

L. J. Knowles. Woven Fabric.

N^o 46,679.

Patented Mar. 7, 1865.
Fig. 1.

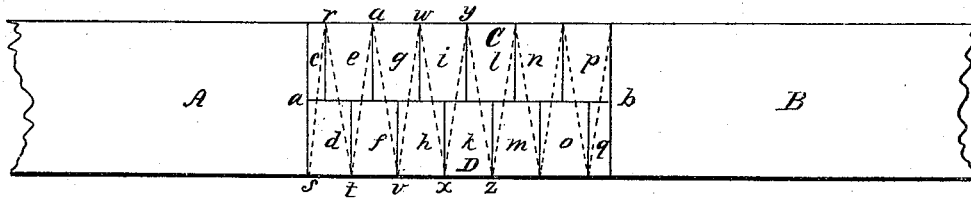


Fig. 2.

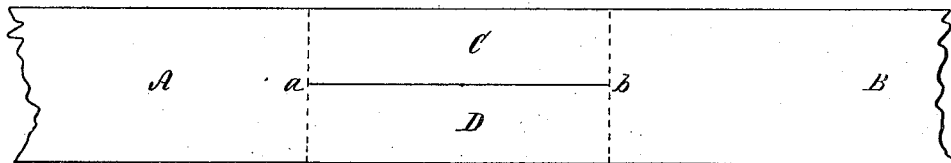


Fig. 3.

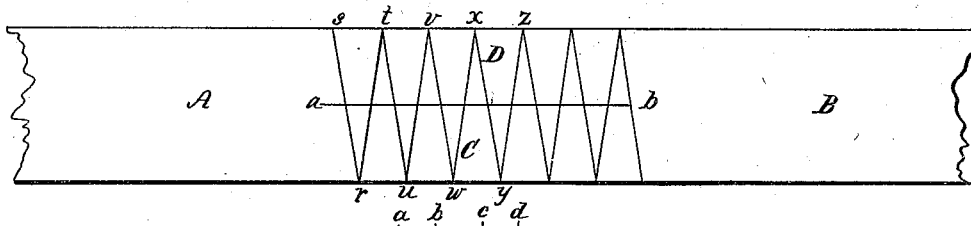


Fig. 4.

Witnesses.

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LUCIUS J. KNOWLES, OF WARREN, MASSACHUSETTS.

IMPROVEMENT IN THE MODE OF WEAVING BUTTON-HOLES IN FABRICS.

Specification forming part of Letters Patent No. 46,679, dated March 7, 1865.

To all whom it may concern:

Be it known that I, LUCIUS J. KNOWLES, of Warren, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in or Mode of Weaving Fabrics with Button-Holes; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a diagram illustrative of my process of weaving. Fig. 2 is a sketch of a piece of webbing with a button-hole in it. Fig. 3 is an under side view of a woven webbing, the button hole, and the weft-threads crossing the latter on the external surface of the fabric.

In the mode heretofore practiced of weaving suspender-webbing with button-holes therein it has been customary to employ a loom having two reeds, or what is termed a "divided" reed, one entire portion, C, of the webbing on one side of each button hole being woven before the other or fellow portion, D, (see Fig. 2,) is woven.

In Fig. 2, *a b* may be supposed to represent a button-hole made in a band, A B, by weaving the two marginal portions C D on opposite sides of the button-hole separate from one another. The part A of the webbing or band being woven, it becomes necessary to next weave in succession the two marginal portions C D, after which the part B is to be woven.

The weaving of one entire marginal part, C or D, before commencing to weave the other, necessarily requires two separate reeds, one to each part, one being out of operation while the other may be in action to effect the driving up of the weft. The reason why two reeds or a divided reed becomes essential under such circumstances is, because after one of the marginal portions may have been completed, it would estop the single reed from going back far enough to commence the weaving of the other portion.

With my improved process of weaving a strip of suspender-webbing or other fabric with one or more button-holes in it, a single reed only becomes necessary for the weaving of the marginal portions of each button-hole, as well as the other portions of the strip, as in carrying out my process I weave but a small part of one marginal portion before proceeding to weave a small part of the other, weaving parts of the two portions alternately—that

is to say, if in Fig. 1 we suppose *a b* to exhibit the button-hole in the strip of webbing A B, and between the marginal or flanking portions C D thereof, I weave the said two marginal portions in the order represented by the letters *c d e f g h*, &c. In other words, I first weave the small part *c* of the marginal portion C, and after having completed the weaving of it, I "flush the warps", or, in other words, run the weft-thread outside of the fabric, and commence and carry on the weaving of the part *d* of the other marginal portion, D. In Fig. 1 the dotted lines *r s* will serve to represent the weft-thread carried from the termination of the part *c* to the commencement of the part *d*. Having woven the said part *d*, I next flush the warps or run the weft-thread again outside of the fabric, and from the termination of the part *d* over to that of the part *e*, and commence and continue to weave the small part *e* of the part C. By continuing to weave alternately parts of each of the marginal portions C D, and flushing the warps or running the weft outside of the fabric, preparatory to weaving the second part, *d*, and each of the others, the two marginal parts C and D flanking the button-hole may be woven, the small part of each woven at any one time being of a length which will allow the reed to beat up the weft while the next succeeding portion may be in the act of being woven. Thus the weaving alternately of increments of the two marginal portions and flushing the warps or running the weft thread across and outside of the fabric between the weaving of any two consecutive increments constitutes an improved process of weaving or forming a button-hole in a fabric or strip of webbing, which, after being manufactured, may have the superfluous weft-threads *r s*, *r t*, *t u*, *u v*, &c., (see Figs. 2 and 3,) on its outer surface and crossing the button-hole, cut or removed therefrom.

In the weaving of suspender-webbing or other fabrics of like character with button-holes, I prefer before running the weft-thread at any time from one marginal portion to the other, during the weaving of the two marginal portions in accordance with my improved process, to run the last shoot directly through the middle of the fabric or between the upper and lower sets of warps, the binding-warps serving to secure the "shoot" in place. I also, directly after each weft-thread has been

carried from one marginal portion to the other and on their outside surfaces, run the first shoot of the increment next to be woven between the upper and lower sets of warps. This carrying the weft-thread between the upper and lower sets of warps may be illustrated by Fig. 4, in which, if we suppose *A* to exhibit the webbing being woven, *a b* will represent the upper, and *c d* the lower, set of warps. The shoot of filling-thread is carried between the two sets, as shown at *e*. In this figure the binding-warps are not shown, such being supposed to be employed with the main set of warps in order to form the webbing, which, without the binding-warps, would, in many, if not all, cases be tubular. The object of so carrying the first and last shoots through the fabric is twofold—viz., the securing of the shoot therein in such manner as to prevent it from being easily drawn out of place after the weft-threads crossing the outer surface of the fabric may have been cut therefrom, and also so that the shoot shall not interfere with the weaving of the weft into either of the sets of warps.

In the weaving of some kinds of webbing

it may not be convenient to carry the weft-thread entirely across the outer surface of the two marginal portions, in which case it may be run partially across them, and still cross the button-hole.

I claim—

1. My improved mode, substantially as described, of weaving a fabric with button-holes, the same consisting in the weaving alternately of increments of the two marginal portions inclosing the button-hole and running the weft-thread on the outside of the fabric between the weaving of any two consecutive increments, the same being essentially as hereinbefore explained.

2. In combination with my said improved process or mode of weaving webbing with a button hole, the running of the first and last shoots of the weft of each increment of a marginal portion between the upper and lower sets of warps, the same being for the objects specified.

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Witnesses:

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