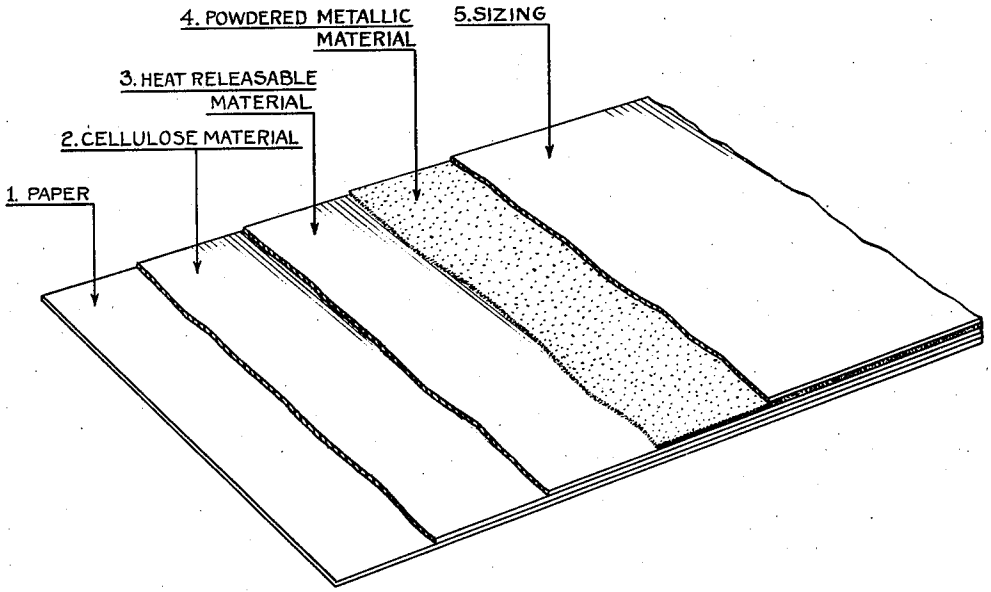
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TRANSFER METALLIC MEDIA

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William F. Grupe, INVENTOR,

BY Henry J. Cooke, Jr. ATTORNEY.

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WILLIAM F. GRUPE, OF LYNDHURST, NEW JERSEY, ASSIGNOR TO PEERLESS ROLL LEAF CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

TRANSFER METALLIC MEDIA.

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This invention relates to transfer metallic media.

An object of this invention is to provide a transfer medium for metallizing purposes either in the form of a sheet or roll whereby improved metallizing effects, and particularly "depth" of color, are attained.

My invention is especially applicable to metallic media for transfer by hot stamping, tipping or like procedure to textiles, leather and like materials to be ornamented, embellished or otherwise impressed.

Pursuant to my invention, a strip of paper of suitable character is employed as the vehicle or carrier of the metallic transfer medium. Pursuant to one form of my invention, the carrier strip is of bond paper of rag or other fibrous base, which is coated with a drying oil such as chinawood oil or other suitable carbohydrate having the property of adhering to paper at the temperature of the transfer operation, to serve as a face coating. The coating on the face of the paper strip thus produced is hard and smooth at ordinary temperatures and these properties are maintained within the range of temperatures employed in hot stamping, tipping and the like, usually not exceeding 240° F. At ordinary temperatures the coating is flexible and is not subject to fracture, chipping or other deformation.

The carrier strip of rag or other bond composition possesses a high tensile and bursting strength, i. e., a high test of puncture-proof and also a high degree of elasticity, thereby withstanding any tendency of tearing or other deformation arising during the stage of transfer, at which stage the paper carrier is brought into contact with the die under high pressure exerted by the platen of the impression machine raising the book, or other article to be impressed, into contact with the metallic transfer medium. I have discovered that such form of paper carrier obviates the disadvantages of glassine paper arising from its relative brittleness due to the nature of manufacture of glassine paper by the use of caustic soda or like alkali wash.

Glassine paper may be employed as the carrier by imparting enhanced strength thereto by a coating on its face of suitable cellulose material known as "soluble cotton", including acetyl cellulose, nitrocellulose, ammoniated cellulose and the like. The cellulose coating possesses the required smoothness and hardness at transfer temperatures and resists fracture, chipping and other deformation at ordinary temperatures.

As one form of the metallic transfer medium, I employ a mixture of beeswax, with or without resin, forming a heat releasable composition, into which the metallic particles are disposed. Such layer of heat releasable composition may be applied by means of a feeding roller, partially immersed in a bath of the heated beeswax material contained in a suitable receptacle.

The metallic particles per se may be powdered bronze or other desired copper alloy in imitation of genuine gold or powdered aluminum or aluminum alloy in imitation of silver, platinum or like effects. The metallic particles are deposited by the spraying process or by the use of a feeding roller partially immersed in a bath containing the powdered material admixed with a suitable vaporizable vehicle. The bath of powdered material and vaporizable vehicle is subjected to agitation during the stage of application by the feeding roller. Carbohydrates of suitable characteristics preferably with waxes may be admixed in the bath containing the powdered metallic material and the bath heated to raise the bath to a suitable temperature above the melting point of the waxes to provide for the proper fluidity of the admixture fed from the feeding roller to the paper strip.

The metallic particle layer may also be employed with soluble cotton, i. e., acetyl cellulose, or nitrocellulose as in the form of collodion or the like, in which event the bath is formed of the soluble cotton dissolved in a suitable vaporizable solvent.

French drying oil, linseed oil or other drying oil may also be added to the bath containing the powdered metallic material.

The metallic particles may be coated with a film of the soluble cotton by spraying within a chamber by means of a compressed air spray an agitated admixture of the metallic particles and the soluble cotton dissolved in a vaporizable solvent and collected after being deposited on a tray or other suitable means. The chamber is preferably heated and well ventilated to facilitate the vaporization.

In the use of compressed air as the spraying medium, I prefer to remove the moisture which I have discovered is present in liquid or other condensed form and in vapor form in

the sprayed compressed air. The removal may be carried out at any stage of the travel of the air into and within the compressed air machine, but preferably adjacent the discharge outlet. The elimination of the moisture pursuant to my invention overcomes the defect of turning grey and other discolorations attending the use of moisture containing compressed air.

The resulting layer containing metallic powder when dried may be coated with a suitable sizing or used without a sizing, depending upon the nature of the material to which the metallic medium is to be applied and upon the nature of the effect which may be preferred.

The facing on the paper carrier as above described is comparable to that of a highly calendered paper and effects a high finish on the resulting transfer impression, by which operation the layers of the transfer medium are reversed relative to one another.

Superior results in the nicety and continuity of outline are attained by the use of the waxy and corbohydrate ingredients admixed with metallic powder, by reason of the highly pronounced characteristic of readibility of taking and retaining impression from the die serving as the matrix combined with the property of "slipperiness", i. e., absence of friction imparted to the transfer metallic medium as a mass by the waxy and carbohydrate ingredients and at the same time precluding any undue flowing of the mass of the transfer metallic medium at the elevated temperature of the transfer operation. Such superior results are especially attained when a soluble cellulose composition is employed as an ingredient of the powdered metallic layer, thus obviating any tendency arising from the presence of soluble cellulose ingredient of discontinuity of the outline or of the body portion of the impression.

The soluble cellulose ingredient is advantageous in providing a film-like coating for the metallic particles which is highly resistant against wear and also protecting the metallic particles from attack by fumes or solutions of acid, alkalies or other chemicals which otherwise cause discoloration, corrosion or the like of the metallic particles. The coating of soluble cotton for the carrier strip may be utilized with other forms of the paper for enhancing its tensile strength and for increasing its bursting strength, i. e., its puncture-proof test. Such coating is also advantageous in obviating the need of calendering the face of the paper carrier to obtain a smooth face thereof on which the metallic particles are carried.

In the employment of the spraying method for despositing the metallic particles, it is desirable to carry out the spraying operation in an enclosure from which the moisture is removed from the air. In the deposition of the metallic particles bearing a film or coating of soluble cotton resulting upon the volatization of the vaporizable ingredient of the admixture, the formed film or coating protects the metallic particles from discoloration of the metallic particles by moisture.

In the use of a drying oil or cellulose material as a coating for the inert carrier, the same does not substantially enter the cellular structure of the paper or other inert carrier, thereby preserving the high tensile strength and high puncture test of the paper or other inert carrier. The bond between such coating material and the paper is had by the adhesive property of the coating material relative to the paper. To characterize such adhering or adhesive property of the coating material relative to the paper or other inert carrier, I employ in the claims the term "inherently adhering" or equivalent term, and to also distinguish the above property from that of aqueous solutions of starch, dextrin or the like heretofore employed for coating a face of a paper strip, where the water of the paste or other emulsion of such starch or dextrin mixture enters the cellular structure of the paper or like carrier material, thereby breaking down the cellular structure and materially reducing its tensile strength and puncture proof test.

The accompanying drawing is an explanatory perspective of a structure embodying the invention in one form.

The different layers of material are indicated by numerals and legends; thus, the base of the transfer medium is a strip of suitable paper 1, of the character previously described. A coating 2 of cellulose material is applied to one surface of the paper. Thereon is a coating of heat releasable material 3 and upon that is a layer 4 of powdered metallic material upon which is placed the outer layer or coating 5 of sizing. The various characteristics and advantages of the material and the combination of them are fully explained in the preceding description.

Whereas, I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention.

I claim:

1. A transfer metallic medium for hot stamping and like transfer operations at elevated temperatures comprising a carrier of paper material bearing on one of its faces a substantially smooth and substantially continuous coating of a material inherently adhering to the paper for the range of temperature from ordinary atmospheric temperatures to the elevated temperature of the transfer operation and metallic particles disposed on said coating of said paper carrier.

2. A transfer metallic medium for hot stamping and like transfer operations at ele-

vated temperatures comprising a carrier of paper material bearing on one of its faces a substantially smooth and substantially continuous coating of a material inherently adhering to the paper for the range of temperature from ordinary atmospheric temperatures to the elevated temperature of the transfer operation, and metallic particles disposed on said coating of said paper carrier, said coating material being pliable at ordinary temperatures to permit the rolling of the paper carrier into a roll.

3. The method of enhancing the tensile strength of paper material serving as the carrier of metallic media transferred under hot temperature, which comprises treating a face of the paper with a solution of a material forming a substantially smooth and substantially continuous coating under ordinary temperatures and at the elevated temperature of the transfer operation inherently adhering to the paper, the solvent of the solution vaporizing substantially wholly without entering the cellular structure of the paper carrier.

4. The method of enhancing the tensile strength of paper material serving as the carrier of metallic media transferred under hot temperature, which comprises treating a face of the paper with a solution of a material forming a substantially smooth and substantially continuous coating under ordinary temperatures and at the elevated temperature of the transfer operation, said material being pliable at ordinary temperatures, the solvent of the solution vaporizing substantially wholly without entering the cellular structure of the paper carrier.

In testimony whereof I have signed this specification this 1st day of August 1925.

WILLIAM F. GRUPE.