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COATED PAPER AND PROCESS OF MAKING THE SAME.

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This invention is an improvement in paper, and in processes of making the same, and with respect to its more specific features, in transparent paper.

For certain purposes a paper which is transparent or nearly so is desirable, as for instance in the packaging of many commodities as for instance candies, fruits and the like, as well as tobacco products of every character. In order to preserve the moisture content of the commodity as nearly intact as possible, and to prevent contamination from the atmosphere, it is desirable that the package include a moisture proof wrapping. Such wrappings are usually the innermost, in candies and fruits for instance, or the outermost as with cigarettes. In either case a transparent wrapping is desirable in order that the commodity be visible through the wrapper, or the display matter of the package, since as a rule the moisture proof wrapper is not suitable for printing, in either case the wrapper should be odorless, devoid of grease, and not displeasing to the touch.

However, many difficulties have been encountered in the making of paper transparent. Certain liquids having resinous or other transparent matter in solution will render the paper transparent when it is treated with the solution, and being in the nature of a varnish, the solutions also water proof and grease proof the paper.

Of those usually applied, some provide a finish which is too hard, making the paper brittle, so that it cannot withstand the ordinary usage to which it is subjected. The paper cracks and breaks easily, becoming no longer impermeable, and it is unable to perform the function for which it is intended.

Other solutions leave the paper normally flexible, but provide a surface which is sticky or "tacky" and with a high coefficient of friction. The paper for this reason is unpleasant to the touch, and when the sheets are stacked one upon the other they readily adhere, and are not easily separated when it is desired to use them. Moreover the solutions impart to the paper an odor of varnish or the like, which persists after the most thorough drying.

An object of the present invention is to provide a transparent paper, suitable for many purposes including the wrappers above mentioned, and a process of preparing the same.

Another object is to provide a simple, inexpensive and easily carried out process, by means of which paper of a selected type may be simultaneously moisture proofed and rendered transparent.

Another object is the provision of a process by means of which any desired tinting may be imparted to the finished article, and wherein the sheets when superimposed do not adhere to each other.

In practicing the process, a thin highly calendared paper is preferably used, and the paper of this character is treated with a solution having as its essential ingredients, a resin with water proofing properties, transparent in solution, and capable of imparting transparency to the paper, and a dry wax, in alcoholic solution.

A suitable resin for the purpose is lac, commonly known as shellac, when modified by the admixture of a suitable softening agent, as for instance gum elemi, and a suitable dry wax is stearic acid, which is preferably double pressed to eliminate the largest possible amount of water.

The ingredients above specified are preferably dissolved separately, each in a specified amount of alcohol, the three essential ingredients each in its solution being then mixed together in a selected ratio to provide the solution with which the paper is to be treated.

The relative proportions of the ingredients, will depend upon the quality of the paper and the results desired. However, I have found the following formulas suitable for the purpose:

#1, 20 gallons alcohol, 60 pounds shellac.
#2, 15 gallons alcohol, 25 pounds gum elemi.
#3, 12 gallons alcohol, 6 pounds stearic acid.

The first and second solutions may be heated to facilitate solution, and after the three basic solutions have been prepared, they are mixed in the following proportions, to provide the treating solution.

#1, 6 gallons.
#2, 3 gallons.
#3, 1½ gallons, alcohol 2 gallons.

The solution may be applied in any de-

sired manner, as for instance the paper to be treated may be passed through a bath, and then dried. Or the solution may be applied to one or both surfaces by means of brushes, and thoroughly worked in by other brushes. An advantageous method is however, passing the paper through the solution, as above stated, and scraping the surplus from both faces of the paper as it leaves the bath.

Shellac when used alone has a tendency to make the paper harsh and brittle, drying a little too hard. However, when modified by a suitable softening agent, as for instance gum elemi, and stearic acid a smooth hard but live and flexible surface is imparted to the paper. There is no greasy feel to the paper, and no feeling of stickiness or tackiness. The surface of the paper is smooth and velvety, and very pleasing to the touch.

In some instances, and for some purpose, the gum elemi may be advantageously replaced by castor oil. When castor oil is used, solutions #1 and 3 are prepared as above described, and #2 solution is made by adding 8 lbs. castor oil to 16 gal. of alcohol. The solutions are combined to form the treating solution in the following proportions:

#1, 6 gallons.
#2, ½ gallon.
#3, 2 gallons.

The improved paper is not only pleasing to the touch and to the eye, but it is odorless, whether prepared with the castor oil or the gum elemi. Although the gum elemi is extremely aromatic, the odor soon dissipates, leaving the paper odorless.

The solution gives especially good results with sulphite spruce pulp paper.

I claim:

1. A thin, highly calendared paper coated on both faces with a smooth, uniform, even coating of a hard resin, a soft gum and a wax.

2. The process of preparing transparent paper, which comprises treating the paper with an alcoholic solution of hard resin, gum elemi, and a dry wax.

3. The process of preparing transparent paper, which comprises treating the paper with an alcoholic solution of a resin, gum elemi and stearic acid, in substantially the proportions specified.

4. The process of preparing transparent paper, which comprises treating the paper with lac, elemi gum and stearic acid, dissolved in alcohol in substantially the proportions specified.

5. The process of preparing transparent paper, which comprises treating the paper with lac, elemi gum, stearic acid and alcohol, in about the proportions of, alcohol 12.5 gal., lac 12 lbs., elemi 5 lbs., stearic acid .75 lbs.

Signed at New York in the county of New York and State of New York this 9th day of January A. D. 1925.

GERHARDT E. GRIMM.