Patented Oct. 8, 1940 2,217,349

UNITED STATES PATENT OFFICE

2,217,349

IMPRESSION TRANSMITTING MEDIUM

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No Drawing. Application February 23, 1937, Serial No. 127,170. Renewed March 9, 1940

3 Claims. (Cl. 197—172)

This invention relates to improvements in impression transmitting media and more particularly to improvements in ribbons and carbons used in connection with offset duplication processes.

Heretofore the ribbons or carbon papers used in connection with offset duplication processes both the hectograph and the spirit duplicator processes have contained, as active ingredients thereof, ink or dyestuffs which are highly water soluble. The preferred ink or dyestuff used in such ribbons or carbon papers has been crystal violet which is basic anilin dyestuff and which is extremely water soluble. Consequently, it follows that the handling of such ribbons or carbon papers causes staining both of the person and of the clothing of a user. Ribbons or carbon papers have been made in such manner that bases of basic colors have been included in the composition with which the ribbons are impregnated or with which the paper is coated but such bases of the basic coloring have been used as oil soluble colors to tone, strengthen and supply the color in the ribbon or carbon for the ordinary uses in producing original copies either from typewriting or handwriting. In such event the color base is invariably dissolved either separately in the ink formulae themselves or in a highly miscible acid such as oleic or stearic acid, whereby reaction takes place developing a high color value in the oil of the ribbon or in the wax of the carbon. This high soluble color has very little transfer color value.

An object of the present invention is to provide impression transmitting media in which the impregnating or coating material is substantially water insoluble.

Another object of the invention is to provide such media in which a further reaction or step is necessary to convert the dyestuff contained therein, to a form in which such dyestuff has high transfer color value.

A further object of the invention is to provide transfer media in accordance with the foregoing wherein use is made of a dyestuff which is water insoluble and of a vehicle which contains no reagent which would convert the dyestuff into a water soluble form.

A still further object of the invention is to provide media of the foregoing character impregnated with or coated with a composition constituting a vehicle free from any reactive matter, which composition must be subjected to the influence of a reagent to produce matter having high transfer color value.

In carrying out the foregoing and other objects of the invention, in the preferred form thereof, ribbons and carbons are so manufactured that the vehicle for the dyestuff contains no oil miscible acids and the dyestuff itself is in the nature of a base of a basic anilin dyestuff or a combination of bases which are held by the vehicle in chemically inert form. The ingredients of the vehicle are such that the color material carried thereby is wholly or almost wholly insoluble in the ingredients of such vehicle.

In the practice of offset duplication processes it is desirable that the coloring matter be of a character having sufficient transfer value as to permit the production of a large number of copies from a single image of the matter to be reproduced. For this purpose it has been found that basic anilin dyestuffs form the coloring matter which can be used most advantageously. These dyestuffs are usually crystal violet, methyl violet, rhodamine, victoria green, victoria blue, Bismarck brown and auramine or combinations thereof. All of these basic colors are organic salts or esters of highly complicated organic radicals, or combinations thereof. They all are highly water soluble. The base of these colors can be obtained in any suitable manner such as, by the use of an intermediate step in the normal production of the basic color, or by processing the basic color in a further step. For example, the basic colors in solution may be treated with dilute alkalies, such as sodium carbonate or sodium hydrate, thereby producing a precipitate of water insoluble basic color base which is the hydrate of the color bearing radical. The precipitate may be filtered and dried and the powder so obtained can be readily secured on the market as crystal violet base, rhodamine base, etc.

The impression transmitting media of the present invention are therefore produced with such a base of a basic color, or a combination of such bases, as ingredients thereof. It is well known in the art that color vehicle must be used for ribbons and for carbons. Accordingly such vehicle may be compounded, always bearing in mind that the vehicle must be free from any acid solvent which would react with the base of the basic color material. For example, compositions which may be used to impregnate ribbons and to coat carbon paper respectively are set forth in the following formulae:

Purple typewriter ribbon ink

	Parts
Mineral oil (light petrolatum or spindle)	100
Crystal violet base	125
Toluol	40

Purple carbon paper ink

	Parts
Petrolatum oil	60
Carnauba wax	22
Crystal violet base	80
Toluol	50

The foregoing formulae are included herein only as illustrative examples, and it is to be understood that other formulae can be used with equal facility, bearing in mind always the one requirement that the vehicle must contain no reagent for the base of the basic color. These examples, moreover have been used only to show formulae for the production of violet colored media but it will be understood that similar formulae may be used for the other colored dyestuffs.

Ribbons and carbons made in accordance with the foregoing can be handled without incurring the liability of staining the person or clothing of a user, since the coloring matter in the compositions is substantially, completely water insoluble and must be further treated to produce a substance having high color transfer value. These ribbons and carbons can be used in the usual offset duplication processes in the manners set forth in my copending application Serial No. 127,169, which resulted in Patent No. 2,146,976, issued February 14, 1939 wherein a full disclosure of methods of producing duplicate copies has been made and such methods have been claimed.

The invention also contemplates the use of water insoluble dyestuff other than the bases of basic anilin coloring matter; for example, an insoluble acid color may be substituted for the base of the basic color and such acid color may be converted into material having high color transfer value, by using a suitable reagent such as triethynol amine, as set forth in my copending application before identified.

As a further example, the compositions may have therein materials which are water insoluble but which will react with other materials to form dyestuff. If copies in black are desired the vehicle may contain either gallotannic acid or iron salts, either of which will react with the other in a suitable process for providing black colors. Also the included ingredients may be ferrocyanide or ferricyanide which substances when properly united react to develop blue colors. It is to be understood that only one ingredient in each group is included in the composition and the other ingredient is to be included or added during the processing attendant upon producing duplicate copies.

From the foregoing it will be seen that the present invention provides impression transmitting media either in the form of carbons or in the form of ribbons, which media contain a color vehicle and a color material, so compounded as to be water insoluble. Consequently, these media can be readily handled under normal atmospheric conditions and even under abnormal atmospheric conditions without staining the person, (particularly the hands) or clothing of a user. It is to be understood that the invention in any form before described is capable of being used in various ways other than those set forth herein, or in my copending application before identified, and accordingly is to be limited only by the following claims.

What is claimed is:

1. As a new article of manufacture for use in offset duplication processes, an impression transmitting supporting body having incorporated therewith a vehicle and basic color base material which material in itself is water insoluble but which can be converted into water soluble basic color by reaction, said material being carried by said vehicle, said vehicle being free from any reagent for accomplishing such conversion.

2. As a new article of manufacture for use in offset duplication processes, a ribbon, said ribbon being impregnated with a compound made up of a vehicle and of a basic color base material which material in itself is water insoluble but which can be converted into water soluble basic color by reaction, said vehicle being free from any reagent for accomplishing such conversion.

3. As a new article of manufacture for use in offset duplication processes, a carbon comprising a sheet of material coated with a compound made up of a vehicle and of basic color base material which material in itself is water insoluble but which can be converted into water soluble basic color by reaction, said vehicle being free from any reagent for accomplishing such conversion.

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