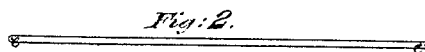
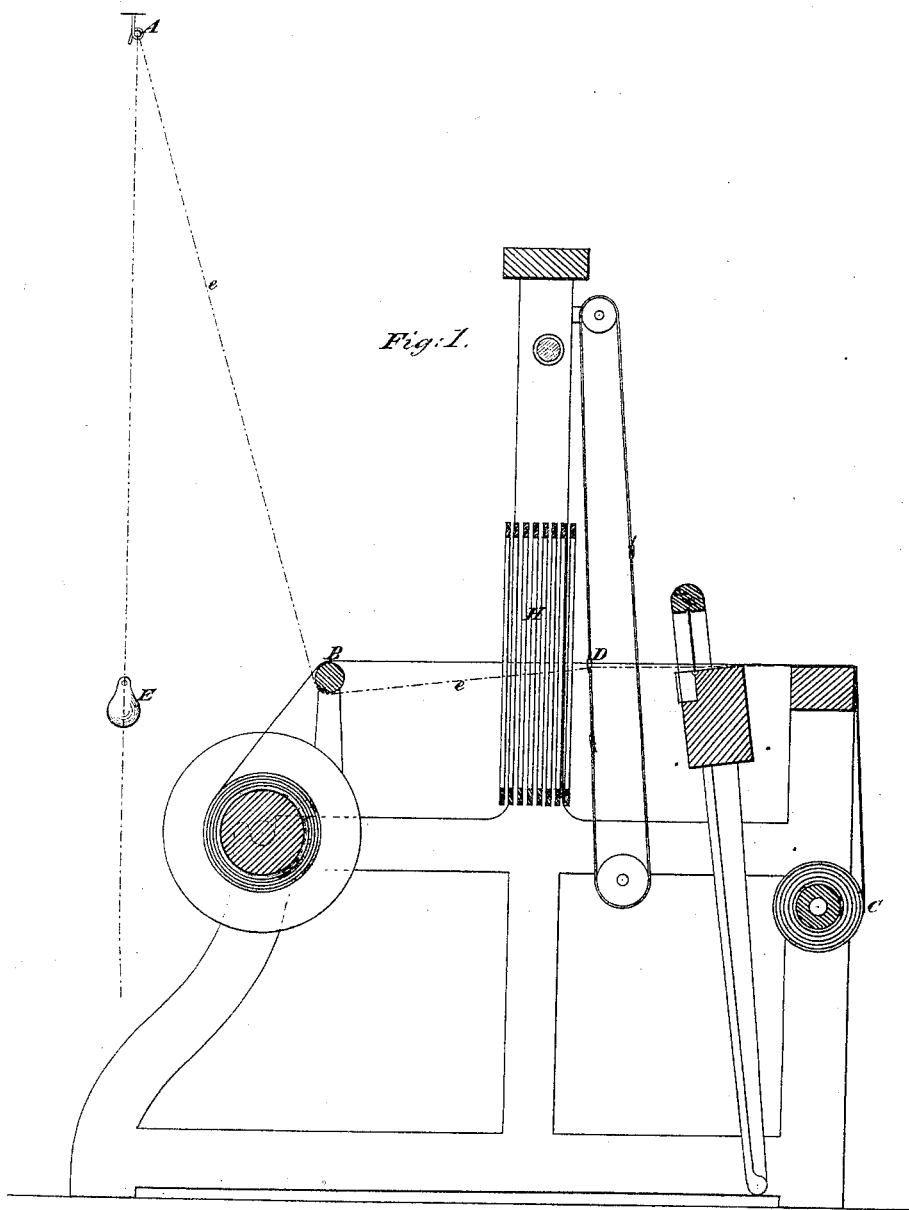


G. Smith,

Loom.

No. 111,783.

Patented Feb. 14, 1871.



Witnesses:  
Geo. Haynes  
Herd Kuehn

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# United States Patent Office.

GUILFORD SMITH, OF SOUTH WINDHAM, CONNECTICUT.

Letters Patent No. 111,783, dated February 14, 1871.

## IMPROVEMENT IN WEAVING TUBULAR FABRICS.

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, GUILFORD SMITH, of South Windham, in the county of Windham and State of Connecticut, have invented a new and useful Improvement in Weaving Tubular Fabrics in a Flat Loom; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification.

In the weaving of certain kinds of tubular fabrics in a flat loom much difficulty has been experienced in keeping the filling so extended as to prevent it from drawing the warp-yarns into a huddle at and near the edges, or those parts of the fabric which are woven nearest the sides of the loom, and thus producing irregularities in the texture of the fabric.

The object of this invention is to overcome this difficulty, and to keep the fabric so extended laterally, particularly at the filling point, that the weaving will be perfectly uniform throughout the whole of a piece woven; and to this end

It consists in the employment of two twines or cords of sufficient strength passing through the loom, one at each side of and parallel with the warp, and kept at a suitable tension by weights or their equivalents, and otherwise so controlled that the fabric is woven over or around them without their being incorporated into it.

In the accompanying drawing—

Figure 1 is a vertical longitudinal section of a loom, illustrating my invention, and

Figure 2 is a transverse section of the woven tubular fabric, having the extending twines or cords *ee* within it.

The loom is constructed and organized in the usual way for weaving tubular fabrics, and, in addition to the usual harness H, there are arranged in front of such harness two additional heddles, D, one at each side of the loom, arranged at a distance apart equal to the width of the double fabric to be woven. These heddles, through which the extending twines or cords

*ee* pass, are so operated that the weft will pass over them and under them without incorporating them into the web.

The twines or cords *ee*, of which a suitable supply is provided at the rear of the loom, pass through or over hooks, eyes, or pulleys, A, suitably secured above, thence under the whip-roll B of the loom, thence through the heddles D and the reed, and are taken up within the woven fabric on the cloth-beam C; and they have suspended from them, in rear of the loom, weights, E, by which they are kept at such tension as to prevent them from being drawn toward each other by the filling, and to make them keep the fabric extended laterally in such manner as to prevent the warp-yarns from being huddled together.

As the weaving proceeds, the weights E, which are gradually raised by the operation, must be from time to time detached, and re-attached further back or lower down on the cords or twines.

When the piece is complete the extending twines or cords *ee* are drawn out.

The extending cords or twines should be as small as is consistent with proper strength, and, preferably, smaller than the warp of the woven fabric. They are made of hemp, linen, cotton, or other fiber, and so spun or twisted as to obtain the strength necessary.

It is obvious that springs or some other devices might be substituted for the weights E to produce the necessary tension of the cords or twines; but the weights are the simplest and, I believe, the most effective contrivances that can be used.

I claim as my invention and desire to secure by Letters Patent—

The extending twines or cords *ee*, applied and controlled substantially as herein described, and passing through the tubular fabric in the weaving operation without being incorporated therein.

GUILFORD SMITH.

Witnesses:

L. C. KINNE,  
A. S. WINCHESTER.