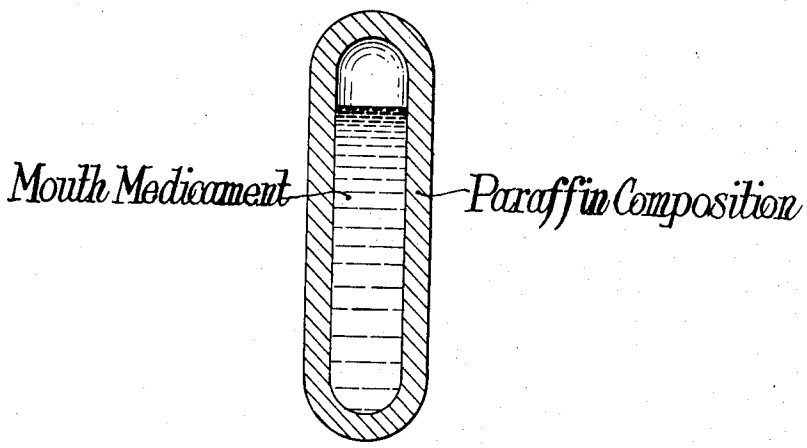
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CAPSULE

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CAPSULE

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This invention relates to capsules and more particularly to a chewable capsule made of a composition having a paraffin base, the capsule containing a mouth medicament.

There are numbers of mouth medicaments upon the market; these are of three general types (1) those having little or no antiseptic or cleansing value but which contain considerable perfume and are adapted chiefly to refresh the mouth and perfume the breath, (2) those which are largely deodorants for the mouth and breath, and (3) those the antiseptic and cleansing power of which is their chief value. These are usually sold in liquid form in glass bottles which are heavy and cumbersome (and sometimes expensive) and are applied to the teeth by varied means, such as by pouring a little into the mouth and "slushing" it through the teeth.

While there are a number of obvious objections to this method, an important one is that it is somewhat unsanitary. Another objection is that it requires the purchase of a relatively large sized bottle which the customer may feel unable to buy except infrequently. Furthermore in case of travel, a person usually does not wish to load his traveling bag with heavy toilet articles, such as a bottle of mouth medicament, and may dispense entirely with the use of the mouth medicament during such travel, with the consequent loss of sales thereof to the manufacturer.

It is an object of my invention, therefore, to provide mouth medicaments in a form which can be marketed in small individual packages or quantities without much weight in addition to the weight of the mouth medicament itself, in a form which can be used effectively, which is sanitary and not susceptible of contamination, is in the proper quantity for a single treatment of the mouth and in a form in which the mouth medicament is contained in a chewable capsule having a paraffin base which acts to assist the cleansing of the teeth and actually gives some pleasure and zest to the process of so doing.

In its broader concept, my invention comprises a closed paraffin-composition capsule of any desired form containing a suitable charge of mouth medicament, such as sufficient for one cleansing, deodorizing and/or perfuming treatment of the mouth.

Obviously the mouth medicament need not necessarily be in liquid form (although more generally so) but may be in the form of a paste or easily soluble powder. My invention is intended to include, therefore, all three forms of the mouth medicament, i. e. liquid, paste and powder.

The capsule is, of course, hollow and may be of any desired form, such as in the form of a short cylinder with closed ends, a sphere, a cube, a fruit, flower, or in fact any form desired. For a form (such as a cylinder, sphere or the like) requiring an inside diameter of approximately ¼ of an inch, the walls of the capsule should be approximately $\frac{1}{16}$ to ⅛ of an inch in thickness, more or less, depending upon the rigidity of the paraffin composition. A capsule 1½ inches long has about the right volume to contain a sufficient charge of mouth medicament for one treatment.

If substantially pure, i. e. commercial, paraffin is to be used in preparing the capsule, a paraffin having a melting range of approximately 130° to 133° F. is very suitable for the reason that it will not soften sufficiently (in capsule form) to lose its shape at a temperature of 112° F. A temperature of 110° F. is about the highest temperature to which a capsule would be subjected in any climate or ordinary condition of handling or storage. At the same time such a paraffin is very chewable and has sufficient plasticity at the temperature of the mouth (body temperature) to permit gathering of the paraffin into a coherent plastic mass within a few seconds after it is fractured or crushed in the mouth. Generally speaking, I have found it best not to employ a paraffin having a melting range higher than 133° to 136° F., as such a paraffin is not as chewable as is desired by most individuals. Paraffins having a melting range higher than 136° F. may, of course, be employed if one is willing to sacrifice a little on chewability or gathering, but it is not my intention to include paraffins which have such a high melting point that they have no chewability or gathering properties in the mouth. Paraffins having a melting range of about 133° to 136° F. are definitely chewable and have a softening point of about 112°–115° F. In general, in order to provide a capsule which will not lose shape at the highest temperature to which it is apt to be subjected in commerce, and which will not stick to things with which it comes in contact by reason of the flowing out of lower melting range paraffins, e. g., by sweating, it is preferable that the lower temperature of the melting range of the paraffin to be employed be not too low. To this end, I have found that paraffins which are included in the melting range of from approximately 122°–133° F. will resist undue softening and sweating at from 110°–120° F. Capsules made of paraffin hydrocarbons with-

in this melting range will not lose shape under most of the conditions to which they may be subjected in commerce. The less the percentage of the lower melting paraffins present, the better will the capsules withstand the effect of temperature, and the larger the percentage of the lower melting paraffins present, the more chewable will the capsule be. So, in preparing the preferred capsule of my invention, the paraffin to be used should be selected with these things in mind in order to balance these properties advantageously.

Also, I may use a mixture of varying proportions of paraffins of different melting points, as for instance, 50 to 40 parts of 124°–127° F. melting point paraffin mixed with 50 to 60 or more parts of 133°–136° F. melting point paraffin will resist softening at 112° F. or even higher and has good chewability.

If distribution is to be effected in an area in which climatic and/or handling conditions are not so severe (as to high temperatures) I may choose a paraffin or paraffin composition having a softening point of, for instance, 105° F. or even as low as 100° F. The plasticity of such paraffin or paraffin composition would be correspondingly greater which is advantageous (rather than disadvantageous) to the chewability of the capsule, as the gathering time for such a capsule is even less than where the paraffin has a higher melting point.

All paraffins which one obtains upon the market today are composed of a mixture of paraffin hydrocarbons having a considerable range of melting points. For instance, it has been found that from commercial paraffins melting from 122° to 136° F. there may be sweated out at 120° F. a small percentage of paraffin hydrocarbons melting below 120° F. While these lower melting paraffins add to the plasticity of the paraffin, they also lower the melting range of the paraffin and may cause stickiness of the paraffin at, for instance, 110° F. Accordingly, with at least the lower melting commercial paraffins, it is advantageous to presweat the paraffin at 120° F. so as to rid it of these lower melting paraffin hydrocarbons and thereby make the paraffin more suitable for capsules from the standpoint of temperature resistance, without appreciably affecting the chewability thereof.

For clarity, it is best to state that by "gathering" it is intended to mean the ability of the paraffin when crushed in the mouth to be molded again into a single coherent mass. The facility with which the crushed paraffin can be "gathered" in the mouth is somewhat of a measure of the chewability of the paraffin. "Chewability" may be defined as that property of the paraffin whereby it can be masticated and still remain a single coherent mass; if the mass coheres strongly during mastication, it is regarded as having a high degree of chewability, whereas if the mass tends to separate into fragments, it may be regarded as having a low degree of chewability.

The capsule of my invention, containing a small charge of mouth medicament, is used by merely depositing it in the mouth and crushing it with the teeth, whereupon the mouth medicament flows about the mouth and cleanses it, being assisted by slushing it through the teeth by means of the tongue and cheeks. At the same time the crushed paraffin is gathered into a coherent mass by means of the tongue. The mouth medicament is then expectorated and the paraffin chewed briefly to "finish off" the cleansing of the teeth, after which it is discarded. All of this requires but a few seconds to accomplish and may be done while a person is making some other portion of his toilet. Even more advantageously, these capsules may be carried in the pocket or purse to be used "between smokes", during the day, while traveling, after dining, or in fact upon any occasion where cleansing, refreshing, perfuming, or deodorizing of the mouth and/or breath is desired. Above all, the use of these capsules is far more sanitary than the use of the tooth brush or a bottle.

The chewed paraffin has the advantage over chewing gum or chicle in that it will not stick to anything if dropped or carelessly disposed of.

Paraffin in capsule form has the advantage that it is insoluble in all known mouth medicaments, does not deteriorate on standing, is unaffected by moisture or other of the elements and is insoluble in substantially all liquids or gases with which it is liable to come into contact during handling, storage or use.

The paraffin capsule may be colored by adding suitable harmless pigments or dyes thereto during the compounding of the paraffin prior to formation of the capsule, thus making it more attractive to the prospective user. The paraffin may also be flavored by adding sugar, essential oils and the like thereto during its preparation prior to formation of the capsule.

The single figure of the accompanying drawing is a sectional view of a capsule of my invention, in cylindrical form, showing how the ends may be rounded or tapered off in the formation thereof. The drawing is suitably labeled to indicate the capsule and the contents thereof.

The cylindrical type of capsule is convenient and economical to produce as it may be formed by continuously extruding a tube of paraffin at about the plastic point of the paraffin (i. e. at about 95°–100° F.), cooling it somewhat, cutting the tube into suitable lengths, sealing one end of the length, filling or charging the capsule with mouth medicament through the other end and then sealing that end. The rounding or tapering of the capsule may be done by suitable forms maintained at a temperature slightly below the melting point of the paraffin, as, for instance, at about the softening point.

If desired, the capsule may be prepared by casting it in halves in suitable molds and uniting the halves, a suitable opening being left for charging the capsule, the opening then being sealed for instance with a hot iron. Or a cold tube (such as a small test tube) may be dipped in molten paraffin, withdrawn, heated upon the inside with water and the capsule slipped off, charged and sealed at the open end. In using the foregoing methods where the paraffin is brought to a molten state, care should be taken not to heat the paraffin hot enough to cause pyrolysis and change the properties of the paraffin disadvantageously. Other ways of forming, charging and sealing the capsule than those described above are known or will occur to those skilled in the art and as the particular method of so doing forms no part of my invention it need not be described further.

It has also been found that the efficiency of the paraffin for cleansing the teeth may be improved by mixing with the paraffin a mild abrasive, such for instance as finely powdered or divided (100 to 400 mesh) dry chalk (calcium carbonate), talc, kaolin, asbestos, anhydrite, asbestine (talcous agalite), adsorbent carbon, and the like. As a

matter of fact, finely divided fillers of various kinds may be mixed with the paraffin in proportions of from a few per cent to 20 to 50 or even 60 per cent by weight and thereby raise the natural melting point of the paraffin and increase its resistance to softening or collapse at higher temperatures so as to give an added factor of safety against collapse of the capsule under storage conditions where higher temperatures might be encountered. In collaborating with me upon this work, Charles W. Stillwell has indeed found that the addition of various percentages of finely divided or precipitated chalk (calcium carbonate) to paraffin, for instance approximately 20 to 40 parts, and preferably 40 parts, of chalk to 60 parts of paraffin will not only increase the softening point of the paraffin several degrees (about 3° to 5° F.) over the natural softening point thereof but that the "chewability" of the paraffin is thereby considerably increased. Thus while commercial paraffin having a melting range of approximately 130°–133° F. is satisfactory, a mixture of 60 parts of such paraffin and about 40 parts of powdered chalk has the advantage of having greater resistance to softening and greater "chewability" as well as furnishing a mild abrasive for the teeth to assist in removing tartar and stain therefrom. More specifically, 25 to 50 parts of powdered chalk with 75 to 50 parts of 124°–127° F. melting range paraffin or 20 to 40 parts of powdered chalk with 80 to 60 parts of 127°–133° F. melting range paraffin gives a composition which will resist softening at temperatures as high as 118° to 120° F. and have excellent chewability. Also, 40 to 50 parts of powdered chalk with 60 to 50 parts of 119°–122° F. melting point paraffin will resist softening at about 112° F. See Stillwell application Ser. No. 722,361 of even date.

The resistance of the paraffin to softening may also be increased by adding certain waxes or resins thereto which are compatible therewith, such as a fraction of one per cent to a few per cent of carnauba wax, ozokerite, candelilla wax or beeswax. From ½ per cent to 1 per cent has been found satisfactory, although more may be added. For instance, 2–5 per cent of carnauba wax raises the softening point of 119°–122° F. melting range paraffin to 114° F. and it is still chewy. Higher melting point paraffins tolerate less carnauba wax (and still retain chewability) as, for instance, ½ to 1 per cent of carnauba wax may be added to 130°–133° F. melting range paraffin and retain chewability. Carnauba wax also toughens the chewiness of the paraffin somewhat. Generally speaking, however, this is somewhat at the expense of the "chewability" of the paraffin composition unless this is offset by the addition of powdered chalk or its equivalent.

The above ratings of softening points are somewhat conservative and ordinarily may be regarded as one to three or four degrees higher, particularly since the smaller the capsule the better its resistance to softening. Also, when the capsule is filled with mouth medicament the softening point of the paraffin is increased a degree or two.

While my invention preferably employs paraffin or paraffin compositions therein, I may also use halogenated paraffins or similarly substituted paraffins so long as they have the same essential properties as paraffin, and the advantages above described.

Probably the more prominent of mouth medicaments sold today are those bearing the tradename of "Pepsodent" or "Listerine" or "Lavoris". It is not important that the formulæ thereof be set forth here or even be known. Any doctor or dentist can prescribe a suitable mouth medicament for use in my invention, the exact formula depending upon the results to be obtained by its use. Suitable mouth medicaments for use in my invention may, however, be compounded as follows:

Example I

Zinc chloride	2 Gr.
Formalin	2 Min.
Menthol	1–32 Gr.
Oil cassia	3–4 Min.
Oil caryophylus	1–4 Min.
Alcohol	6 per cent

Example II

Sodium chloride, sodium borate and boric acid combined in solution with eucalyptol, menthol and methyl salicylate and diluted with two to three parts of water.

Example III

Acetanilid	2 Grs.
Boric acid	10 Grs.
Sodium borate	2½ Grs.
Sodium benzoate	2½ Grs.
Formaldehyde solution	1 Min.

combined with eucalyptol, menthol, thymol, methyl salicylate and baptisia and diluted with from four to twenty parts of water.

Thus it will be apparent that my invention comprises two salient features, each contributing to and augmenting the advantages of the other. The paraffin capsule acts to contain the mouth medicament and convey it into the mouth where the capsule is crushed. The mouth medicament there serves its purpose of cleansing, deodorizing, perfuming, and invigorating the mouth and/or breath. The capsule may then be chewed either in the presence of the mouth medicament or after the latter has been expectorated. Thus, the paraffin acts to "finish off" the mouth cleansing process and is discarded, or it may be retained as it constitutes an excellent "chew".

The capsule of my invention is light, may be made into any desired form or color and may be of any suitable size. If the mouth medicament is desired merely to perfume the breath the capsule may be rather small—possibly containing only a few drops of the perfume, which may be of any desired odor. Such a capsule appeals to the lady who may break off the tip of the capsule, use a portion of the perfume on her handkerchief or clothes and then chew the capsule with the remaining perfume, so that her breath will be perfumed the same as her clothes. The perfume—for such use—would, of course, be attractively flavored so as to be palatable as well as have a pleasing odor. Such capsules are to be regarded as included in my invention and the claims hereto appended. If the mouth medicament is for the cleansing, deodorizing or antisepticizing of the mouth and/or breath, the capsule may be of a size calculated to hold from one to two teaspoonsful of mouth medicament. The paraffin may be perfumed or flavored to add to the attractiveness of the capsule from the consumer's standpoint.

Not of least importance is the fact that by means of my invention mouth medicaments can be marketed in small attractive quantities which has not been practical heretofore with glass con-

tainers due to the expense thereof, paraffin being very cheap and available in unlimited quantities. Hence the mouth medicament may be sold in capsules in lots of one half or one dozen to a package where only a small quantity of the mouth medicament is desired. An entirely new outlet for distribution is thus offered the manufacturer because of this break-down into small and convenient units. Or the capsules may be sold in lots of one hundred or five hundred where the customer is a regular user thereof. They are light and tough enough so that they will not break if accidentally dropped, such as on the bath room floor. The capsules themselves do not deteriorate and as they are air tight, the mouth medicament itself does not deteriorate, evaporate or become contaminated.

In the claims appended hereto, it will be understood that when reference is made to a "paraffin" capsule, such is intended to include either a capsule made from substantially pure or commercial paraffin, or a capsule made from a composition in which paraffin forms an essential constituent, and that when reference is made to a "mouth medicament" such is intended to include the liquid, paste and solid forms as well as the antisepticizing, deodorizing, cleansing and perfuming types. In the specification, by the term "softening point" of the paraffin is meant the collapsing point or the temperature at which a capsule of the size herein designated is soft enough to flow out of shape of its own volition. By "softening" is, of course, meant collapse and by resistance to softening is meant resistance to collapse.

What I claim as my invention and desire to be secured by Letters Patent of the United States is:

1. A hollow and sealed chewable paraffin capsule containing a liquid mouth medicament in the hollow portion thereof.

2. A hollow and sealed chewable paraffin capsule containing a liquid mouth medicament in the hollow portion thereof, the paraffin having a softening point above approximately 110° F.

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