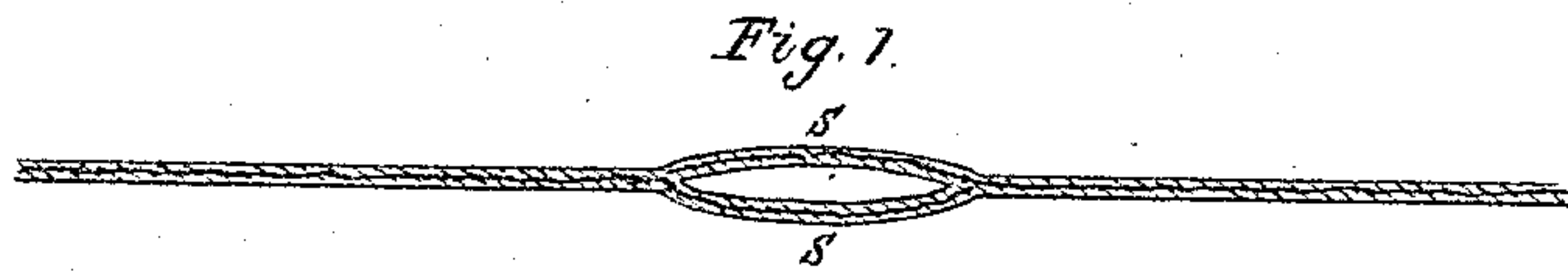
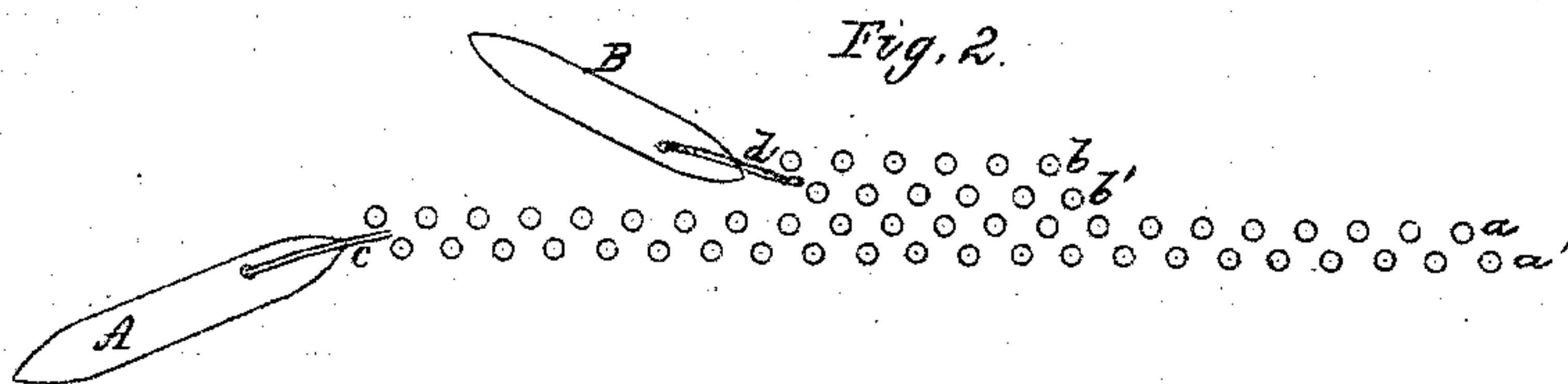


THOMAS ISHERWOOD.

Improvement in Woven Fabrics.

No. 115,859.

Patented June 13, 1871.



Witnesses.

S. H. Piper.

L. N. Moller.

Thomas Isherwood

by his attorney

R. M. Eddy



# UNITED STATES PATENT OFFICE.

THOMAS ISHERWOOD, OF RAMSBOTTOM, ENGLAND.

## IMPROVEMENT IN WOVEN FABRICS.

Specification forming part of Letters Patent No. 115,859, dated June 13, 1871.

*To all persons to whom these presents may come:*

Be it known that I, THOMAS ISHERWOOD, of Ramsbottom, county of Lancashire, England, have invented a new and useful Manufacture, Fabric, or Woven Cloth; and do hereby declare the same to be fully described in the following specification, reference being had to the accompanying drawing in illustration of such cloth and the means and method of its formation.

The cloth constituting my invention is woven with one or more lengthwise sections of double the thickness of the rest or body, the section being either tubular or having its warps carried and connected by the weft or filling-threads.

In weaving this cloth I add to the main warps, where a stripe or section is desirable, an auxiliary set of warps; and I use, in weaving the cloth, one shuttle, with its filling-thread, for the body warps, and another shuttle and a filling-thread to each set of auxiliary warps.

The process of weaving the fabric may be thus described: First raise all the auxiliary warps and thread the body shuttle through the main warps. Next depress out of the way of the main portions of the main warps that or those portions of them which are directly below the auxiliary warps, which I call their fellow portions, and, at the same time, bring the auxiliary warps down and cross them and the main warps not depressed, and throw the shuttle back. Next cross the auxiliary warps of each set and throw its shuttle through them, after which cross the warps of the fellow portion of the main warps and throw the said shuttle back through them. So continue to weave. In this way the fabric produced will be tubular in one or more lengthwise stripes, and the cloth of the tube will have the same thickness all around as the next adjacent cloth, although, when flattened together, the tube stripe will have double the thickness of the next adjacent cloth.

If desirable to interweave the auxiliary warps with their fellow portions of the main warps, this may be done, using for each stripe produced a separate auxiliary shuttle with its weft, the body of the cloth being woven with one or what I term a main shuttle and its weft.

Figure 1 of the drawing is a transverse section of the cloth as woven with one double section, shown at S S, the section in this case being tubular. Fig. 2 is an illustration of the main and auxiliary warps to effect the weaving, *a a'* being the main warps, and *b b'* the auxiliary sectional warps, those portions of the main warp which are immediately below the warps *b b'* being termed their fellow portions.

In Fig. 2 the two shuttles are shown at A B, with their filling or weft-threads *c d*.

I am aware that a cloth has heretofore been made with longitudinal portions of it tubular; but in such cases the tubular parts were of even thickness with the rest of the cloth; but in my cloth each tubular or striped part has a thickness double that of the next contiguous part of the cloth, resulting from the use of the auxiliary striping-warps and the auxiliary shuttles, one for each stripe to be made in the cloth.

I am aware that, in making what are termed plyed goods, such as two-ply or three-ply carpets, for instance, two or more shuttles have been used. All such cloth is very different from mine, in which the stripes have a double thickness of the rest of the cloth, which is not the case with the two or three ply goods.

My cloth is specially designed for sails for navigable vessels, and to save the necessity of making such sails of narrow strips overlapped at their edges and then sewed together in order to give strength to the sail by thus overlapping the strips and sewing them by two or more rows of stitches. By having the cloth made with stripes of double the thickness of the rest of it I can use very wide or very much wider goods in making sails, and thus save a large amount of labor and expense in their manufacture, and render them preferable in many respects, and less liable to become worn out while in use.

My invention differs materially from any thing or fabric described in the provisional specification filed by Robert Rule, with his petition, dated March 10, 1869, for a British patent. It also differs materially from any thing or fabric described in the specification of Edward Land's British patent, dated February 22, 1859. In neither of the said patents is there described any method of weaving by



means of main and auxiliary warps and separate shuttles operating, as hereinbefore explained, to form a tubular-striped fabric.

I make no claim, therefore, to any fabric described in the said provisional patent of Land; nor do I claim a fabric made with solid or non-tubular stripes, nor one of tubular stripes of like thickness with the space or spaces of the fabric between such stripes.

I claim as my invention—

1. The new or improved fabric as made with the main and auxiliary warps and the main and auxiliary fillings carried by separate shuttles, all as described, each longitudinal tubu-

lar stripe of such fabric having a thickness double that of the part of the cloth next adjacent to it, all as specified.

2. The mode, substantially as hereinbefore explained, of weaving such new fabric or cloth, viz., by the main and auxiliary warps, and by fillings carried by separate shuttles operating with said warps, in manner as hereinbefore described.

THOMAS ISHERWOOD.

Witnesses:

R. H. EDDY,  
J. R. SNOW.