D. D. MACPHERSON.

FOLDING DEVICE FOR TREATING MULTIPLY FABRICS.

APPLICATION FILED NOV. 22, 1918.

1,305,141. Patented May 27, 1919.

FIG. 1.

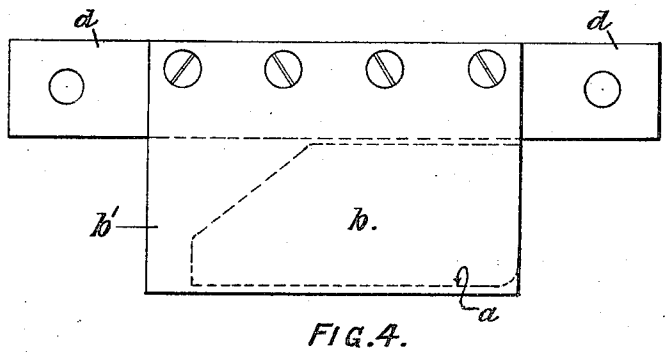


FIG. 4.

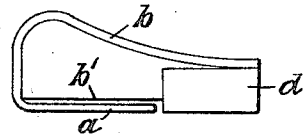


FIG. 3.

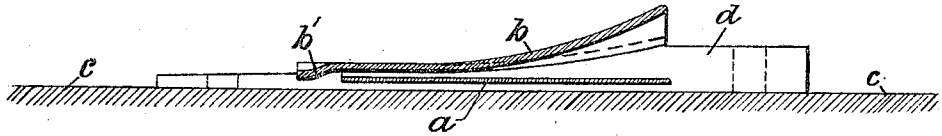


FIG. 5.

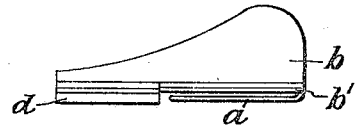
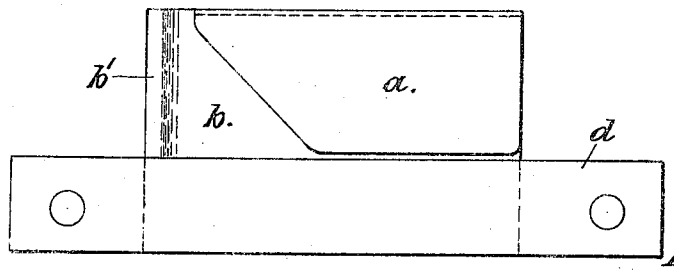


FIG. 2.



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FOLDING DEVICE FOR TREATING MULTIPLY FABRICS.

1,305,141. Specification of Letters Patent. Patented May 27, 1919.

Application filed November 22, 1918. Serial No. 263,763.

To all whom it may concern:

Be it known that I, DONALD DAVID MACPHERSON, a subject of the King of England, and resident of Radbrook Hall, near Shrewsbury, in the county of Shropshire, United Kingdom of Great Britain, have invented new and useful Improvements in Folding Devices for Treating Multiply Fabrics, of which the following is a specification.

This invention has reference to the manufacture of adhered multi-ply folded fabrics or articles of textile or other materials, used for various purposes in industry or manufactures; and the object of the invention is to provide improvements in connection with same by which such multi-ply fabrics or articles can be made more easily and continuously, as well as correctly, and in the desired way.

The invention will be described with the aid of the accompanying drawings which illustrate it, and in which Figure 1 is a plan of the means or mechanism employed, viewed from above; Fig. 2 is a plan of same, viewed from below; Fig. 3 is a longitudinal section; and Figs. 4 and 5 are respectively entrance and delivery end views.

Regarding the manipulation of the fabric or article, it is to be assumed that the material of which it is formed is relatively thin, say for example within the limits of thickness of textile or like fabrics, and that its surface will be furnished or prepared with an adhesive or sticky substance of a kind of the many which are at present used in making adhered multi-ply folded manufactures or articles, and the species of which will depend upon the kind of manufacture or article being produced, and which may be applied or manipulated hot or cold according to the character of same.

In making up the multi-ply fabric or article, (which in general form is of a relatively flat and more or less wide kind), the first fold of the strip or piece from which it is to be formed, may conveniently be folded in and adhered by hand to the required width; and subsequently, the folding and adhering of the folded plies or laminæ on to the piece is effected mechanically; and according to this invention, the means employed consists in the employment of a series of folding appliances, which while they enable the width of unfolded sticky or adhesive main piece of fabric which is being operated upon to pass without being acted upon by pressing dies or the like, fold the desired quantity or measurement along the edge, laying it down on to the main strip or piece from which the fabric or article is being made, and pressing and adhering such part to the main strip or piece. That is to say, the means employed is adapted and constructed to keep the parts of the fabric (which have the adhesive or sticky substance on their surface) apart in the manufacture, and then subsequently to bring and adhere the parts at the edge together at the moment required; while the rest of the strip or piece is not acted or pressed upon by dies or the like across its width.

The mechanical means or appliance comprises mainly two parts, a lower or dividing tongue part *a*, and an upper laying or pressing part *b;* and will be placed on a table or bed *c* upon which the operation of folding and making up the multi-ply fabric is performed. Its under surface will lie above the table or bed surface at just sufficient height to enable the main strip or piece (or it may be two or more of same) to be drawn along over the table or bed and through the appliance; and consequently, in dealing with different thicknesses of material, the underside of the tongue will stand at different heights from the table or bed surface.

The appliance may be made of steel or an alloy or other suitable metallic substance; and the tongue should be only of such a thickness as will give it the required strength and rigidity, and the thinner at the "tip" or exit end, than at the "root" or entrance.

The mechanical appliance will vary in length and width to suit different cases; and the space between the tongue *a* and the roof or upper laying part *b* is relatively more open at the entrance end, and narrows down to the delivery end, at which point the distance between the tongue *a* and the roof *b* will be equal to the thickness of the folded part of the article passing through; and as in making the multi-ply fabric, this thickness will vary and increase with the number of folded plies, the depth of this upper space for the passage of the folded fabric will be greater and greater in each succeeding appliance in series; the number of which will vary according to the number of folded plies required in the manufactured article.

Beyond this point, viz., the delivery end of the tongue *a*, the extended part b^1 of the

roof or laying member *b* is inclined or curved downward as shown, and this lip acts as a presser, and presses and sticks the folded fabric on to the main strip or unfolded piece below, it being so adjusted and arranged as to exercise a firm pressure and compression of the folded part on to the strip, at the moment when the tongue *a* permits the contact, and so insures a complete, accurate, and effective adhesion, thus by means of these holding, folding, and pressing appliances, alone, the multi-ply fabric or article is completely made.

The delivery end of the tongue plate *a* is inclined from its outer edge inward as shown, which promotes generally a better performance of the function of the appliance.

In the case shown, the mechanical appliance *a*, *b*, is fixed on the upper surface of a bar or holder *d*, in such an exact position as to permit of whatever thickness of fabric is being operated to pass between the bar *d* and the side of the tongue *a* in one case, and between the under face of the said tongue *a* and the upper surface of the table or bed *c*, to which the bar *d* is secured by screws or studs, or the like; the inclosed folds or laminæ being arranged to the exact dimension desired. The upper surface of this bar *d* is inclined, and diminishes as the roof part *b* inclines downward from the entrance to the delivery end; the mouth of which however is larger at the outer side than the inner.

Suitable guides or rollers may be used on the table or bed preceding the holding, folding, and adhering appliances, so as to guide, keep taut, and direct the fabric. For instance, as the part to be folded and adhered is passing along, it is guided at its outer edge, and also on the inside along this edge, about which it is being turned down; but any suitable guiding appliance may be used.

While in the case shown in and described with reference to the drawings, the parts for holding the folded portion of the strip or piece, and pressing and adhering it on to same, are combined in the one appliance, if desired, the appliance may be in two parts, *i. e.*, separate, and placed and used in series one behind the other.

What is claimed is:—

1. In apparatus of the character described, a support bar to be arranged upon a table or the like, a substantially horizontal dividing tongue secured to the support bar and spaced from the lower edge thereof to provide a passage between the tongue and the table, and an upper laying plate secured to the support bar above the tongue and spaced therefrom, said laying plate having a portion thereof substantially parallel with the tongue and its other portion inclined upwardly from the tongue.

2. In apparatus of the character described, a support bar to be arranged upon a table or the like, a substantially horizontal dividing tongue secured to the support bar and spaced from the lower edge thereof to provide a passage between the tongue and the table, and an upper laying plate secured to the support bar above the tongue and in spaced relation thereto, a portion of said plate being parallel with the tongue and its opposite end portion being inclined upwardly from the opposite end of the tongue, the parallel end portion of the plate extending beyond the tongue and provided with a downwardly bent portion arranged in the plane of the tongue and serving as a presser.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DONALD DAVID MACPHERSON.

Witnesses:

CHARLES ALFRED FRANCIS DIMOLINE,

CHARLES HORATIO PROBERT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."