UNITED STATES PATENT OFFICE.

FREDERICK HAWKE, OF LONDON, ENGLAND.

IMPROVEMENT IN PREPARING PAPER TO TAKE COPIES.

Specification forming part of Letters Patent No. **210,690**, dated December 10, 1878; application filed October 18, 1877; patented in England, May 17, 1877.

To all whom it may concern:

Be it known that I, FREDERICK HAWKE, of 10 St. John's Wood Park, London, in the county of Middlesex, England, have invented improvements in the preparation of paper for taking impressions of matter, written or printed, in inks which are prepared or unprepared, for copying purposes, as fully set forth herein.

This invention has for its object, in chief, to provide paper which, by the usual practice of damping before use, as with ordinary copying-papers, will readily take impressions from written or printed matter which has been produced with ink free from the impurities inseparable from specially-prepared copying-ink. I thereby render it possible and advantageous to use a purer, better, and cheaper ink for copying than can be used with ordinary copying-paper, which ink is also suitable for all other purposes for which ink is used. I avoid the cost, trouble, and annoyance which result from the necessity of using two separate inks—that is to say, one kind for copying, and the other for ordinary purposes.

The paper prepared according to this invention also produces better impressions from prepared copying-ink than any other paper at present in use, and will copy documents which have been previously copied.

The essential feature of my invention consists in the preparation of special copying-papers, by mixing oxalic or citric acid and the perchloride of iron with the pulp during the process of manufacture, (or sulphate of iron may be used in lieu of the perchloride.) Copying-papers thus made can be used in the same manner as ordinary copying-papers—that is, by moistening them with water, in the usual way, before taking impressions of documents.

The proportions in which the acids and the perchloride of iron are to be employed are regulated according to the thickness of the paper required to be manufactured, as hereinafter described, to avoid any deterioration in the substance of the paper.

The proportions I prefer to employ are as follows—that is to say, for paper weighing twelve to fifteen pounds to the ream of four hundred and eighty sheets, each measuring nineteen by twenty-two inches, to the water used in manufacturing three hundred pounds weight of pulp from the rag-engine I add about one and a half gallon of perchloride of iron, calculated at Fe_2Cl_3, and in which is dissolved about sixteen ounces of pure crystals of oxalic acid. For a paper weighing six to seven and a half pounds to the ream of four hundred and eighty sheets, each measuring nineteen by twenty-two inches, to the water used in manufacturing three hundred pounds weight of pulp from the rag-engine I add about one and a quarter gallon of perchloride of iron, calculated at Fe_2Cl_3, and in which is dissolved about twelve ounces of pure crystals of oxalic acid. For other thicknesses of paper I use a corresponding strength of solution to those indicated above, according to the weight per ream.

I use the above-named combination as the cheapest and best; but other acids, such as citric, may be employed, and I may use either the perchloride or sulphate of iron. From the latter salt, however, I have not obtained such good results.

I claim as my invention—

The preparation of special copying-papers by mixing oxalic or citric acid, in combination with the perchloride or sulphate or iron, with the pulp during the process of manufacture, as hereinbefore described.

FREDERICK HAWKE.

Witnesses:

JOHN HAWKE,
7 St. Mildred's Court, London.

WILLIAM GRANVILLE HAWKE,
7 St. Mildred's Court, London.