

UNITED STATES PATENT OFFICE.

FRANK V. POOL, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE CELLULOID MANUFACTURING COMPANY, OF NEW YORK, N. Y.

ART OF MAKING NITRO-CELLULOSE.

SPECIFICATION forming part of Letters Patent No. 343,850, dated June 15, 1886.

Application filed January 22, 1884. Serial No. 118,330. (No specimens.)

To all whom it may concern:

Be it known that I, FRANK V. POOL, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in the Art of Making Nitro Cellulose, of which the following is a specification.

The invention has relation to the art of making nitro-cellulose; and it consists in a novel method of restoring the strength of spent acids, by which are meant acids which have been used in effecting the nitration of the paper or other fibrous material.

The process of making soluble nitro-cellulose as at present conducted in its most improved form consists in, first, nitrating the fiber by means of a bath of mixed acids; second, clarifying, by settling or filtering, the spent acids which have been used to accomplish the nitration of the fiber; and, third, restoring the strength of the clarified spent acids by the addition of nitric and sulphuric acids. This improved process has been made the subject of Letters Patent granted on the 20th day of March, 1883, to John W. Hyatt and myself, and numbered 274,335. The present process contemplates a modification of the process patented to said Hyatt and myself, the departure consisting in the use of a nitrate, either metallic or earthy, which is decomposed by the sulphuric acid present in the bath, whereby the nitric acid is liberated and the strength of the bath affected accordingly.

The distinctive novelty of my improved process consists in the use of a nitrate the base of which forms, when introduced into the bath, an insoluble compound, whereby the bath is both restored and clarified. The nitric acid is separated, and the base of the nitrate forms with the sulphuric acid present in the bath an insoluble precipitant, which operates to remove the flocculent matter. I recommend the use of lead, calcium, barium, or strontium nitrates as salts that may be employed with satisfactory results.

In practice I make an analysis of the spent acids which it is proposed to restore, and, having done so, add a nitrate in such quantity as the analysis may show to be necessary. Great care will be exercised in making an accurate analysis and in adding the precise quantity of the nitrate that may be demanded, as any deficiency or excess in the quantity of the nitrate supplied will result in the production of an improperly-nitrated compound and a consequent failure in the production of the desired result.

In practicing this process a part of the sulphuric acid present in the bath unites with the nitrate, and the part thus lost must be restored or compensated for by the addition of fresh sulphuric acid, which may be introduced simultaneously with the nitrate or afterward.

I do not wish to be understood as claiming in this case the invention which is claimed in my application No. 175,323, filed August 25, 1885, my present invention embracing only the particular process hereinafter claimed.

What I claim as my invention, and desire to secure by Letters Patent, is—

In the art of manufacturing soluble nitro-cellulose, the process herein described of restoring and purifying spent acids, which consists in adding thereto a suitable quantity of a nitrate which is decomposed in the mixture, the liberated nitric acid serving to strengthen the bath, while the base of the nitrate forms with the sulphuric acid present a compound insoluble in the mixture and acts as a settling agent, whereby the mixture is simultaneously strengthened and purified, substantially as described.

Signed at New York, in the county of New York and State of New York, this 21st day of January, A. D. 1884.

FRANK V. POOL.

Witnesses:

CHAS. C. GILL,
HERMAN GUSTOW.