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PROCESS FOR THE MANUFACTURE OF
DISINFECTING SOAPS

Wilhelm Schulenburg, Frankfort-on-the-Main,
Germany, assignor to Deutsche Gold- und
Silber-Scheideanstalt vormals Roessler, Frank-
fort-on-the-Main, Germany, a corporation of
Germany

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Object of my invention is a process for manu-
facturing soaps with a disinfecting action.

Disinfectant soaps the disinfecting action of
which is due to the incorporation of metallic
5 salts such as mercury bichloride (corrosive sub-
limate) have been known for some time. The
present invention relates to the use of silver salts
in particular as the disinfecting agent.

It has been suggested already to prepare such
10 soaps by incorporation of soluble silver salts or
compounds such as $(\text{AgNH}_3)\text{OH}$ or $\text{Ag}(\text{CN})_2\text{K}$
into the soap but experiments to that effect did
not give satisfactory results. The reason is that
on the one hand soaps prepared with soluble
15 silver compounds showed very little disinfecting
efficiency whilst on the other hand the soaps on
being stored or during usage became discoloured
which is highly undesirable. On account of these
difficulties and disadvantages silver soaps of this
20 description have not found any practical use.

Silver compounds which are insoluble such as
silver sulfide have been employed but without
any success, since soaps prepared with them
possess so small disinfecting action that they are
25 scarcely of any practical use.

According to my new process I obtain soaps of
greatest efficiency which show none of the above
mentioned drawbacks by incorporating into the
soap mixture silver compounds which should be
30 neither insoluble nor soluble with great ease. By
incorporating silver salts or compounds which
are soluble only with difficulty into the soap mass
I succeed in preparing soaps which combine with
excellent disinfecting qualities the property of
35 allowing the soap to be stored and used without
being discoloured undesirably. The disinfecting
action of soaps according to my invention seems
to depend upon the fact that silver ions are set
free or brought into solution to such an extent
40 as are required for obtaining a satisfactory ac-
tion but not to such a degree that colouring or
discolouring action results therefrom.

Suitable silver compounds for obtaining the
effect aimed at of yielding in combination with
45 soap masses good disinfecting action without
causing discolouration are for instance silver sub-
halogenides such as silver subchloride, silver
subbromide, silver subthiocyanide and the like.
Trials with silver compounds of this description
50 have proved that soaps which contained these

with difficulty soluble compounds had an excel-
lent disinfecting action and were free from the
disadvantage of discolouration on being used or
stored.

According to a special form of carrying my in-
vention into effect I incorporate in addition to
the silver compounds of the said character, com-
pounds or substances which contain active oxy-
gen into the soaps. Such substances containing
active oxygen are, for instance, sodium pyro-
10 phosphate hydrogen peroxide, alkali metal per-
borate such as sodium perborate and the like.
The compounds or substances containing active
oxygen may be incorporated into the soap mass
simultaneously with the silver salts; they may
15 also be worked into it before or after the silver
salts are incorporated.

By the action of silver compounds or the silver
ions set free respectively and of the substances
containing active oxygen or the oxygen respec-
20 tively generated therefrom combination effects
may be obtained as regards the disinfecting
action of the soap which exceed the sum of the
actions of each single component. Besides the
effect of the active oxygen itself, the presence of
25 substances containing active oxygen seems to
activate the silver compounds or the silver
formed therefrom respectively with respect to
their disinfecting properties and thereby in-
crease the latter.

It is advisable during the preparation and
manufacture of soaps according to my invention
i. e. containing silver compounds with or without
substances containing active oxygen, to avoid the
presence of water as far as possible since it is
35 well known that active oxygen containing com-
pounds are decomposed when in contact with
soaps containing water. The presence of water
would therefore cause loss of oxygen and there-
by decrease of its action as well as the activating
40 effect upon the silver compounds.

Another form of carrying my invention into
effect consists in the simultaneous use with the
silver compounds soluble with difficulty, of me-
tallic silver when manufacturing the soap. The
45 silver may be employed in the form of powder,
foils, leaves, tinsel or the like. The metallic sil-
ver has, also, a disinfecting effect when it is in-
corporated in soap. The chance of undesirable
discolouration of the soap on storage and usage
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is diminished when silver metal is employed. In consequence by the combined incorporation of metallic silver and with difficulty soluble silver compounds excellent disinfecting effects can be obtained which may be regulated at will by increasing the amount of the one substance in relation to the other without running the risk of discolouration, formation of spots or the like.

Furthermore, the disinfecting effect of the metallic silver to be incorporated into the soap can be enhanced by a preliminary treatment with oxidizing agents. Such agents are for instance compounds containing active oxygen or other oxidizing agents such as alkali metal permanganates. The oxidizing preliminary treatment may be effected also electrochemically, for instance in such a manner that the metallic silver for instance in the form of tinsel or the like is subjected to a superficial anodic oxidation.

The activation of the metallic silver can also as the case may be, be achieved by the incorporation into the soaps of compounds containing active oxygen.

Finally I have found that I can dispense with the silver compounds soluble with difficulty altogether and replace them in their entirety by metallic silver advantageously in the activated form obtained by the preceding treatment with oxidizing agents.

Example 1

To the soap body prepared in the well known way about 0.5 to 1% of silver subchloride in a finely divided form is added in the crutching machine together with other cosmetics such as perfumes or the like. The addition may be effected also separately. The mixture is then worked into a uniform mass. Dyes may be added in order to improve the colour of the finished soap. The soap after it has passed the press shows uniform colour in each single piece, which is not changed by light.

Example 2

The soap is prepared in a well known manner and after it has been dried thoroughly converted into fine powder. To the fine powders thus prepared the desired amounts of silver subchloride and sodium perborate which have been passed through a sieve previously are added. The perborate has been subjected advantageously to preliminary dehydration. The quantities to be added are for instance 1.0% of silver subchloride and 1% of active oxygen in the form of perborate. After thorough mixing the powder is

subjected in a suitable press to high pressure such as 100 atmospheres whereby the powder is molded into a solid piece.

Example 3

Into the composition according to Example 1 and comprising silver subchloride together with the latter 1% of silver powder is incorporated. This powder in order to increase its oligodynamic action has been activated previously by treatment with substances containing active oxygen such as hydrogen peroxide. The metallic silver can be incorporated into the soap in the form of foil, leaves, tinsel or the like in order to achieve a certain decorative effect. Instead of working it into the soap it may also be put onto the surface of the pieces. By arranging the various bits in patterns the decorative effect may be enhanced whilst at the same time the disinfecting power of the silver is made use of.

What I claim is:

1. A soap which contains silver subchloride.
2. A soap which contains a substance selected from the group consisting of silver subhalogenides and silver subthiocyanide.
3. A soap which contains a substance selected from the group consisting of silver subhalogenides and silver subthiocyanide, and substances free of water of crystallization containing combined hydrogen peroxide.
4. A soap which contains a substance selected from the group consisting of silver subhalogenides and silver subthiocyanide, and alkali metal perborates free of water of crystallization.
5. A soap which contains a substance selected from the group consisting of silver subhalogenides and silver subthiocyanide, and dehydrated sodium perborate.
6. A soap which contains a substance selected from the group consisting of silver subhalogenides and silver subthiocyanide, metallic silver and substances free of water of crystallization containing combined hydrogen peroxide.
7. A soap which contains a substance selected from the group consisting of silver subhalogenides and silver subthiocyanide, activated metallic silver and substances free of water of crystallization containing combined hydrogen peroxide.
8. A soap containing metallic silver in a finely subdivided solid non-colloidal state.
9. A soap which contains metallic silver in finely subdivided solid non-colloidal state after it has been activated to increase its oligodynamic action.

WILHELM SCHULENBURG.