

(No Model.)

2 Sheets—Sheet 1.

A. EPPLER, Jr.
SHOE

No. 487,011.

Patented Nov. 29, 1892.

Fig. 1

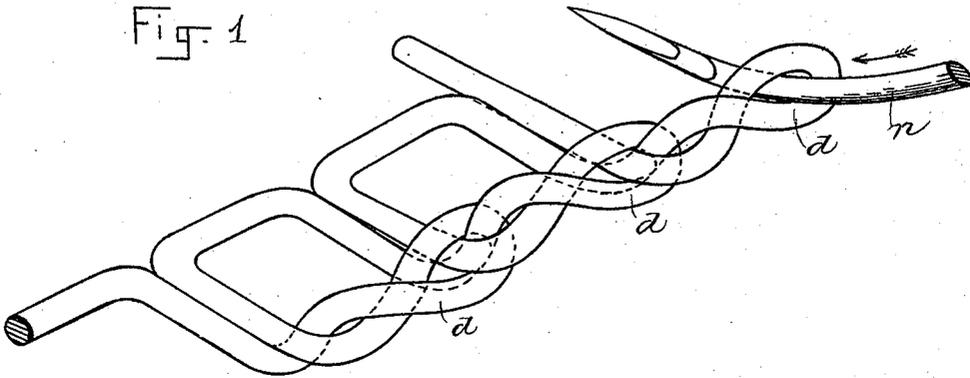
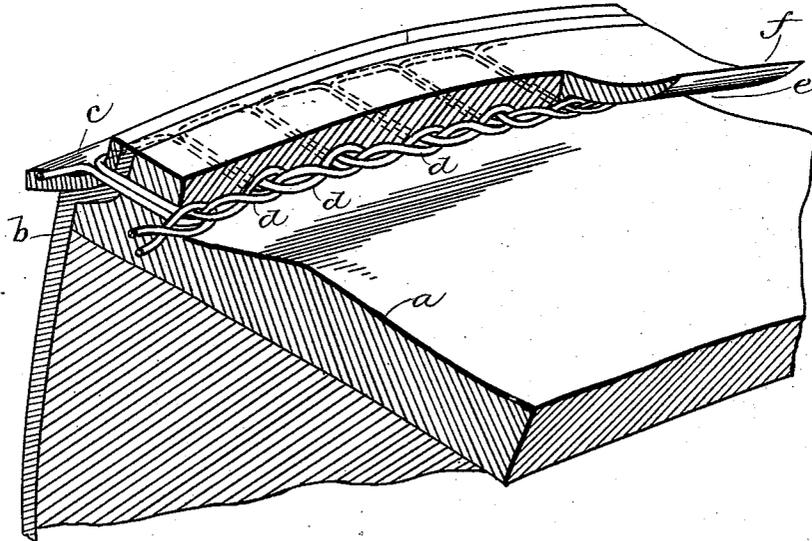


Fig. 2



WITNESSES:

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Clarence S. Bostick

INVENTOR:

Andrew Eppler Jr.
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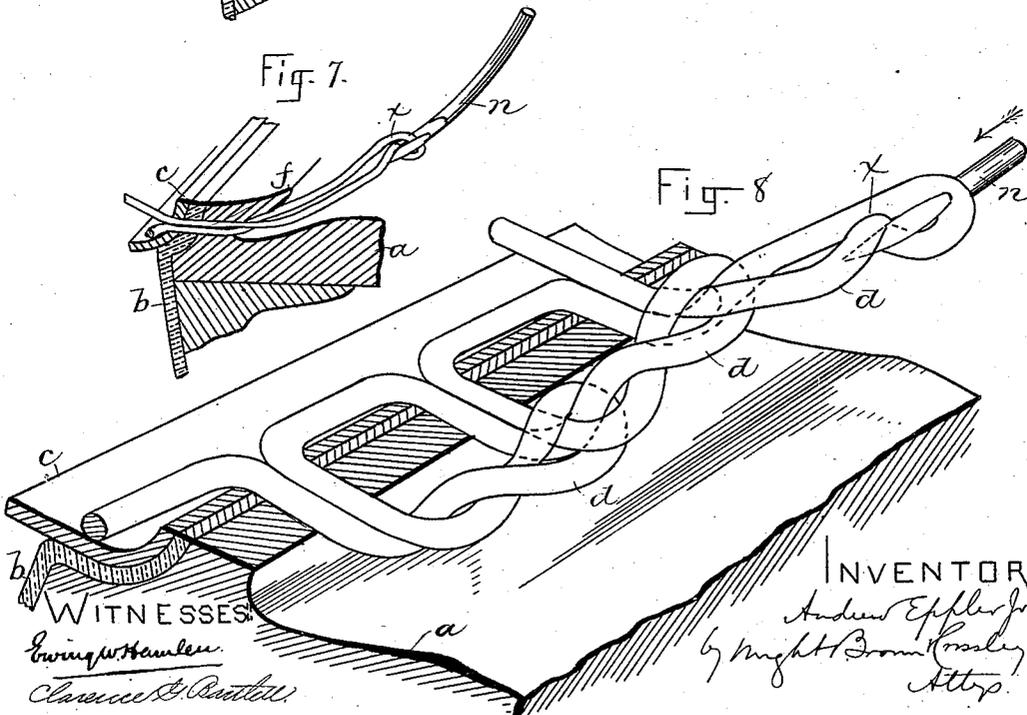
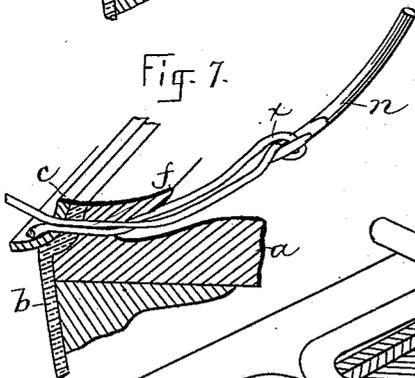
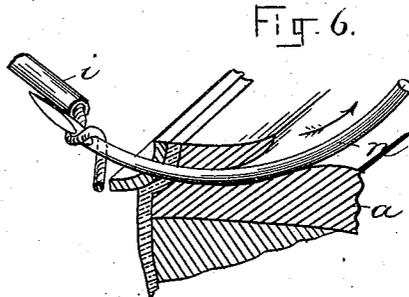
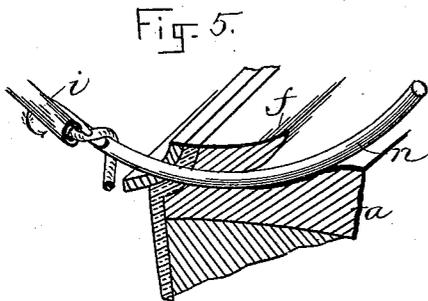
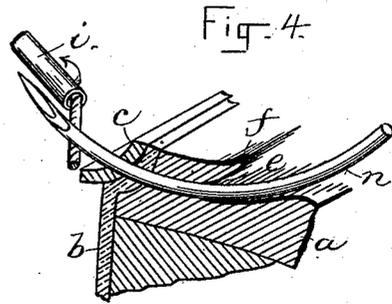
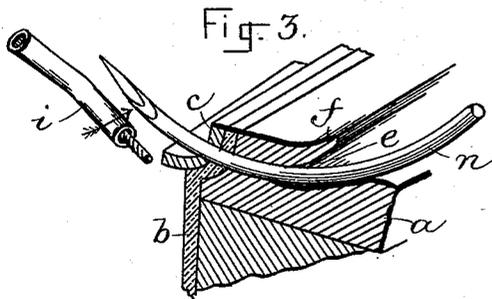
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WITNESSES

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INVENTOR:
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UNITED STATES PATENT OFFICE.

ANDREW EPPLER, JR., OF NEWTON, ASSIGNOR TO THE EPPLER WELT MACHINE COMPANY, OF BOSTON, MASSACHUSETTS.

SHOE.

SPECIFICATION forming part of Letters Patent No. 487,011, dated November 29, 1892.

Application filed September 1, 1890. Serial No. 363,734. (No model.)

To all whom it may concern:

Be it known that I, ANDREW EPPLER, Jr., of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Boots or Shoes, of which the following is a specification.

This invention consists in a welted boot or shoe, the welt and upper of which are united to the channeled inner sole by a chain-stitch, the interlocked or enchaind loops of which are twisted and laid in the channel of the inner sole to prevent the raveling of the stitch in case of the breakage of the thread at any point therein and to prevent the said loops from cutting or sinking into the material on which they bear.

The invention is chiefly applicable to welted boots or shoes in which the welt, upper, and inner sole are united by a single-thread chain-stitch, the interlocked or enchaind loops of which are laid in a channel cut to receive them in the inner sole. The surface presented by the cut material of the inner sole is yielding and spongy, and the loops are pressed so closely against said surface by the tension exerted in taking up the loops that when the strands of the loops are laid side by side in the usual way they are liable to sink or cut into the yielding surface to such an extent as to loosen the connection between the parts united by the stitch, a liability that is obviated by twisting the loops.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a perspective view of a portion of a twisted-loop chain-stitch made in accordance with my invention. Fig. 2 represents a perspective and sectional view of a portion of a boot or shoe, showing the welt, upper, and inner sole united by my improved stitch. Figs. 3 to 7, inclusive, represent perspective views showing the steps of the operation of twisting the stitch-loops by the use of a curved needle and a revolving looper. Fig. 8 represents an enlarged perspective view of a portion of a boot or shoe, the welt, upper, and inner sole of which are united by the improved stitch, the portions of said welt, upper, and inner sole through which the loops pass being shown in section.

The same letters of reference indicate the same parts in all of the figures.

In the drawings, *a* represents the inner sole, *b* the upper, and *c* the welt, of a welted boot or shoe, said parts being of the usual form and having the usual relative arrangement—that is to say, the edge of the upper is laid upon the edge of the inner sole and the welt is laid on the outer surface of the upper, the three parts being united by the loops *d d* of a single-thread chain-stitch, the interlocked or enchaind portions of the stitches being formed in the channel *e*, which is cut in the inner sole, and covered by the flap *f*, which is made by the operation of cutting the channel.

There is nothing new in the boot or shoe above described excepting the twisted loops of the stitch, (hereinafter described,) the general construction of the boot or shoe being common and forming no part of my invention; but, owing to the particular means for uniting the parts, as hereinafter described, a more durable article is produced.

In carrying out my invention I form a permanent twist in the portion of each loop that is interlocked with the succeeding loop, said twist being formed by making one or more convolutions in each loop between its points of engagement with the adjoining loops, as shown in Figs. 1, 2, and 8, so that the twist is confined in each loop by the interlocking of the loops. The stitch may be produced by a curved-needle sewing-machine having suitable appliances for guiding and supporting the work and a looper adapted to so present the thread to the needle as that each loop drawn through the work by the needle will be twisted between the end of the loop that is engaged by the barb of the needle and the point where the threads of the loop pass through the work, so that when the loop is cast off from the needle and interlocked with the succeeding loop drawn through it in the usual way in forming a chain-stitch the twist will be made permanent between the interlocking points of the loops.

In Figs. 3, 4, 5, and 6 I show a looper *i*, which revolves around the needle and stands at the left side of the needle while the latter is advancing and penetrating the work and after the needle has reached its extreme for-

ward position passes first under the needle, then upwardly at the right of the needle, as shown in Fig. 4, then over the top of the needle, as shown in Fig. 5, and then again under the needle, stopping at the rear or right-hand side of the needle, as shown in Fig. 6. The thread is thus wound around the needle above the hook or barb thereof to such an extent that when the needle is withdrawn, as shown in Fig. 7, the sides of the loop will be crossed at *x*, Figs. 7 and 8. The twist is retained in the loop by the needle while the latter is advancing, as indicated by the arrow in Fig. 8, for the next loop, and by the said next loop when the same has been drawn through by the next retraction of the needle.

An organized sewing-machine in which the described movements are given to the looper is shown in Letters Patent of the United States No. 447,872, the application for which was filed concurrently with this application. I do not limit myself, however, to the means described in this and my other application for twisting the loops, and may employ any other suitable means without departing from the spirit of my invention.

A chain of loops, twisted as shown in the drawings when properly taken up or tightened, cannot pull out or unravel in case the thread breaks at any point or points, each loop being locked by the twist imparted to it, so that it is to a great extent independent of the other loops. In an ordinary chain-stitch

the enchainment loop-threads lie side by side without being twisted together, so that when the thread breaks the whole chain is liable to unravel, the loops being interdependent. It will be seen, therefore, that the durability of the seam or fastening is greatly increased by the twisting of the loops. On the side of the seam opposite the enchainment and twisted loops the welt *c* serves to prevent the cutting of the thread into the upper, while the increased bulk of the twisted loops prevents them from sinking or cutting into the surface on which they rest, as already stated,

I am aware of patent to Duchemin, No. 59,715; but my invention differs from what is disclosed therein, in that by my construction there is no liability of the cutting of the chain-stitch thread by the action of a thread uniting an outer sole to the inner sole.

I claim—

A welted boot or shoe the welt and upper of which are united to the channeled inner sole by a chain-stitch, the interlocked or enchainment loops of which are twisted and laid in the channel of the inner sole, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of August, A. D. 1890.

ANDREW EPPLER, JR.

Witnesses:

C. F. BROWN,
EWING W. HAMLIN.