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UNITED STATES PATENT OFFICE.

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PRINTING PROCESS.

SPECIFICATION forming part of Letters Patent No. 758,192, dated April 26, 1904.

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To all whom it may concern:

Be it known that I, MICHAEL RUDOMETOFF, a citizen of the Empire of Russia, residing at Gattschina, near St. Petersburg, Russia, have invented certain new and useful Improvements in Printing Processes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improved process of inking engraved plates which is applicable particularly in copper-plate printing by machinery. It is a well-known fact that the prints produced on copper-plate printing-machines which work with mechanical wipers cannot be compared as far as artistic effect is concerned with impressions produced by hand-presses for copper-plate printing, the reason being that the local toning produced in the case of hand printing-presses by the palm of the hand with the various gradations with, if desired, simultaneous complete avoidance of toning at other places could not be obtained in the case of copper-plate printing-machines in consequence of the insufficient arrangements. It is true that in the case of the latter kind of machines a device generally known as a "wiper" has been used which should imitate the action of the palm of the hand of the copper-plate printer in producing the toning. One can, however, only produce prints which are fully toned or not toned at all, but not any local gradations in the toning. Prints produced according to the present invention on copper-plate printing-machines which work with mechanical wipers are made to be of exactly the same value as impressions produced on hand-presses by locally transferring onto the plate inks of more or less fattiness or of more or less strong consistency or shade and wiping the same all at the same time in such a way that in this manner both a uniform and a locally-graduated toning, with, if desired, a complete avoidance of toning at other places of the picture, can be produced.

As will be evident from the above, according to the present invention for the purposes of copper-plate-print production one and the same kind of ink is not, as heretofore, always employed, but several inks of more or less fattiness or more or less strong consistency or shade. It is important here to note the fundamental observation that more-fatty inks can be completely removed from the printing-plate with greater difficulty than less-fatty inks, and the case is similar to this for inks of less consistency as compared with inks of greater consistency. By using inks containing little or no fat or inks having great consistency for places which require no toning at all one can with great ease completely remove the ink by means of a wiper which suitably wipes these places, while by using more-fatty inks or inks of less consistency for places which require a toning by the time the wiper has removed the less-fatty ink from the places which require no toning this removal has not been so completely effected from the places which require a toning, so that when an impression is taken the desired toning, with the requisite gradations, can be obtained. In order to attain this end, it is necessary to apply more-fatty inks to the places which are to be toned and less-fatty inks on those places which are not to be toned. This may be effected by means of the arrangement of collector-forms used in polychrome printing, such as has been published by Rudometoff in the United States Patent specification No. 714,953, dated December 2, 1902. The transfer of suitable ink can, for instance, be effected by passing over the engraved plate inking-rollers provided with forms and with separate inking mechanism, said forms corresponding to the places to be covered with ink having an equal degree of fattiness and by transferring the ink of the required degree of fattiness or of consistency on the proper places corresponding to the forms. An impression from each of the individual inking-forms may, however, first be taken on a collector-roller, whereupon this collector-roller provides the engraved plate with ink. In both cases it is essential for the transference of the ink to take place with sufficient intensity or force. With the means known up to the present this is attended with difficulties on account of the various degrees of the fattiness and consistency of the ink. In place, therefore, of the smooth or fluted or

rippled rollers hitherto used in the printing of collector-forms inking-forms or collector-forms are used for the purposes of the present invention which consist of leather roughened on its surface more or less, according to the consistency or the fattiness of the ink to be transferred, a rougher surface being necessary for a more-fatty ink or ink having less strong consistency than for a less-fatty ink or ink having a stronger consistency. A further difficulty attends the operation of transferring ink always with perfect uniformity onto the requisite places. It is therefore to be recommended for this purpose to produce the inking-forms in the following manner: In the first instance so many impressions are taken by well-known means from the engraved plate which according to the present invention is to be provided with inks of different degrees of fattiness, consistency, or shade as there are degrees of fattiness or consistency or shade. On each of these impressions those places which are to be supplied with ink of a given degree of fattiness are covered with glue and corresponding leather forms are placed upon the same. The dried forms are placed upon the rollers by providing the latter first of all with an impregnated cardboard cylinder by covering this with glue, after which the forms are fixed by being rolled around the roller. The paper still adhering to the upper side of the leather forms is removed after drying, and the surface is roughened, as mentioned above, so as to correspond with the degree of fattiness and consistency. In this manner it is possible to obtain an exact register between the different inking-forms or between the collector-form and to prevent an overlapping of the several inks.

The inks transferred in the described manner onto the engraved plate are now wiped by one or several mechanical wipers of any suitable construction, so that both fully-toned prints, or prints not toned at all, or prints with toned and untoned parts, together with, if desired, gradations in the toning, can be produced.

The same process can nevertheless be used with equal success in connection with all other presses with engraved plates which are not wiped by mechanical wipers.

What I claim is—

1. The process of inking engraved plates, which consists in transferring onto the engraved plate inks varying in fattiness, consistency, or shade, and in wiping all said inks simultaneously.

2. The process of inking engraved plates, which consists in transferring onto the engraved plate inks varying in fattiness, consistency or shade, by forms consisting of leather having surfaces roughened to various degrees corresponding to the various degrees of fattiness, consistency or shade, and in wiping all said inks simultaneously.

3. The process of inking engraved plates, which consists in transferring onto those parts of the plate which require no toning, ink containing little or no fat, and onto those parts of the plate which require toning ink having a higher degree of fattiness, and in so wiping said inks simultaneously that the ink containing less fat is more completely removed from the plate than the ink having a higher degree of fattiness.

In witness whereof I have hereunto set my hand in presence of two witnesses.

MICHAEL RUDOMETOFF.

Witnesses:
H. A. LOVIAGUINE,
ANDREI MOROGOFF.