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ARCH SUPPORT FOR THE HUMAN FOOT

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FIG. 1

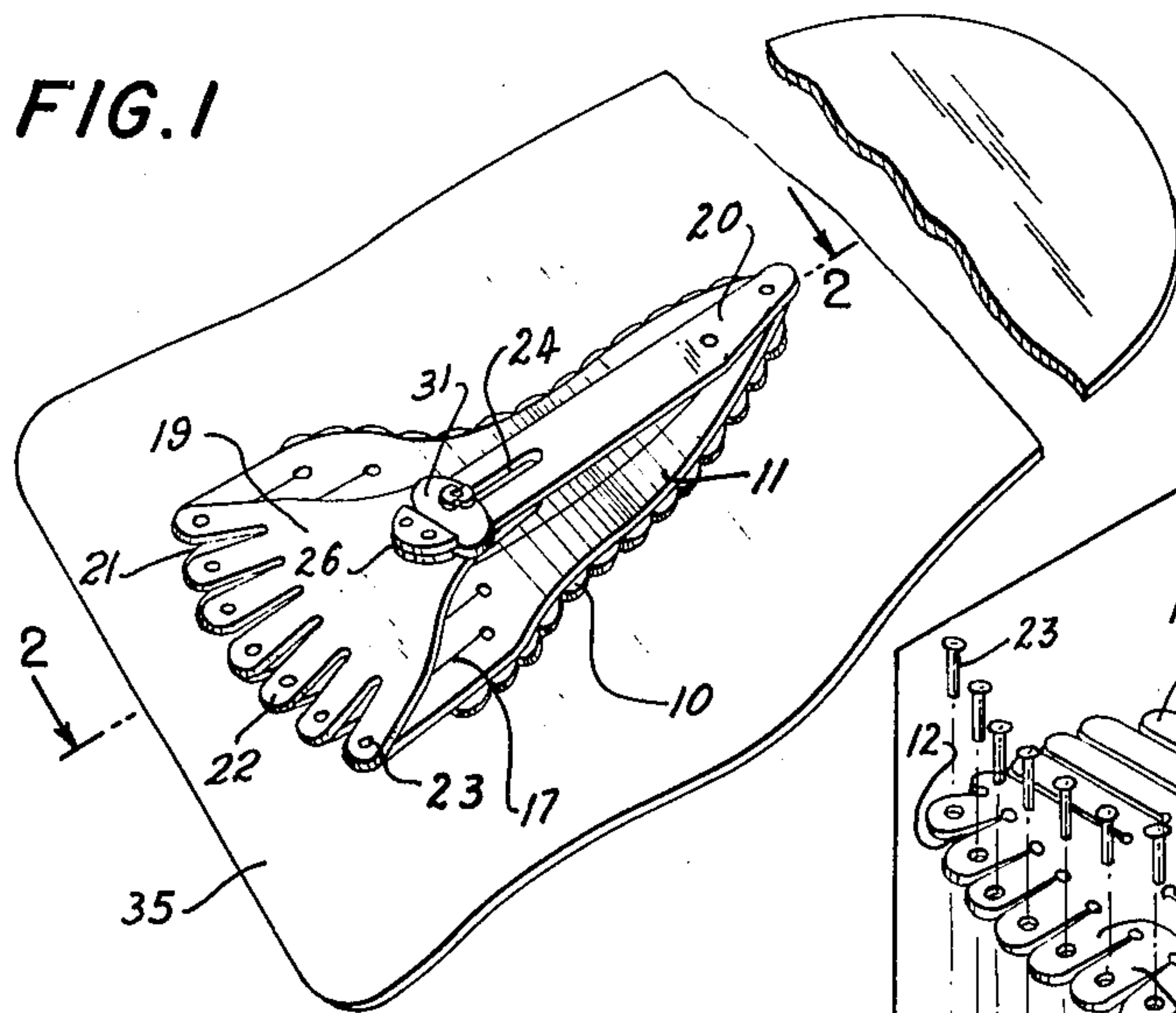
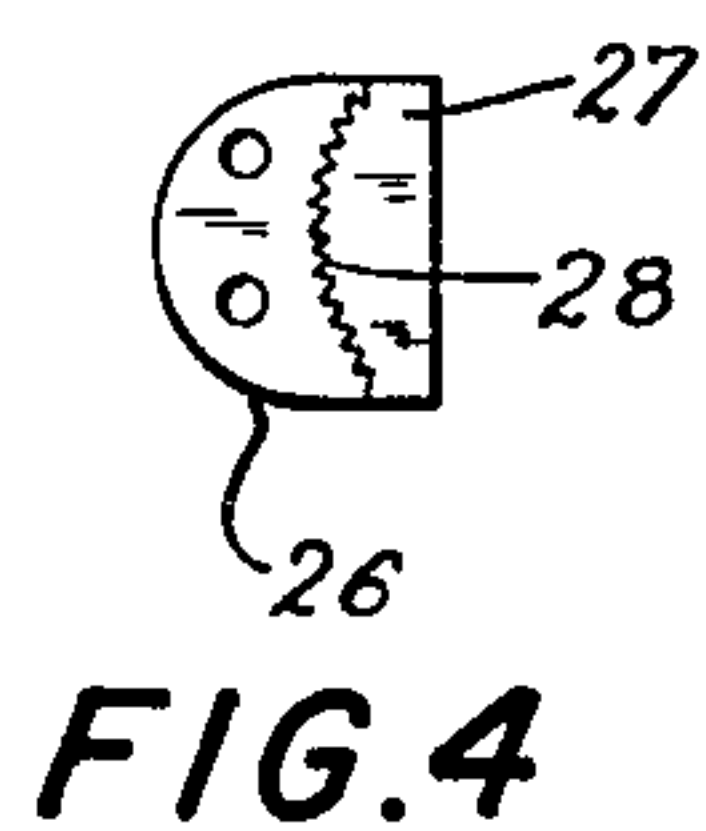


FIG. 3

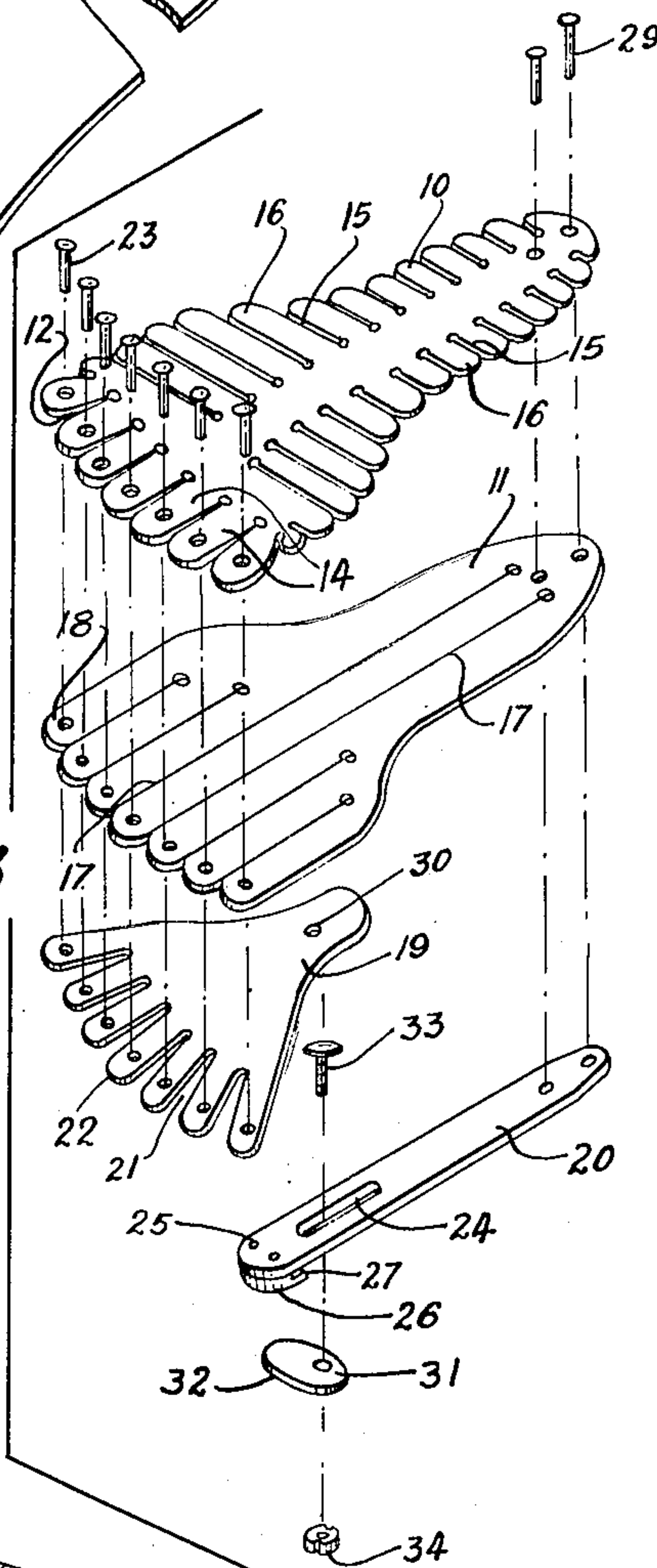
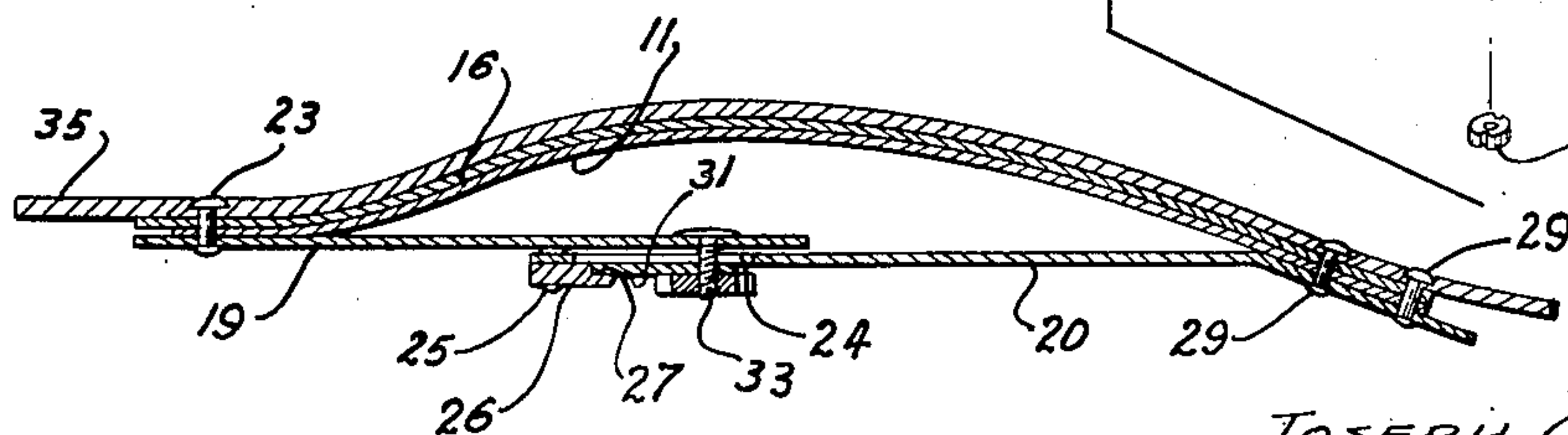


FIG. 2

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ARCH SUPPORT FOR THE HUMAN FOOT

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5 Claims. (Cl. 36—71)

This invention relates to an arch support for the human foot.

An object of the invention is to provide a corrective longitudinal and transverse support for the metatarsal and transverse arches of the foot.

Another object of the invention is to provide an arch support for elevating fallen metatarsal bones of the foot and to support the same for correcting the fallen condition of the bones.

Another object of the invention is to provide an arch support of said character which will flex and bend with the movement of the foot in walking.

Still another object of the invention is to provide an arch support which is adjustable for varying the elevation thereof to suit the requirement of the user.

Still another object of the invention is to provide an arch support affixed to a ply of material adapted to overlie the inner sole of a shoe and which is freely removable for adjustment of the support.

With the foregoing and other objects in view, reference is now made to the following specification and accompanying drawings in which the preferred embodiment of the invention is illustrated.

In the drawings:

Fig. 1 is a perspective view of the under side of an arch support constructed in accordance with the invention and affixed to a ply of material adapted to overlie the inner sole of a shoe.

Fig. 2 is a longitudinal sectional view taken approximately on line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the parts of the arch support shown in separated juxtaposition.

Fig. 4 is a plan view showing the serrated face of the recess member adapted to be engaged by the cam member for varying the elevation of the arch plates.

Referring to the drawings, the arch support includes one or more arch plates which are longitudinal and upwardly arched by means of tensioning members which are adjustable in overlapping relation to produce the desired elevation of the arch plates.

In the embodiment illustrated, the support includes two arch plates 10 and 11 but the same may include additional plates in order to provide a support for a user requiring increased strength in the plates. The plate 10 is of general triangular formation and of relatively greater length than width and is provided with a plurality of slots 12 extending inwardly from the forward end thereof to thereby form parallel resilient fingers 14 along the forward end thereof. The said plate is also formed with a plurality of slots 15 which extend inwardly on opposite sides thereof to provide resilient fingers 16 along the opposite sides of the plate. The arch plate 11 is similarly of general triangular formation to correspond to substantially to that of the plate 10. The plate 11 is formed with slots 17 extending inwardly from the forward end thereof forming resilient fingers 18. A plurality of the medial slots 17 extend throughout the greater part of the length of the plate.

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The plates 10 and 11 are retained in arch formation by means of tensioning members 19 and 20 which overlap and are adjustable to vary the effective length thereof in order to vary the heights of the arch plates. The tensioning member 19 underlies the forward portion of the arch plates 10 and 11 and is formed with a plurality of slots 21 extending inwardly from the forward end thereof so as to form resilient fingers 22 along the forward end thereof and which correspond in number to the fingers 14 and 18 of the arch plates 10 and 11. The plates 10 and 11 and tensioning member 19 are secured together by any desired means such as by rivets 23 which extend through openings in the fingers 14, 18 and 22 thereof respectively so as to secure corresponding fingers of the plates and tensioning members together in fixed relation.

The tensioning member 20 consists of a flat strip which is formed with a longitudinally extending slot 24 opening through the top and bottom faces thereof adjacent the forward end of said strip. Secured to the extreme end thereof by any desired means such as by rivets 25 is a member 26 having a recess 27 extending arcuately thereacross and with the inner face 28 of said recess being serrated for a purpose to be hereinafter explained. The plates 10 and 11 together with the tensioning member 20 are secured together in fixed assembled relation at their rearward ends by any desired means such as by rivets 29. The forward end of the tensioning member 20 underlies the reduced end of the tensioning member 19 with the slot 24 registering with an opening 30 in said reduced end.

In order to adjust the effective length of the tensioning members 19 and 20, a disk like cam member 31 is provided which has a cam peripheral face 32 and is mounted for manually turning thereof on a screw 33 engaging through the opening 30 in the reduced end of the tensioning member 19 and through the slot 24 with the threaded lower end of the screw engaged by a nut 34 for tightening the tensioning members 19 and 20 in adjusted set position when the cam member has been rotated against the serrated face 28 of the member 26 to adjust the overlapping relation of the tensioning members 19 and 20 so as to effect the desired elevation of the plates 10 and 11.

The arch support is attached to a ply 35 of thin, flexible material such as leather and the like which overlies the heel and instep portions of a shoe and is contoured to closely fit the sides of the shoe so as to retain the arch support in position under the metatarsal and transverse arches of the foot. The support is affixed to the ply 35 by the rivets 23 and 29 which are arranged with the headed ends thereof disposed against the uppermost face of the ply.

In order to adjust the plates 10 and 11 to increase or decrease the heights of the bowed formation thereof, the nut 34 is loosened and the member 31 rotated so as to cam the periphery thereof against the serrated face 28 to thereby effect a shortening of the effective length of the tensioning members 19 and 20 when the heights of the arch plates 10 and 11 is to be increased. When in adjusted position the nut 34 is tightened so as to hold the plates in fixed position. If the heights of the plates 10 and 11 is to be decreased, the member 31 is turned so as to increase the effective lengths of the tensioning members 19 and 20 and when in adjusted position with the member 31 wedged against the serrated face 28, the nut 34 is tightened so as to retain the tensioning members in set position.

The fingers 14, 18 and 22 of the plates 10 and 11 and tensioning member 19 being resilient and being secured together, the forward portion of the support will flex and bend when weight is imposed thereon by the movement

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of the foot in walking. The fingers 16 extending along the opposite sides of the arch plate 10 provide flexibility to the opposite sides of the support whereby the support may bend laterally downward when weight is imposed on the support. The arrangement thus functions to provide a resilient and comfortable support and at the same time exerts pressure against the metatarsal and transverse arches of the foot so as to position the same in correct relation.

While the preferred embodiment of the invention has been shown and described herein, it is to be understood that the same is not so limited but shall cover and include any and all modifications of the invention which fall within the purview thereof.

What is claimed is:

1. In an arch support for supporting an arch of a human foot, normally arched upper and lower plates, tensioning members underlying said arched plates, one of said tensioning members and said arched plates having a plurality of corresponding resilient fingers at the forward ends thereof, corresponding fingers of said tensioning member and of said arched plates being secured together at the ends thereof, said arched plates and the other of said tensioning members being secured together at their rear ends, and interengageable means carried by said tensioning members for varying the effective length thereof for adjusting the heights of said arched plates.

2. In an arch support for supporting an arch of a human foot, normally arched upper and lower plates, tensioning members underlying said arched plates, one of said tensioning members and said arched plates having a plurality of corresponding resilient fingers at the forward ends thereof, corresponding fingers of said tensioning member and of said arched plates being secured together at the ends thereof, said arched plates and the other of said tensioning members being secured together at their rear ends, one of said tensioning members having an abutment and an elongated opening therethrough, and cam means rotatable on a shank carried by the other tensioning member and extending through said opening for engagement of said cam means with said abutment for regulating the effective length of said tensioning members for varying the elevation of said arched plates.

3. In an arch support for supporting an arch of a

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human foot, a normally arched upper plate, tensioning members underlying said arched plate, one of said tensioning members and said arched plate having a plurality of corresponding resilient fingers at the forward ends thereof, corresponding fingers of said tensioning member and of said arched plate being secured together at the ends thereof, said arched plate and the other tensioning member being secured together at their rear ends, one of said tensioning members having an abutment and an elongated opening therethrough, and cam means rotatable on a shank carried by the other tensioning member and extending through said opening for engagement of said cam means with said abutment for regulating the effective length of said tensioning members for varying the elevation of said arched plate.

4. In an arch support for supporting an arch of a human foot, a normally arched upper plate, tensioning members underlying said arched plate, one of said tensioning members and said arched plate having resilient fingers at the forward ends thereof, the fingers of said arched plate being secured to the fingers of said tensioning member, said arched plate and the other tensioning member being secured together at their rear ends, and interengageable means carried by said tensioning members for varying the effective length thereof for adjusting the heights of said arched plate.

5. In an arch support for supporting an arch of a human foot, normally arched upper and lower plates, said arched plates having a plurality of resilient fingers at the forward ends thereof, said upper arched plate having resilient fingers at the opposite longitudinal edges thereof, said arched plates being secured together at their ends, a tensioning means underlying said arched plates and secured to the ends thereof for maintaining said arched plates in arched relation, and a ply of flexible material substantially coextensive with the heel and instep portion of a shoe overlying the upper plate and affixed thereto at the ends thereof.

References Cited in the file of this patent

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