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H. A. FREEMAN

1,777,558

PNEUMATIC RUBBER SHOE SOLES

Filed Oct. 24, 1927

FIG. 1

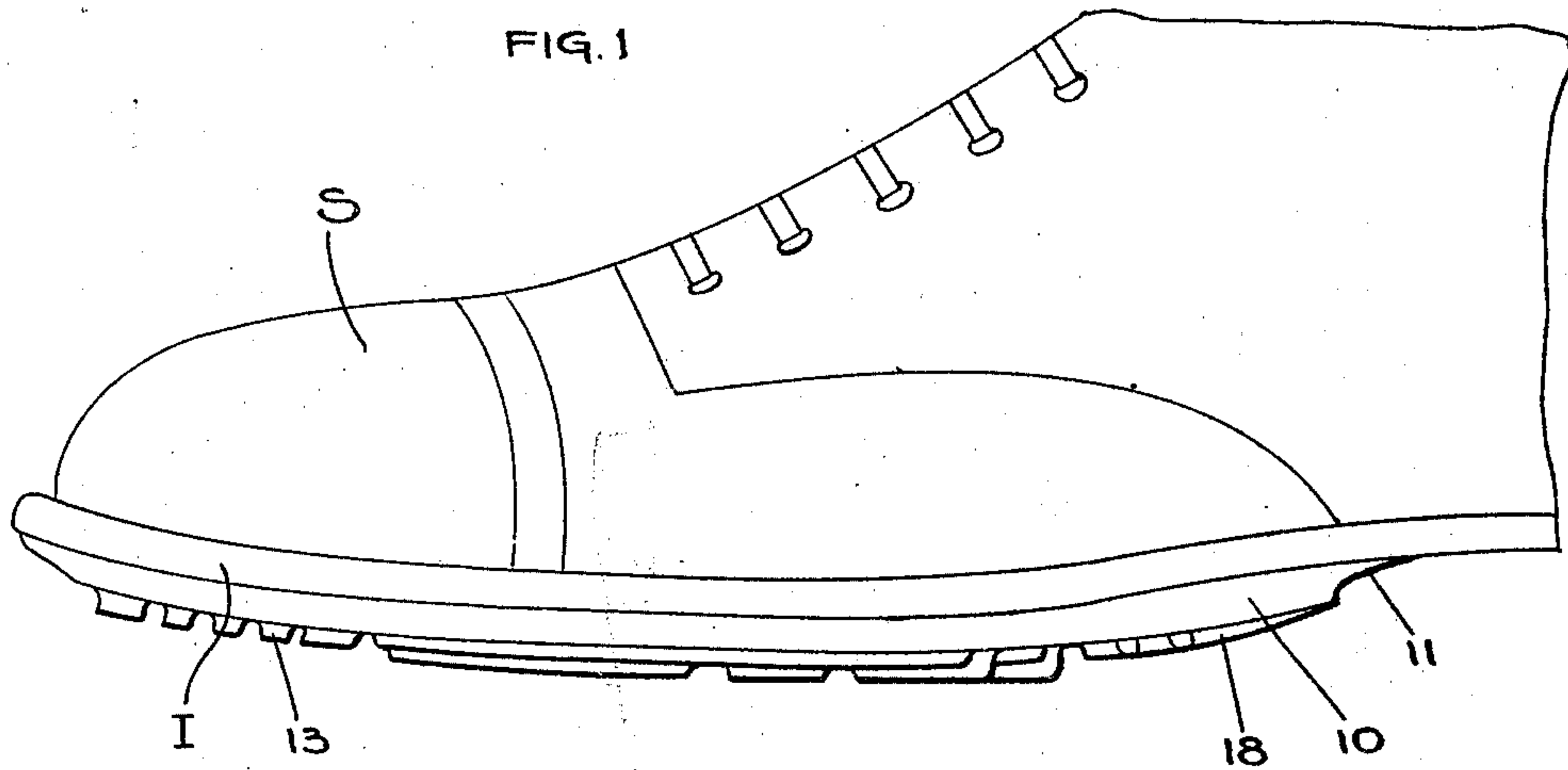


FIG. 2

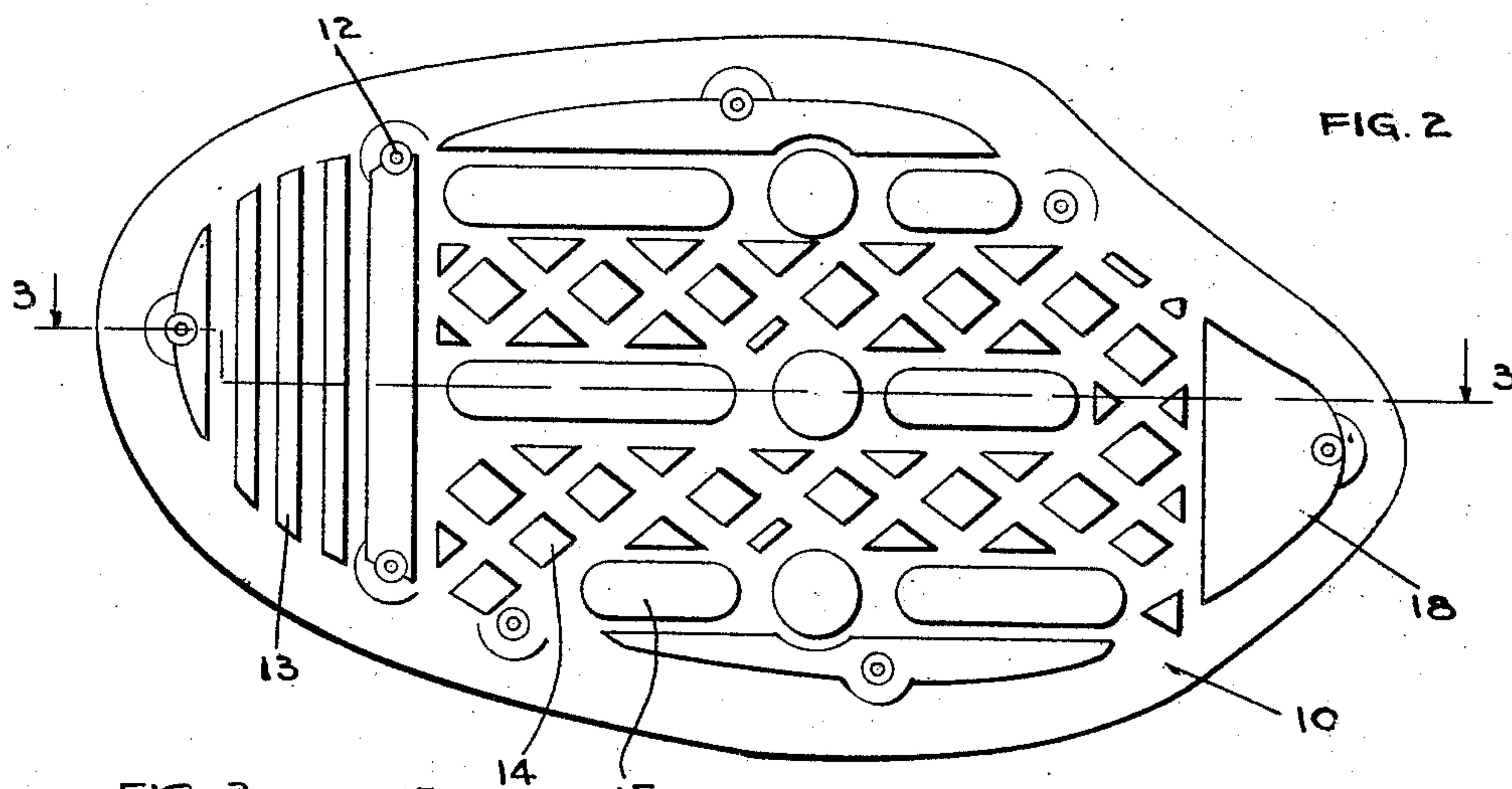


FIG. 3

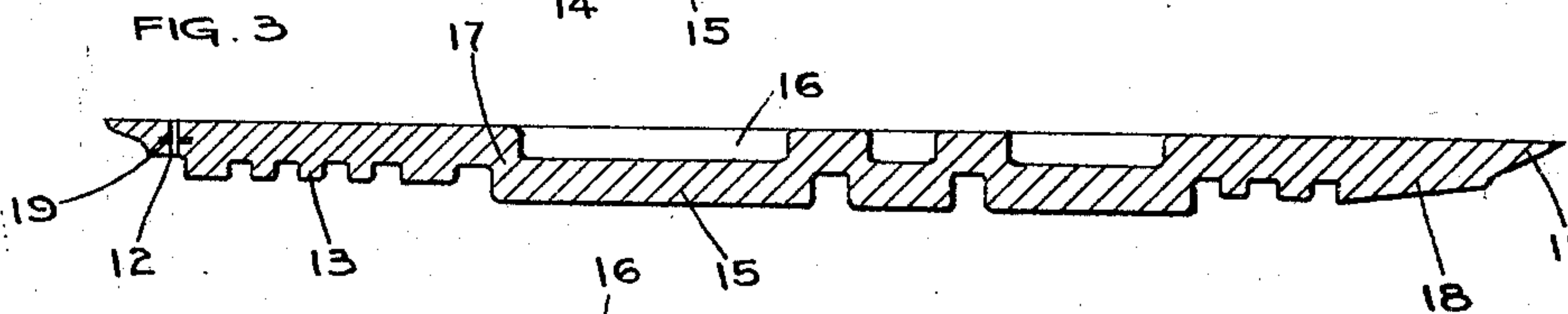
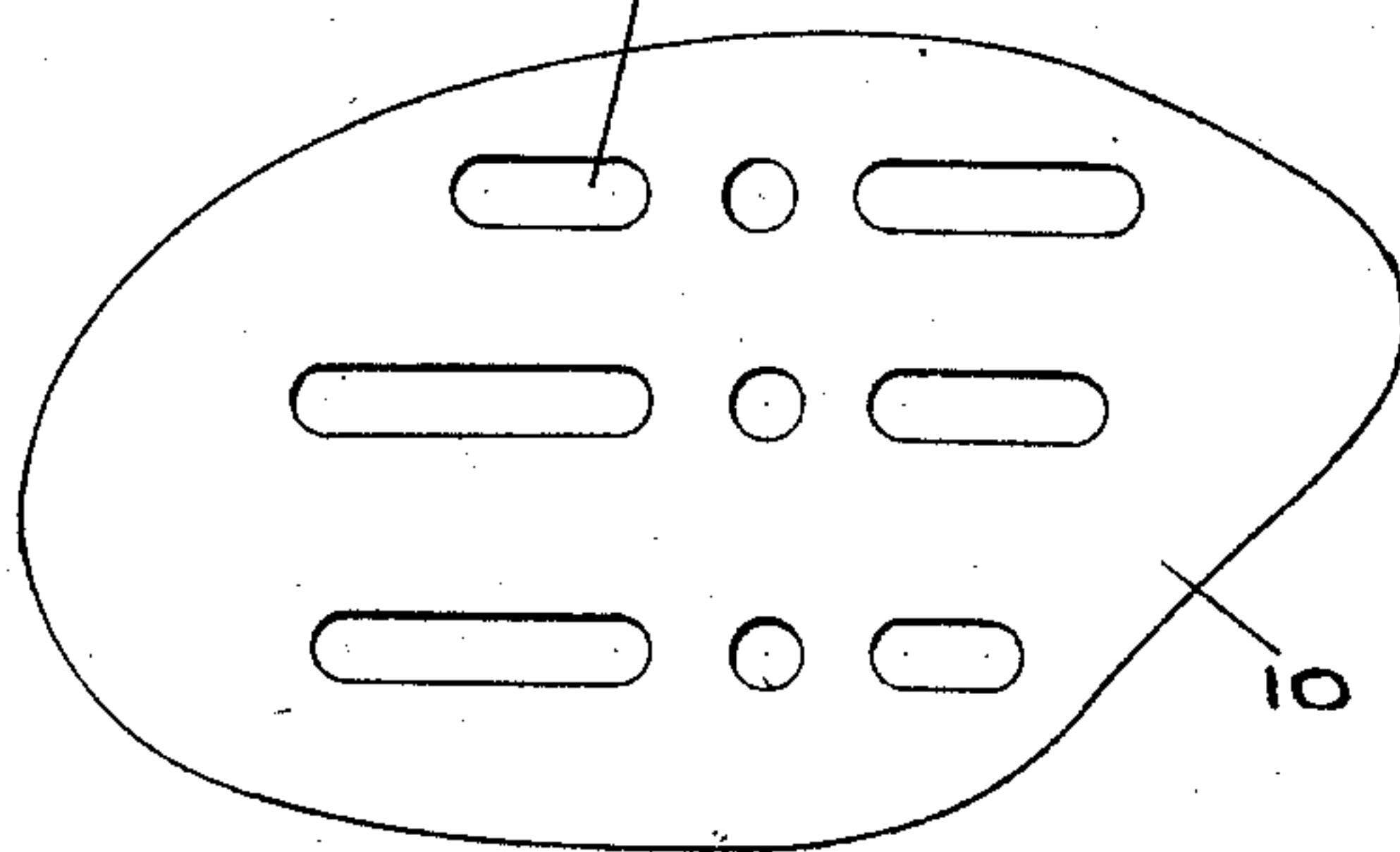


FIG. 4



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PNEUMATIC RUBBER SHOE SOLE

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This invention relates to improvements in foot wear, and particularly to soles for foot wear.

An object of the invention is to provide an improved sole for foot wear which is extremely resilient, having pneumatic cushions so that greater ease in walking is possible.

Another object of the invention is to provide a sole for foot wear which can be easily, quickly and cheaply constructed, and which can be easily and quickly applied to foot wear.

With the foregoing and other objects in view which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a view in side elevation of a portion of a shoe to which the improved sole has been applied.

Fig. 2 is a bottom plan view of the sole.

Fig. 3 is a vertical section taken upon the line 3—3 upon Figure 2.

Fig. 4 is a plan view of the upper surface of the sole.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the improved sole is preferably formed of resilient material such as rubber or its equivalent composition. It is so formed as to provide a sole-shaped section 10 having its edges arranged to conform with the edges of the sole I on a shoe S. The edges are preferably beveled off as indicated at 11, and near the edges there are apertures 12 for the reception of nails, screws or tacks. Said apertures may be reinforced by inserted metal washers 19. The bottom surface of the sole is so formed or molded as to be corrugated, and in the preferred form of construction there are formed three sets of projections or corrugations. The transverse ribs or projections 13 which are arranged adjacent the toe of the sole, extend downwardly the shortest distance so that the toe of the sole is fairly solid as compared with the ball of the sole. Across the ball of the sole there are a plurality of projec-

tions 14 forming the second set, and these projections extend downwardly a slightly greater distance than the projections 13. Between these projections or corrugations there are projections 15, some of which may be circular in form and others oblong as shown upon the drawing. These projections extend downwardly from the sole the greatest distance, and all three sets of projections cooperate in forming an anti-slip tread. On the top surface of the sole there are formed a plurality of depressions 16, which depressions are of approximately the same shape as the projections 15. The depressions 16 are also arranged in vertical alignment with the projections 15 so that the projections 15 may be considered as being hollow with their side walls slightly thinner as shown at 17, than the bottom walls. The sole is manufactured and applied as follows:

If the sole is formed of rubber or the like, it is molded and cured or vulcanized. The mold gives the exterior surface of the sole a smooth, slick surface, and the sole is then placed against a buffer so that its top surface is buffed off or roughened. When this is accomplished, the sole is cemented to the sole I on the shoe S, and the buffed top surface facilitates the cementing of the sole in place so that it will be held fast. Tacks, nails or screws can be driven through the apertures 12 to assist holding the sole in place. In this way, the cement which fastens the sole to the sole I, hermetically seals the chambers defined by the depressions 16. In walking with a sole of the improved construction, the portions of the sole which will first contact with the ground are the bottom surfaces of the projections 15. These merely rest against the ground until the wearer places his weight on the ball of his foot. This tends to flatten out or squeeze the projections 15 until they are even horizontally with the projections 14 which assist in supporting the weight of the wearer. When the projections 15 however, are flattened out, the air entrapped within the depressions 16 will be compressed so that there is a sensation of walking on a pneumatic sole which gives a feeling of ease. By virtue of the fact that the sole I is somewhat

porous, the alternate compressions and partial vacuums formed on the air within the depressions 16, will cause a slight flow of air within the shoe S, tending to cause it to be ventilated. The extension 18 formed on the sole is preferably provided so that this extension may be attached below the instep of the shoe S, but it will be understood that the particular shape of the sole may be varied.

From the above described construction it will be appreciated that a novel, resilient, pneumatic sole is provided for foot wear, having a plurality of projections formed upon its under surface and depressions formed upon its upper surface in alignment with the projections, which depressions serve to entrap and hold air which can be compressed when the projections are caused to sustain the weight of the wearer.

Various changes in the details of construction may be made without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. A sole for foot wear comprising a section of resilient material, the bottom surface of which has projections formed thereon providing a tread, the projections near the toe of the sole extending downwardly the shortest distance, there being other projections across the ball of the sole extending downwardly a greater distance, and a third set of projections arranged across the ball of the sole between said other projections which extend downwardly a slightly greater distance than said other projections, there being depressions formed upon the top surface of the sole over the projections of the third set.

2. A sole for foot wear comprising a section of resilient material the bottom surface of which has projections formed thereof forming a tread, some of the projections extending downwardly a greater distance than the remaining projections, the said remaining projections being arranged about and between the longer projections, there being depressions formed upon the top surface of the sole in vertical alignment with the longer projections whereby when the sole is applied to foot wear said depressions will form air chambers and when the longer projections are materially compressed by the weight being placed thereon the ends of the shorter remaining projections will engage the supporting surface and assist in supporting the load.

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

HAROLD A. FREEMAN.