

# United States Patent Office.

WHEATON LUTHER, OF NIAGARA FALLS, NEW YORK.

Letters Patent No. 73,733, dated January 28, 1868.

## IMPROVED PROCESS OF BLEACHING CLOTH, YARN, &c.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, WHEATON LUTHER, of Niagara Falls, in the county of Niagara, State of New York, have discovered a new and improved Process of Bleaching Cloth, Yarn, Hemp, Straw, and other similar fibrous materials; and I do hereby declare that the following is a clear, full, and exact description of the same. Specimens of the chemicals and of the work done are also deposited with this specification.

The nature of my discovery consists in such a use of well-known chemicals as will prepare the material in a very short time for the quick and thorough action of the bleaching-material, and at the same time preserve the native strength of the fibre. The whole process is done in open vessels, without hydrostatic or other applied pressure. It may be done in closed vessels, but at the risk of damaging the fibre. I call it the "Liquo-Status Process."

To enable others skilled in the art to use my discovery or invention, I will now proceed to describe the process more fully.

First, boil the article in common lime-water, whose strength is from two to four degrees, an hour or hour and a half, depending principally upon the size of the piece. It may be soaked in cold lime-water instead of boiling, but moderate boiling hastens the process, while severe boiling may damage the article. Next rinse the article thoroughly, for five minutes or more, in clean water, cold or hot, and immediately immerse in a dilute acid, muriatic or sulphuric, although I greatly prefer the latter, whose strength is about one degree, until it thoroughly permeates the article—say about half an hour. Then remove it, and without rinsing, and even squeezing is unnecessary, and immediately, whilst it is thoroughly saturated with acid, immerse it in the bleaching-liquid, chloride of lime or hyperchloride of magnesia, whose strength is about two or three degrees, and the bleaching will proceed very rapidly. In ordinary cases it will take from fifteen to thirty minutes to bleach thoroughly. The article is then removed, and without rinsing is immediately immersed in the dilute acid before mentioned for a few minutes, say five or ten, and the process is completed, and the article is thoroughly washed and rinsed.

Having explained the process, I will now proceed to explain the chemical action, so far as to enable others skilled in the art to understand that the process is a rational one. Boiling in lime is not new, but by treating it in acid according to my process, it is unnecessary to keep it in as long as by other known processes. After boiling, the lime is thoroughly washed or rinsed out, and this is the only washing or rinsing that is necessary during the whole process. The lime is supposed to start the color, and the acid continues the process. One of the essential features of this process is immersing the article in the bleaching-liquid while it is thoroughly saturated with the sulphuric or other acid, thus causing the chlorine to be set free the instant that it comes in contact with the article bleached, whereas by other known processes the chloride of lime remains in contact with the article several hours, and rots or weakens it. It is better to have an excess than a deficiency of the acid, for it will set free the chlorine and prevent its preying upon the fibre; hence squeezing out the acid before the article is put in the bleaching-liquid is unnecessary, and might prove detrimental. The acid used in my process is so dilute that it tends to strengthen the fibre, and it remains in contact with the bleaching-powder so short a time that it comes out of the process as strong as it went in. The last immersion in the acid is to set free the chlorine, should any remain in the article after it has been removed from the bleaching-powder. If the acid be sufficiently weak, the last immersion may be prolonged to a quarter or half an hour, without detriment to the process. By the process herein described I am able to bleach thoroughly in three or four hours.

I do not claim to have discovered any new chemicals for bleaching; but

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

By the use of the chemicals herein mentioned, or by those which produce equivalent results, I claim the process substantially as herein described.

Also immersing the article in the bleaching-mixture while it is saturated with the acid.

WHEATON LUTHER.

Witnesses:

A. J. HAMLIN,  
ABNER MUNN.