(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 785 049 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
16.05.2007 Bulletin 2007/20

(51) Int Cl.:
A43B 13/26 *(2006.01)* ***A43C 15/16*** *(2006.01)*
A43C 15/14 *(2006.01)*

(21) Application number: **05024647.9**

(22) Date of filing: **11.11.2005**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(71) Applicant: **Vanbest Co., Ltd.**
Taipei (TW)

(72) Inventor: **Chang, Fu-Chuan**
Taipei (TW)

(74) Representative: **Casalonga, Axel et al**
Bureau Casalonga & Josse
Bayerstrasse 71/73
80335 München (DE)

(54) Improved spike

(57) This invention relates to an improved spike (10,30,40) installed in a sole (21) of a shoe (20) and consists of a receptacle (12) having a base (22) and several connecting seats (24,34,42) integrated around the edge of the base in one piece flexibly moving in proportion to the base. Several spikes (14) are installed unto individual connecting seats extruding the sole. Accordingly, each connecting seat and partial spikes (14,32,48) are wrapped up by the flexible sole. When spikes receive an external force causing connecting seats to deviate slightly and simultaneously, the elasticity of the sole material and elastic recovery of each connecting seat are used ingeniously to create proper grip.

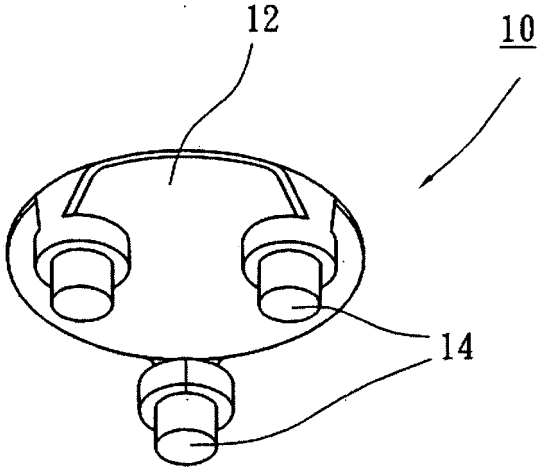

FIG. 1

EP 1 785 049 A1

Description

[0001] This invention relates to footwear. More particularly, the invention is directed to improve spikes.

[0002] Spikes are commonly installed on the bottom of footwear for skidproof and grip effects when shoes wearers stand or walk on grass or places with soft soil. Hence, footwear with spikes is mostly designed for exercise doers like track and field and golfing, etc.

[0003] Spikes are usually divided into two types. One is single column spikes and the other is disc-shaped spikes. Though several spikes are arranged on the bottoms of shoes for the first type; however, not many spikes are installed on the bottoms due to cost and design. Consequently, this type has single-point grip that is not sufficient. Furthermore, the reacting force is sent back to the feet of the wearers stamping on the ground, which causes discomfort for the wearers. A number of spikes are installed to enhance the skidproof effect for the second type. Nevertheless, the design of a rigid disc with many spikes is only effective in slip resistance without any real grip.

[0004] The main purpose of this invention is to provide spikes that may solve the aforementioned problems. Each spike may deviate flexibly to create excellent skidproof and grip effects.

[0005] Accordingly, to achieve the aforementioned purpose, this invention relates to an improved spike with a receptacle installed in a sole of a shoe and a base and several connecting seats integrated around the edge of the base in one piece flexibly moving in proportion to the base. Several spikes are installed unto individual connecting seats extruding the sole.

[0006] A description of the content and the technology of this invention along with drawings is made in detail as follows:

Fig1 is an exploded view of a first preferred embodiment of the present invention;

Fig2 is an exploded view in parts of the first preferred embodiment of the present invention.

Fig3 is a view of the first preferred embodiment of the present invention installed on the sole showing spikes inserting to the ground.

Fig3A is an amplification display view in parts of Fig3.

Fig4 is another view of the first preferred embodiment of the present invention installed on the sole showing spikes inserting to the ground.

Fig4A is an amplification display view in parts of Fig4.

Fig5 is an exploded diagram of the second preferred embodiment of the present invention.

Fig6 is an exploded diagram of the third preferred embodiment of the present invention.

[0007] First, refer to Figs. 1 thru 3. Spikes 10 in a preferred embodiment of the present invention are installed unto a flexible sole 21 of a shoe 20 and constituted by one receptacle 12 and several tacks 14.

[0008] The receptacle 12 is made of flexural metal material and has a base 22 and three connecting seats 24 formed by bending the piece extruding the outer edge of the base 22 for slight flexible deviation relative to the base 22. One foundation 26 is bent and formed on the edge of the base 22. One stand 28 is connected to the foundation 26 and bent into a circle for the hole 29.

[0009] Each tack 14 is made of metal material harder than that of the receptacle 12 and inserted into corresponding hole 29espectively.

[0010] Thus, the receptacle 12 is situated in the sole 21 and the end of each tack 14 extrudes the sole 21 at a proper length. Consequently, every connecting seat 24 and tack 14 are enclosed by the flexible material of the sole 21 The flexibility of the sole 21 and slight flexible deviation of the connecting seat 24 relative to the base 22 are ingeniously designed for a proper grip for each tack 14.

[0011] As the angle of the feet and the ground changes slightly while walking, the angle formed by each spike 10 installed on the bottom of the shoe 20 and the ground also varies as shown in Fig3. When each tack 14 draws in slightly, every tack 14 on the sole 21 will be compressed resulting in a rebounding force that will coordinate the slight expanding elastic recovery of each connecting seat 24 in proportion to the base 22. Consequently, the expanding strength of each tack 14 can be increased and the skidproof and gripping effects of every tack 14 can be enhanced. On the contrary, when each tack 14 expands outwardly a little bit as shown in Fig4, every tack 14 outside the sole 21 will be pressed resulting in a rebounding force that will draw the tack 14 in and coordinate the slight drawn-in elastic recovery of each connecting seat 24 relative to the base 22. In this way, the drawn-in strength of each tack 14 will be motivated and the skidproof and gripping effects can be enhanced.

[0012] Refer to the spike 30 in Fig5 for another preferred embodiment of the present invention. The structure is identical to that of the spike 10 in general. The differences are the cone-shaped end of each tack 32 and a dent 36 on the outside of each connecting seat 34 corresponding to the tack 32 to prevent each tack 32 from getting loose from the connecting seat 34 or being squeezing into the inner end of the connecting seat 34 because of an external force. Therefore, each tack 32 can be clipped tightly and the excellent skidproof and gripping effects disclosed above will be achieved.

[0013] Refer to the spike 40 in Fig6 for still another preferred embodiment of the present invention. Both sides of the foundation 43 of each connecting seat 42 are bent relatively and corresponding to the hole 46 of the stand 44 so that the inner end of each tack 48 can be propped up against the end surface of the foundation 43. As a result, each tack 48 won't squeeze towards the inner end of the connecting seat 42 affecting gripping effect.

[0014] Accordingly, the spike of this invention works with the wrapped connecting seat and the sole flexible

material of the tack perfectly via each connecting seat deviating opportunely and flexibly. A better grip is generated by changing elastic recovery appropriately no matter what angle of deviation is when each tack contacts the ground. This invention indeed has more excellent skidproof effect compared with other commonly known spikes.

Claims

1. Improved spikes are installed inside a flexible sole of a shoe and consist of a receptacle having a base and several connecting seats integrated around the edge of the base in one piece flexibly moving in proportion to the base. Several spikes are installed unto individual connecting seats extruding the sole. Accordingly, each connecting seat and partial spikes are wrapped up by the flexible sole. When spikes receive an external force causing connecting seats to deviate slightly and simultaneously, the elasticity of the sole material and elastic recovery of each connecting seat are used ingeniously to create proper grip.

2. For a first said spike in Item 1, the receptacle is made of metal material.

3. For a first said spike in Item 1, each connecting seat has one stand with a hole into which one end of a spike inserted.

4. For a first said spike in Item 3, the section of each stand is shaped like a circle to form a hole.

5. For a first said spike in Item 4, each connecting seat has one foundation bent around the edge of the base. Every stand is connected to the outer end of the foundation.

6. For a first said spike in Item 1, every spike/tack is made of metal material.

7. For a first said spike in Item 4, there is one dent corresponding to the spike/tack on each stand to pack the spike/tack.

8. For a first said spike in Item 5, two sides of each foundation are relative to the hole on the stand. Each spike/tack is connected against the end surface of the foundation.

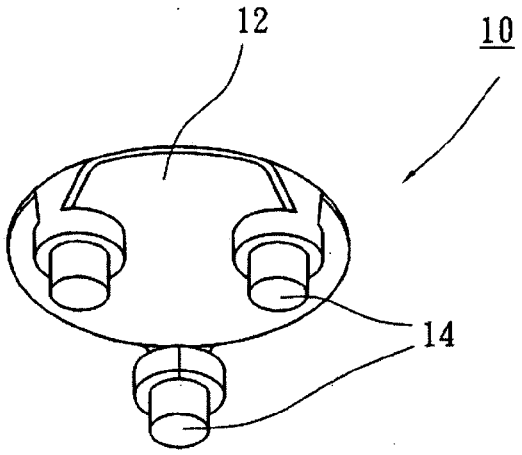

FIG. 1

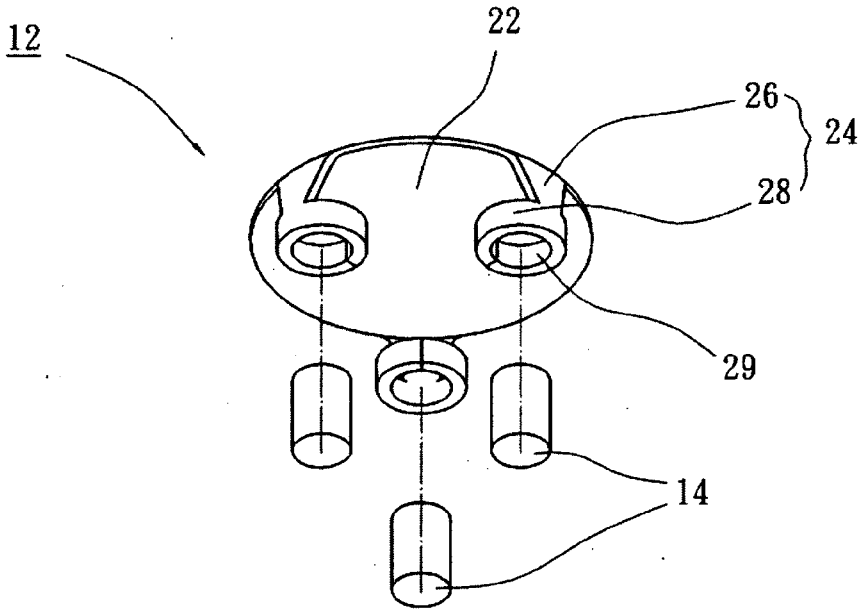

FIG. 2

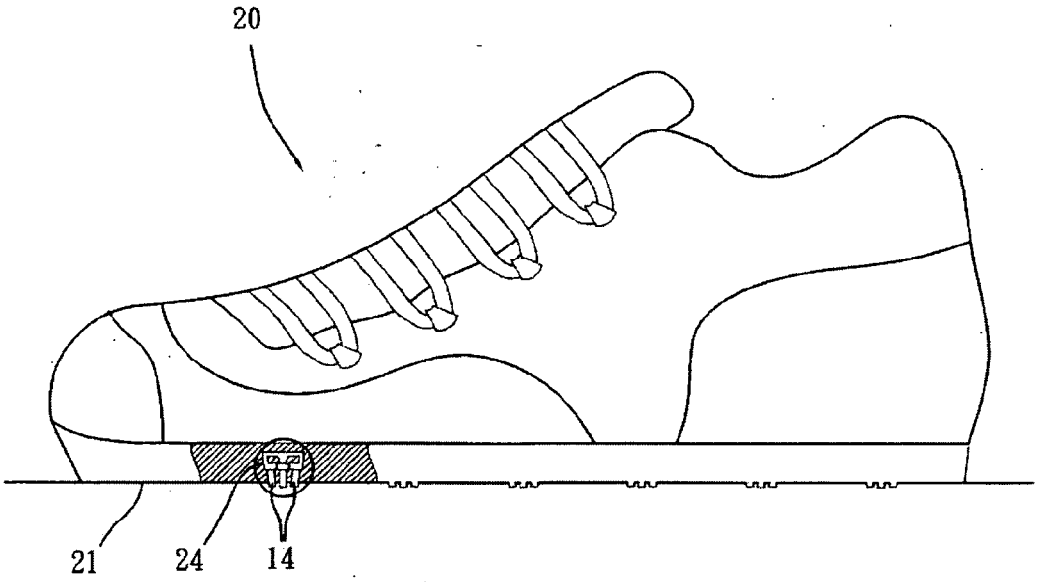

FIG. 3

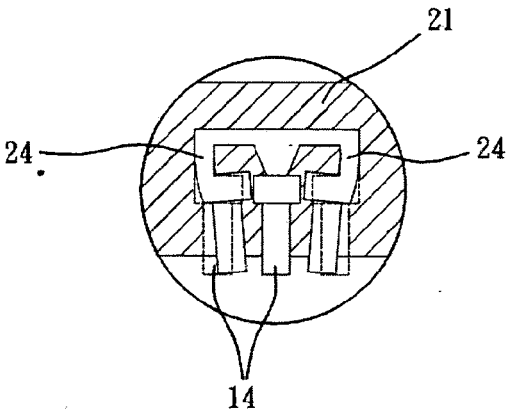

FIG. 3A

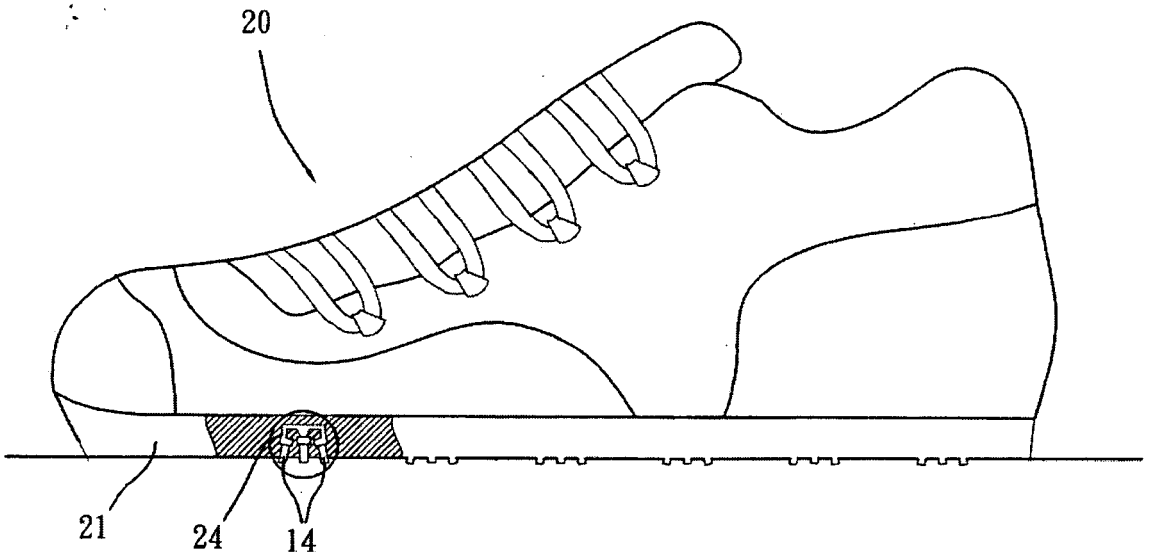

FIG. 4

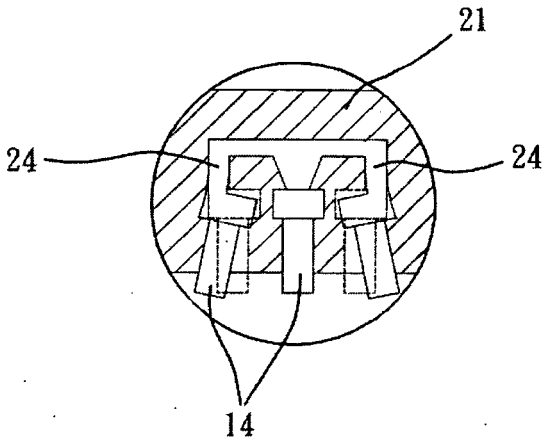

FIG. 4A

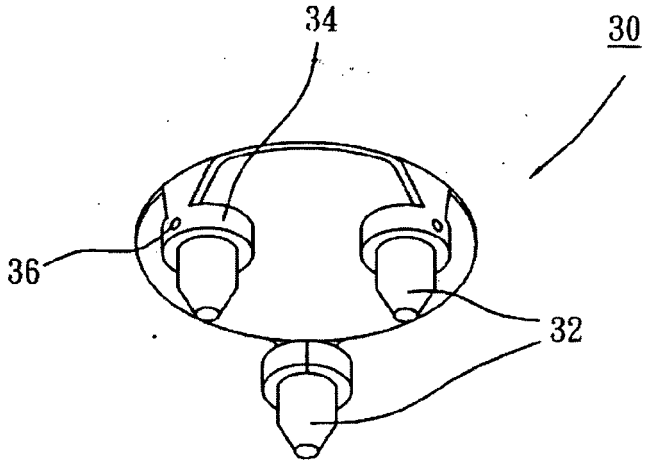

FIG. 5

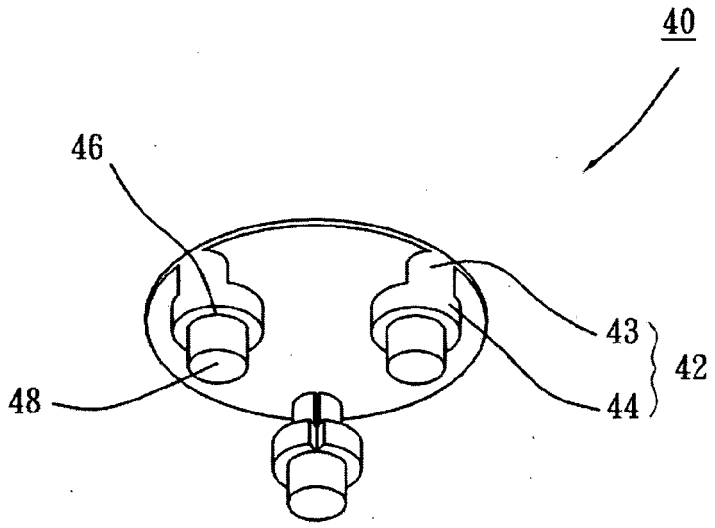

FIG. 6

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 02 4647

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	GB 1 404 456 A (BRITISH BATA SHOE CO LTD) 28 August 1975 (1975-08-28) * the whole document * -----	1,3-6 7	A43B13/26 A43C15/16 A43C15/14
Y	US 5 638 615 A (KORSEN ET AL) 17 June 1997 (1997-06-17) * column 4, lines 20,21 - column 4, lines 58-60; figures * -----	7	
X	WO 03/071893 A (GENERICS INVESTMENT GROUP AG; THE UNIVERSITY OF NORTHUMBRIA AT NEWCAST) 4 September 2003 (2003-09-04) * page 5 - page 19; figures 1-7 * -----	1-4	
A	US 1 653 526 A (WHITE OTTO) 20 December 1927 (1927-12-20) * page 1, lines 59-64; figures * -----	11	
A	DE 41 37 350 A1 (ESJOT-WERK SCHIERMEISTER U. JUNKER GMBH & CO KG, 4763 ENSE, DE) 19 May 1993 (1993-05-19) * column 3, lines 41-48; figures * -----	1	

TECHNICAL FIELDS SEARCHED (IPC)

A43B
A43C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	14 March 2006	Herry, M

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 02 4647

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

14-03-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 1404456 A	28-08-1975	BE 791872 A1	16-03-1973
		DE 2257965 A1	19-07-1973
		FR 2163107 A5	20-07-1973
		IT 975869 B	10-08-1974
		JP 911360 C	21-06-1978
		JP 48072211 A	29-09-1973
		JP 52040053 B	08-10-1977
		NL 7216056 A	29-05-1973
US 5638615 A	17-06-1997	AU 2453795 A	18-12-1995
		WO 9531910 A1	30-11-1995
		US 5475937 A	19-12-1995
WO 03071893 A	04-09-2003	AU 2003208460 A1	09-09-2003
US 1653526 A	20-12-1927	NONE	
DE 4137350 A1	19-05-1993	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82