PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improved Manufacture of Writing Inks.

We, THE NAMIKI MANUFACTURING COMPANY LIMITED, a British Company, of 87, Bishopsgate, London, E.C. 2, do hereby declare the nature of this invention, which has been communicated to us by Kabushiki Kaisha Namiki Seisakusho, a Company organised under the laws of Japan, of 1356, Sugamo-Machi, Kitatoyoshima, Tokyo, Japan, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to writing inks containing iron compounds and tannic acid.

As is well known, these inks are colloidal solutions which contain both positively and negatively charged particles. Consequently there is a tendency to precipitation, even when the said inks are kept in stoppered bottles in the dark. This tendency towards precipitation is still further enhanced when steel pen nibs are employed when the ink is in use, because these nibs are corroded by the acid present in the ink, thereby forming positively charged ferrous, and possibly ferric, ions which, on collision with the negatively charged ions present in the ink, favour the cessation of the Brownian Movement and consequently cause precipitation.

It has been found that if all the electric charges on the colloidal particles in the ink are converted to positive charges, then the tendency of the colloidal particles to precipitate is very materially reduced and the tendency of the ink to corrode the steel nibs is also materially reduced.

According to the process of this invention a substance or mixture of substances is added to the ink in order to convert all the charges on the colloidal particles into positive charges. Suitable substances are normally solid elements of the fifth group of the periodic table, for example, phosphorous, arsenic, bismuth or antimony or compounds thereof.

The aforesaid substances have the further advantage that they are negative catalysts for the reaction which takes place between the steel of the nibs and the acid present in the ink.

[*Price* 1/-]

The following example illustrates how the process of the invention may be carried into effect:

28 grms. of gall nuts and 6 gms. of aniline blue are dissolved in 200 litres of boiling water. In a separate vessel 30 grms. of ferrous chloride are dissolved in 200 litres of cold water. The two solutions are then mixed and a little glycerine, which serves as a protective colloid, 30 ccs. of concentrated hydrochloric acid, and one grm. of arsenic acid are added. The solution is diluted to 1000 litres with water and one grm. of phenol is added thereto.

The following comparative tests illustrate the advantages of the ink prepared according to the present invention.

1. NATURAL PRECIPITATION TEST.

20 ccs. of an ordinary iron-tannic acid ink and 20 ccs. of an ink prepared according to the present invention were each placed in an unstoppered 2 oz. bottle and kept under the same conditions for 30 days. The precipitates were then weighed and calculated as percentages of the original weight of the ink with the following results:

Ordinary iron-tannic acid ink	0.383%
Ink prepared according to the present invention	0.030%

2. CORROSION TEST ON A STEEL NIB.

A steel nib was placed in 10 ccs. of an ordinary iron-tannic acid ink and a similar nib was placed in 10 ccs. of the ink according to the present invention and both were kept under the same conditions for 30 days. The nibs were then washed, cleaned and weighed. The loss of weight calculated as a percentage on the original weight of the nib was as follows:

Nib in ordinary iron-tannic acid ink - - - - -	14.30%
Nib in ink prepared according to present invention - -	1.10%

3. PRECIPITATION TEST BY STEEL NIB.

A steel nib was placed in 20 ccs. of ordinary iron-tannic acid ink and a similar nib was placed in 20 ccs. of ink prepared according to the present invention. In each case the period at which material began to separate out was observed with the following results:

Ordinary iron-tannic acid ink	3 days.
Ink prepared according to the present invention -	15 days.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. A process for the preparation of writing inks containing iron compounds and tannic acid characterised in that a substance or mixture of substances is added to the ink in order to convert all the charges on the colloidal particles into positive charges.

2. A process for the preparation of writing inks containing iron compounds and tannic acid, characterised by admixing with the inks one or more normally solid elements of the fifth group of the periodic table, for example, phosphorus, arsenic, bismuth, antimony or compounds thereof.

3. The process for the preparation of writing inks substantially as described with reference to the example given.

4. Writing inks when prepared by the process claimed in any of the preceding claims.

Dated this 25th day of February, 1932.

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