

UNITED STATES PATENT OFFICE.

ROBERT HENRY CLAYTON, OF MANCHESTER, JULIUS HUEBNER, OF CHEADLE HULME, AND HERBERT ERNEST WILLIAMS, OF MANCHESTER, ENGLAND, ASSIGNORS TO THE MANCHESTER OXIDE COMPANY, LIMITED, OF MANCHESTER, ENGLAND.

MANUFACTURE OF PARCHMENTIZED PAPER, VULCANIZED FIBER, AND THE LIKE.

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Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that we, ROBERT HENRY CLAYTON, JULIUS HUEBNER, and HERBERT ERNEST WILLIAMS, subjects of the King of Great Britain and Ireland, and residents of Manchester, in the county of Lancaster, England; Cheadle Hulme, in the county of Chester, England; and Manchester, in the county of Lancaster, England, respectively, have invented certain Improvements in or Relating to the Manufacture of Parchmentized Paper, Vulcanized Fiber, and the like, of which the following is a specification.

This invention has reference to the manufacture of parchmentized paper (so-called) "vulcanized fiber" and the like.

We have found that thiocyanates have a parchmentizing action upon paper. We have further found that some thiocyanates, *e. g.* the thiocyanates of calcium, magnesium, strontium and lithium, will by themselves give satisfactory results. In other cases, satisfactory results may be obtained by employing two or more thiocyanates in conjunction, as *e. g.* by dissolving water-insoluble or sparingly-soluble thiocyanates in solutions of readily water-soluble thiocyanates, or by partly replacing the solutions of thiocyanates by solutions of other salts, *e. g.* calcium chlorid, which do not adversely affect the action of the thiocyanate or thiocyanates and which themselves may have no parchmentizing action upon paper. By the latter method, a considerable economy in thiocyanate can in some cases be effected. The thiocyanate solutions operate best when they are of high concentration, but in some cases the volume of thiocyanate solution necessary to conveniently treat the paper would, if highly concentrated, contain more thiocyanate than actually required to act upon the paper. In such cases, therefore, the thiocyanate or thiocyanates can be partly replaced in the working solution by a salt or salts having no adverse effect on the action of the thiocyanate or thiocyanates, without reducing the concentration of the latter in the working solution. It will, of course, be understood that we may also partly replace the thiocyanate or thiocyanates or the solutions thereof by other salts or solutions of other salts which, themselves, have a parchment-

izing action upon paper. The working solutions may be acidified (preferably with acetic acid) the effect of which is to increase the capacity of the solutions to parchmentize paper and the rate of speed of the parchmentizing action, and also to prevent viscosity of the solutions.

The following examples will serve to illustrate the employment of thiocyanates for the purpose referred to.

Example 1.

A solution of calcium thiocyanate, of such concentration as to boil at 157° C. under atmospheric pressure, is heated to and maintained at 130° C. and unsized cotton or other paper is passed through the solution at such a speed that the paper is in contact with the solution for about 30 seconds. The paper is then washed and dried in the usual way.

Example 2.

One part by weight of mercuric thiocyanate is dissolved in a solution of two parts of magnesium thiocyanate and the resulting solution concentrated by evaporation until the boiling point rises to 145° C. under atmospheric pressure. The solution is then heated to 130° C. and maintained at this temperature while unsized cotton or other paper is passed therethrough at such a speed that it is in contact with the solution for about 15 seconds. The paper is afterward washed and dried in the usual way.

Example 3.

A solution of equal parts by weight of calcium thiocyanate and calcium chlorid is prepared of such a concentration as to boil at 157° C. under atmospheric pressure. The solution is heated to, and maintained at, 130° C. Unsized cotton or other paper is passed through the solution so as to be in contact therewith for about 30 seconds. The paper is afterward washed and dried in the usual way.

In the foregoing examples, the solutions with which the paper is treated may be acidified by adding acetic acid thereto in the proportion of 4 parts by volume of glacial acetic acid to 100 parts of solution. "Vulcanized fiber" or the like may be

manufactured from paper treated as above described, in the same manner in which such fiber or the like is at present manufactured from paper treated with sulfuric acid or
5 zinc chlorid.

What we claim as our invention, and desire to secure by Letters Patent is:—

1. The process of parchmentizing paper, which consists in treating the paper with a
10 heated thiocyanate solution.

2. The process of parchmentizing paper, which consists in treating the paper with a heated solution of a substantially water-insoluble thiocyanate in a solution of a sub-
15 stantially water-soluble thiocyanate.

3. The process of parchmentizing paper, which consists in treating the paper with a heated solution of a thiocyanate and a salt

which does not adversely affect the action of the thiocyanate and which may itself
20 have no parchmentizing action upon paper.

4. The process of parchmentizing paper, which consists in treating the paper with a heated solution of an acidified thiocyanate
25 solution.

5. The process of manufacturing (so-called) "vulcanized fiber" and the like, which consists in treating paper with a heated thiocyanate solution and manufacturing the thus treated paper into "vulcan-
30 ized fiber" or the like.

In witness whereof we have hereunto set our hands.

ROBERT HENRY CLAYTON.

JULIUS HUEBNER.

HERBERT ERNEST WILLIAMS.