

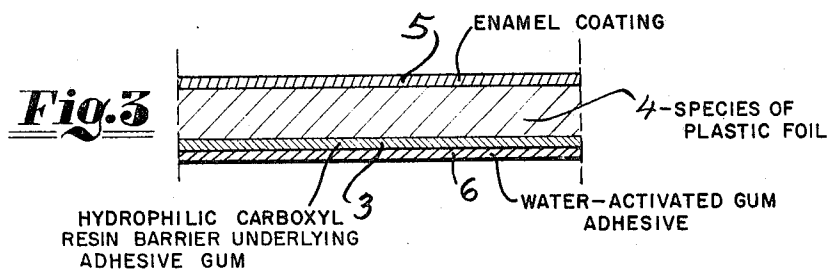
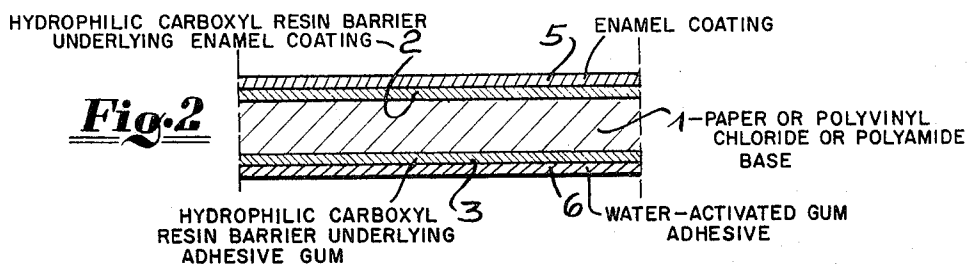
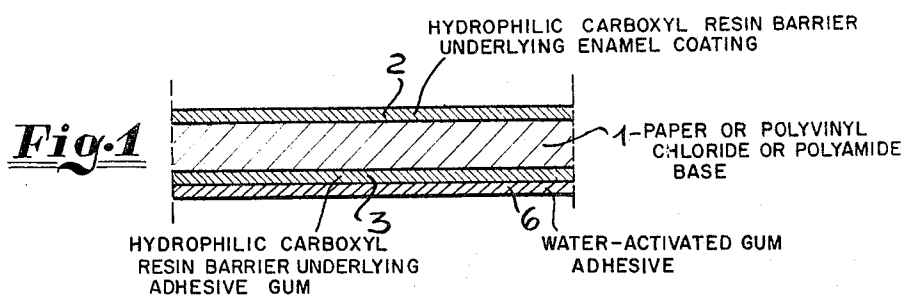
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J. GÖBEL

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GUMMED LABELS AND THE LIKE

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INVENTOR.

JOHANNES GÖBEL

BY

Thomas
A#y

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GUMMED LABELS AND THE LIKE

Johannes Göbel, Aschaffenburg, Germany, assignor to
Buntpapierfabrik A.G., Aschaffenburg, Germany

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This invention relates to coated paper, and more particularly to gummed labels, sheets and sections cut to size, of paper and the like.

The labelling of bottles, cans and boxes, and the paper coverings for cartons, cases and other containers, require a huge amount of labels, sheets and cuttings of ordinary or surface treated paper, such as chrome or cambric paper, which are coated only at the place where they are applied, by pasting their back with glue of the aqueous or dispersion base type.

These labels or cuttings suffer from the drawback that when the glue is being applied, moisture from the adhesive is apt to pass into the paper, thus causing the label or cuttings to curl, frequently to a point where they are applied to the article to be labelled or covered only with difficulty. Another disadvantage often encountered is a total penetration of the glue through the paper which on drying of the glue, leaves glue spots on the surface of the label or covering, so as to render the same unsightly. Another shortcoming frequently observed is caused by repulsion of the glue by the paper so that the glue covers the paper unevenly and only in spots, and the label or covering does not adhere properly to the article.

It is a primary object of the present invention to eliminate the above drawbacks, and to provide coated labels, sheets, cuttings and the like which are materially improved over any gummed paper products now available.

Another important object of the invention is to provide gummed labels or paper coverings which display no tendency to curl.

It is a further object of the invention to provide labels and similar paper articles which on application of the glue or adhesive, do not permit the glue to penetrate the paper so as to detract from a neat appearance of the label.

Still another object of the invention is an adhesive coating for paper labels and the like which is accepted over the entire surface of the paper on which it is applied and hence, is bound to ensure adhesion of the label or similar paper product on the article to which it is applied.

It is a still further object of the present invention to provide an adhesive coating which does not tend to peel off, and which renders the labels inert to water, yet wettable, and permeable to vapor.

Other objects, and the manner in which the same are attained, will become apparent as this specification proceeds.

The present invention contemplates to provide labels or sheets cut to size, of papers which may or may not contain wood and which may have a coated surface, or of plastic foils, and intended to be pasted on articles by means of glue having an aqueous or a dispersion base, at least on the side to which the adhesive is to be applied, with a barrier layer of a carboxyl group containing synthetic or natural resin.

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A carboxyl group containing synthetic resin preferred for use in accordance with the invention, is a hydrophilic synthetic material consisting of carboxyl groups containing polymers, copolymers and mixtures thereof.

Suitable bases for labels and sheets thus pretreated are natural papers as well as all kinds of surface treated papers, such as chromo, gloss, glaze, bright enamel, bronze, plastic, cambric and velvet paper.

In place of paper plastic foils consisting e.g. of polyvinyl chloride, polyamide, cellglass, etc., may be used.

The paper or plastic bases may be coated, in accordance with the invention, with hydrophilic synthetic resins and particularly, carboxyl groups containing polyvinyl compounds such as polyacrylic acid, polymethacrylic acid, polymaleic acid anhydride, polycrotonic acid and their salts. Copolymers of these compounds with one another, or with other carboxyl group containing vinyl compounds or other compatible and polymerizable compounds may also be used; suitable examples are copolymers of the afore-noted compounds with acrylic acid esters, methacrylic acid esters, vinylchloride, vinylidenechloride, vinylacetate vinylalkyl ether, vinyl acetate, styrene and the like. Mixtures of polymers are as suitable as are copolymers provided the copolymer or polymeric mixture is susceptible of swelling in water. With acrylic and methacrylic acid esters, the lower alkyl esters are preferred.

Hydrophilic natural resins particularly suitable for purposes of the invention are carboxyl group containing natural resins such as shellac (acid number 40–70) and copal (acid number 65–190); other resins such as maleic resin (acid number 120) or carboxyl group containing phthalic resins (acid number 80–90) are also suitable.

Mixtures of resins are contemplated as are mixtures of resins with the carboxyl group containing polyvinyl compounds exemplified above.

The barrier layers according to the invention may be applied to the back of an already coated paper, or else they may be applied on both sides of the paper or the like base.

The disposition of the barrier layer or layers according to the invention is illustrated diagrammatically by the drawing accompanying the present specification and forming part thereof, wherein

FIG. 1 shows a natural paper which has been coated with the resin compositions of the invention, on both sides;

FIG. 2 shows a similar paper provided with barrier layers on both sides which in addition, has its top surface coated with a chrome or glaze coating, and

FIG. 3 shows a paper having a barrier layer according to the invention on one side, and a surface improving, chrome or glaze coating on the other side of the paper.

Referring to the drawing, the bases of paper which may or may not contain wood, or plastic foil, are shown at 1 or 4, respectively, while the barrier layers of carboxyl group containing resins are shown at 2 and 3, respectively. A surface improving coating intended e.g. to enhance the printing characteristics of the paper, is indicated at 5.

Papers or foils provided with barrier layers according to the invention, lend themselves to the manufacture by punching, stamping or cutting, of square, rectangular, circular, oval or irregularly shaped labels, sheets, cuttings and the like. These products have the signal advantage that they can be pasted by means of a glue or adhesive having an aqueous or dispersion base, on a

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great variety of articles made of metal, glass, cardboard, plastic, paper, wood, etc., without any tendency to curl or to exhibit stains, and without suffering from uneven or otherwise impaired adhesion due to partial repulsion of the glue by the paper. The water activated gum adhesive is shown at 6.

The invention is further illustrated by the following examples wherein the mode of application of the barrier layers according to the invention, as well as the chemical characteristics of these coatings, are exemplified with illustrative rather than limitative intent.

Example I

5 kilograms of polyacrylic acid are suspended in 95 liters of water, whereupon 3 liters of ammonia, in a 25 percent concentration, are stirred into the suspension. The solution thus obtained is applied by means of a coating machine using rollers, the back of the chromo paper, the amount thus applied, calculated on dry substance, being 10 grams per square meter. Once the coat thus applied has dried, it is sprayed for hardening purposes, with a very thin coat of a 5 percent aqueous solution of aluminum sulfate, and this, too, is dried.

Drying of the synthetic resin coat takes place in a hanging room.

Polymethacrylic acid may be replaced by a copolymer of 90 percent of methacrylic acid and 10 percent of vinylacetate, with equally satisfactory results.

Example II

18 kilograms of a copolymer of 35 percent methacrylic acid and 65 percent methacrylic acid methylester are dissolved in a solvent mixture composed of 61.5 kilograms of ethyl glycol and 20.5 kilograms of tetraline. Into this solution are stirred 35.7 kilograms of a 70 percent solution of polyvinylmethylether (K value 40) in toluene. This solution is applied with a doctor, to the back of a sheet of cambric paper, the amount thus applied being 12 grams per square meter calculated on the dry substance. The solvent is evaporated by placing the coated paper in a drying chamber. The coated paper had all the advantageous characteristics noted above.

Example III

The solution of Example II is applied with a doctor, to a plastic foil of polyvinylchloride having a thickness of 40 μ . The amount thus applied is 8 grams per square meter, calculated on the dry substance. As in the preceding examples the solvent is then evaporated by drying the coated foil in the drying channel.

The coated foil exhibited the superior properties noted above.

Example IV

20 kilograms of polyacrylic acid are dissolved in a mixture of 40 kilograms of ethanol and 40 kilograms of methanol. This solution is applied to the back of a web of glaze paper in an amount of 12 grams per square meter calculated on the dry substance. The solvent is evaporated as in the preceding examples.

The glazed paper exhibited the outstanding no-stain, non-curling, even-adhesion characteristics of all paper etc. products coated in accordance with the invention.

Example V

A copolymer of maleic acid anhydride, vinyl acetate and vinyl chloride is dissolved in a mixture composed of equal parts of ethyl acetate and butyl acetate. The solution is applied with a doctor, to the back of a web of bright enamel paper, in an amount of 10 grams per square meter, calculated on dry substance. The solvent is evaporated by drying in a drying chamber, and the resulting coated paper is found to have all the advantages enumerated e.g. in the preceding example.

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Example VI

A solution of 15 kilograms of a carboxyl group containing polymethacrylate known under the trade name "Plexigum 7613," in 35 kilograms of glycolic acid butyl-ester and 7 kilograms of tetraline, is applied to the back of a web of velvet paper, in an amount of 15 grams per square meter calculated on the dry substance. The solvent is evaporated by drying in a drying chamber. The resulting product exhibited the same superior characteristics as did the products in the preceding examples.

Example XII

50 kilograms of China clay, to which 0.5 kilogram of a pigment dispersing agent (such as that available on the market under the trade name "Polysalz") have been added, are mixed with 50 liters of water. The paste thus obtained is combined with 183.5 kilograms of a shellac solution composed as follows:

30 kilograms of bleached shellac
150 liters of water
0.5 kilogram of soda ash
3 liters of ammonia

The resulting mixture is heated under stirring, to 60° C.

The coating composition thus obtained is applied by an air brush to the back of a web of paper, the front of which is coated with a chromo coating. It could also be applied to both front and back of a paper web, right in the paper machine, by means of a suitable coating device. The amount of coating composition applied is 5 grams per square meter calculated on the dry substance, for each side of the web thus treated.

Rectangular labels are punched from a paper web thus treated, which display all the non-curling, no stain, even adhesion features of the products made in accordance with the preceding examples.

Example VIII

80 kilograms of a carboxyl group containing maleic resin available on the market under the trade name of "Alresat 400 C" are dissolved in 40 liters of 96 percent alcohol and 20 liters of xylene. This solution is applied by means of a doctor coating device, to both sides of a paper web, in an amount of 8 grams per square meter calculated on dry substance, for each side of the web. One side only could be coated as well, and "Alresat 444 C" could be substituted for "Alresat 400 C." The resulting products share all the advantages enumerated above for the products produced in accordance with the preceding examples.

I wish it to be understood that I do not desire to be limited to the exact details of procedure, composition and mode of application shown and described as modifications within the scope of the appended claims which involve no departure from the spirit of the invention nor any sacrifice of the advantages thereof, will occur to workers in this field.

I claim:

1. Gummed labels adapted to be adhered to bottles, cans and boxes through adherence of the moistened gum coating comprising in combination, a base selected from the class consisting of paper and polyvinyl chloride and polyamide, a barrier layer of a carboxyl group containing hydrophilic resin on one side of said base, said hydrophilic resin selected from the class consisting of polyacrylic acid, polymethacrylic acid, polymaleic anhydride, polycrotonic acid, acrylic ester-acrylic acid copolymer, acrylic ester-methacrylic acid copolymer, methacrylic ester-acrylic acid copolymer, methacrylic ester-methacrylic acid copolymer, vinyl chloride-acrylic acid copolymer, vinylidene chloride-acrylic acid copolymer, vinyl chloride-methacrylic acid copolymer, vinylidene chloride-methacrylic acid copolymer, vinyl acetal-acrylic acid copolymer, styrene-acrylic acid copolymer, styrene-metha-

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acrylic acid copolymer, shellac of acid 40-70, copal of acid 65-190, said hydrophilic resin barrier layer being tightly adhesive to the gum applied thereto which has an aqueous dispersion base and further resisting the penetration of the gum through itself to the base, and a coat of moisture activated gum adhesive on said barrier layer.

2. Gummed labels according to claim 1, comprising a surface improving enamel coat on the other side of said base which is opposite said barrier layer and which adapts the label to be printed.

3. Gummed labels according to claim 2, wherein said barrier layer is provided on both sides of the base with said coat of adhesive being on one of said barrier layers,

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and said surface improving enamel coat is provided in the other one of said barrier layers.

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10 EUGENE R. CAPOZIO, *Primary Examiner*.

W. J. CONTRERAS, *Assistant Examiner*.