

I. Lindsley.
Woven Fabric.

N^o 76,476.

Patented Apr. 7, 1868.

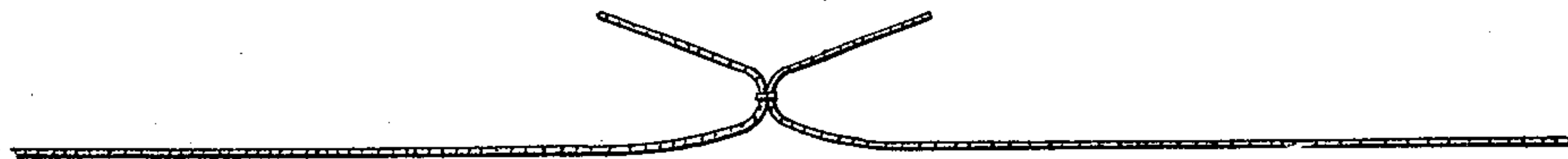


Fig. 1

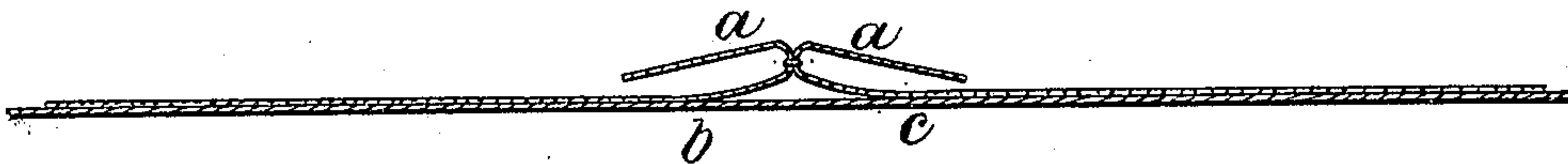


Fig. 2



Fig. 3



Fig. 4

Witnesses

David Pray.

W. C. Tibbels.

Inventor

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United States Patent Office.

ISAAC LINDSLEY, OF PAWTUCKET, RHODE ISLAND.

Letters Patent No. 76,476, dated April 7, 1868.

IMPROVEMENT IN HAIR-CLOTH.

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, ISAAC LINDSLEY, of Pawtucket, in the county of Providence, and State of Rhode Island, have invented a new and useful Improvement in the Manufacture of Hair-Cloth; and I do hereby declare that the following is a full, clear, and exact description of the same, taken in connection with the accompanying drawings, making a part of this specification, the several figures of which will be referred to as the description proceeds.

In the manufacture of hair-cloth, it is well known that the web is composed of distinct hairs interwoven with the warp, instead of a continuous weft-thread, as is the case in weaving common textile fabrics, and for this reason the width of the web that can be produced is determined by the length of the hair which composes its weft. In practice great difficulty is found in procuring hair of sufficient length to make wide cloth, that is, cloth from twenty-eight to thirty-two inches in width, such long hair being comparatively very scarce, while the relative demand for such wide cloth in upholstery, as compared with the demand for narrow widths, far exceeds the ability to produce the wide cloth from the usual sources of supply of hair suitable for such manufacture, but for the production of narrow cloth, the supply of shorter hair which is obtained with the long hair, and from other sources in commerce, is abundant, and can be supplied, for the manufacture of narrow cloth, far in excess of the demand for the same, and with comparative cheapness. The uses for narrow cloth in upholstery are very limited, and it has not been used in place of the wide cloth by sewing pieces together, because, before my invention, no method was known to the trade by which the cloth could be pieced or joined without making a seam that would disfigure the work so much that it would not be acceptable to purchasers. This is owing to the rigidity and intractable nature of the hair, which, with the usual means of forming seams in cloth, would produce a seam forming a deep groove or cavity at the junction of the pieces, which would be very conspicuous. But with some practical means of joining the narrow webs, so that the seam would not be deemed objectionable, the uses of narrow cloth in place of wide cloth in the trade would be enormously increased, and great economy would result therefrom, because the cost of production per square yard of narrow goods is less than one-half of that of wide goods.

The object of my invention is to manufacture a web of hair-cloth, of any desired width, from hair shorter than the width of the web, so that the web thus formed can be used in the trade, practically, as though it had been formed of hair as long as its entire width. This object I attain by first weaving narrow webs of cloth with short hair in the usual manner, and then by uniting these webs, until the desired width is obtained, by a mode of operation to be hereafter described, by which the joining of the narrow webs is so nicely made as to be nearly imperceptible, and gives to the face of the goods a uniform appearance throughout, so that the composite web thus made can be treated in the trade as though it had been woven in one entire width.

My invention, therefore, consists, in the first place, of a new method of joining pieces of hair-cloth, so that in practice the junction shall not be noticeable, by a series of operations which will be hereafter described, and, in the second place, of a new manufacture of hair-cloth, which consists of a web formed by a union of two or more narrow webs by means of my new method, substantially, so that it can be treated practically in the trade as though it were woven entire. In practice, it will be found generally that two narrow webs united will make a web wide enough to meet the ordinary demand of the trade, but more than two may be united, if desired, by the same mode of operation.

I will now proceed to describe the several operations to which the material is subjected in forming the union of the narrow webs, which I have practised with entire success. The two pieces to be joined are first laid together face to face in proper relation to each other, and sewed together through and through by a sewing-machine, or otherwise, with a firm seam, with silk-twist or other strong sewing-material, along the desired line of junction, generally just within the selvages, following as near as may be the line of the warp-thread. The two pieces are then opened out flat on a table, with the face downward, and the seam and parts adjacent are wet with a sponge to soften the hair and destroy some of its elasticity. Then, with a hot smoothing-iron or tailor's goose, the selvages are opened out, which leaves them in the condition shown in fig. 1 of the drawing.

This part of the operation may be done with a suitable machine by a continuous operation. The parts

adjacent to the seam are then again thoroughly wet, and the web is rolled up compactly, with the selvages outward, which has the effect to press them down close to the back of the goods, and hold them in that position. The roll is allowed to remain in that condition about twelve hours, more or less, according to circumstances, and when unrolled it will be found that the hair has absorbed the water until it has become soft and apparently somewhat gelatinous, and, having lost nearly all its elasticity, is capable of being moulded or pressed into a new form, which it will retain permanently on being dried. In this state the selvages lie upon the back of the goods, as is shown in fig. 2, without any tendency to rise up. Then the warp-threads are ravelled out of the selvages up to within two or three threads of the seam, or up to the red lines *a* of fig. 2, so as to remove a large part of the thickness and prevent the impression of the selvages from appearing on the face of the goods after pressing. Then the web is folded back and forth between plates of Russia sheet iron, as is shown in fig. 3, in the same way as pieces of cloth are folded between sheets of press-board to prepare them for pressing, until the whole is thus disposed of. These packs of cloth and sheets are then placed in a hydrostatic press, with hot iron plates between the packs, in the same way as is usually practised in pressing woollen cloths to finish them. A pressure of, say, five hundred to six hundred tons, more or less, is then put upon the contents of the press, and maintained from six to twelve hours, or until the moisture has been dried out of the cloth. It is then re-pressed, to finish the folds left by the first pressure, in the usual way, excepting that to prevent the iron plates from imparting too much gloss to the goods, I place between the plates and the face of the goods a sheet of paper.

Upon examining the weft-hairs after the process has been completed, they will be found, at the line of junction, to have taken the form shown in fig. 4, the transverse part of the bights of hair being bent nearly at a right angle at the face of the goods, and so embedded or moulded to those upon the opposite side of the seam as to bring the weft-hairs at the face into close contact, thus obliterating the cavity formed by the seam before it was pressed. This result appears to be due to the action of the pressure upon the greater thickness at the seam caused by the two thicknesses of cloth and the sewing-thread, and also that the length of weft between two points on either side of the seam, as from *b* to *c*, fig. 2, when measured on the surface of the cloth, is greater than the distance on the plate in a direct line, so that this greater length, when brought down to the plate by pressure, tends to force the bights of the weft-hairs hard against each other and mould them into the form shown in fig. 4.

In order to more effectually conceal the line of union of the narrow webs, I propose, in some cases, if it shall be found acceptable to the trade, to weave the cloth with stripes of any desired style, formed by changing the figure of the weaving or the character of the warp, or both, and to join the webs at the outside edge of the outside stripe of one of them, meeting it with a proper width of the ground-figure of the other, so that the stripe appears to break the ground-figure equally upon either side of it, thus completely concealing the joint.

It is obvious that my new method of joining two pieces of hair-cloth may be employed in the trade for other purposes than forming a wide, continuous web, and I intend so to employ it, and I also intend to employ it in joining other fabrics made with separate wefts of a rigid nature, which may be treated in a similar manner.

What I claim as my invention, is—

The method herein described of uniting woven fabrics, having a face of hair with an imperceptible joint, by stitching the fabric through and through where it is to be united, and while the hair face is in a semi-plastic condition produced by saturation, flattening out and pressing, with protracted pressure, this sewn joint between metal or like surfaces while subjected to a suitable degree of heat to mould and set the hair face at the joint permanently, so as to produce an unyielding joint and an unbroken hair face at the joint, substantially as specified.

I also claim, as a new manufacture, a continuous web of hair-cloth, composed of two or more narrow webs, such as are usually woven from short hair-weft, united after the sewing, moistening, and pressing process herein described, and in which a portion of the warp-threads are removed before pressing, and the bights in the weft-hairs of the united joint are bent and moulded at right angles to the face of the fabric, and into or against each other, to conceal the joint, substantially as specified.

Executed, December 17, 1867.

ISAAC LINDSLEY.

Witnesses:

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DAVID PRAY.