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GUMMED PRODUCT PRINTED WITH CONDITIONER

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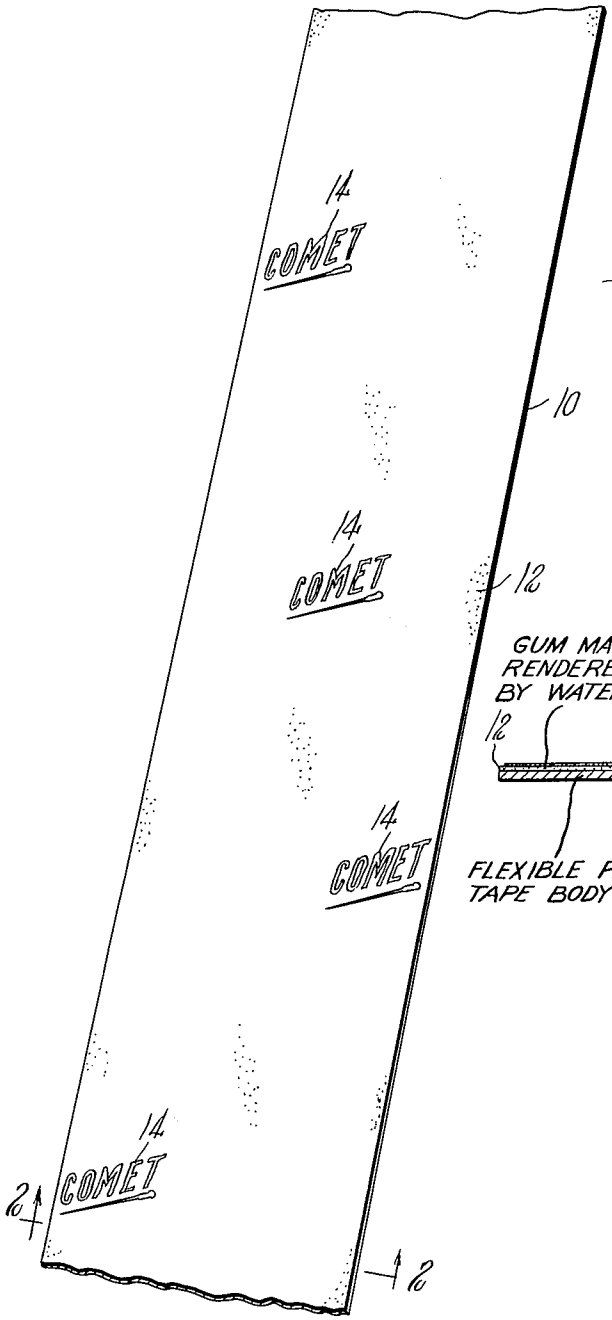


Fig. 1.

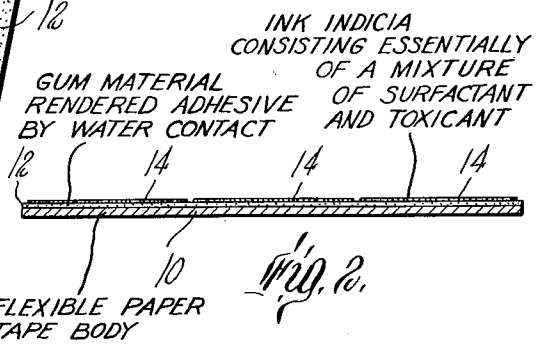


Fig. 2.

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GUMMED PRODUCT PRINTED WITH CONDITIONER

Armand J. Gauthier, Brookfield, Mass., assignor to Ludlow Corporation, a corporation of Massachusetts

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This invention relates to gummed products for adhesion to various surfaces following wetting of a gummed surface thereof. More particularly, the invention relates to such gummed products having on the gummed surface thereof superposed deposits containing one or more conditioning agents or dyes.

Heretofore it has been the practice to incorporate in (and throughout the gummed layer of) the gum of gummed tape and other gummed products, treating agents or conditioners such as fungicides and wetting agents, so as to combat fungus and mold growth and gum putrefaction on wetting brushes or rolls and also to provide for better wetting action. However, in the very nature of things this resulted in a great waste of the treating agents, because of course it was undesirable to dissolve away any great proportion of the gum, so that only a fraction of any conditioner present throughout the layer of gum was effectively dissolved, and enabled to perform its function.

A main object of this invention is to provide for efficient and economical use of treating agents such a surfactants and toxicants, in conjunction with wetting of gummed surfaces, preparatory to adhering the same. In this connection it is an object of this invention to provide for depositing such treating agents upon the outer surface of a gummed layer so that there is substantially complete solution thereof in water used to wet such surfaces in use.

Another object of this invention is to provide a gummed product, such as a gummed tape, which has colored indica printed on the gummed surface thereof, such for example as trademarks, warning signals, information generally, or ornamental devices. Such indica make possible for example printing in different code colors on tapes of different character to prevent confusion therebetween.

A further object is to print such indicia or deposits on gummed surfaces in such a manner that substantially the entire width of a wetting roll or brush used to wet the same will periodically contact certain of said indicia, for example, as by staggering such indicia diagonally across the width of a tape or by imprinting deposits periodically across the width of a tape, so as to condition the entire wetting roll or brush.

Other objects, features and advantages will appear from the following description of a preferred embodiment, taken in conjunction with the attached drawings thereof, in which:

FIG. 1 is a partial perspective view of a broken-away length of gummed tape according to the invention; and

FIG. 2 is a sectional view taken at 2—2 of FIG. 1.

Referring to the drawings, there is shown in FIG. 1 a length of paper tape **10** having deposited over one surface thereof a layer **12** of gum which becomes adhesive upon wetting with water. Deposited on the outer face of said gum layer **12** are a multiplicity of indicia **14**, said indicia being printed in a color contrasting with the color of said gum, and in the words and design of a trademark, the indicia or deposits constituting a dried mixture including a fungicide, a bactericide, and one or more bodying agents and dyes or pigments.

In my preferred practice the deposits **14** are printed by means of a "Flexographic" printing head using rubber plates or rolls of the type familiar to the printing art, and an ink according to the present invention.

In my preferred embodiments of the inks used, I incorporate a number of ingredients. One ingredient is a bactericide (e.g., Dowicide A, Dow Chemical Company's sodium salt of orthophenylphenol), which is specific to bacteria of the protein liquifying type. Another ingredient of the preferred inks is a fungicide, such as Dowicide G (Dow Chemical Company's sodium salt of pentachlorophenol), which is specific to mold and fungi. Another ingredient is a dye, for example amaranth red dye (trisodium salt of 1-(4-sulfo-1-naphthylazo)-2-naphthol-3,6-disulfonic acid), or W. O. Hickok Carmine Ruling Ink Powder (the aluminum lake of cochineal), to give the printed deposits the desired color. Another ingredient is one or more bodying agents, such as Cellosize WPO9 (Carbide & Carbon Chemical Corporation's hydroxyethyl cellulose, low viscosity), or PVP Type K90 (General Aniline and Film Corporation's 20% aqueous solution of polyvinylpyrrolidone, high viscosity), or cornstarch. An additional ingredient is a wetting or penetrating agent (which could be anionic, cationic, nonionic, or amphoteric), also referred to herein as a surfactant, such as Renex #30 (a polyoxyethylene ether alcohol, non-ionic, supplied by Atlas Powder Co.), Tergitol Anionic 08 (Carbide & Carbon Chemical Corporation's sodium 2-ethyl hexyl sulfate) or Hyamine #1622 (Rohm & Haas' di-isobutylphenoxy ethoxy ethyl dimethyl benzyl ammonium chloride). The last-named material functions as a bactericide as well as a surfactant. A further ingredient is a defoamer, for example Nalco 71–D5 (National Aluminate Company's liquid mixture of polyglycol and fatty acid type of surface active materials, with self-emulsifying and emulsion-stabilizing materials added). Also, the ink includes solvents, as water and alcohols. Such alcohols may suitably be Delcasol (Bensing Brothers and Deeney's brand of anhydrous ethyl alcohol), or methanol. Having described generally formulation of the preferred inks, I now set forth three specific formulations thereof;

Example 1

The following ingredients were mixed, in the order indicated, at a high speed in a dispersion mill having a high speed agitator. A total of 78 pounds of Delcasol was used, added in the separate increments below indicated.

Cold water	35 lbs.
Delcasol	18 lbs.
Dowicide A	1 lb. 8 oz.
Dowicide G	12 oz.
Amaranth Red Dye	15 oz.
Cellosize WPO9	4 lbs. 8 oz.
20% aqueous solution PVP Type K90	8 lbs. 12 oz.
Renex #30	1 lb. 10 oz.
Hyamine #1622	2 lbs. 12 oz.
Delcasol (to thin)	60 lbs.
Nalco 71–D5 Defoamer	15 ml.

Example 2

The following formulation was also made up by mixing, in the order and amounts indicated, in a dispersion mill as above.

Cold water	35 lbs.
Methanol	18 lbs.
Dowicide A	1 lb. 8 oz.
Dowicide G	12 oz.
Amaranth Red Dye	15 oz.
W. O. Hickok Carmine Ruling Ink Powder	3 oz.
Cellosize WPO9	6 lbs. 4 oz.
Tergitol Anionic 08	1 lb. 10 oz.
Hyamine #1622	2 lbs. 12 oz.
Methanol (to thin)	60 lbs.
Nalco 71–D5 Defoamer	15 ml.

Example 3

Another satisfactory formulation constituted the following materials, mixed in a similar manner.

Water	25 lbs.
Amaranth Red Dye	1 lb. 8 oz.
Cellosize WP09	4 lbs. 8 oz.
Hyamine #1622	2 lbs. 8 oz.
Renex #30	1 lb. 8 oz.
Dowicide A	1 lb. 8 oz.
Dowicide G	8 oz.
Delcasol	25 lbs.
Corn starch	12 lbs. 8 oz.

The bodying agents are used to provide satisfactory pick-up by the rubber printing roll and transfer therefrom to the gummed surface being printed. Use of surfactants gives the advantage not only of better wetting of the gum but better penetration into the surface to which the wetted gummed product is to be adhered. Defoamer prevents foaming in printing, especially between the ink pick-up roll and the engraved transfer roll, where a great deal of air is beaten in.

The gummed products, such as gummed tape, embodying the present invention are characterized by deposits, preferably laid down by printing in colored indicia (with inks as for example above described) giving trademark, ornamentation, or information, on the outer face of the gummed layer, so as to be substantially completely dissolved therefrom in the wetting operation, to condition wetting bath, wetting rolls or brushes, and the interface between the wetted tape (or other gummed product) and the surface to which it is to be adhered. (Wetting of a gummed tape is done usually for example by passing the gummed side thereof over a roll or brush rotatably dipping into and wet by a wetting bath.) The deposits may contain one or more water-soluble conditioning agents, such as toxicants (fungicides or bactericides), and surfactants, and preferably includes a dye or pigment of color contrasting with the color of the gum. Preferably the deposits are made interruptedly, to effect further economies in quantities of conditioning agent used, and at the same time using such a dye or pigment so that the interrupted deposits define said colored indicia. Preferably also said interrupted deposits are so staggered as to span substantially the entire width of the gummed product (as shown especially in FIG. 2), so that in passing the same over for example a wetting brush, substantially the entire width thereof periodically makes contact with a deposit containing conditioning agent.

Deposits laid down by printing with the ink of Example 1 contain a dried admixture of all the ingredients thereof except the solvents, water and Delcasol. Similarly, deposits laid down with the inks of Examples 2 and 3 contain mixtures of all the ingredients thereof except the water, methanol, and Delcasol, which evaporate in drying. Inks containing fewer ingredients may be used to lay down deposits having fewer materials in admixture, as above described; for example the ink might contain a single toxicant or a single surfactant.

The above embodiments are illustrative only, and other embodiments with the following claim will be readily apparent to those skilled in the art.

I claim:

An adhesive paper tape comprising a flexible paper tape body, a layer of gum material capable of being rendered adhesive upon contact of liquid water on one surface of said body, and a plurality of discrete spaced indicia, each being a thin layer of ink which consists essentially of a mixture of a surfactant, for reducing the surface tension of the water applied to the gum layer and a toxicant for conditioning the water applying device, said indicia being deposited interruptedly along the length of the tape and in staggered relationship so as to span substantially the entire width of the tape.

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