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COMBINED STRAINER-BASKET AND DRAIN VALVE FOR SINKS

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Fig. 1.

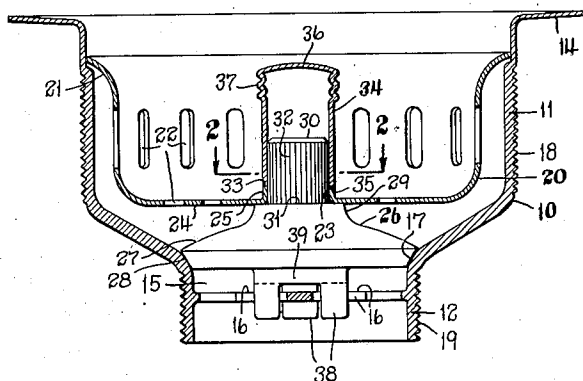


Fig. 2.

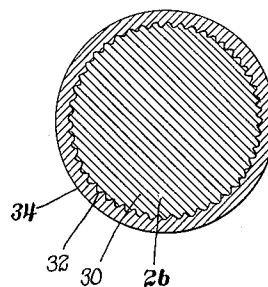


Fig. 6.

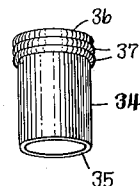


Fig. 3.

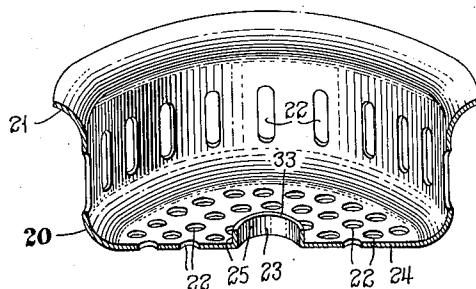


Fig. 4.

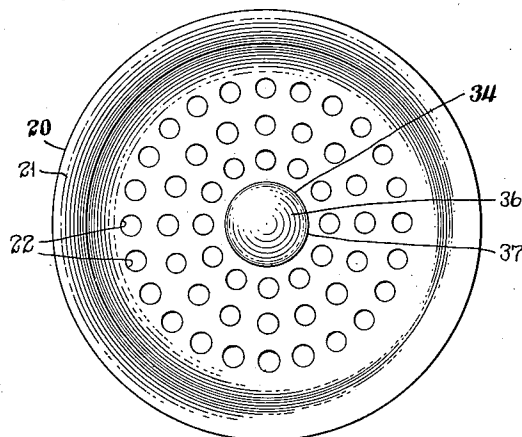
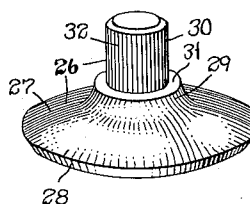


Fig. 5.



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COMBINED STRAINER BASKET AND DRAIN
VALVE FOR SINKSKenneth R. Marcussen, Waterbury, Conn., as-
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1 Claim. (Cl. 4—287)

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The present invention relates in general to waste-pipe fittings and more especially to an improved valve-plug and strainer-basket for the body-fixture of a sink drain.

An object of the invention is to provide a superior valve-plug and strainer-basket assembly which is economical to manufacture.

A further object of the invention is to provide a sanitary valve-plug and strainer assembly wherein the assembly constitutes an integrated unit having no movable elements and, hence, no separable joints or bearings in which foreign matter and refuse may collect.

A still further object of the invention is to provide an improved valve-plug and strainer-basket assembly for insuring optimum drainage characteristics when the valve-plug is open.

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 and which are not claimed in any separate application.

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

Fig. 1 is an elevation partly in section of a waste-pipe fitting, including the body-fixture and the improved valve-plug and strainer-basket assembly of this invention, the valve-plug being shown seated on the valve-seat of the body-fixture;

Fig. 2 is an enlarged plan view taken on section line 2—2 of Fig. 1 of the shank of the valve-plug;

Fig. 3 is a perspective sectional view showing substantially one-half of the strainer-basket, the section being taken on a major diameter of the basket;

Fig. 4 is a plan view of the strainer-basket assembly;

Fig. 5 is a front elevation in perspective of the valve-plug; and

Fig. 6 is a front elevation in perspective of the cap for the shank of the valve-plug.

In carrying out the invention, the improved valve-plug and strainer-basket assembly is shown mounted in a body-fixture 10 which may be of the type which is formed from a single slug by a suitable forging operation as described in detail in Patent No. 2,169,896 to W. J. Gazey dated August 15, 1939, and comprises an upper cup-shaped body-portion 11 of relatively-large diameter and a lower throat-portion 12 of relatively-small diameter. The cup-shaped body-portion

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11 is intended for the purpose of receiving the strainer-basket of the fitting, as will hereinafter appear, the upper end of the body-portion 11 of the body-fixture being formed with a radially-extending annular flange 14 adapted to engage the surface of a sink (not shown) surrounding a drain-opening therein. During the forging of the body-fixture 10, a transverse wall is formed in the throat-portion 12 thereof which is subsequently sheared away or otherwise removed to form a drainage-passage 15 provided with a spider consisting of three supporting-ledges 16. The latter intersect at the center of the drainage-passage 15 and extend radially outwardly therefrom at angles of substantially 120° to each other, the outer ends of the supporting-ledges being integral with the annular wall of the drainage-passage. As shown especially well in Fig. 1, the aforesaid supporting-ledges 16 are formed in the lower throat-portion 12 of the body-fixture below the intersection of its upper end with the lower end of the upper cup-shaped body-portion 11 of the fixture, the point of intersection of the upper and lower portions of the fixture constituting an annular valve-seat 17. Subsequent operations on the body-fixture 10 produce the external threads 18 on the upper body-portion for the reception of a suitable clamping-nut or the like, in the usual manner of waste-pipe fittings; and exterior threads 19 on the throat-portion 12 so as to adapt the latter to be threaded into a drainpipe-coupling or the like.

Referring more especially to Figs. 1, 3 and 4, the improved strainer-basket is indicated generally at 20 and comprises a cup-shaped member preferably formed of stainless steel and having at its upper end an outwardly-projecting annular flange 21, the outer edge of which is adapted to engage freely within the upper end of the body-fixture. The usual drainage perforations 22 are provided in both the bottom and side walls of the strainer-basket. In addition to these perforations, a central aperture 23 is pierced through the bottom 24 of the strainer-basket and the surrounding metal is drifted or otherwise bent upwardly to form an integral annular stabilizing-cuff or -collar 25 (see Fig. 3), projecting upwardly into the basket substantially perpendicularly to the plane of its bottom. By way of illustration only, the vertical height of the annular cuff 25 is substantially one-third the diameter of the central aperture 23 in the bottom of the basket, but it will be understood that the proportions may vary for different sizes of fixtures. The inner cylindrical wall of the annular cuff 25 con-

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stitutes an extended stabilizing-surface for the shank of the valve-plug.

The valve-plug is indicated generally at 26 in Fig. 5 and comprises a substantially-disk-shaped body 27, the periphery of which is formed with an annular beveled face 28 adapted to seat on the valve-seat 17 of the body-fixture to close the drainage-passage 15, as indicated in Fig. 1. The upper surface of the body of the plug is slightly convex and is necked down to form a concentric substantially-cylindrical neck-portion 29 of reduced diameter. Projecting upwardly substantially vertically from the center of the neck-portion 29 of the plug-body is a post or shank 30; the diameter of which is less than the diameter of the neck 29, thereby forming an annular substantially-square shoulder 31 on the top thereof. The outside diameter of the plug-shank 30 is slightly larger than the inside diameter of the stabilizing-cuff 25 of the basket and, consequently, the plug-shank is adapted to engage in the cuff with a tight friction or force fit and thereby fasten the basket securely to the valve-plug. Moreover, to insure a rigid nonrotatable connection between the basket and the valve-plug, the shank 30 of the plug is provided with longitudinal serrations 32, as indicated especially well in Figs. 2 and 5, which bite into the wall of the cuff as the plug-shank is forced therethrough. When so assembled, that portion of the bottom of the basket which circumscribes its central aperture 23, seats squarely on the annular shoulder 31 of the plug while the shank of the plug extends upwardly above the upper edge 33 of the basket-cuff 25 to provide a bearing-surface for a shank-cap 34. By way of illustration, for satisfactory performance, the length of the plug-shank is substantially equal to its diameter and is substantially four times the height of the basket-cuff, as a consequence of which a major portion of the plug-shank extends above the upper edge 33 thereof.

The shank-cap 34 is indicated especially well in Figs. 1 and 6 and comprises a cylindrical stainless-steel thimble substantially twice the length of the plug-shank and adapted to fit on the upwardly-extending bearing-surface thereof with a tight friction or force fit. To this end, the internal diameter of the thimble is substantially equal to the internal diameter of the basket-cuff 25 so that the internal wall of the thimble will be grooved also and, hence, locked to the shank of the plug by the longitudinal serrations thereof. Moreover, the external diameter of the thimble corresponds substantially to the external diameter of the basket-cuff so that when the thimble is pressed down over the upwardly-extending bearing-surface of the plug-shank and seated against the upper annular edge 33 of the basket-cuff, as indicated in Fig. 1, the juncture of the latter with the lower end 35 of the thimble will present a substantially-continuous surface; that is to say, the joint between the cuff and the thimble will be so very tight as to present no recess or shoulder for the accumulation of refuse or the like. The upper end of the thimble is closed by a slightly-enlarged cylindrical head-portion 36; the exterior walls of which are formed with annular corrugations 37 which constitute finger-grips to facilitate lifting and lowering the basket and plug assembly vertically in the body-fixture.

Projecting downwardly from the underside of the plug is a plurality of positioning-lugs 38; the number of lugs corresponding to the number of supporting-ledges 16 in the throat-portion of the

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body-fixture. More particularly, each lug projects downwardly from the underside of a disk-shaped protuberance 39 formed integrally or otherwise provided on the underside of the plug, concentric with the center thereof. The diameter of the disk-shaped protuberance 39 is shown as being substantially one-third the diameter of the plug, the downwardly-extending projections 38 being located at the periphery of the disk-shaped protuberance and spaced circumferentially thereon at substantially 120° to each other.

When it is desired to permit waste water to drain outwardly through the fitting, the valve-plug is lifted by grasping the head 36 of the thimble and pulling upwardly thereon so as to lift both the valve-plug and the basket upwardly in the body-fixture. The assembly is then rotated sufficiently to cause the positioning-lugs 38 to rest upon the three supporting-ledges 16 of the spider. As a consequence, the valve is opened and waste water is permitted to flow freely down the drainage-passage 15. When, however, it is desired to prevent the egress of water through the waste-fitting, the valve-plug is rotated by grasping the finger-grip of the thimble and rotating both the basket and the plug until the positioning-lugs 38 of the latter come into registry with the spaces or gaps between the supporting-ledges of the spider, whereupon the plug will be free to drop by gravity and seat against the valve-seat 17 of the body-fixture, as shown in Fig. 1.

The provision of an integral stabilizing-cuff in the strainer-basket for making a tight friction fit with the shank of the plug constitutes a relatively simple and inexpensive method of fabrication and one which, in conjunction with the stainless-steel thimble for covering the upper exposed end of the plug-shank, provides a highly sanitary construction, free of any joints or bearing-surfaces in which foreign matter may collect. Moreover, by locating the projecting-lugs on the underside of the plug adjacent the center thereof, as distinguished from its outer periphery, the lugs are substantially within the hollow vortex of the drainage water as it passes down into the drain-pipe and, hence, offers no obstruction whatsoever to the free flow of the water, thus insuring optimum drainage performance when the valve is open.

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 claim are intended to be embraced therein.

I claim:

1. In a waste-pipe fitting: a strainer-basket having a bottom provided with a central aperture; a flange circumscribing said central aperture, said flange having an upper edge lying in a plane above the bottom of said strainer-basket; a valve-plug; a shank projecting upwardly from said valve-plug and arranged to extend upwardly above the upper edge of said annular flange of said central aperture; fastening-means comprising longitudinal serrations on said shank arranged to bite into the walls of said flange to secure said plug to said basket with a tight non-rotatable fit; and an inverted cup-shaped cap adapted to engage over the upwardly-extending end of said shank; the outside diameter of said cap being equal to the outside diameter of said

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flange, the inner wall of said cap being arranged to make a force fit over the longitudinal serrations of said shank to firmly secure said cap thereto with the bottom edge of said cap in engagement with the upper edge of said annular flange thereby to form a tight circumferential joint therewith which intersects the substantially-flush peripheral surfaces of said cap and flange in a transverse plane above the bottom of said basket.

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