Description

The invention concerns a soap dispenser with a device indicating the level of a liquid soap, comprising at least one reservoir for a liquid soap and a covering hood with at least one inspection window.

A known indicating device of this kind (EP-A-0 023 470) comprises optical indicating means which indicate the liquid level direct or provoke a change of shade in an inspection window by total reflexion in a glass body.

The known indicating device has proved advantageous per se, but after prolonged use becomes less clear.

The object of the invention is to create an indicating device of the kind described at the beginning which, with the smallest possible outlay, offers a reliable and clear indication of the level of the liquid soap-metering device regardless of the number of times the device is refilled.

According to the invention, this object is achieved in that there is a floating body in the reservoir with at least one indicating flag attached thereto and in that the path of movement of the indicating flag, of which there is at least one, extends at least partially along the inspection window of the covering hood.

The indicating device according to the invention thus comprises in simplest form a float which moves with the level of the liquid soap and an indicating flag attached thereto, which in the final position of the float, ie when the container is nearly empty, is aligned with the inspection window of the covering hood. The whole indicating device is thus as simple as possible; it is clear and reliable due to the appearance of the clearly visible indicating flag in the inspection window, and independent of the number of times the contents are replenished or changed.

Further developments and advantageous embodiments of the indicating device according to the invention are indicated in the following claims.

Advantageously, in the case of the indicating device according to the invention, two indicating flags and two inspection windows are provided on different sides of the covering hood. Thus the indication is visible even in cases where one side of the covering hood is inaccessible, eg for structural reasons.

In the case of the indicating device according to the invention, the indicating flag is advantageously provided with two different-coloured flags. Thus the indication in the inspection window of the covering hood can be seen particularly clearly. Furthermore, as the

reservoir empties, the area of colour seen through the inspection window and indicating the emptiness of the container increases, so that the transition to complete emptiness is clearly visible and the liquid soap can be replenished in time.

It is advantageous if the container, of which there is at least one, opens into the inner chamber of the reservoir via at least one aperture. Thus the reservoir is automatically refilled through the aperture, of which there is at least one, of the container if this aperture is no longer immersed in the liquid soap.

According to an advantageous embodiment, the floating body is pivotably mounted via at least one lever above the aperture of the container in the interior of the reservoir. This embodiment ensures trouble-free movement of the floating body and thus of the indicating flag, because the bearings are above the liquid soap and cannot get stuck.

According to a further advantageous embodiment, the floating body extends over a substantial part of the width of the reservoir and is provided with one lever in each case on the end faces. The floating body is thereby securely guided.

The indicating flag extends advantageously out of the

reservoir into a chamber formed between the covering hood and the container. In this area, the inspection window is also formed in the covering hood. Thus a space-saving arrangement is achieved, which in addition requires no special structural alteration of the soap dispenser for integration of the indicating device.

An embodiment of the soap dispenser according to the invention is illustrated in the drawings and is described and explained in detail below with the help of reference numbers.

Figure 1 shows a longitudinal section through a soap dispenser;

Figure 2 the section II-II according to figure 1;

Figure 2a a view of the two final positions of the indicating flag with respect to the inspection window in the covering hood of the soap dispenser according to figure 1;

Figure 3 the profile III-III from figure 1 of the rear wall, of the covering hood and of the reservoir;

Figure 4 a plan view of the floating device of the indicating flag from figure 1.

In the drawings, the same parts are indicated with the same reference numbers.

In the section illustration of figure 1 a holder for the liquid soap metering device from a rear wall 1 which is, for example, fixable to a wall and from the respective ends of which a holding plate 1', 3 projects. A reservoir 4, which is described in detail below is mounted on the lower holding plate 1', which is formed integrally with the rear wall 1. Support ribs 4' are formed on the reservoir 4. A container 5 made of transparent material for the liquid soap to be dispensed rests on the reservoir 4 and is provided with a neck 5', which defines an aperture 8. The whole device is surrounded by a covering hood 6, which is held on holding elements 7 on the upper holding plate 3 and pushed on laterally to the projecting rear wall 1 (cf. fig 3).

The reservoir 4 which is pushed on to the lower holding plate 1' and is covered at the sides by the covering hood 6 is disposed on the rear wall 1 with a fixing member 10. A bottom 9 subdivides the reservoir 4 into an inner chamber 11 and a pumping chamber 12. The two chambers 11 and 12 are interconnected via a cylinder 13, which is open at both ends and inserted in the bottom 9. In the part of the pumping chamber 12 which faces away from the rear wall 1 an operating button can be

moved against the pressure of a return spring (not shown) between two stops, only one of which is visible. This operating button 14 is connected to a piston (not shown), the other end of which is mounted in the cylinder 13. The lower side of the operating button 14 is provided with an outlet 14' for the liquid soap. The operating button 14 and the cylinder 13 form parts of a metering device which is known per se and which is not described here in detail.

In figure 1 a cylindrical floating body 21 of the indicating device is visible, an indicating flag 22 thereof extending upwards and a lever 25' extending laterally. The lever 25' is hinged to a bearing 26 on the reservoir 4.

In the section represented in figure 2, the parts already shown in figure 1 bear the same reference numbers. In addition, in the illustration in figure 2, it can be seen that the indicating flag 22 is disposed on an end face of the floating body 21 and projects into a chamber 23, which is formed between an indentation 24 on the neck-side end of the container 5 and the covering hood 6. The covering hood 6 is provided with an inspection window 28 through which the indicating flag 22 is visible.

The profile shown in figure 3 of the rear wall 1, the

reservoir 4 and the covering hood 6 shows the fixing element 10 and the supporting ribs 4'. It can be seen that the reservoir 4 is fixed without intermediate chamber to the covering hood 6 and the rear wall 1.

The plan view in figure 4 shows the reservoir 4 with the fixing element 10 and the floating device with the floating body 21, from both ends of which levers 25 and 25' emanate, which are hinged to bearings26 on the reservoir 4. These bearings are represented as projections formed near the ends of the levers 25, 25' and housed in appropriate recesses in the associated wall of the reservoir 4. In this example, only the lever 25' is provided with an indicating flag 22.

Subsequently the modus operandi of the indicating device is explained with the aid of figures 1 and 2a. In figure 1 an upper liquid level 2 can be seen which extends to the height of the aperture 8 of the container 5. This is the normal operating condition of the soap dispenser which exists for as long as the container 5 contains liquid soap. The floating body 21 is situated in the upper position as illustrated in figures 1 and 2. As can be seen in detail from figure 2a, the indicating flag 22 comprises two areas of colour 27 and 29 on its end which faces away from the floating body 21. These areas are of different colours; in the example of an embodiment, the area 27 is green and the

area 29 red. The portion of the coloured area 27 which is visible through the inspection window 28 in the covering hood 6 in the position of the indicating flag 22 according to figure 1 is indicated by dots in figure 2a and has the reference number 30. When the soap dispenser is full the floating body 21 floats to the upper liquid level 2, so that the lower coloured area 27 of the indicator 22 is aligned with the inspection window 28 in the covering hood 6. The green of the coloured area 27 indicates that the soap dispenser is ready for use.

When the container 5 has been emptied, during use the liquid level drops gradually into the reservoir 4 to a

lower liquid level, which is indicated by 2' in figure 1. The floating body 21, and hence the indicating flag 22, follows this movement along an arc-like path. The final position of the floating body 21 with the indicating flag 22 corresponding to the lower liquid level 2' in figure 1 is shown by broken lines in figure 2a. From this illustration, it can be seen that in this position of the indicating flag 22 the upper coloured area 29, which is red, is aligned with the inspection window 22 of the covering hood 6 and the portion 30 of the coloured area 29 can be seen through the inspection window 28.

Between the two final positions shown in figure 2a, a portion 30 is visible through the inspection window 28 in the covering hood 6 comprising parts of both coloured areas 27 and 29. Thus the staff concerned are warned in time of the emptying of the container 5 before the reservoir 4 is completely empty.

The cylinder 13 connecting the inner chamber 11 of the reservoir 4 to the pumping chamber 12 of the reservoir 4 has an aperture on one side which is large enough to afford sufficient flow of liquid soap. A penetrated piston, which is known per se and not illustrated here, is associated with the cylinder 13 and forms part of the metering device, which is connected to an operating button 14. An outlet 14' for the liquid soap is

disposed in the front part of the lower surface of the operating button 14.

In a further embodiment of the example illustrated, there is an indicating flag 22 on each end face of the floating body 21 and an inspection window 28 corresponding to each side of the covering hood 6. The level of the soap dispenser can then be seen on two different sides of the covering hood 6 and cannot be obscured by structural conditions or the like.

In a further embodiment the indicator flag 22 can only be provided with one area which is visible in the inspection window 28 of the covering hood 6 when the container 5 is empty.

The area or areas do not have to be coloured but may also be reflective, for example, phosphorescent, luminescent, or made noticeable in some other way. The indicating flag 22 may also be situated in a region further from the rear wall 1. The floating body 21 may also be guided to the reservoir 4 by other guiding means. Also the indicating flag 22 may extend in another direction or the area or areas 27, 29 be located on other parts of the floating device, the inspection window or windows 28 being arranged accordingly in the covering hood 6.

The soap dispenser could also be provided with a refillable container for the soap solution to be dispensed which can be mounted in a fixed manner.