

1

2,824,812

HECTOGRAPH COMPOSITION

Walter G. Drautz, Delmar, N. Y., assignor to General Aniline & Film Corporation, New York, N. Y., a corporation of Delaware

No Drawing. Application December 20, 1954
Serial No. 476,603

10 Claims. (Cl. 106—145)

This invention relates to the production of hectograph compositions, and more particularly to the use in such compositions of an improved vehicle or carrier.

It is generally recognized in the art relating to hectograph duplicating materials that a black hectograph ink which will meet the requirements of repeated use is difficult to obtain. In order to be of value as a black hectograph ink, it must be capable of printing a great many, as for example from 150 to 200, copies in a good deep black shade from a single master copy, and the last print made should not differ greatly in shade from the first print. Some known compositions initially give good deep black shades but on continued use the copies change to bluish, yellowish or orange shadings after about 20 copies have been made. This is due in part to the fact that a combination of spirit-soluble shading colors which blend to a shade approaching black is almost always employed. Obviously, not all shading colors may be blended together since certain forms are incompatible or do not produce the desired results. If the proper combination of shading colors is not employed, and if the proper proportions of such shading colors are not carefully controlled, the uneven exhaustion of these combined colors during use of the hectograph material creates a progressive imbalance in the proportion of the colors whereby the color remaining in said hectograph material in the largest proportion will predominate, thereby producing progressively poorer and inferior black prints.

What has been said above with respect to the importance of employing the proper combination of dyestuffs applies with equal force to the vehicle, or "dope" in which the dyestuff composition is suspended. Thus, the vehicle in which the dyestuff composition is to be suspended must be capable of storage, in bulk, in the ink, and when coated, for extended periods of time without appreciable change, i. e., it should not gum, crystallize, change color, become rancid, change in moisture content under varying conditions of humidity or the like. It should have a relatively low viscosity at temperatures of from about 160 to 212° F., the temperatures usually employed during admixture with the dyestuff composition and during the coating of the base, which may be paper, fabric, sheets made of synthetic film forming material, or the like. The vehicle or dope should also provide good adhesion with the base when and after it is coated thereon, should not be of such character as to smear, smudge, or stick to articles coming in contact therewith, should be sufficiently flexible to avoid flaking or breaking off, and should be capable of giving up color fairly evenly, consistently, and at the proper rate under hectograph printing conditions.

In formulating hectograph ink vehicles, it has been common practice to employ varying proportions of many different types of oils and waxes in order to arrive at a composition having the above-mentioned characteristics. However, none of these formulations has found universal acceptance due to lack of one or more of said char-

2

acteristics, and/or economic reasons or the like. The instant invention is based upon the discovery that a hectograph ink vehicle having the desired characteristics may be formulated by including therein sugar cane wax in proportions of about 20 to 35 percent by weight of the vehicle, the remainder of the vehicle containing other oils and waxes in varying proportions.

Sugar cane wax is a wax obtained by an extraction of the filter cake from juice clarification of cane sugar and contains, among other constituents, varying amounts of unsaturated acids such as linolenic, linoleic and oleic acids. The particular sugar cane wax preferred for use in the instant invention is one having a melting point of about 165 to 170° F., an acid number of about 20 to 30, and a saponification number of about 65 to 75. Such a wax is available under the trade name of Duplicane 517. However, other similar sugar cane waxes may be employed which have the required properties, the most important of which is a melting point within the range of about 160 to 185° F., the lower portion of the range of temperatures employed during compounding with the dyestuff composition and during the coating operation.

Other waxes and oils which may be mixed with the sugar cane wax at a temperature of 160° to 212° F. in formulating the hectograph ink vehicle of this invention may be beeswax, carnauba wax, paraffin wax, Carbowax (polyethylene glycols), other vegetable waxes such as japan wax, montan wax, synthetic waxes, tacky mineral oil foots, mineral oil, petrolatum, fatty alcohols, castor oil, lard oil, and the like. It will be understood that the terms "oil" and "wax" as employed herein and in the appended claims have reference to materials having oily and waxy characteristics, i. e., their physical properties, as distinguished from their chemical constitutions. Preferred compositions are those including, by weight 20 to 35 percent of sugar cane wax, about 3 to 10 percent of beeswax, about 15 to 20 percent of castor oil, about 25 to 35 percent of mineral oil, and about 20 to 25 percent of petrolatum or lanoline.

The hectograph ink vehicles of this invention are employed in the usual manner in formulating hectograph inks therefrom. Thus, the vehicle is mixed with the dyestuff composition at elevated temperatures of about 160 to 212° F. in the usual grinding mills, roller mills, and/or the like. Incorporation of maximum proportions of dyestuff composition in the ink is a desideratum, and in general, the ink should contain about 40 to 70 percent by weight of dyestuff composition therein. The hectograph ink may then be coated on to the base to be employed, at similar elevated temperatures, in any desired manner such as by rolls, doctor blades and/or the like.

The following examples, in which parts are by weight, are illustrative of preferred embodiments of the hectograph ink vehicles of this invention and are not to be regarded as limitative:

Components	Example		
	I	II	III
Sugar cane wax.....	23	25	29
Beeswax.....	5	5	4.5
Castor oil.....	18	18	17
Linoline.....	24	22	
Mineral oil.....	30	30	29
Petrolatum.....			20.5

The dyestuffs which may be mixed with the hectograph ink vehicle of this invention may comprise any of the usual mixtures of dyestuffs employed in the hectograph ink art for attaining any desired shade. By way of example, the mixtures disclosed in my U. S. Patent Nos. 2,684,908 or 2,691,595 may be made use of in formu-

3

lating hectograph printing inks in accordance with the instant invention. Another highly advantageous dyestuff composition which may be employed herein is that disclosed in my copending application Serial No. 352,020, filed April 29, 1953. This composition comprises a mixture of 35 to 45 parts of Crystal Violet (C. I. 681), 40 to 45 parts of Chrysoidine (C. I. 20) and 15 to 20 parts of Rhoduline Blue (C. I. 658), by weight and may be suitably prepared by mixing the dyestuff components, dispersing the resulting mixture in about 80 to 200 parts by weight of water for each 100 parts of dye mixture, and then drying the resulting slurry.

This invention has been disclosed with respect to certain preferred embodiments, and various modifications and variations thereof will become obvious to the person skilled in the art. It is to be understood that such modifications and variations are to be included within the spirit and purview of this application and the scope of the appended claims.

I claim:

1. A hectograph ink vehicle consisting essentially of oils and waxes of which about 20 to 35 percent by weight consists of sugar cane wax having a melting point of from about 160 to 185° F.

2. A hectograph ink vehicle consisting essentially of, by weight, about 20 to 35 percent of sugar cane wax having a melting point of from about 160 to 185° F., about 3 to 10 percent of beeswax, about 15 to 20 percent of castor oil, about 25 to 35 percent of mineral oil, and about 20 to 25 percent of a member selected from the group consisting of petrolatum and lanoline.

3. A hectograph ink vehicle consisting essentially of, by weight, about 23 parts of sugar cane wax having a melting point of from about 160 to 185° F., 5 parts of beeswax, 18 parts of castor oil, 24 parts of lanoline and 30 parts of mineral oil.

4. A hectograph ink vehicle consisting essentially of, by weight, about 25 parts of sugar cane wax having a melting point of from about 160 to 185° F., 5 parts of beeswax, 18 parts of castor oil, 22 parts of lanoline, and 30 parts of mineral oil.

5. A hectograph ink vehicle consisting essentially of, by weight, about 29 parts of sugar cane wax having a melting point of from about 160 to 185° F., 4.5 parts of beeswax, 17 parts of castor oil, 29 parts of mineral oil and 20.5 parts of petrolatum.

4

6. A hectograph ink consisting essentially of, by weight, about 40 to 70 percent of dyestuffs, and about 60 to 30 percent of a hectograph ink vehicle comprising oils and waxes of which about 20 to 35 percent consists of sugar cane wax having a melting point of from about 160 to 185° F.

7. A hectograph ink consisting essentially of, by weight, about 40 to 70 percent of dyestuffs, and about 60 to 30 percent of a hectograph ink vehicle comprising about 20 to 35 percent of sugar cane wax having a melting point of from about 160 to 185° F., about 3 to 10 percent of beeswax, about 15 to 20 percent of castor oil, about 25 to 35 percent of mineral oil, and about 20 to 25 percent of a member selected from the group consisting of petrolatum and lanoline.

8. A hectograph ink consisting essentially of, by weight, about 40 to 70 percent of dyestuffs, and about 60 to 30 percent of a hectograph ink vehicle comprising about 23 parts of sugar cane wax having a melting point of from about 160 to 185° F., 5 parts of beeswax, 18 parts of castor oil, 24 parts of lanoline and 30 parts of mineral oil.

9. A hectograph ink consisting essentially of, by weight, about 40 to 70 percent of dyestuffs, and about 60 to 30 percent of a hectograph ink vehicle comprising about 25 parts of sugar cane wax having a melting point of from about 160 to 185° F., 5 parts of beeswax, 18 parts of castor oil, 22 parts of lanoline, and 30 parts of mineral oil.

10. A hectograph ink consisting essentially of, by weight, about 40 to 70 percent of dyestuffs, and about 60 to 30 percent of a hectograph ink vehicle comprising about 29 parts of sugar cane wax having a melting point of from about 160 to 185° F., 4.5 parts of beeswax, 17 parts of castor oil, 29 parts of mineral oil and 20.5 parts of petrolatum.

References Cited in the file of this patent

UNITED STATES PATENTS

2,440,364	Champion	Apr. 27, 1948
2,454,700	Holik	Nov. 23, 1948
2,682,516	Wilder et al.	June 29, 1954
2,703,807	Wilder et al.	June 29, 1954

OTHER REFERENCES

Warth: "The Chemistry and Technology of Waxes" (1947), published by Reinhold (pages 136 and 138).