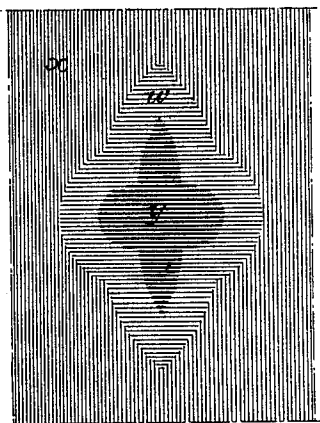


A. HEALD.
WOVEN FABRIC.

Patented Mar. 16, 1897.



Inventor:
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by his Attorneys
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UNITED STATES PATENT OFFICE.

ALFRED HEALD, OF PHILADELPHIA, PENNSYLVANIA.

WOVEN FABRIC.

SPECIFICATION forming part of Letters Patent No. 578,742, dated March 16, 1897.

Application filed June 8, 1896. Serial No. 594,722. (Specimens.)

To all whom it may concern:

Be it known that I, ALFRED HEALD, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain improvements in Woven Fabrics, of which the following is a specification.

My invention consists of a certain improvement in the woven fabric for which I obtained Letters Patent of the United States numbered 198,615, dated December 25, 1877, the object of my present invention being to obtain additional color effects in the pattern of the fabric without the use of any additional threads. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a face view of a piece of fabric constructed in accordance with my invention, but without any attempt to represent the weave. Fig. 2 is an exaggerated section of the fabric, taken in the direction of the warp. Fig. 3 is a like exaggerated section of the fabric, taken in the direction of the weft; and Figs. 4 and 5 are views illustrating methods of combining backing-threads with the fabric.

In the fabric forming the subject of my above-mentioned patent I combined ingrain and damask plies, which were transposed according as either was required to appear upon the face of the fabric, the other ply going to the back. The ingrain ply was composed of interwoven warps, such as *a a'*, and wefts, such as *A A'*, and the damask ply was composed of face warps, such as *b*, and filling threads or wefts, such as *B*, alternated with fine wefts, such as *c*, with which one or other of the warps of the ingrain plies engaged, so as to confine the two plies of the fabric firmly together. Viewed in one light, therefore, the ingrain ply of my patented fabric took the place of one of the face warps of a true damask fabric, while viewed in the other light the damask ply took the place of the second ply of a true ingrain fabric.

In the patented fabric the weft-thread *B* of the damask ply was simply used as a stuffer-thread, and the aim of my present invention is to render this thread also available in the formation of the pattern. For this purpose I make the filling-thread *B* of the same material as the other threads of the fabric or of a material which will permit of its use with

said other threads in the formation of the pattern upon the face of the fabric, and in those portions of the fabric where this filling-thread is to appear in the pattern I sink the damask warps *b* so that the weft-threads *B* will overlie the same, the damask warps being down and embedded between these damask wefts *B* on the face of the fabric and the ingrain ply on the back of the fabric. Thus in the drawings the portion *w* of the fabric is one in which the ingrain ply is on the face and the damask ply is on the back, while in the portion *x* of the fabric the damask ply is on the face, damask warps being up, and the ingrain ply is on the back, and in the portion *y* of the fabric the damask weft is up or on the face, the ingrain ply on the back, and the damask warp is down and between the two.

Wherever the damask weft appears on the face of the fabric it is tied down by one of the ingrain warps, preferably by that one which does not engage the fine weft *c*.

When a double-faced fabric is not desired, heavy wefts *m* may be applied to the back of the fabric and bound thereto either by the ingrain warps, or one of them, as shown in Fig. 4, or by a special warp *n*, engaging with the backing-threads and with wefts of the face fabric, as shown for instance in Fig. 5.

The term "damask," as used in this specification, means a web or fabric in which warps are combined with thick and thin wefts without regard to the particular shedding, except that the thin wefts in all cases serve as binders.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. A woven fabric in which an ingrain ply composed of interwoven warps and wefts, and a damask ply composed of warps and thick and thin wefts are combined as described, whereby the face of the fabric is composed in part of an ingrain ply with the warps up, in part of a damask ply, and in part of damask weft-threads overlying the damask warps, substantially as specified.

2. A woven fabric in which an ingrain ply composed of interwoven warps and wefts, and a damask ply composed of warps and thick and thin wefts are combined as described, whereby the face of the fabric is composed in

part of an ingrain ply, in part of a damask ply with the warps up, and in part of damask weft-threads overlying the damask warps and tied down by the ingrain warp, substantially as specified.

5 3. A woven fabric in which an ingrain ply composed of interwoven warps and wefts, a damask ply composed of warps and thick and thin wefts, and a backing-ply, are combined
10 as described, whereby the face of the fabric is composed in part of an ingrain ply, in part of a damask ply with the warps up, and in

part of damask wefts overlying the damask warps, the backing-wefts being united to the face fabric by means of warp-threads engaging said backing-wefts and wefts of the face fabric, substantially as specified. 15

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

ALFRED HEALD.

Witnesses:

JOS. H. KLEIN,
F. E. BECHTOLD.