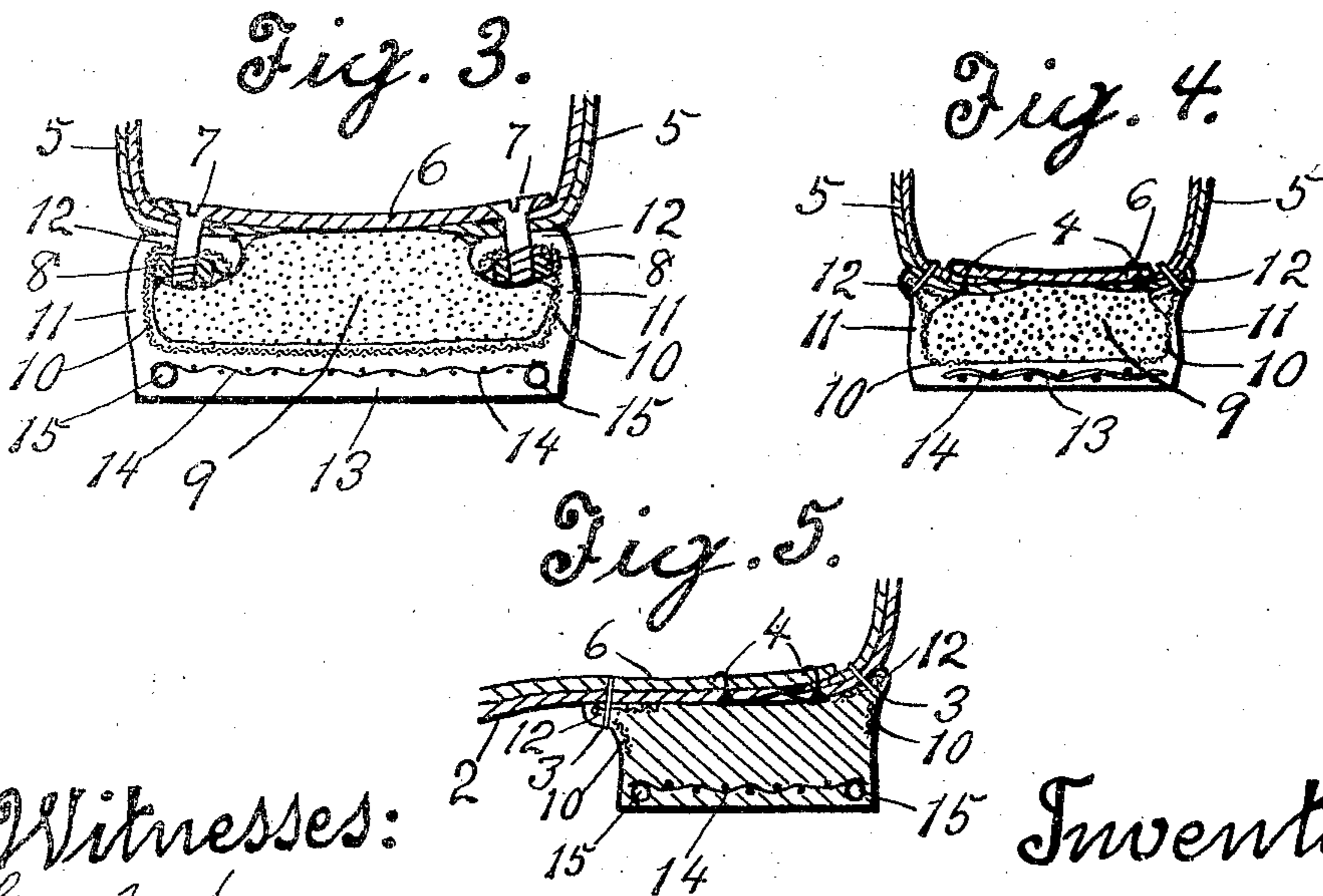
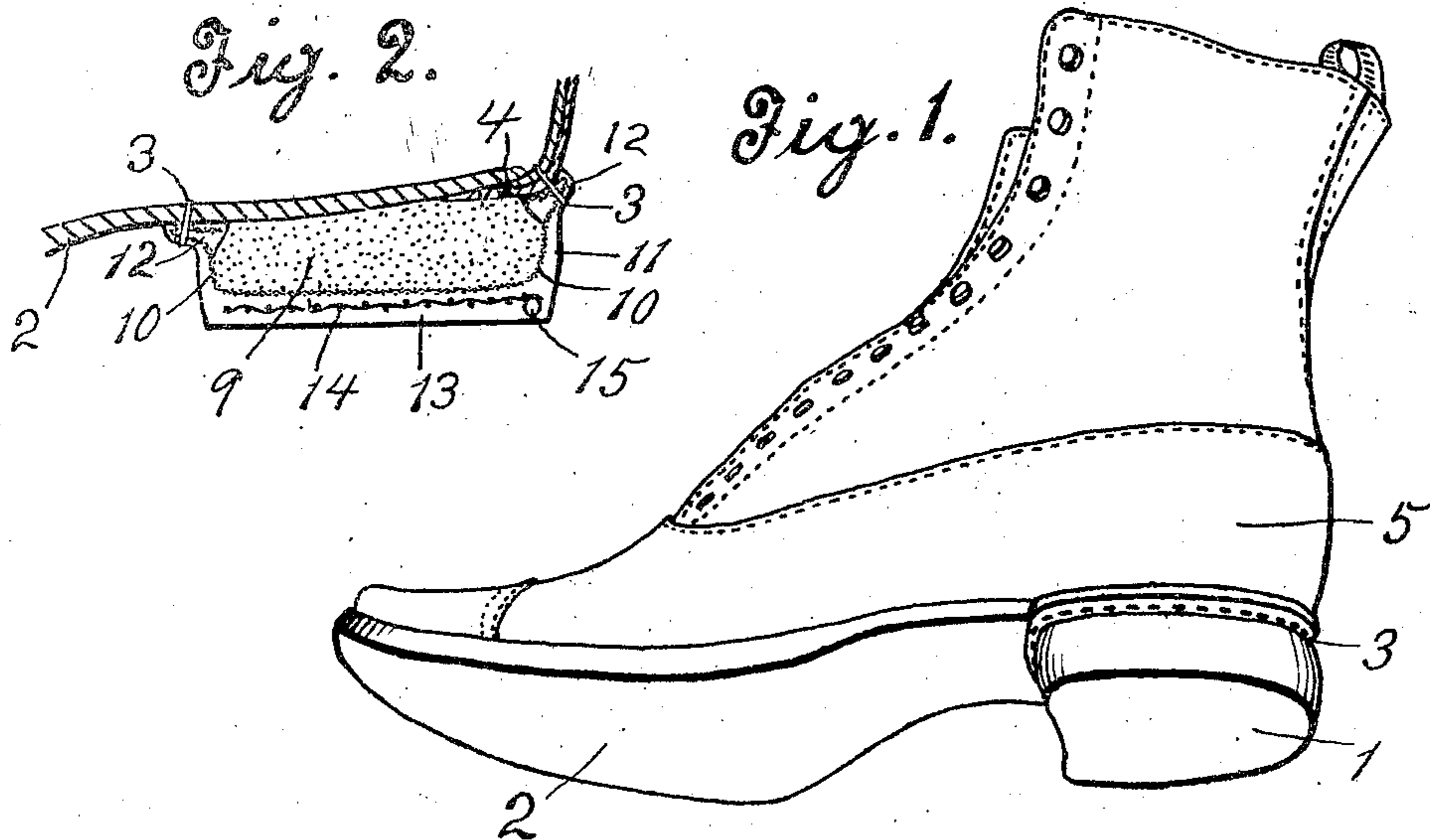


No. 812,496.

PATENTED FEB. 13, 1906.

H. E. IRWIN.
RESILIENT HEEL AND SOLE.
APPLICATION FILED NOV. 4, 1903.

2 SHEETS—SHEET 1.



Witnesses:
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2 SHEETS—SHEET 2

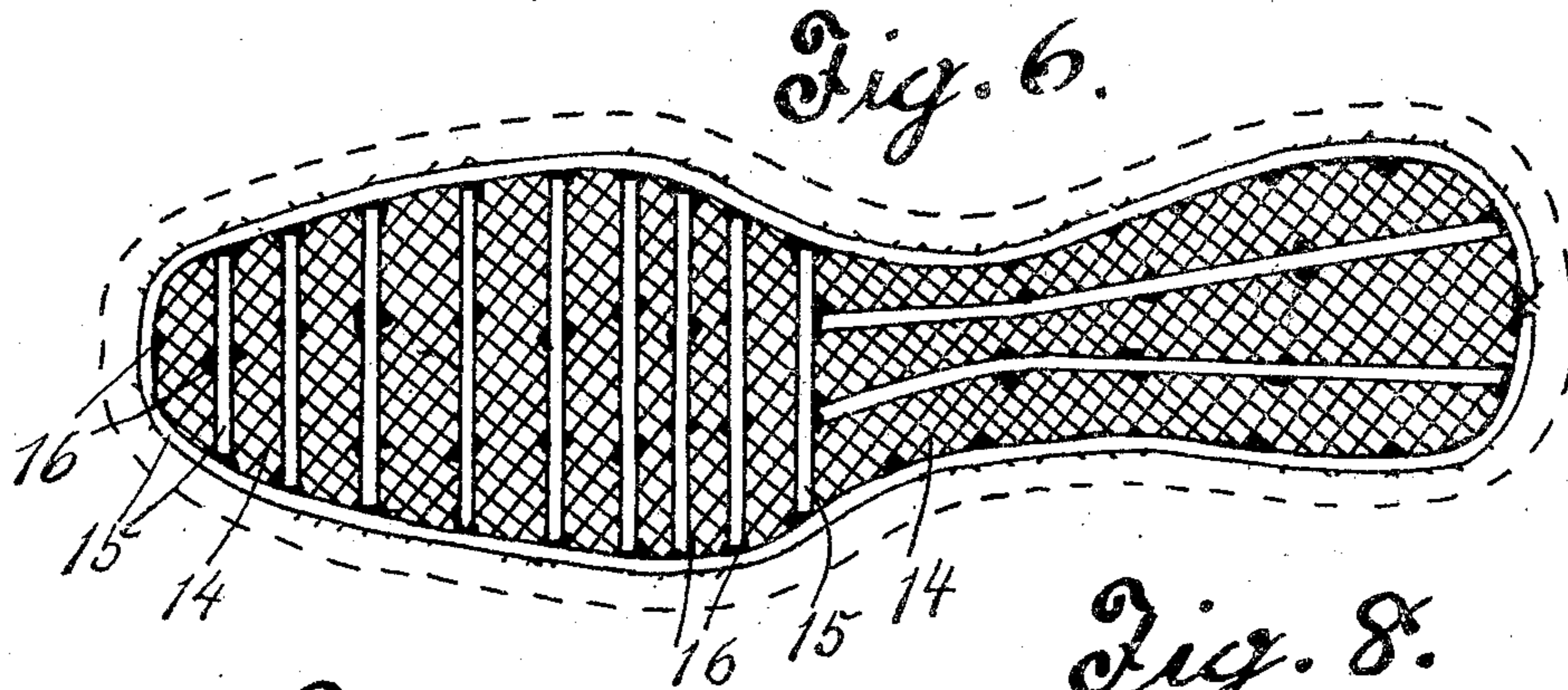


Fig. 7.

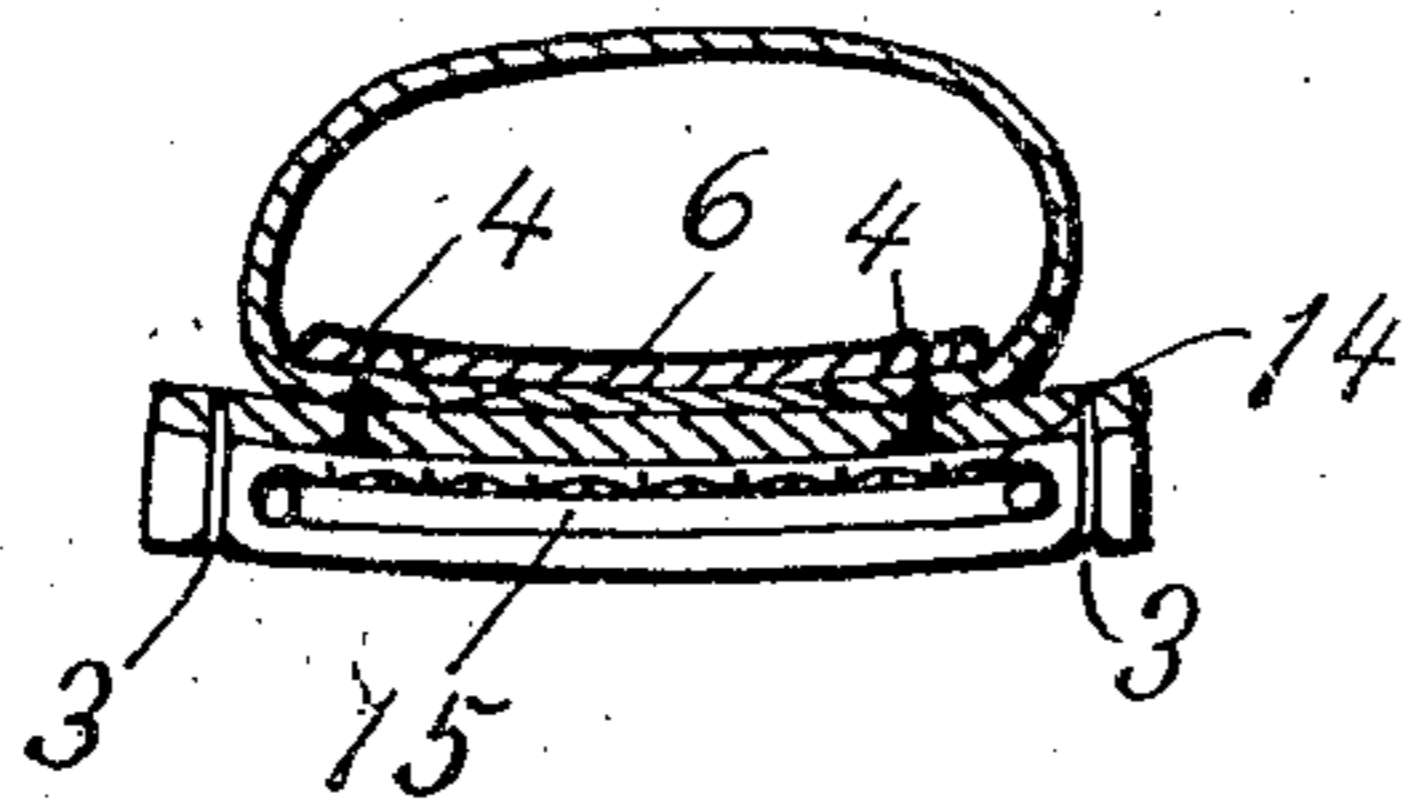


Fig. 8.

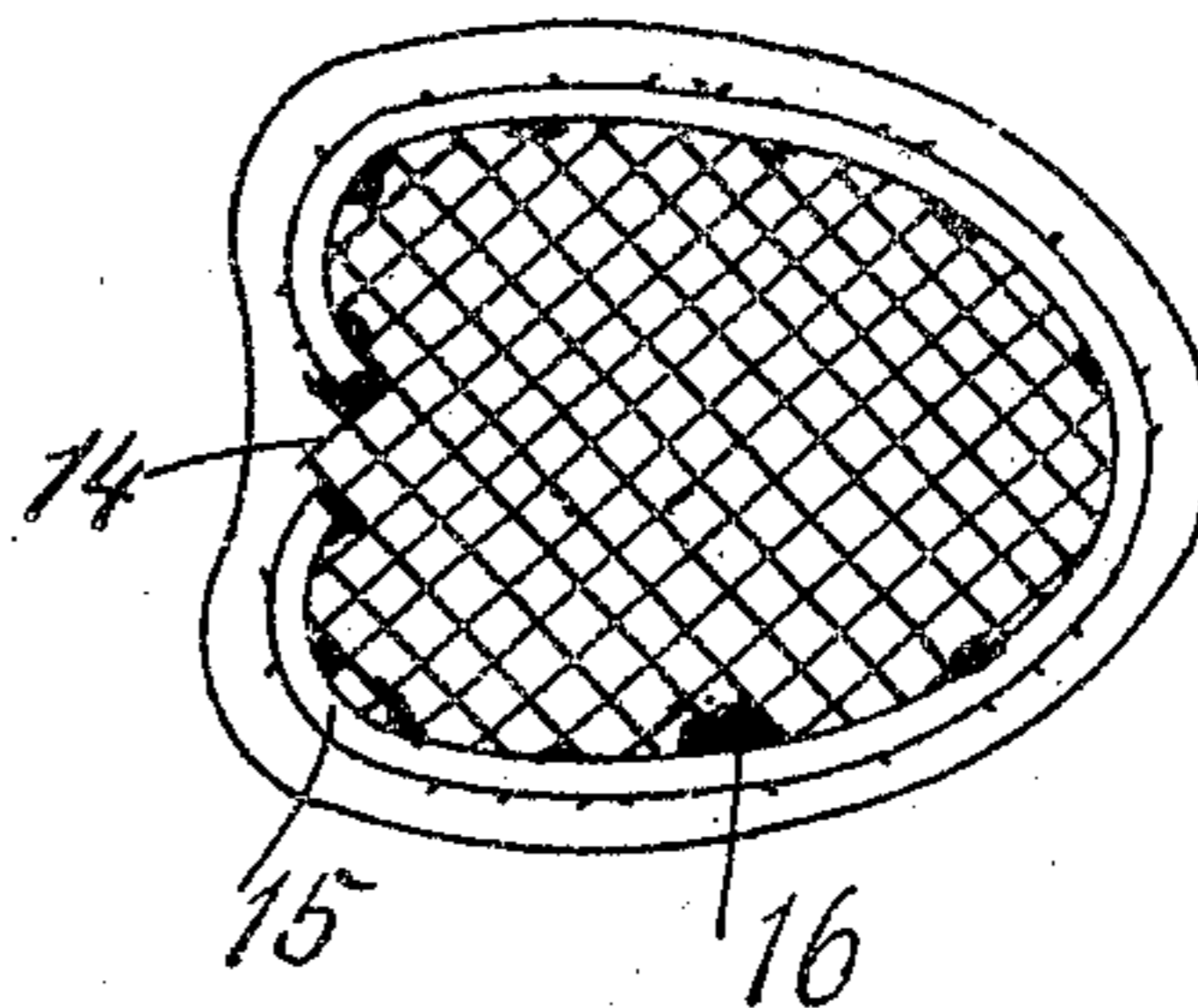
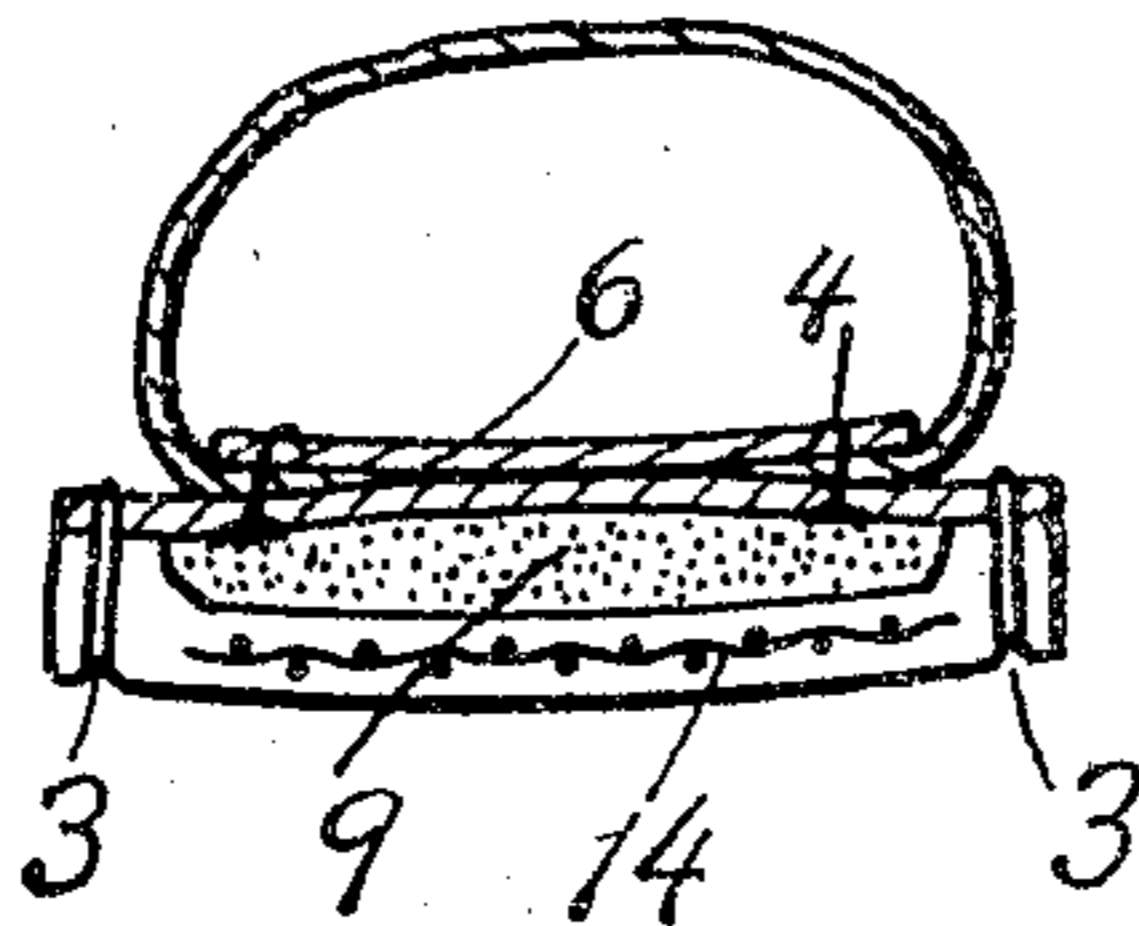


Fig. 9.



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UNITED STATES PATENT OFFICE.

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RESILIENT HEEL AND SOLE.

No. 812,496.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed November 4, 1903. Serial No. 179,782.

To all whom it may concern:

Be it known that I, HERBERT E. IRWIN, a citizen of the United States, residing at Galesburg, in the county of Knox and State of Illinois, have invented certain new and useful Improvements in Resilient Heels and Soles, of which the following is a specification.

My invention relates to certain new and useful improvements in resilient heels and soles for shoes and boots, which consist in the arrangement of parts and details of construction, as will be hereinafter fully shown in the drawings and described and pointed out in the specification.

The principal object of my invention is to provide a heel and sole of great resiliency, while at the same time imparting rigidity and stiffness to them.

Another object of the invention is to embed wire and finely-woven wire in a heel and sole, not only to give them proper stiffness, but also great wearing qualities.

Another object of the invention is to provide means for positively securing a resilient heel to a boot or shoe.

A further object of my invention is to construct a heel of rubber compound to insure the wearer ordinarily against slipping and to enable him to avoid jars and wrenches to which one wearing shoes equipped with solid heels is subject.

These and such other objects as may hereinafter appear are attained by the devices shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a shoe equipped with my improved heel and sole. Fig. 2 is a longitudinal sectional view of a resilient heel. Figs. 3 and 4 are cross-sectional views of resilient heels. Fig. 5 is a longitudinal sectional view of a solid rubber heel. Figs. 6 and 8 are plan views of a sole and heel framework, and Figs. 7 and 9 are sectional views of a shoe near the toe.

Similar characters of reference indicate the same parts in the several figures in the drawings.

Referring by numerals to the accompanying drawings, 1 indicates a resilient heel, which is secured to a shoe by means of stitches 3. The sole of the shoe is designated by 2 and the sides by 5. Insole 6 is fastened to the shoe by tacks 4. My heel is preferably composed of a soft or porous rubber or yielding material 9, which is inclosed by a firm rubber shell having a stiff base 13 and slightly

bulging sides 11, which extend into upwardly-projecting flange edges that are firmly secured to the shoe by means of stitches 3, or, as shown in Fig. 3, the sides of the shell extend into flange edges 12, that are attached to the shoe by means of screws 7, which pass through the insole 6 and flange edges 12 and engage metal securing plates or rings. Bordering on or quite near the interior surface of the heel-shell is textile fabric 10, while in its base is embedded fine woven wire 14, which is supported by a framework consisting of wires 15 or the like, which are integrally secured to the woven-wire fabric by solder 16.

Heretofore resilient heels have been made to imitate leather heels and secured in the same way. Some heels have been made entirely of rubber and others have had their upper part composed of leather and their lower part of rubber, while some heels are equipped with rubber between layers of leather. Some rubber heels have embedded within them canvas midribs, the object of which is to prevent nail-heads from pulling through. Such midribs are a source of weakness, as the heel is likely to split and tear loose, and, again, the resiliency is lessened by the midribs and nails.

I preferably construct my resilient heel with an inner part 9 and an outer shell, the sides 11 being flexible and the bottom stiff and comparatively thin. I prefer a yielding material other than air to produce resiliency in the heel, as a pneumatic heel is likely to be punctured as well as to be more expensive in construction. The inner porous-like flexible material 9 is in the preferred construction made separate and placed within the shell.

I have shown two ways in which the resilient heel may be secured to the shoe. In the preferred construction I have shown the heel provided with an upwardly-extending flange edge, by means of which it is sewed to the shoe, or it may be attached to the shoe by means of a screw passing through the insole and edge of the heel-shell into a metal plate or ring, thus binding the heel to the shoe. The flange edge of the heel has textile fabric embedded in it, so that the securing means for the heel which pass through the flange edge also pass through the textile fabric embedded therein, and the heel is thereby firmly secured to the boot or shoe.

In order that the soles and heels may have the proper amount of stiffness and rigidity, I embed within them a framework consisting

of wires soldered to a wire-screen or woven-wire fabric, such as is shown in Figs. 6 and 8. Frameworks of this description are shown embedded in the heels and sole shown in Figs. 2, 3, 5, and 7, while in Figs. 4 and 9 are shown frameworks consisting of medium-weight woven wire without the larger wires.

It is very essential that resilient soles have embedded within them a framework of wire, since without them rubber soles yield so easily that it is painful and tiresome to the foot to walk with them over rough surfaces. To provide a framework which will allow the sole to bend easily as one's weight varies from heel to toe in walking, I place the larger wires 15 parallel and at right angles to the length of the shoe. The parallel wires are placed closer together at the place of greatest wear. Thus I produce a resilient sole that possesses sufficient rigidity and stiffness and at the same time affords ease in walking.

One of the defects of the rubber heels as now put on the market is that of rapid wear. To overcome this, I solder frame-wires 15 to woven wire 14 in such a way that when they are embedded within the heel and the rubber is worn away the wire fabric is not exposed until the frame-wires are entirely worn away, and since the rubber penetrates the woven-wire fabric 14 and unites with the rubber on the other side of it the framework is firmly held in place in the rubber heel. It will be observed, therefore, that my wire framework increases the life and wearing qualities of the resilient heel and sole.

In Fig. 5 I have shown a solid rubber resilient or cushion heel with woven-wire fabric embedded therein. In Fig. 9 the upper part of the sole is composed of leather and the lower part of rubber with embedded woven wire therein, and between these layers is a resilient material 9.

It is obvious that changes in the form and proportion of parts may be made in my invention—such as, for instance, any resilient material may be used in my heel, even compressed air, if need be—and I therefore would have it distinctly understood that I reserve the right to make all such changes as fairly fall within the scope of my invention.

Having thus fully described the invention, what I claim, and desire to secure by Letters Patent, is—

1. A resilient heel or sole for a boot or shoe having embedded in its body woven-wire fabric and a framework consisting of larger wires or the like, said wire fabric being arranged to lie upon the said framework and means for integrally securing the wire fabric thereto, substantially as described.

2. A resilient heel or sole for a boot or shoe having embedded in its body woven-wire fabric and a framework consisting of larger wires

or the like, said wire fabric being arranged to lie upon and to be integrally secured to the said framework so that the larger wires are anchored or firmly held in the heel or sole, substantially as described.

3. A resilient heel or sole for a boot or shoe consisting of two parts, the inner part being composed of a soft or sponge-like material, the outer part of a firmer rubber compound or other material, said outer part having embedded in its body woven-wire fabric and a framework of larger wires or the like, the woven-wire fabric being integrally united to the said framework, substantially as described.

4. The combination with a boot or shoe having an insole therein, of a resilient heel composed of two parts, an outer open-top rubber shell having a stiff base 13 and flexible sides 11 extending at the entire periphery of the shell into thickened flange edge 12 adapted to abut against the base of the said shoe or boot, said shell being strengthened by textile fabric embedded therein, and an inner resilient core arranged to fit within the heel-shell and to come into contact with the said insole, said heel being secured to the boot or shoe by means penetrating the said insole and passing entirely through the thickened flange 12 and textile fabric 10, whereby the heel is secured at the entire periphery of its shell-top, substantially as described.

5. The combination with a boot or shoe, of a heel composed of a resilient core and an outer open-top shell, said shell having a stiff bottom 13 and thin flexible sides 11 extending into an enlarged flange 12 arranged to abut against the boot or shoe sole, a metallic member placed against the side of said shell-flange, and screws or the like passing through the sole and engaging said metallic member whereby the shell is held securely to the boot or shoe, substantially as described.

6. The combination with a boot or shoe, of a heel composed of a resilient core and an outer rubber shell, said shell having a stiff bottom, flexible sides and an open top and being interiorly lined with a textile fabric, the edges of the shell adjacent to the said opening being thickened, a metallic member arranged to abut against the said thickened edges and screws or the like passing through the insole and engaging the metallic member thereby clamping the heel to the boot or shoe, substantially as described.

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

HERBERT E. IRWIN.

Witnesses:

A. S. HAMILTON,
C. A. ROADSTRUM.