June 25, 1929. F. BINGLER 1,718,521

ANKLE SUPPORT WITH FOOT FORMING SOLE

Filed Jan. 13, 1928

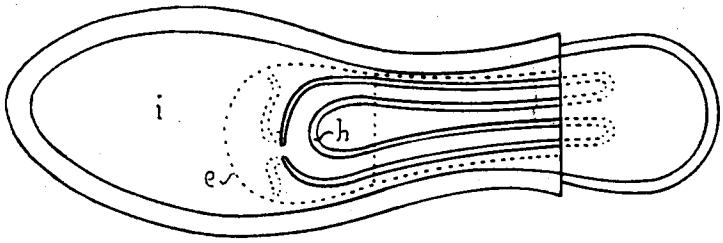


Fig. 1.

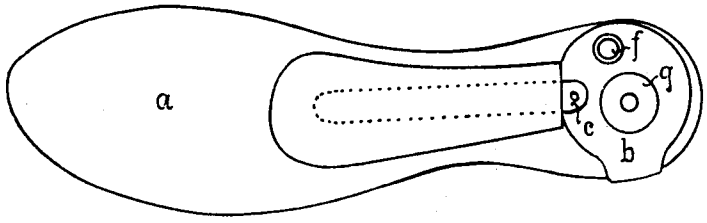


Fig. 2.

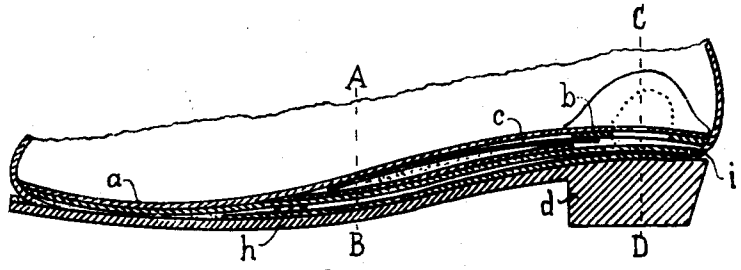


Fig. 3.



Fig. 4.

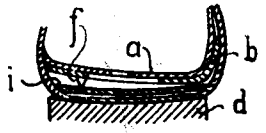


Fig. 5.

INVENTOR:
Franz Bingler
BY: Rugg, Boyd & Baker
ATTORNEYS.

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UNITED STATES PATENT OFFICE.

FRANZ BINGLER, OF LUDWIGSHAFEN, GERMANY.

ANKLE SUPPORT WITH FOOT-FORMING SOLE.

Application filed January 13, 1928, Serial No. 246,416, and in Germany January 14, 1927.

This invention relates to a combined ankle support and arch support for shoes, the object of the invention being to provide a device of this character which will properly support the ankle and arch of the wearer's foot and will eliminate painful pressure of the lower part of the heel.

In a general way, the invention comprises a wire insert having a narrow arched tongue at the center and disposed on a soft layer or pad, and two outer portions lying in the same horizontal plane with said tongue, said outer portions having their ends bent first inwardly and then outwardly, the insert being secured at its rear end to the inner sole of a shoe, the bent ends being free to form an elastic support for the bone of the foot of the wearer. The invention also comprises, in combination with the insert above referred to, of a metal plate disposed over the heel portion of the shoe, said metal plate being bent upward at one side thereof and provided with a central opening for accommodating the protuberance of the heel of the wearer's foot, and a spring member secured to said plate and extending toward the front of the shoe, said spring plate being embedded in a layer of soft material, such as sponge rubber.

With the foregoing and other objects in view, the invention consists in the novel features of construction and combination of parts which will be more fully described herein and particularly pointed out in the claims.

In the drawing accompanying this specification,

Fig. 1 is a plan view of the inner sole of a shoe, illustrating the same equipped with the wire insert forming part of the present invention;

Fig. 2 is an inverted plan view of the inner sole showing the metal plate and its spring extension for supporting the arch portion of the foot;

Fig. 3 is a longitudinal central section of the sole of the shoe embodying the features of the present invention;

Fig. 4 is a transverse section taken approximately on the line IV—IV of Fig. 3; and

Fig. 5 is a transverse section taken approximately on the line V—V of Fig. 3.

The same characters of reference designate the same parts in the different figures of the drawing.

Referring to the drawing, *h* designates an insert made of wire of suitable thickness, bent in such a way as to form a narrow tongue-shaped bow and outer portions extending approximately parallel with said bow, said outer portions having their forward free ends bent first inwardly and then outwardly, as indicated in dotted lines in Fig. 1. The wire insert is preferably supported on a layer of soft pliable material *e* disposed below the inner sole *i* of the shoe, the rear end of the insert being secured to the inner sole approximately in the region of the front part of the heel bone of the wearer, the forward bent ends of the outer portions being left free to follow elastically the pressure of the foot in all directions. The front portion of the insert is so disposed that the wires forming the tongue and outer portions will form supports in the longitudinal direction for the cuboid bone, the shipbone, the first, second and third wedge bones, as well as in the transverse direction the three central metatarsal bones. If desired, the ends of the two outer portions may be further bent outwardly to form supports for the two exterior metatarsal bones.

Above the insert hereinbefore described is disposed a sole *a*, to the heel portion of which is secured a metal plate *b* which has a laterally extending, bent up side portion adapted to form an ankle brace. Secured to the plate or disc *b*, near its forward edge, is an elongated metal spring member *c*, which is padded with a comparatively thick layer of soft material, such as sponge rubber, the spring *c* being disposed in position to engage the sole *a* along the arch portion of the foot. For balancing the movement of the sole *a*, the metal plate *b* is provided at its underface, near one edge thereof with a plug *f*, said plug being adapted to be depressed into the inner sole under walking pressure. The plate *b* is further provided approximately at the center thereof with an opening *g*, which may be either circular or of any other shape best adapted to receive the central portion of the protuberance of the heel of a wearer, the sole *a* being also provided with a small perforation disposed concentrically above the opening *g*, thereby imparting flexibility to the surrounding members.

Having thus described my invention, what I claim is:

1. A device of the character described, comprising, in combination with the sole of a shoe, a wire insert having a center arched tongue and two outer portions lying in the same plane with said tongue, said outer portions having their ends bent first inward

and then outward, a layer of soft material disposed below said insert for supporting the same, said insert being secured at its rear end to the inner sole of the shoe, its forward bent ends being left free to act as an elastic cushioning means for the foot of the wearer.

2. The combination with the sole of a shoe, of a wire insert having a center arched tongue and two outer portions lying in the same plane with said tongue, said outer portions having their ends bent first inwardly and then outwardly, a layer of soft material disposed below said insert, said insert being secured at its rear end to the inner sole of the shoe, its forward bent ends being left free, a metallic spring member disposed above said insert and extending longitudinally of the shoe, and a layer of soft material between said spring member and insert.

3. The combination with the sole of a shoe, of a wire insert having a center arched tongue and two outer portions lying in the same plane with said tongue, said outer portions having their ends bent first inwardly and then outwardly, a layer of soft material disposed below said insert, a metal plate disposed above the heel of the shoe and carrying a spring member extending over said insert in the direction of the length of the shoe, said plate being bent up at one side thereof to form an ankle support and provided with a central opening to accommodate the heel of the user, and a layer of soft material between said spring member and insert.

4. The combination with the sole of a shoe, of a wire insert having a center arched tongue and two outer portions lying in the same plane with said tongue, said outer portions having their ends bent first inwardly and then outwardly, a layer of soft material disposed below said insert, a metal plate disposed above the heel of the shoe and carrying a spring member extending over said insert in the direction of the length of the shoe, said plate being bent up at one side thereof to form an ankle support and provided with a central opening to accommodate the heel of the user, a layer of soft material between said spring member and insert, said plate being provided in its underface with a pin adapted under pressure to engage the heel of the shoe, and a sole-form of soft material overlying all of said elements and provided with a small aperture disposed in concentric relation with the opening in said plate.

In testimony whereof I have signed my name to this specification.

FRANZ BINGLER.