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

(11) Publication number: **0 534 560 A1**

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **92202928.5**

(51) Int. Cl.5: **A43B 3/00**

(22) Date of filing: **24.09.92**

(30) Priority: **26.09.91 IL 99575**

(43) Date of publication of application:
31.03.93 Bulletin 93/13

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

(71) Applicant: **Shkalim, Yossef**
1 Zalman Street
Holon(IL)

(72) Inventor: **Shkalim, Yossef**
1 Zalman Street
Holon(IL)

(74) Representative: **Dragotti, Gianfranco et al**
SAIC BREVETTI s.r.l. Viale Bianca Maria, 15
I-20122 Milano (IT)

(54) **Lighted shoe.**

(57) A lighted shoe comprises as a lighting element a plurality of light sources (11) connected to electric leading wires (10,10') the said leading wires (10,10') being contained within a transparent cover (3) connected to the shoe, the electric leading wires being also connected to a battery (8) positioned within the shoe.

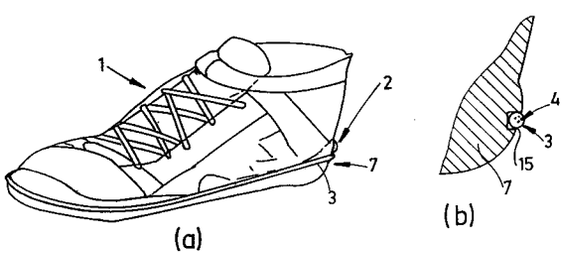

Fig.1

EP 0 534 560 A1

The presente invention relates to a lighted shoe. More particularly, the invention relates to a shoe that can be lighted by external lighting elements, particularly for esthetic or safety purposes.

It is known in the art to apply lighting devices to shoes. For instance, EP-A-0 121 026 relates to a shoe comprising a cavity on its heel, which contains an e.m.f. source, and a number of light sources, typically a pair of L.E.D.s, are incorporated in the sole.

This design presents several severe drawbacks, inasmuch as providing a cavity in the heel - which is necessary in order to replace the batteries - leads to a non-sealed environment, and therefore moisture may interfere with the functioning of the device. Furthermor, providing cavities in the heel requires a relatively complex and expensive manufacturing procedure. Also, positioning individual lighting elements, such as small L.E.D.s in the sole, is costly and complicated.

Other shoes comprising lighting elements are described, e.g., in U.S.-A-597823, 2557663, 3946505, 4128861 and 4253253.

However, nowhere in the art there is provided a lighted shoe which can be safely used in a moist environment, and which is easy and convenient to use and simple to produce. For this reason, lighted shoes have never found their way to the general market.

More importantly, however, the lighted shoes of the known art have not solved the problem of permitting easily to position lighting elements in various and varying positions on and around the shoe, without substantially altering the structure and the manufacturing procedure of the shoe. As will be understood by the skilled person, the ability easily to position light sources and lighting elements in various positions on the shoe is the key factor to an efficient and inexpensive production of lighted shoes.

Is is thus a primary object of the present invention to provide a lighted shoe which comprises lighting elements which can be easily and conveniently positioned in various positions on and around the shoe, by using simple and inexpensive standard elements.

It is another object of the present invention to provide a lighted shoe which overcomes the drawbacks of the prior art, which is safe to wear in a moist environment, which does not require complicated operations, involving the disassembly of the heel, to replace the batteries, and which is simple to produce.

The lighted shoe according to the invention comprises as a lighting element a plurality of light sources connected to electric leading wires, the said leading wires being contained within a transparent cover connected to the shoe, the electric leading wires being also connected to a battery positioned within the shoe.

Preferably, the light sources are low-energy demanding sources such as mini-electric light bulbs, L.E.D.s, or the like light sources. It should be understood that it is not a primary object of the invention to provide light sources which are strong enough to be used to improve the visibility of the wearer, as is done, for instance, in EP-A-0 121 026.

Instead, safety is achieved by lighting up the shoes and making the wearer visibel to other persons, and furthermore, in many instances, the purpose for the lighting is of a purely aesthetic nature, and does not require strong lights such as those required for improving the visibility of the wearer.

In an embodiment of the invention, the shoe comprises a rechargeable battery or batteries, the said battery or batteries being integrated into the heel of the shoe and being connected to elongated lighting elements positioned on or around the outer surface of the shoe, an electrical connection for recharging the rechargeable battery being provided within the shoe, and wherein:

a) a light switch is provided on the said shoe, in oreder to connect and to disconnect the rechargeable battery to the lighting element; and

b) the elongated lighting elements comprise a plurality of low energy-demanding light sources, positioned on or around the shoe so as to provide and extended lighting along its length.

The term "battery" is emplyed herein to indicate a unit which may physically comprise one or more separate batteries. According to one embodiment of the invention, the battery is incorporated in the heel by casting the heel, made of plastic material, around the said battery and limitative description of preferred embodiments, with reference to the appended drawings, wherein:

- Fig. 1(a) is a schematic perspective view of a shoe according to one embodiment of the invention;
- Fig. 1(b) is a partial cross-section of the heel of the shoe of Fig. 1(a), seen from behind;
- Fig. 2(a) shows the shoe of Fig. 1, seen from the back;
- Fig. 2(b) shows a detail of the on-off switch, according to one particular embodiment of the invention;
- Fig. 3 is a top view of the shoe of Fig. 1;
- Fig. 4 schematically shows the electric connections;
- Fig. 5 is a detail of a lighting element, according to one embodiment of the invention;
- Fig. 6 shows a pair of shoes in recharging position;
- Fig. 7 shows, in perspective view, a shoe according to another preferred embodiment of the invention;

- Fig. 8 shows sections of two sewable lighting elements, according to two different embodiments of the invention; and
- Fig. 9 schematically shows a double charger transformator.

Turning now to Fig. 1, the shoe generally indicated by numeral 1 has an on-off switch 2, which lights the lighting elements (not shown) contained in the transparent housing 3. In Fig. 1(b) a portion of the heel 7 is shown, the rear part having been cut off, and shows a particular embodiment of the invention in which the transparent cover 3, containing lighting elements 4, is attached to the sole and heel by providing a "channel" 15, into which cover 3 may be inserted.

This channel 15 will run, according to one embodiment of the invention, along substantially the whole sole of the shoe, and its depth will be such as to permit to house the cover 3, while not dimming the light diffusing therefrom. Connection between the cover 3 and the material of which the heel and sole are made, can be effected by glueing, by mechanical forces, by connecting elements, by incorporating the plastic material of cover 3 into the material of the heel, e.g., by heat, or by any other suitable methods.

Fig. 2(a) shows a shoe, according to another embodiment of the invention, in which the cover 3 is not inserted into a "channel", but is connected to the outer portion of the shoe. This can be the case, for instance, when the cover 3 has a semi-circle cross-section, and it is integral with the plastic material of which the sole is made.

In this figure, a switch, positioned according to this embodiment of the invention on the heel, and indicated by numeral 2, is also seen.

Fig. 2(b) illustrates a possible on-off switch 2, as being covered by an elastic protective cover 5, which permits to operate it while protecting it from dirt and moisture.

In Fig. 3 the lighting element and its cover 3 are seen as surrounding the shoe along almost all of its perimeter. Of course, the lighting element may fill less than all the length of the cover 3. The electric connection for connecting the rechargeable batteries to the charger, for charging purposes, is shown in the figure as numeral 6. This connection can be integral with the bottom part of the inner shoe, and may further be slightly recessed so as not to be felt by the foot.

Furthermore, a lid or cover can be provided (not shown in the figure) to level connection 6 with the inner sole, and to prevent dirt from getting into the electric connections.

In Fig. 4 the rechargeable battery 8, contained in the heel 7 and therefore shown in broken lines, can be further housed in a housing 9, which can be, e.g., simply a protective plastic cover. Its connection to the charge connection 6 and the lighting elements 4 is also shown, while the connections to the switch 2 are not shown, for the sake of simplicity, as these are evident to the skilled person.

In Fig. 5 a segment of the transparent cover 3 is seen to contain a lighting element, generally indicated by numeral 4, which comprises two electric wires 10 and 10', to which a plurality of mini bulbs 11 are connected.

The recharge operation of the shoe pair is illustrated in Fig. 6, which also schematically shows the double charger 12, which receives electric power via plug 13, and which charges the rechargeable batteries of the shoes through lines 14 and 14', connected to the connections 6 and 6' of the shoes.

In Fig. 7 a shoe, according to another embodiment of the invention, is shown, in which the lighting elements 16 are provided as the shoelace of the shoe. These lighting elements comprise a cover 17, containing lighting elements, e.g., microelectric bulbs or L.E.D.s, schematically shown in the figure as numeral 18, and function as hereinbefore described, with the exception that they are not securely connected to the shoe, but are connected thereto only in their function as shoelaces. The lighting elements will be provided with connectors 19 and 19', to be connected to electrical connections (not shown in the figure), which may be positioned in any convenient location on the shoe, and which will be connected to battery 8, with the same general electrical scheme of Fig. 4.

In Fig. 8 two different segments of sewable electric elements are shown. In Fig. 8(a) the lighting element comprises an outer transparent cover 20, and an inner cover 21, which may be transparent, as shown in the figure, or may be made of any non-transparent or even reflecting material. Inner cover 21 is substantially flat, so that this part of the lighting element may be easily attached to a flat surface. Flaps 22 and 22' permit the sewing of the lighting element to a surface. In the figure thread 23 is shown, the shoe having been removed, to indicate that this part of the flap is connected to the surface by means of this thread 23.

In Fig. 8(b) another lighting element is illustred, in which both sides of the cover are substantially the same, and inner cover 24, together with outer cover 25, constitute a substantially tubular body, containing lighting elements 26.

Flaps 27 and 27' are used for connection by meansof threads 28, in a manner similar to what was discussed with respect to Fig. 1(a). The embodiment of Fig. 8(b) can be useful, for instance, when a channel-like housing is provided, such as schematically illustrated in Fig. 1(b).

Finally, Fig. 9 shows a double transformator 29, which is used in the charger 12 of Fig. 6, and

schematically shows double outlets 30 and 30', which connect, according to Fig. 6, to lines 14 and 14'.

All the above description of preferred embodiments has been provided for the purpose of illustration, and is not intended to be limitative. Many modifications can be carried out in the various components of the invention, without exceeding its scope.

Claims

1. A lighted shoe comprising as a lightin element a plurality of light sources (11) connected to electric leading wires (10,10') characterized in that said leading wires (10,10') are contained within a transparent cover (3, 17) connected to the shoe and the electric leading wires (10,10') are also connected to a battery (8) positioned within the shoe.

2. A shoe according to claim 1, characterized in that the light sources (11) are low-energy demanding sources such as mini electric-light bulbs, L.E.D.s or the like light sources.

3. A shoe according to claim 1 or 2 characterized in that the transparent cover (3) is a plastic tube, connected to the shoe.

4. A shoe according to claim 1 or 2 characterized in that the cover (3) is a transparent cover made of plastic material integral with the plastic material of which the sole is made.

5. A shoe according to claim 1 or 2 characterized in that the cover (3) is sewn on the surface of the shoe.

6. A shoe according to claim 1 or 2 characterized in that the transparent cover (17) is a flexible tube used as, or as part of, a shoelace (16).

7. A shoe according to any one of claims 1 to 6 characterized in that the transparent cover (3, 17) is colored.

8. A shoe according to any one of claims 1 to 8, characterized in that the light sources (11) are colored.

9. A shoe according to any one of claims 1 to 8 characterized in that is provided with light-reflecting elements to enhance light emission therefrom.

10. A shoe according to any one of claims 1 to 9 charactherized in that is provided with light-diffusing elements to homogenize the light emissione therefrom.

11. A shoe comprising a rechargeable battery (8) the said battery (8) being integrated into the heel (9) of the shoe and being connected to elongated lighting elements positioned on or around the outer surface of the shoe, an electrical connection (14,14') for recharging the rechargeable battery (8) being provided within the shoe characterized in that:
    a) a light switch (2) is provided on the said shoe, in order to connect and to disconnect the rechargeable battery (8) to the lighting element; and
    b) the elongated lighting elements comprise a plurality of low energy-demanding light sources (11) positioned on or around the shoe so as to provide an extended lighting along its length.

12. For shoes according to anyone of claims 1 to 10 a power supply device (12) for recharging rechargeable batteries (8), comprising two outlets for permitting simultaneously to recharge two separate batteries (8).

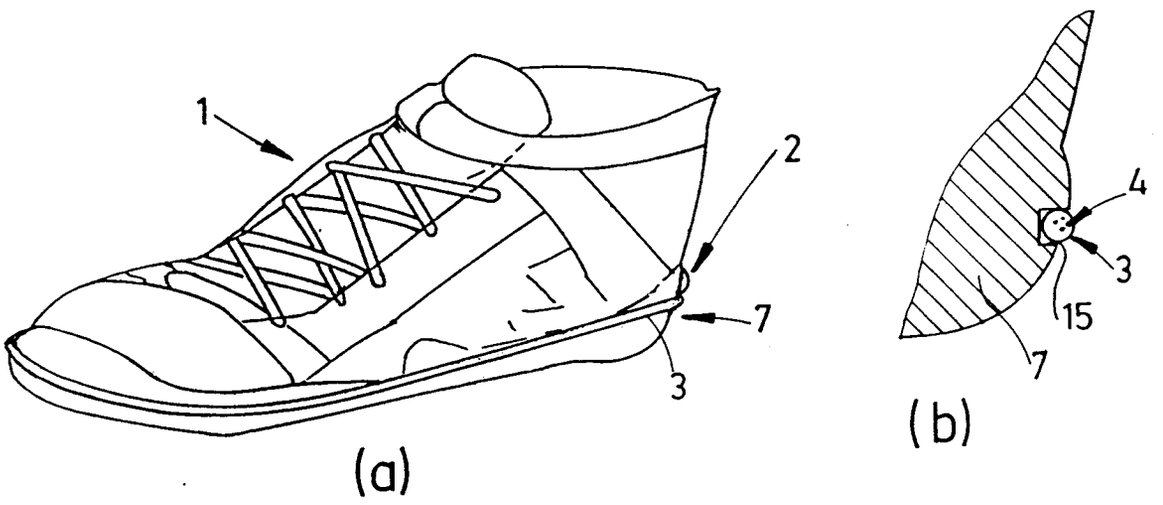

Fig.1

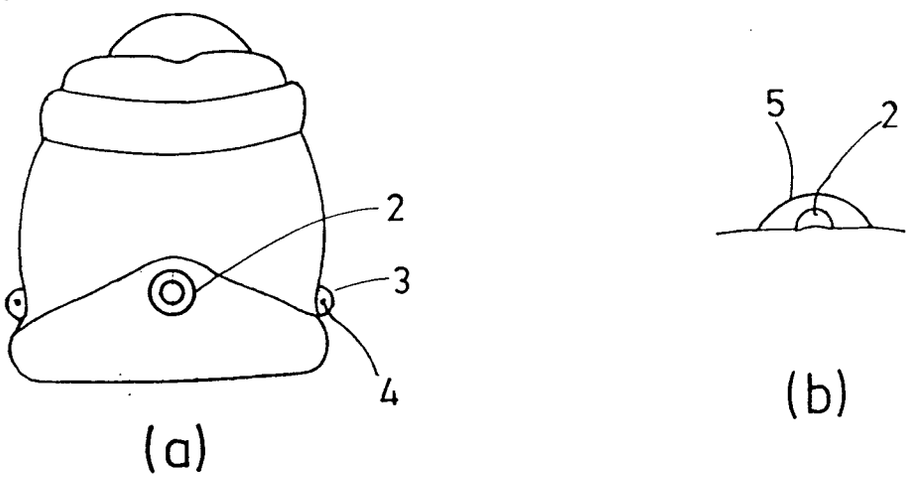

Fig.2

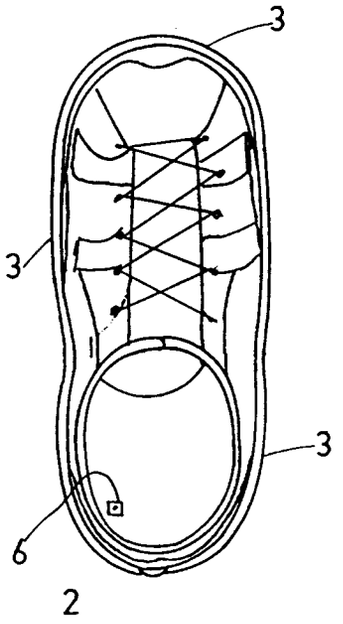

Fig.3

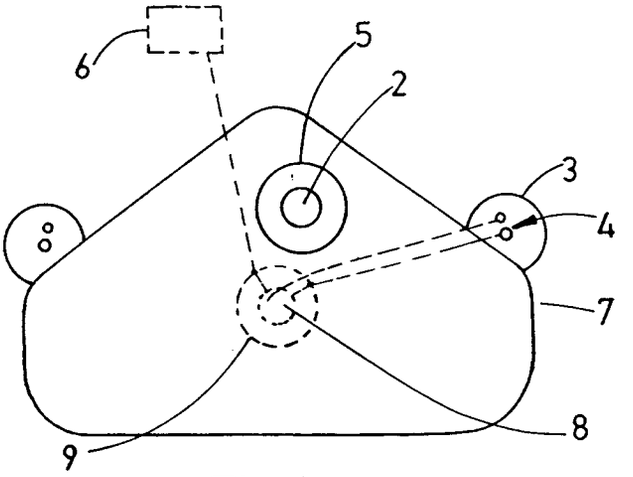

Fig.4

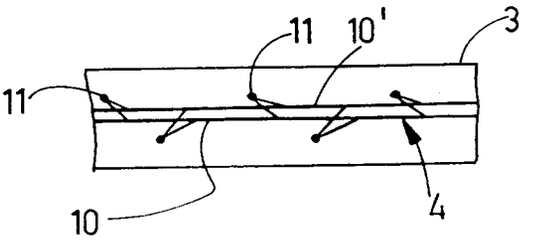

Fig.5

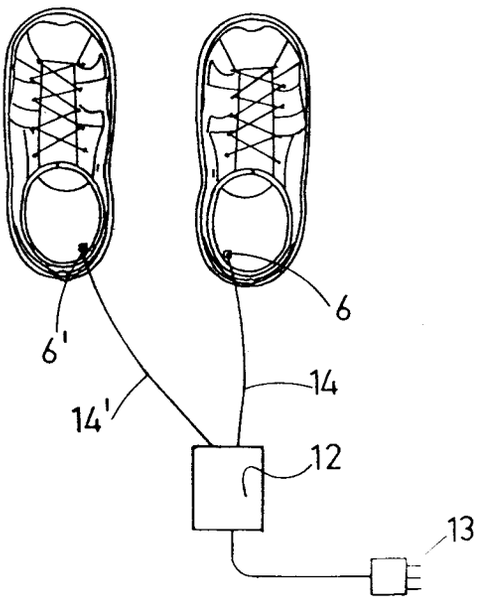

Fig.6

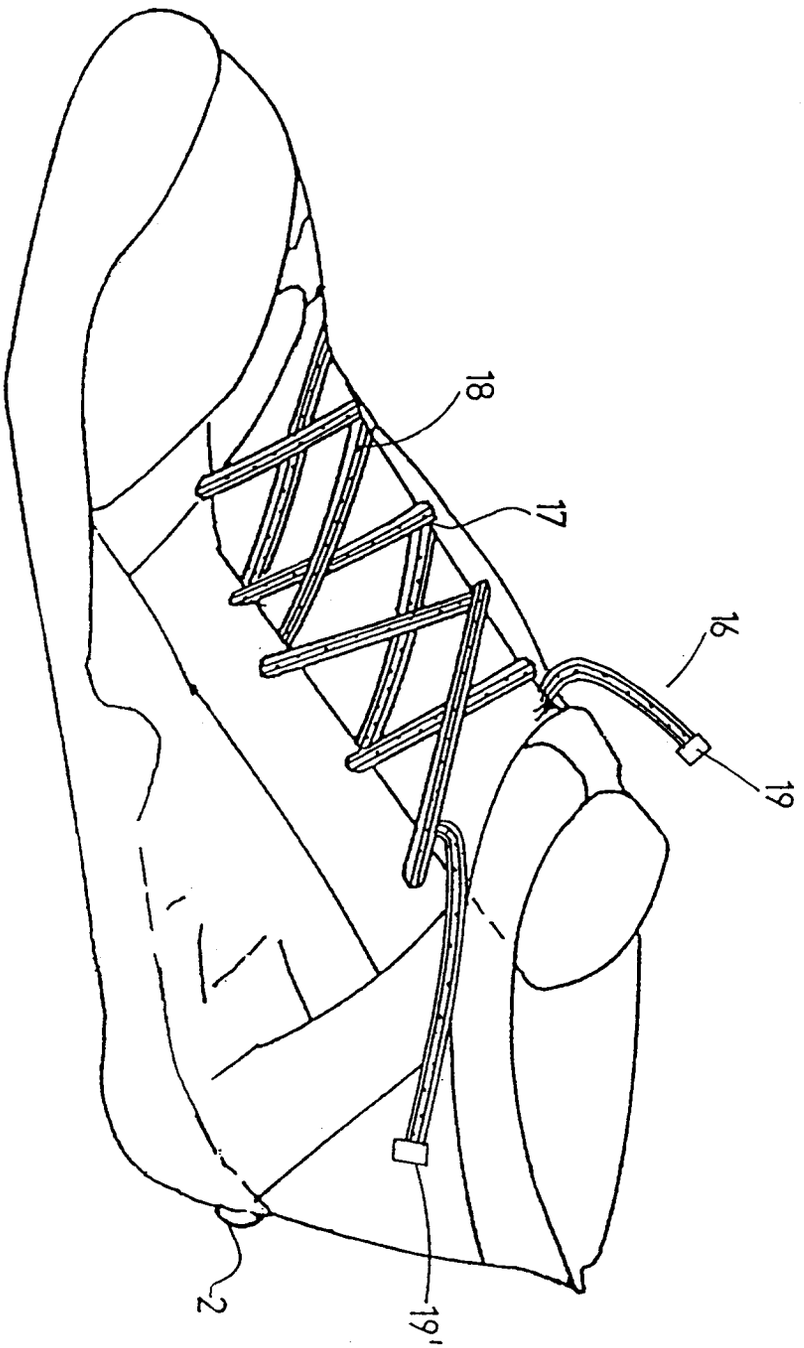

Fig.7

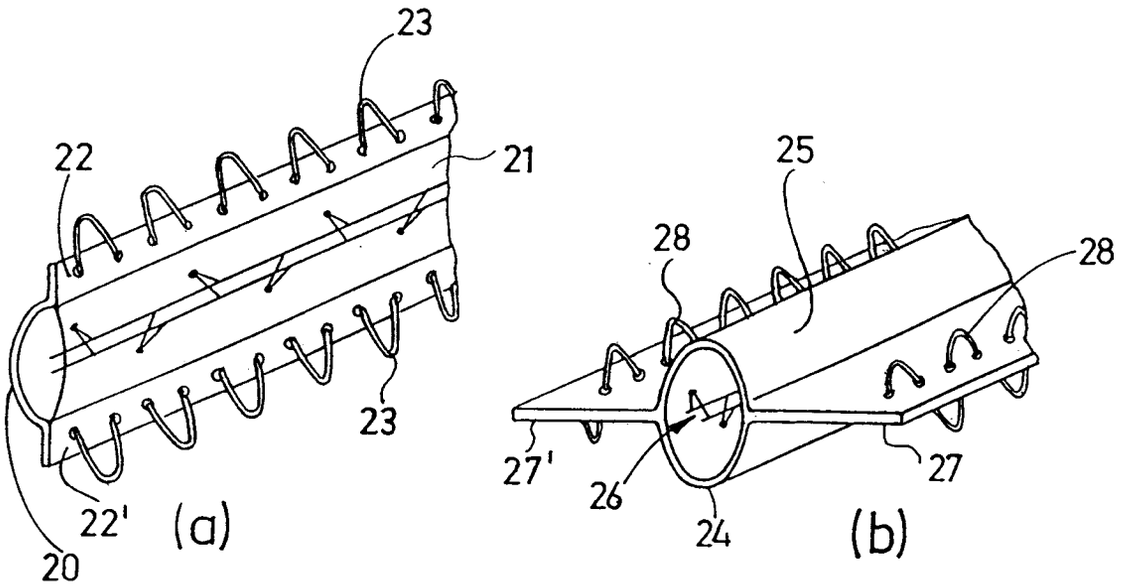

Fig.8

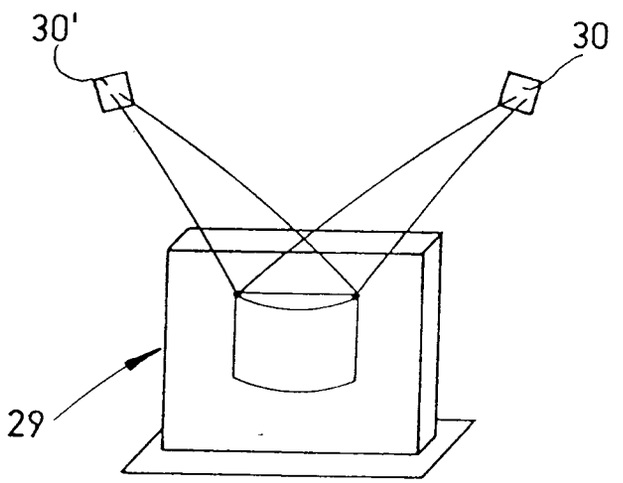

Fig.9

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 20 2928

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.5)
P,X	US-A-5 052 131 (P. RONDINI) * the whole document *	1-3,6-8	A43B3/00
X	US-A-4 848 009 (N. RODGERS) * the whole document *	11	
A		1,2	
X	US-A-5 033 212 (W. EVANYK)	11	
A	* the whole document *	1,2	
X,D	EP-A-0 121 026 (A. DANA) * the whole document *	11	
A	US-A-4 158 922 (A. DANA) * the whole document *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A43B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	25 NOVEMBER 1992	DECLERCK J.T.

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 (P0401)