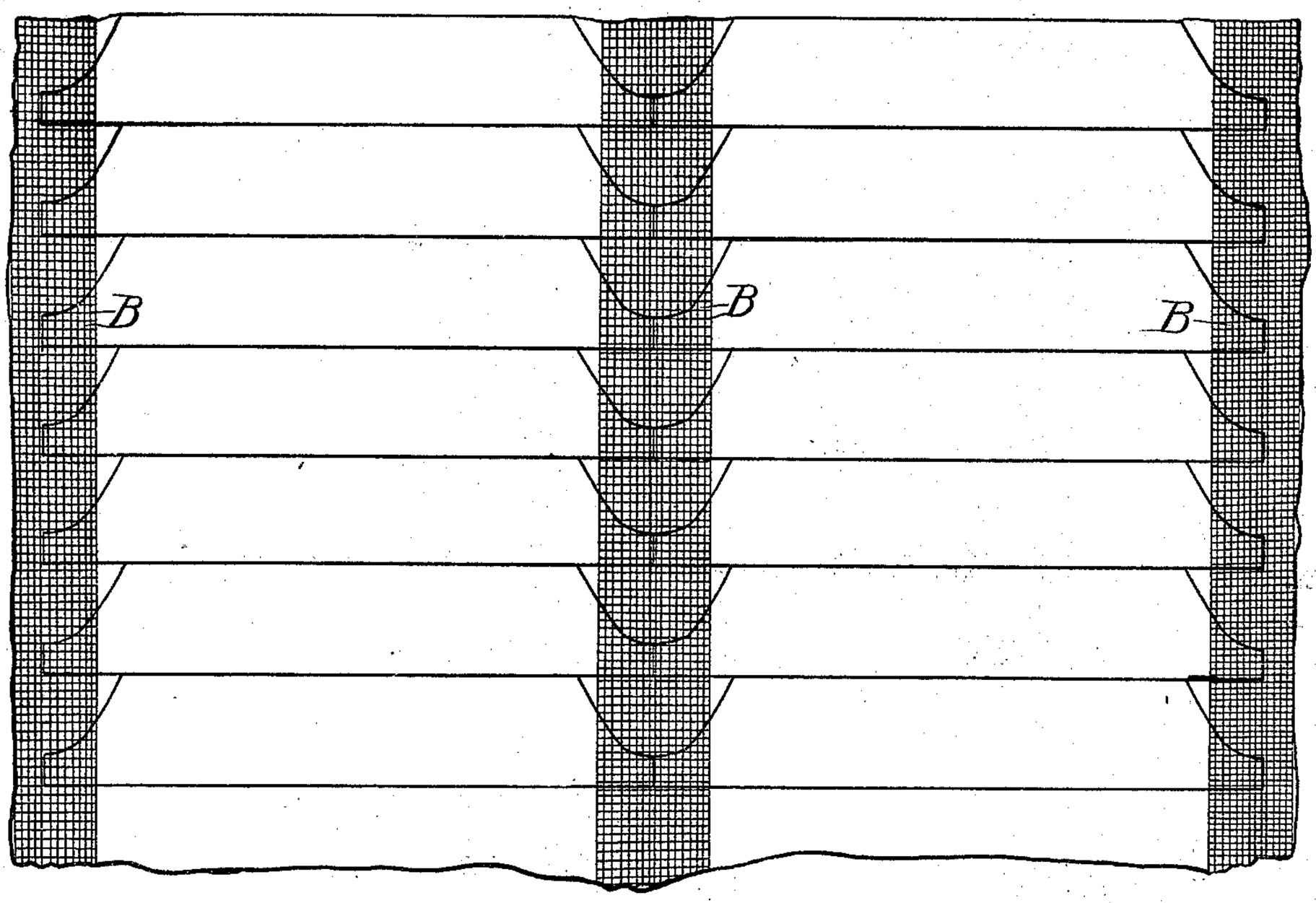
J. M. Wilcox.

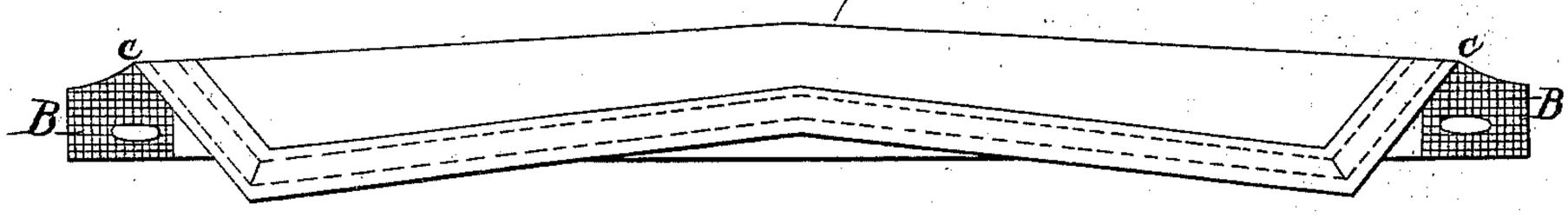
Paper Products.

No. 80,105. Patented Jul. 21, 1868.

Fig; 1;



Fig; 2;



Witnesses;

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JAMES M. WILLCOX, OF GLEN MILLS, PENNSYLVANIA.

Letters Patent No. 80,105, *dated July* 21, 1868.

IMPROVEMENT IN THE MANUFACTURE OF PAPER FOR COLLARS.

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, JAMES M. WILLCOX, of Glen Mills, in the county of Delaware, and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Paper for Paper Collars, Cuffs, Tags, or other articles; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which are made a part of this specification.

The object of my invention is, to produce a material possessing the advantages hereinafter named for the manufacture of paper collars, cuffs, tags, or other articles which require local strengthening.

The advantageous qualities combined in my material for collars, &c., may be enumerated as follows:

First. Complete collars or other articles may be cut from rolls of indefinite length by machinery in the most rapid manner.

Second. The button-holes or other parts where great strength is required will be supported or reinforced by strong fabric or fibre applied to the paper in the process of manufacturing, in such a manner as to be absolutely secure against removal, avoid any unsightly projection from the surface of the paper, and permit the application of an even coat of enamel, which may impart a perfectly uniform appearance to the whole surface.

These objects I accomplish by applying to the pulpy sheet, when "couched" or partially solidified, continuous strips of woven fabric or strong fibre, at distances apart corresponding with the distances in the finished article of the parts where increased strength is required. Thus, in making paper for sixteen-inch collars, I lay the strips sixteen inches apart from centre to centre, and of sufficient width to cover the button-holes in the adjacent ends of two collars and the ends of the folds.

The strengthening-material is applied either between two pulpy sheets or to the outside of one sheet. In either case, a suitable cement is employed to effect an inseparable connection, and the whole is then formed into a solid sheet, by heavy pressure, and dried and calendered in the machine.

My invention further consists in so applying a strengthening-material to paper for collars that it will protect the fold where collars are especially liable to break and tear; and, if desired, the strengthening-band may be made of sufficient width to support the corners also, and thus prevent their curling up.

In the drawings—

Figure 1 may represent a portion of a sheet of my improved paper, and

Figure 2 a collar, cut, punched, and folded, ready for sale and use.

B B are the strips of strengthening-material.

The red outlines indicate the collar-blanks, which may be cut from the rolls by machinery such as is commonly used for cutting collars out of common paper.

By reference to fig. 2, it will be seen that the reinforce or strengthening-material B, as applied by me, affords protection and support, not only to the button-holes, but to the corners C of the collar, where paper collars, as hitherto made, are very liable to break and tear. This constitutes a great feature of superiority of my invention, as compared with the plan of applying a patch to each place where a button-hole is to be punched.

Another great advantage in my invention is, that the application of the strengthening-material and the subsequent cutting and punching of the collars, may all be performed by machinery, so that no more manipulation is necessary than in making paper collars of ordinary construction.

A third advantage of my invention is, that I avoid any considerable waste of material, and spare the cost of extra strengthening where it is not required. My plan is, in this respect, far superior to any in which a woven fabric is applied over the whole surface of the paper. Much less care and skill are necessary in applying narrow strips than in stretching wide cloth, by reason of the liability of the latter to wrinkle from unequal stretching.

A fourth advantage is, that by employing cement in connection with the semi-solidified sheet of pulp, I render the subsequent accidental separation of the strengthening-material absolutely impossible.

A fifth advantage of my invention is, that by applying the fabric or strengthening-fibre to the sheet while

in a partially-pulpy state, and subsequently subjecting it to heavy pressure, I effectually embed the fabric into the paper, so as to conceal the former, and produce a solid sheet, of uniform thickness and appearance, and without any prominent or projecting surfaces.

A sixth advantage is, that my improved paper will take a coat of enamel all over it, and, when so coated, will present precisely the same appearance as an enamelled sheet to which no local strengthening has been applied.

A seventh advantage is, that one drying dries both paper and cloth. One pressing, one reeling, one general process only, is required to produce the finished article of locally-strengthened paper.

In fine, my invention is believed to combine in a higher degree than any plan hitherto proposed the advantages of economy, regularity, thorough union, (in contradistinction to mere superficial cementation,) sightliness, a level surface that can be enamelled over, local strength, and economical manufacture of collars by the most approved machinery, which cuts from the roll and not from the sheet.

It is impracticable to press paper-pulp in its softest condition, for the reason that, under the heavy pressure required, there is danger of it crushing down and losing its consistency and continuity; and furthermore, if the cloth be applied to the paper before the latter is stretched, as has been heretofore attempted, the subsequent stretching of the paper and the firmness of the cloth, which will not stretch, inevitably cause wrinkling and failure. For these reasons, I find it necessary to have the sheet stretched and partially solidified or "couched," before applying the woven fabric or other strengthening-material.

I propose to employ in my invention any strengthening-material which may be found suitable. For instance, strips of loose fibre, or of bank-note or other strong paper, may be used, or strong fibre locally interwoven.

I am aware that paper collars have before been strengthened by applying patches to the parts where button-holes are to be cut or punched. This, therefore, I do not claim. A great advantage of my invention consists in strengthening the ends of the fold where collars, as now commonly made, break and tear long before the collar is completely soiled or worn.

Having thus described my invention, the following is what I claim as new therein, and desire to secure by Letters Patent:

In the manufacture of paper for collars, cuffs, tags, and other articles requiring especial strength in certain places, I claim the employment of strips, B, of stronger material, applied to the paper after it is couched, and while it is soft, and embedded therein by subsequent pressure, at proper distances asunder, to impart greater strength to the required parts of the articles to be cut from the sheets or rolls.

I further claim locally strengthening paper for collars, by applying, either in the sheet or roll, strips of strong material, in such positions as to protect the ends of the fold.

JAMES M. WILLCOX.

Witnesses:

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