

T. K. REED, dec'd.

EUNICE S. REED Admr'x.

Boots and Shoes.

No. 154,714.

Patented Sept. 1, 1874.

Fig. 1.

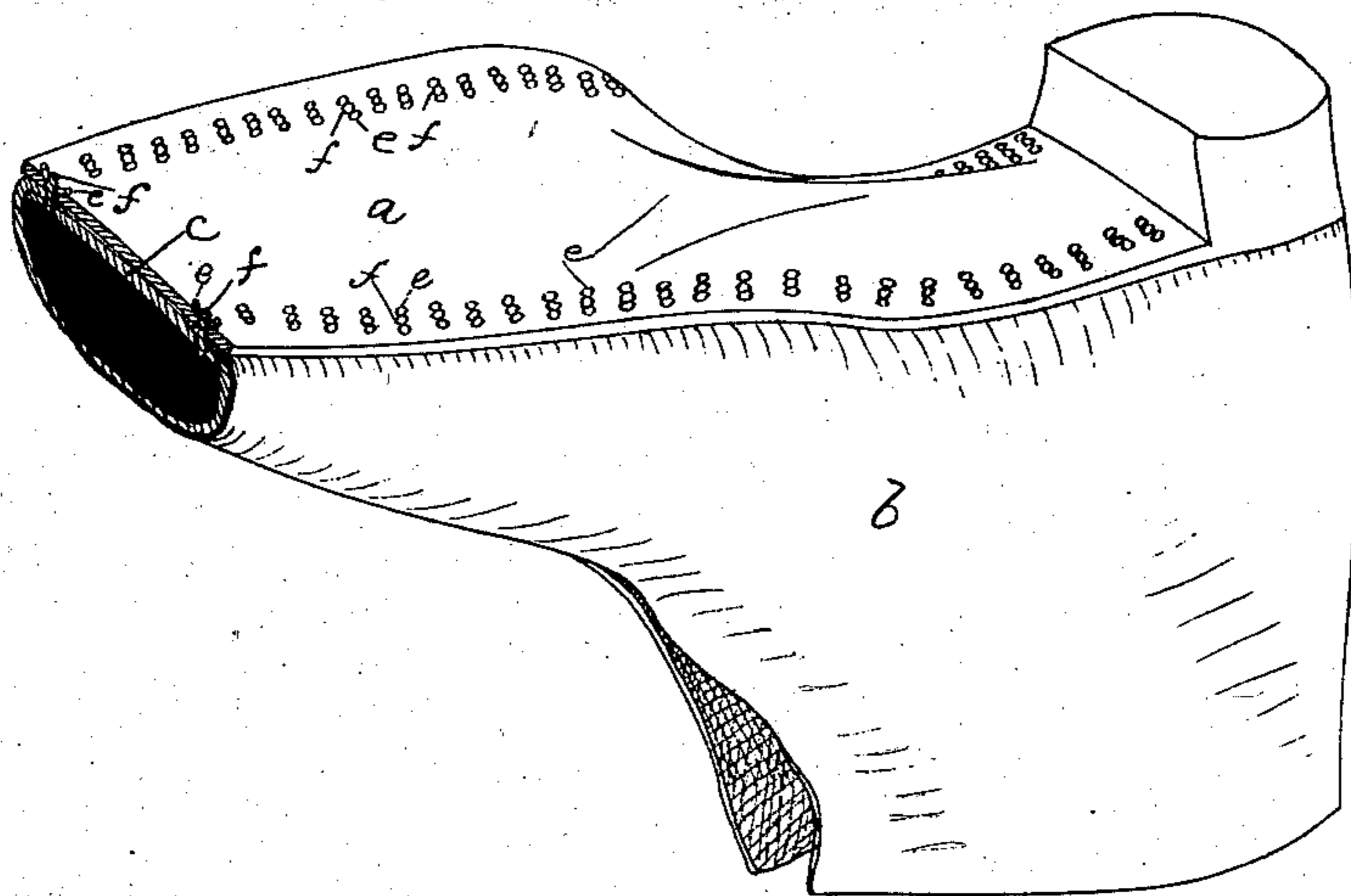


Fig. 2.

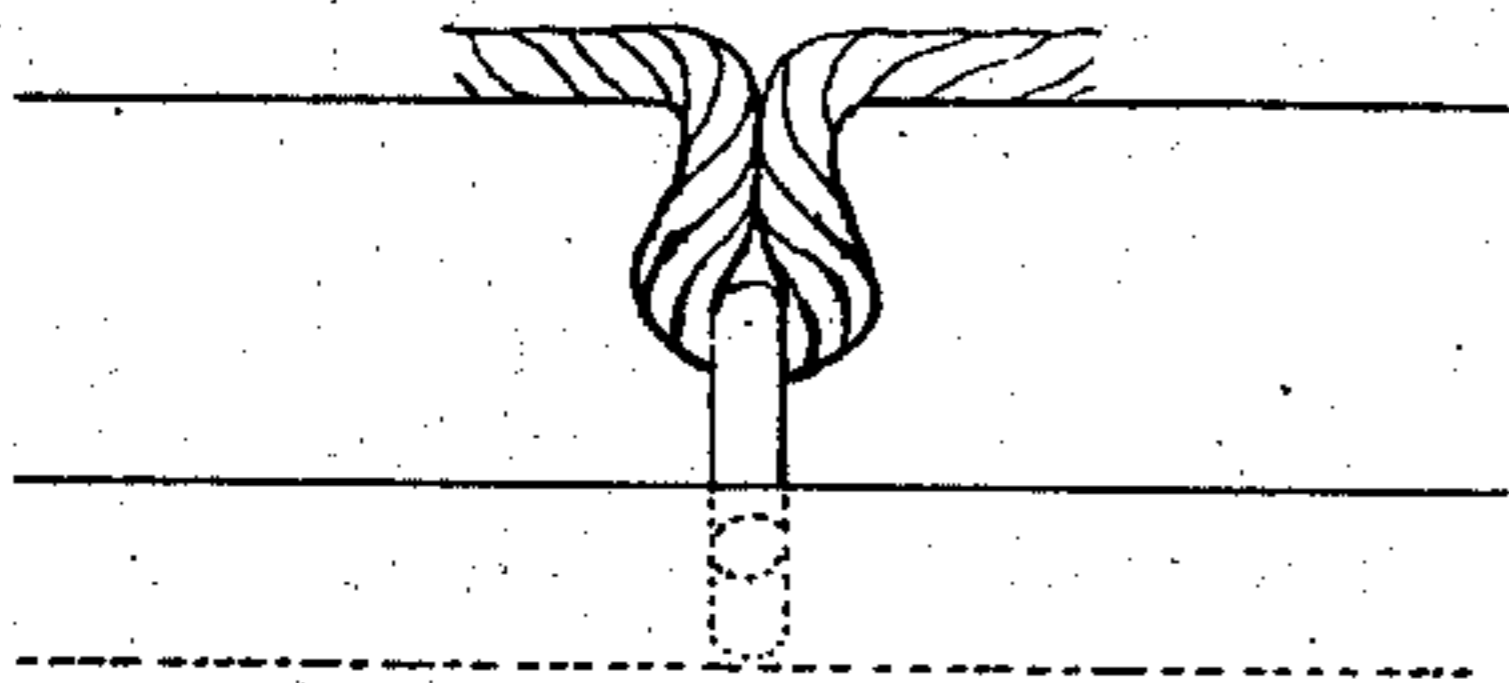


Fig. 3.

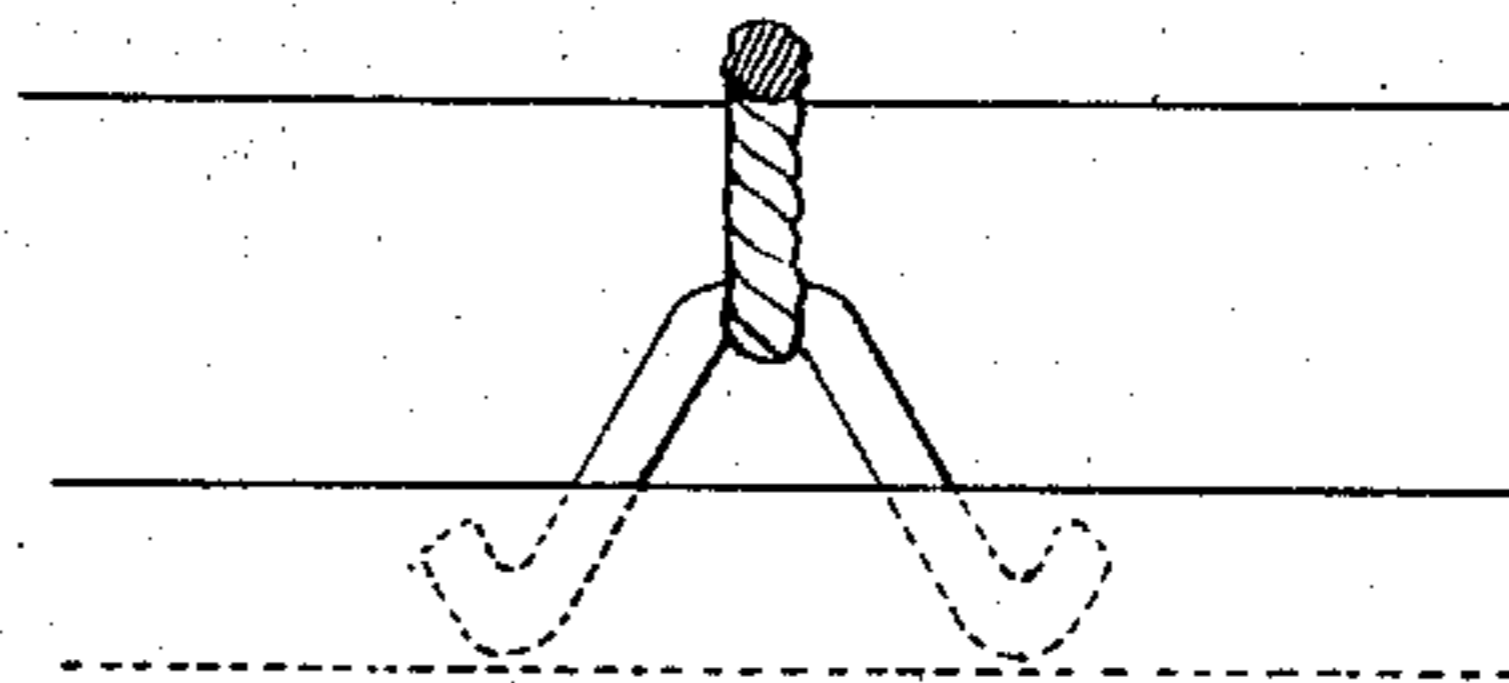


Fig. 4.

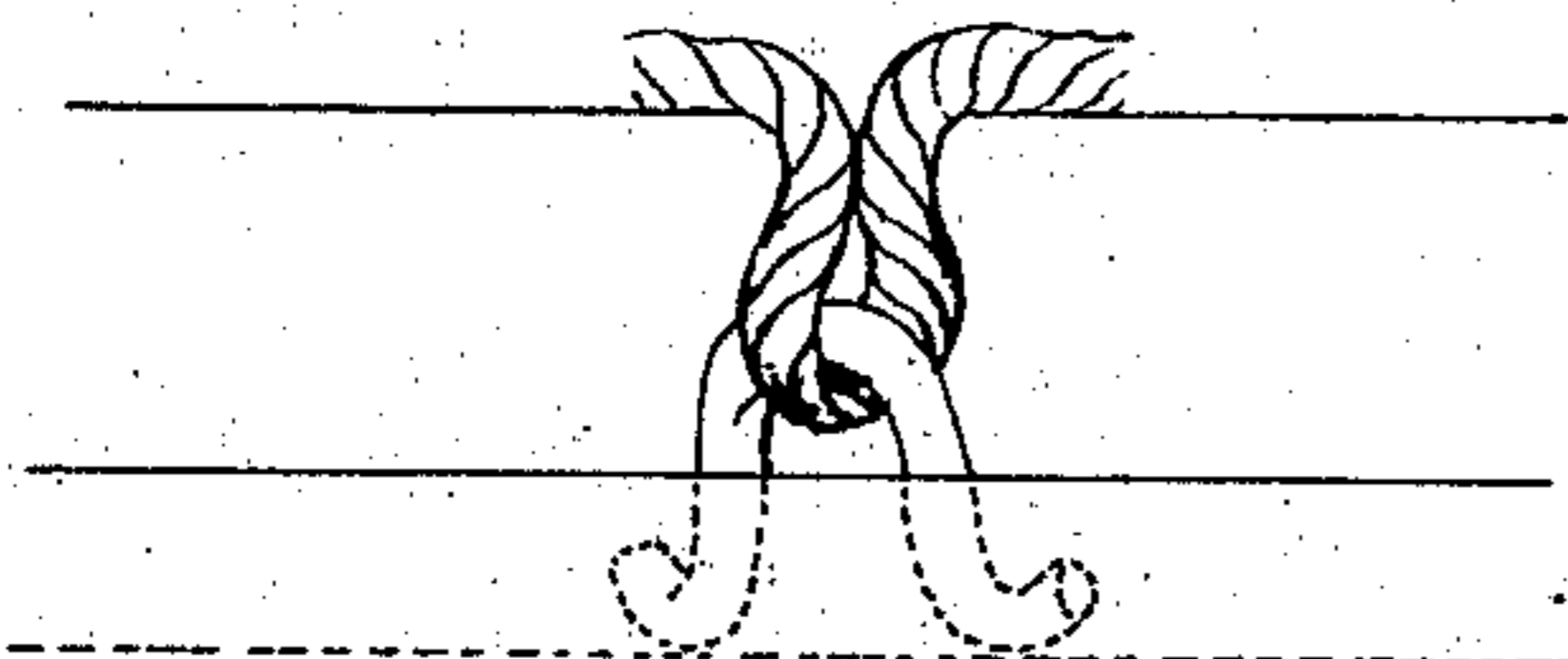
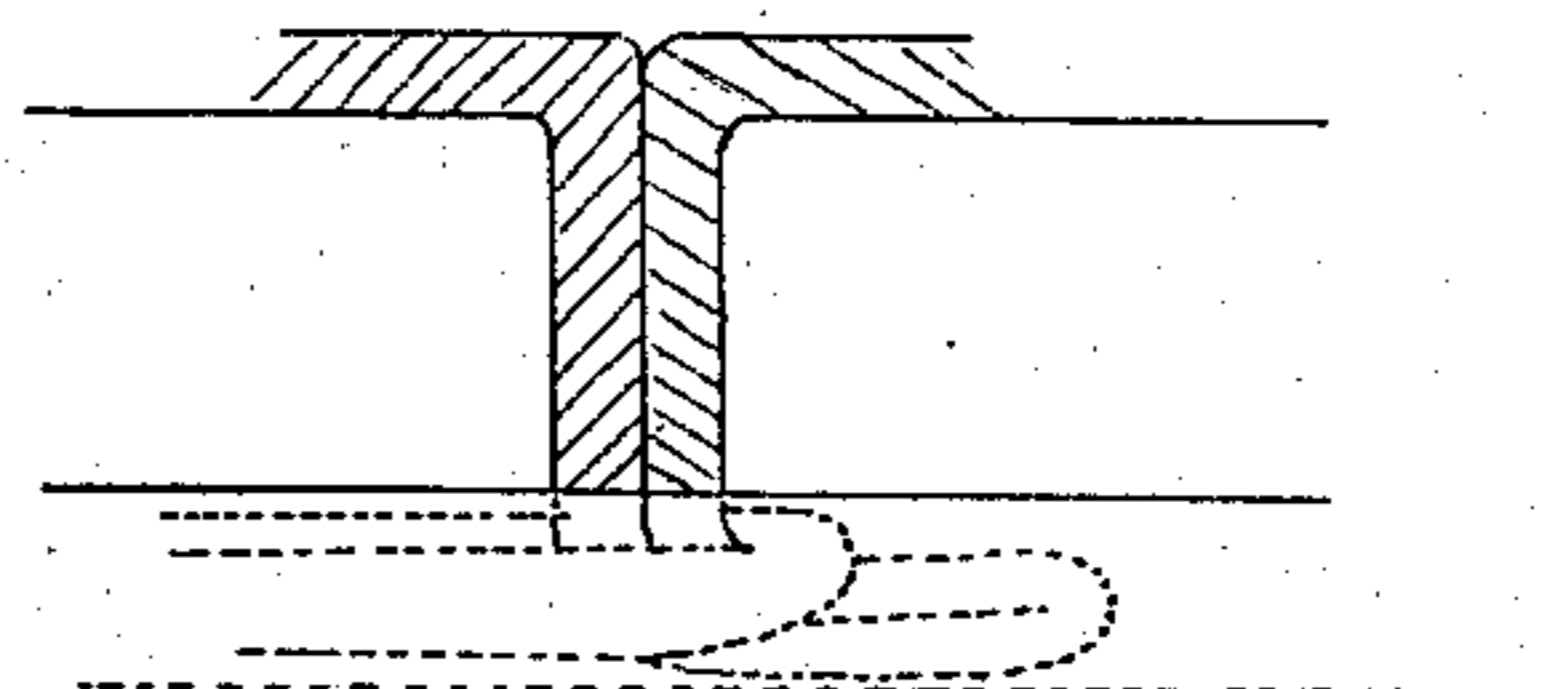


Fig. 5.



Witnesses.  
Geo. T. Smallwood Jr.  
C. Nickenlooper

Inventor.  
Timothy K. Reed.  
per John J. Halsted.  
1874.

# UNITED STATES PATENT OFFICE.

EUNICE S. REED, (ADMINISTRATRIX OF TIMOTHY K. REED, DECEASED,) OF EAST BRIDGEWATER; SAID ADMINISTRATRIX ASSIGNOR TO THEODORE A. DODGE, OF CAMBRIDGE, MASSACHUSETTS.

## IMPROVEMENT IN BOOTS AND SHOES.

Specification forming part of Letters Patent No. 154,714, dated September 1, 1874; application filed April 11, 1874.

*To all whom it may concern:*

Be it known that TIMOTHY K. REED, of East Bridgewater, in the county of Plymouth and State of Massachusetts, did invent an Improvement in Boots and Shoes; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of the invention sufficient to enable those skilled in the art to practice it.

The invention has reference to a new method of uniting the uppers and soles of boots and shoes, and is particularly applicable to that class of shoes in which the outer soles, uppers, and inner soles are connected by stitches passing through the parts from outside to inside of the shoe, or vice versa. One object of the invention is to so unite the parts that the thread shall be so far removed from the wearing-surface of the sole as not to be subjected to abrasive wear at the outer surface of the sole. Another object of this invention is to place the threads in such a manner as that, when the sole shall have worn down so far as to reach and sever the loops or stays of the thread, the thread-peg thus left shall be of such a shape as to most readily hold the sole in place, and prevent ripping. Another object of this invention is to make the shoe, when sewed, more pliable and easy to the foot than the sewed shoe now in use.

To attain these purposes the fastenings are formed of thread and wire, the thread being in the form of short loops or bows, each of which, in turn, is carried through the inner sole, upper, and outer sole, and then has a short length of wire inserted through it, this wire being also in the form of a bow, with hooking ends, and the strain upon the thread drawing this bow into the outer sole until its hooks strike the outer surface of the sole, thus making a lock between each bow of the continuous thread and each independent bow of wire, and a lock or fastening in which the wire, instead of the thread, is the part that comes in contact with the ground as the shoe wears.

It will be seen that, when the sole first begins to wear, so that the metal bows are subjected to abrasion, these will have a much greater tend-

ency to prevent the thread from pulling through the sole than if a loop-stitch had been formed. In the latter the loops are quickly worn off, not only because the thread wears more rapidly, but also because the loops cannot, in practice, be sunk as deeply into the sole as the metal bows. As soon as the loop or bow is worn off, the sole is held onto the upper and inner sole by a mere peg of thread, and the shape of this peg then greatly affects its holding power. With the worn-off loop, the peg left is of even size throughout, and can more readily be pulled through the needle-hole. With the bow the thread is spread at the wearing-surface, as illustrated in Fig. 2, and cannot easily be pulled through the needle-hole, which is smaller than the thread at this point. In fact, the bow tends to spread the thread so greatly that there is a wedge-shaped peg left until the sole is almost worn through.

The wire bow may be made quite long, and sunk, for some depth, into the leather in such a manner as to make this wedge-shaped staple extend entirely through the parts.

The stitches are always formed while the leather is "in temper," *i. e.*, rendered very pliable and easily worked in, by wetting. In this condition the wire sinks readily into the needle-hole, which it spreads for a certain depth; but when the shoe is dried, after being bottomed, it will be found, in practice, that the wedge-shaped peg cannot be pulled through the hole, but will remain firmly in place. In the drawing, Figs. 3 and 4 show sections of this stitch, the dotted lines being the parts supposed to have been worn off.

This construction entirely obviates the greatest evil of machine-sewed shoes, the ripping of the united parts.

Another difficulty with a sewed shoe in which the parts are united with a series of chain or other stitches is found in the fact that the loop being at the bottom of the sole, and being drawn very tightly, so as firmly to connect the parts, when the shoe comes to be worn it is not as pliable as might be desired.

In practice it is found that the only feasible method of sewing the soles onto shoes is by a chain-stitch, in which the loops are at the bot-

tom of the sole; and, all machine-sewed shoes, having an insole, are thus made at the present time. In order to unite the parts securely, great tension has to be put upon the thread, and the loop is, consequently, drawn in so firmly that there is no "give" left. These loops are generally sunk into a channel, so that it takes a good deal of wear on the shoe before the loops are abraded. Hence, for some weeks after putting on a shoe it will not be as pliable as is desirable, because the row of loops, forming a cord at the bottom, keeps the sole more or less rigid.

In this invention this rigidity is entirely obviated; and, from the start, the shoe is very easy to the foot, a result that can only be attained either by this method, or by what is known as "staple" sewing, in which no loop at all is made, but the thread merely thrust, like pegs, through the parts, or else by cutting off the loops. And these latter methods make a very poor shoe, because the staple is of a size no greater than the needle-hole, a defect cured by this invention, as already stated.

It is well known that in uniting other parts of a shoe, such as the upper, or leather-work of any kind, with the Keith stitch, there is never enough wear upon the metal bows to abrade them, and expose the thread. Hence, the only use of the bows, in such work is to prevent the thread from being broken by wear. But, as already explained, the uses of such a stitch in bottoming shoes are greatly different, though using an old stitch; and this invention produces a much better shoe than

has yet been put into the market, and is not only an entirely new article of manufacture, but one of great use and profit to the community.

The invention consists in a boot or shoe having the sole or soles and upper thus united.

To effect the union, an organization like what is known as the Keith Wire-Lock-Stitch Machine may be used; this machine being, in principle, like, or substantially like, that shown in the T. K. Reed Patents, Nos. 80,592 and 146,280; but this organization will, of course, require to be modified to enable it to be used in uniting the soles and uppers of common boots and shoes.

Figure 1 of the drawing represents a view of a boot having the parts united in accordance with this invention.

*a* denotes the outer sole; *b*, the upper; *c*, the inner sole. *e* denotes the wires, and *f* the thread.

Fig. 2 shows the manner in which the thread is spread by the use of the bow. Fig. 3 is a side view of the stitch. Fig. 4 is a perspective view of the same. Fig. 5 is a view of a common loop-stitch, the dotted lines in each of these views showing the parts abraded by wear.

What is claimed is—

A boot or shoe having the sole or soles and upper united by the wire and thread fastenings, substantially as shown and described.

EUNICE S. REED, *Admr'x*.

Witnesses:

ALFRED C. MONROE,  
Z. S. REYNOLDS.