(No Model.)

E. D. HEINEMANN.

LACE FASTENER.

No. 586,818. Patented July 20, 1897.

Fig. 1

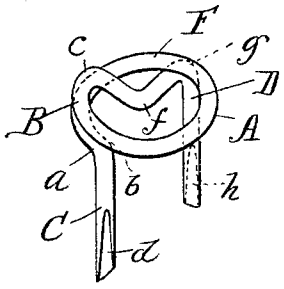


Fig. 2.

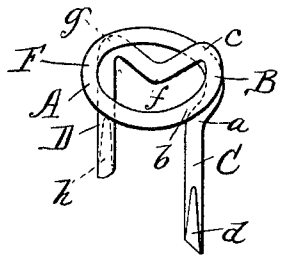


Fig. 3.

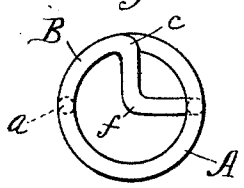


Fig. 5.

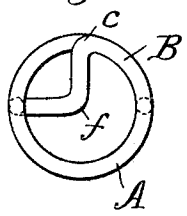


Fig. 4.

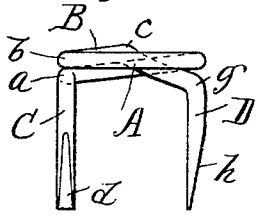
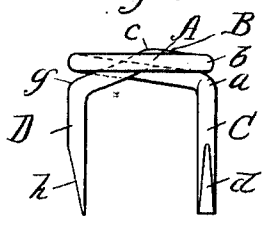


Fig. 6.



Witnesses.
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Wm. F. Fleming

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Emil D. Heinemann
by Brocur Darby Atty's

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EMIL D. HEINEMANN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE TITAN MANUFACTURING COMPANY, OF SAME PLACE.

LACE-FASTENER.

SPECIFICATION forming part of Letters Patent No. 586,818, dated July 20, 1897.

Application filed April 13, 1897. Serial No. 632,048. (No model.)

To all whom it may concern:

Be it known that I, EMIL D. HEINEMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Lace-Fastener, of which the following is a specification.

This invention relates to lace-fasteners.

The object of the invention is to provide a fastener for securing the laces of shoes, gloves, corsets, umbrellas, and the like, wherein the lace is held in a single loop in such manner that the tighter the strain thereon the more securely it is gripped and clamped.

The invention consists, substantially, in the construction, combination, location, and relative arrangement, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally specifically pointed out in the appended claims.

Referring to the drawings and to the various views and reference-signs appearing thereon, Figure 1 is a view slightly in perspective of a fastener embodying my invention for use upon the left-hand side of the shoe or other article to which the fastener is to be applied. Fig. 2 is a similar view of a fastener for the right-hand side of the article. Figs. 3 and 4 are respectively a plan and side elevation of the "left" fastener shown in Fig. 1. Figs. 5 and 6 are respectively a plan and side elevation of the "right" fastener shown in Fig. 2.

In carrying my invention into practice the body portion of the fastener is formed of a single strand of wire bent into one complete coil or convolution and an additional partial convolution superimposed thereon and lying in the same vertical plane therewith, and the ends are bent at substantially right angles to the plane of the coils and are suitably beveled, preferably in intersecting planes, to facilitate the insertion thereof in the fabric or material to which the fastener is to be applied and the clenching thereof on the inner side of such fabric or material.

In the drawings, reference-sign A designates the complete coil of the body portion of the fastener, said coil beginning, say, at the point *a* and ending with one complete convolution or coil at the point *b*, and the partial convolution or coil B forms a continuation of the complete coil and starts at the point *b* and terminates at the point *c*, the partial coil or convolution B being superimposed upon and lying in the same plane with the coil A between the points *b* and *c*. The wire forming the complete coil or convolution A is bent at right angles with the plane of such coil at the point *a* to form the end C of the fastener, such end at the extremity thereof being beveled, as at *d*. From the point *c* the wire forming the upper or partial coil B is deflected or bent inwardly into the space inclosed by the coil A and downwardly to the point *f*. Thence the wire is bent outwardly and to the point *g*, directly underneath the coil A, from which point the wire is bent at substantially right angles to the plane of coil A to form the end D, said end being beveled at the extremity thereof, as at *h*, and preferably in a plane in angular relation with respect to the plane of the bevel *d* of the end C.

Of course it will be seen that a shoulder at the point *f* is not essential, as the important feature is to so arrange the terminal of the upper or partial convolution that the lace or cord to be held will pass under the near edge of the complete coil A, then over the terminal portion of the upper partial convolution B, and then between the adjacent or proximate surfaces of the coils A B.

From this description it will be seen that the complete coil A is at one point underneath the partial coil B and at another point over that part of the wire forming a continuation of the partial coil B from the point *f* to the point *g*. It will also be seen that the portion of the wire extending from and forming a continuation of the end D to the point *c*, and which portion has a bend therein at the point *f*, thereby forming a shoulder at that point, lies partly in a plane above the coil A and partly in a plane below said coil, and hence when the lace to be secured is inserted in a single loop between the coil A and the partial coil B such lace is securely gripped between the coil A and the partial coil B, and by reason of such lace passing under the partial coil B and over that portion of the wire extending from *c* to *f* and under the coil A at the point F any strain exerted

upon the lace in a direction tending to draw it lengthwise through the fastener after once properly inserted serves to elevate the near edge of the coil A, (indicated at F,) and hence to correspondingly depress the partial coil B, thereby clamping or gripping the lace more tightly between the partial coil B and that portion of the coil A lying directly underneath the same. In the same manner any strain exerted upon the lace in a direction to depress the portion of the wire extending from the point *c* to the point *f*, the lace passing over this portion of the wire when properly inserted in the fastener, has the effect of more firmly clamping or gripping the lace between the partial coil B and that portion of the coil A lying directly underneath the same, and in the operation of inserting the lace in the fastener the said lace is forced over the shoulder formed at the point *f*, thereby preventing such lace from working out of the fastener in use.

Thus it will be seen that I provide an exceedingly simple and efficient lace-fastener wherein strains upon the lace in a direction to withdraw the same from the fastener serve only to clamp or grip it more firmly, wherein working out of the lace is prevented, and wherein the lace is efficiently clamped and held.

It will also be seen that by the construction as above described I produce a fastener wherein the lace may be easily and with facility inserted or introduced to the fastener or removed therefrom when it is desired to lace or unlace the shoe, glove, or the like.

In the fasteners of prior constructions it has been found necessary in order to securely hold the laces after being inserted in the fastener to arrange the clamping or holding parts of the fastener in such close proximity to each other that it is difficult to remove or insert the lace therein in unlacing or lacing, and hence the lace is soon worn or broken. No such difficulty is present in my fastener, as the holding or gripping of the lace is not dependent upon the close proximity of the gripping parts, but to the peculiar construction of the fastener, whereby the lace is passed under and over certain portions of the fastener, as above explained, instead of merely between such portions.

Having now set forth the object and nature of my invention and a construction and arrangement embodying the same, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent of the United States, is—

1. A lace-fastener, comprising a single strand of wire bent to form convolutions, the end of one convolution bent inwardly into the space inclosed by the other convolution, then outwardly, thereby forming a shoulder, and finally downwardly at an angle to the plane of the other convolution, as and for the purpose set forth.

2. A lace-fastener, comprising a single strand of wire bent to form a lower complete convolution and an upper partial convolution, the end of the upper convolution being bent inwardly and downwardly and then outwardly and underneath the lower convolution and finally at an angle with the plane of such convolutions, as and for the purpose set forth.

3. A lace-fastener formed of a continuous wire and comprising a body portion formed of a complete convolution and a partial convolution superimposed thereon, the wire forming the partial convolution being bent inwardly and downwardly into the space inclosed by said complete convolution and thence outwardly underneath said complete convolution, and having securing ends, as and for the purpose set forth.

4. A lace-fastener, consisting of a single wire formed into continuous convolutions superimposed upon each other and lying in the same vertical plane, the free end of the lower convolution bent at substantially right angles to the plane of such convolution and in the same vertical plane therewith, the end of the upper convolution bent inwardly and downwardly forming a shoulder in the space inclosed by said convolutions, and thence outwardly underneath the lower convolution and finally terminating in a securing end bent at right angles to the plane of the convolutions and lying in the same vertical plane therewith, as and for the purpose set forth.

5. A lace-fastener comprising a single strand of wire bent to form a complete convolution and a partial convolution arranged to overlie the complete convolution, the end of the partial convolution being bent inwardly and downwardly beneath the complete convolution, the terminals of said convolutions forming securing ends for the fastener, as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 5th day of April, 1897, in the presence of the subscribing witnesses.

EMIL D. HEINEMANN.

Attest:

JOHN P. DABNEY,

S. E. DARBY.