



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) Publication number:

**0 425 901 A1**

(12)

## EUROPEAN PATENT APPLICATION

(21) Application number: **90119952.1**

(51) Int. Cl.<sup>5</sup>: **A61H 3/06**

(22) Date of filing: **18.10.90**

The title of the invention has been amended  
(Guidelines for Examination in the EPO, A-III,  
7.3).

(30) Priority: **30.10.89 IT 2219889**

(43) Date of publication of application:  
**08.05.91 Bulletin 91/19**

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

(71) Applicant: **ARTIGO S.p.A.**  
**Piazzale Cadorna 5**  
**I-20123 Milan(IT)**

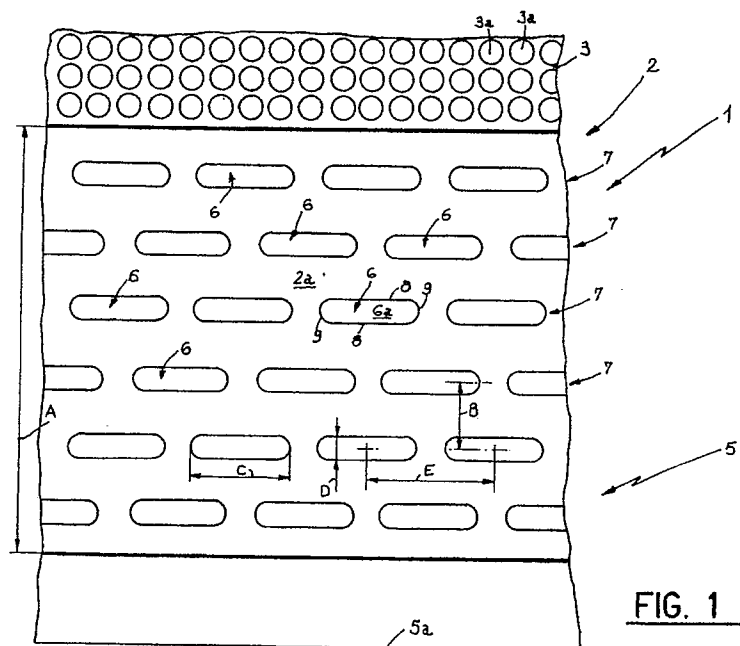
(72) Inventor: **Di Bartolo, Carmelo**  
**Via Amatore Sciesa, 4**  
**IT-20135 Milan(IT)**

(74) Representative: **Giannesi, Pier Giovanni et al**  
**Pirelli S.p.A. Direzione Brevetti Piazzale**  
**Cadorna, 5**  
**I-20123 Milano(IT)**

(54) **Tactile signalling structure for sight disabled people incorporated in conventional paving.**

(57) The described signalling structure (1) comprises a plate-like element (2) set in coplanar relation with a floor (3) adjacent the obstacle to be signalled and provided with a number of surface projections (6) having an elongated configuration, aligned so as to form several parallel rows (7) in side by side relation and extending transversely to the user's advance

direction towards the obstacle or dangerous area to the signalled. The surface projections (6) can be easily recognized to the touch by a blind person walking towards the obstacle or the signalled dangerous area.



**FIG. 1**

**EP 0 425 901 A1**

## A STRUCTURE FOR SIGNALLING OBSTACLES AND DANGEROUS AREAS TO PEOPLE UNABLE TO SEE

The present invention relates to a structure for signalling obstacles and dangerous areas to people unable to see.

The above structure lends itself to be used in particular, although not exclusively, in places of public passage such as platforms in railway stations, pavements or the like in order to signal the presence of dangerous areas or obstacles of different kind to people unable to see.

It is known that one of the greatest problems that people unable to see or at all events people having serious sight defects must tackle is due to the lack, in the structures of public services, of any appropriate medium allowing them to be conveniently warned when, while walking, they approach an obstacle or a dangerous area. This situation can occur, for example, when a blind man walks along an underground railway platform in the rail direction, or when he sets about crossing a road, or approaches a staircase.

It is clear that in the absence of appropriate signalling the above situations can have a high degree of risk.

Presently walls, posts, bannisters, handrails, and the like are used in order to offer the desired signals through tactile information to blind people.

It is however apparent that this information system cannot be always adopted and everywhere, since it is not always possible to suggest and/or proceed to the setting of walls, posts, bannisters and handrails. In addition, it is to be pointed out that the use of the above structures brings about the necessity for people unable to see of manually touching surfaces which are not hygienically safe.

It is substantially an object of the present invention to eliminate the problems of the known art, by providing a signalling structure adapted to be incorporated in a conventional paving adjacent the area or obstacle to be signalled in order to transmit sure and precise tactile information to people unable to see through their feet when they are walking towards said obstacle or dangerous area.

A further object of the invention is to offer a signalling structure adapted to be mounted in a very easy and economical manner and the presence of which does not involve any hindrance or inconvenience of any kind to the passage of the public.

The foregoing and further objects that will become more apparent in the course of the present description, are substantially attained by a structure for signalling obstacles and dangerous areas to people unable to see, characterized in that it comprises at least a plate-like element set in coplanar relation with a paving or floor adjacent the obstacle

to be signalled, and provided at the upper part thereof with a plurality of surface projections of substantially elongated configuration homogeneously distributed transversely to the advance direction of the user towards the signalled obstacle.

Further features and advantages will become more apparent from the description of a detailed preferred embodiment of a structure for signalling obstacles and dangerous areas to people unable to see in accordance with the present invention, given hereinafter by way of non-limiting example with reference to the accompanying drawings, in which:

- Fig. 1 is a fragmentary plan view of the signalling structure in question, mounted to the pavement of an underground railway station in the area facing the rails;
- Fig. 2 is a cross sectional view of the signalling structure shown in Fig. 1;
- Fig. 3 is an enlarged sectional view of a detail of the signalling structure of the invention.

With reference to the drawings, a structure for signalling obstacles and dangerous areas to people unable to see in accordance with the present invention, has been generally identified by reference numeral 1.

The signalling structure 1 essentially comprises at least a plate-like element 2 laid in coplanar relation with a floor 3, in a region close to the obstacle or the dangerous area to be signalled.

In the example shown by way of example only in the accompanying figures, the plate-like element 2 is fastened, for example by means of glue or adhesive, to the under-paving 4 of an underground railway platform 5 and extends along an end side 5a of the platform itself, in front of the rails (not shown). The remaining surface of the under-paving 4 is coated with the floor 3 which, in the example shown, consists of conventional plate-like elements made of molded elastomeric material provided at the upper part thereof with surface projections 3a of circular configuration, homogeneously distributed in side by side relation.

The plate-like element 2, preferably made of molded elastomeric material has a width, identified by "A" in Fig. 1, ranging from 300 mm to 600 mm. Homogeneously distributed on one surface 2a of the plate-like element 2 is a plurality of surface projections 6 having a substantially elongated configuration extending transversely to the user's advance direction towards the obstacle or dangerous area to be signalled, in the case shown towards the end side 5a of the platform 5. The surface projections 6 are consecutively aligned so as to define a number of rows 7 disposed parallelly in side by side relation, with a constant transverse

gap therebetween which is identified by "B" in the accompanying figures and is preferably in the range of 70 to 90 mm.

The configuration of each surface projection 6 exhibits two parallel rectilinear edges 8 extending at right angles to the advance direction of the user towards the obstacle or dangerous area, which edges are joined to each other by two semicircular end portions 9. The overall length of each surface projection 6 marked by "C" in Fig. 1, is preferably in the range of 95 to 115 mm. The width, identified by "D", of each projection 6 preferably ranges between 25 mm and 35 mm and preferably it is so conceived that a 2:3 ratio exists between the transverse gap "B" separating the rows 7 and the projection width "D".

As clearly shown in Fig. 1, the surface projections 6 of each row are homogeneously distributed according to a constant longitudinal spacing identified by "E", the value of which is comprised between 115 mm and 145 mm.

In addition, the surface projections 6 of each row 7 are offset with respect to the surface projections 7 belonging to the contiguous row 7 by an amount corresponding to half their longitudinal spacing "E".

Each surface projection 6 has an upper surface 6a located at a height "F" of 2 to 5 mm from the upper surface 2a of the plate-like element 2. As is apparent from Fig. 3, the upper surface 6a of the surface projection 6 is joined to the upper surface 2a of the plate-like element 2 by two arcs of a circle 10a, 10b disposed consecutively according to a sinusoidal extension. The radius of the arcs of circles 10a, 10b, identified by "G" in Fig. 3 preferably ranges between 6 mm and 10 mm.

Advantageously, as can be readily seen from Fig. 2, the height "F" of the surface projections 6 belonging to the different rows 7 becomes increasingly greater as the danger area or the signalled obstacle, in this case the end side 5a of the platform 5, comes closer.

In a preferred embodiment the projections of the two first rows are 3 mm in height and the projections of the following rows are 4 mm high.

The plate-like element 2 can also be partly or completely coloured in a showing up hue in order to facilitate also people which are not completely unable to see.

The operating features of the signalling structure according to the invention described above mainly as regards structure, can be readily understood.

The presence of the surface projections 6 gives the plate-like element 2 a surface configuration which can be immediately recognized to the touch by a person unable to see when he/she while walking towards the obstacle or the signalled area,

reaches the signalling structure 1.

Advantageously, the elongated configuration and the orientation of the surface projections 6 also inform the blind person about the location and disposition of the obstacle or signalled dangerous area. In greater detail, the blind person will be able to know in advance that he/she will meet the obstacle or signalled area if he/she goes on walking in a direction perpendicular to the orientation of the surface projections 6.

The progressive variation in height of the surface projections 6 also informs the person unable to see about his/her progressive moving close to or apart from the signalled area while crossing the signalling structure 1.

The present invention attains the intended purposes.

It will be recognized in fact that the signalling structure of the invention is capable of giving clear and readily recognizable information to people unable to see, adapted to warn them of the presence of an obstacle or any danger situation. In this connection attention must be drawn to the fact that the specified structure features and size ratios relative to the described structure can ensure the immediate recognition of the signalling structure on the part of a blind person who meets it while walking along the floor 3.

In addition, it is also pointed out that the signalling structure of the invention can be made at very reduced costs and can be easily installed even onto existing pavings.

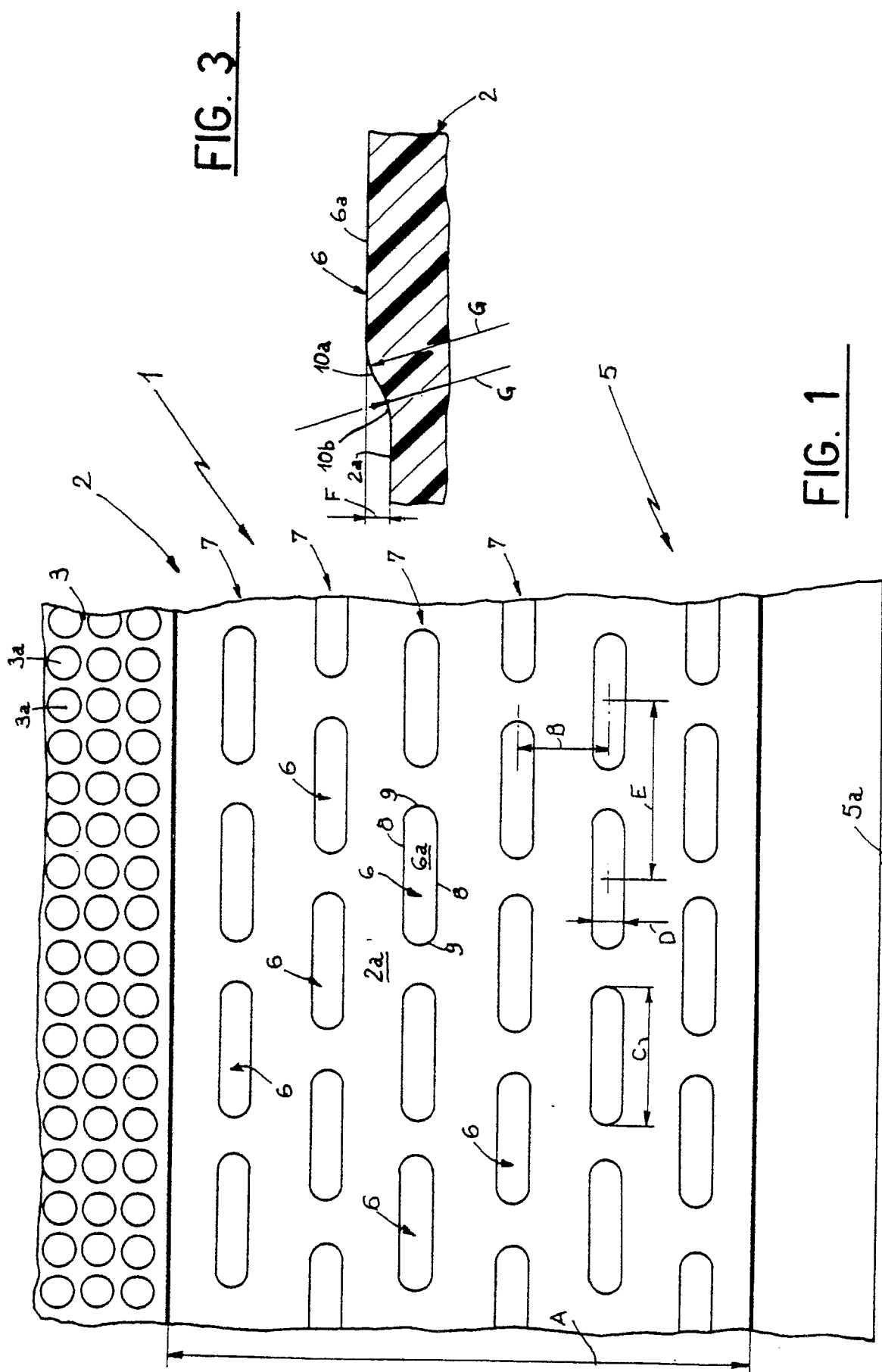
It will be also recognized that although the signalling structure in question has been specifically conceived for people unable to see or at all events having serious sight problems, it does not create any inconvenience to the public in the areas in which it is installed.

Obviously modifications and variations can be made to the invention as conceived, all of them falling within the scope of the inventive idea characterizing it.

## Claims

1. A structure for signalling obstacles and dangerous areas to people unable to see, characterized in that it comprises at least a plate-like element (2) set in coplanar relation with a paving or floor (3), adjacent the obstacle to be signalled and provided at the upper part thereof with a plurality of surface projections (6) of substantially elongated configuration and homogeneously distributed transversely to the advance direction of the user towards the signalled obstacle.
2. A structure according to claim 1, characterized in that said surface projections (6) are arranged in

- alignment so as to form a plurality of parallel rows disposed in side by side relation, with a predetermined transverse gap "B" therebetween and each of them exhibiting the respective projections (6) disposed according to a predetermined longitudinal spacing "E" and offset relative to the surface projections (6) belonging to the contiguous row (7) by an amount equal to half their longitudinal spacing "E". 5
3. A structure according to claim 1, characterized in that the configuration of each of said surface projections exhibits two parallel rectilinear edges (8) extending transversely to the user's advance direction towards the signalled obstacle and joined to each other by two semicircular end portions (9). 10 15
4. A structure according to claim 2, characterized in that said rows forming the surface projections (6) are mutually spaced apart from each other by a transverse gap "B" in the range of 70 to 90 mm.
5. A structure according to claim 2, characterized in that said longitudinal spacing "E" ranges between 115 mm and 145 mm. 20
6. A structure according to claim 1, characterized in that each surface projection (6) has a length "C" comprised between 95 mm and 115 mm. 25
7. A structure according to claim 1, characterized in that each surface projection (6) has a width "D" in the range of 25 to 35 mm.
8. A structure according to claim 2, characterized in that the ratio between the transverse gap "B" and the width "D" of each surface projection (6) has a value of 2:3. 30
9. A structure according to claim 1, characterized in that each surface projection (6) has a flat upper surface (6a) joined to the upper surface (2a) of the plate-like element (2) by two arcs of circles (10a, 10b) extending consecutively according to a substantially sinusoidal extension. 35
10. A structure according to claim 9, characterized in that said arcs of circles (10a, 10b) have a radius "G" of 6 to 9 mm. 40
11. A structure according to claim 1, characterized in that each surface projection (6) has a height "F" of 2 to 5 mm.
12. A structure according to claim 2, characterized in that the surface projections (6) belonging to the different rows (7) have an increasingly greater height "F" as they approach the signalled obstacle. 45
13. A structure according to claim 1, characterized in that said plate-like element (2) has an overall width "A" in the range of 300 to 600 mm. 50



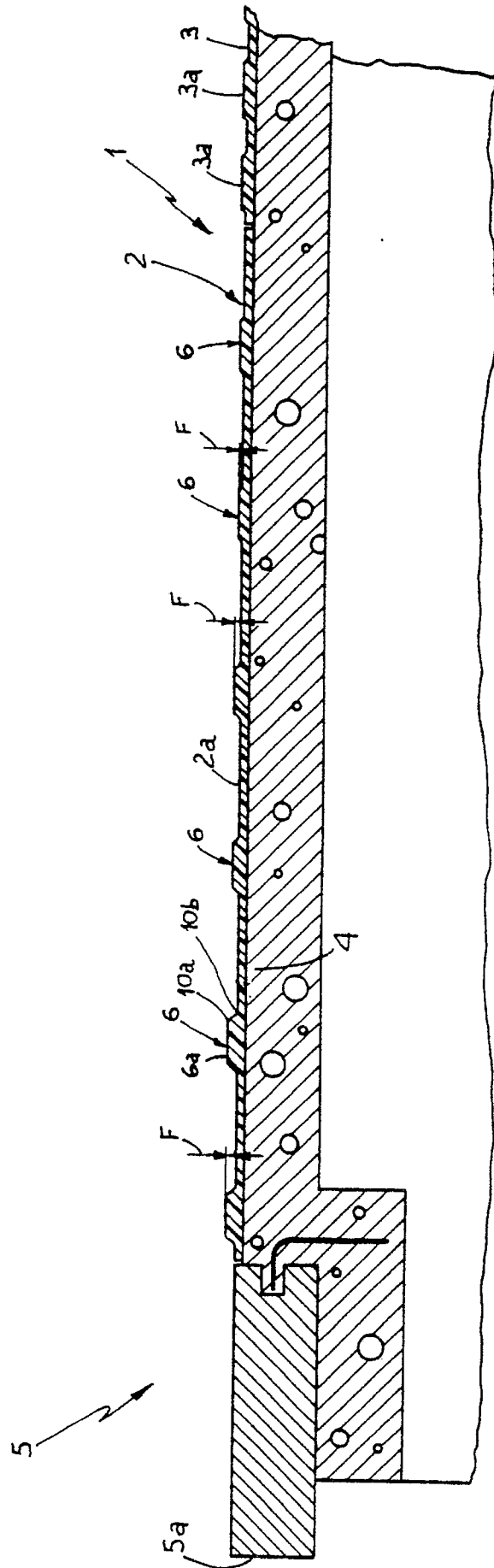


FIG. 2



European  
Patent Office

## EUROPEAN SEARCH REPORT

Application Number

EP 90 11 9952

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)
A	US-A-4 620 816 (J. KUPFER) * Figures; column 3, lines 1-30; column 5, line 9 - column 6, line 34 *	1	A 61 H 3/06
A	DE-U-8 802 560 (McONDO RUBBER S.p.A.) * Page 3, lines 6-14 *	1	
A	US-A-4 715 743 (D. SCHMANSKI)		
A	FR-A-2 590 481 (GERLAND S.A.)		
A,P	GB-A-2 221 234 (UNIV. OF NOTTINGHAM)		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A 61 H E 01 F G 09 B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 28 January 91	Examiner VEREECKE A.
<div>CATEGORY OF CITED DOCUMENTS</div> <div>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</div> <div>E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons ..... &amp;: member of the same patent family, corresponding document</div>			