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## GLASSINE PAPER

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3 Claims. (Cl. 92—3)

This invention relates to glassine paper and to the method of making the same, and the principal object is to provide a glassine paper having an alginate incorporated in the softening solution for the purpose of imparting to the said paper a greatly increased oil resistance, and also yielding a transparent film thereon well-suited for use as grease-proof coatings on glassine and other types of transparent coatings.

Glassine paper usually consists of thin transparent paper made from sulfite pulp, by long continued beating and supercalendering. In making glassine paper a softening solution is usually applied to the paper, said solution consisting of a water solution of glycerine, invert sugar, or other sugars, or mixtures of all three, said solution being applied to the paper immediately after it comes from the paper screen, or after moistening the paper that has been dried in the paper machine but before it is given the usual calendering treatment.

I have discovered that the addition of about 1–2% of a light colored alginate having a 2% Woolwich viscosity of about 20–40 seconds to the above aqueous softening solution, containing glycerine and sugar, produces a glassine paper with greatly increased oil resistance. Also, the algins yield transparent films which make them well-suited for use as grease-proof coatings on glassine and other types of transparent coatings. Thus the use of alginates provides a unique product in that it forms a transparent grease-proof coating. The use of alginates also serves to produce a better finish than that obtained with the usual softening glycerine-sugar water solution since it eliminates pinholes and imperfections usually present in the paper and gives a smooth surface thereto.

I will explain the invention to enable others familiar with the art to adopt and use the same, and will summarize in the claims the essential features of the invention for which protection is desired.

*Example 1*

A softening solution was made up containing 1% of a light colored sodium alginate having a 2% Woolwich viscosity of 20–40 seconds, 5% glycerine, and 94% water; and same was applied to the paper in the paper making machine in the usual manner. The finished paper contained 0.3% algin. The turpentine oil resistance test showed 200 seconds average on the control paper in which no algin was used, and showed 400 seconds average on the algin treated paper.

*Example 2*

A softening solution was made up containing approximately 3.3% glycerine, 3/5% sugar, and 0.5% alginate, and same was sprayed onto the paper while in the paper making machine. Subsequent turpentine grease-resistance tests showed that it took an average of 185 seconds for the turpentine to penetrate the algin-free control paper, while the average time necessary for penetration using the algin treated paper was 292 seconds.

Any water soluble alginate may be used; but I prefer to use either sodium or ammonium alginate made in accordance with U. S. Patents #1,814,981, #2,036,922 and #2,036,934, and having Woolwich viscosities in the range of 20–40 seconds on a 2% solution (which is the time for a steel ball 1/8 inch in diameter to fall 15 cm. through the solution at 20° C. The color of the alginate should be such that it does not materially darken the paper to which it is applied. Alginates containing ingredients to aid in their solution such as disclosed in U. S. Patent #2,000,807 can also be used; also alginates of the type described in U. S. Patents #2,128,551 and #2,163,147 are suitable, as well as alginates having Woolwich viscosities below 20 seconds on a 2% solution. In general however alginates having Woolwich viscosity values below 40 seconds function more satisfactorily than those with higher values.

Usually glassine paper is not a coated paper; that is, it has no wax or lacquer coating. However my glassine paper may have applied thereto a coating of paraffin, wax, oil, lacquer paint, resin, alginate or other film or coating. This coating or film, if of wax and the like, renders the paper resistant to water, emulsions, and water solutions; while if of resin, the second coating renders the paper resistant to fats, oils, emulsions and water. The paraffin may be applied by dipping the algin-treated glassine paper into a hot solution thereof; and the waxes may be applied by first dissolving same in a volatile organic solvent and then spraying, dipping or brushing such solution onto the paper. Mastic, copal, benzoin, shellac, colophony, dammar, sandarac, anime, and other natural resins, as well as the synthetic resins may also be used for the second coating.

I claim:

1. Glassine paper comprising paper pulp, glycerine, and substantially 0.3% of an alginate homogeneously incorporated therein to render same oil-resistant and transparent.

2. Glassine paper comprising paper pulp, glycerine, and substantially 0.3% of an alginate having a 2% Woolwich viscosity of 20–40 seconds homogeneously incorporated therein to render same oil-resistant and transparent.

3. Glassine paper comprising paper pulp, glycerine, sugar, and a substantially .3 percent of an alginate homogeneously incorporated therein to render same oil-resistant and transparent.

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