

No. 724,432.

PATENTED APR. 7, 1903.

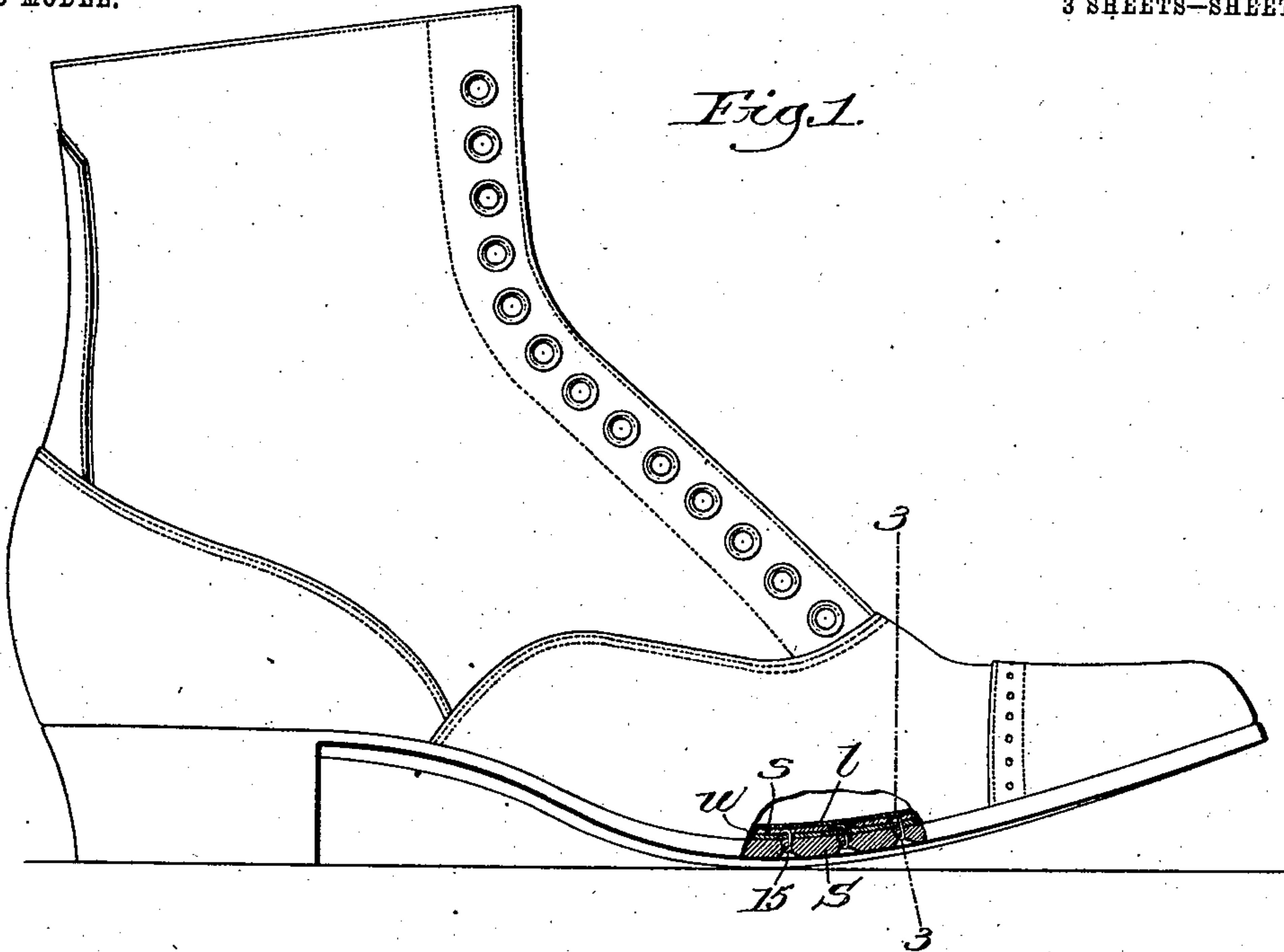
L. A. CASGRAIN.

METHOD OF ATTACHING THE OUTER SOLES OF BOOTS OR SHOES  
TO THEIR INNER SOLES.

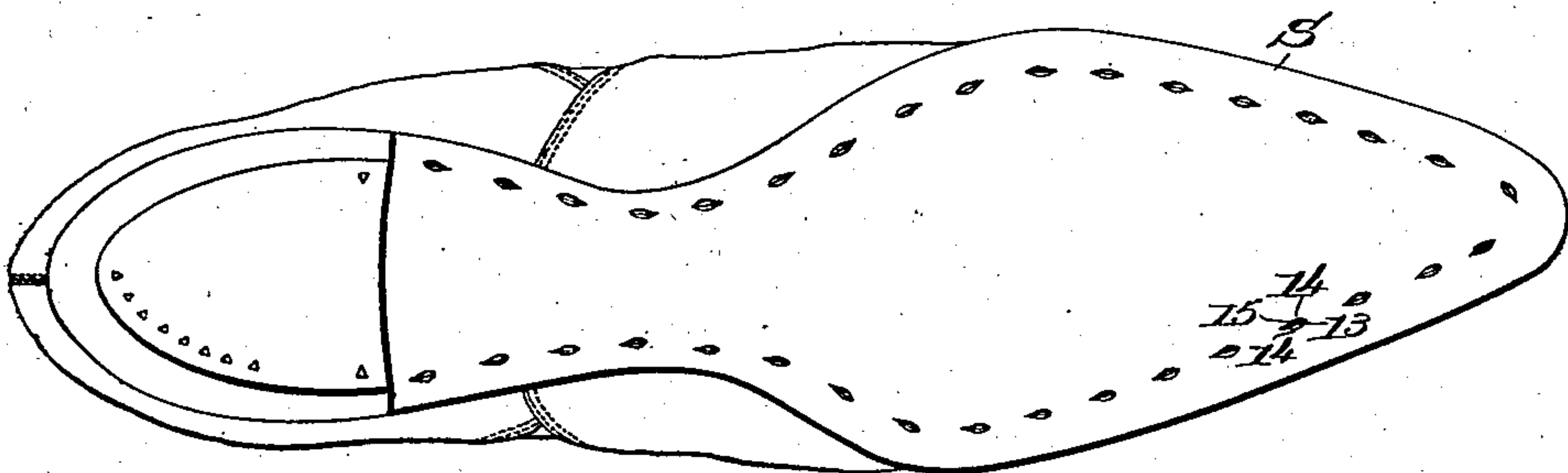
NO MODEL.

APPLICATION FILED FEB. 15, 1902.

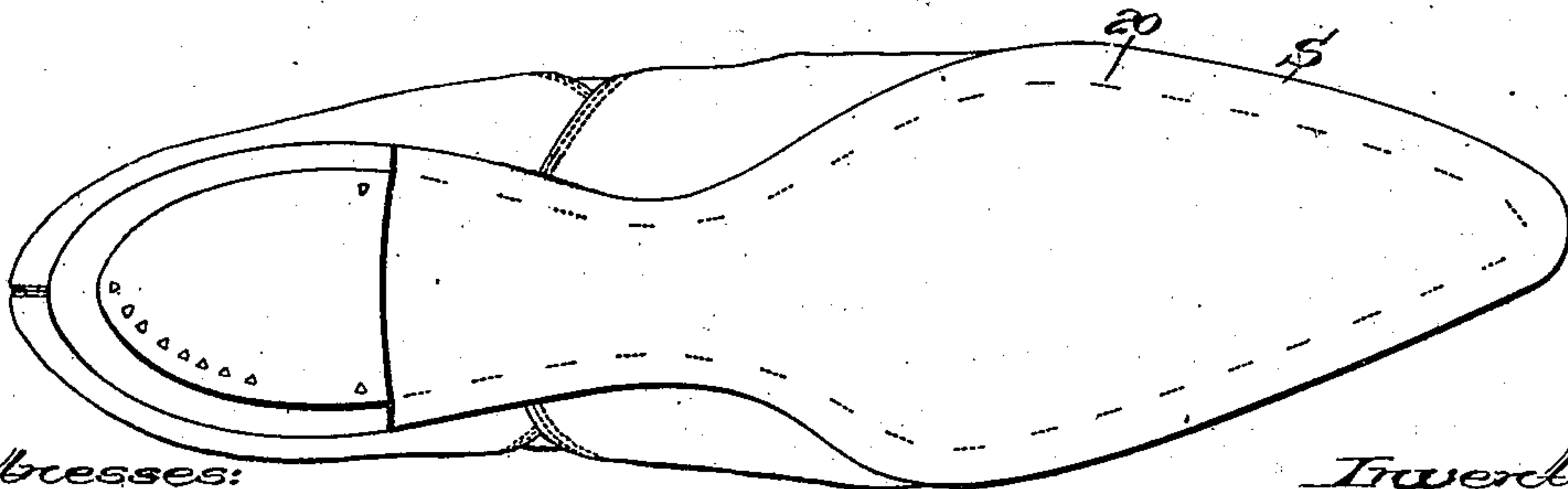
3 SHEETS—SHEET 1.



*Fig. 2*



*Fig. 2a*



Witnesses:  
Fred S. Grunhaft.  
Edward F. Allen.

Inventor.  
Louis A. Casgrain,  
by Wesley Gregory, Atty.

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3 SHEETS—SHEET 2.

*Fig. 3.*

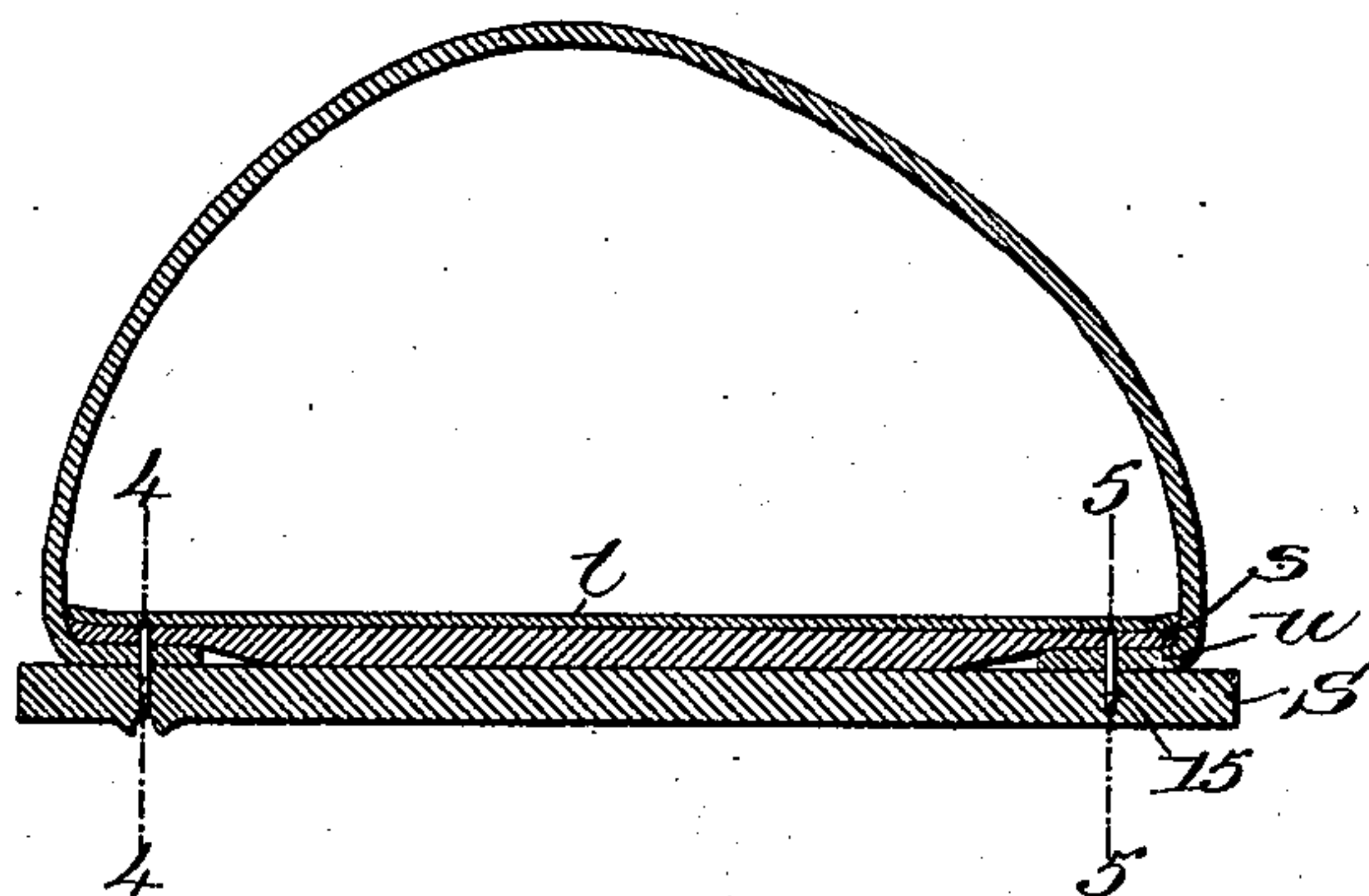


Fig. 4.

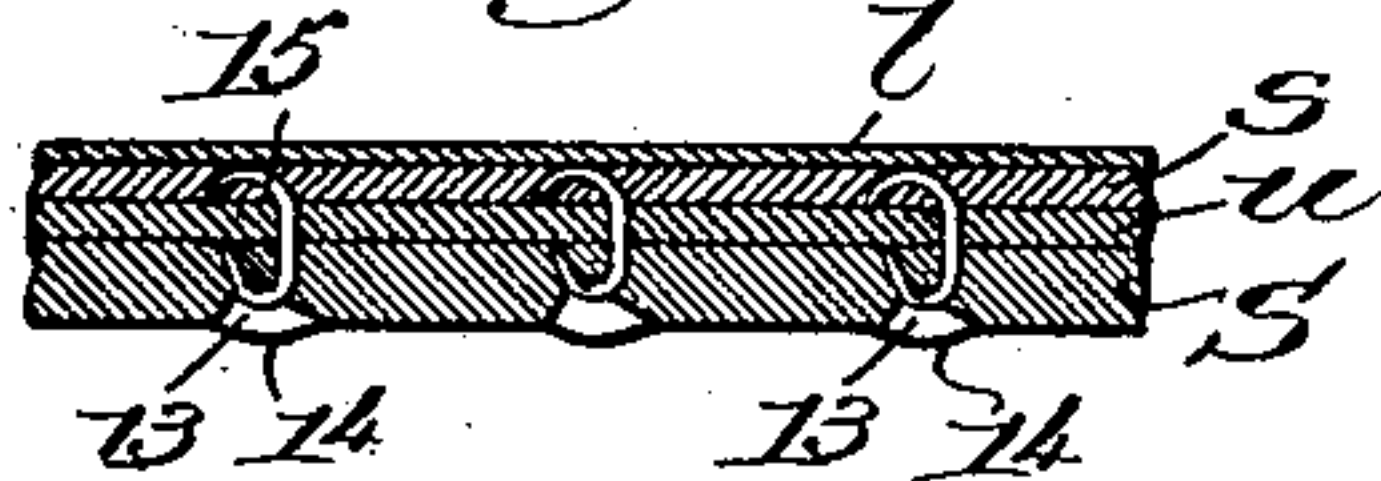
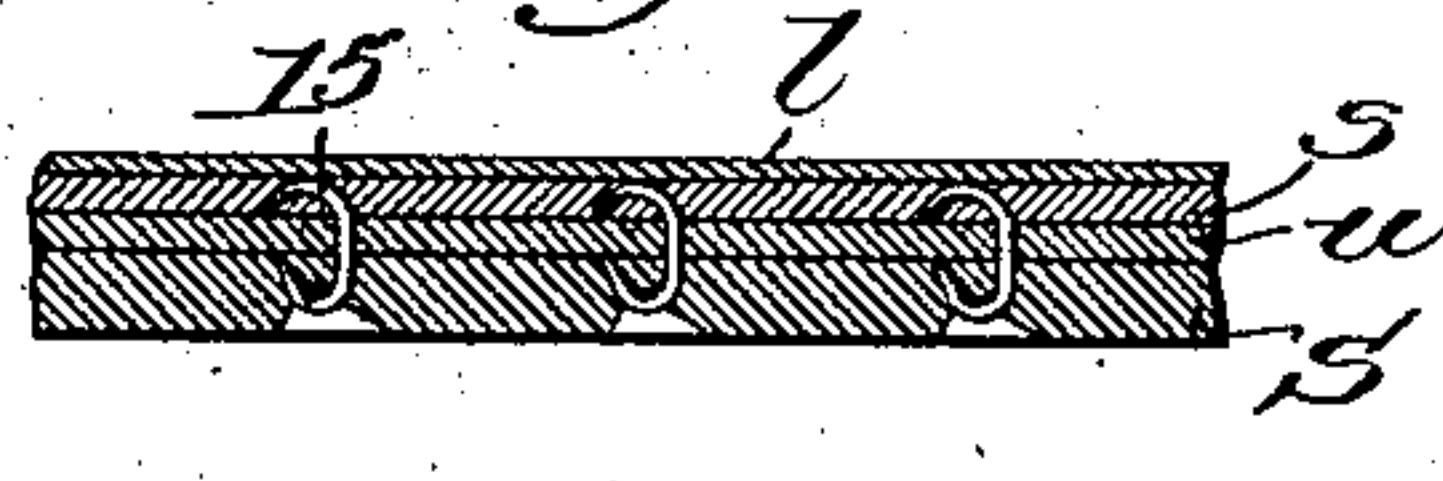


Fig. 5.



*Fig. 6.*

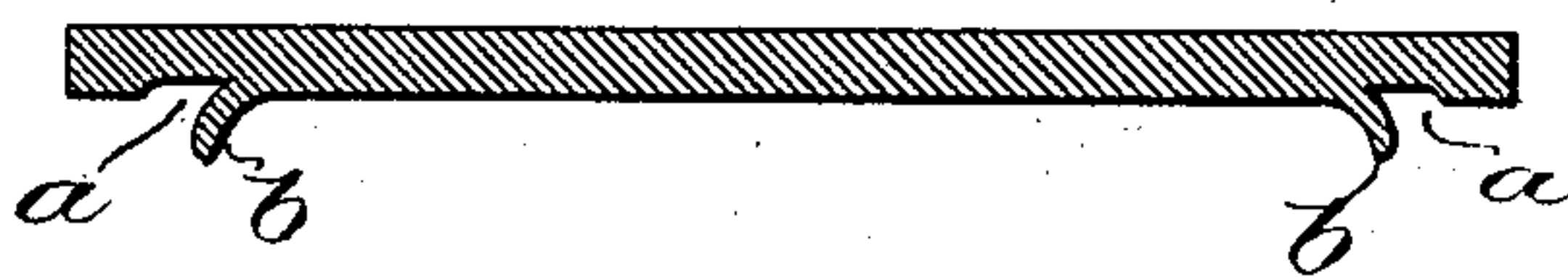
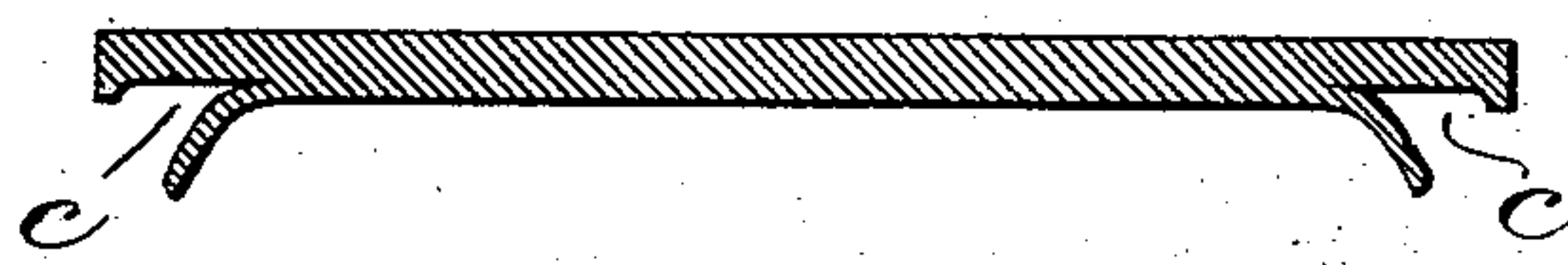
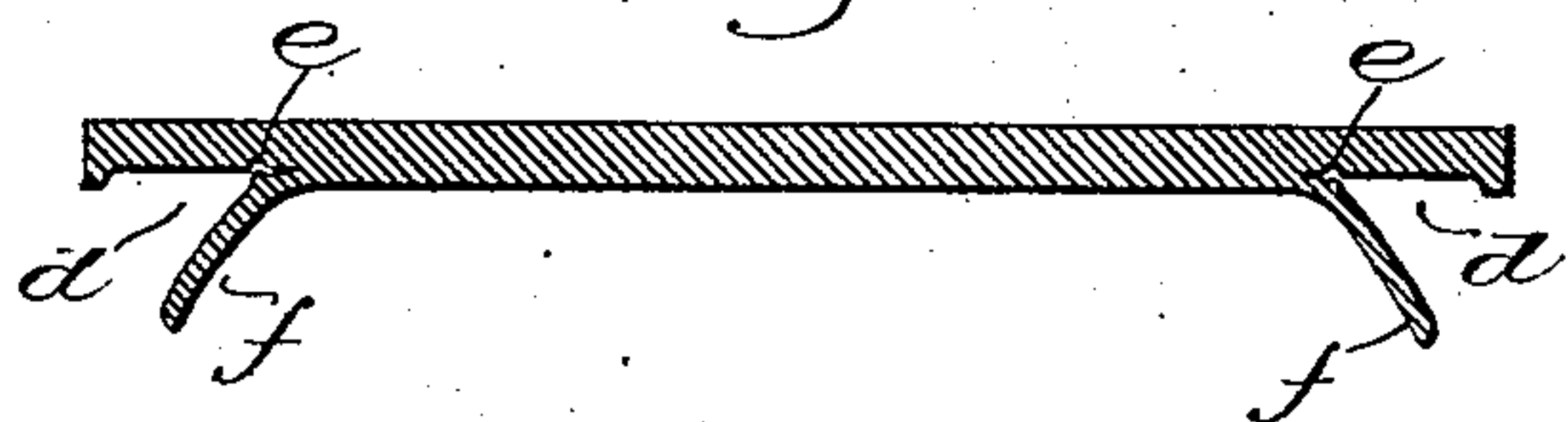


Fig. 7.



*Fig. 8.*



Witnesses:

Fred S. Grunkap.

Edward F. Allen.

*Inverdon.*

Louis A. Casgrain,

By Brasby Gregory,  
Attys.

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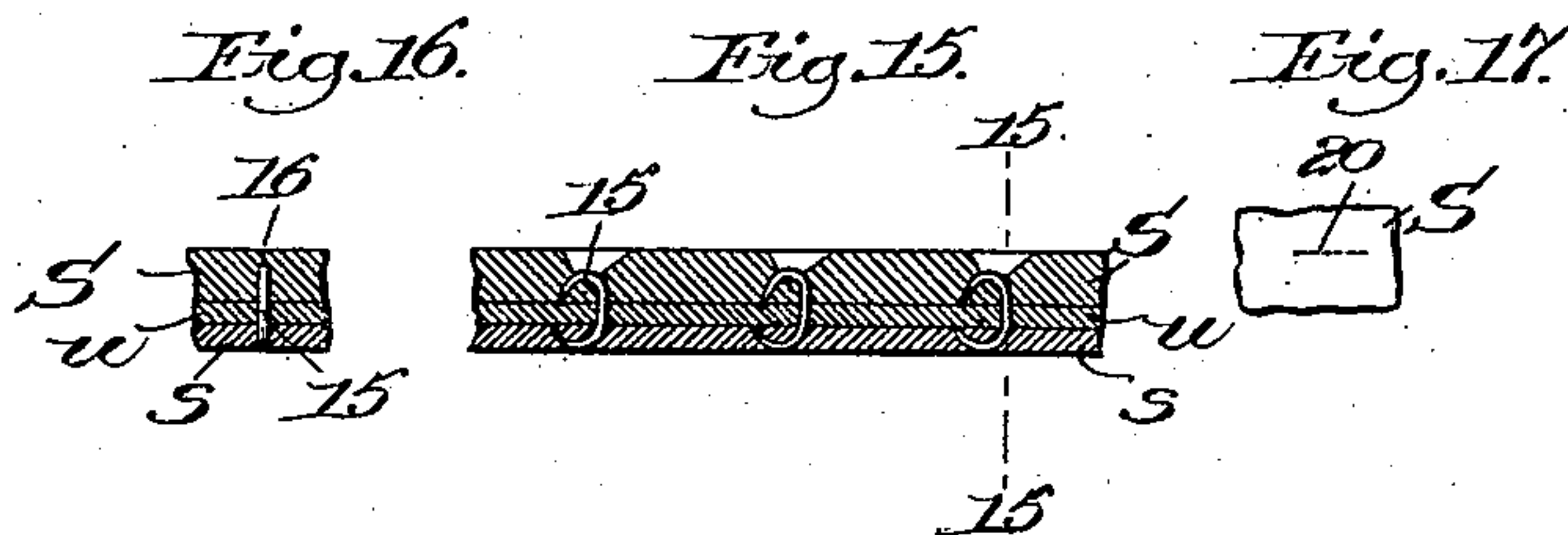
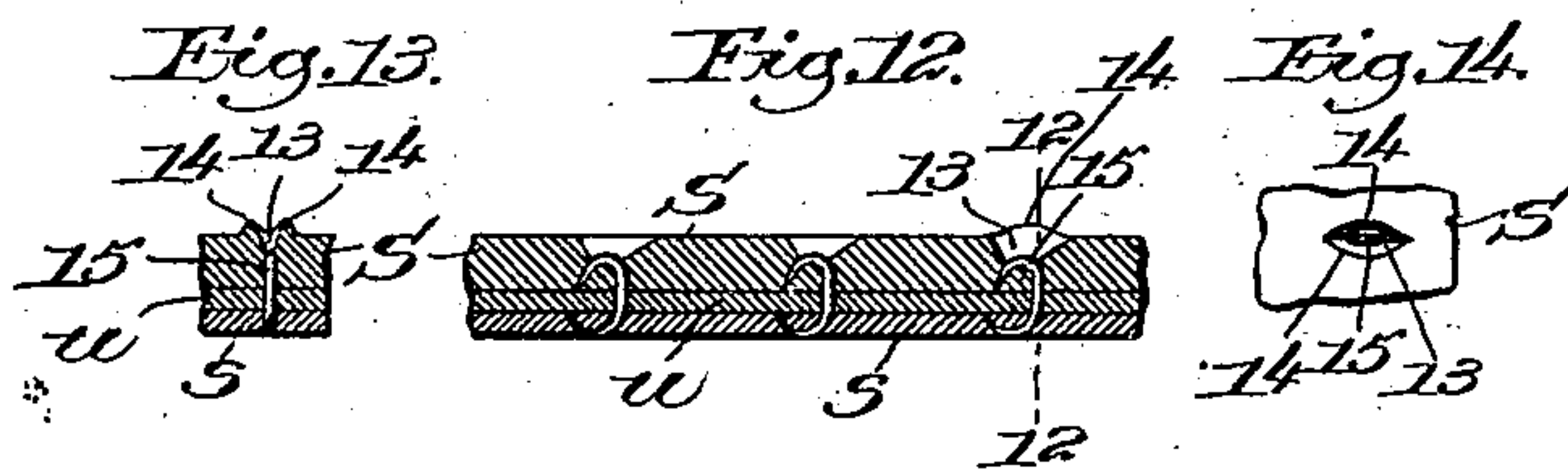
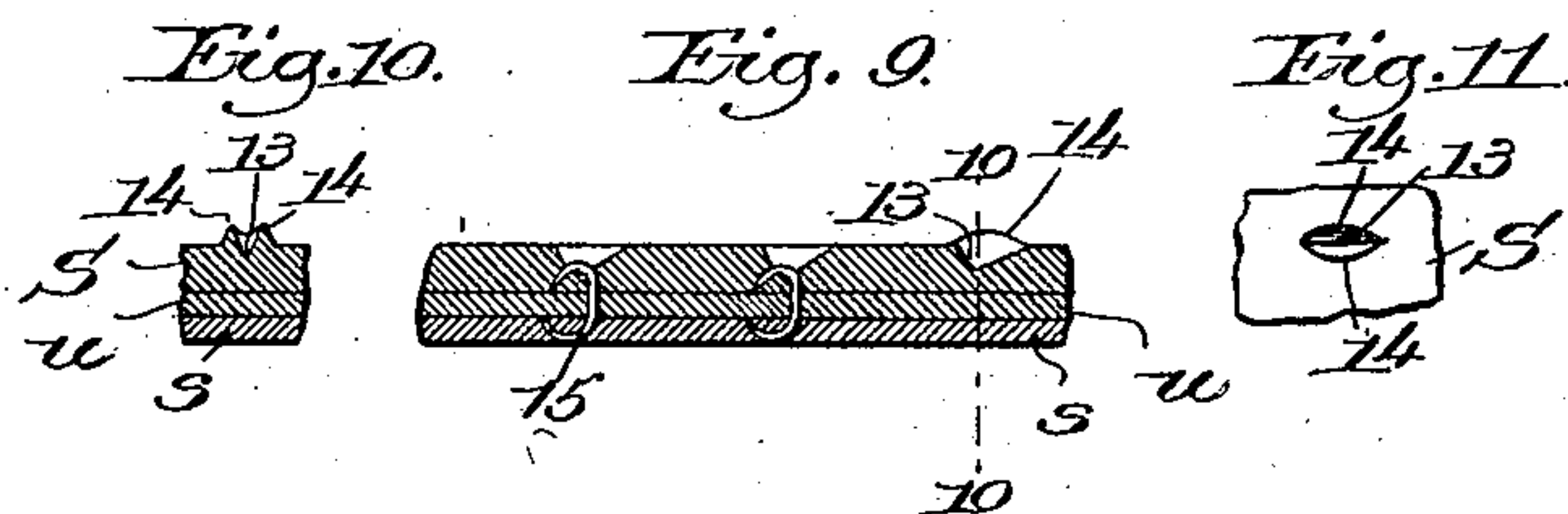
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TO THEIR INNER SOLES.

APPLICATION FILED FEB. 15, 1902.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses:  
Fred S. Grunke,  
Edward H. Allen.

Inventor.  
Louis A. Casgrain,  
by Crosby Gregory,  
attys.



# UNITED STATES PATENT OFFICE.

LOUIS A. CASGRAIN, OF WINCHESTER, MASSACHUSETTS, ASSIGNOR TO  
UNITED SHOE MACHINERY COMPANY, OF BOSTON, MASSACHUSETTS,  
A CORPORATION OF NEW JERSEY.

METHOD OF ATTACHING THE OUTER SOLES OF BOOTS OR SHOES TO THEIR INNER SOLES.

SPECIFICATION forming part of Letters Patent No. 724,432, dated April 7, 1903.

Application filed February 15, 1902. Serial No. 94,154. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS A. CASGRAIN, a citizen of the United States, residing at Winchester, county of Middlesex, State of Massachusetts, have invented an Improvement in Methods of Attaching the Outer Soles of Boots or Shoes to Their Inner Soles, of which the following description, in connection with the accompanying drawings, is a specification, like  
10 characters on the drawings representing like parts.

This invention consists in an improved method of attaching the outer soles of boots or shoes to their inner soles. In the manufacture of boots and shoes the fastening material which is used to attach the outer sole is usually concealed. It has heretofore been the practice to make a continuous "channel" in the outer sole to secure the fastening material. After this channel is cut it is opened  
20 by a separate operation, the "channel-lip" being turned up to afford access to the groove in which the fastenings are to be inserted. After the fastenings have been inserted the channel-lip is cemented, and after the cement has had an opportunity to dry the lip is closed, either by hand or by machine. Four distinct operations are thus necessary—cutting, opening, cementing, and closing. This method of  
30 forming an opening in the stock is therefore objectionable on account of the expense of these separate operations; also, the stock is greatly weakened by being cut in this way, as is explained more fully hereinafter.

In applying my present invention I form in the outer sole a plurality of cuts to receive the fastenings, insert fastenings in the cuts, and close the cuts over the fastenings. This method does away with several operations,  
40 and is therefore much more economical. Preferably, also, the cuts are separate and disconnected, thus leaving the original strength of the stock between the cuts. It may, however, in some work be necessary or convenient to form the cuts so near together that the ends of the cuts meet or overlap. In such cases the stock between the openings may be slightly cut; but obviously the strength of the stock will be interfered with

much less than when a continuous channel is  
50 formed. Also the advantages in the way of economy above referred to will in this case be secured to the same degree as when the cuts are entirely separate and disconnected. I consider, therefore, that forming the open-  
55 ings in this manner would be within my invention.

The shoe shown in the drawings embodies the invention described and claimed in United States Letters Patent No. 669,022, issued February 26, 1901, as well as my present  
60 invention. The fastenings shown in the drawings is that described and claimed in United States Letters Patent No. 669,025, issued February 26, 1901. It will be obvious, however, that any kind of fastening or fastening material commonly used or adapted for use  
65 in attaching the outer soles of boots or shoes may be used without departing from my invention.

In the drawings, Figure 1 shows a shoe  
70 partly cut open, having its outer sole secured to its inner sole in accordance with my invention. Fig. 2 is a view of the bottom of the shoe shown in Fig. 1, showing the cuts  
75 open, with fastenings inserted in some of the cuts. Fig. 2<sup>a</sup> is a view of the bottom of the shoe, showing the cuts closed. Fig. 3 is an enlarged sectional view of the shoe shown in Fig. 1 on the line 3. At the left of the figure  
80 is shown that stage of the process at which the opening has been made and the fastening inserted, the opening not yet being closed. At the right of this figure is shown the next  
85 step of the process, at which the opening is closed. Fig. 4 is a section on the line 4 of Fig. 3, showing several cuts open. Fig. 5 is a section on the line 5 of Fig. 3, showing  
90 several cuts closed. Figs. 6, 7, and 8 show several kinds of "channels" heretofore used. Fig. 9 shows at the right the first step in the application of my improved method. Fig. 10  
is a section on the line 10 of Fig. 9. Fig. 11 is a plan view of the cut shown at the right  
95 in Fig. 9. Fig. 12 illustrates at the right the next step in the application of my novel method, a fastening being shown as inserted in the cut. Fig. 13 is a section on line 12 of



Fig. 12. Fig. 14 is a plan view of the portion of the stock shown at the right in Fig. 12. Fig. 15 shows the final step in my improved method, the cut being closed. Fig. 16 is a section on the line 15 of Fig. 15. Fig. 17 is a plan view of a portion of the stock shown at the right of Fig. 15, the line of the closed cut being shown by dotted lines.

In the manufacture of boots and shoes in which it is customary to conceal the fastening material used in attaching the outer soles it has been the practice first to cut a continuous groove or channel in the outer sole. This channel has then to be opened by a separate operation, the channel-lip being turned back to afford access to the channel. After these two distinct operations have been performed the fastening material is then inserted by a separate operation and on a separate machine. After the insertion of the fastening material it is necessary to turn back the channel-lip to cover and conceal the fastening material and leave a smooth surface for the tread-face of the sole. As a preliminary step to this closing operation it is necessary to apply cement to the channel-lip in order that it may adhere to the body of the stock when the channel-lip is turned back. This cementing operation may be performed either by hand or by machine. It is also much preferable, although not the invariable practice, to moisten the channel-lip after the cement is applied to put the stock "in temper" for the closing operation. After the cement has had a little time to dry the channel-lip is turned back either by hand or by machine, covering and concealing the fastening material.

In Figs. 6, 7, and 8 are illustrated several forms of channels which have heretofore been extensively used in the manufacture of shoes. Fig. 6 shows what is known in the trade as the "English channel," formed by cutting the stock and turning up the channel-lip *b*, exposing the channel *a* for the reception of the fastening material. This channel is used to a less extent than the channels shown in Figs. 7 and 8, for the reason that it is difficult to turn down the channel-lip *b* in such manner that the stock will be left smooth, and it is also difficult to make the channel-lip adhere properly to the sole. In Fig. 7 is shown at *c* the form of channel generally employed when metallic fastenings are used to attach the outer sole of a shoe. Fig. 8 shows at *d* the channel which is formed in "McKay work"—that is, that class of shoes in which the sole is attached on a McKay sewing-machine. In forming this channel the lip *f* is turned up and the groove *e* is formed to receive the fastening material. Each of the channels shown in Figs. 6, 7, and 8 is formed in a continuous groove. It will be obvious that forming a continuous channel in the stock in this way must of course greatly weaken the stock. It will also be noticed that in the forms of channels shown in Figs. 7 and 8, which are the chan-

nels generally formed in the outer sole in boot or shoe work, a wide cut is made, extending nearly to the edge of the stock. When the edge of the sole is trimmed, as it always is, the sole is likely to be left with the cut extending very nearly or quite to its edge. This results in a considerable weakening of the sole at its edge, where it is especially desirable that the full strength of the stock be preserved, if possible. This channel-lip is also liable to become detached from the sole, to which, as already stated, it is cemented when the channel is closed.

Figs. 1 to 5 and 9 to 17 of the drawings illustrate the application of the method herein described and claimed, *S* being the outer sole of a boot or shoe, *s* the inner sole, *l* the stock-lining, and *u* the upper.

In the application of the method of my present invention I form a series of cuts in the outer sole to receive the fastening material, insert fastenings in said openings, and close the openings to conceal the fastenings. It is obvious that a number of these openings might be made before any fastenings were inserted, that the fastenings might then be inserted in all of the openings before any of them were closed, and that the openings might then all be closed over the fastenings, and I should consider such a method within my invention. I prefer, however, to form one opening at a time, insert a single fastening in that opening, and then close the opening before proceeding with the inserting of the next fastening or the forming of the next opening. This preferred form of the application of my invention is illustrated in Figs. 9 to 17, inclusive. In Fig. 9 two of the fastenings are shown as already inserted, in accordance with my novel method, in openings which have already been closed, and at the right of the figure is shown a cut 13, made subsequently to the insertion of the next preceding fastening, in which opening no fastening has yet been inserted. Figs. 10 and 11 are other views of this opening, showing the lips 14 raised on each side of the opening. In Figs. 12, 13, and 14 the next step in my method is illustrated. In these figures the fastening 15 is shown as inserted in the opening 13, the cut still being open. In Figs. 15, 16, and 17 the final step in the application of my method is illustrated. Here the opening 13 is shown as closed, the lips 14 being forced down and together, as indicated at 16, Fig. 16. The line of the cut is indicated by dotted lines 20 in Fig. 17.

In the application of my invention I find it unnecessary to use cement in closing the openings in the stock. By closing the cuts promptly after the fastening is inserted I further obviate the necessity for moistening the stock a second time to put it in temper for the operation of closing the channel and I also do away with the separate operation of opening the channel. In dispensing with these separate operations of opening the chan-



nel, moistening the stock, and applying cement it will be obvious that I save considerable expense. Preferably, also, the cuts are separate and disconnected, leaving solid stock  
 5 entirely untouched between the openings. In this way the original strength of the stock between the openings is preserved. In some kinds of work, however, as when it is desired to insert the fastenings near together, the  
 10 ends of the openings may meet or overlap, so that the stock is slightly cut between the openings. In such cases, however, the strength of the stock between the openings is interfered with much less than where the continuous channel is formed, as already explained,  
 15 and the economical advantages are secured to the same extent as when the openings are entirely separate and disconnected. I consider, therefore, that forming the openings in  
 20 this manner would be within the scope of my invention. It should also be noticed that the cut is formed at a distance from the edge of the sole, so that the edge is left with its full strength, which is a great advantage. I prefer  
 25 so to form the opening in the sole that when it is closed the cut will be in a plane substantially perpendicular to the plane of the surface of the sole, as shown at the right in Fig. 3. When the cut is formed in this  
 30 manner, the strength and wearing quality of the stock, even at the deepest part of the opening, are interfered with less than is the case when the opening is made by a wide cut at an acute angle to or substantially parallel  
 35 with the tread-face of the sole.

In the commercial application of my novel method I prefer to form the cuts, insert the fastenings, and close the cuts on the same machine, and in my United States Letters  
 40 Patent No. 693,686, granted on my application February 18, 1902, is shown a machine for performing all three of these operations. It is obvious, however that while it is preferable to perform all the operations on one

machine they may, if desired, all be performed by hand, or they may be divided between different machines, or some of the operations may be performed by hand and others by machine.

Having thus fully described my invention, 50 what I claim as new, and desire to secure by Letters Patent, is—

1. The method of attaching the outer soles of boots or shoes to their inner soles, which consists in forming a plurality of openings in 55 the outer sole; in such operation raising a lip on the stock adjacent to each of the openings; inserting a fastening in each of the openings for uniting the outer sole to the inner sole; and forcing said raised lips over the fasten- 60 ings to conceal the fastenings.

2. The method of attaching the outer soles of boots or shoes to their inner soles, which consists in forming an opening in the outer sole; in such operation raising a lip on the 65 stock adjacent to the opening; inserting a fastening in said opening for uniting the outer sole to the inner sole; forcing said raised lip over the fastening to conceal the fastening; and repeating the operation for each 70 fastening to be inserted.

3. The method of attaching the outer soles of boots or shoes to their inner soles, which consists in forming a plurality of openings in the outer sole; in such operation raising lips 75 on the stock on opposite sides of each of the openings; inserting a fastening in each of the openings for uniting the outer sole to the inner sole; and forcing said raised lips over the fastenings to conceal the fastenings. 80

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS A. CASGRAIN.

Witnesses:

GEO. W. GREGORY,  
 EDITH M. STODDARD.