

UNITED STATES PATENT OFFICE.

J. B. PALSER AND G. HOWLAND, OF FORT EDWARD, NEW YORK.

IMPROVEMENT IN THE MANUFACTURE OF PAPER-PULP.

Specification forming part of Letters Patent No. 26,202, dated November 22, 1859.

To all whom it may concern:

Be it known that we, J. B. PALSER and G. HOWLAND, of Fort Edward, in the county of Washington and State of New York, have invented a new and useful Improvement in the Manufacture of Paper-Pulp; and we do hereby declare that the following is a full, clear, and exact description of the same.

In the manufacture of paper-pulp from straw and other fibrous materials we employ sixty gallons of caustic alkali of a strength indicating $3\frac{1}{2}^{\circ}$ to $3\frac{3}{4}^{\circ}$ Baumé to every one hundred pounds of the cut straw. The alkaline mixture and straw having been placed in a suitable rotary steam-boiler and the man-hole of the latter closed, the fire is applied below and a pressure of one hundred and ten to one hundred and thirty pounds raised. This pressure is maintained for four hours, the boiler being constantly but slowly rotated and the "stock" within the boiler being thus kept in gentle agitation.

A well-known method (patented by Letters Patent No. 17,387) of reducing straw to pulp is to employ a solution of caustic alkali of a strength indicating from 2° to 3° Baumé, seventy pounds of the solution to one hundred pounds of cut straw, the whole being placed in a boiler and boiled under a pressure of not less than eighty-four pounds for about three hours' time. We find in practice that the above method does not sufficiently disintegrate the straw, nor does it sufficiently dissolve or remove the woody, albuminous, and silicious matters from the fibrous portions. The pulp produced is therefore coarse, rough, dark-colored, and comparatively impure, and the paper made from it is so brittle as often to break when bent, is weak, rough, and of no great merchantable value. In order to consume it usefully, a large percentage of better and more

costly fibrous material—such as linen, cotton, or manila pulp—must be mixed with it.

Our improvement effects an almost complete separation of the silicious, albuminous, and woody matters, leaving the fibrous portions nearly pure, and producing a fine, light-colored, and greatly-improved pulp, which readily converts into a good, strong, pliable, and useful article of paper without any admixture of other fibrous materials.

On comparison of the pulp produced from straw by our method and that made after the mode described in the patent before mentioned a very marked difference in appearance is observable in favor of our invention. The paper made from the pulps above mentioned also presents the same striking difference in favor of our improvement.

We do not claim the boiling of the stock under a pressure of eighty-four pounds, nor do we claim any other part or feature of the process described in the Letters Patent No. 17,387 aforesaid. Nor do we claim broadly the employment of alkaline liquids, nor the boiling of the straw or other stock therewith under pressure, nor the use of revolving boilers; but, Having thus described our invention, we claim as new and desire to secure by Letters Patent—

The boiling of straw or other stock for about four hours under a pressure of from one hundred and ten to one hundred and thirty pounds in a solution of caustic alkali of a strength indicating from $3\frac{1}{2}^{\circ}$ to $3\frac{3}{4}^{\circ}$ Baumé, substantially in the manner and for the purpose herein set forth.

J. B. PALSER.
G. HOWLAND.

Witnesses:

JAMES L. REYNOLDS,
A. E. BEACH.