

Jan. 22, 1952

K. R. MARCUSSEN
COMPOSITE DRAIN FITTING

2,583,300

Filed Feb. 13, 1948

2 SHEETS—SHEET 1

Fig. 1.

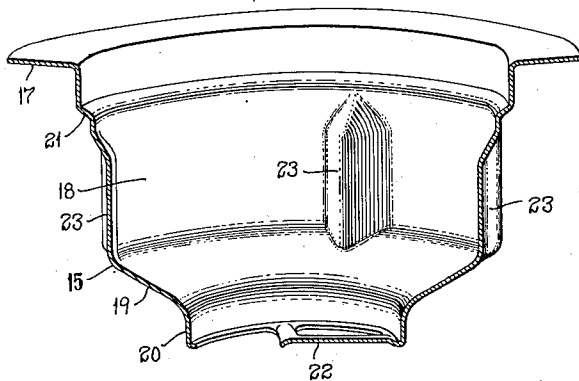


Fig. 2.

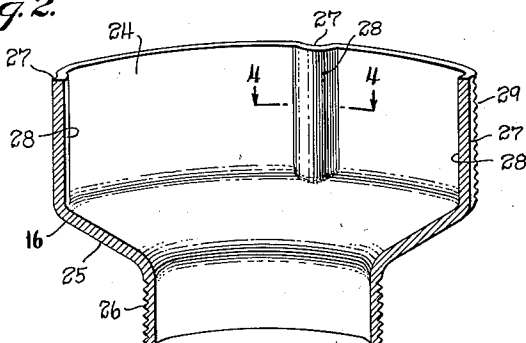


Fig. 4.

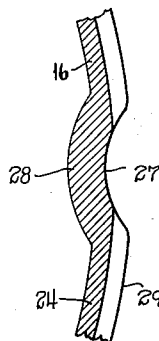


Fig. 3.

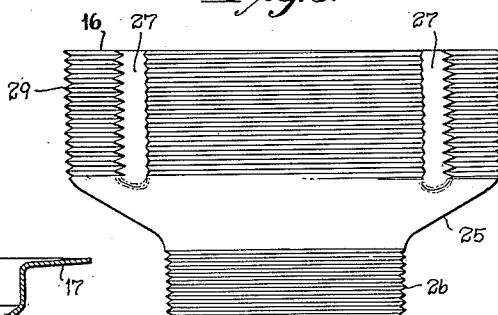
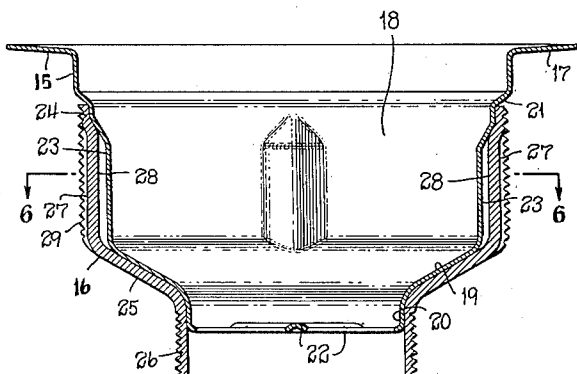


Fig. 5.



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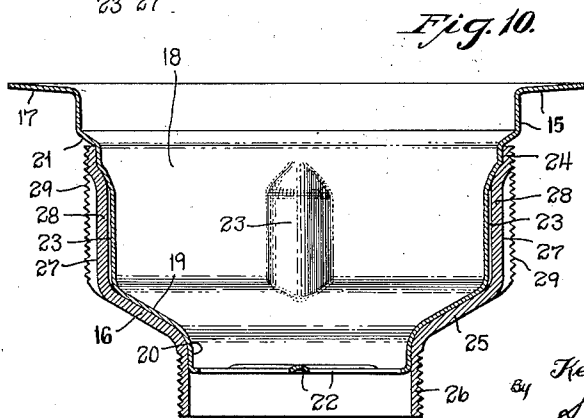
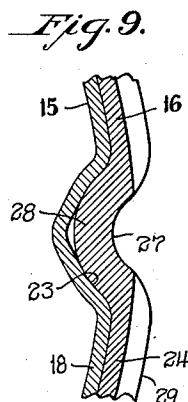
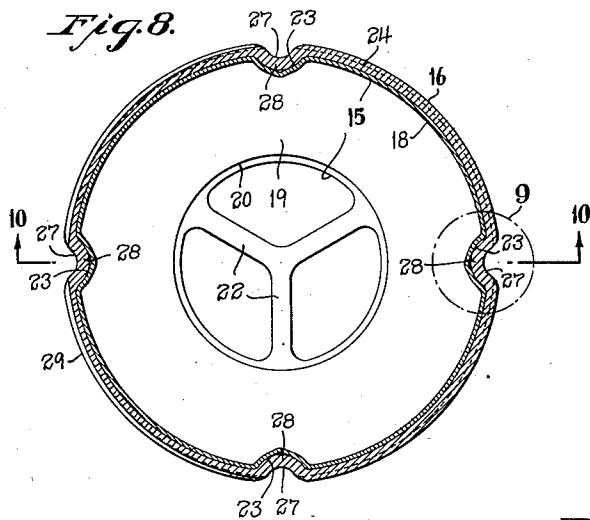
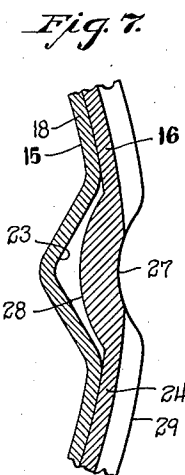
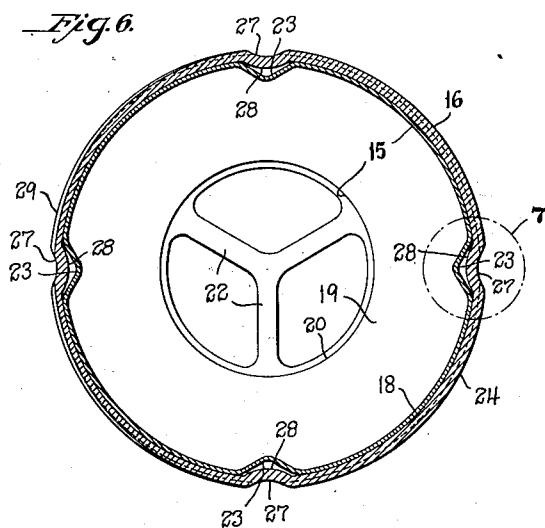
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2 SHEETS—SHEET 2



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2,583,300

COMPOSITE DRAIN FITTING

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3 Claims. (Cl. 285—37)

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The present invention relates to improvements in drain-fittings for sinks and the like and relates more particularly to composite drain-fittings, as will be apparent from the following, considered in conjunction with the accompanying drawings.

One of the main objects of the present invention is to provide a superior composite drain-fitting, comprising two substantially cup-shaped shells or members interfitting and permanently secured together in a simple, effective and low-cost manner.

Another object of the present invention is to provide a superior drain-fitting of the character referred to, comprising two substantially cup-shaped shells or members interfitted and permanently secured together in such manner as to effectively resist the strains of installation, use, and removal without causing a separation of the two main members referred to.

A further object of the present invention is to provide a superior composite drain-fitting for sinks, comprising the two shells or members above referred to and in which one member is composed of stainless steel and the other member of brass or similar material, and in which the stainless steel part forms a shield for the brass or equivalent part to protect the same against abrasive action incident to cleaning, while the brass or equivalent member is so assembled with the stainless steel member as to effectively reinforce the same and provide convenient means for receiving exterior threads required for the leak-proof assembly of the composite fitting with a sink or the like.

Still another object of the present invention is to provide a superior method of manufacture whereby superior composite drain-fittings may be produced economically.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art.

In the accompanying drawings, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a sectionalized perspective view of an inner shell suitable for use in connection with the present invention and shown prior to its assembly with an outer shell;

Fig. 2 is a similar view of an outer shell suitable for use in connection with the present invention;

Fig. 3 is a view in side elevation of the outer shell;

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Fig. 4 is an enlarged fragmentary sectional view taken on the line 4—4 of Fig. 2;

Fig. 5 is a transverse sectional view of the assembly, comprising the inner shell and the outer shell shown prior to their being anchored together;

Fig. 6 is a transverse sectional view taken on the line 6—6 of Fig. 5;

Fig. 7 is an enlarged scale sectional view of the area indicated by the dotted lines 7 in Fig. 6;

Fig. 8 is a view similar to Fig. 6 but showing the inner shell and the outer shell anchored together by deepening of the clearance-grooves in the outer shell;

Fig. 9 is a fragmentary sectional view of the portion of the structure of Fig. 8 indicated by the broken line 9 of Fig. 8; and

Fig. 10 is a transverse sectional view taken on the line 10—10 of Fig. 8.

The composite drain-fitting chosen for illustration in the accompanying drawings in order to make clear a preferred embodiment of the present invention, includes a substantially cup-shaped inner shell generally designated by the reference character 15 and a complementary substantially cup-shaped outer shell generally designated by the reference character 16. The said inner shell is preferably made of stainless steel, though other materials may be employed, while the said outer shell 16 is preferably formed of brass or other suitable and readily deformable material.

The inner shell 15 above referred to may be readily produced by a drawing operation and includes an annular seating-flange 17 extending outwardly at its upper end, a side or lateral wall 18, an inclined bottom wall 19 and a neck 20.

At a point intermediate the seating-flange 17 and the sloping bottom wall 19, the side wall 18 of the inner shell-member is displaced to provide a substantially-annular shoulder 21 as is shown. Preferably, the lower end of the neck 20 is provided with an integral transverse web 22 which in the instance shown has three slender radial arms so as to provide a maximum degree of clearance for the passage of water between the said arms.

At four (more or less) equidistant points, the side wall 18 of the inner shell-member 15 is displaced inwardly to provide a corresponding number of substantially-vertical coupling-grooves 23 which at their lower ends intersect the sloping bottom wall 19 of the said inner shell.

The outer shell 16 before referred to includes a side or lateral wall 24, a sloping bottom wall 25

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and an externally-threaded neck 26 designed to accommodate within itself the shorter neck 20 of the said inner shell 15.

At four (more or less) equidistant points, the side wall 24 of the outer shell 16 is inwardly displaced to provide in its outer face a corresponding number of substantially-vertical clearance-grooves 27, each of which results in the formation of an inwardly-projecting coupling-rib 28 designed and adapted to respectively fit into the coupling-grooves 23 formed in the inner shell 15 as before described.

The clearance-grooves 27 in the exterior of the side wall 24 of the outer shell 16 intersect at their lower ends the sloping bottom wall 25 and are of an initial depth sufficient to cause their innermost portions to lie well inwardly of the roots of threads 29 formed upon the exterior of the side wall 24 for purposes as will hereinafter appear.

The outer shell 16 may be conveniently drawn up from heavy-gauge brass so as to simultaneously produce the clearance-grooves 27 and coupling-ribs 28. Following the drawing up of the outer shell and the formation of its clearance-grooves 27 and coupling-ribs 28, the side wall 24 is then provided with the exterior threads 29. In cutting the threads 29, the chips resulting therefrom will definitely terminate at each of the clearance-grooves 27, thereby facilitating the rapid and accurate formation of the said threads 29.

The exterior dimension of the side wall 18, bottom wall 19 and neck 20 of the inner shell 15 are such as to permit the said inner shell to be inserted with a light press or force fit into the outer shell 16 so that the parts may readily assume the positions in which they are shown in Figs. 5, 6 and 7 prior to being firmly united, in a manner as will hereinafter appear.

Following the assembly of the inner and outer shells 15 and 16 as above described and as indicated in Figs. 5, 6 and 7, the clearance-grooves 27 in the outer shell 16 are deepened by means of rollers or other suitable tools to thus bring the parts into the condition in which they are shown in Figs. 8, 9 and 10.

The deepening of the clearance-grooves 27 in the outer shell 16 as above described, will, of course, simultaneously extend the coupling-ribs 28 further inwardly and cause the latter to measurably distort the coupling-grooves 23 in the inner shell 15. Furthermore, the action referred to will stretch the entire side wall 24 of the said outer shell into tight engagement with the outer periphery of the side wall 18 of the inner shell 15, to thereby firmly interlock the two said shells not only against relative turning movement but also against relative axial movement.

It will be apparent from the foregoing that by forming the clearance-grooves 27 and hence also the coupling-ribs 28 in the outer shell-member prior to the formation of the threads 29 thereon, the cutting operation is greatly facilitated, owing to the fact that the chips will definitely break off at each of said clearance-grooves.

It will further be apparent that while the inner and outer shells 15 and 16 may be initially assembled with but a moderate pressure, the subsequent deepening of the clearance-grooves 27 in the outer shell 16 serves not only to force the coupling-ribs 28 more tightly into the coupling-grooves 23 in the inner shell, but also firmly engages the inner periphery of the side wall

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24 of the said outer shell with the outer periphery of the side wall 18 of the inner shell 15, in the manner illustrated in Figs. 8, 9 and 10.

Thus, the two complementary shell-members 15 and 16 are so firmly united against both relative rotary movement and axial movement as to virtually constitute a unitary structure.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are, therefore to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A composite drain fitting, comprising inner and outer cup-shaped shells of which said outer shell is of malleable metal and both shells have substantially cylindrical interfitted walls, respectively, said cylindrical wall of the inner shell having an outer longitudinal groove and a portion of said cylindrical wall of the outer shell extending inwardly to form a tongue which is in registry with, but initially at least in part spaced from, said groove, and said cylindrical wall of the outer shell being held uniformly contracted in tight clamping engagement with said cylindrical wall of the inner shell by further permanent inward deformation of said tongue into the groove of the interfitted inner shell.

2. A composite drain fitting, comprising inner and outer cup-shaped shells of malleable metal having substantially cylindrical interfitted walls, respectively, adjacent portions of said interfitted shell walls extending inwardly to form a registering groove and tongue in said inner and outer shells, respectively, of which said tongue is initially at least in part spaced from said groove, and said cylindrical wall of the outer shell being held uniformly contracted in tight clamping engagement with said cylindrical wall of the inner shell by further permanent inward deformation of said tongue into the groove of the interfitted inner shell.

3. A composite drain fitting, comprising inner and outer cup-shaped shells of which the inner shell is of stainless steel and the outer shell is of malleable metal more readily cuttable with a threading tool than stainless steel, said shells having substantially cylindrical interfitted walls, respectively, and adjacent portions of said interfitted shell walls extending inwardly to form a registering groove and tongue in said inner and outer shells, respectively, of which said tongue is initially at least in part spaced from said groove, said cylindrical wall of said outer shell being externally threaded and held uniformly contracted in tight clamping engagement with said cylindrical wall of the inner shell by further permanent inward deformation of said tongue into the groove of the interfitted shell.

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