

No. 641,007.

Patented Jan. 9, 1900.

C. W. GILBERT & C. C. SHEPARD.
WOVEN FABRIC.

(Application filed Oct. 16, 1899.)

(No Model.)

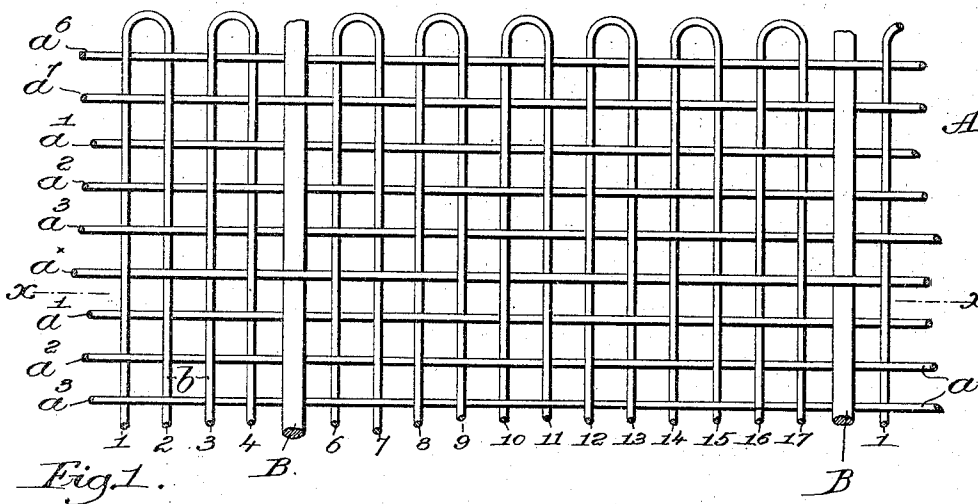


Fig. 2.

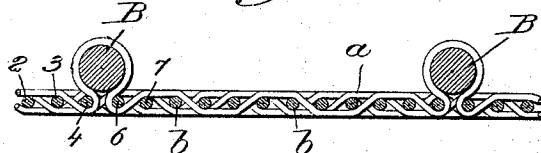


Fig. 4.

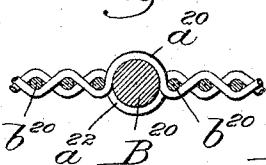


Fig. 5.

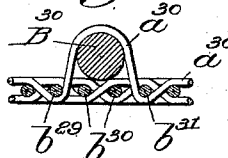
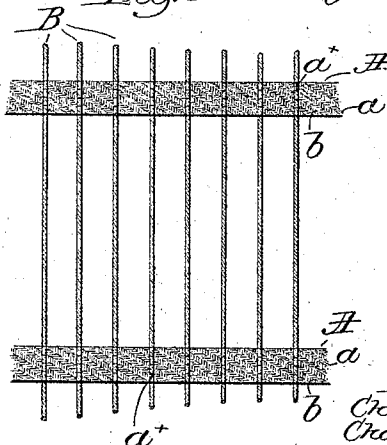


Fig. 3.



witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES W. GILBERT AND CHARLES C. SHEPARD, OF WORCESTER, MASSACHUSETTS, ASSIGNORS TO THE L. C. CHASE & COMPANY, OF BOSTON, MASSACHUSETTS.

WOVEN FABRIC.

SPECIFICATION forming part of Letters Patent No. 641,007, dated January 9, 1900.

Application filed October 16, 1899. Serial No. 733,729. (No model.)

To all whom it may concern:

Be it known that we, CHARLES W. GILBERT and CHARLES C. SHEPARD, citizens of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented an Improvement in Woven Fabrics, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention has for its object the production of a novel textile fabric comprising a series of separated and comparatively narrow woven bands connected by transverse and usually large or coarse wefts extending from one to the other side of the fabric across the faces of the bands and firmly bound thereto in a peculiar manner by binder-warps, so that the bands cannot slip or change their position relative to said connecting-wefts. Such fabric is very largely used for fly-nets to protect horses or other animals from the attacks of flies and other insects; but heretofore the structure has been such that the woven bands will slip or change their position relative to the connecting-wefts, owing to the insufficient hold of the binder-warps thereupon. In the present invention the binder-warps are brought into engagement with the band-connecting wefts in a peculiar manner, whereby relative slipping of the bands or wefts is absolutely prevented.

Figure 1 is a plan view of a portion of one of the bands of the novel fabric, the warp and weft being opened out, showing the band-connecting face-wefts crossing the band. Fig. 2 is an enlarged sectional view taken on the line xx , Fig. 1, between two adjacent warps to show the peculiar manner in which the binder-warps hold the face-wefts and bands firmly together. Fig. 3 is a plan view of a portion of the fabric as it actually appears, and Figs. 4 and 5 are longitudinal sectional views showing the old mode of binding the face-wefts onto the bands.

Referring first to Fig. 1, a series of narrow woven bands A, each composed of a group of warps a and wefts or filling b and having selvage edges, are shown as separated from each other any desired distance, a series of

usually large or coarse connecting-wefts B being extended across the faces of the bands at desired intervals and secured to the bands by one or more binder-warps a^x in each group. 55

In use the fabric of suitable size is thrown over the animal, the band-connecting wefts extending in the direction of the length of the horse, while the bands cross the back and shoulders, the bands thus forming the supporting portion of the fabric. 60

Heretofore in fabrics of this general character those of the warps in each band-forming group which have been selected to form binders have been passed about the large band-connecting wefts in different ways, two forms being shown in Figs. 4 and 5; but the said wefts were not firmly held upon the bands, and the fabric would not retain its proper proportions and arrangement. Referring to Fig. 4, the band-connecting wefts B^{20} are inserted at desired intervals to take the place at such picks of the band-wefts b^{20} , a very common form of weave being shown, one of each pair of binder-warps a^{20} passing above the weft B^{20} , while the other binder a^{22} passes beneath it; but it is impossible to tightly grip the large wefts thus introduced into the bands, and the fabric possesses very inferior stability or endurance. In Fig. 5 the band-connecting weft B^{30} is a true face-weft, as it rests upon the face of the band, and single binders a^{30} are used, the face-weft resting upon and between two adjacent body-wefts b^{30} , while the binder, passing over the band-connecting weft B^{30} , skips the two wefts b^{30} referred to and is passed under the wefts b^{29} b^{31} of the immediately preceding and following picks. The comparatively long portion of exposed binder-warp soon stretches and loosens its hold upon the face-weft, so that the bands can slip and change their positions. 80 85 90

In weaving fabric of this character it will be obvious that the introduction at intervals of larger wefts requires that such of the warps as are to serve as binders shall be led from a separate beam, for in a given length of fabric the binder-warps will necessarily be longer than the mere body-warps. Now, referring more particularly to Figs. 1 and 2, which most clearly show the nature of the present invention, a twill weave is shown, the group of 95 100

warps in a band being arranged in subgroups of body-warps $a^1 a^2 a^3$ and a binder a^x , the warps $a^6 a^7$, Fig. 1, forming a plain selvage with the body-weft b , which selvage is repeated at the opposite edge of the band. The body-warps and the binder-warp of each subgroup form, with the wefts, the woven band, the width of the latter determining the number of subgroups, the fabric being woven readily on some form of ribbon-loom having a separate shuttle for each band, the shuttles carrying the weft or filling b . At certain picks, however, usually much larger or coarser wefts B are introduced, extending from one to the other side of the fabric and lying upon the faces of the bands, said wefts being bound thereto by the binder-warps and connecting the several bands. Supposing that picks 1, 2, 3, and 4 have been woven, Fig. 1, when the shed is formed for the next pick all of the body-warps will be in one plane of the shed and the binder warp or warps a^x in the other plane. Then a band-connecting weft B is introduced, preferably by hand, the shed is changed, the binder and body warps changing places as to the planes of the shed, and a body-weft is introduced at the sixth pick and weaving of the bands continued. When the body-weft is beaten up, (see Fig. 2,) it will be seen that the band-connecting weft lies on the face of the band above and between the two adjacent picks of body-weft, under each of which the binder-warp passes, the beating up of the weft drawing the binder tightly about the face-weft B and locking said binder from slackening thereafter. With the weave herein shown the face-wefts can, if desired, be introduced at each recurring pick, wherein the body-warps are in one and the binder-warps in the other plane of the shed; but herein the face-wefts are introduced at greater intervals, two of such picks, in which the body and binder warps are in different planes of the shed, intervening between each pair of face-wefts. The invention, however, is not restricted to bands of any particular widths nor to any number of bands, nor is it restricted to the particular intervals herein

shown at which the face-wefts are introduced. The weave of the bands may also be varied so long as the band-connecting wefts lie upon the faces of the bands and the binder-warps pass over such wefts and under the two body-wefts adjacent the face-weft and above and between which the latter is located.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, a fabric composed of a plurality of woven bands, one or more warps of each group included in a band serving as a binder, or binders, and a series of band-connecting wefts bound by the said binding-warps to the several bands and lying upon the faces of the bands between two adjacent wefts of the latter under which a binder-warp passes.

2. As a new article of manufacture, a fabric composed of a plurality of closely-woven bands, one or more warps in each serving as a binder or binders, and a series of coarse band-connecting wefts bound by the said binder-warps to the several bands and extended from one to the other side of the fabric, said wefts lying upon the faces of the bands between two adjacent wefts of the latter under which a binder-warp passes.

3. As a new article of manufacture, a fabric composed of a plurality of closely-woven separated bands, a plurality of regularly-recurrent warps in each serving as binders, and a series of transverse band-connecting wefts extended across the bands from one to the other side of the fabric, said wefts being bound by the binder-warps to the several bands and lying upon the faces of the latter between two adjacent wefts in the band under which the binder-warps pass.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES W. GILBERT.
CHARLES C. SHEPARD.

Witnesses:

HENRY F. HARRIS,
CHARLES F. MARSTON.