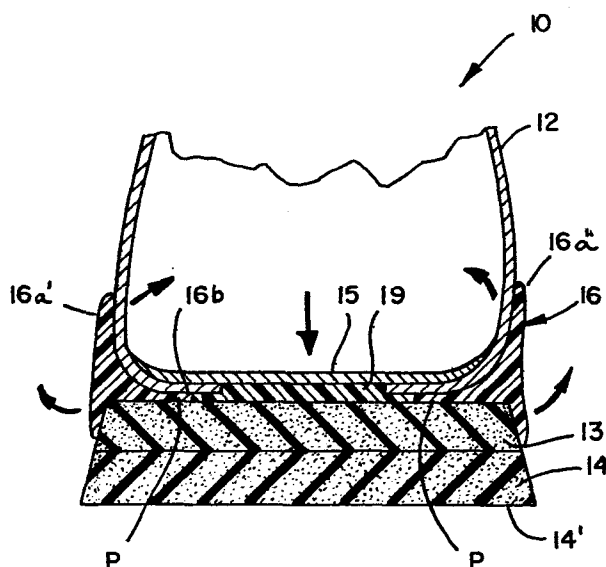




HEEL COUNTERS AND ATHLETIC SHOES
INCORPORATING SUCH COUNTERS

This invention relates to shoe heel counters, and to athletic shoes with exterior heel counters.

Exterior heel counters are known and used for a variety of reasons but chiefly in athletic shoes

5. for added foot support to inhibit tendency to overpronation. Teachings relating to such are set forth in U.S. patents such as 4,255,877; 4,287,675; 4,288,929; 4,259,792; 2,244,504; 4,322,895; 4,354,318; and 4,354,319.
10. According to the present invention an exterior heel counter is comprised of polymeric material and configured to extend around the heel of a shoe and along the medial and lateral sides of the shoe to the instep region; said counter including a
15. vertically oriented exterior rim, an integral interior anchor flange projecting horizontally inwardly from the central portion of said rim for anchoring between an overlying shoe insole and an underlying shoe midsole, the forward portions of said
20. anchor flange being connected to prevent said counter from spreading apart; said rim having a downwardly depending lower rim portion for abutting the shoe midsole and an upwardly extending upper rim portion for abutting the shoe upper; said rim having sufficient
25. rigidity such that outward force on said lower rim portion causes pivoting force on said rim and consequent inward force on said upper rim portion, for foot support.
30. The invention thus provides an exterior heel counter exhibiting dynamic foot support responsive to

the foot action on the shoe. When the counter is incorporated in a shoe it has a lever action to achieve the dynamic support. This lever action occurs with forces on the vertical rim of the counter, 5. in cooperation with the integral anchoring flange of the counter. The lower portion of the rim, to which is applied laterally outwardly directed force by the vertically compressed, laterally expanding underlying sole, causes a laterally inwardly directed force on 10. the upper rim portion, and by it on the shoe upper, for momentarily increased foot support.

The invention may be carried into practice in various ways but one exterior heel counter and an athletics shoe incorporating it, both embodying the 15. invention, will now be described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a fragmentary, side elevational view of the athletic shoe;

Figure 2 is a plan view of the exterior heel 20. counter;

Figure 3 is a side elevational view of the inside, i.e. medial side of the insert in Figure 2;

Figure 4 is a side elevational view of the outer side, i.e. lateral side of the insert in Figure 2;

25. Figure 5 is a sectional view taken on plane V-V of Figure 2;

Figure 6 is an end elevational view of the insert taken on plane VI-VI of Figure 2; and

30. Figure 7 is a fragmentary, sectional view taken of the shoe in Figure 1 on plane VII-VII of Figure 1.

Referring now specifically to the drawings, the athletic shoe 10 there depicted includes a shoe upper 12, a midsole 13, an outsole 14 having a lower tread surface 14', an insole 15, and an exterior counter control device 16. The upper is shown to extend partially beneath the foot from both sides, while leaving a gap between the edges thereof, for receipt of a bonding material such as ethylene vinyl acetate. Insole 15 is bonded to the upper 12 where it overlaps the edges of the upper, and bonded to midsole 13, with bonding material 19. Midsole 13 is bonded to outsole 14 in conventional fashion. Upper 12 is bonded to the abutting inner wall surface of the upper portion of counter device 16. The lower portion of the counter device abuts and is bonded to the periphery of midsole 13. The bonding material is preferably ethyl vinyl acetate or the equivalent. Midsole 13 is of a compressible resilient polymeric material such as porous rubber, as is conventionally used.

The counter control device 16 comprises a moulded polymeric element, preferably of graphite-reinforced nylon. It is configured to include a curvilinear portion extending around the heel of the shoe and two generally straight side portions to extend forwardly along the medial and lateral sides of the shoe to the instep region. The counter includes an outer, basically vertically oriented rim 16a extending around the outer periphery and a generally horizontal, inwardly projecting anchor flange 16b projecting from and

integral with the central portion of the rim.

Integrally interconnecting the front portions of flange 16b is a transverse bridge 16c. This bridge therefore connects the forward portions of the counter

5. to prevent these forward portions from spreading apart under the influence of lateral outward force applied to the opposite sides of the rim. Flange 16b and bridge 16c include orifices 17 therethrough, allowing bonding material between the midsole and shoe upper
10. to assist in anchoring this counter insert by extending through and curing in the openings 17 in the form of tiny posts. Rim 16a extends above and below this anchoring flange 16b. The lateral side 16a' of the rim retains its vertical orientation to
15. the front end thereof. The medial side 16a" retains its full vertical orientation except that, at its forward portion 16a''' in the instep region, it is sloped at a small acute angle such that the upper portion of the rim slants upwards and outwards and the
20. lower portion of the rim slants upwards and inwards, at the same angle. This assures full contact with the sloped shape of the shoe upper in this instep region while retaining its basically vertical orientation.

- Anchor flange 16b has a thicker rigid area where
25. it joins the rim and tapers to a thinner flexible area toward the central portion of the shoe. The inner face of the juncture of the rim and anchor flange is concavely curved, causing the shoe upper to curve smoothly down and in, and generally flattens out to
 30. its thinner more flexible character beneath the flat

portion of the upper. The rim is of sufficient rigidity such that lateral outward force applied to the lower rim portion will result in inconsequential bending of this lower rim portion relative to the upper rim

5. portion, but rather such force will result in the entire rim and the immediately adjacent thicker anchor flange material (Figure 7) tending to pivot about the thinner anchor flange region generally designated "P" (Figure 7).

10. The heel counter device achieves a dynamic force-responsive support action for the foot. This is considered particularly useful for athletic shoes, including running shoes, wherein substantial force is repeatedly applied by the foot to the underlying sole

15. of the shoe and wherein the tendency for overpronation of the foot is maximum. This dynamic support action is achieved with lever action of the external counter in cooperation with the outsole and the shoe upper.

20. The counter device responds to the dynamic downward forces applied during use of the shoe to produce laterally inward support on the foot. That is, in response to the downward force applied by the foot to the underlying compressible midsole as the athlete moves, the midsole vertically compresses, causing

25. lateral outward expansion thereof. This lateral expansion causes a lateral outward force against the abutting lower rim portion on the medial and lateral sides of the shoe. The lower rim portions are prevented by the shape of the counter and its anchored condition

30. from spreading apart. Thus, the lateral force causes

- the rigid vertical rim and adjacent thicker zone of the anchor flange to tend to pivot about the more flexible region P of the anchoring flange, such that the upper portions of the rim apply an inward force
5. against the medial and lateral sides of the shoe upper, in support of the lower foot. The result is the dynamic support action applied when most needed.

- The details of the particular shoe construction could be varied within the novel concept taught, to
10. suit a particular athletic activity. The invention is therefore intended to be limited only as set forth in the appended claims and the reasonable equivalents thereto, rather than the specific illustrative embodiment of the invention.

CLAIMS

1. An exterior heel counter (16) comprised of polymeric material and configured to extend around the heel of a shoe and along the medial and lateral sides of the shoe to the instep region; said counter including a vertically oriented exterior rim (16a), an integral interior anchor flange (16b) projecting horizontally inwardly from the central portion of said rim for anchoring between an overlying shoe insole (15) and an underlying shoe midsole (13), the forward portions of said anchor flange being connected (16c) to prevent said counter from spreading apart; said rim having a downwardly depending lower rim portion for abutting the shoe midsole and an upwardly extending upper rim portion for abutting the shoe upper; said rim having sufficient rigidity such that outward force on said lower rim portion causes pivoting force on said rim and consequent inward force on said upper rim portion, for foot support.

2. An exterior heel counter according to Claim 1 in which, at the juncture of the anchor flange (16b) with the central portion of the rim (16a), the anchor flange is thicker and rigid, and the anchor flange tapers to a thin flexible zone.

3. An exterior heel counter according to Claim 2 in which said juncture has a concave inner curvature.

4. An exterior heel counter according to any of Claims 1 to 3 in which the rim (16a), at the medial side (16a") of the shoe, has its said upper rim portion sloped upwards and outwards at an acute angle and its said lower rim portion sloped upwards and inwards at an acute angle.

5. An exterior heel counter according to any of Claims 1 to 4 in which the anchor flange (16b) contains orifices (17) for bonding material to bond the insole (15) and the midsole (13) through the anchor flange.

6. An exterior heel counter according to any of Claims 1 to 5 in which the connection of said forward portions comprises a transverse bridge (16c) integral with said anchor flange (16b).

7. An exterior heel counter according to any of Claims 1 to 6 which is of graphite-reinforced nylon.

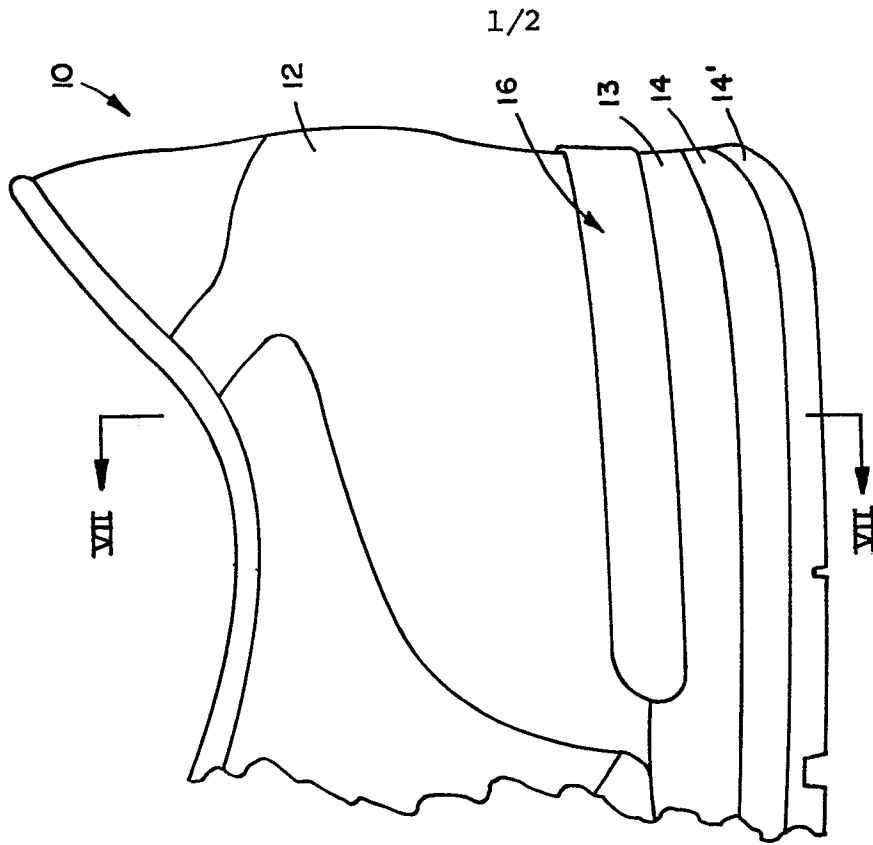


FIG. 1

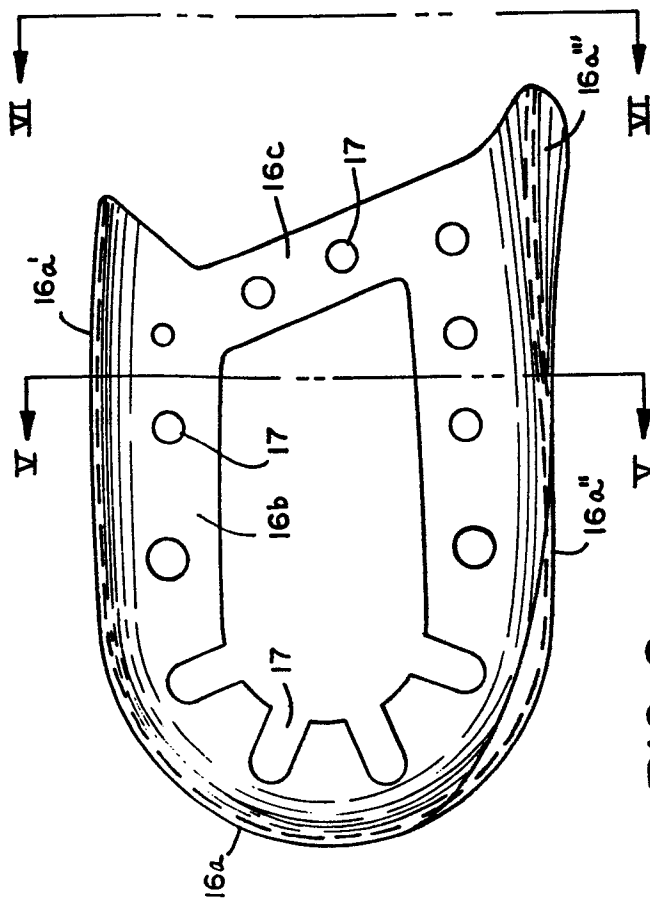


FIG. 2

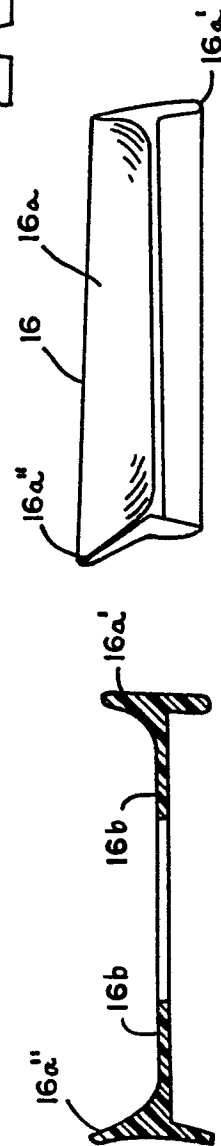
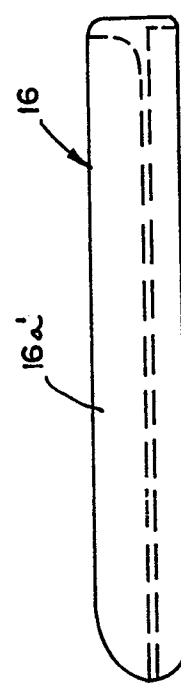
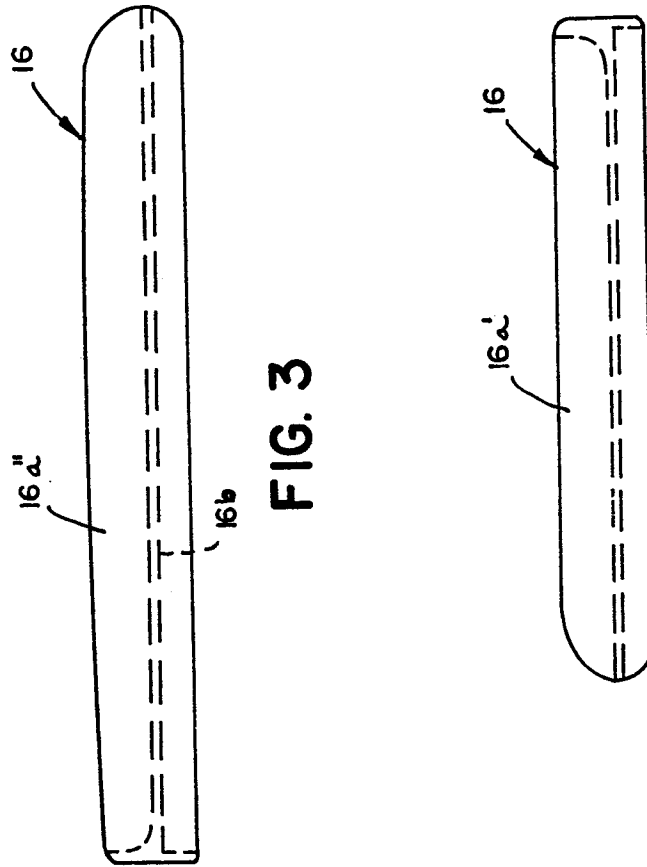
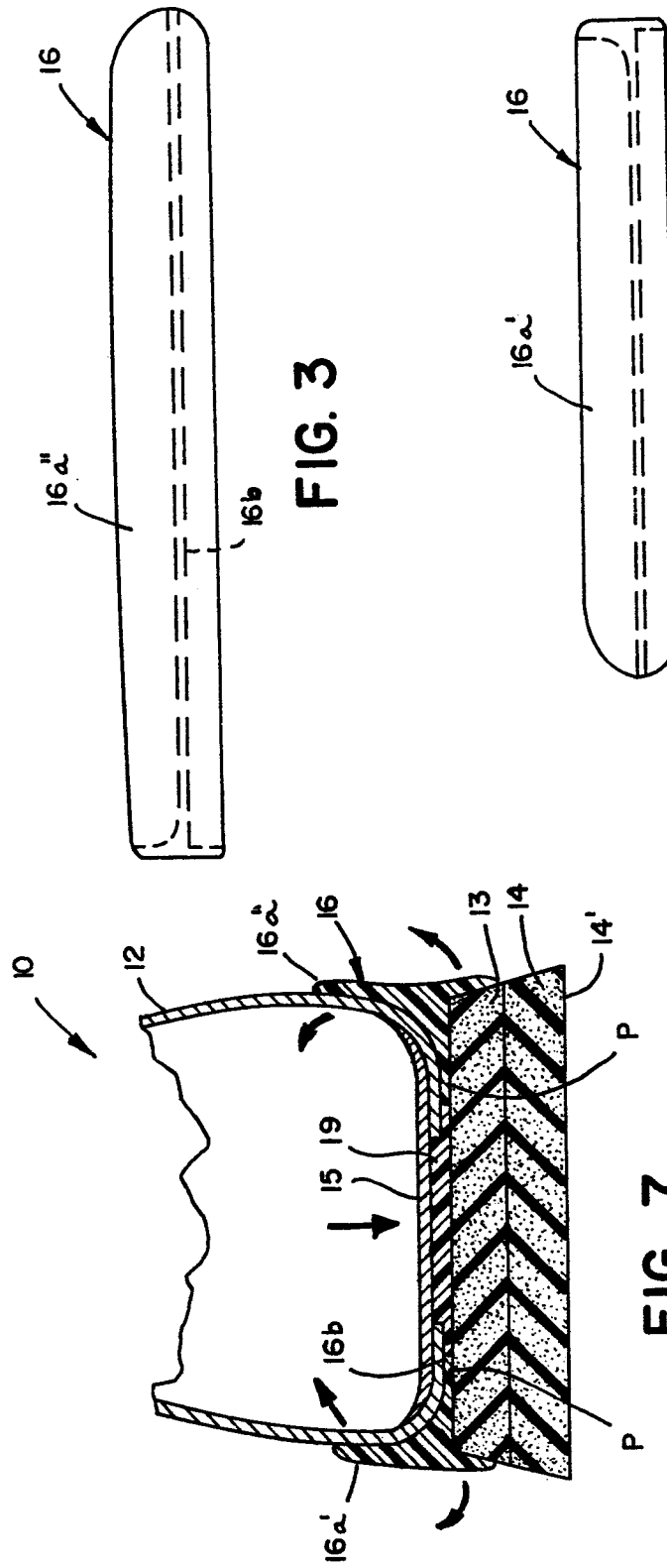


FIG. 5

FIG. 6





European Patent
Office

EUROPEAN SEARCH REPORT

0146208

Application number

EP 84 30 6123

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
P,X	EP-A-0 096 542 (NIKE) * Claim 1; figures 1-5 *	1-5	A 43 B 23/08 A 43 B 5/06
X	FR-A- 466 055 (J.F. MONTINE) * Abstract; figure 2 *	5,6	
A	US-A-3 780 454 (E. GODWIN) * Column 4, lines 23-30 *	7	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			A 43 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 31-01-1985	Examiner MALIC K.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			