

W. E. ELLIS.  
MEANS FOR TYING SHOE UPPERS.  
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920,294.

Patented May 4, 1909.

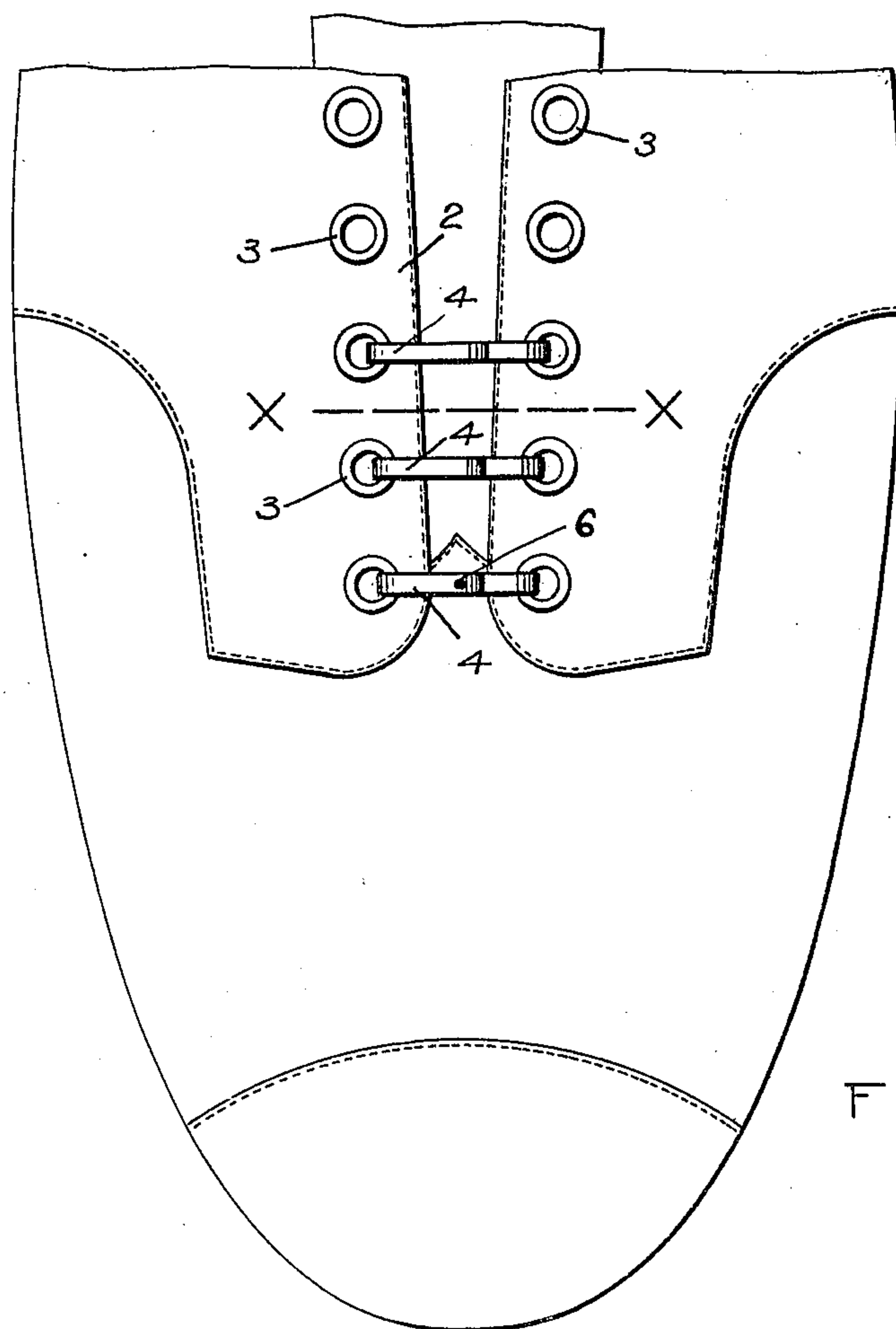


FIG. 1.

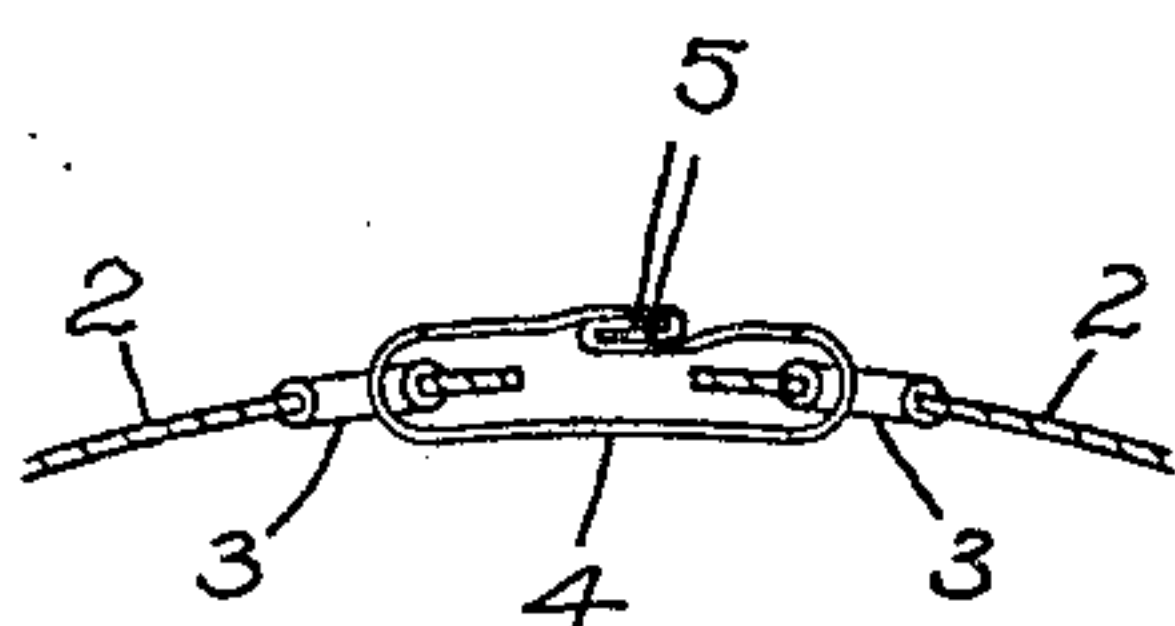


FIG. 2.

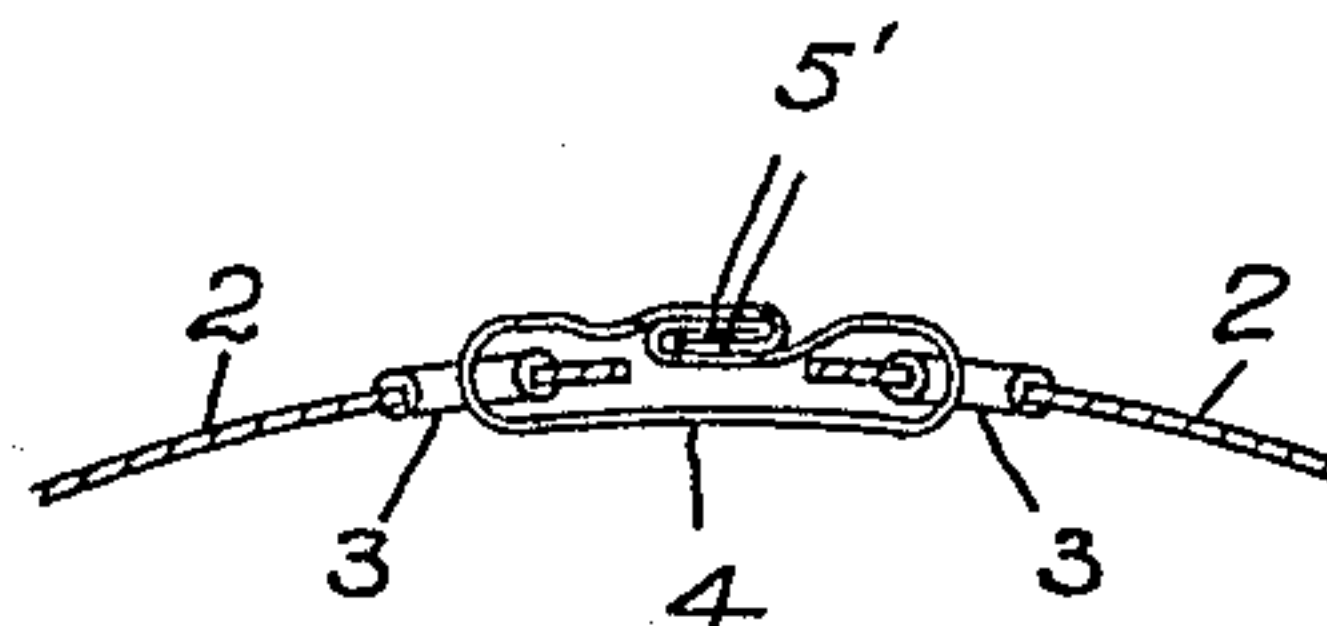


FIG. 3.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

WARREN E. ELLIS, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR TO ELLIS LACER COMPANY,  
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## MEANS FOR TYING SHOE-UPPERS.

No. 920,294.

Specification of Letters Patent.

Patented May 4, 1909.

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*To all whom it may concern:*

Be it known that I, WARREN E. ELLIS, a citizen of the United States, and resident of Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Means for Tying Shoe-Uppers, of which the following is a specification.

This invention is intended to provide for the securing of the eyeleted edges of the uppers of lace shoes, during the process of lasting, in such manner that any desired number of pairs of opposite eyelets may be independently connected and held at a predetermined distance apart without possibility of varying this distance under the strain of the lasting process. This is accomplished, according to my present invention, by passing through each pair of eyelets which it is desired to secure a flexible strip or wire, preferably made of soft metal, and interlocking the end portions of this strip or wire in such manner as to form a closed loop, as many of these loops being provided as there are pairs of eyelets to be connected. The loops thus formed are given such dimensions that when the upper is drawn over the last its eyeleted edges will separate to the desired distance and be held by the fastening in the position thus assumed, which fastening, being readily flexible, will conform to the shape of the last and permit the upper to hug the same closely.

In the accompanying drawings,—Figure 1 is a plan view of a portion of a shoe upper having several pairs of its eyelets connected in accordance with my invention; Fig. 2 is a transverse section on the line  $x-x$  in Fig. 1; and Fig. 3 is a similar section illustrating a slight modification.

In the drawings, 2—2 represent the eyeleted edges of a shoe upper, the eyelets being shown at 3, and 4—4 represent connecting strips preferably made of thin, flat, soft steel wire, each of these strips being passed through a pair of opposite eyelets and formed into a closed loop by having its end portions interlocked in such manner as to prevent the opening or elongation of the loop under the strain of the lasting process. As shown in Fig. 2, each of the end portions 5 of the strip 4 is folded or bent over into parallelism with the adjacent portion of said strip and located between the corresponding portions at the other end of the strip, with said end portions pointing in opposite directions,

while in Fig. 3 the two end portions 5' point in the same direction, one of them being folded over twice. In either case, each end portion of the strip is located beneath the bent-over other end portion thereof in such manner as to cover the ends of said strip and prevent the uppers from coming in contact with and being defaced by any sharp edges or corners which may be left by the severing of the strip. After the end portions of the strip have been folded over and interlocked as described, pressure is preferably applied thereto in order to flatten and compact the same and thus develop a frictional resistance to relative lateral movements thereof such as might result in their separation. Such separation may also be effectively prevented by indenting the interlocked portions of the strip with a prick-punch or the like, as shown at 6 in Fig. 1. By suitably determining the size of the loops the eyeleted edges of the upper may be held at any desired angle to each other, and after the upper has been lasted one or more loops may be left therein during subsequent processes, as is often desirable, each connecting strip being removed when desired by severing the same at any suitable point and then withdrawing it from the eyelets.

It is an advantageous feature of my invention that the strain on the fastening device is divided between the two transversely-extending portions of the loop, the wire employed being of such size as to pass freely through the eyelets, so that the fastening may be made of very thin and flexible wire and an inexpensive as well as a simple fastening is provided.

I claim as my invention:

1. The combination with a shoe upper having eyeleted edges of a flexible metallic strip passing freely through a pair of opposite eyelets and having its end portions interlocked to form a closed loop, each extremity of said strip being covered by an overlying portion thereof.

2. The combination with a shoe upper having eyeleted edges of a flat, flexible, metallic strip passing freely through a pair of opposite eyelets and having its end portions folded over and interlocked to form a closed loop, each extremity of said strip being covered by an overlying portion thereof.

3. The combination with a shoe upper having eyeleted edges of a plurality of dis-



connected, flexible, metallic strips, each passing freely through a pair of opposite eyelets and having its end portions interlocked to form a closed loop, each extremity of said  
5 strip being covered by an overlying portion thereof.

4. The combination with a shoe upper having eyeleted edges of a plurality of flat, flexible, metallic strips, each passing freely  
10 through a pair of opposite eyelets independently of the other strips and having its end

portions doubled over and interlocked to form a closed loop, the extremities of each strip being held between and covered by doubled-over portions thereof.

In testimony whereof, I have hereunto subscribed my name this twenty-seventh day of May, 1907.

WARREN E. ELLIS.

Witnesses:

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JOSEPH T. BRENNAN.