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PROCESS FOR REMOVING INTAGLIO INK FROM A WIPING CYLINDER

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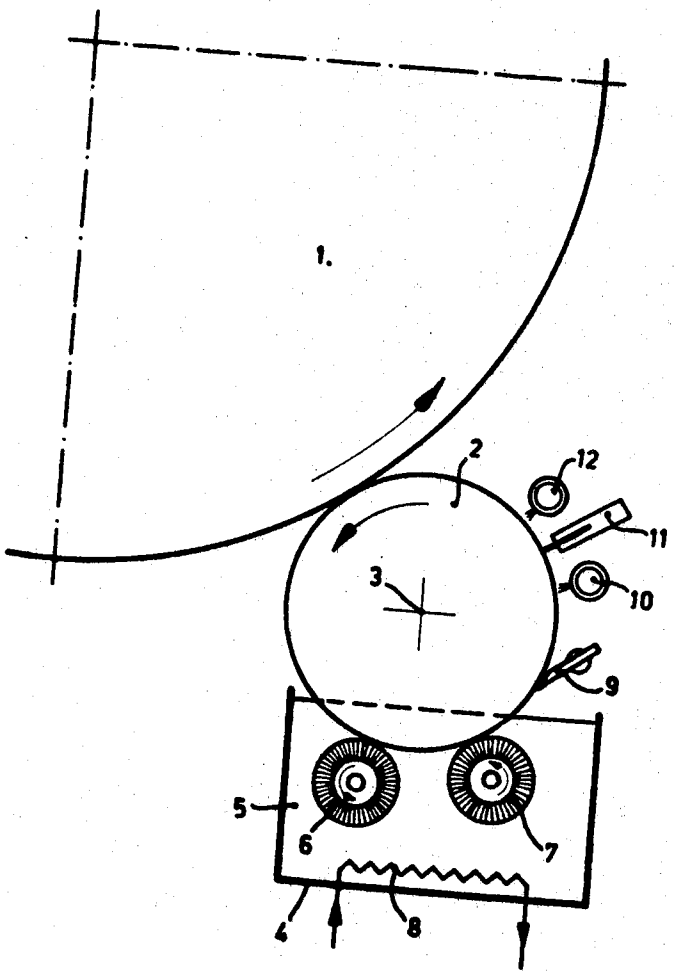

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PROCESS FOR REMOVING INTAGLIO INK FROM A WIPING CYLINDER

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Continuation-in-part of application Ser. No. 411,807, Nov. 17, 1964. This application Oct. 24, 1965, Ser. No. 504,492
Claims priority, application Switzerland, May 14, 1965, 5,263/65
3 Claims. (Cl. 101—170)

ABSTRACT OF THE DISCLOSURE

A process for removing single or multicolor intaglio printing ink from the outer surfaces of a rotating wiping cylinder which cleans the engraved surfaces of single or multicolor intaglio printing presses during use thereof by sequentially passing the surface of the wiping cylinder in an aqueous solution at 30° to 80° C., which solution consists of 1 to 5% by weight of sodium hydroxide, potassium hydroxide or ammonium hydroxide, from about 2 to 10% by weight of trisodium phosphate, from about 0.3 to 10% by weight of sulphonated castor oil, the balance water, brushing the surface of the cylinder while it is in contact with the solution; scraping the surface and spraying the same with water to remove the solution from it and again scraping the surface to remove excess water from it.

This application is in part a continuation of my previous application Ser. No. 411,807, now abandoned, filed Nov. 17, 1964.

In the above-mentioned patent application is disclosed a wiping system for presses for single or multicolor intaglio printing, comprising at least one wiping cylinder engaging the printing plate or the engraved printing cylinder and a solvent bath adapted to clean the wiping cylinder, and wherein a first scraper blade removes the ink off the smooth outer surface of the wiping cylinder before said surface enters the cleaning solvent and a second scraper blade engages the outer surface of the wiping cylinder after it has been treated by the cleaning solvent and before it returns into contact with the plate or the engraved cylinder so as to release it from any cleaning liquid adhering still to said wiping cylinder. The solvent is of a low volatility such as for example, the petroleum derivative sold under the registered trade name Shell "Sol–T." Other solvents disclosed in said application include high boiling petroleum fractions, or even aqueous solutions, emulsions or dispersions of emulsifying and wetting agents and detergents of the cationic, anionic or non-ionic types and including sulphonated and sulphated aliphatic and aromatic derivatives, sodium salts of alkyl and aralkyl sulphates, having an alkyl chain of substantial length, up to 27 carbon atoms, sulphonated oils and paraffins, and phenols with long chain solvating substituent groups, for example polyether groups.

The present invention is an improvement over the above-described wiping system for removing ink from the engraved surface of intaglio printing presses and resides in a simplified apparatus for carrying out such inch removal and, more importantly, in a novel and inexpensive ink solvent. The solvent according to the claimed invention consists in an aqueous solution comprising from 0 to 5 percent by weight of a strong base from 2 to 10 percent by weight of a detergent and from 0.3 to 10 percent by weight of a wetting agent, the solvent being maintained at a temperature ranging from 30° to 80° C. during use.

Heretofore those skilled in the art were convinced that only solvents such as trichloroethylene could ensure the speedy and complete dissolution of ink from plates and engraved cylinders. It is therefore completely unobvious and unexpected that an aqueous solution, which can be discarded after use, is effective for the same purpose.

Referring now to the drawing, there is given therein a single figure showing schematically one embodiment of the wiping system of the invention.

As illustrated, the plate cylinder **1**, carries an engraved plate, not illustrated, and forms part of an intaglio press and is inked by inking rollers (not shown) with one or more inks. Cylinder **1** rotates in unison with the wiping cylinder **2** rotating round the axis **3**, which wiping cylinder is provided with a smooth outer surface. As indicated by the arrows, the wiping cylinder **2** and the plate cylinder **1** revolve in the same direction, in other words, their peripheral directions of movement are opposed in their contacting area so as to obtain an optimum wiping action through a relative frictional sliding movement. The cylinder **1** can obviously be constituted by an engraved cylinder.

When the wiping system operates with several wiping cylinders, the illustrated cylinder **2** may constitute in principle any one of such cylinders. When the cylinder **2** serves as a preliminary wiping or ink levelling cylinder, it revolves at the same peripheral speed and in the same direction as the plate cylinder over the plates without any frictional sliding movement with reference thereto.

The wiping cylinder **2** dips through the lower section of its outer surface inside a vat **4** which is filled according to the invention up to the level shown by dotted lines with a solvent, the composition of which will be given below.

Two rotating brushes **6** and **7** are operatively mounted in vat **4**. Driving means of any conventional type which need not be shown are provided to rotate these brushes in the same direction as wiping cylinder **2** and a peripheral speed, in the appropriate direction, greatly superior to that of the cylinder.

With the present solvent, it has been noted that it is not necessary to provide a scraping blade ahead of the point on the wiping cylinder where the same dips into the solvent.

The use or non-use of such a scraping blade, evidently depends on the quality of the ink taken from the engraved plate by the wiping cylinder and also of the length of use desired for the solvent. Thus when it is desired to assure continuous service of the printing machine during a relatively long time, it is recommended that the scraper blade be used to remove the greater part of the color adhering to the surface of the wiping cylinder before the latter again enters the cleaning liquid so that this liquid absorbs ink very slowly thereby avoiding the need to change it too often. When the cleaning solvent is new, the cleaning of the surface of the cylinder is accomplished without any use of the scraper blade.

The cleaning solvent **5** is maintained at a temperature between 30° and 80° C. and preferably at 50° C., by means of a conventional heating device **8**.

As stated, rotating brushes **6** and **7** have in their zone of contact with the wiping cylinder **2**, a peripheral speed from 5 to 10 times greater than that of the wiping cylinder in order to obtain a cleaning action which is particularly efficient. As soon as the surface of the wiping cylinder comes out of the wiping bath, it is subjected to the action of the scraping blade preferably made of rubber, which removes from the surface any solvent which may have adhered thereto.

It is also useful to subject the surface of the wiping cylinder to a cleaning and scraping treatment following that performed by scraping blade **9**. To remove the remains of the solvent on the surface of the wiping cylinder, there is provided in the system of the invention, an assembly of nozzles positioned after the scraping blade **9**, by

means of which the surface of the cylinder is sprayed with hot or cold water. Behind this assembly of nozzles **10**, and speaking with reference to the sequence in which a given point on such cylinder is subjected to the action of the other devices, is provided another scraping blade **11**, preferably formed of rubber, and intended to remove the film of water which adheres to the surface of the wiping cylinder. After this scraping blade **11** is provided a ventilation system **12** intended to dry the surface of the wiping cylinder by sending hot air thereto before the same contacts the engraved plate on the plate-bearing cylinder **1**.

In a variant of the invention which is not shown, the cleaning device comprising the elements **10**, **11** and **12** are replaced by a simple wiping device. This is formed by a scrubber extending along the entire length of the cylinder parallel to its axis and which is covered with felt or other suitable material and is pressed against the surface of the wiping cylinder with a predetermined pressure. This wiping device can be positioned inside the cleaning bath.

The novel solvent of the invention consists essentially of:

(A) From 0 to 5 percent by weight of a strong base; preferably concentrated sodium hydroxide, potassium hydroxide or ammonium hydroxide;

(B) From 2 to 10 percent by weight of a detergent for example, sodium polyphosphate such as trisodium phosphate sodium laurylsulfate ($CH_3(CH_2)_{10}CH_2OSO_3Na$).

(C) From 0.3 to 10 percent by weight of a wetting agent such as non-ionic surface active compounds defined by the formula; $R—O(R^1)_n—R^{11}$ where R stands for alkyl, aryl and aralkyl radicals, R^{11} is hydrogen or a group similar to R, R^1 is an alkoxy radical having up to 5 carbon atoms in the chain and *n* is an integer ranging between 1 and 50 and exemplified by polynuclear aromatic phenols such as p-phenylphenol, 2-naphthol and 1-naphthol polyoxyethylated with from 6 to 27 moles of ethylenoxide, phenyl substituted alcohols such as triphenylmethanol polyoxyethylated with 14 moles of ethylene oxide; alkylphenols such as nonylphenol, octylphenol having from 4 to 28 moles of ethylene glycol; sulfonated derivatives of tung oil, oiticica oil, linseed oil, perilla oil, sunflower oil, poppyseed oil, soyabean oil, castor oil, corn oil, cottonseed oil and fish oils; partial esters of lauric, palmitic, stearic and oleic acids having polyoxyethylene chains such as polyoxyethylene sorbitan mono-oleate, bis(2-ethylhexyl) sodium sulfosuccinate, bis(1-methylamyl) sodium sulfosuccinate.

The following are examples of compositions found effective in the practise of the invention:

Example 1

Component:	Weight percent
NaOH	1
$CH_3(CH_2)_{10}CH_2OSO_3Na$	5
p-Phenylphenol polyoxyethylated with 20 moles of ethylene oxide	1
Water	93

Example 2

Component:	Weight percent
KOH	2
$Na_3(PO_4)$	5
Sulfonated castor oil	1
Water	92

It will be noted that the new solvent composition presents several important advantages. Firstly, it is inexpensive and need not be reused. Secondly, it does not give off noxious fumes. Thirdly, it is very efficient in its ability to dissolve the ink on the plates.

What is claimed is:

1. Process for removing single or multicolor intaglio printing ink from the outer surfaces of a rotating wiping cylinder which cleans the engraved surfaces of single or multicolor intaglio printing presses during use thereof, comprising in sequence the steps of passing said outer surface of said rotating wiping cylinder in a solution at 30° to 80° C. consisting essentially of 1 to 5% by weight of potassium hydroxide, sodium hydroxide or ammonium hydroxide, from about 2 to 10% by weight of trisodium phosphate, from about 0.3 to 10% by weight of sulphonated castor oil, the balance water; brushing said surface while said surface is in contact with said solution; scraping said surface and spraying the same with water to remove said solution therefrom; and again scraping said surface to remove excess water therefrom.

2. Process according to claim **1**, wherein said surface is sprayed with cold water.

3. Process according to claim **1**, wherein said surface is sprayed with hot water.

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