

UNITED STATES PATENT OFFICE.

CARLETON ELLIS, OF MONTCLAIR, NEW JERSEY.

MISCIBLE OIL.

993,827.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that I, CARLETON ELLIS, a citizen of the United States, residing at Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Miscible Oil, of which the following is a specification.

This invention relates to miscible oils adapted for use as vegetation sprays, sheep dips and the like and relates in particular to miscible oils containing copper or other metallic base in actual solution therein.

My invention consists in the combination of an oil or similar vehicle, an emulsifying agent such as a water-soluble soap sufficiently free from water as to be soluble in the oil and an oil-soluble compound of copper or other metal, having a substantial scale removing and insecticidal action.

As a basis for a miscible oil, I prefer to use such oil bases as kerosene, heavy or light petroleum oils, residual or asphalt oils, crude oils, rosin oils and spirits, or vegetable oils such as corn and cotton seed with their foots, residues and distillates, fish, menhaden, porgy, cod and other fish oils or animal oils such as lard, tallow and horse oils, tankage grease, wool grease and degreas, refuse oils extracted from leather, etc., and solvent resins such as the resin obtained from guayule rubber and other resinous bodies.

As a basis for the saponifiable body, I may use ordinary rosin and similar resins, oleic and stearic acid, sulfonated oil, wool grease, fish oils as menhaden oil or other saponifiable stock, but preferably I make use of ordinary rosin or a mixture of rosin and red oil or commercial oleic acid.

If it becomes desirable to use a blending material of a phenolic character, I preferably use cresylic acid for this purpose although creosote obtained from coal tar or other tar, and similar carbolic material may be employed. The metal base used as the insecticidal body in the form of a metallo-organic compound is preferably copper, lead, zinc, antimony or arsenic. As a basis for the soap, I prefer to make use of potash as the saponifying alkali although soda or other alkaline agent may be used in whole or in part. The potash soaps, particularly those of rosin and oleic acid, if largely freed from water, are readily soluble under the action of heat in most of the oils above mentioned. This is especially the case if creosote or similar blending agent is present. With kerosene and the heavy petroleum oils,

some difficulty obtains in the dissolution in oil of these concentrated water-soluble soaps unless a little creosote or cresylic acid is present and for that reason, I prefer to use a blending agent of the character described. In order to produce miscibility, that is to say, to make the oil capable of either dissolving in water to form a clear transparent solution or to form one which readily emulsifies with water and may be diluted indefinitely without any material separation of the emulsified particles, a substantial proportion of such water-soluble bodies must be carried by the oil.

The metallo-organic compound of a water-insoluble character preferably is secured by making soap from among the metals mentioned, as for example, copper soap may be made by precipitating sodium oleate with copper sulfate, or by heating copper carbonate or hydroxid with red oil or oleic acid to a temperature of about 200° C. for an hour or more metallo-organic oil-soluble compounds are produced. For example, two parts of red oil, one part of guayule resin and one part of finely powdered carbonate of copper are heated to a temperature of 140° to 180° C. with the result that the carbonate dissolves to a very large extent forming a copper soap containing copper oleate and copper "guayulate" or some combination of copper with guayule resin. This metallo-organic compound of copper dissolves very readily in oils and should be added to the oil basis used in making the miscible oil. Preferably, the metallo-organic compound as specified is made and this is introduced with rosin and oleic acid into a kettle. Heat is applied and the mixture melted. Kerosene, heavy petroleum or other oil preferably together with some creosote is added and finally a concentrated potash soap mixture is added and the mixture stirred until the ingredients are blended to a clear solution of a permanent character. This may then be packaged for shipment. In using the miscible oil so made, it is diluted usually with 10 to 20 gallons of water, when it forms an emulsion of an exceedingly-permanent character. By nicely proportioning the amounts of oil and copper soap, a mixture may be made, the oil portion of which has the precise specific gravity of water or of dilute soap solution so that the emulsified particles will remain in suspension for an indefinite period after dilution to working strength.

A specific formula herein given by the way of illustration is as follows:—20 pounds each of rosin and red oil are melted in a kettle and to this is added 50 pounds each of guayule resin, cresylic acid and kerosene oil. 30 pounds of copper oleate and "guayulate" base above mentioned are introduced and then approximately 13 pounds of a solution of caustic potash, of a specific gravity of 1.47 are added and the mixture heated and stirred until the incorporation is complete. A greenish colored mixture is thus produced which when mixed with a large amount of water forms a relatively permanent bluish green emulsion. As the copper is actually dissolved in the oil particles of the emulsion, there is not the danger in its application that obtains with Bordeaux mixture and the like. For example, when the emulsion is sprayed on fruit trees, the copper does not act in a corrosive manner and cause defoliation.

Variations of the above illustrative formula may be made in accordance with the character of the mixture desired for any particular application, as for example, the guayule resin and cresylic acid may be substituted by rosin oil and petroleum oil or the proportions varied in other ways. The amount of copper compound or other metallic base to be added depends on the strength required and the degree of emulsification. For sprays, the cresylic acid may be omitted entirely when the metallic base is readily soluble in the oil base used.

It will be noted that the formulas above set forth include a very substantial percentage of soap, as well as the oil soluble copper compound itself, which imparts to the composition the quality of high miscibility, or emulsifying properties, which, as is well known, is required in a miscible oil. An oil which does not readily form a very perfect emulsion with water, as is well known, is very liable to burn foliage, owing to the lodgment of coarse particles of the oil on the leaves with subsequent destructive action. It has heretofore been proposed to treat carbolineum with a very small amount of soap and incorporate a very small amount of copper sulfate, which would not properly attain the object of the present invention, namely the production of an oil of satisfactory miscibility, due to the presence of a substantial percentage of soap, at least 5% and preferably from 10% to 20%, and likewise a substantial proportion of an oil-soluble copper-compound, preferably 8% to 10%. The foregoing formulas are therefore proportioned so as to provide an amount of soap adequate to render the copper-laden oil properly miscible.

Having described my invention to the details of which I do not wish to be limited, what I claim is:—

1. A miscible oil comprising a substantially water-insoluble oleaginous base, a water-insoluble metallo-organic compound soluble in said oleaginous base and an aqueous soap solution soluble in said oleaginous base.

2. A miscible oil comprising a substantially water-insoluble mixture of oleaginous material, a water-insoluble metallo-organic compound soluble in said oleaginous material and a concentrated aqueous solution of soap miscible with said oleaginous material.

3. A miscible oil comprising a substantially water-insoluble oil, a heavy metal soap soluble in said oil, a concentrated aqueous solution of soap miscible with said oil.

4. A miscible oil consisting of an oleaginous base, a concentrated aqueous solution of soap miscible with said base, and at least 1% of copper soap soluble in said base.

5. A miscible oil consisting of a homogeneous composition comprising a solution of an organic compound of copper and a concentrated aqueous solution of a water soluble soap all in solution in an oil vehicle.

6. A homogeneous miscible oil comprising a substantially water-insoluble oleaginous material, at least 5% of water-soluble soap miscible with said oleaginous material and several per cent. of a water-insoluble organic compound of copper soluble in said oleaginous material.

7. A homogeneous miscible oil comprising a substantially water-insoluble oleaginous material, water, at least 5% of water-soluble soap miscible with said oleaginous material and several per cent. of a water-insoluble compound of copper soluble in said oleaginous material.

8. A homogeneous oil, comprising substantially water-insoluble oleaginous material, about 10% of a water-soluble soap, soluble in said oleaginous material and a substantial percentage of a water-insoluble organic compound of copper also soluble therein.

9. A homogeneous miscible oil, comprising substantially water-insoluble oleaginous material, approximately 10% of water-soluble soap, soluble in said oleaginous material and approximately 5% of a water-insoluble organic compound of copper, also soluble therein.

In testimony whereof I have affixed my signature in presence of two witnesses.

CARLETON ELLIS.

Witnesses:

NATHANIEL L. FOSTER,
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