Patented Apr. 5, 1932 1,852,231

UNITED STATES PATENT OFFICE

FRED BRYNER, OF MIDLAND, MICHIGAN, ASSIGNOR TO THE DOW CHEMICAL COMPANY, OF MIDLAND, MICHIGAN, A CORPORATION OF MICHIGAN

HAIR DRESSING

No Drawing. Application filed October 1, 1930. Serial No. 485,829.

The subject matter of the present invention is concerned with cosmetics, and more particularly with such a material that is suitable for a hair dressing.

In the past, materials of the type in question have consisted usually of a wax or gum, such as beeswax, gum arabic, gum resin, tragacanth, etc., dissolved in ethyl alcohol and mixed with an oil such as a petroleum jelly, glycerine, olive oil or an animal fat, and made to a consistency suitable for a paste or thick liquid. These compositions usually also contain small quantities of dye and perfume to impart a desired color and odor thereto, and sufficient benzoic, boric, or salicylic acids to prevent rancidity or equivalent decomposition therein when plant or animal products are used. The purpose of such hair dressing is to keep the hair in a satisfactory condition, easy to keep combed and smooth in appearance. Frequently, however, the hair thus treated becomes matted, greasy, or otherwise unattractive due to the crystallization of the constituents thereof when the alcohol solvent evaporates, and for other reasons.

I have found tri-aryl phosphates, such as phenyl-bi-diphenyl-, cresyl-diphenyl-, tri-cresyl-, phenyl-dicresyl-, etc., phosphates, to be suitable and effective materials for hair dressing compositions, many of such phosphates being heavy, almost colorless, viscous liquids. I have also found the substances in question to be practically non-irritating, non-poisonous, and largely tasteless and odorless, and such phosphates to possess germicidal action in sufficient amount largely to prevent decomposition or other similar action in the composition wherein employed. My invention, then, consists of the features hereinafter fully described and particularly pointed out in the claims, the following description setting forth in detail several approved combinations of ingredients embodying my invention, such disclosed means constituting, however, but several of various ways in which the principle of the invention may be used.

In proceeding according to my invention, I preferably employ a liquid phosphate as previously indicated and mix the same in a suitable vessel in the usual manner with a quantity of an oil, such as olive oil, for instance, which serves to moisten and oil the hair and scalp, and also to be beneficial in producing other favorable results with the phosphate employed. The phosphate-oil mixture may now be diluted with or dissolved in alcohol to a desired consistency and, if desired, a small quantity of dyeing material and perfume added. The hair dressing composition thus prepared is practically greaseless and may be applied in the usual way, the hair treated maintaining a comb for a longer time and presenting a smooth and attractive appearance.

The following examples set forth several preferred compositions illustrating my invention; it is understood, however, that such examples do not thus limit my invention.

Example I

Phenyl bi-diphenyl (monophenyl bi-orthodiphenyl) phosphate	40 grams
Castor oil	25 grams
Ethyl alcohol (20 percent water) perfumed with geranium	1 litre
Chlorophyll solution	5 cc.

Example II

Phenyl bi-diphenyl (monophenyl bi-orthodiphenyl) phosphate	40 grams
Ethyl alcohol (20 percent water)	1 litre
Rosemary oil	5 cc.
Bergamot oil	10 cc.

Example III

Phenyl bi-diphenyl (monophenyl bi-orthodiphenyl) phosphate	30 grams
Tri-orthodiphenyl phosphate	10 grams
Ethyl alcohol (20 percent water) perfumed with geranium	1 litre
Olive oil	20 grams
Bergamot oil	10 cc.
Salicylic acid	5 grams

In the foregoing examples liquid organic phosphates were used. Many of the compounds coming within the scope of my invention, however, are crystalline salts when pure, but become heavy viscous oils when mixed with other phosphates or even when

various impurities are present. In the usual method for making such phosphates, which consists of reacting a phenolic compound with phosphorous oxychloride and continuously removing, as formed, the volatile chlorine products from the reaction mixture; if the phenolic compounds thus employed should contain small amounts of other phenols than that specified, the reaction product likewise would contain varying amounts of other phosphates. Such mixtures of phosphates are applicable in the present invention. It is understood that mixtures of such phosphates may also be made or the phosphates used may contain impurities that may cause the same to be liquid under given conditions, or when such phosphate, which ordinarily is a crystalline material, is mixed with the other constituents of the hair dressing composition, such mixture remains practically liquid after the dissolving solvent has been substantially removed therefrom.

The constituents adapted to be used in conjunction with the materials forming the subject matter of my hair dressing composition may be much varied. Petroleum jellies or oils may be desirable because of their stability and relative cheapness, but the results obtained thereby are mostly inferior to those obtained by vegetable and animal oils, the latter of which, in combination with the phosphates enumerated previously, appear to possess certain hair stimulating and other valuable properties which are practically absent when the petroleum product is similarly used. Although glycerine has been used with/or in place of the vegetable or animal oils, yet it is known to dry up and injure the hair, and therefore the same is preferably not incorporated in my hair dressing composition. Preservatives are necessary when vegetable and animal oils are specified, but when these materials are used with the tri-aryl phosphates, for instance, the free phenol content of the latter is usually sufficient to make other preservatives unnecessary. When preservatives are indicated, however, boric and salicyclic acids and tincture of benzoin are found adaptable. Perfumes such as rose, geranium, or almond oil in small quantities, are suitable to add to cover the natural tint of the oils or greases of the composition and to impart thereto the odor desired. My hair dressing compositions as obtained in the above examples are practically colorless, light to heavy viscous liquids, which may be conveniently colored by adding thereto small amounts of such coloring materials, for instance, as solutions or extracts of caramel for yellows or browns, cochineal for reds, chlorophyll or bergamot oil for greens, indigo for blues, etc. Obviously, numerous other combinations of materials embodying my invention may be made.

My invention, briefly, consists then in a new composition of matter comprising an organic phosphate and suitable for use as a hair dressing material, thereby providing a composition that is effective, substantially non-irritating, non-poisonous, and which may be conveniently and economically compounded and used.

Other modes of applying the principle of my invention may be employed instead of those explained, change being made as regards the materials employed, provided the ingredients stated by any of the following claims or the equivalent of such stated ingredients be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A hair dressing composition comprising a tri-aryl phosphate.

2. A hair dressing composition comprising phenyl bi-diphenyl phosphate.

Signed by me this 26 day of September, 1930.

FRED BRYNER.