United States Patent

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[73] Assignee General Electric Company

[54] **FAUCET-COUPLING ASSEMBLY FOR A WASHING MACHINE**
10 Claims, 3 Drawing Figs.

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[51] Int. Cl. F16k 45/00
[50] Field of Search 137/562, 583; 251/148, 145, 149.9, 339, 303, 156; 222/509, 475, 471, 470, 469; 141/360, 335, 351, 353, 355, 357

[56] References Cited
UNITED STATES PATENTS

3,190,311	6/1965	Boyce et al.	137/562 X
3,124,157	3/1964	Krzewina	137/583
3,306,319	2/1967	Kendt et al.	137/562

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ABSTRACT: A coupling assembly for connecting a washing machine to a water faucet having a handle member protruding from its body portion that serves as a spout for draining water from the assembly. The handle member is manually slidable to unseat a valve to thereby dispense the water therethrough. The handle member is linked to a quick-release connector that fastens the assembly to the faucet so that manipulation of the connector to release it is translated to the valve. Water pressure within the assembly is relieved as the release operation takes place.

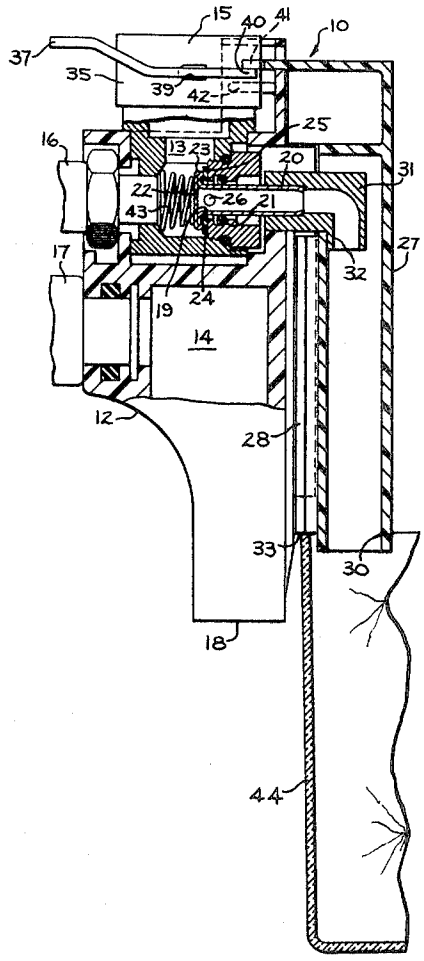
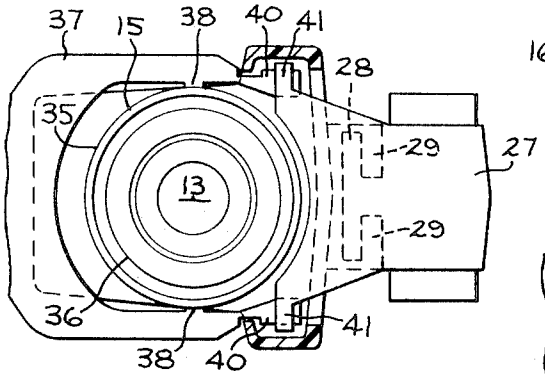


FIG. 2



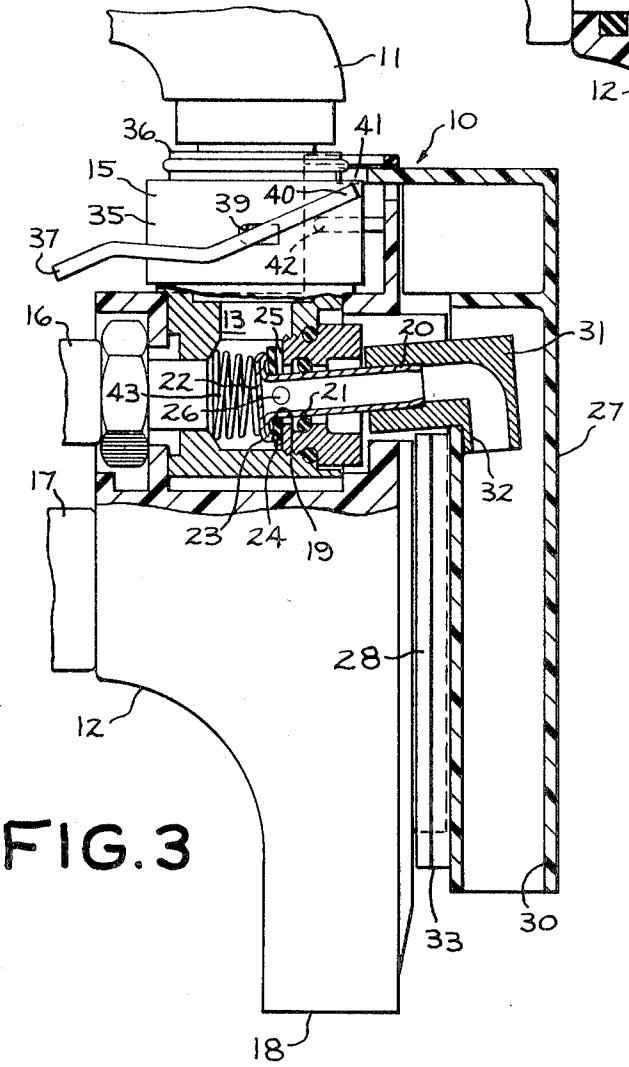


FIG. 3

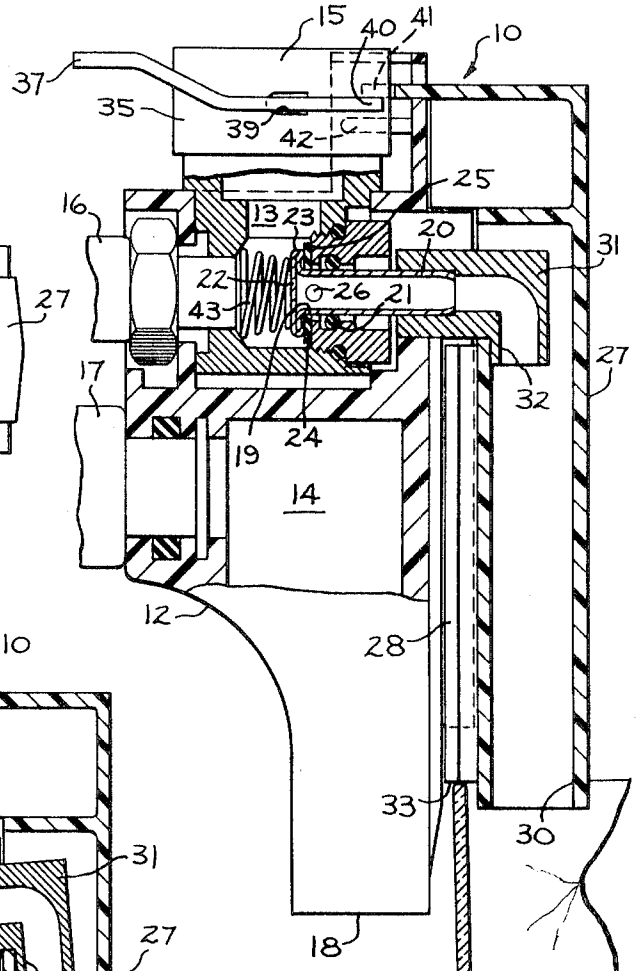
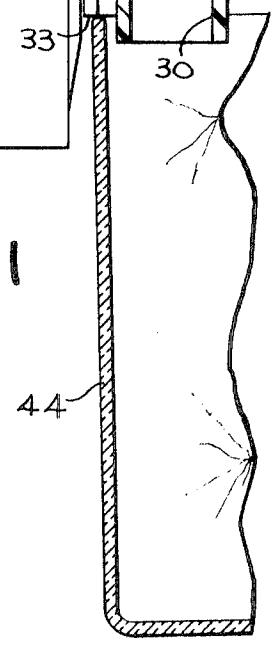


FIG. 1



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FAUCET-COUPLING ASSEMBLY FOR A WASHING MACHINE

BACKGROUND OF THE INVENTION

A great number of different devices have been introduced for temporarily connecting a washing machine hose to a water source. In recent years the art has advanced from the relatively simple garden hose type of screw-on coupling to a larger more sophisticated form having a quick-acting snap-on mechanism for joining it to the faucet and means in combination therewith for receiving effluent from a drain hose and discharging to a sink drain. Some of the more elaborate devices include a water-takeoff means whereby the housewife may selectively draw water from the assembly without disconnecting the assembly from the faucet. For this to be done a normally closed valve means is provided in the housing of the assembly in combination with a manually operable actuation means for unseating the valve and thereby directing a flow of water outwardly from the assembly through an auxiliary outlet.

The features heretofore described are particularly important when such an assembly is used to connect a portable dishwasher to a kitchen faucet. The housewife is able to complete the water inlet hose connection and the effluent discharge hose connection in a single operation. During the time that the dishwashing machine is operating the housewife is able to draw water from the kitchen faucet through the assembly while the assembly remains connected to the faucet. Further, the housewife can use the water-takeoff means to relieve the internal liquid pressure within the coupling assembly prior to its removal from the faucet and thereby prevent squirting of water from the inlet end of the coupling assembly when it is removed.

A coupling assembly embodying the desirable features heretofore generally described is disclosed in U.S. Pat. No. 3,306,319 issued to Norman L. Kendt and Don E. Payton on Feb. 28, 1967, entitled "Water Takeoff For Washing Machine Connector," and assigned to General Electric Company, the assignee of the present invention. The present invention is an improved construction for a coupling assembly of the type disclosed therein that obviates certain disadvantages present in prior assemblies. For example, in the type of coupling assembly having a water-takeoff means utilizing a manually operable push valve to draw water from the assembly, it is a two-handed operation to fill a drinking glass since it is necessary to support the glass with one hand while manipulating the push valve with the other. Also, the housewife is required to remember to actuate the push valve each time she disconnects the coupling assembly from the faucet in order to relieve the water pressure within the assembly. In actual practice, the housewife often forgets to actuate the push valve before performing the uncoupling operation and thereby may splash water as she disconnects the assembly.

Accordingly, it is an object of this invention to provide an improved means to connect an automatic washing machine to a water source such as a kitchen faucet.

It is also an object of this invention to provide an improved coupling assembly for an automatic washing machine which will allow one to withdraw liquid from the coupling assembly in a comparatively simple one-hand operation.

It is a further object of this invention to provide an improved coupling assembly incorporating automatic means to safely relieve the pressure of water within the assembly when it is disconnected from the water source.

SUMMARY OF THE INVENTION

This invention relates generally to a coupling assembly that permits quick connection and disconnection of a washing machine to a water source such as a kitchen faucet. More specifically, the invention is an improved construction for a coupling assembly unit incorporating such features therewith as a new and improved water-takeoff means that is mechanically linked to a releasable connector mechanism of the unit whereby manipulation of the mechanism to remove the unit from the faucet automatically unseats a valve to thereby simultaneously bleed off water pressure in the unit.

The improved coupling assembly of this invention includes a body portion defining a water passageway having an inlet end with means to couple it to a water faucet spout, and an outlet end coupled to a water delivery hose leading to a washing machine such as a dishwasher. A water-takeoff outlet is provided intermediate the length of the water passageway and has valve means therewith for maintaining the water-takeoff outlet in a normally closed position during operational use of the coupling assembly.

The water-takeoff outlet is provided with an annular valve seal thereabout that cooperates with a movable valve member in opening and closing the water-takeoff outlet. The valve member is preferably formed with an elongated tubular body portion having a closed end with an annular flange extending radially therefrom that normally is pressed toward the valve seat. The valve member is adapted to be pivoted laterally to tilt the radial flange and permit water to flow past the valve seat. A plurality of circumferentially spaced-apart openings are provided on the tubular portion of the valve member adjacent the flange so that when the valve member is tilted, water carried within the passageway will enter through the openings into the tubular body of the valve member and flow outwardly through its open end. The open end of the valve member extends outwardly toward a substantially large handle member that is slidably mounted on the assembly's body portion whereby the pivotal movement may be imparted to the valve member by manually sliding the handle member from a first to a second position relative to the body portion of the assembly.

A central bore through the handle member communicates with the open end of the tubular valve member. The opposite open end of the central bore through the handle member is oriented downwardly away from the faucet to which the assembly is connected and serves as a discharge port or spout to deliver water toward a sink therebelow when the handle member is manually actuated by sliding it relative to the body portion. The slidably mounted handle member has one end thereof disposed adjacent the releasable connector and is adapted to be contacted by an end of a depressable releasing lever carried on the connector. Thus, manipulation of the releasing lever to release the connector of the assembly from the faucet serves also to slide the handle member relative to the body portion and thereby tilt the tubular valve member and bleed water from the assembly when it is disconnected from the faucet.

The body portion of the assembly also has a lower end drain passageway therethrough. The inlet end of the drain passageway is connected to a drain hose from the washing machine, and the outlet end of the drain passageway is oriented to direct effluent discharge received from the machine downwardly toward the drain opening in the sink therebeneath.

BRIEF DESCRIPTION OF THE DRAWING

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 by reference to the accompanying drawing in which:

FIG. 1 is an elevational view, partially cut away to show details, of the improved coupling assembly of the present invention;

FIG. 2 is a plan view taken as though looking downwardly on the assembly shown in FIG. 1; and

FIG. 3 is a side elevational view similar to FIG. 1 but showing certain components of the coupling assembly repositioned in accordance with the connection or disconnection operation.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. 1 and 3 of the drawing there is illustrated a coupling assembly **10** for connecting a washing machine to the outlet end of a faucet **11**. The coupling assembly **10** includes a body portion **12** defining a water passageway **13** through its upper end and an effluent discharge passageway **14** through its lower end. The body portion **12** is provided with releasable connecting means **15** for coupling it to the faucet **11** whereby the inlet end of the water passageway **13** is in liquid flow communication with the faucet. The outlet end of the water passageway **13** has a hose **16** coupled thereto whereby water is transmitted therethrough from the passageway **13** to the washing machine.

At the lower end of the body portion **12** the end of the washing machine drain hose **17** is coupled to the body portion **12** at the inlet end of the discharge passageway **14** whereby effluent received from the washing machine through the hose **17** will be conducted through the passageway **14** and then out through the discharge outlet **18** toward a sink drain that would normally be disposed below the assembly.

A water-takeoff opening or secondary outlet **19** is provided at an intermediate point along the water passageway **13**. A tubular valve member **20** extends through the opening **19** and is provided with a ringlike resilient sealing member **21** intermediate its length for sealably supporting it in the installed position shown. The tubular valve member **20** has a head portion comprising a closed end **22** with a radially outwardly projecting annular flange **23** thereon, and an elongated hollow stem. An annular resilient gasket **24** is fitted about the tubular body of the valve member **20** contiguous to the flange **23**. A portion of the inside surface of the body portion **12** immediately circumjacent the water-takeoff opening **19** is a valve seat **25**, and the gasket **24** abutting the flange **23** seals against the valve seat **25** and between it and the flange **23** to normally prevent water in the passageway **13** from escaping past or through the valve member **20** and through the water-takeoff outlet **19**. The valve member **20** is adapted to be tilted on a transverse axis relative to the water-takeoff opening **19** (see FIG. 3) whereby water from passageway **13** may drain outwardly through the tubular valve member **20** by means of a plurality of openings **26** provided in a circumferentially spaced-apart disposition through the sidewall of the tubular valve member **20** adjacent the gasket **24**. The openings **26** are closed off from communication with the passageway **13** when the valve member **20** is seated. The open end of the tubular valve member **20** extends toward a relatively large handle member **27** that is slidably mounted on the body portion **12** of the assembly **10**.

As shown most clearly in FIG. 2 the handle portion **27** has a slide bar **28** integral thereto that extends toward the body portion **12** and is slidably carried between oppositely disposed channel members **29** integral to the body portion **12**. The handle member **27** is substantially hollow having a liquid-dispensing passageway therethrough. The upper end of the handle member **27** is closed, as shown in FIGS. 1 and 3, and an open end or discharge port **30** is provided at the lower end for discharging water withdrawn from the assembly **10**. A blocklike member **31** is force-fitted on the open end of the valve member **20** and extends into the handle member **27**. The blocklike member has a passageway **32** that leads from the open end of the tubular valve member **20** and turns downwardly within the handle member **27**.

Customarily, the inlet and drain hoses on a portable washing machine are retractable into the machine when the machine is stored out of use, and the more recent type of coupling assembly is made to be insertably stored in a receptacle or pocket provided in the cabinet of the machine. Withdrawal of such a coupling assembly from its stored position on the machine's cabinet is usually afforded by providing an extended handle member that is easily grasped by the hand of the operator. The handle member **27** of the coupling assembly **10** of the present invention is formed to serve such a purpose although it also acts as a spout for discharging water selectively withdrawn from the coupling assembly. It should be noted, with reference to FIGS. 1 and 3, that the handle member **27** is slidably mounted to be moved vertically relative to the body portion **12** to thereby tilt the tubular valve member **20** and permit water in the passageway **13** to flow through the hollow body of the valve member and thence outwardly through the handle member **27** to where it is discharged from the port **30** of the handle member. The sliding action may be imparted to the handle member **27** without contacting it with the hand by use of a fillable utensil such as a cup or drinking glass **44** being moved under and then upwardly against the handle portion **27**. The rim of the utensil may be pressed upwardly against the bottom end **33** of slide bar **28** to cause the handle member **27** to slide upwardly relative to the body portion **12** to thereby dispense water from the assembly and into the utensil. For this purpose the bottom end **33** extends downwardly below the end of the channel members **29**.

The releasable connecting means **15** which removably engages the coupling **10** to the faucet **11** comprises an outer collar portion **35** that slides vertically relative to an inner collar portion **36** (FIG. 3). A U-shaped lever **37** is provided to facilitate manually sliding the collarlike portion **35** to the position shown in FIG. 3 when the assembly is connected or disconnected from the faucet. The U-shaped lever **37** has inwardly extending finger portions **38** that fit into oppositely disposed respective grooves **39** provided therefor in the sidewall of the collarlike portion **35**.

Oppositely disposed leg portions **40** of the lever **37** extend beneath projections **41** integral to the upper end of the handle member **27**. Therefore, as the lever **37** is manually pressed downwardly to disconnect the coupling **10** from the faucet **11**, not only is the collarlike portion **35** of the connector **15** caused to move downwardly but the handle member **27** is, by the same levering action, slid upwardly relative to the body portion **12**. Initially, when the handle end of the lever **37** is depressed, which action releases a plurality of small spherical balls (not shown) carried in circumferentially spaced-apart openings through the collarlike member **36**, the projections **41** serve as a fulcrum and the outer collar portion of the releasable connector **15** is moved downwardly by the lever action. At the same time with the downward stroke of the lever **37**, a point on the undersurface of each leg **38** contacts the end of a respective shoulder or ledge portion **42** that projects inwardly integral to the upper end of the body portion **12**. The extreme outer ends of the legs **38** are thereby forced upwardly, and the upward thrust against the projections **41** urges the entire handle member **27** to slide upwardly relative to the body portion **12** and thereby unseat the valve member **20**.

Normally, the valve member is held in the closed position shown in FIG. 1 by means of a water pressure or a biasing means on spring **43**. The force exerted by the fluid pressure, along with the spring **43**, if used, is translated through the valve member **20** by the blocklike member **31** and thence to the handle member **27**, and acts to urge the handle member **27** to maintain its "down" position relative to the body portion **12**. When the handle member **27** is thus utilized as an actuating means and is slid upwardly the tubular valve member **20** is thereby tilted such that the passageway **13** is brought into communication with the atmosphere outside the body of the assembly and the liquid pressure within the passageway **13** is thereby relieved. By linking the slidably mounted handle member **27** to the lever **37**, it is not necessary for the person removing the coupling assembly **10** from its mounted position on the faucet **11** to remember to relieve the internal liquid pressure before doing so. The internal pressure is automatically relieved by the act of depressing the lever **37** to disconnect the coupling assembly **10** from faucet **11**.

It should be apparent to those skilled in the art that what has been heretofore described is, at present, considered to be the preferred embodiment of this invention. In accordance with the patent statutes, changes may be made in the disclosed apparatus without actually departing from the true spirit and scope of the invention.

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

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

a. a body portion defining a liquid passageway therein,

b. said passageway having an inlet end and at least two outlets therefrom,

c. manually releasable means for connecting said inlet end in liquid-receiving relationship to the faucet,

d. one of said outlets serving to transmit liquid from said passageway toward the washing machine,

e. valve means normally closing off a second of said outlets,

f. means for dispensing liquid from said body portion, including a slidable member, having a discharge passageway disposed therein, and being manually slidable on said body portion,

g. said second outlet communicating with said discharge passageway, and

h. said releasable means being adapted to open said valve means to dispense liquid through said discharge passageway.

2. The combination set forth in claim 1 wherein said slidable member comprises a movable handle member mounted on said body portion and said discharge passageway is formed within said handle member.

3. The combination set forth in claim 2 wherein said handle member is slidably mounted for movement between a first and second position on said body portion whereby it may be manually moved to said second position to dispense liquid therefrom.

4. The combination set forth in claim 2, wherein said handle member is formed to facilitate grasping by an operator's hand for manually moving said handle member to dispense liquid therethrough.

5. The combination set forth in claim 1, wherein said valve means includes:

a. a valve seat circumjacent said second outlet, and

b. a valve member having a head portion adjacent said valve seat and substantially elongated stem portion extending through said second outlet.

6. The combination set forth in claim 5 wherein the end of said stem portion opposite said head portion is linked to said actuating means whereby said stem is laterally displaced by movement of said slidable member.

7. The combination set forth in claim 1, wherein:

a. said valve means includes a valve member disposed in said second outlet, and

b. said valve member is adapted to be pivoted generally laterally relative to said second outlet.

8. The combination set forth in claim 1, wherein said valve means includes a valve member having a tubular stem portion extending toward said actuating means whereby manual movement of said actuating means displaces said valve member from its normal position relative to said second outlet.

9. The combination set forth in claim 1, wherein said actuating means includes means thereon to facilitate its engagement and movement solely by means of a fillable utensil being brought in contact therewith to impart movement thereto.

10. The combination set forth in claim 1 wherein said slidable member translates motion of said manually releasable means to said valve means.