

April 13, 1943.

P. SPERRY

2,316,724

OUTLET CONNECTOR WITH STRAINER FOR TANKS

Filed March 9, 1942

2 Sheets-Sheet 1

Fig. 1.

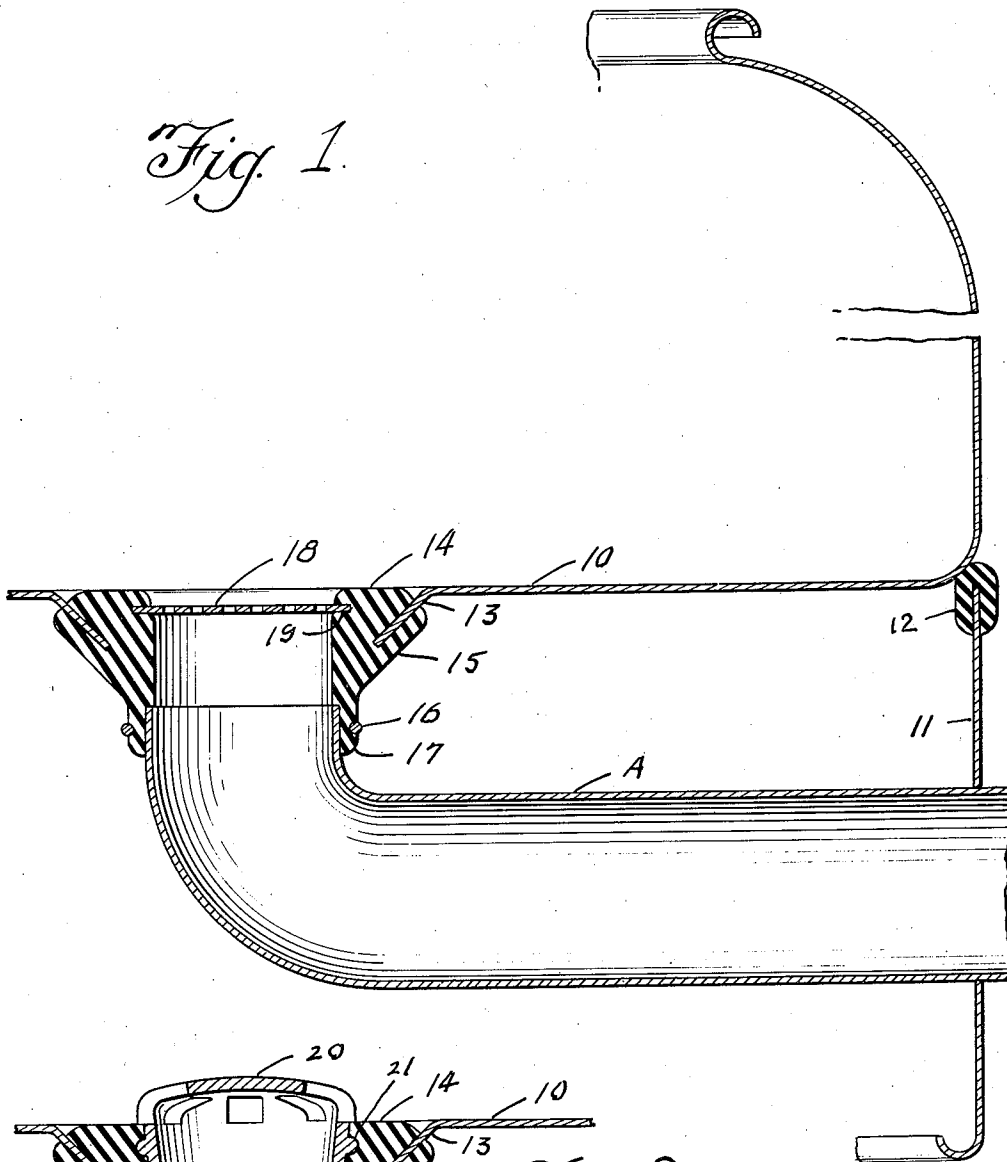
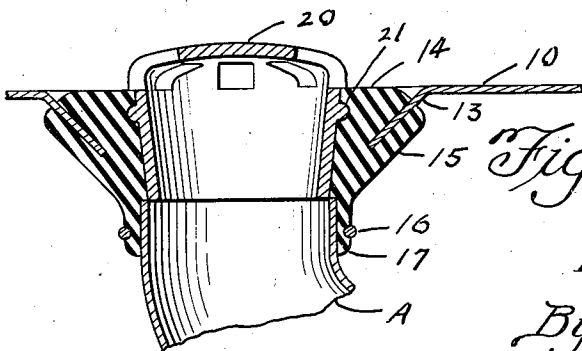


Fig. 2.

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Fig. 3.

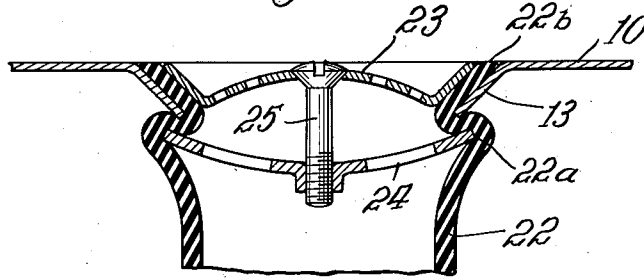


Fig. 4.

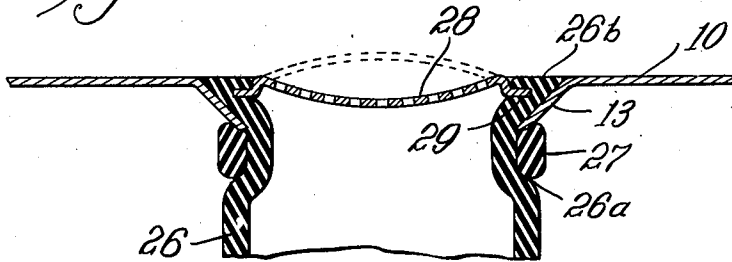
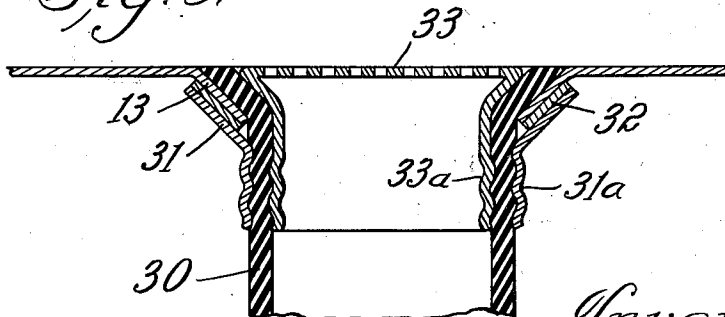


Fig. 5.



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UNITED STATES PATENT OFFICE

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OUTLET CONNECTOR WITH STRAINER FOR TANKS

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Application March 9, 1942, Serial No. 433,862

4 Claims. (Cl. 285—38)

This invention relates to tank connectors, and is a continuation in part of my co-pending application, Serial No. 412,043 filed September 23, 1941.

It will be appreciated that such tanks are usually associated or connected with apparatus in which the liquid in the tanks is used. Further, it will be appreciated that often such tanks are used apart from the apparatus and are supported independently or by means not always in accurate alignment with the associated apparatus.

The comparative recent development in ceramics in which the physical properties of vitreous enamel have been vastly improved has provided tanks of light steel covered with vitreous enamel which has largely replaced tanks of copper, zinc and cast iron of higher costs and lower utility. Such tanks have invaded the plumbing field and have been utilized for such plumbing fixtures as bath tubs, sinks and lavatories. These tanks of light steel covered with thin coatings of vitreous enamel have one serious weakness—that is, their liability to chip when subjected to sharp bending stresses and shocks. This weakness frequently is encountered as a result of the outlet piping connections which, as aforesaid, are not always mounted in accurate relationship with the associated apparatus. The condition is further aggravated by the fact that tanks of light steel when coated with vitreous enamel often are warped or distorted as a result of the necessary high enamelling heat.

To combat the conditions as above outlined, designers and engineers have developed connector structures wherein the connections are made on a tapered wall outlet opening in the tank. The connector contacts have been usually made by soft lead washers associated with zinc die castings. This connection provides considerable structural adaptability and fit in the joint between the comparatively fragile vitreous tank and the connections. However, even with all this ingenuous high cost construction, expensive failures have occurred, that is, the enamel in the tank is cracked at the joint and rust and failure ensue. The present invention utilizes a strainer member in connection with the connector and utilizes the strainer as a lock means, as will later be explained.

The present defense armament program has limited the use of certain strategic materials and among these, zinc is most critical. This has had the effect of seriously handicapping many non-defense industries whose products involve the use of such materials.

It is the principal object of this invention to

provide non-ferrous connector means with a strainer for light vitreous enamel tanks or the like, said connector and strainer providing greater adaptability to non-uniform conditions, and less liable to damage the tank from dangerous stresses imposed by the connector.

Other objects and benefits will be disclosed in the following descriptions and drawings, showing my novel connector with strainer, adapted to a conventional washing machine tub as illustrative of my invention.

Fig. 1 is a broken cross sectional elevational view of a corner of a washing machine tub, showing a drain opening, with my novel rubber connector and strainer installed therein;

Fig. 2 is a broken cross sectional elevational view of another connector with strainer, as will later be explained;

Fig. 3 is a similar broken cross sectional elevational view of another form of connector with strainer;

Fig. 4 is a broken cross sectional elevational view of still another form of connector with strainer; and

Fig. 5 is a broken cross sectional elevational view of a connector with strainer attached by screwing the parts together as will later be explained.

Now referring to the drawings, and at the outset, to Fig. 1, I designate a conventional form of washing machine tub by the numeral 10. This tub is normally about 23 inches in diameter and 50 inches high. The drain openings are usually about six inches inward from the wall of the tub as is well shown in Fig. 1. The common practice is to provide drain openings in the bottom of the tub with a conical wall opening 13. In this conical opening, I insert my rubber connector consisting of an upper section 14 and a lower section 15 with a recess therebetween to accommodate conical walls 13 of the drain opening. In the lower flange 17 of the connector, I provide a recess to accommodate a metal lock ring 16 to firmly attach the connector to a drain tube of any desired form A. Near the inner end of the upper section 14 I provide a recess 19 in which I insert a perforated drain disc 18. This disc may originally be in convex form and expanded into flatwise condition as shown to provide means to lock the flanges of the connector in sealing contact. It will be appreciated that almost any form of drain may be inserted in the opening and such a drain device would have the effect of expanding the upper section 14 of the connector and to hold it in the desired sealing engagement.

Now referring to Fig. 2, the parts 10, 13, 14, 15, 16 and 17 are exactly the same as those described in Fig. 1. However, in Fig. 2, I have provided a plug type strainer 20, having a circumferential bead 21 (this bead may be in the form of a screw thread) which expands the upper section 14 of the connector to hold it in sealing engagement with the flange opening.

Now referring to Fig. 3, I show a connector 22 having an expansible bead 22A adapted to grip the drain wall 13 between this expansible bead 22A and a tapered flange section 22B. This connection is effected by an inner perforate circular lock member 24 and an upper flanged strainer member 23 drawn together by a cap screw 25 as shown. By this structure, it will be appreciated that the connector 22 is firmly gripped in sealing engagement with the flange opening 13.

Now referring to Fig. 4, I show another form of rubber connector 26 having a shoulder flange 26A and a tapered flange 26B which are held together by a heavy rubber lock ring 27 with the flange 26B being expanded outwardly in sealing engagement by a disc strainer member 28 inserted in an inner recess 29. This strainer member may originally be in convex form as shown in dotted outline and then forced into concave sealing position as shown.

Now referring to Fig. 5, I show a flanged rubber connector member 30 being held in the flanged opening 13 by screwing a strainer member 33 having threads 33A into a female threaded member 31 having mating threads 31A. By screwing these members 31 and 33 together, the rubber connector 30 will be tightly gripped between the tapered walls of the drain opening 13 by the members 31 and 33. A gasket 32 is inserted between the flange of the member 31 and the outer wall of the drain opening 13.

It will be appreciated by the foregoing that many forms of drains may be adapted to hold

a rubber connector in sealing engagement with the drain openings of tanks. However, I do not wish to be limited to any specific structure except as such limitations are imposed by the following claims.

I now claim as new:

1. In a connector attachment for tank outlets, a soft flexible tubular member adapted to abut the tank outlet flange, a strainer member adapted to cover the tank outlet, and to co-act with the tubular member to lock the tubular member in sealing attachment to the outlet flange.

2. In a connector attachment for tank outlets, a soft flexible tubular member adapted to be inserted in the tank outlet in abutting engagement with the tank outlet flange, a strainer member adapted to engage the top of the tubular member and cover the outlet opening therein, and to co-act with the tubular member to lock the tubular member in sealing attachment to the outlet flange.

3. In a connector for attachment with the outlets of tanks, a soft flexible tubular member adapted to be inserted within the outlet, flange means on the tubular member adapted to be engaged in gripping sealed contact with the tank outlet, an inner recess in the flange means, and a strainer member adapted to be inserted within the inner recess and to lock the flange in sealing attachment with the tank outlet.

4. In a connector attachment for tank outlets, a soft flexible tubular member adapted to be inserted in the tank outlet in abutting engagement with the outlet flange, a strainer member adapted to engage the top of the tubular member and cover the outlet opening therein, and ring means encircling the tubular member below the tank outlet adapted to urge the strainer member into engagement with the tubular member and to seal the tank outlet.

PIERCE SPERRY.