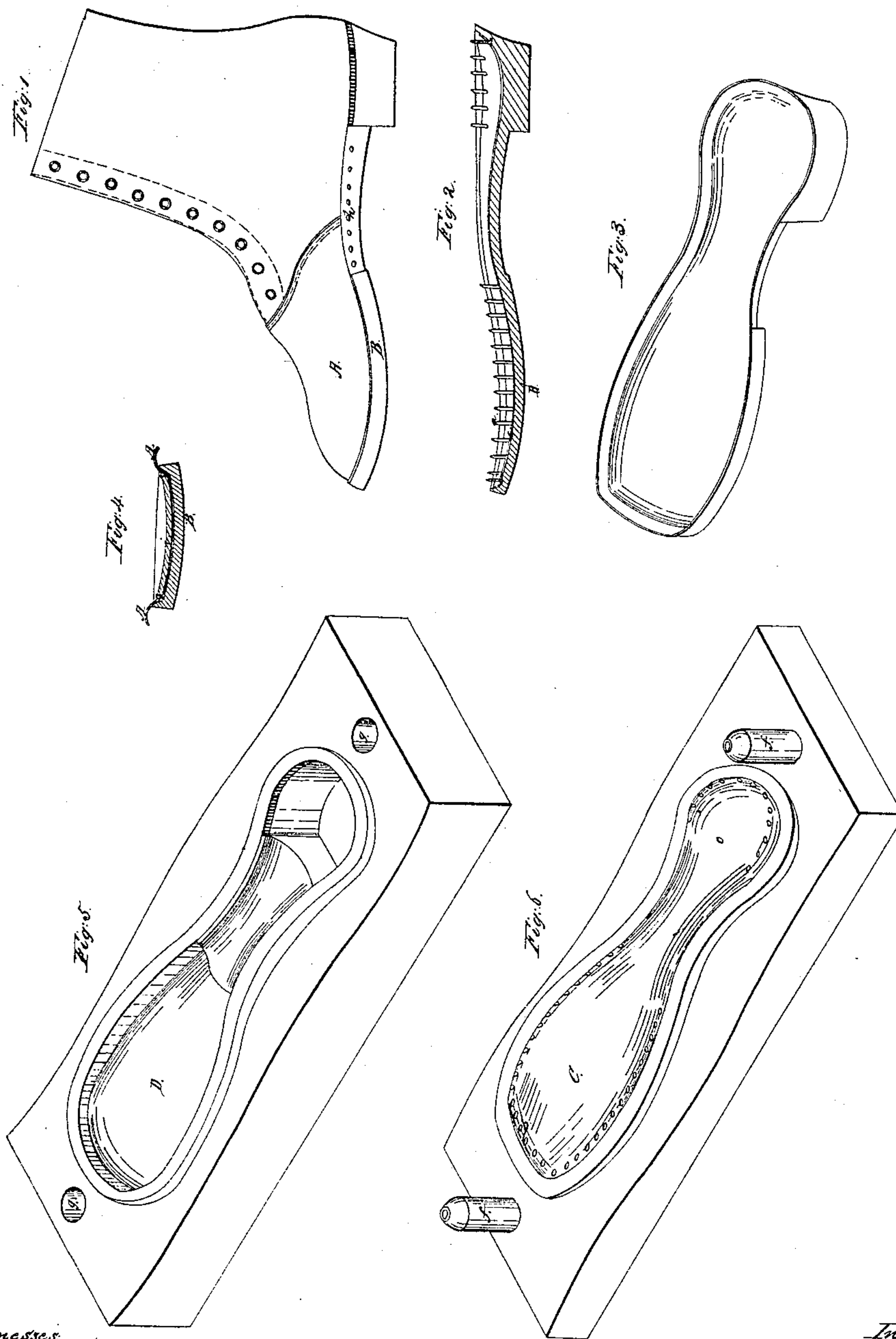


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D. E. HAYWARD.  
ATTACHING RUBBER SOLES TO BOOTS AND SHOES.  
No. 40,802. Patented Dec. 1, 1863.



Witnesses,  
Homer H. Stearns,  
B. C. Chisholm.

Inventor,  
Daniel E. Hayward,  
per his Attorney  
Sam. Cooper.



# UNITED STATES PATENT OFFICE.

DANIEL E. HAYWARD, OF MELROSE, MASSACHUSETTS.

## ATTACHING RUBBER SOLES TO BOOTS AND SHOES.

Specification of Letters Patent No. 40,802, dated December 1, 1863.

*To all whom it may concern:*

Be it known that I, DANIEL E. HAYWARD, of Melrose, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Attaching Vulcanized India-Rubber Soles to Boots and Shoes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a view of a leather boot with a vulcanized rubber sole attached thereto, by my improved method; Fig. 2, a longitudinal section through the sole, ready to be attached to the boot; Fig. 3, a view of an ordinary plain vulcanized sole such as has been cemented to boots and shoes; Fig. 4, a cross section of the boot Fig. 1, showing the manner in which the nails pass through the leather and are clenched down onto it; Fig. 5, a view of the lower half of the vulcanizing mold; Fig. 6, a view of the top half.

I am aware that an outer sole of vulcanized rubber, such as is represented in Fig. 3, has been cemented to an inner sole of rubber which had been previously nailed to a leather upper; but in this case the two soles were liable to be torn asunder, one from the other.

This difficulty I have avoided by my present invention, the object of which is to make a cheap and durable boot or shoe, with a leather upper and a vulcanized rubber sole, in which the sole will not be liable to be torn from the upper; and my invention consists in an improved method of preparing and attaching the rubber sole, which I will now proceed to describe in such terms that others skilled in the art may understand and use my invention.

In the said drawings A is the upper leather of a boot; B, the vulcanized india rubber sole, which has been formed in the mold Figs. 5 and 6. It has a row of large headed tacks or rivets *a* secured on the inner side of it, around near its edge, in the following manner: The top part or follower C, Fig. 6, of the mold has a series of holes *b*, of the proper size to receive the rivets *a*, around its edges at the proper distances from each other and from the edge; a sheet of stout cloth or canvas *c* of the form of the sole is laid on the follower C, and the rivets *a* are pushed through it one into each hole *b*. The follower C, is now placed on the plastic rubber with which the mold D, Fig.

5, has been filled, and the two parts of the mold are secured together (guide pins *f* on the part C enter holes *g* in the other half of the mold). The rubber sole B is now vulcanized in contact with the canvas *c* which is caused to adhere firmly to the rubber sole the heads of the nails being slightly embedded in the rubber, so that there is no danger of cloth and rubber being torn apart, while the large flat head of the rivet *a* cannot by any ordinary force be pulled through the canvas *c*. The sole thus produced (shown in Fig. 2,) is ready to be applied to the boot. This can be done in a most expeditious manner; the upper A, is lasted on a steel plated last, together with its inner leather sole *i*, Fig. 4, and the sole B is laid on and driven down when the nails *a* pass through the upper leather and the inner sole and are clenched down on the metal plate of the last, as shown in Fig. 4. This secures the sole to the boot in a most perfect and durable manner.

If preferred the shank part may be nailed through its edge from the outside as shown at *h*, Fig. 1. I sometimes dispense with the sheet of canvas cloth *c* and the nails or rivets *a* are inserted in the holes *b* of the follower C, the heads of the nails projecting a short distance above the surface of the follower; the two parts of the mold are now put together, the follower pressing on the plastic rubber in the mold D presses the heads of the nails into it, and when the sole has been vulcanized, the heads of the nails remain firmly embedded in the vulcanized rubber, their points projecting from its inner surface, as in the previously described case. I however prefer the use of the canvas cloth, particularly in light soles, as I think it is the strongest mode of attaching the nails or rivets to the sole.

What I claim as my invention and desire to secure by Letters Patent, is—

1. Securing nails or rivets *a* to the rubber sole B, by vulcanizing the sole onto the nails or rivets substantially in the manner described.

2. I claim the canvas cloth *c* when the nails or rivets *a* are passed through it, and the cloth and nails are attached to the sole in the manner substantially as set forth.

D. E. HAYWARD.

Witnesses:

HENRY BURR,  
HORACE H. BURR.