

United States Patent Office.

MORRIS L. KEEN, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO HIMSELF
AND SAMUEL A. WALSH, OF NEW YORK CITY.

Letters Patent No. 109,742, dated November 29, 1870.

IMPROVEMENT IN PAPER-STOCK.

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, MORRIS L. KEEN, of Jersey City, State of New Jersey, have invented certain Improvements in Paper-Stock, from wood, straw, cane, flax, flax-tow, hemp, hemp-tow, jute, jute-tow, manilla-rope or tow, gunny or gunny-bagging, and any analogous material, of which the following is a description.

Take any of the material suitably prepared by any mechanical means in ordinary use for cutting or reducing the same to suitable fineness, and put the same in a close, strong boiler, one of upright form preferred, fitted with a perforated false bottom inside, so that the stock under treatment can be drained off by means of a cock in the bottom of boiler communicating with space under the false bottom.

A discharge-valve is also fitted to a passage through both bottoms, communicating with the interior of the boiler, so that the stock of pulp when finished can be discharged or blown out under pressure into a suitable receiver or tank for said purpose.

The boiler is also provided with a top screen or perforated diaphragm, fitted across the inside of the top of the boiler, allowing a steam-space above the screen.

The material is charged into the boiler through a man-hole, either above or below the screen; if above, a portion of the screen is removed to admit of charge.

After the boiler is charged with the material to be treated, steam is admitted from a separate generator by means of pipes, either at top or bottom of boiler, and the material is subjected to steaming process at the high temperature of from 300° to 400° Fahrenheit, according to the material under treatment, for say thirty (30) minutes or more. The drain-cock is then opened at the bottom and the condensed steam and interstitial matter is drawn off, or a self-acting water-tap or valve may be attached that will allow the liberated interstitial matter and condensed steam to pass off freely during the entire steaming operation.

The stock is now subjected to hot water percolation at a temperature of from 300° to 400° Fahrenheit, injected above the screen into the steam-space, and washes out the acids and interstitial matter acted on by the steam at high temperature.

After a lapse of a short time, say ten minutes, the percolation by hot water is stopped, and the material again subjected to steaming process for ten or fifteen minutes, the length of time and temperature being regulated by nature or kind of material under treatment, after which hot water percolation is again in-

troduced, and the alternation of steaming and washing continued till the material is reduced of its interstitial matter, from forty (40) to sixty (60) per cent., according to the kind of stock under treatment, and the condition desired to be obtained, as to quality or kind of paper the stock is intended for.

The stock thus treated is ready for boiling in solution of alkali, caustic soda preferred, of a strength of 6° to 12° Beaumé, though weaker solutions will answer, according to the kind of material treated, say for the space of about one hour, which answers very well, and under steam pressure of from ten pounds to thirty pounds or upward, after which the alkali is drawn off, quantum for quantum, and then a puff of steam or shower of hot water is injected at the top of boiler above the screen, thereby forcing out the remnant of alkali remaining in the stock under treatment; we then subject the stock to the steaming process, say ten (10) or fifteen (15) minutes, at a temperature of from 300° to 400° Fahrenheit, and then to percolation with hot water, alternating it according to stock under treatment, and the kind of paper the stock is intended for.

If the stock is to be bleached, the more thoroughly it is cleaved by steam and hot water, the easier it is bleached.

For ordinary uses it can be discharged without the last percolation washing alluded to above.

I term the material at each of the stages of the process, "paper-stock."

I propose to put it up in bales or other packages, for shipment and sale in this condition, ready for the paper manufacturer to use.

I believe it is cleaner at every stage, takes sizing better, is easier to bleach, and is better prepared for the manufacture of either brown or white paper than any stock at present prepared by any other known process.

Confining attention now to the brown stock resulting from the first process, it will be observed that the shortness of the time and small number of operations allow my stock to be produced more cheaply than any before known having the same qualities. This is a distinction, and a most important one commercially, between my product and any others.

It differs, also, mechanically in the combination or aggregation of the following qualities:

First, it is brown or unbleached.

Second, it is dull or void of brilliancy.

Third, it is soft or cottony.

Fourth, its fiber appears under magnifying power mostly perfect and unbroken.

I claim as my invention—

1. The brown paper-stock herein described, made by the first process and having the several qualities and peculiarities herein described.

2. The gray paper-stock, as produced from the brown, by boiling the same in alkaline solutions, put up in any convenient form for sale or use.

3. The bleached paper-stock, as produced from the

brown, by boiling the same in alkaline solutions, and treating it with any bleaching materials.

In testimony whereof, I have hereunto set my name in presence of two subscribing witnesses.

Witnesses:

MORRIS L. KEEN.

THOMAS D. STETSON,

O. O. LIVINGE: