A device for distributing active substance fluids into a toilet flush liquid. A holder suspended from the edge of a toilet bowl holds at least two containers each having its own outlet to distribute its respective active substance fluid into the flush liquid. The containers are designed such that no flush liquid may enter and only active substance may exit the containers. A partial quantity of fluid containing active ingredients is distributed into the flush liquid each time the toilet is flushed.
DISTRIBUTING DEVICE FOR DISTRIBUTING FLUIDS CONTAINING ACTIVE INGREDIENTS

[0001] The invention relates to a dispensing device for dispensing active substance fluids into the flushing liquid in a toilet bowl, with the features of the introductory part of claim 1.

[0002] The term active substance fluid means flowable, thus liquid to viscous, in a given case gel-like or even pasty or granular or otherwise pourable, active substance preparations with cleansing, disinfecting, deodorising, bleaching or similar action (particularly described in DE 199 30 362 A1, which is not prior published, as well as in EP 0 775 741 A1 and EP 0 960 984 A2).

[0003] Dispensing devices of the usual kind are known in various forms under the catchword “WC baskets”. In the first instance, dispensing devices are known for a single active substance fluid. The active substance fluid is there disposed in a storage container, which is flexibly arranged or exchangeably inserted in a holder, with an outlet opening arranged at the base side when the storage container is mounted at the holder.

[0004] In a first known dispensing device for a single active substance fluid the active substance fluid is delivered by way of an actuating element (for example, from an open-pore foam material) saturated therewith and loadable by the flushing liquid (EP 785 315 A1). Here the outlet opening of the storage container is for the most part closed after the pushing out of a closure part of the storage container by a sealing element arranged at the holder in stationary position, so that a flow path with only a small cross-section is available for the seeping out of the active substance fluid. The device functions with utilisation of the capillary effect of the open-pore foam material. A similar construction with a rib plate serving for the distribution is also known.

[0005] In the case of both variants it has on occasions felt not to be optimal that the outlet opening is in principle permanently open, so that active substance fluid can continue to seep out over longer term non-use of the toilet bowl.

[0006] Another dispensing device for a single active substance fluid (DE 299 02 066 U1) has at the storage container a sealing element which operates in valve-like manner and which normally adopts a positive, closed closure setting in which the outlet opening is closed.

[0007] This happens under the action of the gravitational force of a valve ball acting as a sealing element. This sealing element can be displaced against the biasing force into a release setting slightly freeing the outlet opening. An actuating element constructed as a rocker and pivotably mounted on a pivot axis at the holder serves for this purpose. The actuating element has at one side of the axis a loading region having a pan-shaped receptacle for flushing liquid. The arm of the actuating element lying on the other side of the axis bears from below against the sealing element. If the flushing liquid impinges on the influencing region, then the actuating element is lifted off the valve seat at the outlet opening by way of the actuating element and slightly frees the outlet opening. The active substance fluid can then past the sealing element out of the outlet opening into the current of flushing liquid flowing by or is entrained by the flushing liquid. A dispensing device similar to the previously explained dispensing device is known from DE 199 30 362 A1 already mentioned further above but not prior published, the device having, however, as actuating element a single-arm lever which is pivotably connected at one end with the holder and at which the sealing element is arranged between the end pivotably connected with the holder and the loading region. This construction corresponds, in particular, with a storage container exchangeably arranged at the holder.

[0008] In the case of use of the previously explained dispensing devices of the usual kind all components entering the flushing liquid of the toilet bowl have to be included in common in the active substance fluid. However, many active substance components cannot be realised in a form stable in conjunctive storage. Accordingly, a multi-chamber dispensing device has already been proposed (EP 0 960 984 A2). This known dispensing device serves for dispensing at least two different or equally solid, gel-like, pasty or liquid media in liquid or aqueous form into a toilet bowl. A container, which has at least two independent chambers arranged adjacent to one another for storage of the media, is disposed at a holder able to be suspended at the edge of the toilet bowl. Each chamber has a dispensing device with a dispensing tubelet which exits into the environment by one free end thereof via the base of the container and is surrounded at the other free end thereof in fluid-guiding manner by a cover. The two chambers of the container can be filled via slot-like passages of a cover part by flushing water flowing over, which then issues into the toilet bowl in the manner of a siphon or overflow by way of the dispensing tubelet with entrainment of the respective active substance. The separation of the chambers in the container has the advantage that different media can be used which would otherwise adversely influence one another in their desired effect in the case of common storage in only one chamber. In addition, the consistency of the media can be different in the different chambers.

[0009] In the dispensing device explained above the principle of functioning of known “WC baskets” is utilised, according to which the flushing water flowing over from above flows into the chambers containing the active substance fluid, detaches parts of the active substance material and, with entrainment thereof, flows back out of the chambers. In that case the problem exists that a substantial liquid level is left behind in the chambers by the siphon action effected here. The action of the flushing liquid on the active substance fluid in the respective chambers thus continues even when the flushing process has long been concluded. The consumption of active substance fluid cannot, in practice, be controlled in optimum manner.

[0010] There is also known a double-chamber dispensing device for like or different gel-like active substance fluids (WO 92/20876 A1), in which the outlet openings are executed as perforations in the storage containers at the base and are permanently open. Due to the viscosity and surface tension of the gel, this normally cannot exit by itself under gravitational force. Partial quantities of the active substance fluids can be discharged only by flushing liquid which runs over and which enters from below into the outlet openings and etches to some degree the gel near the outlet openings. In this double-chamber system it is thus similarly the case that the outlet openings are basically permanently open, so that also with longer-term non-use of the toilet bowl the
active substance fluids can either seep out or solidify under the influence of the ambient atmosphere and thereafter are no longer activatable.

[0011] The teaching is based on the problem of optimising the known dispensing device explained in the foregoing, for dispensing active substance fluids from at least two mutually separate storage containers, with respect to possibility of control of the dispensing of the active substance fluids.

[0012] The set problem demonstrated in the foregoing is solved, in the case of a dispensing device with the features of the introductory part of claim 1, by the features of the characterising part of claim 1. According to the invention the storage containers are protected against the entry of flushing liquid into the interior thereof and only active substance fluid issues from the outlet openings of the storage containers. This is realised in the manner that with each flushing process the dispensing of a partial quantity of the active substance fluid into the flushing water takes place from each storage container.

[0013] In the sense of solution of the set problem defined in the foregoing an embodiment of the dispensing device, which is in accordance with the invention, according to claim 16 is particularly advantageous. A positive closure of the outlet openings is advantageous in this concept particularly for the purpose of defined dimensioning of the partial quantities and for the purpose of protection of the active substance fluids in the storage containers in the case of non-use in the longer term.

[0014] The technical principles of individual dispensing devices, which have been explained above, are available for realisation of the invention. It is essential that two different active substance fluids are, before delivery thereof into the flushing water, either intimately mixed in targeted manner or, in the case of incompatible active substance fluids, can also be conducted separately until discharge. The construction of the stationary plate-shaped distribution element or the movable plate-shaped actuating element at the upper side is accorded particular attention (state of the art to that extent: WO 99/66140 A1; DE 199 12 217 A1).

[0015] Preferred embodiments and developments of the teaching form the subject of the subclaims.

[0016] Claim 49, together with the succeeding subclaims, gives a separate teaching which in itself is independently capable of protection.

[0017] Preferred embodiments of the invention are explained in more detail in the following by reference to the drawing, in which:

[0018] FIG. 1 shows a preferred embodiment of a dispensing device according to the invention, in a plan view,

[0019] FIG. 2 shows a section through the device of FIG. 1 along the line II-II,

[0020] FIG. 3 shows a section through the device of FIG. 2 along the line III-III,

[0021] FIGS. 4 to 24 show different variants of stationary plate-shaped distribution elements, also transferable in corresponding manner to movable plate-shaped actuating elements,

[0022] FIG. 25 shows a distribution element of a further embodiment of a dispensing device,

[0023] FIG. 26 shows, in section, a dispensing device with a distribution element according to FIG. 25 and

[0024] FIG. 27 shows a lower edge of a storage container or a further modified embodiment of the dispensing device according to the invention.

[0025] The dispensing device illustrated in FIG. 1 to FIG. 3 serves for dispensing of at least two active substance fluids into the flushing liquid which is flushed into a toilet bowl. With regard to what is to be understood in the sense of the teaching as active substance fluid, this has already been defined in the general part of the description and reference may be made thereto.

[0026] Such a dispensing device comprises, in the first instance, a holder 1 which can be suspended at the edge of the toilet bowl and at least two mutually separate storage containers 2, 3, which are provided in the holder 1, each for a respective active substance fluid. The active substance fluids can be corresponding, different, mutually compatible or mutually incompatible active substance fluids. Two storage containers for two active substance fluids or more storage containers for more active substance fluids can be given.

[0027] According to the invention suitable active substance fluids are, for example, aromatic phases, particularly perfumed aromatic phases. Such aromatic phases usually contain at least one aromatic, preferably perfume oil, at least one surfactant or emulsifier and water as well as, in a given case, further ingredients such as, for example, preservatives, thickeners, sequestering agents, colorants, further surfactants or emulsifiers, stabilisers, descalers, etc.

[0028] According to the invention equally suitable as active substance fluids are bleaching phases, particularly bleaching phases containing chlorine, for example bleaching phases based on hypochlorite, wherein the bleaching phases can usually contain, apart from the actual bleaching agent and water, optionally further ingredients such as thickeners, surfactants or emulsifiers, neutralisers, colorants, aromatics, etc.

[0029] Further suitable active substance ingredients according to the invention are descaling active substance phases, preferably acidic descaling active substance phases. Such descaling active substance phases can contain, apart from the actual descaler—this is preferably an organic or anorganic acid—and water, optionally further ingredients such as surfactants or emulsifiers, thickeners, aromatics, preservatives, etc.

[0030] It is equally possible to use, as active substance fluids, highly concentrated surfactant phases, so-called “foam boosters”. Such highly concentrated surfactant phases can contain, apart from the surfactants, also further usual ingredients.

[0031] According to the invention active substance fluids with an antibacterial and/or fungicidal and/or antiviral active substance phase are equally suitable, wherein the active substance phase can contain, apart from the active substance acting antibacterial, and/or fungicidal and/or antiviral and water, optionally further ingredients such as, for example, surfactants or emulsifiers, thickeners, aromatics, preservatives, etc.
In addition, it is possible for the active substance fluids to be active substance phases with an enzyme content. Such active substance phases with enzyme content can contain, apart from the enzyme or enzymes and water, optionally further ingredients such as surfactants or emulsifiers, thickeners, aromatics, preservatives, etc.

Equally, it is possible for the active substance fluids used in accordance with the invention to be absorbent, particularly odour-absorbent, active substance phases. These can contain, apart from the absorption agent, particularly an odour-absorption agent, and water, optionally further ingredients such as surfactants or emulsifiers, thickeners, aromatics, preservatives, etc.

The dispensing device according to the invention offers, in accordance with a special embodiment, the possibility of using combinations of different active substance fluids in the storage containers 2, 3, wherein according to a preferred embodiment one of the storage containers 2, 3 contains an aromatic phase, particularly as previously defined.

Examples of active substance fluid combinations to be used are perfumed aromatic phase combined with chlorine bleach (not stable in storage together with one another), perfumed aromatic phase with highly concentrated surfac tant phase (foam booster), aromatic phase with descaling acidic active substance phase, aromatic phase with antibacterial active substance phase, different acid systems, aromatic phase combined with active substance phase having an enzyme content, perfumed acid phase combined with watercolouring phase, aromatic phase with odour-absorbent phase, perfumed acid phase with available oxygen, perfumed acid phase with active substance phase, thickened with polyacrylate, etc. Of particular interest in that case are viscous to gel-like active substance fluids with viscosities in the region of a few thousand mPas, particularly 2000 to 5000 mPas, preferably 2500 to 3500 mPas (measured by Roto visko LVT, hydrometer 2, 6 rpm, 200°C).

In the case of the illustrated dispensing device each storage container 2, 3 has an own outlet opening 4 by way of which the respective active substance fluid can be dispensed into the flushing liquid. By contrast to the state of the art forming the starting point for the teaching, it is now the case here that the storage containers 2, 3 are protected against entry of flushing liquid into the interior thereof. The outlet openings 4 of the storage containers 2, 3 are then so arranged that only active substance fluid issues. The dispensing of a partial quantity of the active substance fluid from each of the storage containers 2, 3 into the flushing liquid takes place in each flushing process. In the illustrated embodiment this is realised by the fact that the outlet opening 4 of the respective storage container 2, 3 in use setting, thus as illustrated in FIG. 2, is arranged at the base. Flushing water flowing over always impinges laterally on the storage containers 2, 3.

Many different possibilities exist for the arrangement and mounting of the storage containers 2, 3 at the holder 1. In the embodiment which to that extent is preferred and is illustrated in the drawing it is provided that the storage containers 2, 3 are mounted or mountable in the container 1 to be individually exchangeable. An alternative consists in coupling the storage containers 2, 3 together by means of an adapter or the like and mounting them, thus coupled, in the holder 1. A further alternative consists in directly coupling the storage containers 2, 3 together and mounting them, thus directly coupled, in the holder 1. Finally, it is also conceivable to construct the storage containers 2, 3 in a common unitary housing, for example as separate chambers in a cohesive housing, and then mount them in that form at the holder 1. One or other variant can be selected according to preferences in practice and the active substance fluids to be used.

The storage containers 2, 3 can be designed, as described in the state of the art (DE 299 02 066 U1, DE 199 15 322 A1), to each be individually refillable by way of a refilling opening optionally equipped with a valve. In particular, in this case the storage containers 2, 3 can also be fixedly mounted or constructed in the container 1, thus a unitary arrangement closed in itself can be selected. The illustrated embodiment, however, shows the storage containers 2, 3 as exchangeable single-use containers which will be very widespread in practice. The illustrated and preferred embodiment shows the storage containers 2, 3 arranged adjacent to one another at the holder 1. The same applies to an arrangement of the storage containers 2, 3 one above the other. Alternatively, it could also be provided to arrange the storage containers 2, 3 one above the other for the purpose of product delivery in cascade manner.

The illustrated and preferred embodiment further shows that the storage containers 2, 3, which here are, in fact, individually exchangeable, can be mounted in the container 1 by plugging in from above (into use setting). Diverse other possibilities of fastening come into question as alternatives. For example, it could be conceivable to push the storage containers 2, 3 into the holder 1 from the side. It could also be conceivable to place the storage containers 2, 3 laterally at the holder 1 and then pivot into the use setting about a pivot axis. One or other variant can be selected according to the respective construction of the outlet openings 4 and the method of closure thereof.

In principle, it is possible to use as active substance fluid, for example, gels with very high viscosity or pastes which are not independently capable of flowing. In this case it can be recommended for the storage container 2, 3 to have a flexible wall portion or a flexible wall overall and an expulsion of the active substance fluid disposed therein takes place by pressure loading of the storage container 2, 3. This pressure loading may be exerted by way of, for example, an appropriate mechanism via the flushing liquid which flows over.

It has already been mentioned above that in the case of the multi-chamber dispensing device according to the invention dispensing mechanisms can, in principle, be used which are known from the state of the art for dispensing devices for a single active substance fluid. To that extent a constructional possibility applicable in the present case is that a plate-shaped distribution element is provided at the holder 1 and has a loading region flowed over by flushing liquid during the flushing process, wherein the interior of the storage container 2, 3 is disposed in permanent connection with the distribution element by way of the outlet opening 4, optionally with interposition of an arrangement preventing free flowing of the active substance fluid. According to a particularly preferred embodiment the plate-shaped distribution element is associated in common with all storage containers 2, 3.
The illustrated and preferred embodiment depicts a solution operating with an actively closing sealing element. Here the outlet opening 4, which is arranged at the base, of the storage container 2, 3 is closed by means of, in particular, a sealing element 5. The sealing element 5 is biased into the closed setting closing the outlet opening 4 and is displaceable against the biasing force into a release setting slightly freeing the outlet opening 4.

For displacing the sealing element 5 there is provided an actuating element 6 which co-operates with the sealing element 5 and which is transiently loaded by a force via the flushing liquid in each flushing process to such an extent that the sealing element 5 temporarily adopts the release setting against the biasing force. For that purpose a loading region 7 which is acted on by flushing liquid during the flushing process and on which the flushing liquid thus impinges during the flushing process is disposed at the actuating element 6. The actuating element 6 is constructed as a single-arm lever pivotally connected at one end with the holder 1. The sealing element 5 is arranged at the actuating element 6 at a specific spacing from the loading region 7. Due to the single-arm construction of the lever forming the actuating element 6 (FIG. 3) the effective direction of the force exerted by the flushing liquid is aligned with the direction of opening of the sealing element 5. The sealing element 5 can thereby be lifted from below from the outlet opening 4 of the storage container 2, 3. It is thus possible without further measures to exchangeably mount the storage containers 2, 3 without special constructional features.

In the illustrated embodiment the sealing element 5 is arranged between the end, which is pivotally connected with the holder 1, of the actuating element 6 and the loading region 7. The opening path of the sealing element 5 is thus comparatively small and opening takes place, as desired, with only a quite small gap. Moreover, this gap is, with appropriate design of the sealing element 5, opened asymmetrically, namely opening more strongly in the direction of the loading region 7 so that the effective substance fluid preferentially issues in this direction. That is the direction for the flushing liquid, with which the effective substance fluid then appropriately mixes. The effective substance fluid can thus run on the upper side of the actuating element 6 in the direction of the loading region 7 and already mixes on this path with the flushing liquid which flows over.

It is possible to provide for the sealing element 5 to be integrally formed at the actuating element 6. This is recommended particularly in the case of design of the actuating element 6 from a plastic material, particularly from plastic material capable of injection moulding. In addition, the holder 1 can, in particularly preferred manner, consist of plastic material, especially a plastic material capable of injection moulding, preferably thermoplastic synthetic material. Overall, it can be provided that the actuating element 6 is integrally formed at the holder 1 and the biasing force is produced by the inherent resilience of the actuating element 6.

The illustrated and preferred embodiment is now distinguished in particular manner by the fact that the actuating element 6 is associated in common with the sealing elements 5 for at least two storage containers 2, 3, preferably for all storage containers 2, 3. There can be recognised in FIG. 1 in plan view the wide actuating element 6, which is of plate-shaped construction, with the equally wide, pan-shaped loading region 7 and the small outflow openings 8 recognisable therein, all in the frame-shaped base plate 9 of the holder 1. The arrangement of the outlet openings 4 at the storage containers 2, 3 is matched thereto. In particular, these containers are, with respect to the centre of the overall dispensing device, constructed asymmetrically with outlet openings 4 offset relative to the centre of the dispensing device overall (FIG. 2). There is thereby obtained a concentration of the active substance exit at a relatively narrowly defined region regardless of the fact that two storage containers 2, 3 are provided.

Finally, a dispensing, which is controlled in specific manner, of active substance fluid from the different storage containers 2, 3 can be realised in the manner that the flow cross-sections at the outlet openings 4 and/or at the sealing elements 5 are able to be determined and/or set to be different.

Finally, there are a number of design possibilities of the illustrated dispensing device in constructional respects, particularly with regard to the arrangement and formation of the outlet openings and sealing elements. In this connection, there is a contemporaneously filed parallel patent application of the applicant, to the disclosure content of which reference may be made. In particular, a simultaneous metering or a metering delayed in time can be realised with the same or different concentration from the different storage containers.

The present invention is further explained by reference to the following examples, which do not, however, restrict the invention in any manner. Different active substance fluid combinations for the storage containers 2, 3 of the dispensing device according to the invention are described in the examples.

1) Perfumed aromatic phase combined with chlorine bleach: not able to be realised in practice with storage stability in a single-tank system.

a) Aromatic Phase

<table>
<thead>
<tr>
<th>Composition:</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FAEOS-Na, C_{12-14}, 2 EO</td>
<td>24.50%</td>
<td>basic surfactant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>alky</td>
<td>(C_{10-12})</td>
<td>15-glucoside</td>
<td>2.88%</td>
<td>co. surfactant/</td>
</tr>
<tr>
<td>1,2-propanediol</td>
<td>5.00%</td>
<td>emulsifier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ethan</td>
<td>(96%), 1% MEK denatured</td>
<td>5.00%</td>
<td>co. emulsifier</td>
<td></td>
</tr>
<tr>
<td>hydroxysterylcellulose</td>
<td>0.45%</td>
<td>thickener</td>
<td></td>
<td></td>
</tr>
<tr>
<td>perfume oil, pine tar</td>
<td>10.00%</td>
<td>aromatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hemiacetal-isothiazolin combination</td>
<td>0.05%</td>
<td>preservative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>colorants</td>
<td>&lt;1.00%</td>
<td></td>
<td>ad.100%</td>
<td></td>
</tr>
<tr>
<td>tap water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

0) e.g. Natronol 250 HBR

approx. 3000 mpas, 20° C., Rotovisko LVT, hydrometer 2, 6 rpm

6.5 pH, undiluted

clear solution

Production:

Provide warm water of 20-25° C. Add colorants and preservative under continuous agitation and subse-
quently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running during the approx. 60 minute swelling time (test by glass-plate test for freedom from pinholing); if pinholes are still present, further agitation needed. Add surfactants, then alcohols. Finally, add perfume and check batch with respect to release parameters.

[0058] b) Bleach Phase Containing Chlorine (approx. 1% Active Chlorine)

[0059] Composition:

- Na-hypochlorite (12.5% active chlorine) 8.00%
- sodium hydroxide (50%) 2.50%
- Oxy-Rite 100(2) 0.10%
- polyacrylate polymer(2) 1.00%
- cocoalkyl/phenyl/ether/soap(3) 2.00%
- distilled water ad. 100

(1) maker BF Goodrich
(2) maker BF Goodrich, e.g. Carbopol (Registered Trade Mark) 676
(3) e.g. Genaminion CS/company Clariant GmbH

[0060] approx. 2500 mPas, 20° C., Rotovisko LVT, hydrometer 2, 6 rpm

[0061] 12.7 pH, undiluted

[0062] opaque solution

[0063] Production:

[0064] Provide water. Spread in thickener at medium to high rotational speed (approx. 800 rpm) (test by glass-plate test for freedom from pinholing); if polymer particles are still present, further agitation needed. Thereafter add Oxyrite. Neutralise the solution by NaOH. For a maximum viscosity, the pH value should be set to above 12.5. Stir in the Na-hypochlorite solution at reduced rotational speed.

[0065] 2) Highly perfumed aromatic phase combined with foam booster phase.

[0066] a) Aromatic Phase with High Perfume Content

[0067] Composition:

- FAEOS-Na, C_{12-14} + 2 EO(2) 24.50% basic surfactant
- alkyl [C_{x-y}]-1-glucoside(2) 2.88%
- 1,2-propanediol 10.00%
- ethanol 16%, 1% MEK denatured 5.00%
- hydroxyethylcellulose 0.45%
- perfume oil, citrus tang 20.00%
- hemicetal-isothiazolin combination 0.05%
- colorants <1.00%
- tap water ad.100

(1) e.g. Texapon N 70
(2) e.g. Gluconon 220 UP-W

[0068] approx. 2500 mPas, 20° C., Rotovisko LVT, hydrometer 2, 6 rpm

[0069] 6.5 pH, undiluted

[0070] clear solution

[0071] Production:

[0072] Provide warm water of 20-25° C. Add colorants and preservative under continuous agitation and subsequently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running during the approx. 60 minute swelling time (test by glass-plate test for freedom from pinholing); if pinholes are still present, further agitation needed. Add surfactants, then alcohols. Finally, add perfume and check batch with respect to release parameters.

[0073] b) Highly Concentrated Surfactant Phase Thickened with Betaine/Chlorine

[0074] Composition:

- FAEOS-Na, C_{12-14} + 2 EO(2) 30.00% basic surfactant
- cocamidopropyl betaine(1) 20.00% co. surfactant
- NaCl, denatured 1.50% thickener
- hemicetal-isothiazolin combination colorants <1.00% preservative
- tap water ad.100

(1) e.g. Debyton K

[0075] approx. 5500 mPas, 20° C., Rotovisko LVT, hydrometer 2, 20 rpm

[0076] 6.5 pH, undiluted

[0077] clear solution

[0078] Production:

[0079] Provide water. Dissolve colorants and preservative and then stir in surfactant. Set viscosity with NaCl.

[0080] 3) Aromatic phase combined with acid descaling active substance phase.

[0081] a) Aromatic Phase

[0082] Composition:

- FAS-Na, C_{12-14}(1) 29.50% basic surfactant
- alkyl [C_{x-y}]-polyglycoside(2) 3.30% co. surfactant/ emulsifier
- 1,2-propanediol 5.00% emulsifier
- ethanol 96%, 1% MEK denatured 5.00% co. emulsifier
- hydroxyethylcellulose 0.45% thickener
- perfume oil, aqua tang 10.00%
- trisodium citrate(5) 2 H2O 2.00% aromatic
- hemiacetal-isothiazolin combination colorants 0.05% preservative
- tap water ad.100

(1) e.g. Texapon LS 35
(2) e.g. Gluconon 600 CS-UP

[0083] approx. 2500 mPas, 20° C., Rotovisko LVT, hydrometer 2, 6 rpm

[0084] 8.0 pH, undiluted

[0085] clear solution

[0086] Production:

[0087] Provide warm water of 20-25° C. Add colorants and preservative under continuous agitation and subsequently dissolve for 5 minutes. Spread in thickener at
medium to high rotational speed. Keep agitator running during the approx. 60 minute swelling time (test by glass-
plate test for freedom from pinholing); if pinholes are still present, further agitation needed. Add surfactants, then alco-
hols. Finally, add perfume and check batch with respect to release parameters.

[0088] b) Acid Descaling Phase, Thickened by Polysac-
charide

[0089] Composition:

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAEOS-Na, C_{12-14} + 2 EO</td>
<td>8.11%</td>
</tr>
<tr>
<td>alkyl (C_{6-10})-1,5-glucoside</td>
<td>5.44%</td>
</tr>
<tr>
<td>citric acid</td>
<td>3.00%</td>
</tr>
<tr>
<td>polysaccharide/xanthene gum&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.20%</td>
</tr>
<tr>
<td>ethanol 96%, 1% MEK denatured</td>
<td>3.00%</td>
</tr>
<tr>
<td>perfume oil, aqua tang</td>
<td>6.00%</td>
</tr>
<tr>
<td>hemiacetal-isothiazolin combination</td>
<td>0.05%</td>
</tr>
<tr>
<td>colorants</td>
<td>&lt;0.05%</td>
</tr>
<tr>
<td>tap water</td>
<td>ad 100%</td>
</tr>
</tbody>
</table>

<sup>1</sup>E.g. Rhodopal T

<sup>2</sup>Approx. 3500 mPas, 20° C, Rotovisko LVT, hydrometer 2, 20 rpm

[0090] 2.5 pH, undiluted

[0091] clear solution

[0093] Production:

[0094] Provide water. Add colorants and preservative under continuous agitation and subsequently dissolve for 5
minutes. Spread in thickener at medium to high rotational speed. Keep agitator running during the approx. 60 minute
swelling time. Add surfactants, then alcohols. Finally, add perfume and citric acid and check batch with respect to release
parameters.

[0095] 4) Aromatic phase combined with antibacterial active substance phase.

[0096] a) Aromatic Phase/Foam-Activated by ABS Formulation

[0097] Composition:

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na-alkylbenzolsulfonate&lt;sup&gt;1&lt;/sup&gt;</td>
<td>25.50%</td>
</tr>
<tr>
<td>C_{12-14}-oxoalcohol + 10 EO&lt;sup&gt;2&lt;/sup&gt;</td>
<td>10.00%</td>
</tr>
<tr>
<td>1,2-propandiol</td>
<td>5.00%</td>
</tr>
<tr>
<td>ethanol 96%, 1% MEK denatured</td>
<td>5.00%</td>
</tr>
<tr>
<td>hydroxyethylic/cellulose</td>
<td>0.45%</td>
</tr>
<tr>
<td>perfume oil, lemon tang</td>
<td>10.00%</td>
</tr>
<tr>
<td>hemiacetal-isothiazolin combination</td>
<td>0.05%</td>
</tr>
<tr>
<td>colorants</td>
<td>&lt;1.00%</td>
</tr>
<tr>
<td>tap water</td>
<td>ad 100%</td>
</tr>
</tbody>
</table>

<sup>1</sup>E.g. Marilon A 250, company Hils
<sup>2</sup>E.g. Genapel-OK-X-100, company Clariant

[0098] approx. 2500 mPas, 20° C, Rotovisko LVT, hydrometer 2, 6 rpm

[0099] 9.1 pH, undiluted

[0100] clear solution

[0101] Production:

[0102] Provide warm water of 20-25° C. Add colorants and preservative under continuous agitation and subse-
quently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running
during the approx. 60 minute swelling time (test by glass-
plate test for freedom from pinholing); if pinholes are still present, further agitation needed. Add surfactants, then alco-
hols. Finally, add perfume and check batch with respect to release parameters.

[0103] b) Antibacterial Phase

[0104] Composition:

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAEOS-Na, C_{12-14} + 2 EO</td>
<td>24.50%</td>
</tr>
<tr>
<td>alkyl (C_{6-10})-1,5-glucoside</td>
<td>2.80%</td>
</tr>
<tr>
<td>1,2-propandiol</td>
<td>5.00%</td>
</tr>
<tr>
<td>ethanol 96%, 1% MEK denatured</td>
<td>5.00%</td>
</tr>
<tr>
<td>hydroxyethylic/cellulose</td>
<td>0.45%</td>
</tr>
<tr>
<td>perfume oil, lemon tang</td>
<td>10.00%</td>
</tr>
<tr>
<td>hemiacetal-isothiazolin combination</td>
<td>0.10%</td>
</tr>
<tr>
<td>salicyclic acid, tech.</td>
<td>0.60%</td>
</tr>
</tbody>
</table>

[0105] approx. 2700 mPas, 20° C, Rotovisko LVT, hydrometer 2, 6 rpm

[0106] 5.5 pH, undiluted

[0107] clear solution

[0108] Production:

[0109] Provide warm water of 20-25° C. Add colorants and preservative under continuous agitation and subse-
quently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running
during the approx. 60 minute swelling time (test by glass-
plate test for freedom from pinholing); if pinholes are still present, further agitation needed. Add surfactants, then alco-
hols. Finally, add perfume and check batch with respect to release parameters.

[0110] 5) Different acid systems with high descaling activity

[0111] a) Lactic Acid Phase

[0112] Composition:

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAEOS-Na, C_{12-14} + 2 EO</td>
<td>8.11%</td>
</tr>
<tr>
<td>alkyl (C_{6-10})-1,5-glucoside</td>
<td>5.44%</td>
</tr>
<tr>
<td>lactic acid&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2.50%</td>
</tr>
<tr>
<td>polysaccharide/xanthene gum</td>
<td>0.22%</td>
</tr>
<tr>
<td>ethanol 96%, 1% MEK denatured</td>
<td>3.00%</td>
</tr>
<tr>
<td>perfume, orange tang</td>
<td>8.00%</td>
</tr>
<tr>
<td>hemiacetal-isothiazolin combination</td>
<td>0.05%</td>
</tr>
<tr>
<td>colorants</td>
<td>&lt;1.00%</td>
</tr>
<tr>
<td>tap water</td>
<td>ad 100%</td>
</tr>
</tbody>
</table>

<sup>2</sup>Purac 80
Production:

[0117] Provide water. Add colorants and preservative under continuous agitation and subsequently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running during the approx. 60 minute swelling time. Add surfactants, then alcohols. Finally, add perfume and lactic acid and check batch with respect to release parameters.

[0118] b) Citric Acid Phase/Nio-Surfactant Base

[0119] Composition:

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA-C12-18 + 7 EO</td>
<td>12.50% basic surfactant/ emulsifier</td>
</tr>
<tr>
<td>alkyl (C12&lt;sub&gt;-&lt;/sub&gt;C18)gluco-side</td>
<td>5.44% co. surfactant</td>
</tr>
<tr>
<td>oleyl-cetylalcohol + 5 EO</td>
<td>5.00% co.emulsifier</td>
</tr>
<tr>
<td>citric acid</td>
<td>5.00% descaler</td>
</tr>
<tr>
<td>polysaccharide/xanthene gum</td>
<td>0.20% thickener</td>
</tr>
<tr>
<td>ethanol 96%, 1% MEK denatured</td>
<td>0.05% co. emulsifier</td>
</tr>
<tr>
<td>perfume oil, orange</td>
<td>12.00% aromatic</td>
</tr>
<tr>
<td>hemisecetal-isothiazolin combination</td>
<td>0.05% preservative</td>
</tr>
<tr>
<td>colorants</td>
<td>&lt;1.00%</td>
</tr>
<tr>
<td>tap water</td>
<td>ad./100</td>
</tr>
</tbody>
</table>

[0120] approx. 3500 mPas, 20° C., Rotovisko LVT, hydrometer 2, 20 rpm

[0121] 2.2 pH, undiluted

[0122] clear solution

[0123] Production:

[0124] Provide water. Add colorants and preservative under continuous agitation and subsequently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running during the approx. 60 minute swelling time. Add surfactants, then alcohols. Finally, add perfume and citric acid and check batch with respect to release parameters.

[0125] b) Aromatic phase combined with active substance phase with enzyme content

[0126] a) Aromatic Phase

[0127] Composition:

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAEO5-Na, C12-14 + 2 EO</td>
<td>24.50% basic surfactant</td>
</tr>
<tr>
<td>Na-allane-sulfonate&lt;sup&gt;03&lt;/sup&gt;</td>
<td>8.50% co. surfactant</td>
</tr>
<tr>
<td>1,2-propandiol</td>
<td>5.00% emulsifier</td>
</tr>
<tr>
<td>ethanol 96%, 1% MEK denatured</td>
<td>5.00% co. emulsifier</td>
</tr>
<tr>
<td>hydroxyethylcellulose</td>
<td>0.45% thickener</td>
</tr>
<tr>
<td>perfume oil, fruit blossom</td>
<td>9.00% aromatic</td>
</tr>
<tr>
<td>hemisecetal-isothiazolin combination</td>
<td>0.05% preservative</td>
</tr>
<tr>
<td>colorants</td>
<td>&lt;1.00%</td>
</tr>
<tr>
<td>tap water</td>
<td>ad./100</td>
</tr>
</tbody>
</table>

[0128] approx. 2500 mPas, 20° C., Rotovisko LVT, hydrometer 2, 6 rpm

[0129] 6.8 pH, undiluted

[0130] clear solution

[0131] Production:

[0132] Provide warm water of 20-25° C. Add colorants and preservative under continuous agitation and subsequently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running during the approx. 60 minute swelling time (test by glass-plate test for freedom from pinholing); if pinholes are still present, further agitation needed. Add surfactants, then alcohols. Finally, add perfume and check batch with respect to release parameters.

[0133] b) Enzyme Phase

[0134] Composition:

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAEO5-Na, C12-14 + 2 EO</td>
<td>24.50% basic surfactant</td>
</tr>
<tr>
<td>alkyl (C12&lt;sub&gt;-&lt;/sub&gt;C18)glu-co-side</td>
<td>2.88% co. surfactant/emulsifier</td>
</tr>
<tr>
<td>1,2-propandiol</td>
<td>5.00% emulsifier</td>
</tr>
<tr>
<td>ethaneol 96%, 1% MEK denatured</td>
<td>5.00% co. emulsifier</td>
</tr>
<tr>
<td>hydroxyethylcellulose</td>
<td>0.45% thickener</td>
</tr>
<tr>
<td>perfume oil, fruit blossom</td>
<td>9.00% aromatic</td>
</tr>
<tr>
<td>hemisecetal-isothiazolin combination</td>
<td>0.05% preservative/ antibacterial active substance</td>
</tr>
<tr>
<td>lipase</td>
<td>0.50% enzyme</td>
</tr>
<tr>
<td>colorants</td>
<td>&lt;1.00%</td>
</tr>
<tr>
<td>tap water</td>
<td>ad./100</td>
</tr>
</tbody>
</table>

[0135] approx. 2700 mPas, 20° C., Rotovisko LVT, hydrometer 2, 6 rpm

[0136] 6.5 pH, undiluted

[0137] clear solution

[0138] Production:

[0139] Provide warm water of 20-25° C. Add colorants and preservative under continuous agitation and subsequently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running during the approx. 60 minute swelling time (test by glass-plate test for freedom from pinholing); if pinholes are still present, further agitation needed. Add surfactants, then alcohols. Finally, add perfume and check batch with respect to release parameters.

[0140] 7) Perfumed acid phase combined with active substance phase to colour flushing water

[0141] a) Acid Phase

[0142] Composition:

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAEO5-Na, C12-14 + 2 EO</td>
<td>20.10% basic surfactant</td>
</tr>
<tr>
<td>alkyl (C12&lt;sub&gt;-&lt;/sub&gt;C18)gluco-side</td>
<td>5.44% co. surfactant</td>
</tr>
<tr>
<td>citric acid</td>
<td>2.50% descaler</td>
</tr>
<tr>
<td>formic acid</td>
<td>1.50% descaler</td>
</tr>
<tr>
<td>polysaccharide/xanthene gum</td>
<td>0.22% thickener</td>
</tr>
<tr>
<td>ethanol 96%, 1% MEK denatured</td>
<td>3.00% co. emulsifier</td>
</tr>
<tr>
<td>perfume oil, mint</td>
<td>10.00% aromatic</td>
</tr>
</tbody>
</table>
Production:

Provide warm water of 20-25°C. Add colorants and preservative under continuous agitation and subsequently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running during the approx. 60 minute swelling time. Add surfactants, then alcohols. Finally, add perfume and check batch with respect to release parameters.

Composition:

FAEOS-Na, C_{12-14} + 2 EO 24.5% basic surfactant
alkyl (C_{12-16})-1,5-glucoside 2.88% co. surfactant/emulsifier
tetrahydrofurfuryl alcohol 10.00% emulsifier
hydroxyethylcellulose 0.45% thickener
perfume oil, willow green 10.00% aromatic
colorants <1.00% odour absorber
tap water ad.100

(1)Tego-Sorb, conc. 50, company Goldschmidt

Production:

Provide warm water of 20-25°C. Add colorants and preservative under continuous agitation and subsequently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running during the approx. 60 minute swelling time (test by glass-plate test for freedom from pinholing); if pinholes are still present, further agitation needed. Add surfactants, then alcohols. Finally, add perfume and check batch with respect to release parameters.
9) Perfumed acid phase combined with active substance phase with available oxygen

a) Acid Phase with Available Oxygen

Composition:

- FAEOS-Na, C15-14 + 2 EO 20.10% basic surfactant
- alkyl (C8-18) - 1.5-glucoside 5.46% co-surfactant
- citric acid 2.00% descaler
- polysaccharide/xanthene gum 0.22% thickener
- ethanol 96%, 1% MEK denaturated 3.00% co-emulsifier
- perfume oil, apple 8.00% aromatic
- hemisuccinic-isothiazolin combination 0.05% preservative
- hydrogen peroxide and oxygen (10%) 2.86% available oxygen
- diethylene triamine pentaethylene phosphoric acid NaO 0.16% stabiliser
- colorants, pigment <1.00%
- tap water ad 100

b) Polyacrylate-Thickened Acid Substance phase

Composition:

- FAEOS-Na, C15-14 + 2 EO 20.10% basic surfactant
- alkyl (C8-18) - 1.5-glucoside 5.44% co-surfactant
- citric acid 4.00% descaler
- polysaccharide/xanthene gum 0.22% thickener
- ethanol 96%, 1% MEK denaturated 3.00% co-emulsifier
- hemisuccinic-isothiazolin combination 0.05% preservative
- colorants <1.00%
- tap water ad 100

Production:

- Provide water. Add surfactants, then alcohols. Work in perfume and acids and check batch with respect to release parameters.

10) Perfumed acid phase combined with polyacrylated thickened active substance phase

a) Acid Phase

Composition:

- FAEOS-Na, C15-14 + 2 EO 20.10% basic surfactant
- alkyl (C8-18) - 1.5-glucoside 5.44% co-surfactant
- citric acid 4.00% descaler
- polysaccharide/xanthene gum 0.22% thickener
- ethanol 96%, 1% MEK denaturated 3.00% co-emulsifier
- hemisuccinic-isothiazolin combination 0.05% preservative
- colorants <1.00%
- tap water ad 100

Production:

- Provide water. Add colorants and preservative under continuous agitation and subsequently dissolve for 5 minutes. Spread in thickener at medium to high rotational speed. Keep agitator running during the approx. 60 minute swilng time. Add surfactants, then alcohols. Add perfume and acids and finally add the stabilizer and hydrogen peroxide and check batch with respect to release parameters.

Approx. 3500 mPas, 20°C, Rotovisko LVT, hydrometer 2, 20% pH, undiluted

Clear solution
which has a loading region flowed over by flushing liquid during the flushing process, wherein the interior of the storage containers 2, 3 is permanently connected with the distribution element 6 by way of the outlet openings 4, optionally with interposition of a respective arrangement preventing free flowing of the active substance fluid. It can be readily gathered how the variants proposed here can be transferred in corresponding manner to a plate-shaped movable actuating element 6.

[0201] As the appropriate state of the art already shows (for example, WO 99/66140 A), the plate-shaped distribution element 6 has, on the upper side and near a longitudinal edge, for the storage container 2 or 3 a connection point 10 for the outlet opening 4 thereof. In the illustrated example of embodiment the connection point 10 is executed in star-shape or cone-shape as a form of pushing-open tip. In the case of appropriate viscosity of the active substance fluid the depression 11 emanating here in the sense of a targeted dispensing each time of a part quantity of the active substance fluid into the flushing liquid.

[0202] It is now provided that the connection points 10 are here arranged near the longitudinal edge adjacent to one another at a spacing and that the distribution element 6 on the upper side extends out from the connection points 10 and has depressions 11 which reach approximately up to the oppositely disposed longitudinal edge and which serve for distribution of the active substance fluids into the flushing liquid.

[0203] In order that the depressions 11 can appropriately fulfill their function of distribution of the active substance fluids into the flushing liquid it is recommended to form the depressions 11 to be channel-shaped, preferably with U-shaped, V-shaped, W-shaped or semicircular cross-section or as a series of punctiform depressions or as intermediate spaces between rows of punctiform or strip-shaped protrusions. In that case provision can be made to widen or narrow the depressions 11 towards the ends thereof.

[0204] In the embodiment of a distribution element 6 of FIG. 4 and FIG. 5 the depressions 11 are formed to be channel-shaped, wherein these depressions 11 widen towards their ends.

[0205] In addition it can be provided to arrange the depressions 11 to extend rectilinearly and/or parallelly towards one another or to be radiating in shape, curved, zigzagged, wave-shaped or cascade-shaped. In the embodiment of FIG. 4 and FIG. 5, the depressions extend rectilinearly and parallelly to one another.

[0206] If it is desired to avoid a premature premixing of the active substance fluids, it can be provided that the depressions 11 differ from the different connection points 10 or associated therewith do not or substantially do not cross one another.

[0207] Alternatively, provision can be made for the active substance fluids of the different storage containers 2, 3 to be premixed relatively quickly. A contribution to that purpose can then be made if the depressions 11 emanating from different connection points 10 are arranged to cross one another or at least in part run towards one another. In addition, mutually crossing depressions 11 are just as usable.

[0208] FIG. 4 and FIG. 5 show—to that extent a special embodiment as is already provided—that the connection points 10 are directly interconnected near the longitudinal edge by way of at least one transversely extending depression 12. There is thereby obtained a cross-mixing on a relatively wide depression 12 in the region below the storage containers 2, 3.

[0209] There are similarly different possibilities for the design of the distribution element 6 or, in the alternative design variants, the actuating element 6. It can be provided at the outset that the distribution element 6 or the actuating element 6 is formed in plan view to be approximately rectangular, square, round, oval or elliptical. The distribution element 6 illustrated by way of example in FIGS. 4 and 5 is formed to be approximately rectangular in plan view.

[0210] However, other designs with other shapes in plan view can also be realised, for example realised in the manner that the distribution element 6 or the actuating element 6 is formed in plan view to be approximately muller-shaped, blossom-shaped, leaf-shaped, butterfly-shaped, in the form of a slice of fruit, or the like.

[0211] Similarly, there are different possibilities for the design of the distribution element 6 in section. There is no constraint to a flat planar form. Inclined and wavy shapes can also come under the term 'plate-shaped'. In particular, it can be provided that the distribution element 6 or the actuating element 6 is formed overall to extend in cross-section concavely, convexly, curvilinearly, in muller-shape, in cascade-shape or in funnel-shape.

[0212] This can also be realised section-by-section per connection point 10.

[0213] With respect to the selection of material there is recommended for the distribution element 6 in the first instance plastic material and, in particular, also a hygienically appropriate plastic material, for example polypropylene. Obviously also other materials can be selected insofar as they can be appropriately equipped for the purpose of use. In particular, a sintered material, particularly also a sintered plastic material, would be recommended here, which due to its porosity can have an additional storage function and a mixing function and the function of a means of foaming up the flushing liquid mixed with active substance fluid. Alternatives are obviously also other materials such as ceramic, glass, metal or, in a particularly extravagant variant, also an appropriately equipped wood.

[0214] There are still further proposals in detail for the design of the distribution element 6 (or the actuating element 6). In the first instance it can be recommended that the number of depressions on the distribution element 6 or the actuating element 6 amounts to between 2 and 10, preferably between 10 and 50. Moreover, it is proposed that the width of the depressions 11 at the surface amounts to between 0.5 and 5.0 mm, preferably between 1.0 and 2.0 mm. Finally, it is recommended that the depth of the depressions 11 is between 0.2 mm and 4.0 mm, preferably between 0.5 mm and 2.0 mm.

[0215] With respect to the design of the distribution element 6 in terms of size, it is recommended that the total area of the distribution element 6 or the actuating element 6 is between 500 mm² and 8,000 mm², preferably between 2,000 mm² and 4,000 mm².

[0216] The variants, which are illustrated in FIGS. 4 to 24, of different distribution elements 6 shall again be briefly explained in detail in the following.
[0217] FIG. 4 shows a perspective view of a distribution element 6 with depressions 11 which extend in parallel alignment with one another and which widen towards the ends. These all emanate from a wide depression 12 which extends transversely near the longitudinal edge and connects the connection points 10 together and which has the function of a predistributor and a premixer.

[0218] FIG. 5 shows the plan view of the distribution element 6 of FIG. 4.

[0219] FIG. 6 shows, in perspective view, a further distribution element 6 which is, in principle, constructed similarly to the previously explained example. However, here the depressions 11 are oriented away from one another and arranged to a certain extent to be radiating in shape.

[0220] FIG. 7 shows an arrangement in which the depressions 11, which are associated with both connection points 10, are arranged to extend entirely separately and away from one another. In detail, the depressions here extend acutely or curvilinearly and the plate is convoluted arched.

[0221] FIG. 8 shows a construction similar to FIG. 7 insofar as here, too, the depressions 11 lead away separately from the individual connection points 10. Here there is provided for each of them a radiating arrangement of the depressions 11 which in turn widen towards their ends. Moreover, it is of interest, as in the case of FIG. 7 and FIG. 8, that the transversely extending wide predistributor is absent.

[0222] FIG. 9 shows a variant similar to FIG. 8, but now with depressions 11 which extend in zigzag shape and mainly do not cross. The plate here drops away laterally outwards so that a cascade-shaped structure is formed.

[0223] FIG. 10 shows an arrangement with transverse depressions which extend in wave shape and which go out from two depressions 11 running parallel to one another and extending rectilinearly away from the connection points 10.

[0224] FIG. 11 shows depressions 11, which emanate in radiating form from the respective connection points 10, with dot rows arranged therein.

[0225] FIG. 12 shows, on the surface of the distribution element 6, the depressions 11 realised in such a manner that they are formed between elevated rows of dots.

[0226] FIG. 13 shows flat members which are arranged one above the other in the manner of roof shingles on the distribution element 6 and which lead to a cascade-shaped arrangement of the depressions 11.

[0227] FIG. 14 shows a variant in which the distribution element 6 is upwardly arched in overall cross-section, thus representing a convexity just as in the previous figure and contrary to the design in the further embodiments described beforehand in which it represented a concavity. Here there are depressions 11 extending curvilinearly from one to the other connection point 10, thus running towards one another.

[0228] FIG. 15 again shows a flat plate as a distribution element 6, in which the depressions 11 again similarly run towards one another, here emanating from the wide depression 12, which was already explained earlier and which extends directly transversely, between the connection points 10; the depressions 11, however, extend approximately angularly overall and initially widen and then narrow towards the end. Of interest here in addition is a central wide additional depression extending to the oppositely disposed longitudinal edge of the distribution element 6.

[0229] FIG. 16 shows in turn a distribution element 6, which is instead designed to be convex in cross-section, with substantially angularly extending depressions 11, but otherwise designed similarly to the previous embodiment.

[0230] FIG. 17 shows a respective depression 11 which extends from each connection point 10 to the oppositely disposed longitudinal edge and which is additionally structured by transversely disposed depressions 11.

[0231] FIG. 18 shows a design, which is already explained per se, of the depressions 11 with an overall convexly formed cross-sectional shape of the distribution element 6, but the distribution element 6 in plan view with an approximately mussel-shaped form.

[0232] FIG. 19 shows, in plan view, a distribution element 6 with, instead, a leaf-shaped form, the depressions 11 here being arranged to cross one another.

[0233] FIG. 20 shows an arrangement which is similar to the previous embodiment, but in which the depressions 11 extend curvilinearly, yet similarly crossing one another.

[0234] FIG. 21 shows a construction of a distribution element 6 with a particularly large number of depressions 11 which are constructed and arranged to be curved and to cross one another.

[0235] FIG. 22 shows a distribution element 6 with rectilinearly extending, but rectilinearly arranged, depressions 11 which in part widen or narrow and thereby have an auxiliary structure imposed thereupon.

[0236] FIG. 23 equally shows a flat distribution element 6 in which the similar structure of the depressions 11 is realised by series of dot rows, between which the depressions 11 are disposed.

[0237] FIG. 24 corresponds with FIG. 16, but with a concave instead of convex curvature of the plate.

[0238] Reference has already been made several times in the above to the fact that in the case of the multi-chamber dispensing device according to the invention the dispensing mechanisms known from the state of the art for dispensing devices for a single active substance fluid can in principle be used.

[0239] According to a further teaching, which is independent in itself, of the invention the present patent application however also relates to a dispensing device which has, in particular, been optimised from the viewpoint of dispensing several, at least two, active substance fluids, but which can also be used as a dispensing device for a single active substance fluid.

[0240] FIG. 25 shows to that extent a particularly advantageously designed flushing plate, thus a stationary distribution element 6, which again is similarly executed to be plate-shaped. In the case of this dispensing device two storage containers 2, 3 provided in the holder 1 are present. However, it is equally conceivable that in purely constructional terms this arrangement can be realised even in the case of only one storage container 2.

[0241] It is here provided that the distribution element 6 is divided on the upper side, on the one hand, into a connection region 14, which emanates from one longitudinal edge 13 and in which a connection point 10 for the outlet opening 4 of the storage container 2; 3 is arranged, and, on the other hand, into the loading region 7 reaching from the connection region 14 substantially to the oppositely dis-
posed longitudinal edge 15, and that the surface in the connection region 14 is formed to be smooth apart from individual protrusions, depressions or interruptions present for reasons of fastening, connection or sealing. It has proved that the smooth top side of the distribution element 6', with correct setting of the gap between the lower edge of the outlet opening 4 of the storage container 2; 3 and the upper side of the distribution element 6', permits a sufficient distribution of the active substance fluid and a sufficient loading of the loading region 7. The attempts realised in the state of the art with all only possible shapings in the connection region 14 have thus proved to be not absolutely necessary if other parameters of the overall arrangement are set in advantageous manner.

0242] The embodiment illustrated in FIG. 25 exhibits in the connection region 14 not a smooth surface overall, but a smooth surface with the exception of such protrusions, depressions or interruptions as are present for reasons of fastening, connection and sealing. It is essential that the area on which the active substance fluid distributes is a smooth surface, this has neither ribs nor channels, nor is a porous plate.

0243] The circular points recognisable in FIG. 25 serve for fastening of this distribution element 6' to the holder 1 (not illustrated here).

0244] The illustrated embodiment shows the plate-shaped distribution element 6' for the two storage containers 2, 3 in common. For that purpose the connection points 10 for the outlet openings 4 of the storage containers 2, 3 are then disposed adjacent to one another at a spacing in the connection region 14. Even in the case of mixing of different active substance fluids the constructional solution, which is illustrated here, for the distribution element 6' has proved advantageous in practice.

0245] FIG. 25 further shows that a wide strip of smooth surface of the connection region 14 exists between the outer edge of the connection point 10 and the loading region 7.

0246] Thus, the entire connection region 14 of the distribution element 6' is thereby free of ribs, channels, etc., and has a smooth surface overall.

0247] The illustrated and, to that extent, preferred embodiment shows the connection points 10 again executed as a form of pushing-open tip, as has already been illustrated in the previously described embodiments.

0248] The illustrated and preferred embodiment with a stationary distribution element 6', which is illustrated in FIG. 25, is now further distinguished by the fact that the arrangement preventing free flowing of the active substance fluid has a spacer arrangement which surrounds, here annularly surrounds, the pushing-open tip or the like at the connection point 10 and which consists of individual spacers 16, which slightly protrude from the surface in the connection region 14 and on which the lower edge 17 of the connection opening 4 of the storage container 2, 3 stands. In FIG. 25 there can be recognised the spacers 16 which are arranged circularly around the pushing-open tip at the connection point 10 and which are so arranged and leave free such a gap therebetween that the lower edge 17 of the outlet opening 4 of the storage container 2, 3 can be seated there and the active substance fluid can exit to the side between the spacers 16. At the same time, entry regions are also formed in the air flowing back into the lower end of the deepest point of the depressions 11 in the loading region 7. The active substance fluid can thus enter at the end into the depressions 11. At the same time the possibility of access for water below the edge of the front wall 19 is limited as strongly as possible, there can otherwise be further recognised in FIG. 26 that a noticeable vertical spacing results between the underside of the holder 1 and the surface of the distribution element 6' in the connection region 14 in the free regions.
FIG. 25 finally still shows that, as already explained, the upper side of the distribution element 6' is smooth in the connection region 14 for the active substance fluid, but otherwise can have individual protrusions for reasons of fastening, connection and sealing. FIG. 25 shows, as a protrusion present for reasons of sealing, that in the connection region 14 a protective edge 20 projecting slightly upwardly from the upper side is formed on the side, which faces one longitudinal edge 13, of the connection point 10, especially to enclose the spacers 16 at this side.

1. Dispensing device for dispensing active substance fluids into the flushing liquid in a toilet bowl, with a holder (1), which can be suspended at the edge of the toilet bowl, and with at least two storage containers (2, 3), which are provided in the holder (1) and are separate from one another, each for a respective active substance fluid, wherein each storage container (2, 3) has an own outlet opening (4) by way of which the respective active substance fluid can be dispensed into the flushing liquid, characterised in that the storage containers (2, 3) are protected against entry of flushing liquid into the interior thereof and the outlet openings (4) of the storage containers (2, 3) are so arranged that only active substance fluid issues and that in each flushing process the dispensing of a partial quantity of the active substance fluid from each of the storage containers (2, 3) into the flushing liquid takes place.

2. Dispensing device according to claim 1, characterised in that the outlet opening (4) of the storage container (2, 3) is arranged at the base side in use setting.

3. Dispensing device according to claim 1 or 2, characterised in that the storage containers (2, 3) are mounted or mountable in the holder (1) to be individually exchangeable.

4. Dispensing device according to claim 1 or 2, characterised in that the storage containers (2, 3) are coupled together by means of an adapter or the like and can be mounted thus-coupled in the holder (1).

5. Dispensing device according to claim 1 or 2, characterised in that the storage containers (2, 3) are directly coupled together and are mountable thus-coupled in the holder (1).

6. Dispensing device according to claim 1 or 2, characterised in that the storage containers (2, 3) are formed in a common, unitary housing.

7. Dispensing device according to one of claims 1 to 6, characterised in that the storage containers (2, 3) are each individually refillable by way of a respective refilling opening and are optionally fixedly arranged or formed in the holder (1).

8. Dispensing device according to one of claims 1 to 7, characterised in that the storage containers (2, 3) are arranged adjacent to one another at the holder (1).

9. Dispensing device according to one of claims 1 to 7, characterised in that the storage containers (2, 3) are arranged one above the other at the holder (1).

10. Dispensing device according to one of claims 1 to 9, characterised in that the storage containers (2, 3) are mounted at the holder (1) by plugging in from above.

11. Dispensing device according to one of claims 1 to 9, characterised in that the storage containers (2, 3) can be mounted at the holder (1) by pushing in from the side.

12. Dispensing device according to one of claims 1 to 9, characterised in that the storage containers (2, 3) can be mounted at the holder (1) by placing at the side and pivoting in.

13. Dispensing device according to one of claims 1 to 12, characterised in that the storage container (2, 3) has a flexible wall section or a flexible wall overall and expulsion of the active substance fluid disposed therein is carried out by pressure loading of the storage container (2, 3).

14. Dispensing device according to one of claims 1 to 13, characterised in that a plate-shaped distribution element (6') is provided at the holder (1) and has a loading region (7) flowed over by flushing liquid during the flushing process and the interior of the storage container (2, 3) is permanently connected with the distribution element (6') by way of the outlet opening (4), optionally with interposition of an arrangement preventing free flowing of the active substance fluid.

15. Dispensing device according to claim 14, characterised in that the plate-shaped distribution element (6') is provided for at least two storage containers (2, 3) in common, preferably for all storage containers (2, 3).

16. Dispensing device according to one of claims 1 to 13, characterised in that the outlet opening (4) arranged at the storage container (2, 3) at the base side is closed by means of a sealing element (5), that the sealing element (5) is biased into the closed setting closing the outlet opening (4) and is adjustable against the biasing force into a release setting slightly freeing the outlet opening (4), that for adjustment of the sealing element (5) there is provided an actuating element (6) which co-operates with the sealing element (5) and which in each flushing process can be transiently loaded with a force by the flushing liquid to such an extent that the sealing element (5) temporarily adopts the release setting against the biasing force and that for that purpose a loading region (7) loaded by flushing liquid during the flushing process is located at the actuating element (6).

17. Dispensing device according to claim 16, characterised in that the actuating element (6) is constructed as a single-arm lever pivotably connected at one end with the holder (1), that the sealing element (5) is arranged at the actuating element (6) between the end pivotably connected with the holder (1) and the loading region (7) and that the actuating element (6) preferably extends linearly or with a decline from the sealing element (5) towards the loading region (7).

18. Dispensing device according to claim 16 or 17, characterised in that the actuating element (6) is associated in common with the sealing elements (5) for at least two storage containers (2, 3), preferably for all storage containers (2, 3).

19. Dispensing device according to one of claims 1 to 18, characterised in that in the case of two storage containers (2, 3) these are constructed asymmetrically with respect to the centre of the dispensing device as a whole.

20. Dispensing device according to claim 19, characterised in that the outlet openings (4) of the storage containers (2, 3) are arranged at the storage containers (2, 3) to be offset towards the centre of the dispensing device as a whole.

21. Dispensing device according to one of claims 1 to 20, characterised in that the flow cross-sections at the outlet openings (4) and/or the biasing forces at the sealing elements (5) can be determined to be different and/or set to be different.

22. Dispensing device according to one of claims 1 to 21, characterised in that the storage containers (2, 3) contain corresponding active substance fluids, in particular are filled therewith.
23. Dispensing device according to one of claims 1 to 21, characterised in that the storage containers (2, 3) contain different active substance fluids, in particular are filled therewith, wherein the different active substance fluids can be compatible or incompatible with one another.

24. Dispensing device according to claim 22 or 23, characterised in that the active substance fluid is an aromatic phase, particularly a perfumed aromatic phase.

25. Dispensing device according to claim 24, characterised in that the aromatic phase contains at least one aromatic, preferably a perfume oil, at least one surfactant or an emulsifier and water as well as optionally further ingredients such as preservatives, thickeners, sequestering agents, colorants, further surfactants or emulsifiers, stabilisers or descalers.

26. Dispensing device according to claim 22 or 23, characterised in that one active substance fluid comprises a bleaching phase, preferably an active substance fluid containing chlorine, preferably on the basis of hypochlorite, wherein the bleaching phase can optionally contain further ingredients such as thickeners, surfactants and emulsifiers, neutralisers, colorants and aromatics.

27. Dispensing device according to claim 22 or 23, characterised in that one active substance fluid comprises a descaler active substance phase, preferably an acid descaling active substance phase, wherein the descaling active substance phase can contain, apart from the descaler, particularly an organic or inorganic acid, optionally further ingredients such as surfactants or emulsifiers, thickeners, aromatics or preservatives.

28. Dispensing device according to claim 22 or 23, characterised in that one active substance fluid comprises a highly concentrated surfactant phase (foam booster).

29. Dispensing device according to claim 22 or 23, characterised in that one active substance fluid comprises an active substance phase which acts antibacterially and/or fungicidally and/or antivirally and which can contain, apart from the active substance acting antibacterially and/or fungicidally and/or antivirally, optionally further ingredients such as surfactants and emulsifiers, thickeners, aromatics or preservatives.

30. Dispensing device according to claim 22 or 23, characterised in that one active substance fluid comprises an active substance phase which has an enzyme content and which can contain, apart from the enzyme, further ingredients such as surfactants and emulsifiers, thickeners, aromatics or preservatives.

31. Dispensing device according to claim 22 or 23, characterised in that one active substance fluid comprises an absorbent, particularly an absorbent, active substance phase which can contain, apart from the absorption agent, particularly an absorbent agent, optionally further ingredients such as surfactants and emulsifiers, thickeners, aromatics or preservatives.

32. Dispensing device according to claims 23 to 24 and optionally one or more of claims 25 to 31, characterised in that the storage containers (2, 3) contain different active ingredient fluids, wherein one of the storage containers (2, 3) contains an aromatic phase particularly as defined in claim 24 and/or claim 25.

33. Dispensing device according to one of claims 1 to 32, characterised in that the viscosity of the active substance fluids received in the storage containers (2, 3) lies in the region of a few thousand mPas, particularly in the region of 2,000 to 5,000 mPas, preferably in the region of 2,500 to 3,500 mPas.

34. Dispensing device according to claim 15 or 18 and optionally one or more of claims 19 to 33, characterised in that the plate-shaped stationary distribution element (6) or the plate-shaped, but movable actuating element (6) has, on the upper side near a longitudinal edge and adjacent to the other another at a spacing, the connection points (10) for the outlet openings (4) of the storage containers (2, 3) and that the distribution element (6) or actuating element (6) has, on the other side and emanating from the connection points (10), depressions (11) which extend approximately up to the opposite longitudinal edge and which serve for the distribution of the active substance fluids into the flushing liquid.

35. Dispensing device according to claim 34, characterised in that the depressions (11) are formed in channel shape, preferably with U-shaped, V-shaped, W-shaped or semicircular cross-section, as a series of punctiform depressions or as intermediate spaces between rows of punctiform or strip-shaped protrusions.

36. Dispensing device according to claim 34 or 35, characterised in that the depressions (11) widen or narrow towards the ends thereof.

37. Dispensing device according to one of claims 34 to 36, characterised in that the depressions (11) extend rectilinearly and/or perpendicularly relative to one another or are arranged to be radiating in shape, curved, zigzagged, wave-shaped or cascade-shaped.

38. Dispensing device according to one of claims 34 to 37, characterised in that the depressions (11) associated with the different connection points (10) do not or substantially do not cross one another.

39. Dispensing device according to one of claims 34 to 37, characterised in that the depressions (11) are arranged at least in part to cross one another or run towards one another.

40. Dispensing device according to one of claims 34 to 39, characterised in that the connection points (10) are directly interconnected by way of at least one transversely extending depression (12).

41. Dispensing device according to one of claims 34 to 40, characterised in that the distribution element (6) or the actuating element (6) is formed to be approximately rectangular, square, round, oval or elliptical in plan view.

42. Dispensing device according to one of claims 34 to 40, characterised in that the distribution element (6) or the actuating element (6) is formed to be approximately mussel-shaped, blossom-shaped, leaf-shaped, butterfly-shaped, to have the form of a slice of fruit, or the like.

43. Dispensing device according to one of claims 34 to 42, characterised in that the distribution element (6) or the actuating element (6) is formed overall or per connection point (10) to extend section-by-section, in cross-section, concavely, convexly, curvilinearly, in mussel shape, in cascade shape or in funnel shape.

44. Dispensing device according to one of claims 34 to 43, characterised in that the distribution element (6) or the actuating element (6) consists of plastic material, particularly a polypropylene, or also of a sintered material, of ceramic, glass, metal or wood.

45. Dispensing device according to one of claims 34 to 44, characterised in that the number of depressions (11) on the distribution element (6) or the actuating element (6) is between 2 and 100, preferably between 10 and 50.
46. Dispensing device according to one of claims 34 to 45, characterised in that the width of the depressions (11) at the surface is between 0.5 and 5.0 mm, preferably between 1.0 and 2.0 mm.

47. Dispensing device according to one of claims 34 to 46, characterised in that the depth of the depressions (11) is between 0.2 mm and 4.0 mm, preferably between 0.5 mm and 2.0 mm.

48. Dispensing device according to one of claims 34 to 47, characterised in that the total area of the distribution element (6') or the actuating element (6) is between 500 mm² and 8,000 mm² preferably between 2,000 mm² and 4,000 mm².

49. Dispensing device for dispensing an active substance fluid into the flushing liquid in a toilet bowl, with a holder (1), which can be suspended at the edge of the toilet bowl, and at least one storage container (2, 3), which is provided in the holder (1), for an active substance fluid, wherein the storage container (2, 3) has an outlet opening (4) by way of which the active substance fluid can be dispensed into the flushing liquid, wherein a plate-shaped distribution element (6) is provided at the holder (1) and has a loading region (7) flowed over by flushing liquid during the flushing process and wherein the interior of the storage container (2, 3) is permanently connected with the distribution element (6') by way of the outlet opening (4), optionally with interposition of an arrangement preventing free flowing of the active substance fluid, particularly with at least two storage containers (2, 3), which are provided in the holder (1) and separate from one another, each for a respective active substance fluid, particularly according to one or more of claims 4 to 48, characterised in that the distribution element (6') is divided on the upper side, on the one hand, into a connection region (14), which goes out from a longitudinal edge (13) and in which a connection point (10) for the outlet opening (4) of the storage container (2, 3) is arranged, and on the other hand, into the loading region (7), which reaches from the connection region (14) substantially up to the oppositely disposed longitudinal edge (15), and that the surface of the distribution element (6') is formed to be smooth in the connection region (14) apart from individual protrusions, depressions or interruptions present for reasons of fastening, connection or sealing.

50. Dispensing device according to claim 49, characterised in that the plate-shaped distribution element (6'), in the case of presence of at least two storage containers (2, 3) in the holder (1), is provided in common for both storage containers (2, 3), preferably for all storage containers (2, 3), and that the plate-shaped distribution element (6') has in the connection region (14) near the longitudinal edge (13) and adjacent to one another at a spacing, the connection points (10) for the outlet openings (4) of the storage containers (2, 3).

51. Dispensing device according to claim 49 or 50, characterised in that a wide strip of smooth surface of the connection region (14) is present between the outer edge of the connection point (10) and the loading region (7).

52. Dispensing device according to one of claims 49 to 51, characterised in that the arrangement preventing free flowing of the active substance fluid has a pushing-open tip or the like at the connection point (10).

53. Dispensing device according to claim 52, characterised in that the arrangement preventing free flowing of the active substance fluid has a spacer arrangement surrounding, preferably annularly surrounding, the pushing-open tip or the like at the connection point (10) and consists of individual spacers (16), which slightly project from the surface in the connection region (14) and on which the lower edge (17) of the connection opening (4) of the storage container (2, 3) stands, so that exit regions for the exit of active substance fluid or entry regions for the entry of air result between between the spacers (16).

54. Dispensing device according to claim 52, characterised in that the lower edge (17) of the outlet opening (4) of the storage container (2, 3) is formed as a spacer arrangement with individual, slightly axially protruding spacers (16), which when the storage container (2, 3) is mounted sit on the upper side of the distribution element (6) in the connection region (14), so that exit regions for the exit of active substance fluid or entry regions for the entry of air result between between the spacers (16).

55. Dispensing device according to one of claims 49 to 54, characterised in that the distribution element (6') goes out in the loading region (7) from the edge of the connection region (14) and has depressions (11), which reach approximately up to the opposite longitudinal edge (15) and which serve for distribution of the active substance fluid or the active substance fluids into the flushing liquid.

56. Dispensing device according to claim 55, characterised by the features of the characterising part of one or more of claims 35 to 39.

57. Dispensing device according to one of claims 49 to 56, characterised in that the holder (1) has or forms a carrier (18) receiving the storage container (2, 3) or the storage containers (2, 3), wherein a front wall (19) facing the loading region (7) extends at the transition from the connection region (14) to the loading region (7).

58. Dispensing device according to claim 57, characterised in that the depressions (11) extend in the loading region (7) up to just below the edge of the front wall (19).

59. Dispensing device according to claim 57 or 58, characterised in that only a small gap is present between the uppermost edge of the depressions (11) in the loading region (7) and the edge of the front wall (19) of the carrier (18), preferably a gap of 0.1 to 0.4 mm, particularly a gap of approximately 0.2 to 0.3 mm.

60. Dispensing device according to one of claims 49 to 59, characterised in that a protective edge (20) protruding slightly upwardly from the upper side is formed in the connection region (14) on the side, which faces a longitudinal edge (13), of the connection point (10) or the connection points (10), particularly to enclose the spacers (16; 16') at this side.