

United States Patent Office.

WELLINGTON CAMPBELL, OF MILLBURN, NEW JERSEY.

Letters Patent No. 90,497, dated May 25, 1869.

IMPROVED COMPOSITE PAPER FOR HANGINGS AND FOR OTHER PURPOSES.

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, WELLINGTON CAMPBELL, of Millburn, in the county of Essex, and State of New Jersey, have made an invention of a new and useful article of manufacture, which I denominate "Composite Paper;" and I do hereby declare that the following is a full, clear, and exact description and specification of the same.

It is well known that paper curtains, paper hangings, and sheets of paper for other purposes, are much more liable to be torn or frayed at the edges by handling than at the intermediate portion, and various means have been devised of obviating the defect.

The object of my invention is the production, at a low cost, of paper which is less liable to the above-stated defect than other papers of the same average weight per square foot. To this end,

My invention consists of a paper, one or more longitudinal strips or portions of the breadth of which are of greater strength than the adjacent strips, the strips of greater strength being produced in the process of manufacture, by doubling the material at such strips, and the whole being united, by the felting or interlocking of the material, and being consolidated by pressure, so as to constitute a composite sheet of paper.

My invention may be produced in several ways. Thus, in the process of manufacturing the paper, one wire-clothed cylinder, or one belt of wire cloth, may be used to produce a sheet of paper-pulp, or paper material, in the ordinary way, as practised with a cylinder-machine, or with a Fourdrinier machine. Simultaneously with the production of the said sheet, a supplementary wire-clothed cylinder, having one or more narrow bands of wire cloth at its barrel, may be employed to produce one or more strips or ribbons of paper-pulp suitable for doubling the sheet of paper at the places where greater strength is required; as, for example, two bands of wire cloth may be used to produce two strips of paper material for strengthening the edges of the sheet; and these two strips may be conducted to, and laid in contact with the edges of the said sheet previous to couching and pressing it, so that the operations of couching and pressing cause the contiguous faces of the damp or wet sheet and strips to unite, as by felting, without the necessity of employing any glutinous material to stick the two together.

The compound sheet of paper thus produced may be dried and trimmed in the usual manner, and will be found to possess the characteristics of my new manufacture, the edges being doubled in strips, and the doubled parts being firmly united, by the interlocking of the contiguous parts, while the intervening portion of the sheet is of lighter weight and strength.

Another mode of producing my invention is to form a sheet of paper material in the usual manner, to couch it and to press it partially, so as to impart to it some consistency; then to turn over narrow strips at the edges of the sheet upon the intervening portion, and to subject the sheet so doubled, at the edges, and

while still moist, to the final pressure applied to paper previous to drying it. In this case, the doubled portions are composed, necessarily, of the same quality of material as the intervening portion, but are of double weight for the same area of surface, while, by the system of manufacture first above described, the strengthening-strips of paper material may be formed either of the same material as the residue, or of a stronger, or of a weaker material than the residue of the paper, a stronger material being, in my opinion, preferable, the difference of material being effected by causing the supplementary wire-clothed cylinder to revolve in a tank of paper-pulp distinct from that from which pulp is taken for the formation of the main sheet.

Another mode of producing my invention is to combine the two systems of manufacture above described, the sheet of pulp being first doubled, at or near the edges, by the application of the supplementary ribbons or strips of damp material, and then being doubled, while wet or damp, a second time, by the turning over of narrow strips at the edges upon the intervening portion, and the whole being consolidated by pressing the strips and sheet together.

The paper thus produced may be dried in the usual manner.

In some cases, I propose to increase the strength of the sheet of paper by introducing one or more threads between the two thicknesses of paper material. In this case, the thread may be conducted to and laid in contact with the sheet of paper material, at the desired place, before the strengthening-strip is applied to said sheet, so that, when the said strip is applied, and consolidated by pressure, the thread is enclosed between the two thicknesses.

Having thus described the several modes in which I have contemplated the application of the principles of my invention, I declare that I am well aware that sheets of paper have long prior to my invention been strengthened by pasting strips of paper upon the edges of such sheets, and also that entire sheets of paper have been doubled throughout in the process of manufacture, by combining two sheets of wet paper-pulp together. I therefore do not claim broadly a doubled paper; but

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

A paper having adjacent strips of its breadth of different strength, each strip of greater strength being produced by combining, with the damp sheet of paper material, a damp strip of paper material of the required breadth, and by consolidating the whole by pressure, the article produced constituting a new article of manufacture.

In testimony whereof, I have hereto set my hand, this 14th day of April, A. D. 1869.

WELLINGTON CAMPBELL.

Witnesses:

W. C. WITTER,
W. L. BENNETT.