J. J. Ott,

Preparing Chemical Paper for Carpets, &c.

No. 81,199. Patented Aug. 18. 1868.

Fig: 1.

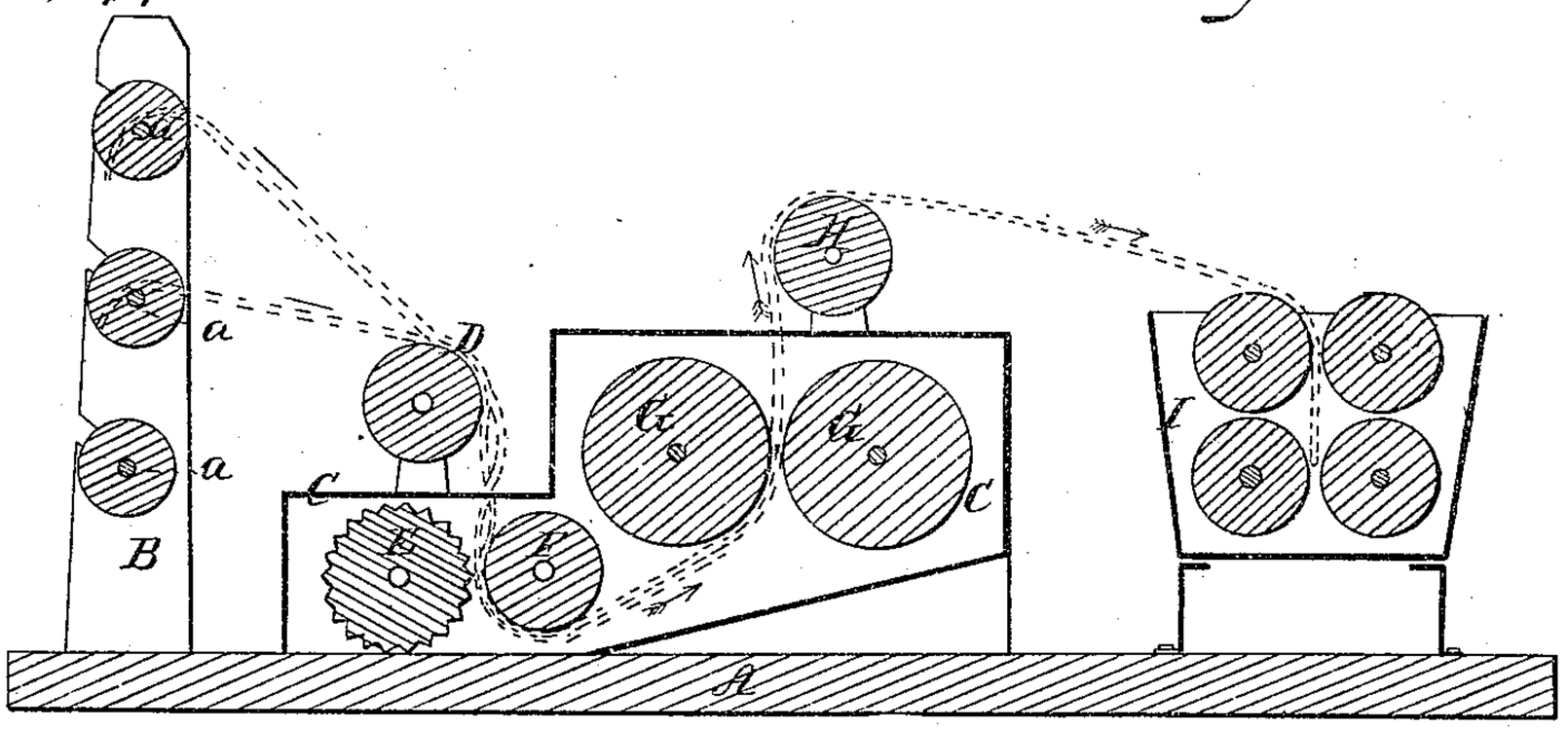

Fig: 2.

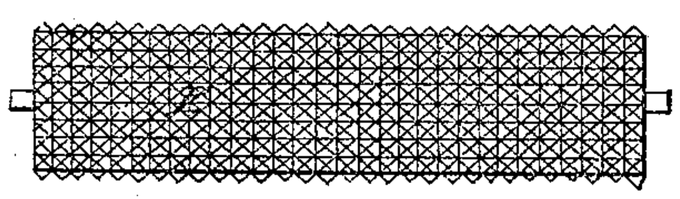

Fig: 3.

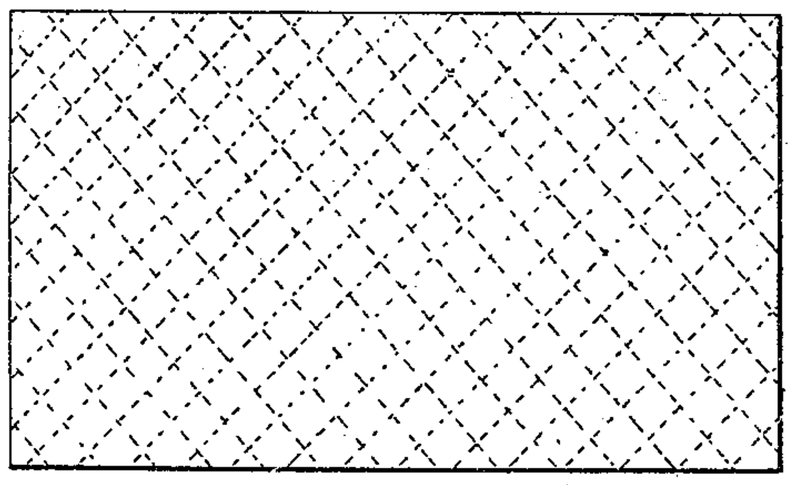

Fig: 4.

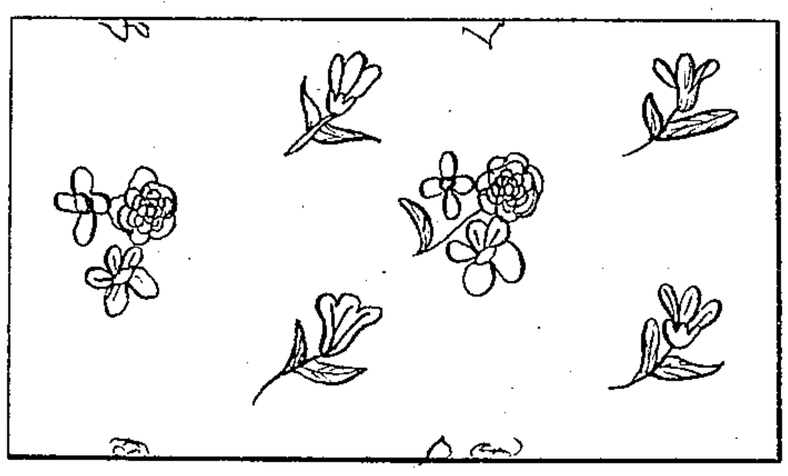

Fig: 5.

Witnesses;
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per
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UNITED STATES PATENT OFFICE.

JOSEPH J. OTT, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PREPARING PAPER FOR THE MANUFACTURE OF FLOOR-COVERINGS, BELTING, WINDOW-SHADES, AND THE LIKE.

Specification forming part of Letters Patent No. **81,199**, dated August 18, 1868.

To all whom it may concern:

Be it known that I, JOSEPH J. OTT, of Washington city, in the county of Washington, and in the District of Columbia, have invented new and useful Improvements in Mode of Preparing Chemical Paper for Carpeting, Belting, &c.; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the combination of two or more sheets of paper which previously have passed through a chemical process, whereby the paper becomes impervious to liquids, and can be used for carpeting, belting, and a variety of other purposes.

Some time ago it was discovered that if unsized paper—water-leaf—be passed through a preparation of two parts of sulphuric acid and one part of water, there was an immediate change in its texture, it becoming stronger and more impervious to liquids.

This action of the preparation upon the paper is found, however, to be only a superficial one. The moment the paper comes in contact with it, that moment it becomes more impervious to liquids, and therefore more impervious to this preparation itself, which, as it penetrates deeper and deeper into the body of the paper, does so with increasing difficulty, so that when the paper is quite thick it is almost impossible for the preparation of itself to permeate the whole body during the time in which it is prudent to leave it in the preparation.

That the action is a superficial one is readily seen upon washing the paper, when it splits, showing that the portions nearest the center are the weakest, and affected by the preparation the least, if at all. Now, this being the case, it is readily seen that the paper, which owes its increased strength to the action of the preparation, receives that contributed strength in the greatest proportion at its surface. If we take two sheets of paper of a thickness not too great to be affected throughout by the preparation, and, after passing them through it, join their surfaces, the strength of the combined sheets will be just twice the strength of either, and, having four surfaces, in which lies the increased strength, affected to the full extent the preparation is capable of, is certainly much stronger than one sheet of paper, of the same quality, of twice the thickness of either piece, for the increased strength of the thicker piece is equal only to that of one of the thinner sheets plus the strength of its unaffected body—that is, the portions adjacent to the center.

Another quality of this material is, that if it be printed or painted upon in any of the common water-colors not affected by this proportion of acid, on passing it through the preparation, these colors are set, and to a great extent become water-proof.

Taking advantage of the above facts, it becomes practicable to manufacture and use a variety of articles, such as paper floor-covering or carpeting, paper belting, paper awnings, paper curtains, paper bagging, paper "leather" for various purposes, trunks, book-binding, shoe-soles, and a great many others.

Where necessary, as for carpeting, awnings, or where figures, flowers, &c., are desired, the various figures are to be printed on the outer surfaces, and dried before passing through the preparation for the first time. The different sheets, or rather the surfaces thereof, are to be fastened together by means of a perforating-roller, perforating at the time the material is passing through the acid the second time.

For this purpose I have constructed a machine; and to enable others skilled in the art to make and use the same, I will proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and in which—

Figure 1 is a sectional side view of said machine; Fig. 2, a side view of the perforating-roller; Figs. 3 and 4, plan views of paper after having passed through the machine; and Fig. 5 shows the edge broken open of paper made of four thicknesses.

A represents a table or bed for the machine, of any suitable size, at one end of which are two standards, B. In these standards shafts *a a* have their bearings, and the rolls of paper, as they come from the mill, are placed on these shafts, from whence the paper passes into the acid-box C through a slot in the top thereof. A roller, D, is placed on top of said box, to guide the paper by passing it over the same

vertically down into the box, where it goes between the perforating-roller E and smooth roller F, around the latter, toward the rear of the box, and up between the pressing-rollers G G, out through another slot in top of the said box C.

The perforating-roller E is provided, around its entire outer surface, with a number of teeth, which can be put as close, and in any shape, as may be desired, and it is then placed close enough to the smooth roller F to make indentations through all the thicknesses of paper passing between them, which, in conjunction with the chemical preparation through which the paper at the same time passes, makes the sheets of paper stick together, without any kind of glue being used, as it passes between the pressing-rollers G G.

On top of the acid-box C, above the slot where the paper, now in one sheet, comes out, is another roller, H, around which the paper passes into a vat or tub, I, for the purpose of being washed and all superfluous acid removed. In this vat or tub the paper passes around rollers placed in the most convenient manner.

The machine may be operated by any means desired, steam, water, or hand power, gearing to suit being attached thereto.

The acid is fed by a running stream of the liquid from a vat containing the preparation, and is continually being pumped back into this vat through tubing immersed in running water, for the purpose of keeping the preparation at the proper degree of coolness, for should the preparation become heated by means of the chemical action on the paper and colors, it would lose its power to strengthen, and only destroy.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

As an article of manufacture, the combination of two or more sheets of paper, when prepared by passing through a solution of acid, and connected together by puncturing, with a toothed roller, substantially as herein described, for use as carpeting, belting, and other purposes, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 24th day of July, 1868.

JOSEPH J. OTT. [L. S.]

Witnesses:
CHAS. L. EVERT,
A. A. YEATMAN.