

# UNITED STATES PATENT OFFICE.

WM. B. NEWBERY, OF DORCHESTER, MASSACHUSETTS.

IMPROVEMENT IN THE MANUFACTURE OF PAPER FROM SPANISH GRASS.

Specification forming part of Letters Patent No. 42,866, dated May 24, 1864.

*To all whom it may concern:*

Be it known that I, WILLIAM B. NEWBERY, of Dorchester, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in the Process of Manufacturing Paper from *Esparto* (*Stipa Tenacissima*) or Spanish Grass; and I hereby declare that the following is a full, clear, and exact description of the same.

My invention consists in an improved process of manufacturing paper from *Esparto* (*Stipa tenacissima*) or Spanish grass, either alone or in combination with other fibrous material, by which I am enabled to effect a great saving in time, labor, and chemicals, and produce a good article of paper at a much less cost than has heretofore been practicable.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

I take the raw *Esparto* as imported, and boil it with lime in the proportion of one pound of lime to four pounds of *Esparto* from six to twelve hours, according to the degree of whiteness required, in a rotary boiler such as is generally used by paper-makers, which effectually softens and opens the fibers and admits of the removal of the coloring-matter, as will be hereinafter described. The boiled grass is then passed to the beating-engine and beat into pulp.

For wrapping-paper the pulp may be colored or not, as may be desired. If it is to be colored, it is mixed with a solution of either sumac or logwood in the proportion of two pounds of sumac or two ounces extract of logwood to one hundred and fifty pounds of pulp, and a solution of copperas or a weak solution of sulphuric acid is then added in such proportions as to produce the shade of color required, in a manner well-known to paper-manufacturers.

For white paper the grass, after it is boiled, is passed to the beating-engine, where it is mixed with a solution of caustic soda or carbonate of soda, in the proportion of fifteen to twenty pounds of soda to one hundred and fifty pounds of the pulp, and a jet of steam is introduced into the beating-engine, so as to raise the heat to as high a degree as practicable, by which process the colored vegetable matter is disengaged from the fiber at the same time that the process of pulping is in progress, thereby effecting a great saving of time and labor. After being worked in the

beating-engine for the space of an hour, to an hour and a-half the soda is washed out by a current of water passing through the engine, and the mass is reheated, when the bleaching-liquor is applied, composed of a solution of chloride of lime, about fifteen or twenty pounds of which is employed for one hundred and fifty pounds of pulp. The pulping process is then continued until the required degree of whiteness is obtained, when it is removed from the engine and formed into sheets in a well-known manner.

It will thus be seen that the processes of pulping and bleaching are effected simultaneously, thereby avoiding the delays occasioned by stopping the beating-engine and removing the pulp to other receptacles, which would result in a considerable loss of time.

For both wrapping and white paper any ordinary sizing may be used; but I prefer a sizing composed of silicate of soda or water-glass made after the process patented by Geo. E. Vanderburgh on the 29th May, 1860, and re-issued April 1, 1862, of a strength indicated by 35° to 40° of Baumé's hydrometer. This sizing is applied in the proportion of two pounds of the above silicate of soda of commerce dissolved in twenty-four pounds of water to one hundred and fifty of pulp, if for ordinary paper, increasing the quantity for stiffer and stouter paper.

For the coarser qualities of paper the *Esparto* may be used either alone or in combination with manila, jute, gunny, or other fibrous material, in such proportion as to produce the quality of paper required, in a manner well-known to paper-manufacturers.

I do not confine myself to the exact proportions above mentioned, as it is obvious that circumstances may render a variation necessary.

The above process economizes time, labor, and chemicals, and produces a cheaper and better paper than that heretofore made by any other process with which I am acquainted.

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

The within-described process of manufacturing paper from *Esparto* (*Stipa tenacissima*) or Spanish grass, either alone or in combination with manila, jute, gunny, or other fibrous material, substantially as set forth.

WM. B. NEWBERY.

Witnesses:

P. E. TESCHEMACHER,  
N. W. STEARNS.