No. 848,189. PATENTED MAR. 26, 1907.

G. D. MOORE.

TUBULAR FABRIC AND METHOD OF MAKING THE SAME.

APPLICATION FILED SEPT. 6, 1904.

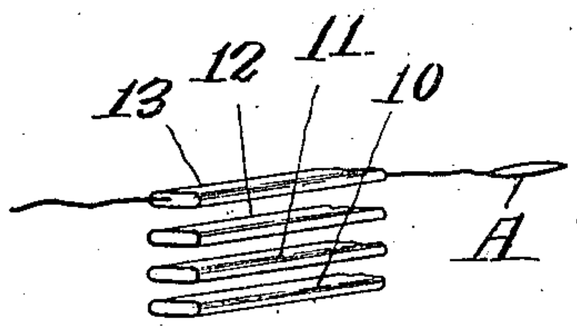

Fig. 1.

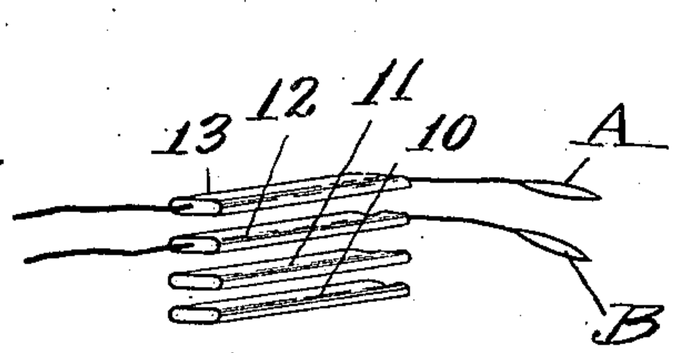

Fig. 2.

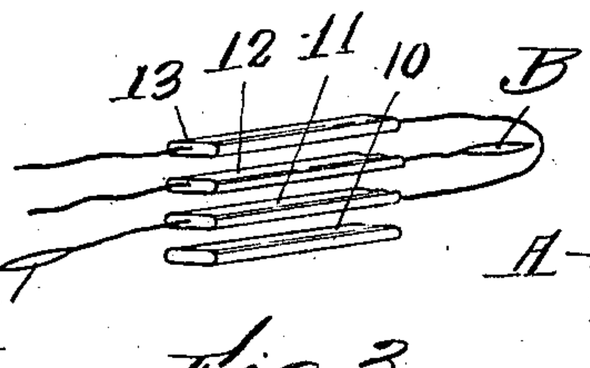

Fig. 3.

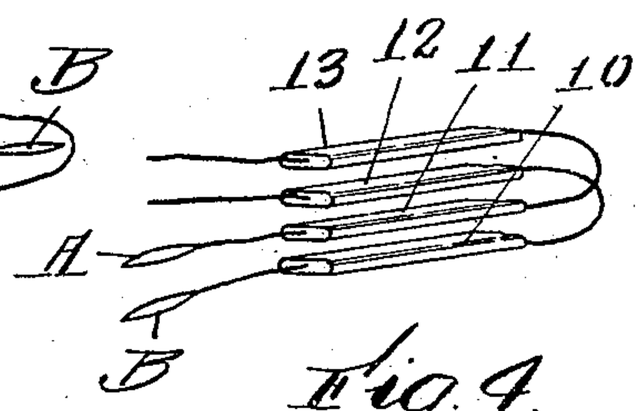

Fig. 4.

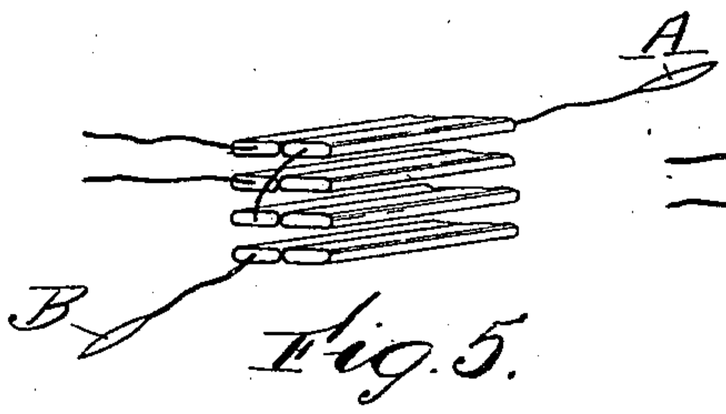

Fig. 5.

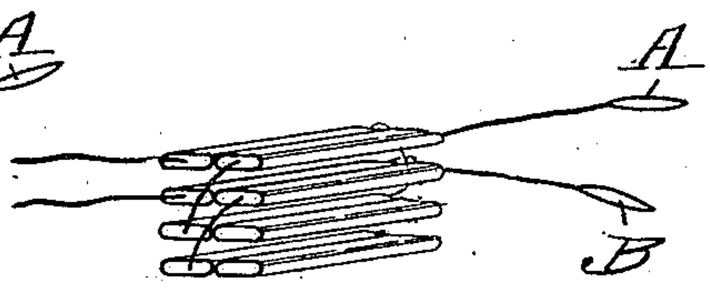

Fig. 6

Fig. 7.

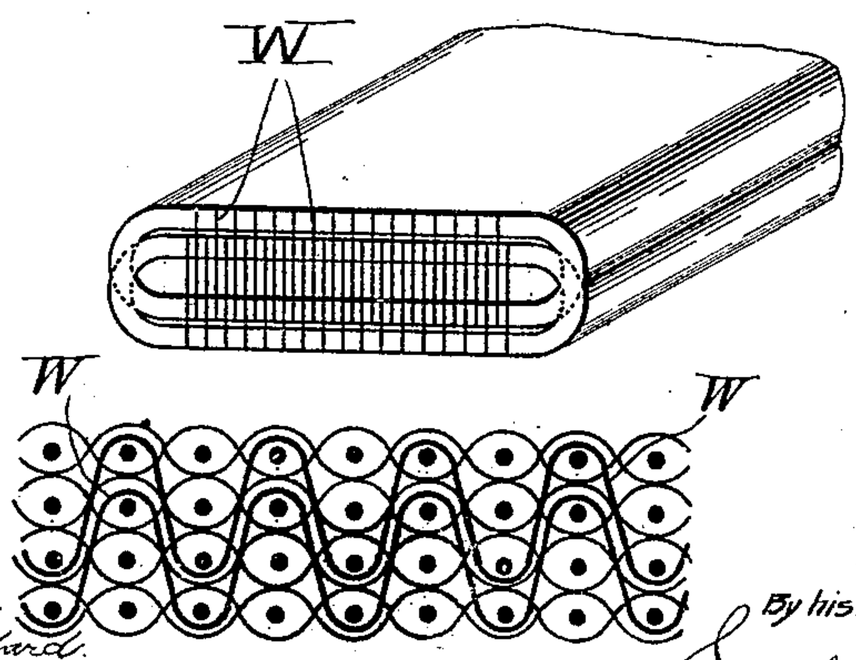

Fig. 8.

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UNITED STATES PATENT OFFICE.

GEORGE D. MOORE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO MULTIPLE WOVEN HOSE & RUBBER CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

TUBULAR FABRIC AND METHOD OF MAKING THE SAME.

No. 848,189. Specification of Letters Patent. Patented March 26, 1907.

Application filed September 6, 1904. Serial No. 223,375.

To all whom it may concern:

Be it known that I, GEORGE D. MOORE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Tubular Fabric and Method of Making the Same, of which the following is a specification.

This invention relates to a multi-ply textile fabric especially adapted for use as belting and to a method of weaving the same on a multiple-shuttle loom.

The especial object of this invention is to provide belting fabric having uniform selvages at opposite sides.

To this end this invention consists of a belting fabric formed by two or more interlocked flat tubes, and of the method of weaving the same, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying drawing, Figures 1 to 6 are diagrammatic views illustrating successive steps in weaving a fabric according to this invention. Fig. 1 illustrates the travel in one direction of the shuttle, which forms the upper one of the interlocked tubes. Fig. 2 illustrates the travel in one direction of the shuttle, which forms the lower one of the interlocked tubes. Fig. 3 illustrates the return travel of the shuttle, which forms the upper one of the interlocked tubes. Fig. 4 illustrates the return travel of the other shuttle. Fig. 5 illustrates an operation similar to that shown in Fig. 1 taking place in connection with a subsequently-formed shed. Fig. 6 illustrates an operation similar to that shown in Fig. 2 taking place in connection with a subsequently-formed shed. Fig. 7 is a fragmentary perspective view showing the arrangement of binder-warps preferably employed in the completed fabric, and Fig. 8 is a longitudinal section showing the manner of laying the tying warp-threads in position.

In weaving multi-ply belting fabrics it has heretofore been the practice to weave such fabrics upon a single-shuttle loom. The harness-motion of the loom is operated to open a number of different sheds, and a single weft-thread is inserted through the sheds, which are successively opened. In a fabric woven in this ordinary manner a number of superimposed plies will be formed; but the selvage at one side of the fabric will be of a different character from the selvage at the other edge of the fabric—that is to say, at one edge of the fabric the weft-threads in passing from one ply to another ply will cross, while at the other edge of the fabric the weft-threads will not cross. For example, in weaving a four-ply fabric to form a double tubular fabric with a single weft the selvage at one side of the fabric might pass from the upper ply to the bottom ply and at the next pick from the second ply to the third ply. At the other side of the fabric the weft passes from the bottom ply to the second ply and from the third ply to the top ply, so that there would be a crossing of weft-threads on one side of the fabric, while there will be a plain selvage at the other side of the fabric, and this result follows wherever multi-ply fabrics containing more than two plies are woven with a single shuttle.

In practice I have found it to be desirable that a belting fabric should have the same selvage at each edge. Otherwise the belting will tend to stretch to different extents at its opposite edges, and it is difficult to control a belt made from such a fabric to cause the same to run straight.

A fabric constructed according to this invention consists, essentially, of two tubes, which are interlocked to form a multi-ply fabric having the same character of selvage on each edge.

Referring to the accompanying drawing for a detail description of a method of weaving a four-ply belting fabric according to this invention, as shown in Figs. 1 to 6, the warps are arranged in the loom to successively open four different sheds, (designated by the numerals 10, 11, 12, and 13, respectively.)

As shown in Fig. 1, a shuttle A is first inserted through the shed 13, which forms one of the outside plies of the completed fabric. A second shuttle B is inserted through a shed 12, which forms one of the intermediate plies of the fabric. The shuttle A is returned through a shed 11, which forms another one of the intermediate plies of the fabric, and the second shuttle B is returned through the shed 10, which forms the bottom ply of the completed fabric. This completes one cycle

in the operation of weaving a four-ply fabric according to this invention, said operations continuing in corresponding sequence, as shown in Figs. 5 and 6. In this method of weaving it will be seen that the shuttle A weaves a complete tube and that the shuttle B weaves a second complete tube and that these flat tubes interlock with each other, as shown in Fig. 7, to form a four-ply fabric which will have the same character of selvage at each edge thereof.

Running with the warp-threads I preferably employ a number of binder warp-threads W, which serve to fasten the plies of the completed fabric together, the binder-warps extending down from the top ply a portion of the way only through the completed fabric and the binder-warps W being extended up from the bottom ply a portion of the way only through the completed fabric, so that the four plies will be tied together to form a comparatively rigid center part with less firmly bound outside portions or plies, as shown in Fig. 8, and I consider this a desirable way of binding the plies together, as it provides a fabric of great strength and which at the same time can be comparatively easily flexed.

I am aware that changes may be made in practicing my invention by those who are skilled in the art without departing from the scope thereof as expressed in the claims. For example, my invention is not limited to four-ply fabrics, as the same can also be practiced in manufacturing fabrics having six or any greater even number of plies. Furthermore, I do not wish to be limited to the method of weaving which I have described, as my fabric may be produced in other ways. I do not wish, therefore, to be limited to the construction I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. As an article of manufacture, a multi-ply belting fabric comprising flattened tubes which interlock with each other to form the same character of selvage at each edge of the fabric.

2. A four-ply belting fabric comprising two flat tubes which interlock with each other and form the same character of selvage at each edge of the fabric, and binder-warps fastening together the top three plies of the fabric and other binding-warps fastening together the bottom three plies of the fabric.

3. The method of weaving multi-ply fabric which consists in arranging warp-threads to open a number of sheds inserting one weft-thread through a shed which forms an outside ply of the completed fabric, inserting a second weft-thread through a shed which forms an intermediate ply adjacent to the first-named outside ply, returning the first-named weft-thread through a shed which forms a second intermediate ply of the completed fabric, and returning the second-named weft-thread through a shed forming the other outside ply of the completed fabric, so that the completed fabric comprises two interlocked flattened tubes.

4. The method of weaving a four-ply belting fabric consisting in arranging warp-threads to open a number of sheds inserting a weft-thread through a shed which forms an outside ply of the completed fabric, inserting a second weft-thread through a shed which forms an intermediate ply of the completed fabric adjacent to the first-named outside ply, returning the first weft-thread through a shed which forms the other intermediate ply of the completed fabric, returning the other weft-thread through the shed which forms the other outside ply of the completed fabric, and connecting the plies of the completed fabric by binder-warps.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE D. MOORE.

Witnesses:
PHILIP W. SOUTHGATE,
LOUIS W. SOUTHGATE.