Sept. 7, 1965 R. B. SNOW 3,204,347

SOLE PLATE FOR ATHLETIC SHOE

Filed April 9, 1965

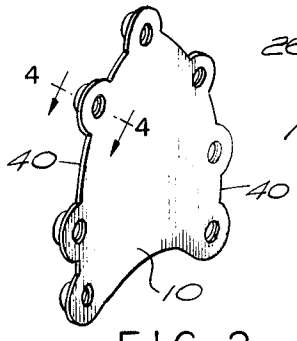

FIG. 2

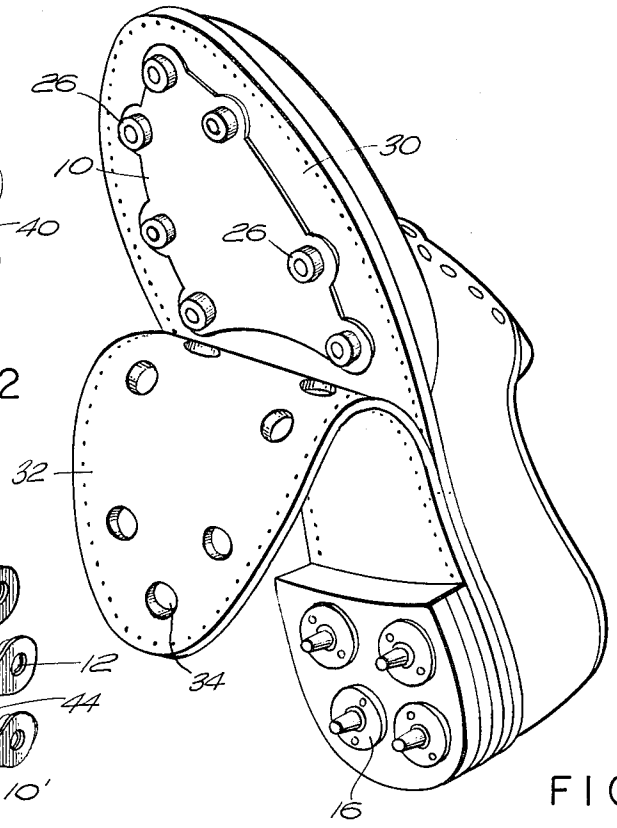

FIG. 1

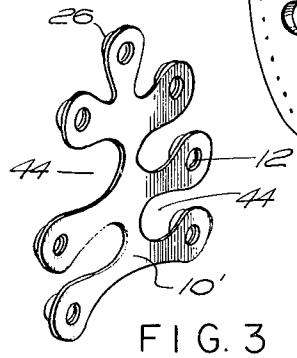

FIG. 3

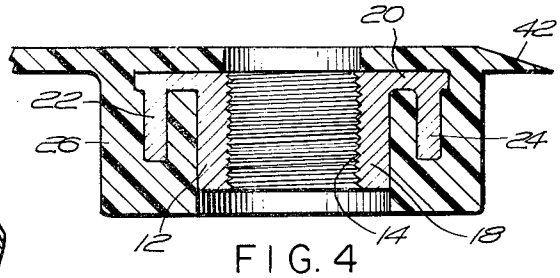

FIG. 4

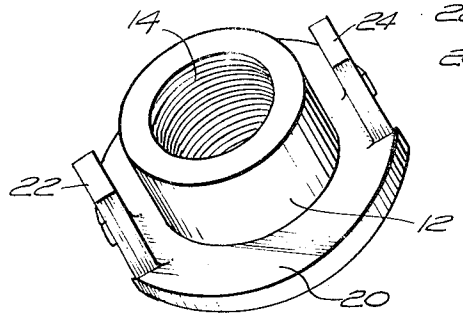

FIG. 5

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United States Patent Office

3,204,347
Patented Sept. 7, 1965

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3,204,347

SOLE PLATE FOR ATHLETIC SHOE

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Filed Apr. 9, 1965, Ser. No. 446,919
3 Claims. (Cl. 36—2.5)

This invention relates to a sole plate to be incorporated in the sole of an athletic shoe between the insole and the outsole to strengthen the sole and to provide a strong support for receptacles employed to hold spikes or cleats. For some time past thin plates of spring steel have been employed for this purpose, steel receptacles being secured to them as shown, for example, in Patent No. 3,040,449. When plates like that are used in shoes having leather soles, the receptacles are exposed to the corrosive effects of moisture and of the tannic acid which is usually present in leather soles.

According to the present invention, metal receptacles for spikes or cleats are molded into a plate of tough synthetic resin such as rigid polypropylene, the plate being molded with a thickness sufficient for desired strength but without undue rigidity. To provide adequate mechanical anchorage for the receptacles, as well as to protect the receptacles against corrosion, a thick body of resin is provided around each receptacle.

For a more complete understanding of the invention, reference may be had to the following description thereof, and to the drawing, of which

FIGURE 1 is a perspective view of a shoe having a sole plate embodying the invention applied to the bottom of the insole;

FIGURE 2 is a perspective view of the top face of the sole plate;

FIGURE 3 is a perspective view of the top face of a sole plate having a different contour;

FIGURE 4 is an enlarged fragmentary section, on the line 4—4 of FIGURE 2, of the sole plate; and

FIGURE 5 is a perspective view of one of the receptacles embedded in the plate.

The sole plate 10 is molded in one piece with the customary number of metal receptacles 12, preferably of steel, embedded therein. These receptacles may be any one of a variety of forms, provided that they have an interior screw thread 14 into which the threaded stem of a spike 16 or cleat can be screwed. The receptacle illustrated on the drawing has a tubular portion 18, interiorly threaded as at 14, with a radial flange 20 at one end thereof. At diametrically opposite points on the flange 20 are ears 22, 24 which are bent up from the plane of the flange to be beside but spaced from the tubular portion 18. When the plate 10 is molded about the receptacles, the open ends of each tubular portion 18 are blocked to prevent entry of the resin thereinto. The mold is shaped so that around each receptacle 12 a cylindrical button 26 is formed having a diameter somewhat greater than that of the flange 20 and a length greater

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than that of the ears 22, 24. The flange and ears of each receptacle are completely embedded in the resin. The button 26 extends beyond the other end of the receptacle, as indicated in FIGURE 4, so that substantially the entire surface of each receptacle 12, with the exception of its interiorly threaded surface, is covered and protected by the resin. The ears 22, 24 securely anchor the receptacle against rotation when a spike or cleat is screwed into or out of it. The button 26 thus provides ample support for the receptacle against torsional stresses that may be imposed on it.

While any synthetic moldable material of sufficient toughness can be used for the plate, molded rigid polypropylene is satisfactory, the plate being made with the proper thickness to provide the desired degree of flexibility. By way of example but not limitation, the plate may be 1 mm. thick, and the buttons 26 may be 15 mm. in diameter.

When a sole plate 10 is incorporated into the sole of a shoe, it is placed between the insole 30 and the outsole 32. Suitably located holes 34 are provided in the outsole to be fitted by the buttons 26 the ends of which are intended to be substantially flush with the outer face of the outsole. Since the insole and outsole are customarily cemented to each other whether or not the edges are joined by stitching, the edges of the plate 10 are recessed as at 40 between successive buttons 26 and the edges are beveled as at 42 to provide additional interface contact between the insole and outsole. In cases where the insole and outsole are joined adhesively without stitching, a plate 10′ may be employed, this plate being similar to the plate 10 but with materially deeper recesses 44 between successive buttons 26.

I claim:

1. A sole plate comprising a thin sheet of rigid polypropylene resin shaped to be inserted between the insole and outsole of a shoe, a plurality of cylindrical buttons integral with said sheet and projecting from a face thereof, and a steel receptacle embedded in each said button, each said receptacle consisting of an interiorly threaded tube coaxial with the button and open at both ends, a radial flange at one said end, and ears extending from said flange beside said tube.

2. A sole plate as described in claim 1, the contour edge of said plate being recessed between successive buttons.

3. A sole plate as described in claim 2, the margin of said plate being beveled to a sharp edge.

References Cited by the Examiner

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FRANK J. COHEN, *Primary Examiner.*