

Sept. 22, 1970

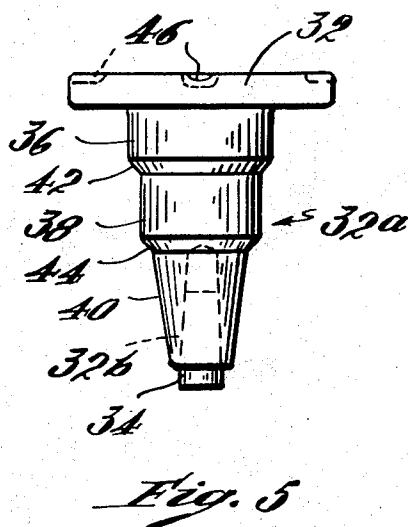
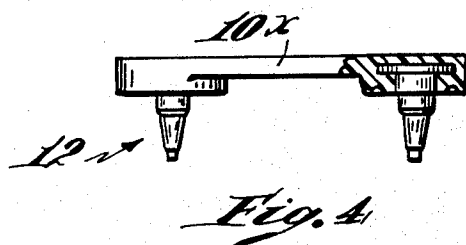
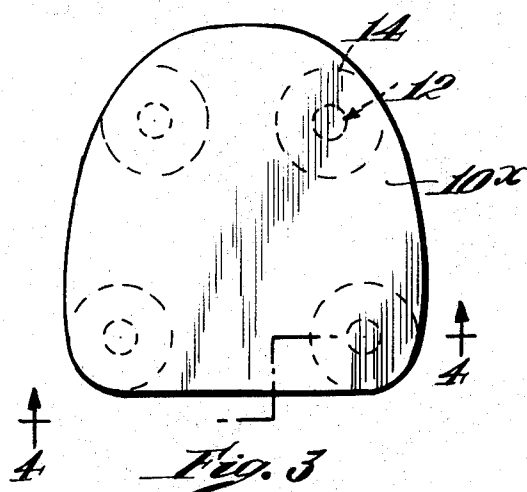
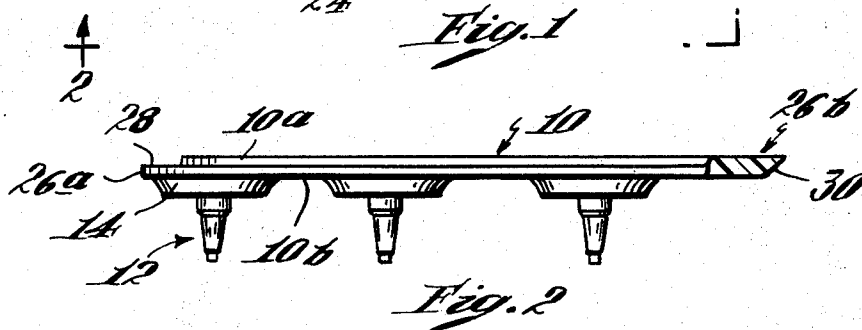
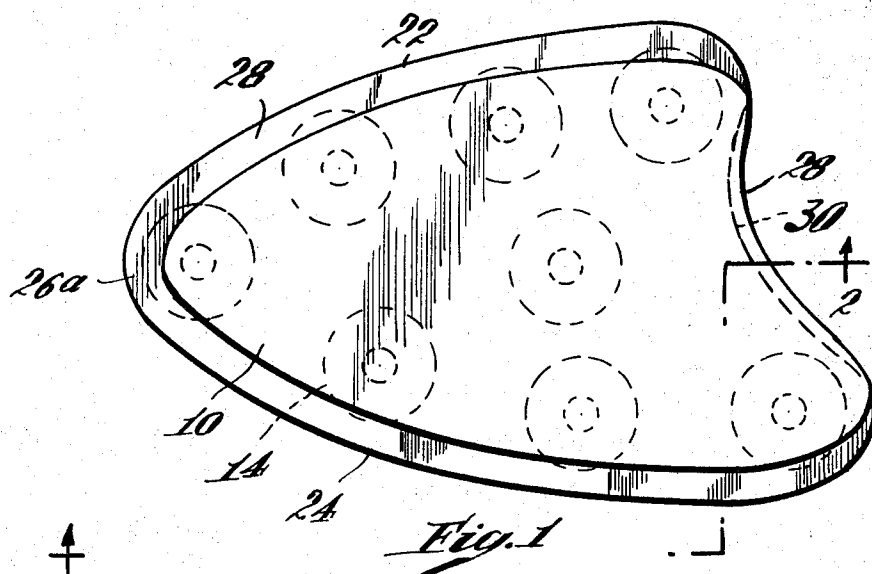
L. E. BERNIER ET AL

3,529,370

CLEATED ANCHOR PLATE

Filed Nov. 8, 1968

2 Sheets-Sheet 1



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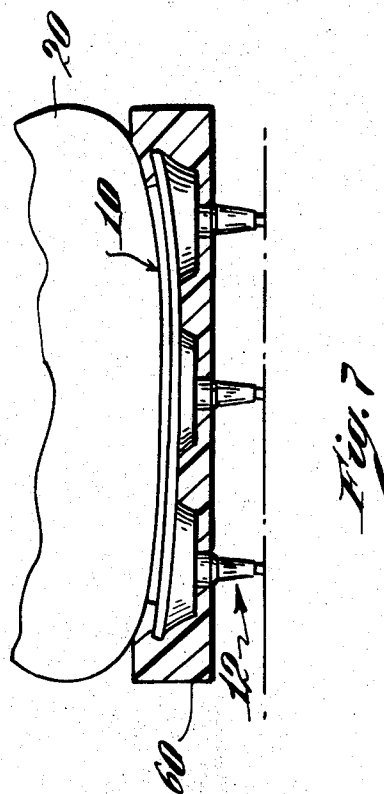
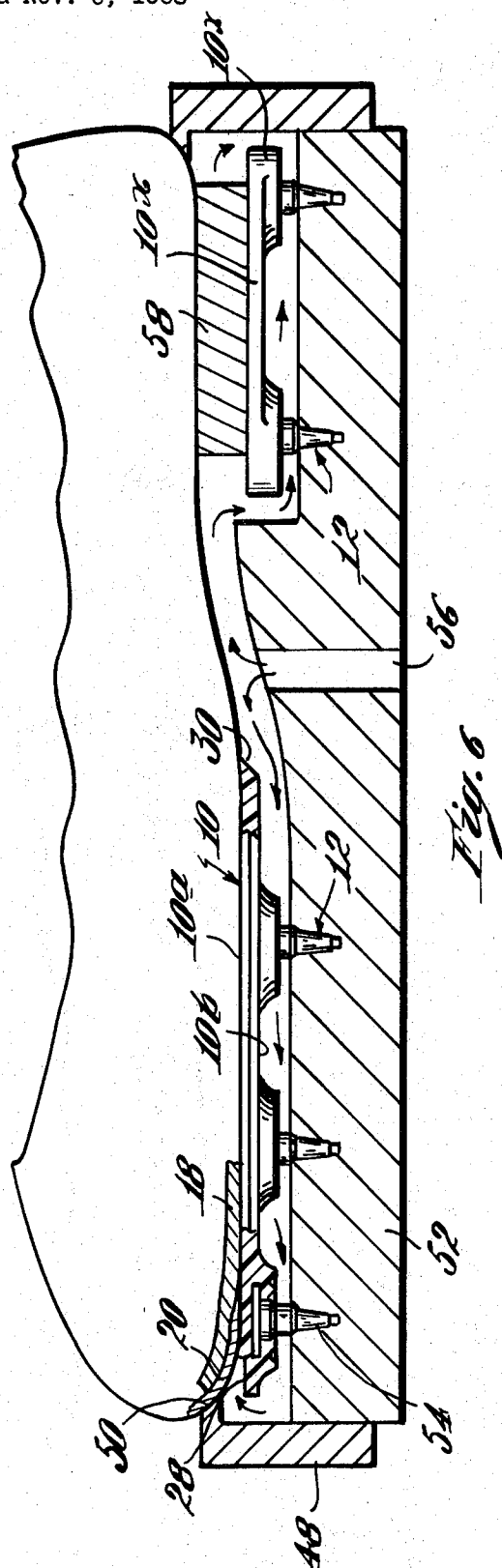
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**3,529,370**

CLEATED ANCHOR PLATE

Filed Nov. 8, 1968

2 Sheets-Sheet 2



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3,529,370

## CLEATED ANCHOR PLATE

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9 Claims

### ABSTRACT OF THE DISCLOSURE

An anchor plate for incorporation into the bottom of a golf shoe, said plate being comprised of a material adapted to be conformed to the contour of the bottom of the lasted upper and having fixed to one surface thereof a plurality of cleats.

### BACKGROUND OF THE INVENTION

In application Ser. No. 734,154, filed June 3, 1968, there is disclosed an anchor plate to one side of which are affixed cleats, for incorporation into the bottom of a shoe by injection molding. The object of this invention is to provide improvements in the aforesaid anchor plate which enable obtaining better attachment of the anchor plate to the bottom of the lasted upper and better conformity to the contour of the bottom.

### SUMMARY

As herein illustrated, there are anchor plates for the forepart and heel ends, each one of which has attached to one side metal cleats. The plates are comprised of a material which, at normal temperature, is shape-retaining; at an elevated temperature becomes conformable without loss of continuity, so that it can be conformed easily to the transverse and longitudinal contour of the bottom of the lasted shoe in spite of irregularities therein; and which will revert to its shape-retaining condition when no longer subject to an elevated temperature. The anchor plates correspond substantially in configuration to the portion of the shoe bottom in which they are to be incorporated but are of smaller area. The surface of the anchor plate for the forepart, facing the bottom of the lasted upper, extending from one side around the tip to the other side, contains a groove which provides a clearance between the anchor plate and the bottom of the lasted upper. The butt end of the forepart anchor plate is beveled from the top surface downwardly and forwardly. The anchor plate for the heel end contains no such groove.

The invention will now be described in greater detail with reference to the accompanying drawings wherein:

FIG. 1 is a plan view of the top side of an anchor plate for incorporation into the forepart of the shoe bottom;

FIG. 2 is an edge view of the anchor plate shown in FIG. 1 taken on the line 2—2 of FIG. 1;

FIG. 3 is a plan view of an anchor plate for incorporation in the heel end of the shoe bottom;

FIG. 4 is an edge view of the anchor plate shown in FIG. 3 taken on the line 4—4 of FIG. 3;

FIG. 5 is an elevation, to much larger scale, of a cleat;

FIG. 6 is a vertical section taken longitudinally of a mold assembly showing the forepart and heel plates supported from the bottom of the mold cavity and an upper supported at the top of the mold cavity; and

FIG. 7 is a transverse section of a finished shoe illustrating the conformity of the forepart plate with the bottom surface of the lasted upper.

Referring to the drawings (FIGS. 1, 2 and 3), the improved anchor plate for the forepart of the bottom

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comprises a relatively thin plate 10 corresponding in configuration to the forepart of the bottom in which it is to be incorporated but smaller in area, to one surface of which are secured a plurality of cleats 12, as disclosed in the application referred to above, the anchor plate 10 has at one side integral bosses 14 in which the heads of the cleats 12 are secured.

In accordance with this invention, the anchor plate 10 and the integrally formed bosses 14 are comprised of a material which, at normal temperatures, is shape-retaining, resists to a substantial degree bending, distortion and displacement so as to hold the cleats in rigid relation to each other in the finished bottom. The material, however, is chosen so that it is adapted to be made conformable at higher than ambient temperatures, for example, by the application of heat, in which condition it can be conformed intimately to the longitudinal and transverse contour of the lasted upper and to any irregularities in the bottom of the lasted upper without loss of continuity or displacement of the cleats relative to each other, and that it will revert to its stable condition when restored to normal temperature. The application of the heat necessary to make the plate conformable, as will be explained hereinafter, can be applied prior to placing the plate in the mold or can be applied by heat supplied through the last, especially if the upper is string-lasted to the last, or by heat from the hot bottom-forming composition as it is injected into the mold. Any material embodying the foregoing characteristics of shape-retention at normal or ambient temperatures which may be rendered conformable at high temperatures and will return to its stable condition at normal temperatures without loss of continuity is suitable for the purpose. One such material is a rubber known as S-B-R- nitrile phenolic blend. Polyvinyl chloride may also be used and it is within the scope of the invention that materials may be used that are adapted to be rendered conformable by means other than heat, for example, fluids or chemicals, the application of which would render the material temporarily conformable or pliable.

The anchor plate 10 for the forepart, as illustrated in FIG. 6, is supported with its upper surface 10a in direct contact with the bottom side of the lasted upper which may comprise an insole 18 to which the lasting margin 20 of the upper is fastened, or if the upper is string-lasted against the lasting margin and the naked bottom of the last. In any event to obtain a good bond between the anchor plate and the lasting margin at the bottom, the marginal edge of the anchor plate, as shown in FIGS. 1, 2 and 6, along the inner and outer sides 22 and 24 and around the tip 26a has in the upper surface 10a a groove 28. The anchor plate is approximately 1/8 inch in thickness and the groove is approximately 1/16 inch in depth and 1/4 inch in width. The butt end 26b of the anchor plate is provided with a bevel 30 which slopes from the upper surface 10a downwardly and forwardly as shown in FIG. 2. The lower surface 10b of the anchor plate, as previously indicated, has formed integral therewith the bosses 14 and these are approximately 1/8 of an inch thick and have an outside diameter of approximately 3/4 of an inch. Optionally, the plate may have holes through it to provide for better anchoring between the plate and the bottom which is to be applied.

Each cleat 12 (FIG. 5) has a circular head 32, a shaft or body 32a of three diameters stemming therefrom, and a tip 34. The shaft 32a comprises a cylindrical portion 36 of one diameter, a cylindrical portion 38 of smaller diameter and a tapering portion 40. The cylindrical portion 36 is adapted to be embedded in the material of the anchor plate and specifically in the boss 14; the cylindrical portion 38 is adapted to be embedded in the substance of which the sole is formed; and the tapering por-

tion 40 is adapted to project from the tread surface of the sole when it is completed. At the junction of the cylindrical portion 36 and the cylindrical portion 38 there is a beveled shoulder 42 and at the junction of the cylindrical portion 38 with the conical portion 40 there is a beveled shoulder 44. The beveled shoulder 42 allows the material of which the plate is comprised to flow inwardly from the diameter of the cylindrical portion 36 to the diameter of the cylindrical portion 38 thus to provide a seal about the cleats, and the shoulder 44 provides for a smooth transition from the tread surface of the sole to the conical portion 40 extending therefrom.

By way of illustration, only, and without limitation the cleats incorporated in the anchor plate, as described above, have the following specifications: a head diameter of  $\frac{5}{8}$  of an inch; a shaft diameter at 36 of  $\frac{7}{16}$  of an inch; and a shaft diameter at 38 of .260 inch.

The shaft of the cleat contains an axial opening 32b at the smaller end which extends toward the head throughout substantially the entire length of the tapered portion in which the tip 34 is forced and fixed, for example, by brazing or compression. The tip is comprised of tungsten.

To prevent rotation of the head 32 in the anchor plate the upper surface thereof contains a plurality of holes or depressions 46. Optionally, the heads may be made non-circular, for example, polygonal.

As related above in the above-identified application, the cleats are attached to the anchor plate by an injection molding process in which the lower portions of the cleats comprising the conical and cylindrical portions 40 and 38 are supported in openings in the bottom of the mold cavity suitably closed at the top, and the material of which the anchor plate is to be made is injected into the cavity about the heads 32, the cylindrical portions 36 of the shafts and the beveled shoulders 42 which extend upwardly from the bottom into the cavity. It is within the scope of the invention to form the anchor plate by a pressure molding process instead of injection molding, by the simple expedient of placing a moldable material, for example unvulcanized rubber, in the mold cavity above the heads of the cleats and then applying pressure and heat to form it about the heads and cylindrical portions adjacent thereto. The anchor plate is provided with the groove 28 and the bevel 30 either in the mold during the molding process or after it is removed from the mold by routing the edge and beveling the butt end. The anchor plate 10 with the cleats 12 attached thereto is incorporated in the bottom, that is, the sole of a shoe by an injection molding process, using a mold assembly, such as shown in FIG. 6, comprising a side ring 48, at the top of which there is a lip 50 adapted to provide a seat for the lasted upper and a sole plate 52 at the bottom of the ring movable therein relative to the bottom of the lasted upper supported on the lip. The sole plate contains openings 54 for receiving the lower conical ends of the cleats, as shown in FIG. 6, to support the anchor plates with the cleats attached thereto above the upper surface of the sole plate in a position for engagement of the upper surface 10a of the anchor plate with the lower side of the lasted upper.

In accordance with this invention, the anchor plate is first roughed with a wire brush or washed to take off the releasing compound and then coated with an adhesive compatible with rubber or polyvinyl chloride. After thus treating the anchor plate and before placing it in the mold cavity it is subjected to further treatment, for example to heat, to make it conformable whereupon it is placed in the mold cavity and by raising the sole plate is forced against the bottom side of the lasted upper so that it assumes the contour of the bottom of the lasted upper. A bottom-forming composition of rubber, polyvinyl chloride or equivalent bottom-forming composition is now injected into the mold cavity through an opening 56 in the sole plate which, as shown, is located at the shank portion so as to fill the cavity about the anchor

plate 10 at the forepart. The groove 28 at the tip and along the sides of the forepart anchor plate provides a space between it and the bottom of the lasted upper so that the bottom-forming composition which flows into the cavity beneath the anchor plate flows upwardly about its edges and inwardly into the groove. The beveled edge 30 at the butt end of the plate directs the bottom-forming composition flowing from the passage 56 downwardly beneath the plate rather than between it and the bottom of the lasted upper, thus preventing any tendency for depressing the butt end of the anchor plate and by displacing it interfering with the proper flow of bottom-forming composition into the mold and also improper positioning of the anchor plate in the finished sole.

The conformity of the anchor plate to the contour of a transversely curved bottom is shown in FIG. 7, wherein the completed bottom or sole 60 is shown in section with the anchor plate embedded therein so that only the shoulders 44 and the conical portions 40 of the cleats extend from the tread surface. It is to be observed that while the anchor plate is caused to conform to the contour of the bottom, the cleats are held in fixed relation to each other during its conformation to the bottom so that in the finished shoe the tips of the cleats lie in a common plane which is substantially flat; hence affording a high degree of stability and balance for the golfer.

A heel end anchor plate 10x is also employed in conjunction with the forepart anchor plate, as shown in FIGS. 3, 4 and 5, but which may not require the provision of a groove or bevel as is required for the forepart anchor plate since it is held flat against a filler 58 at the heel end of the lasted upper which is smaller than the heel end anchor plate 10x so that the bottom-forming composition can flow over the exposed upper surface surrounding the filler thus firmly connecting it to the bottom of the lasted upper. Generally, it is not necessary to render the heel plate conformable since the filler provides a flat bottom surface against which the heel end anchor plate can be firmly held without any danger of the bottom-forming composition entering between its upper surface and the lower surface of the filler.

The anchor plates and the manner of incorporating them in the shoe bottom, as described above, provides a high degree of stability and balance, and in addition provides for long wear without need for replacement, minimum breakage or pulling out of the cleats from the sole, or deflection or displacement relative to each other, and affords no opportunity for entrance of water and/or dirt into and through the sole and from thence to the interior of the shoe.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents falling within the scope of the appended claims.

We claim:

1. An article of manufacture for incorporation in the bottom of a shoe, comprising a flat nonmetallic plate having tip and butt ends adapted to correspond in configuration to but smaller in area than the forepart of a shoe bottom in which it is to be incorporated, said plate having substantially flat top and bottom surfaces, said top surface being adapted to have engagement with the bottom of a lasted upper, a groove formed in the top surface marginally of the plate, said groove having angularly disposed surfaces one of which is situated intermediate the top and bottom surfaces thereof substantially parallel to the top surface, so as to provide a space between the bottom of the lasted upper and said one surface when the top surface is in engagement with the bottom of the lasted upper into which bottom forming composition can flow during the bottom forming operation, and a plurality of rigid metal cleats each embodying a relatively large diameter flat head which is thinner than the plate and a shank of smaller diameter extending perpendicular therefrom which terminates in a tapering tip,

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said cleats being incorporated in the plate with their heads buried between the top and bottom surfaces.

2. An article of manufacture according to claim 1, wherein said groove extends from the tip along the sides to the butt end.

3. An anchor plate according to claim 1, wherein the butt end of the plate is beveled downwardly and forwardly with respect to the top surface.

4. An article of manufacture according to claim 1, wherein said plate is comprised of polyvinyl chloride material which is shape-retaining at ambient temperature but which is adapted to be rendered conformable at a higher temperature to the bottom of the lasted upper without loss of its continuity.

5. An anchor plate according to claim 1, wherein said plate is in the order of  $\frac{1}{8}$  of an inch in thickness.

6. An anchor plate according to claim 1, wherein said plate is in the order of  $\frac{1}{8}$  inch in thickness and the groove is in the order of  $\frac{1}{16}$  of an inch in depth and  $\frac{1}{4}$  of an inch in width.

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7. An anchor plate according to claim 1, wherein said plate is in the order of  $\frac{1}{8}$  of an inch in thickness, bottom surface and is in the order of  $\frac{1}{8}$  of an inch in thickness and the bosses are of the order of  $\frac{1}{8}$  of an inch in thickness and  $\frac{3}{4}$  of an inch in diameter.

8. An anchor plate according to claim 1, containing a plurality of small holes formed through said plate.

9. An anchor plate according to claim 1, comprised of rubber.

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