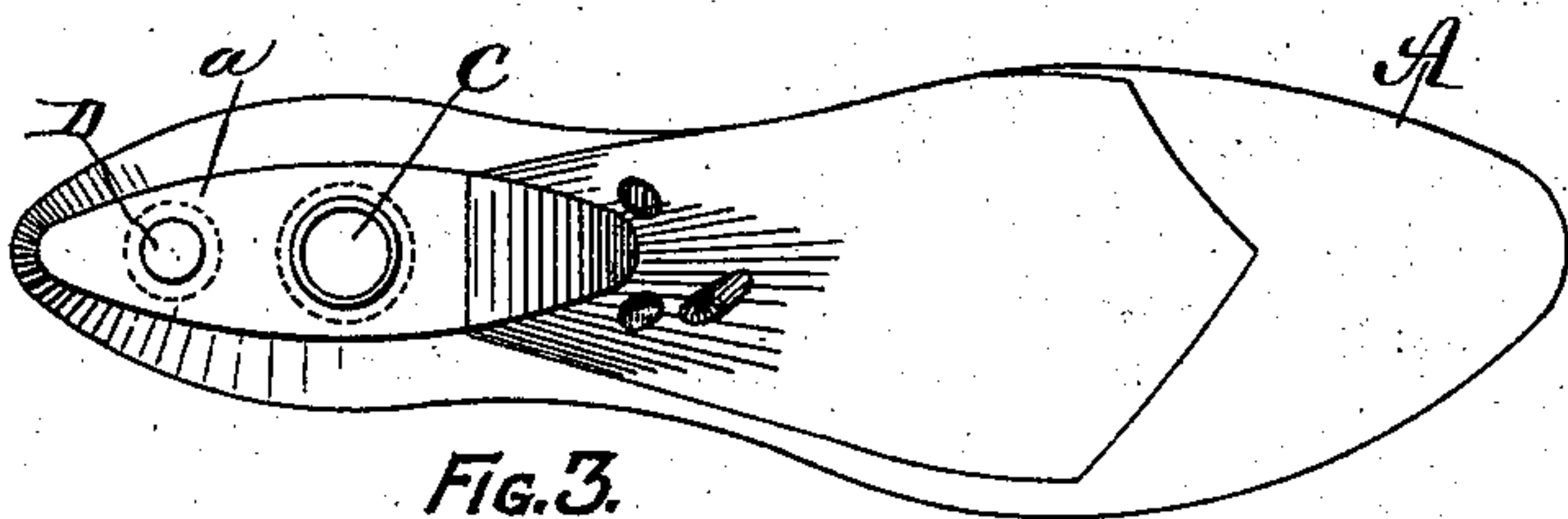
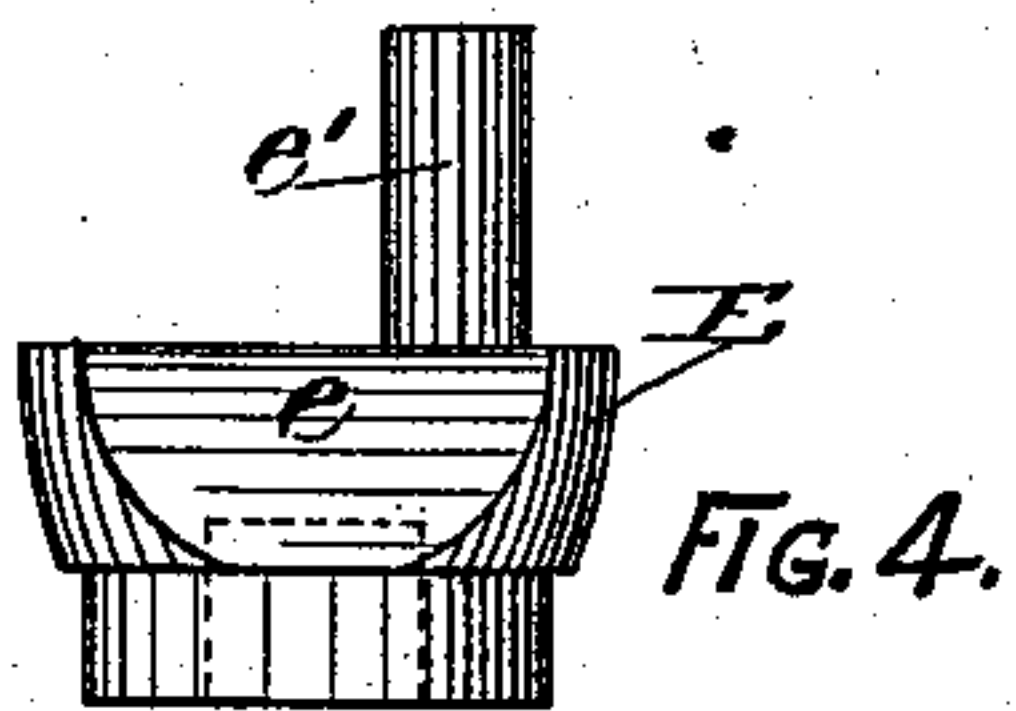
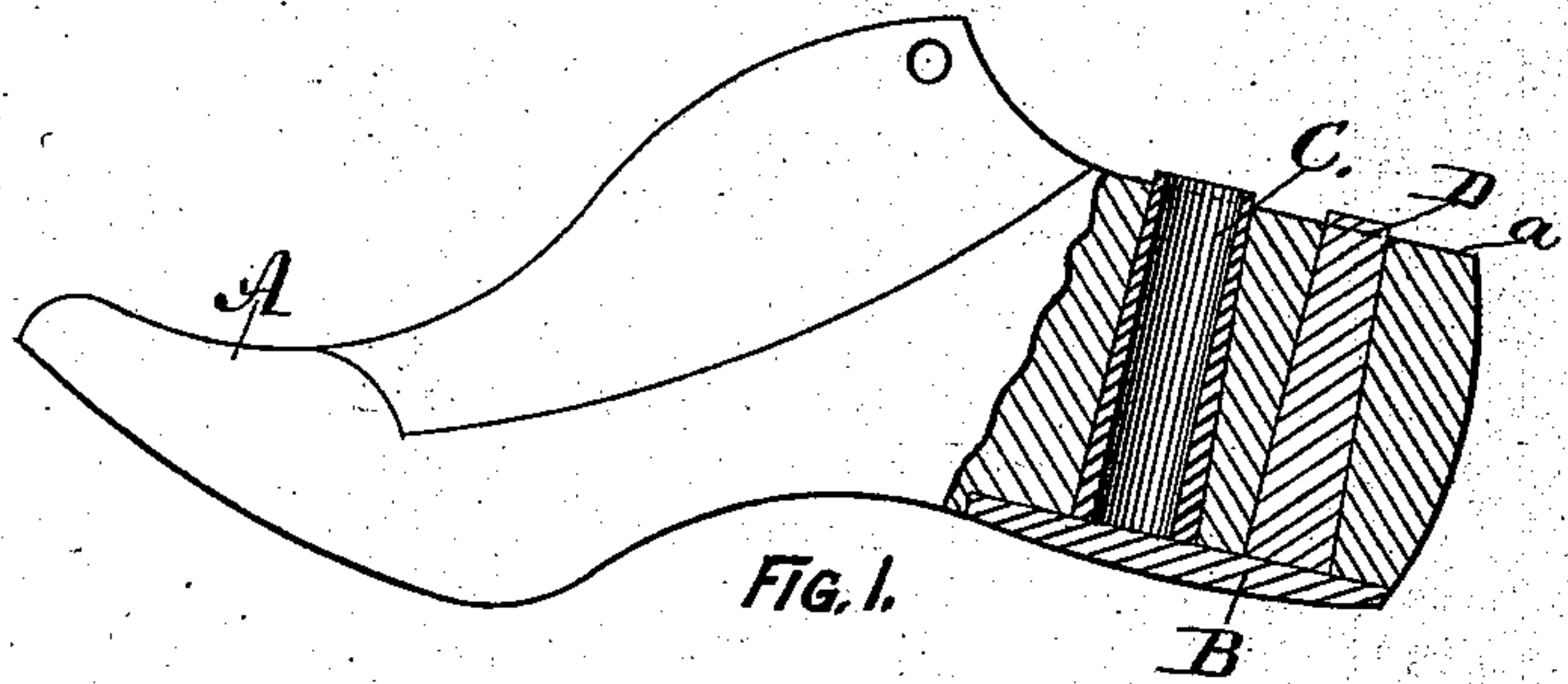
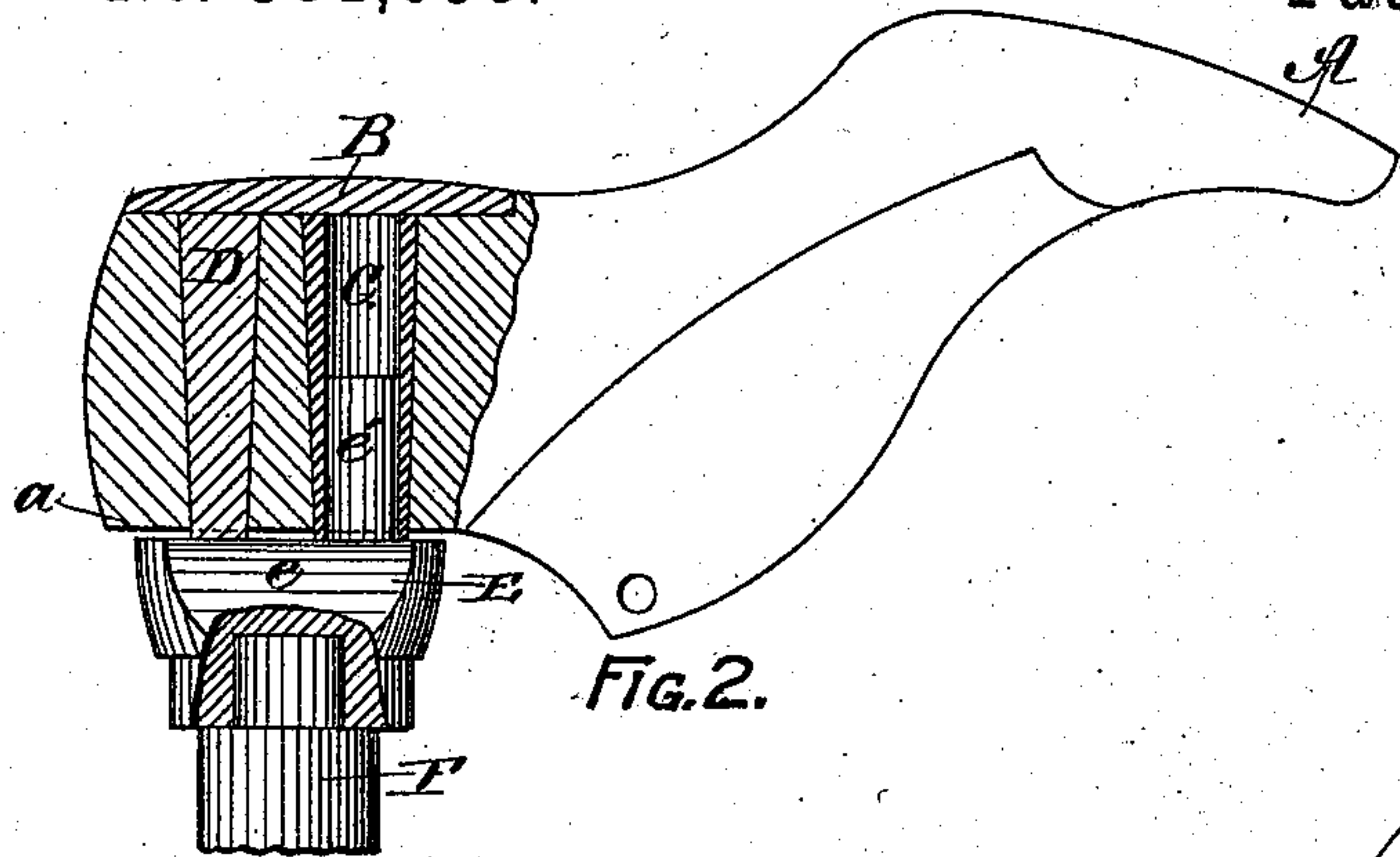


(No Model.)

D. BALL.  
LAST.

No. 381,098.

Patented Apr. 17, 1888.



Witnesses:

D. Brewer.  
W. W. Brown.

Inventor:

DAYTON BALL,

by

William H. Low,

Attorney.



# UNITED STATES PATENT OFFICE.

DAYTON BALL, OF ALBANY, NEW YORK.

LAST.

SPECIFICATION forming part of Letters Patent No. 381,098, dated April 17, 1888.

Application filed December 8, 1887. Serial No. 257,284. (No model.)

*To all whom it may concern:*

Be it known that I, DAYTON BALL, of the city and county of Albany, in the State of New York, have invented new and useful Improvements in Lasts and their Supports, of which the following is a full and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

10 Figure 1 is a side elevation of a last containing my improvements, with the heel portion shown in vertical section. Fig. 2 is a like view of my last fixed on the jack of a heeling-machine. Fig. 3 is a plan view of my last; and  
15 Fig. 4 is a side elevation of a jack or support for my last when used in a heeling-machine.

The object of my invention is to give sufficient strength to a wooden last to constantly endure the exceeding pressure to which it is  
20 subjected in a machine for mechanically attaching heels to shoes, and I attain this object by the means herein shown and described.

As represented in the drawings, A designates the last, which may be of any preferred  
25 form and of any required size. Said last is made of wood, and is provided with a metallic heel-plate, B, which should be of sufficient strength and thickness to prevent it from becoming perforated by the nails used for heel-  
30 ing shoes thereon. Said heel-plate is finished to conform to the usual shape of the heel of the last, and is secured to its place by means of screws or other suitable fastenings.

C is a metallic sleeve inserted in the cone of  
35 the last. Said sleeve is coniform in shape and has a cylindrical bore. The larger end of said sleeve is fitted to bear against the inner face of the heel-plate, and thereby a greater bearing-surface is obtained, to resist the tendency  
40 of injuring said heel-plate while under pressure, than is possible when a cylindrical sleeve is used.

D is a coniform metallic stud, that is also inserted in the cone of the last at a short distance from the sleeve C. Preferably the axes  
45 of said stud and the sleeve C are arranged parallel with each other. The length of said stud and of the sleeve C is slightly greater than the depth of the cone of the last, so that  
50 the smaller ends of the stud and sleeve will project slightly above the surface *a* of the cone; thereby the wood of the last is protected against the compressive power exerted by the heeling-machine, the pressure of the latter being  
55 entirely borne by the sleeve C and stud D.

E is the jack, which is fitted on the jack-spindle F of the heeling-machine, so that the head *e* of said jack will be about concentric with said jack-spindle. Said jack is provided with a single pin, *e'*, which fits the bore of the  
60 sleeve C, but which should be so short that it will not bear against the inner face of the heel-plate B when the last is fixed on said jack. The pin *e'* should be arranged in the head *e*, so that it will be eccentric to the center of the  
65 jack-spindle F to such a degree that the center of the latter will be about midway between the centers of the sleeve C and stud D. By this arrangement the stress of the pressure exerted by the heeling-machine in the operation  
70 of heeling shoes on these lasts will be equally distributed on the head of the jack, and thereby the jack-spindle will be exempted from a bending strain.

By giving the sleeve C and stud D a greater  
75 diameter at their inner ends than at their outer ends I avoid any liability of their wearing loose and dropping out of place while in use.

I claim as my invention—

1. A last provided with a metallic heel-  
80 plate, in combination with a coniform sleeve and a coniform stud, as herein described, both sleeve and stud being made of metal and having a slightly greater length than the depth of the cone of the last, said heel-plate, sleeve,  
85 and stud all being made independently of each other, and the sleeve and stud being inserted in said last, so that the larger end of each will have a separate bearing against the inner face of said heel-plate, as and for the purpose herein  
90 specified.

2. The combination, with a last provided with a metallic heel-plate and having a metallic sleeve and a metallic stud inserted separately in the cone of said last, the inner ends  
95 of both sleeve and stud having a separate bearing against the inner face of said heel-plate, and the outer ends of both projecting slightly from the upper face of the cone of the last, of a jack provided with a single pin  
100 which is fitted to the bore of the sleeve of the last, but is of insufficient length to bear against the heel-plate, said pin being arranged eccentrically to the center of the jack-spindle, on which said jack is fitted, as and for the  
105 purpose herein specified.

DAYTON BALL.

Witnesses:

WM. H. LOW,  
S. B. BREWER.