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METHOD OF DRYING PRINTING INKS

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The present invention relates to a method for drying printing inks and has particular reference to rapid drying by exposure of a freshly printed surface to the vapors of an active catalyst.

Printing inks such as are used for lithographing or otherwise decorating metallic sheets of tin plate as for can manufacture may be mentioned by way of example. The ink of the printed sheets is normally dried by passing the sheets through extended drying ovens during which time the freshly printed surface is subjected to heat at relatively high temperatures with or without forced draft or air circulation and for a baking period which may require usually not less than ten minutes and more likely twice as long or even longer. Such a protracted time has been found necessary to thoroughly dry the printed surface and render it sufficiently hard to allow for handling of the sheet in subsequent manufacture. Printing of paper or fibre stock also requires a drying time of substantial proportions according to regulation methods.

By the use of better drying inks and by subjecting the freshly printed surface to the vapors of an active catalyst in accordance with the steps of the instant invention, as will be hereinafter set forth, a hard, fully dried printing surface for tin plate sheets, for example, may be obtained in only a few seconds' time.

An object of the present invention, therefore, is the provision of a process of drying printed surfaces by exposure to the vapors of an active catalyst such as stannic tetrachloride so that the drying time for rendering such printed surfaces hard and scratch-proof is reduced to a minimum, or differently stated, the invention contemplates an improved method of drying by chemical reaction and the use of a catalyst and such drying is effective in a relatively short period of time and without the use of heat.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description which is of a preferred embodiment thereof.

The printing inks which are to be dried may be printed onto a suitable surface or rolled out by means of printing, coating or other rollers onto the place desired. So many well known ways of applying the ink are used in the printing art that it is thought only this very brief reference is needed for present purposes.

Best drying results in accordance with the practice of method steps of the invention are obtained when the ink to be dried contains a highly unsaturated ingredient such as partially polymerized China-wood oil. Such inks are at present being successfully used in the printing of tin plate sheets or blanks which are ultimately formed into the ordinary tin cans and this type of printing is described herein by way of illustration although it should be understood that paper, cellulosic materials and the like also provide suitable printing surfaces for inks of this character. A number of different active catalysts may be used, stannic tetrachloride already having been mentioned. Titanic tetrachloride, antimony trichloride, zinc chloride, aluminum chloride and similar materials are also exemplary of what is meant by the term "active catayist."

The exact manner of effecting the actual drying step of the printed surface will vary somewhat in accordance with the industry involved. For example, freshly printed tin sheets such as are used in can manufacture will require one kind of treatment while fibre coated substances or cellulosic materials for other uses would probably require different treatments.

The articles of whatever nature having printed surfaces to be dried may be introduced into substantially air-tight or sealed chambers where the freshly applied ink may be subjected to the vapors of the catalyst, or the catalyst itself divided in very fine vapor form be sprayed onto the freshly printed surface inside a sealed room or in the open as under a fume hood or other vapor controlling device.

Where the quick drying of freshly printed sheets or blanks of tin plate is contemplated, the same may be handled in a continuous manner by being advanced or conveyed by being carried upon a belt or other conveyor which passes through a restricted opening in the side wall of a closed chamber. The chamber may be supplied in suitable manner by the catalyst in vapor form and the size of chamber, movement of conveyor, quantity of vapor and other elements will be so controlled that the sheets with their printed surfaces will be subjected to the action of the catalyst only long enough to effect the drying. Following the drying the sheets may be continuously removed from the chamber by the same or by other conveyors. To conserve the catalyst, valves may be provided in the chamber walls if this is found desirable.

It is though that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the steps of the process described and their order of ac-

complishment without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the process hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. The method of drying printing inks containing partially polymerized China-wood oil which have been applied to a surface, which comprises exposing the freshly printed surface to stannic tetrachloride in vapor form.

2. The method of drying printing inks containing partially polymerized China-wood oil which have been applied to a surface, which comprises exposing the freshly printed surface to a vapor selected from the group consisting of stannic tetrachloride and titanic tetrachloride.

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