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OFFSET PREVENTION

William H. Wood, Bedford, Ohio, assignor to Harris-Seybold-Potter Company, Cleveland, Ohio, a corporation of Ohio

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11 Claims. (Cl. 106—2)

This invention relates to the prevention of offsetting in printing; and it is among the objects of the invention to provide protection which is rapidly effective, yet conveniently attained with a material which may be applied in the form of a fine mist by means of spray apparatus.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, the following description setting forth in detail certain illustrative embodiments of the invention, these being indicative however, of but a few of the various ways in which the principle of the invention may be employed.

I have found that polyvinyl alcohol is outstandingly effective in preventing offset of ink from one sheet to another, the sheets having been printed by any usual or desired procedure. Some polyvinyl alcohols are water-soluble in hot water, while others are soluble in cold water, the difference supposedly depending upon the method of manufacture. The cold water soluble form is generally preferable for usage in the present invention. The polyvinyl alcohol is made up with water, and usually though not always a still more volatile component, such for instance as a volatile alcohol, preferably a propyl alcohol, as isopropyl or normal propyl alcohol, or tertiary butyl alcohol, or the like of similar vaporization characteristic. The amount of the volatile agent or alcohol may depend somewhat upon the conditions encountered in the use of the material, and for example may be twenty to fifty per cent of the propyl alcohol, the remainder being a three to eight per cent water solution of polyvinyl alcohol. Sprayed upon the printed sheets, as may be readily accomplished by a spraying attachment in association with the printing means, the fine mist distributes minute portions of the composition over the printed surface and evaporation takes place rapidly enough that the sheets stacked upon each other do not adhere. As a further refinement, I find that a small amount of an agent such as urea or dextrose or an alcohol soluble carbohydrate incorporated in the composition affords a uniform dispersion of the colloid over a period of time and also results in somewhat better bonding to the surface of the sheet. The amount of such agent may in general be up to twenty per cent of weight of dry solid polyvinyl alcohol. Where for any reason, as in the case of certain inks or papers, a relatively high concentration of polyvinyl alcohol is desired in the composition, it may be difficult in some instances to attain as high a concentration as preferred without such an increase in viscosity as to handicap usage in the spraying system. I have found that in such event, the further incorporation of hydrogen peroxide modifies the composition very beneficially, allowing the incorporation of a higher percentage of solids in a solution without interfering with the spraying action through excessive viscosity. The amount of hydrogen peroxide in general may be up to two per cent of the polyvinyl alcohol (dry). Peculiarly, I have also found that by chlorinating the polyvinyl alcohol, as for instance by passing the halogen into an aqueous solution of the polyvinyl alcohol, I can attain a similar higher concentration without too great viscosity. It will be understood though that the agent having the viscosity-reducing characteristic of hydrogen peroxide is desirable in those conditions only where a particularly high concentration of the polyvinyl alcohol is wanted, and otherwise it will be omitted from the fundamental composition, as would also the agent having the adhesion-promoting characteristic of urea where the character of the paper and ink is not particularly unfavorable to the fundamental composition.

Anti-offsetting treatment in accordance with the present invention is unique and remarkable in contrast to known efforts heretofore in that the printed surface is free from objectionable granular or waxy "feel" and there is no staining or visible change in the paper.

Other modes of applying the principle of the invention may be employed, change being made as regards the detail described, provided the features stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:

1. Non-offset spray means, comprising water-soluble polyvinyl alcohol, water, isopropyl alcohol, and small proportions of dextrose and hydrogen peroxide.

2. Non-offset spray means, comprising water-soluble polyvinyl alcohol, water, and a propyl alcohol.

3. In handling printed sheets, preventing offsetting by applying upon such sheet minute droplets of a water-containing solution of polyvinyl alcohol with a propyl alcohol and urea.

4. In handling printed sheets, preventing offsetting by applying upon such sheet minute droplets of a water-containing solution of polyvinyl alcohol and a propyl alcohol and dextrose.

5. In handling printed sheets, preventing off-

setting by applying upon such sheet minute droplets of a water-containing solution of polyvinyl alcohol and a propyl alcohol and hydrogen peroxide.

6. Non-offset spray means, comprising a solution of polyvinyl alcohol and urea in water and a propyl alcohol.

7. Non-offset spray means, comprising twenty to fifty per cent of a propyl alcohol, and fifty to eighty per cent of a three to eight per cent water solution of polyvinyl alcohol.

8. Non-offset spray means, comprising polyvinyl alcohol, water, a propyl alcohol and hydrogen peroxide.

9. Non-offset spray means, comprising an aqueous solution of polyvinyl alcohol, a propyl alcohol and dextrose.

10. In the method of preventing offsetting of printed material, the step of spraying the same with an aqueous solution containing polyvinyl alcohol.

11. The method of preventing offsetting of printed material, which comprises spraying the same with an aqueous solution containing polyvinyl alcohol treated with a halogen.

WILLIAM H. WOOD.