching means **37** rigidly secured thereto for movement therewith. Latching means **37** includes a circumferential slot **38** with an enlarged portion **39** at one end thereof. The enlarged portion **39** is sufficiently large to receive fitting **18** whereas the remainder of slot **38** is too small to accept fitting **18**. Fitting **18** has a pair of slots **40** and **41** which are spaced from each other a distance less than the width of the slot **38** so that, once fitting **18** is slipped over coupling spout **21**, latching means **37** may be moved relative to fitting **18** and member **26** with the upper and lower portions of latching means **37**, which define the narrow portion of slot **38**, being received by slots **40** and **41**. Once this has been done, fitting **18** cannot be removed from spot **21** until latching means **37** is again moved to an extent wherein enlarged portion **39** is in registry with fitting **18**. Because latching means **37** and valve element **32** move together, and further because of the relationship between enlarged portion **39** of slot **38** in latching means **37** and opening **33** in valve element **32**, fitting **18** cannot be removed from spot **21** until passageway **30** has been closed by valve element **32**.

The foregoing arrangement, although compensating for inadvertent failure to turn off faucet **10** prior to removing fitting **18** from spout **21**, would not in itself prevent inadvertent discharge of water through spout **21** when fitting **18** is not coupled thereto. In order to avoid this possibility, the present invention provides means to prevent opening of passageway **30** until such time as fitting **18** is coupled to spout **21**. This is accomplished by means of a spring-biased stop **42** which has a small tab **43** projecting outwardly therefrom to engage and prevent rotation of latching means **37** when in its extended position as illustrated in FIGURES 6 and 8. When fitting **18** is coupled to spout **21**, fiitting **18** engages tab **43**, and, as slots **40** and **41** are brought into alignment with latching means **36**, stop **42** is forced inwardly to the position illustrated in FIGURE 7 which retracts tab **43**

from its interfering position with latching means **37**. Thus, when fitting **18** is properly coupled to spout **21**, latching means **37**, and valve element **32**, are free to rotate so that opening **33** may be brought into registry passageway **30**.

Thus it can be seen that the present invention provides means to prevent inadvertent removal of the washing machine inlet hose from the coupling when faucet **10** is opened. Moreover, the present invention does allow removal of the hose from the coupling when faucet **10** is inadvertently left open without escape of water through spout **21** by automatically requiring closing of passageway **30** before fitting **18** can be removed from spout **21**. Additionally, the present invention prevents the opening of passageway **30**, which could result in the escape of liquid through spout **21** if faucet **10** were opened, until such time as fitting **18** is properly couple to spout **21**.

As mentioned earlier, another problem which is frequently attendant with a device to connect an automatic washing machine to a faucet is that of residual pressure after the faucet has been turned off. In other words, there is usually provided a water inlet valve on the automatic washing machine which selectively admits water to the washing machine at predetermined times throughout the dishwasher cycle. When the faucet is open, as is the case when the washing machine is connected thereto, and the water inlet valve on the washing machine closes at the last admission of water to the washing machine, there is in existence a pressure at the coupling between the washing machine hose and the faucet. Closing of the faucet does not dissipate this pressure but simply traps it between the faucet and the washing machine inlet valve. Thus, under these circumstances, there is frequently a violent momentary escape of liquid when the washing machine hose is uncoupled from the faucet. The present invention automatically compensates for this by spacing passageways **30** and **31** from each other a distance less than the length of opening **33** so that, when valve element **32** is closed preparatory to disconnection of fitting **28** from spout **21** passageway **30** is vented to the atmosphere through passageway **31** as valve element **32** passes through the position illustrated in FIGURE 4 which is intermediate the position wherein fitting **18** is latched onto spout **21** and the position wherein fitting **18** is unlatched and may be removed from spout **21**. This brief venting of passageway **30** to the atmosphere through passageway **31** dissipates any residual pressure within passageway **30** so that fitting **18** may be removed from spout **21** without escape of liquid through spout **21** during uncoupling.

Thus, it can be seen that the present invention provides means to connect an automatic washing machine to a water faucet which is easy and simple to use, inexpensive to manufacture, allows the housewife to draw water from the faucet while the washing machine is connected thereto, relieves any residual pressure at the coupling before the washing machine is disconnected therefrom, and compensates for the inadvertent failure to turn off the faucet prior to disconnecting the washing machine.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A coupling to connect an automatic washing machine to a water faucet comprising:

(a) a general elongated body portion,

(b) means at one end of said body portion to secure the coupling to the faucet,

(c) at least one passageway within said body portion adapted to receive liquid from the faucet,

(d) a coupling spout extending from said body portion and adapted to engage in liquid-tight relationship a fitting on a washing machine inlet hose,

(e) said passageway extending through said coupling spout to transmit the liquid through the fitting and the hose,

(f) a manually-movable valve element to selectively open communication between said passageway and the faucet, and

(g) a latching means movable with said valve element to latch the fitting against dislodgment from said spout as said valve element opens said passageway.

2. The invention of claim **1** further comprising a spring-biased stop having an operative position wherein it prevents movement of said valve element, said stop being adapted for engagement by the fitting and movement by the fitting into an inoperative position wherein it allows movement of said valve element.

3. The invention of claim **1** particularly adapted for use with a faucet disposed above a sink and further comprising a second passageway extending through said body portion and opening into the sink, said valve element having an opening therethrough adapted to be brought into registry with either of said passageways to selectively open and close either passageway.

4. The invention of claim **3** wherein said passageways are spaced from each other and the opening through said valve element is sufficiently elongated to at least partially open both of said passageways simultaneously.

5. A coupling to connect an automatic washing machine to a water faucet disposed above a sink comprising:

(a) a cylindrical threaded element adapted to be threadedly connected to the water faucet,

(b) a member rigidly secured to said threaded elements,

(c) first and second passageways within said member,

(d) an aerator secured to said member and opening into the sink,

(e) said first passageway communicating directly with said aerator,

(f) a generally cylindrical spout extending laterally from said member and adapted to receive a fitting on a washing machine inlet hose in water-tight relationship,

(g) said second passageway extending through said spout,

(h) a valve element manually movable relative to said threaded element and said member and having therein an elongated opening adapted to be brought into registry with either of said first and second passageways,

(i) a latching means rigidly secured to said valve element for movement therewith into a latching position to secure the fitting against dislodgment from said spout when said elongated opening moves into registry with said second passageway, and

(j) a spring-biased stop having an extended operative position wherein it prevents movement of said valve element,

(k) said stop being adapted for engagement by the fitting and movement by the fitting into a retracted inoperative position wherein it allows movement of said valve element.

6. A coupling to connect an automatic washing machine to a water faucet disposed above a sink comprising:

(a) a body portion adapted to be secured to the faucet,

(b) first and second passageways through said body portion,

(c) said first passageway opening into the sink,

(d) means associated with said body portion adapted to couple with a washing machine inlet hose in liquid-tight relationship therewith,

(e) said second passageway communicating with the inlet hose when the inlet hose is coupled to said means,

(f) a valve element movable relative to said body

portion and having an opening therein adapted to be brought into registry with either of said first and second passageways, and

(g) latching means movable with said valve element into a latching position wherein the washing machine inlet hose is secured against dislodgment when said valve element is in registry with said second passageway.

7. A coupling to connect an automatic washing machine to a water faucet disposed above a sink comprising:

(a) a body portion adapted to be secured to the faucet,

(b) first and second passageways through said body portion,

(c) said first passageway opening into the sink,

(d) means associated with said body portion adapted to couple with a washing machine inlet hose in liquid-tight relationship therewith,

(e) said second passageway communicating with the inlet hose when the inlet hose is coupled to said means,

(f) a valve element movable relative to said body

portion and having an opening therein adapted to be brought into registry with either of said first and second passageways, and

(g) a stop movable between at least two positions and adapted to be engaged by the inlet hose and moved from one of said positions to the other as the inlet hose is coupled to said means, said stop preventing movement of said valve member toward the position wherein said opening is in registry with said second passageway when said stop is in said one of said positions.

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U.S. Cl. X.R.

137—625.46; 251—149.9