Nov. 15, 1949 C. T. MANVILLE ET AL 2,488,017

BATH SPRAY

Filed Feb. 18, 1946

Fig. 1.

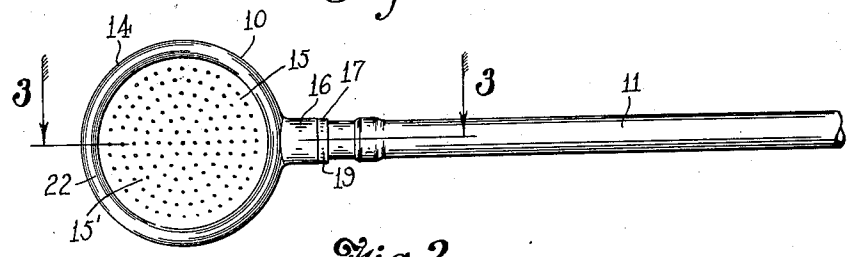


Fig. 2.



Fig. 3.

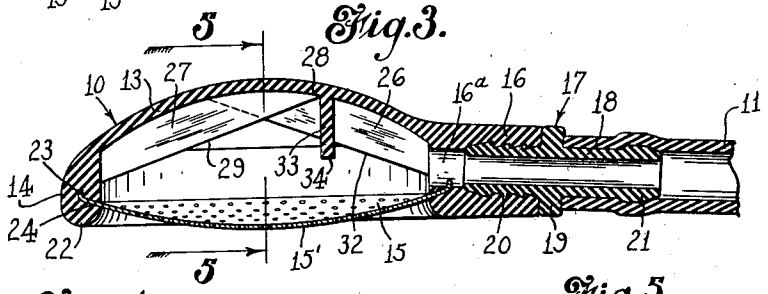


Fig. 4.

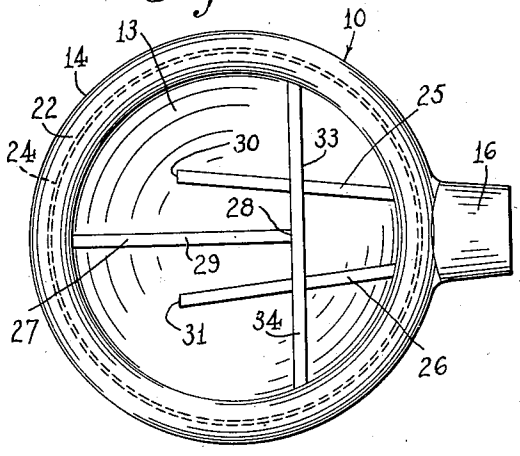
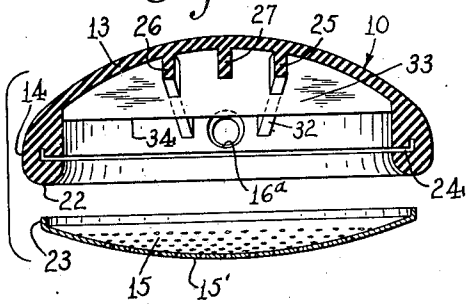


Fig. 5.



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BATH SPRAY

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Application February 18, 1946, Serial No. 648,458

3 Claims. (Cl. 299—141)

1

This invention relates to bath sprays of the type in which the spray head is connected with a water faucet by a flexible tube, the spray head or rose being manipulated by hand to direct the issuing spray of water.

A bath spray of this general type is disclosed in our application, Serial No. 572,300, filed January 11, 1945.

An object of the present invention is to provide certain improvements in an article of this class.

Another object is to improve the spray by increasing the uniformity with which the water is sprayed from the different parts or areas of the perforated spray plate.

In the accompanying drawings:

Fig. 1 is an elevation of a bath spray embodying the invention;

Fig. 2 is an elevation from a different angle;

Fig. 3 is an enlarged section on line 3—3 of Fig. 1;

Fig. 4 is a face view of the spray head with the spray plate removed; and

Fig. 5 is an exploded sectional view of the head, the section being taken on line 5—5 of Fig. 3.

The improved bath spray has a spray head generally indicated at 10, and a flexible rubber tube 11 attached to the head. A coupling device (not shown) may be provided for securing the rubber tube to the water faucet. The present invention is concerned primarily with the structure of the head 10.

The spray head or rose has its major portion constructed of suitable resilient plastic material, for example, compounded rubber or compounded rubber-like material of a character to provide, when cured, a head having flexible elastic walls. The head is relatively shallow, having at one face a perforated metallic plate from which the spray issues. The inlet to the spray head is at one side, that is to say, in the peripheral wall of the head. It is here that the rubber tube, such as 11, has communication with the interior of the head.

The spray head 10 shown in the drawings is a shallow round head having a cup-like body 13 of flexible rubber provided with a peripheral wall 14 in which is set a perforated round metal plate 15. At one side of the head the rubber wall is formed to provide an inlet bore 16a. This bore is formed in an extension or projection 16 integral with the cup-shaped portion of the head and creating a radial extension on the head. By providing this extension the lateral wall of the head is considerably thickened at the point where the inlet is provided. The rubber tube 11 is connected to this extension in a manner to provide leakproof communication between the tube and the inlet 16a. In the present case, a connecting nipple 17 is provided for this purpose, said nipple having a tubular body 18 and intermediate of its ends an integral laterally projecting collar 19. When the nipple is installed, the collar 19 is interposed between the forward edge of the tube 11 and the rear edge of the extension 16. The forward end portion of the nipple is externally corrugated, as shown at 20, and this portion is forced into a portion of the bore in the extension which provides the inlet, whereby the nipple is very firmly anchored to the spray head, although removable therefrom when that is desired. The rear portion of the nipple has a bulbous extremity 21 over which the elastic tube 11 is forced for the purpose of firmly securing the tube to the nipple. The forward portion of the tubular nipple is of less length than the bore in the extension 16, leaving an unobstructed inlet portion in the extension, which inlet portion is of somewhat larger diameter than the bore of the nipple. The nipple is preferably made of hard rubber, the result being that it interiorly stiffens a portion of the extension 16.

2

The cup-shaped member 13 preferably has its side wall 14 substantially thicker than the top wall of the cup, although this side wall as well as the top wall is quite flexible. At the mouth portion of the cup the side wall may advantageously be rounded off, as shown at 22. The metal plate 15 is received in a groove in the side wall, and this plate preferably has a crowned or outwardly bulging portion 15' of somewhat greater diameter than the chamber formed in part by the side wall of the cup. The plate also has an annular edge flange 23 at the rim. The flange 23 and the adjacent crowned portion of the plate are adapted to be received in an L-shaped groove 24 in the side wall 14, this groove 24 having a portion extending laterally into the side wall from the cup interior and a communicating groove portion to receive the flange 23. As the side portion of the cup is elastic, it can be deformed in order to receive the perforated plate having the inwardly directed edge flange. The rubber of the side wall holds the plate firmly for the reason that portions of the rubber side wall prevent axial dislocation of the plate and also lateral dislocation thereof relatively to the rubber cup. After the spray plate has been installed, its flange 23 holds the mouth of the rubber cup against distortion from its normal round shape.

It is preferred to provide the spray plate with fine perforations throughout the portion within the rubber rim. Modification may be made in this respect, however, if desired. Nevertheless, inasmuch as the water entering the spray head comes in by way of a port in the side wall, so as to tend to create a stream more or less parallel to the spray plate, it is desirable to provide means controlling the flow of water in the chamber so that the water will be ejected from the different portions of the spraying surface in a uniform manner. For this purpose we provide the shallow chamber with a slightly dished or curving inner surface at the top of the cup-shaped member, whereby the top of the cup is in the form of a shallow dome, and we provide the chamber interiorly with stream-controlling means in the nature of deflecting or baffling means which inhibits a localized ejection of water from the spray plate.

In the form shown, the deflecting means or baffling means includes flexible rubber walls that are integral with the structure of the rubber cup. In this particular form there are three generally longitudinal walls **25**, **26** and **27** formed integral with the top portion of the rubber cup, the walls **25** and **26** being disposed at opposite sides respectively of the inlet port **16a** and leading to the left (Fig. 4) toward the opposite side of the cup, and the wall **27** being disposed between the walls **25** and **26** and leading from the left-hand side of the cup (Fig. 4) toward the right-hand side. These walls are approximately normal to the cup top, but they are obliquely disposed with respect to the general plane of the cup, as shown in Fig. 3. As shown in Fig. 3, the intermediate wall **27** extends from the left-hand side wall portion in an upward direction to a point indicated at **28**, said wall having a straight inclined lower edge **29**. The walls **25** and **26** on the other hand extend from the right (Figs. 3 and 4) to points **30** and **31** and have straight inclined lower edges **32**. The walls **25** and **26** preferably diverge slightly from their bases adjacent the sides of the water inlet as shown in Fig. 4.

In addition to these generally longitudinal walls, there is provided a lateral wall **33**. This wall is also integral with the cup top, but instead of being substantially normal to the adjacent top portion of the cup, it is located in a plane substantially normal to the general plane of the cup, although this wall **33** is located between the center of the cup and the inlet **16a**. The wall **33** extends transversely along a chord of the circle defining the water chamber, having its ends meeting the circle. This wall is located at the inner end of the wall **27** and is integrally connected to the walls **25** and **26** at points intermediate of the ends of those walls. As represented in Fig. 3, the wall **33** has a straight lower edge **34** lying in a plane parallel to the plane of the spray head, and it will be observed that the lower edge **34** projects downwardly somewhat beyond the walls **25** and **26**. It will also be observed that preferably the lower edge of the wall **33** is projected downwardly to a slight extent beyond a horizontal plane passing through the inner, upper end of the inlet **16a** (Fig. 3). It will also be noted that preferably the arrangement is as shown in Fig. 3, for example, in that, while the wall **33** is normal to a horizontal plane, the inlet duct of the spray head, including the nipple and the part of **16a** lying inwardly of the nipple, is slightly tipped with respect to such a horizontal plane.

In operation, the walls **25** and **26** have a certain lateral confining action upon the stream of water entering from the inlet. The wall **27**, when the water reaches it, has a dividing action on the body of water, causing the water at opposite sides to be turned toward opposite sides of the cup as it rebounds. The transverse wall **33** somewhat retards the water turned backwardly in this manner. On the other end, the wall **33**, as it projects to a certain extent into the path of the water entering from the inlet, exerts a retarding action on this water and also causes the entering water to be spread or diffused somewhat in a lateral direction or, in other words, toward the sides of the cup.

By forming the top of the cup member on a relatively shallow curve and by providing deflecting and baffling means such as above described, the spray can be caused to be ejected from the different parts of the spray plate in a substantially uniform manner, notwithstanding the fact that the inlet is at one side of the spray head and that the spray head itself is quite shallow.

While only a single embodiment of the invention is shown, it will be understood that the invention can be embodied in various forms and that modifications and changes may be made without departure from the principles of the invention or the scope of the claims.

What we claim is:

1. A bath spray device comprising a body member formed as a shallow cup with a slightly dished bottom, the side wall of the cup having an inlet at one point in the periphery, a relatively rigid perforated spray plate disposed across the mouth portion of the body member, and means formed integrally with the top wall of the body member at the interior thereof acting upon the incoming water stream to inhibit localized ejection of water from the spray plate, said means including a pair of longitudinal walls at the side adjacent the inlet, a longitudinal dividing wall adjacent the opposite side of the cup, and a transverse wall cooperating with said longitudinal walls, said transverse wall being located between the center of the cup and the inlet and disposed as a chord of the circle defining the water chamber, said transverse wall having a lower free edge portion disposed in a plane to intersect the projection of the water stream issuing from the inlet.

2. A bath spray device comprising a cup-shaped body member and a spray plate which together form a water chamber, the water chamber having an inlet at one side of the center within the side wall of the body member, and deflecting means formed as a part of the body member, said deflecting means including two walls integrally joined to the side wall of the cup and to the cup top and leading from the side wall at the respective sides of the inlet and adapted to confine the incoming stream of water, said deflecting means also including a wall adjacent the side of the cup remote from the inlet which divides the stream lengthwise and a further wall disposed transversely to the first-mentioned walls, said transverse wall being located between the center of the cup and the inlet and extending across the cup adjacent the inner end of said dividing wall and extending across the first two walls intermediate of the ends of said first two walls, said transverse wall being substantially normal to the general plane of the spray head and having a lower free edge pro-

jecting into the path of the water stream entering from the inlet.

3. A bath spray device comprising a body member formed as a shallow cup with a slightly dished bottom, the side wall of the cup having an inlet at one point in the periphery, a relatively rigid perforated spray plate disposed across the mouth portion of the body member, and means formed integrally with the top wall of the body member at the interior thereof acting upon the incoming water stream to inhibit localized ejection of water from the spray plate, said means including a pair of longitudinal walls extending from the cup side adjacent the inlet and so arranged that the water enters between said walls causing the walls to have a confining action upon the stream of water, a longitudinal dividing wall adjacent the opposite side of the cup causing the water at opposite sides of said dividing wall to be turned at right angles toward opposite sides of the cup as the water rebounds from the side wall of said cup, and a transverse wall cooperating with said longitudinal walls, said transverse wall being disposed as a chord of the circle defining the water chamber and serving to retard the rebounding water and further exerting a retarding action on the water entering from the inlet.

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