UNITED STATES PATENT OFFICE.

FRANKLIN S. CLARK, OF NEW YORK, N. Y., AND EDWIN A. HARRIS, OF FARGO, GEORGIA.

PROCESS OF MAKING SHEEP-DIPS.

SPECIFICATION forming part of Letters Patent No. 721,153, dated February 24, 1903.

Application filed November 20, 1902. Serial No. 132,133. (No specimens.)

To all whom it may concern:

Be it known that we, FRANKLIN S. CLARK, residing at New York, in the county of New York and State of New York, and EDWIN A. HARRIS, residing at Fargo, in the county of Clinch and State of Georgia, citizens of the United States, have invented a new and useful Process of Making Sheep-Dips, of which the following is a specification.

This invention relates to a process of making sheep-dips.

The object of the invention is in a ready, simple, thoroughly feasible, and practical manner to present an emulsifying sheep-dip which shall be thoroughly effective for the destruction of insects infesting the skin of the animal, for the cure of scab, scratches, and similar animal diseases, and that shall possess high detergent properties.

With these and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the emulsifying sheep-dip and process of making the same, as will be hereinafter fully described and claimed.

The product of this process is an emulsifying sheep-dip, animal-wash, fly-oil, and general disinfectant.

Soluble sheep-dips and disinfectants made from tar and other materials are well known in the art; but, so far as known, soluble or emulsifying disinfectants made in the manner hereinafter described are new.

The process is carried out upon pine distillates, especially from that species known as "long-leaf" or "*Pinus palustris*," which is indigenous to most of the Southern States. The wood is distilled in retorts and by various processes, all of which produce a certain amount of pine-oil, running from yellow, having a specific gravity of 0.86, to a dark red, having a specific gravity of 0.98. It is this latter oil in connection with which the process is carried out. This oil, which for convenience of identification will be designated "pine-oil," is pumped into a still supplied with a closed and open coil, as well as a direct fire, and is subjected to a fractional distillation according to the process set forth in the patent of Franklin S. Clark, dated October 2, 1888, No. 390,454. When the distillation has been carried far enough to effect removal of ill-smelling oils, it is stopped, and the hot residual oil in the still is then treated with about six to ten per cent. of its original bulk, according to the quality of the oil, with a solution of caustic soda or caustic potash having a specific gravity of 1.21, thereby saponifying certain oily ingredients. Care must be observed that too small an amount of alkali be not used if the best results are to be obtained. The usual distillation is now continued in order to remove all of the hydrocarbon light oil. If the distillation be carried to a point where light oil remains in the residue, an emulsifying liquid is produced, but the result attained is at the expense of this light oil. The distillation, therefore, is carried further; but care must be taken that it be not carried too far, especially with a direct fire, as a pasty or solid residue will be left in the still that is a soluble soap-like material and though valuable is not employed in this invention. Where the distillation is carried to the proper point, which may be determined by the elimination of practically all of the light oil, the residue in the still will be a thick black liquid of tarry consistency which is capable of mixing or dissolving in water. This material has not only good medicinal and antiseptic qualities, but also possesses strong detergent properties. When mixed with water, a clear solution is presented, and this is employed for the purposes named. The product just described constitutes the first element of the invention. We will hereinafter call this product "soluble base."

The second step of the invention consists in so treating the soluble base as to cause it to emulsify in water to a light milky emulsion. This is effected by using a certain percentage of oil, rosin, and caustic-soda solution. The oil must be such that it will hold the soluble base in solution and will not separate out during the use of the finished product, and the specific gravity of the mixture must be slightly heavier than water. The characteristic of the product is that when thrown into water it sinks and emulsifies while sinking. While different oils can be used for treating the soluble base, it is preferred to employ the lighter grades of the

heavy oils produced during the distillation of the main bulk of the pine-oil, and, as defined in the process of making lubricating-oil in the Clark patent above referred to, the degree of heat for producing these heavy oils varying from 540° to 740° Fahrenheit, and for convenience this oil will be designated as "intermediate" oil, being between the light and heavy distillates. Any one of the heavy oils above referred to is added to a mixture of the soluble base, rosin, and soda until neutralization is produced, the amount of oil used varying from twenty-five per cent. to thirty-three per cent. of the bulk of the finished product. In practice the rosin is melted in a kettle, and to this is added the soluble base and the intermediate oil, and the whole is thoroughly mixed, and to this is added and incorporated a solution of caustic soda having a specific gravity of 1.21, and the product after emulsifying is of bluish-gray color. The product is then carefully treated with light oil to bring it to the proper consistency.

In the above-described step the quantities of ingredients employed are from five to six pounds of rosin to each gallon of the soluble base and one gallon of the intermediate oil to each gallon of the soluble base and about twenty per cent. of the caustic-soda solution to the amount of soluble base. The light oil referred to is one of the pine products made during the crude distillation.

Having thus described the invention, what we claim is—

1. The process of making a water-soluble sheep-dip which consists in subjecting pine-oil to fractional distillation to eliminate the ill-smelling oils, then saponifying, then eliminating all or part of the hydrocarbon light oil, leaving as a residue a water-soluble tarry substance.

2. The process of making an emulsive sheep-dip which consists in subjecting pine-oil to fractional distillation to eliminate the ill-smelling oils, then saponifying, then eliminating all of the hydrocarbon light oil, leaving as a residue a water-soluble tarry substance, then treating this substance with the intermediate oil, rosin and a caustic-alkali solution to emulsify it, and finally treating the substance with light oil to bring it to the proper consistency.

3. The process of making an emulsive sheep-dip, which consists in subjecting pine-oil to fractional distillation to eliminate the ill-smelling oils, then saponifying, then eliminating all of the hydrocarbon light oil, leaving as a residue a water-soluble black liquid of tarry consistency, then treating this liquid with an intermediate oil, rosin, and a caustic-alkali solution to emulsify it, and finally treating the substance with a light oil to bring it to the proper consistency.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

FRANKLIN S. CLARK.
EDWIN A. HARRIS.

Witnesses:
G. H. BAXTER,
FREDERICK BOLANDER.