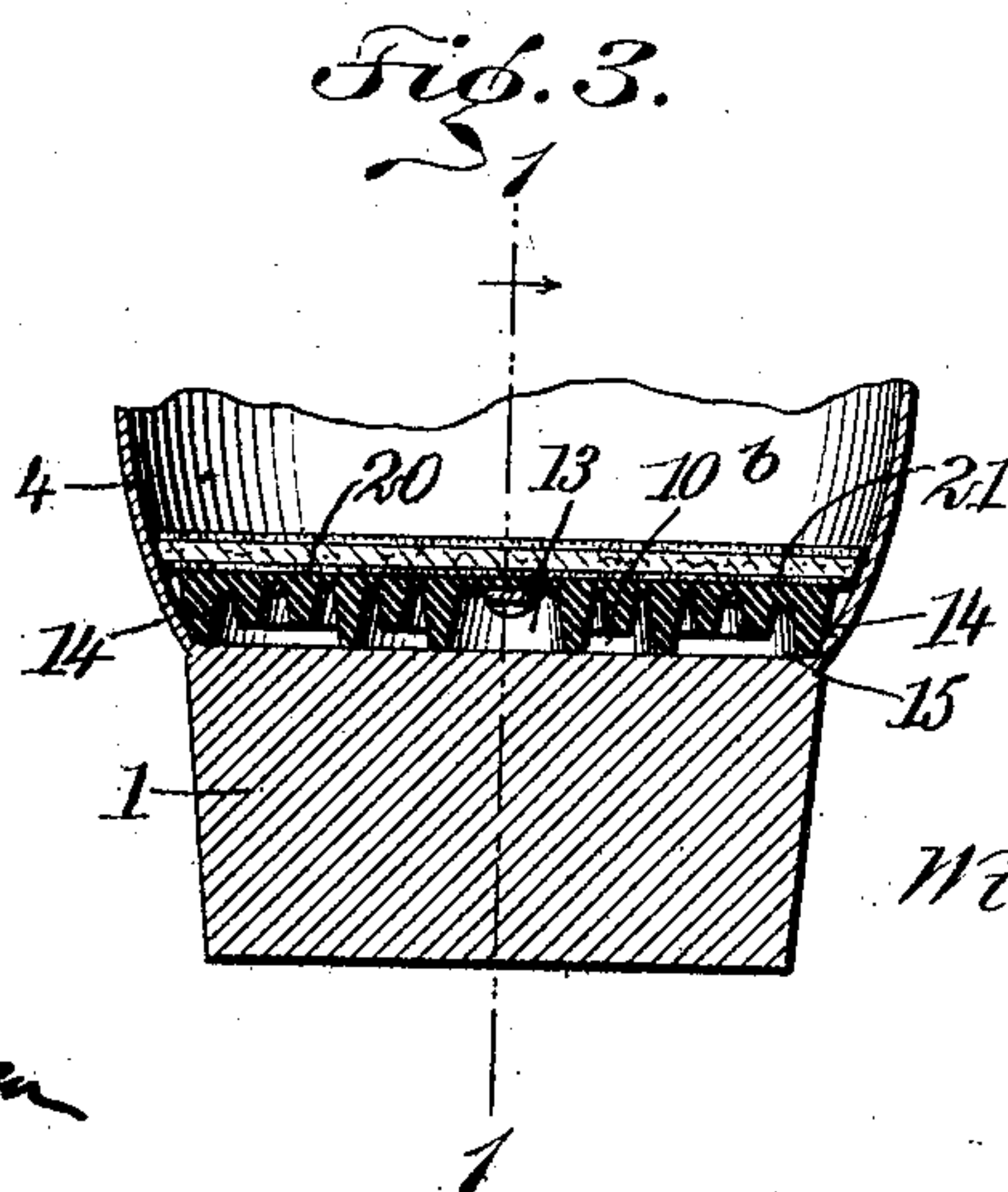
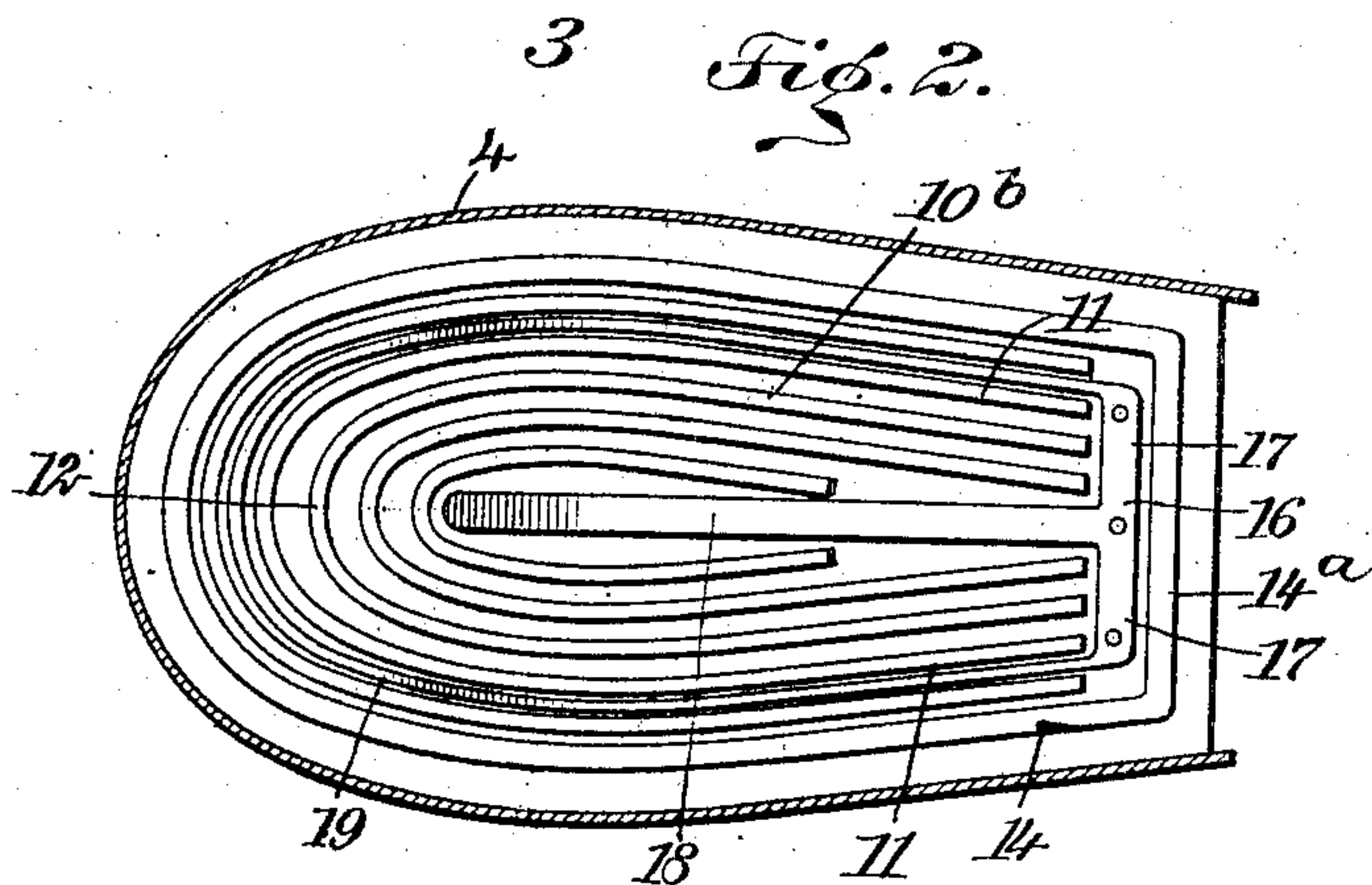
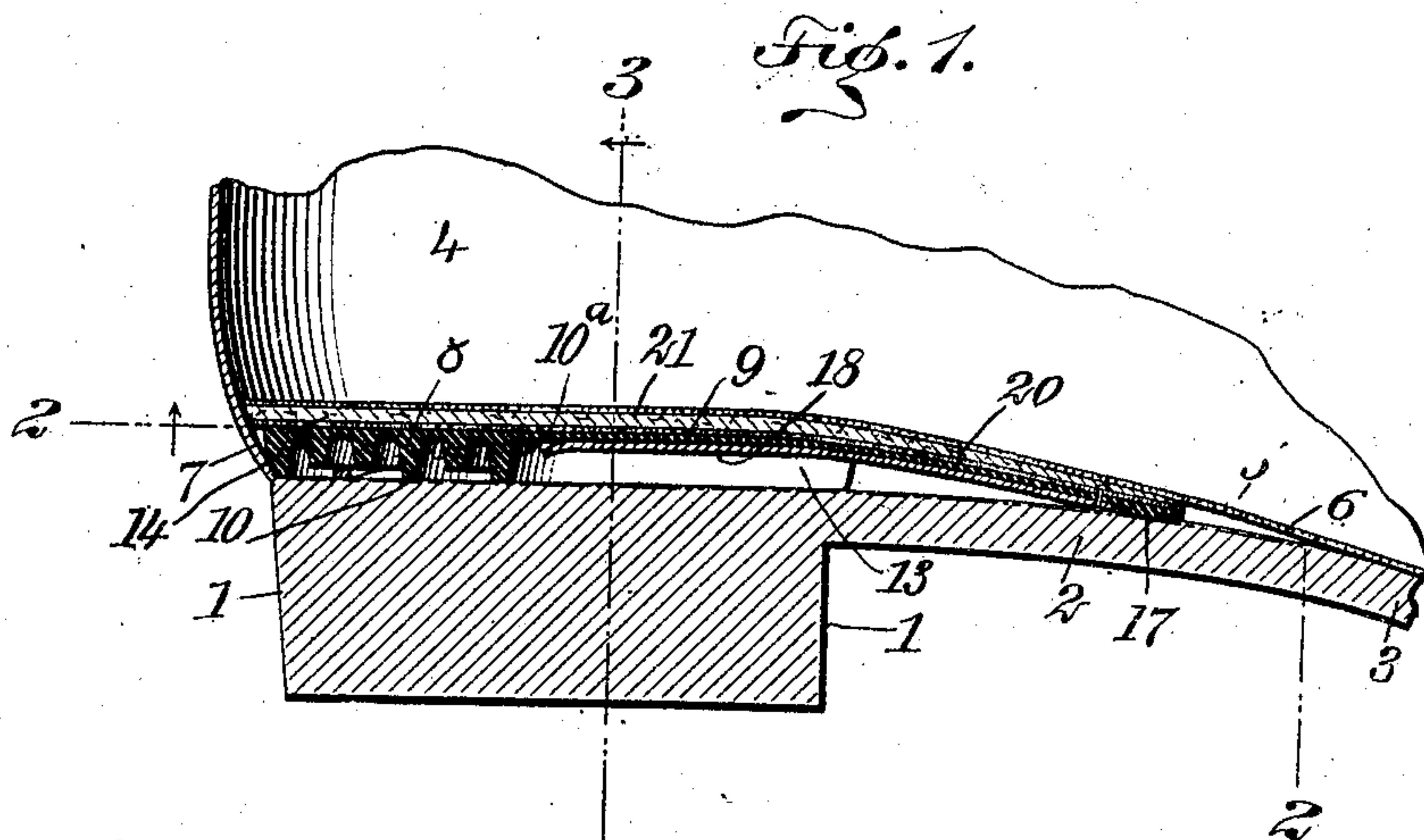


No. 832,375.

PATENTED OCT. 2, 1906.

W. L. GORDON.
PNEUMATIC HEEL CUSHION.
APPLICATION FILED DEC. 13, 1906.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM LEONARD GORDON, OF DEAL, NEW JERSEY.

PNEUMATIC HEEL-CUSHION.

No. 832,375.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed December 13, 1905. Serial No. 291,562.

To all whom it may concern:

Be it known that I, WILLIAM LEONARD GORDON, a citizen of the United States, and a resident of Deal, in the county of Monmouth and State of New Jersey, have invented a new and Improved Pneumatic Heel-Cushion, of which the following is a full, clear, and exact description.

This invention relates to shoemaking.

10 The object of the invention is to produce a shoe having a pneumatic cushion which will operate to give elasticity to the tread and also assist in ventilating the interior of the shoe.

15 The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

20 Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

25 Figure 1 is a longitudinal section taken in a vertical plane at the heel of the shoe constructed with my pneumatic cushion. This section is taken on the line 1 1 of Fig. 3. Fig. 2 is a section taken substantially on the line 2 2 of Fig. 1 and looking upwardly, and Fig. 3 is a vertical section taken on the line 3 3 of Fig. 1.

30 Referring more particularly to the parts, 1 represents the lift of the heel, from which the shank 2 of the sole 3 extends forwardly, as shown. This portion of the shoe may be of the usual construction, comprising the usual counter 4, which attaches around the edge of the sole at the heel. Upon the inner face of the sole 3 I place an insole 5, the body 6 whereof consists, preferably, of a canvas piece cut to the proper last. At the heel this insole is supported upon my pneumatic cushion 7. This pneumatic cushion comprises a body or pad 8, preferably formed of rubber or similar elastic material. This pad consists of a thin sheet 9, preferably of rubber, on the under face whereof I form a plurality of ribs or corrugations designated collectively by the numeral 10. These ribs 10 are of elongated horseshoe form, as indicated most clearly in Fig. 2, comprising oppositely-disposed limbs 11, which converge forwardly and which are connected by bows 12 at the rear. Certain of these ribs, such as the ribs 10^a, are of greater height than the others and project below the same, so that the pad normally is disposed, as shown in Figs. 1 and 3.

In this way an air-space 13 is formed under the pad and between the sheet 9 and the upper face of the sole.

In addition to the ribs 10 I provide the sheet 9 with a downwardly-projecting flange 14, which extends along the outer edge of the same, as shown. At the front this flange 14 extends transversely of the sole, forming a bar 14^a of reduced height, and at the rear and sides it lies close against the inner face of the counter, as indicated most clearly in Fig. 3. It preferably tapers slightly toward its lower extremity. Between the ribs 10^a referred to above and between the said ribs and the flange 14 I provide intermediate ribs or corrugations 10^b, which are substantially similar in form to the ribs 10^a, but do not project downwardly to such an extent.

To the under side of the sheet 9 I attach a frame 16, preferably formed of light metal, such as steel. The form of this frame is shown most clearly in Fig. 2. It comprises oppositely-extending arms 17, which incline forwardly, as indicated. From their point of juncture a tongue 18 extends rearwardly, and this tongue constitutes a leaf-spring, as indicated most clearly in Fig. 1, and rests upon the under side of the sheet 9, tending to support the same. The outer extremities of the arms 17 are connected by a bow 19, which lies in the space between two of the adjacent corrugations, as shown in Fig. 2. This bow is also resilient and presses downwardly at its extremity upon the upper face of the sole. The function of this frame will appear more fully hereinafter.

The upper face of the sheet 9 is attached to a sheet or strip 20 of suitable fabric, such as canvas, the parts being cemented or connected together in any suitable manner. Upon the upper side of this canvas sheet and between it and the aforesaid insole 6 I place a sliver 21, preferably of cork, and this sliver tapers toward its forward extremity so that it comes substantially to an edge at the forward extremity of the pad.

When pressure comes upon the heel of the shoe, as in walking, the cushion 7 becomes compressed by the weight above. The air inclosed by the flange 14 operates as an air-cushion when compressed. As the greatest pressure is exerted toward the heel, a quantity of the entrapped air is forced forwardly under the bar 14^a. The ribs 10^a assist in contracting the air-space by expanding under pressure and tend to force the air forwardly.

While the intermediate ribs 10^b assist in this operation to a certain extent, they substantially arrest the downward movement of the heel of the foot. As soon as the weight is removed from the heel as a step is taken the spring or tongue 18 and the bow 19 operate to return the cushion to its normal condition. In this way the air which has been forced forwardly, as described, will find its way back under the heel-pad. Evidently in walking the cushion operates to produce a good ventilation within the interior of the shoe, while at the same time it cushions the shock and jar of the heel when it comes upon the ground or pavement. The sliver or cork operates to absorb the moisture which may be given off by the foot within the shoe, and this of course has opportunity to dry out at night when the shoe is removed.

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

1. A pneumatic cushion adapted to be worn at the heel of a shoe and consisting of a

pad having corrugations on the under face thereof extending in a front and rear direction, and a resilient frame tending to support said pad above the sole of the shoe whereby, in walking, the air under said pad is forced forwardly.

2. A pneumatic cushion adapted to be worn at the heel of a shoe and consisting of a pad having a plurality of ribs on the under face thereof, said ribs being of substantially horseshoe form with the bows thereof disposed rearwardly, said ribs being disposed apart whereby channels are formed opening forwardly, and a rib surrounding the aforesaid ribs and having its forward extremities connected by a transverse bar beyond the openings from said channels.

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

WILLIAM LEONARD GORDON.

Witnesses:

MILAN ROSS,

E. C. VAN CLEAF.