

UNITED STATES PATENT OFFICE.

WILLIAM FRIESE-GREENE, OF DOVERCOURT, AND PERCY EDWIN KNELL,
OF LONDON, ENGLAND, ASSIGNORS TO THE ELECTRICAL INKLESS PRINT-
ING SYNDICATE, LIMITED, OF LONDON, ENGLAND.

MANUFACTURE OF PAPER.

SPECIFICATION forming part of Letters Patent No. 670,511, dated March 26, 1901.

Application filed November 10, 1900. Serial No. 36,057. (No specimens.)

To all whom it may concern:

Be it known that we, WILLIAM FRIESE-GREENE, photographer, of 8 Cliff Villas, Dovercourt, Essex county, and PERCY EDWIN KNELL, engineer, of 8 Pope's road, Brixton, London, England, have invented certain new and useful Improvements in the Manufacture of Paper, of which the following is a specification.

This invention has reference to the manufacture of paper suitable for use in electrical inkless printing in a manner such as is described in the specification of William Fries-Greene's British patent, No. 27,243 of 1897.

The invention consists in applying to the paper in the course of its manufacture or after its manufacture a solution of any oxy derivative of benzene which will reduce a haloid salt of silver—for example, hydroquinon, adurol, and the like—in conjunction with a salt of cobalt (preferably nitrate) or a salt of the so intimately allied element nickel, (such as the sulfate or chlorid.) Among the oxy derivatives of benzene which are particularly useful for the purpose of this invention, in addition to hydroquinon, the following may be mentioned: amidol, metol, adurol, glycin, kachin.

The solutions may be incorporated with paper-pulp before its manufacture into paper or be distributed, preferably in the state of fine division, upon the layer of pulp when on the wire web or other "former" before or during the "forming" of the paper or upon the paper after it has "formed" and either when still moist or after it has become dry.

We do not limit ourselves to any particular proportions of the ingredients of the solution employed, as they may be considerably varied; but the following may be given as examples:

First. Water, one gallon; hydroquinon, two ounces; nitrate of cobalt, one-fourth ounce. In lieu of the cobalt in this formula an equal quantity of a nickel salt may be used.

Second: water, one gallon; adurol, two ounces; nitrate of cobalt, one-fourth ounce. In lieu of the cobalt in this formula an equal quantity of a nickel salt may be used.

In all cases where hydroquinon is used it should preferably be dissolved separately in warm water and the solution kept lukewarm while it is being applied to the paper.

What we claim, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, paper containing an oxy derivative of benzene which will reduce a haloid salt of silver, together with a salt of cobalt or a salt of nickel.

2. As a new article of manufacture, paper containing hydroquinon and salt of cobalt.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

WILLIAM FRIESE-GREENE.
PERCY EDWIN KNELL.

Witnesses:

GEORGE BELOE ELLIS,
ROBERT M. SPEARPOINT.