No. 677,459. Patented July 2, 1901.

J. W. McCABE.

ORNAMENTING CARDBOARD, &c.

(Application filed Dec. 28, 1899.)

(Specimens.)

FIG. 1.

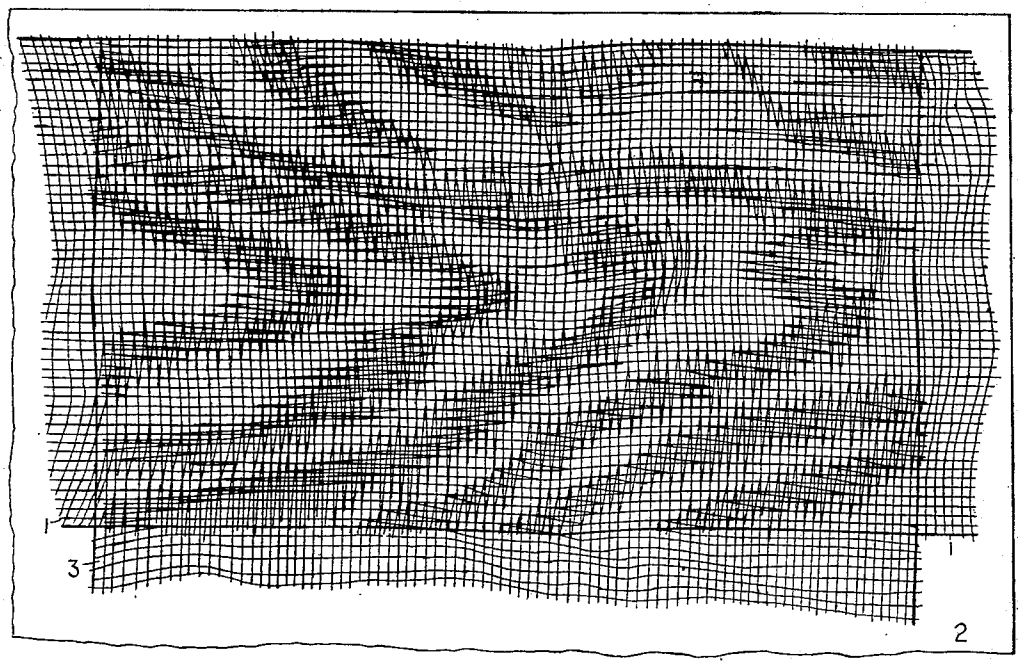


FIG. 2.

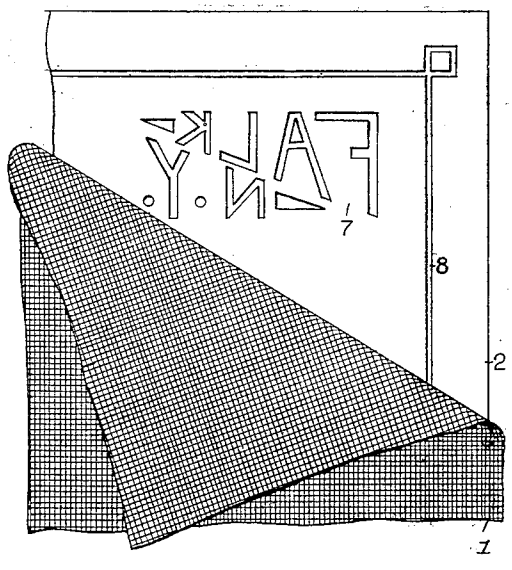


FIG. 3.

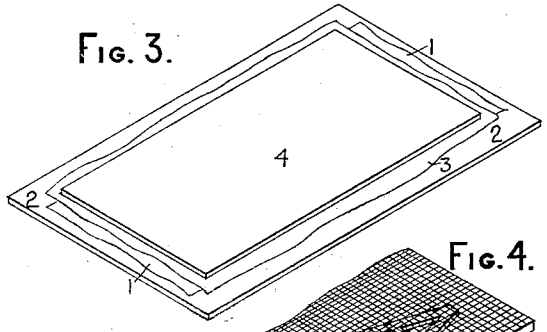


FIG. 4.

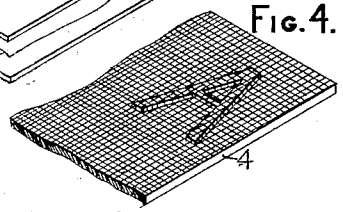
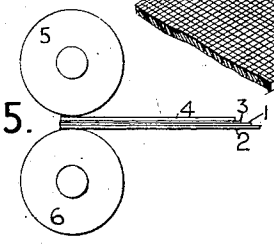


FIG. 5.



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UNITED STATES PATENT OFFICE.

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ORNAMENTING CARDBOARD, &c.

SPECIFICATION forming part of Letters Patent No. 677,459, dated July 2, 1901.

Application filed December 28, 1899. Serial No. 741,806. (Specimens.)

To all whom it may concern:

Be it known that I, JAMES WILLIAM McCABE, a citizen of the United States, and a resident of the borough of Manhattan, in the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in the Art of Ornamenting Cardboard, &c., of which the following is a specification.

This invention relates primarily to the production of a woven-fabric finish upon the surface of paper or cardboard. Heretofore a fabric effect has been imparted to cardboard by placing a sheet of woven fabric between the cardboard and a metal plate and subjecting the same to great pressure, so that the threads of the fabric were forced partly into the cardboard. Such a sheet of fabric, however, does not yield an ornamental effect, but produces simply plain impressions of the threads composing the sheet.

One of the main objects of my invention is to impart to the cardboard a finish closely resembling that of quartered oak or watered silk.

Another object of the invention is to provide a novel and economical method of embossing any selected name, trade-mark, design, border, or the like upon the cardboard and at the same time giving a fabric effect thereto, so that the name or design or the like shall appear in relief upon the cloth-finished surface of the cardboard.

Heretofore, so far as I am aware, no one has ever produced a sheet of cardboard or the like having both a fabric finish and an embossed design or the like, and no way has hitherto been known, so far as my knowledge extends, of producing such a surface except by the very costly process of engraving a plate with a woven-fabric surface and also with the design or the like to be embossed on the surface of the cardboard.

My invention consists, first, in a method of imparting a watered-silk finish to cardboard or the like, and, secondly, in a method of producing a raised design or the like upon the surface of the cardboard at the same time that a cloth finish is imparted thereto, all as will be hereinafter more fully set forth, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is an enlarged diagrammatic view of one fragment of muslin placed upon another and both secured to a plate or support. Fig. 2 illustrates a fragment of an engraved impression-plate and a fragment of a sheet of muslin used to cover the plate, one corner of the muslin being lifted to exhibit the engraving. Fig. 3 illustrates an impression-plate with two sheets of muslin thereon and a sheet of cardboard placed upon the muslin. Fig. 4 is a fragmentary view of a sheet of cardboard having a woven-fabric surface and a letter embossed thereon. Fig. 5 is a diagram illustrating the impression-plate and superposed muslin and cardboard as being passed between pressure-rolls.

In the several views the same parts are designated by the same numerals of reference.

A piece of muslin 1 is spread over the surface of an impression-plate 2 (preferably zinc) and secured thereon preferably by flour-paste, the muslin being somewhat stretched or distorted in the pasting operation, so that the threads instead of extending in straight lines at right angles to one another have a distorted or wave-like arrangement. The whole sheet is tightly stretched and stuck upon the plate. A second sheet of muslin 3 is stretched and pasted in like manner over the first sheet, so that the threads of one sheet cross or intersect the threads of the other sheet irregularly or at varying angles, or, in other words, the mesh of one sheet does not register with or match the mesh of the other sheet. A sheet of cardboard 4 is then placed upon the prepared impression-plate, and the aggregation is thereupon subjected to sufficient pressure to force the threads of both sheets to some extent into the cardboard. It will be understood that by this operation impressions from both fabrics are made upon the cardboard and that by reason of the non-registering or unmatched arrangement of the sheets said fabric impressions intersect at varying points or portions. Upon removing the cardboard from the muslin it will be found that the operation has imparted a watered-silk finish or quartered-oak pattern thereto and that an ornamental configuration or pattern is produced upon the surface thereof, said pattern corresponding to the pattern produced by or

resulting from the crossing or intersection of the two plain patterns or meshes of the muslin sheets.

At Fig. 1 is illustrated an ornamental oak pattern or grain such as is produced by the crossing of the plain meshes of two pieces of muslin or the like; but it is impracticable to illustrate by a drawing the delicately-traced patterns which may be obtained by this method or the beautiful watered-silk finish thereby obtained. An important feature of this portion of the invention is the facility with which the pattern or grain may be varied to suit different tastes or desires. I have found in practice that a very slight variation in the superposition of the muslin sheets will produce a different watered-silk or wave-like effect upon the cardboard, and in this way I have been able to economically prepare plates with different designs for different customers and also to cheaply produce an assortment of designs for an individual customer when required. The great economy of this method of producing a variety of designs will perhaps be better understood when it is remembered that heretofore it has been necessary to provide an engraved plate, which is very costly, for each different design. It will therefore be seen that I have devised a method for producing an ornamental fabric finish upon the surface of cardboard or the like and for infinitely varying the pattern or configuration of the ornamentation by an operation which is simple, expeditious, and inexpensive.

I have found that fabric too finely woven will not make an appreciable impression upon the cardboard, but that what is known in the art as "paper muslin" of a texture somewhat finer than ordinary "cheese-cloth" gives the best results when it is desired to produce delicately but distinctly lined and highly-finished surfaces; but coarser and rougher fabrics may be used, according to the character of the work to be done.

It will be noted that each of the two sheets 1 and 3 makes an impression upon the cardboard and that the gist of this portion of my invention resides in producing an ornamental fabric effect upon cardboard by making thereon crossed impressions of woven fabric, so that one set of impressions is intersected by the other set, whereby a new and joint pattern (not present in the fabric if considered by itself) is created.

The required pressure may be obtained by passing the superposed impression-sheets, muslin, and cardboard between pressure-rollers 5 and 6, as illustrated diagrammatically at Fig. 5. The pressure of the rollers may be varied according to the density or hardness of the cardboard or paper to be impressed. In using very hard paper I sometimes employ a pressure of twenty tons.

If desired, the muslin sheets 1 and 3 may be pasted upon both sides of the plate 2, so that two sheets of cardboard may be impressed at one operation. A pile of six or more prepared plates with interposed cardboard sheets may be passed simultaneously between impression-rollers.

The upper steel bed or die-plate of a reciprocating-platen press may be prepared in the same way as the zinc plates above referred to and the cardboard placed upon the lower die of the press, the impression being effected by a closing movement of the dies. If it is desired to impress both surfaces of the cardboard simultaneously, there may be placed upon the lower die of the press a zinc plate previously prepared in the described manner, so that the cardboard may be compressed between two cloth-faced plates. In this way both sides of the cardboard may be given an ornamental fabric finish.

Instead of preparing flat plates or dies in the above-described manner a curved or cylindrical plate or a roll may be properly faced by pasting superposed sheets of muslin thereon, and the cardboard may be compressed between the prepared roll and a flat bed or a second unprepared roll. If it be desired to impress both sides of the cardboard at the same time, both rolls may be faced, as set forth.

I will now describe a method of producing an embossed name or design upon the cardboard simultaneously with a fabric or woven finish. The name or design 7 is reversely engraved upon the face of the impression-plate 2, together with a border 8, if desired, as illustrated at Fig. 2, and a sheet of muslin is then pasted over the plate, so as to cover the design as well as the uncut portion of the plate. The cardboard is then placed upon the plate and the aggregation subjected to pressure in the described manner. Upon separating the cardboard from the cloth the former will be found to have received not only a cloth finish, but also the design formed in relief thereon, the design having the same fabric finish as the remainder of the card, the whole producing a pleasing effect to the eye. When desired, an ornamental fabric effect can be produced upon the cardboard at the same time as the design by the hereinbefore-described method—that is, by using two superposed sheets of muslin. If cloth-faced rolls are used for producing the fabric surface, they may be provided with the engraved design. This portion of my invention may therefore be said to consist in the method of imparting a woven effect to cardboard or the like and simultaneously producing a rilievo design thereon by the use of a cloth-faced engraved impression-plate.

The invention is particularly useful in preparing cards upon which photographs are to be mounted. It may also be used in finishing cards or paper for other purposes.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. The method of imparting a watered-silk finish to cardboard or the like, by producing irregular or unmatched superposed sheet-fabric impressions thereon.

2. The method of imparting a watered-silk finish upon cardboard or the like, by pressing superposed unmatched sheets of fabric thereon.

3. The method of imparting to cardboard or the like an ornamental fabric pattern resembling the grain of oak, by producing superposed crossed or unmatched impressions of plainly-woven fabric thereon.

4. The method of imparting to cardboard or the like an ornamental fabric pattern resembling the grain of oak, by impressing superposed and unmatched sheets of muslin or the like thereon.

5. The method of imparting to cardboard or the like an ornamental fabric pattern by subjecting it to the pressure of superposed sheets of fabric pasted upon a plate.

6. The method of imparting simultaneously to cardboard or the like both a fabric or woven finish and a rilievo design, by pressing the cardboard against a cloth-faced and engraved plate.

7. The method of imparting to cardboard or the like both a fabric or woven finish and a rilievo design, by engraving the design upon a plate, then pasting a sheet of fabric upon the plate, then laying a sheet of cardboard or the like upon the plate thus prepared, and then subjecting the whole to pressure.

8. The method of imparting to cardboard or the like both an ornamental or figured fabric effect and a rilievo design, by subjecting it to the pressure of superposed sheets of fabric pasted upon a plate having an engraved design.

Signed at borough of Manhattan, in the city of New York, in the county of New York and State of New York, this 22d day of December, A. D. 1899.

JAMES WILLIAM McCABE.

Witnesses:
FLORENCE KEELING,
ETHEL M. WELLS.