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(11) **EP 1 052 335 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
 15.11.2000 Bulletin 2000/46

(51) Int. Cl.⁷: **E01F 9/03**, E01F 9/016

(21) Application number: **00109059.6**

(22) Date of filing: **28.04.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
 MC NL PT SE**
 Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Hazan, Hasmonai**
42100 Reggio Emilia (IT)

(74) Representative:
Modiano, Guido, Dr.-Ing. et al
Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

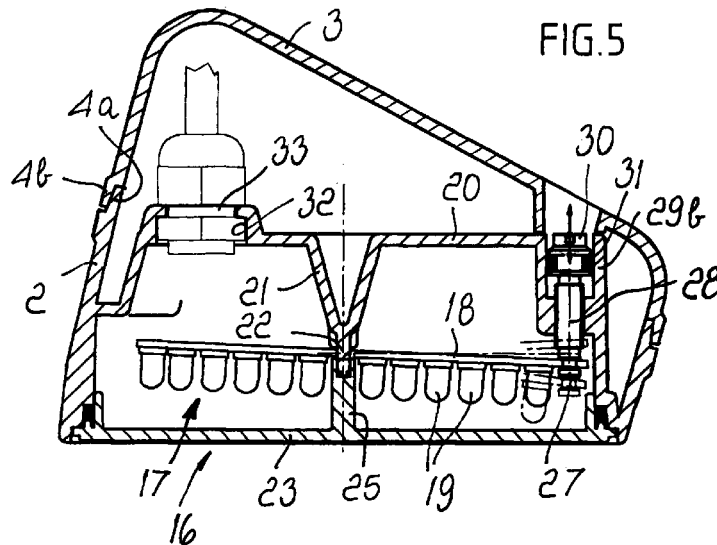
(30) Priority: **13.05.1999 IT BO990250**

(71) Applicant: **CONCHIGLIA S.P.A.**
I-42100 Reggio Emilia (IT)

(54) **Safety and warning delineator**

(57) A safety and warning delineator, constituted by two vertically elongated substantially symmetrical half-shells (2,3) which can be coupled frontally to each other; the delineator comprises, at a lower end thereof, means for fixing to fixed supports and that at least one reflector element (10) and at least one luminous delineator element (16) are arranged on the front surface of

the first half-shell (2), the luminous delineator element (16) being provided with an antiglare light source (17) which is circuitally connected to a power supply unit adapted to control the frequency and power of the supply according to environmental and/or danger conditions.



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Description

[0001] The present invention relates to a safety and warning delineator.

[0002] Delineators are known being constituted by rods which have a certain height and bear reflector panels of adapted colors and sizes prescribed by the highway code; luminous delineators for critical points are also provided which must ensure uniform lighting and avoid dazzling.

[0003] The aim of the present invention is to provide a safety and warning delineator which combines, in the same item, the characteristics of an ordinary delineator and of a luminous delineator, is particularly adapted for critical points and in case of fog or other atmospheric events and/or in case of danger, and can be installed directly on the ground or coupled to metallic or concrete guardrails.

[0004] Within the scope of this aim, an object of the present invention is to provide a safety and warning delineator whose indications can be controlled remotely according to the environmental and danger conditions that must be indicated to users.

[0005] A further object of the present invention is to provide a structure which is simple, relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

[0006] These and other objects which will become better apparent hereinafter are achieved by a safety and warning delineator according to the present invention, constituted by two vertically elongated symmetrical half-shells which can be coupled frontally to each other, characterized in that it comprises, at a lower end thereof, means for fixing to fixed supports and in that at least one reflector element and at least one luminous delineator element are arranged on the front surface of one half-shell, said luminous delineator element being provided with an antiglare light source circuitally connected to a power supply unit which controls the frequency and power of the supply according to environmental and/or danger conditions.

[0007] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of a safety and warning delineator according to the invention, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figures 1a, 1b and 1c are, respectively, a front, rear, and plan view of a safety and warning delineator according to the present invention, fitted to a post;

Figures 2a, 2b and 2c are, respectively, a front, rear and plan view of a safety and warning delineator according to the present invention, fitted to a metallic guardrail supported on a taller post;

Figure 2d is a front view of a safety and warning

delineator according to the present invention, fitted on a metallic guardrail with a shorter post;

Figure 3 is a front view of a safety and warning delineator according to the present invention, fitted to a concrete guardrail;

Figure 4 is a front view of the top of the front half-shell of the delineator;

Figure 5 is a sectional top view of the top of the delineator according to the invention;

Figure 6 is a front view of the luminous component of the delineator;

Figures 7 and 8 are sectional exploded side views of the coupling of the reflector delineator in two provided versions;

Figure 9 is a side view of a pole for supporting the delineator according to the invention;

Figure 10 is a bottom view of the pole of Figure 9;

Figure 11 is a sectional view of the supporting pole, taken along the line XI-XI of Figure 10.

[0008] With particular reference to the above figures, the reference numeral 1 generally designates a safety and warning delineator according to the invention.

[0009] The delineator 1 is constituted by two half-shells 2 and 3 which are substantially symmetrical, are produced by molding materials such as plastics, are peripherally provided with respective lips and complementary lips 4a and 4b (see Figure 5) for interlocking, are vertically elongated and can be coupled frontally to each other by means of screws 5.

[0010] The half-shells 2 and 3 are vertically elongated, end in an upward region with an inclined profile 6 and with rounded corners 6a and 6b and have a cross-section (see Figure 10) shaped like right-angled trapezoids having corners 7 which are in turn rounded and have dimensions which are elongated in the direction of the altitude of the trapezoids.

[0011] The half-shells 2 and 3 are cut, at the base, along an inclined plane which descends toward the shorter sides of the trapezoidal cross-sections and are open for interlocking insertion and fixing, by means of at least one through screw 8 of a connecting segment 9, to a fixed support: the segment 9, as shown in Figures 1a, 1b, 2a, 2b and 3, can be the end part of a post P which is designed to be driven directly into the ground, or can be the end part of a bracket S1 for fixing to a metal guardrail 50 or (Figure 2d) to a bracket S1 for fixing to a concrete guardrail 60.

[0012] On the front surface of the first half-shell 2 there is at least one reflector element, in the specific case two reflecting elements 10a, 10b arranged one above the other, whereas a reflecting element 10c is fitted in the second half-shell 3; the elevation from the ground, the dimensions and the color of the reflector elements 10a, 10b are prescribed by highway code standards.

[0013] Each one of the elements 10a, 10b is circu-

lar or polygonal in shape and can be inserted and locked in a respective seat 11 (see Figures 7-8) provided in the surface of the half-shells; the seat 11 has a recess 12 which is shaped so as to match the element 10a, 10b for heat coupling, or optionally coupling by means of an adhesive, of the element 10. The seat 11 has, at the center, a complementary stud 13 with a hole 14 for an optional screw 15 for coupling the center of the refractor element 10. The reference numeral 16 generally designates a luminous delineator element provided with a dazzle-free (antiglare) light source 17 which is circuitally connected to a power supply designed to be remotely controlled by a monitoring network, optionally a temporary or emergency network, which is capable of driving the frequency and power of the supply according to the environmental conditions (fog, smoke, ash, snow, etcetera).

[0014] The light source 17 is advantageously constituted by a circular or polygonal disk 18 covered by a plurality of very small lamps 19 of the type known as LED, which provide considerable assurances in terms of antiglare, durability and functional strength: moreover, the breakage of some of the lamps does not compromise the operation of the system, offering assurances of maximum safety.

[0015] The element 16 is provided with means for adjusting the relative orientation with respect to the half-shell which comprise a recessed seat 20 of the first half-shell 2 having a certain depth and having, at the center, a conical raised portion 21 ending with a pin 22 and in which the inlet is closed by a transparent disk 23 which can be fixed to the half-shell 2 by means of screws screwed into corresponding perforated studs 24 which are distributed around the seat 20.

[0016] The disk 23 is centrally provided with a complementarily shaped pin 25 which can be coupled to a central hole of the disk 18 being designed to cooperate with the pin 22 in order to support the disk 18 with an adjustable orientation.

[0017] The disk 18 is provided with two perimetric notches 26a and 26b which are mutually spaced by 90 degrees and can be engaged by mushroom-shaped heads 27 of respective adjustment bolts 28 which are screwed into respective studs 29a, 29b which are formed peripherally to the seat and are mutually spaced by 90 degrees. The notches 26a and 26b have a helical shape so as to allow, by rotation, easy fitting on the mushroom-shaped heads of the bolts 28.

[0018] The bolts 28 have, on their head, a notch 30 for actuation by means of a screwdriver and have an annular recess for an annular gasket 31 of the type known by the trade-name O-Ring for forming a seal against the respective cylindrical seat: the actuation of one bolt 28 or the other allows to adjust the angle that the axis of the disk 18 forms with respect to the horizontal and vertical plane in order to arrange the disk 18 in the ideal lighting condition with respect to the direction of travel of the vehicles: it is thus possible to provide cor-

rect linearity of the light beam produced by the delineators installed in succession.

[0019] The gasket 31, due to its particular concept, ensures, besides to a watertight seal, that the setting of the disk 18 is maintained even in the presence of vibrations caused by the passage of vehicles.

[0020] On the bottom of the seat 20 there is provided a hole 32 for fixing a grommet 33 for the power supply of the light source, and the seat also accommodates a small connecting printed circuit board 34.

[0021] The invention achieves the intended aim and objects, and in particular a safety and warning delineator is provided which combines the characteristics of an ordinary delineator and of a luminous delineator and is adapted to indicate critical points or for luminous guidance and in case of fog or other atmospheric and/or dangerous events: the delineator according to the invention can be installed directly on the ground or coupled to the metallic or concrete guardrails and its indications can be remotely controlled according to environmental conditions and dangers that must be indicated to users.

[0022] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0023] All the details may furthermore be replaced with other technically equivalent ones.

[0024] In practice, the materials used, as well as the shapes and the dimensions, may be any according to requirements without thereby abandoning the scope of the protection of the appended claims.

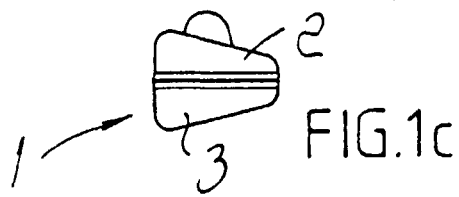
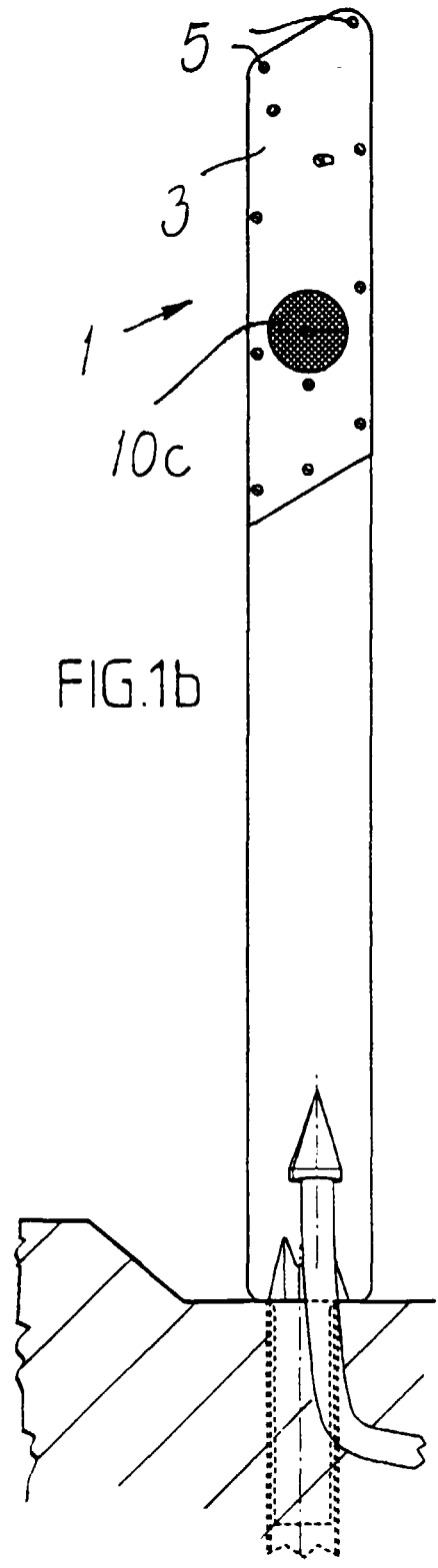
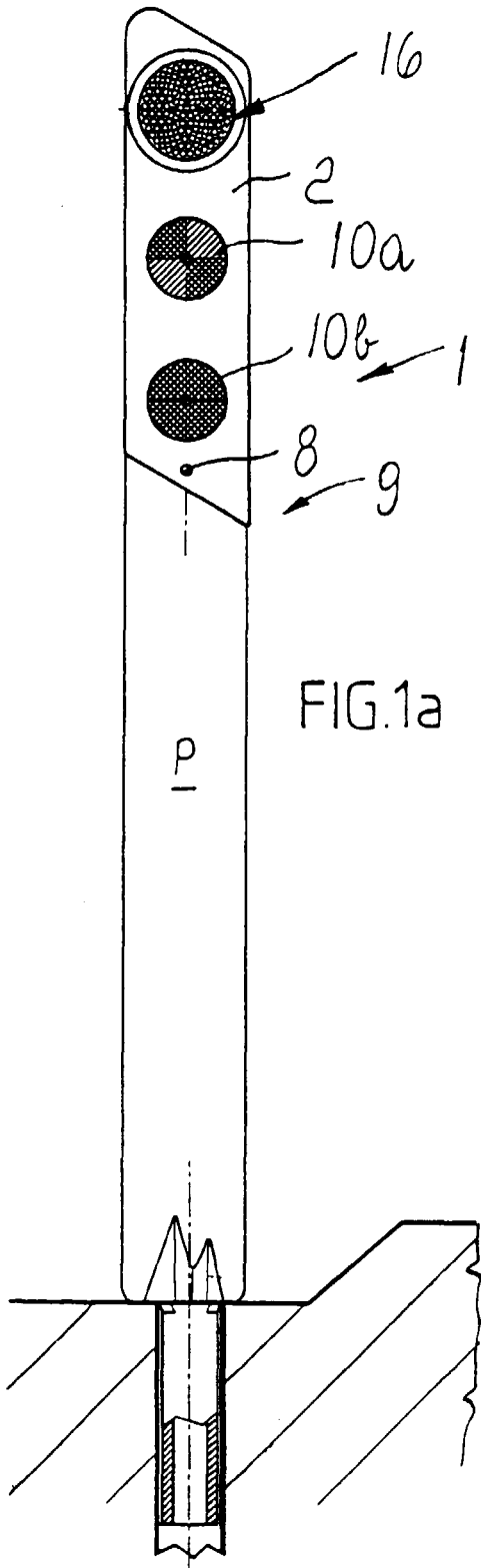
[0025] The disclosures in Italian Patent Application No. BO99A000250 from which this application claims priority are incorporated herein by reference.

[0026] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A safety and warning delineator, constituted by two vertically elongated substantially symmetrical half-shells which can be coupled frontally to each other, characterized in that it comprises, at a lower end thereof, means for fixing to fixed supports and in that at least one reflector element and at least one luminous delineator element are arranged on the front surface of the first half-shell, said luminous delineator element being provided with an antiglare light source circuitally connected to a power supply unit which controls the frequency and power of the supply according to environmental and/or danger conditions.

2. The delineator according to claim 1, characterized in that said half-shells have cross-section shaped like right-angled trapezoids with rounded corners and with dimensions which are elongated in the direction of facing planes of said half-shells. 5
3. The delineator according to claim 2, characterized in that said half-shells are cut, at the lower end thereof, along an inclined plane which descends toward the shorter sides of said trapezoidal sections, and are open for the interlocking insertion and fixing of a segment for connection to a fixed support. 10
4. The delineator according to claim 1, characterized in that said reflector element is interlocked snugly in a seat formed in the surface of the first half-shell, said seat being centrally provided with a complementarily shaped perforated stud for an optional screw for coupling the center of the reflector element. 15 20
5. The delineator according to claim 1, characterized in that said light source is constituted by a disk which is covered by a plurality of small lamps of the type known as LED. 25
6. The delineator according to claim 1, characterized in that said luminous delineator element comprises means for adjusting the relative orientation with respect to the half-shell and the horizontal and vertical inclination, said means being adapted to provide correct linearity of the light beam determined by delineators installed in succession. 30 35
7. The delineator according to claim 6, characterized in that said adjustment means comprise a recessed seat of the first half-shell which is centrally provided with a pin and in which the inlet can be closed by a transparent disk centrally provided with a complementary pin which can be coupled to the center of said disk covered by the lamps and is adapted to cooperate with said pin in order to support the disk so that it can oscillate, said disk being provided with two perimetric helical notches which are mutually spaced by 90 degrees and can be engaged by the heads of respective adjustment bolts, particularly for horizontal and vertical adjustment, which are screwed into respective studs formed peripherally with respect to said seat. 40 45 50
8. The delineator according to claim 1, characterized in that said reflector elements are circular or polygonal, are two arranged one above the other and are surmounted by said luminous delineator element. 55



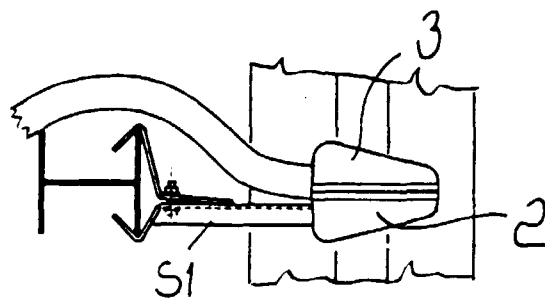
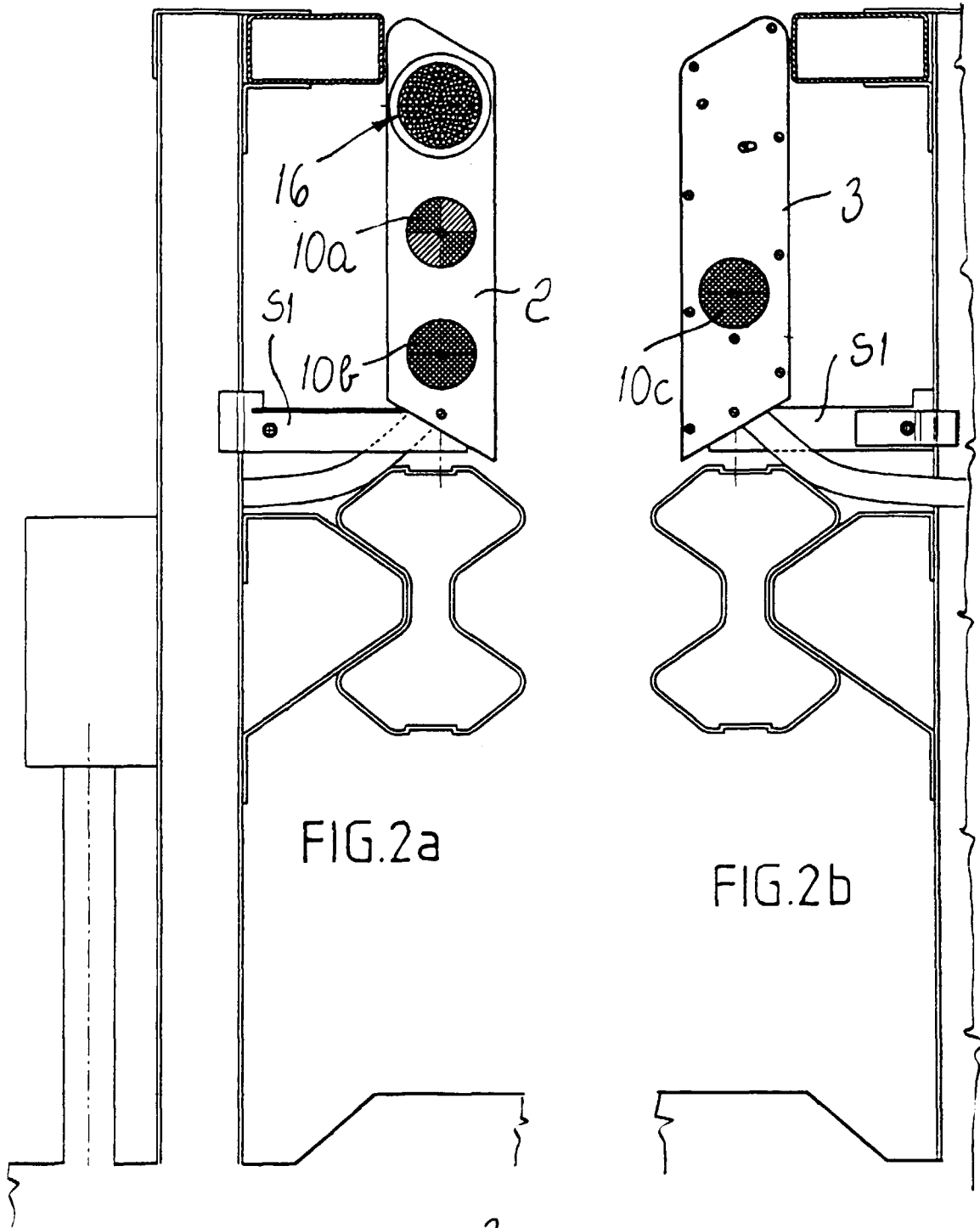


FIG.2d

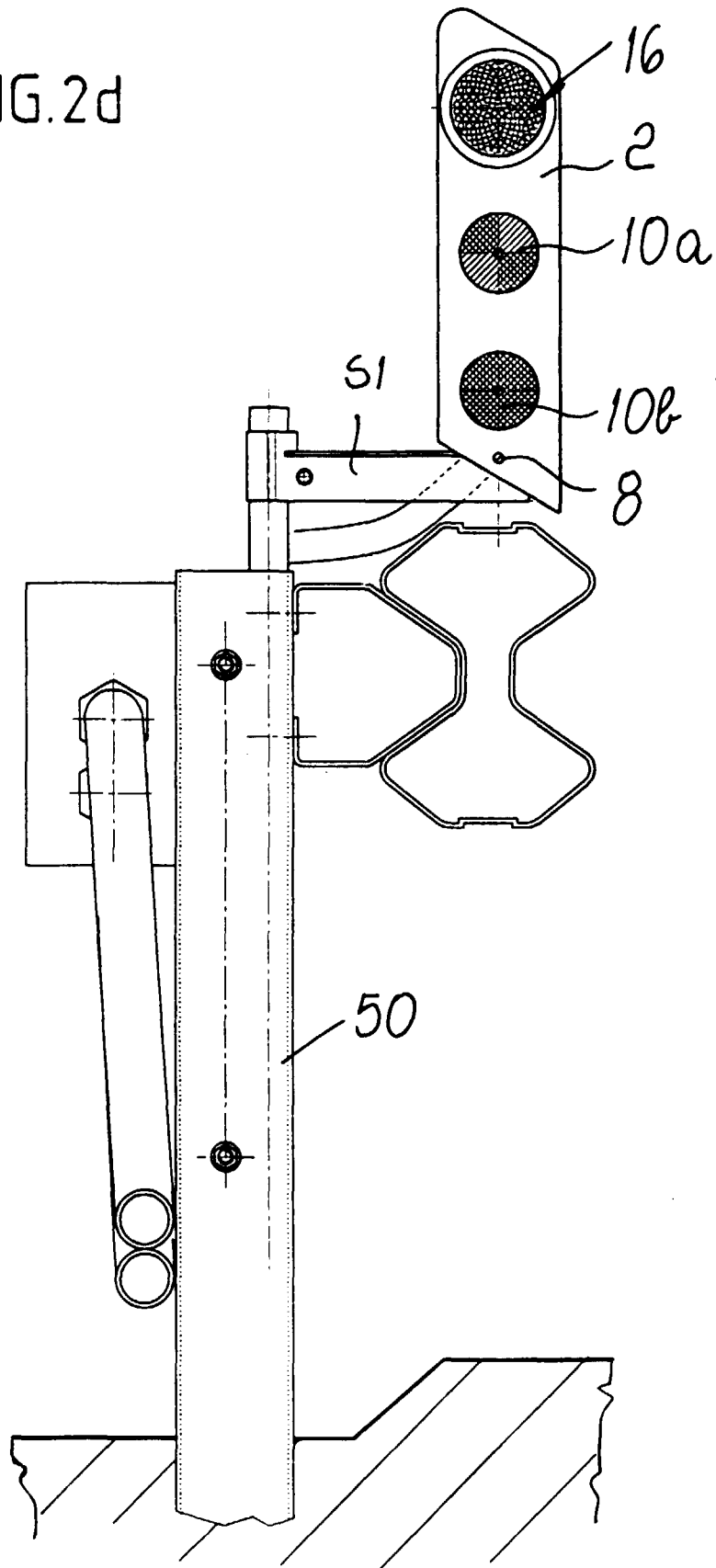
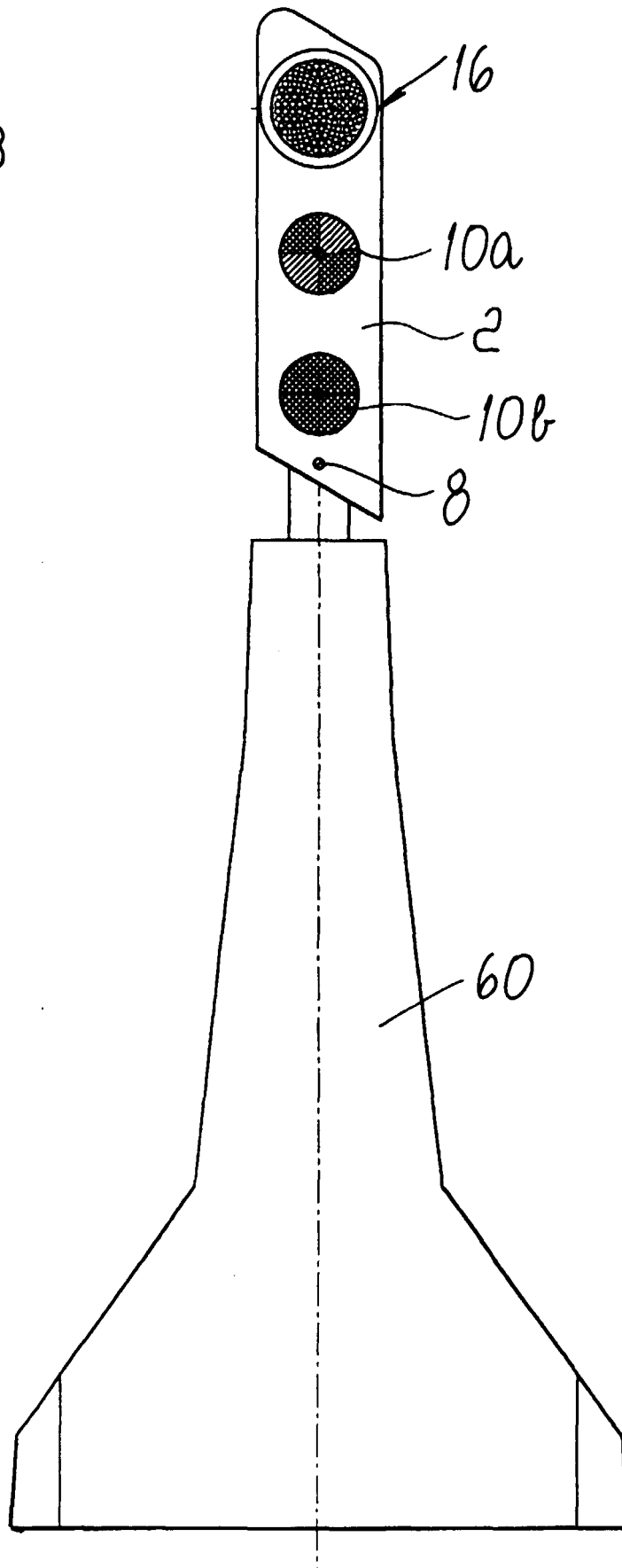
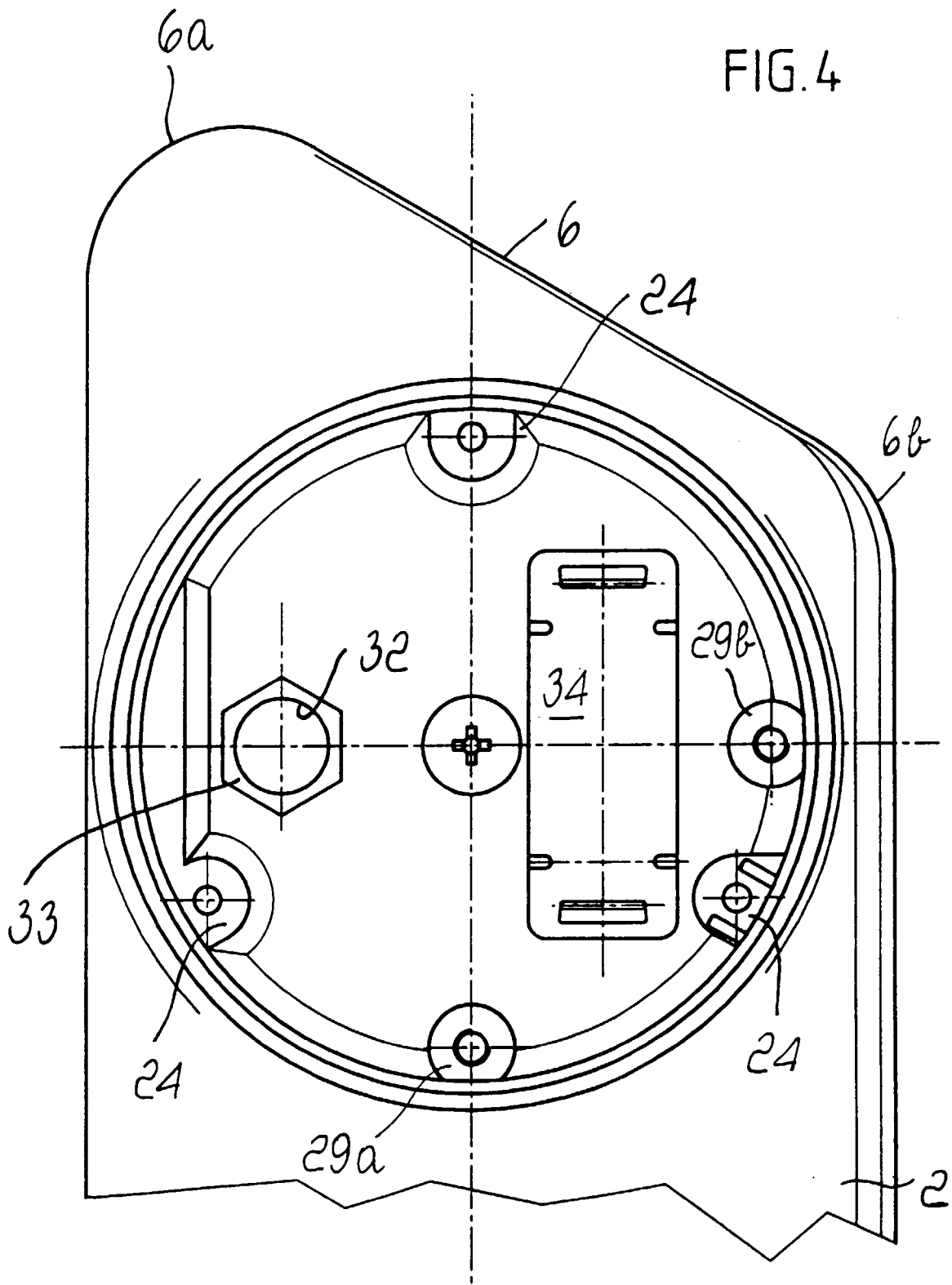
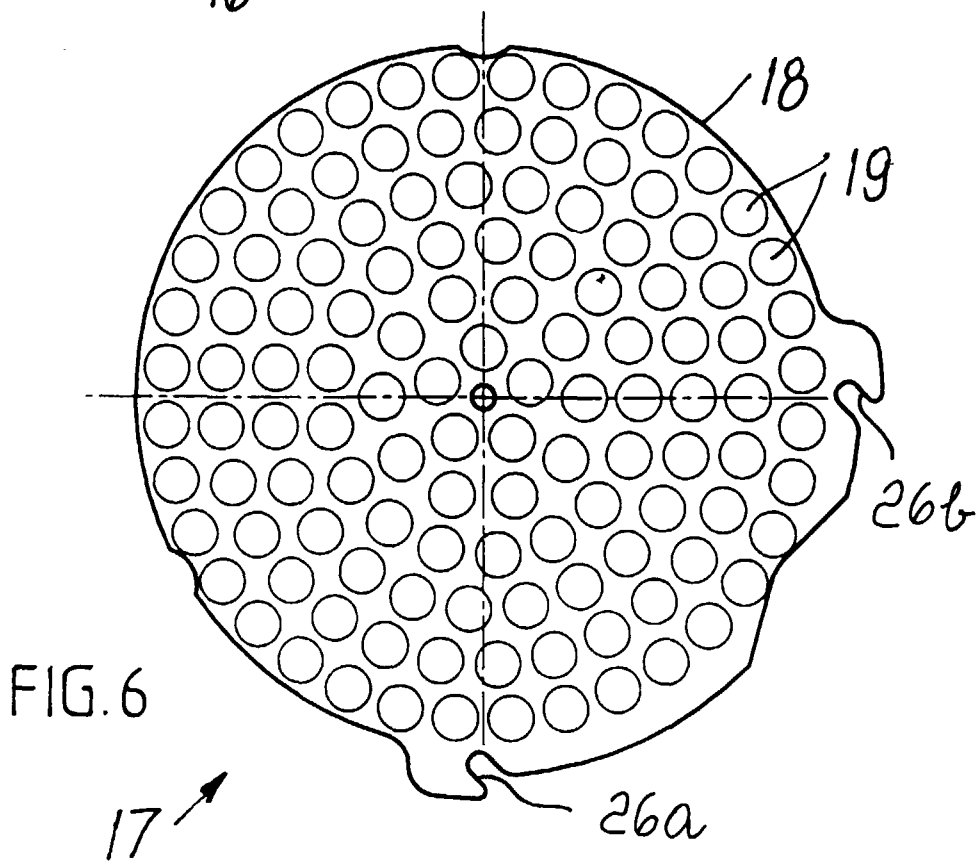
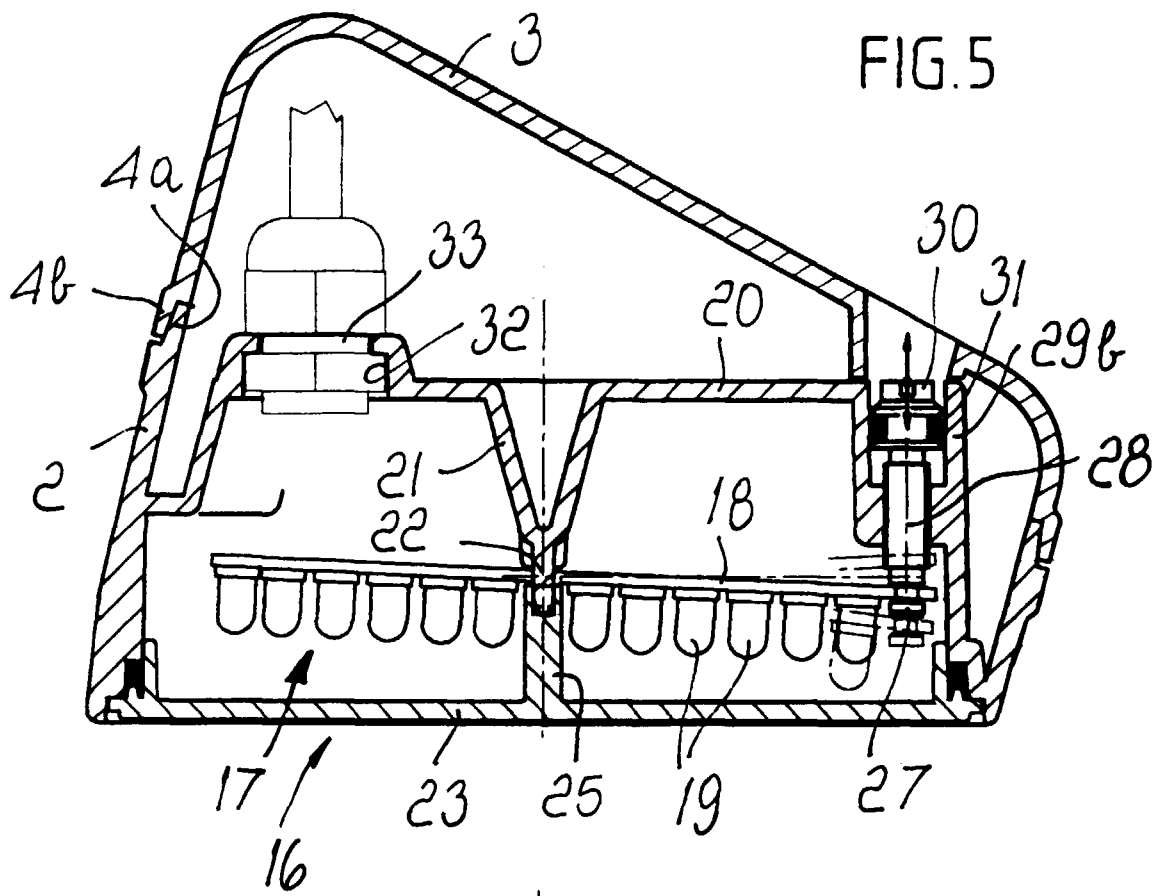


FIG. 3







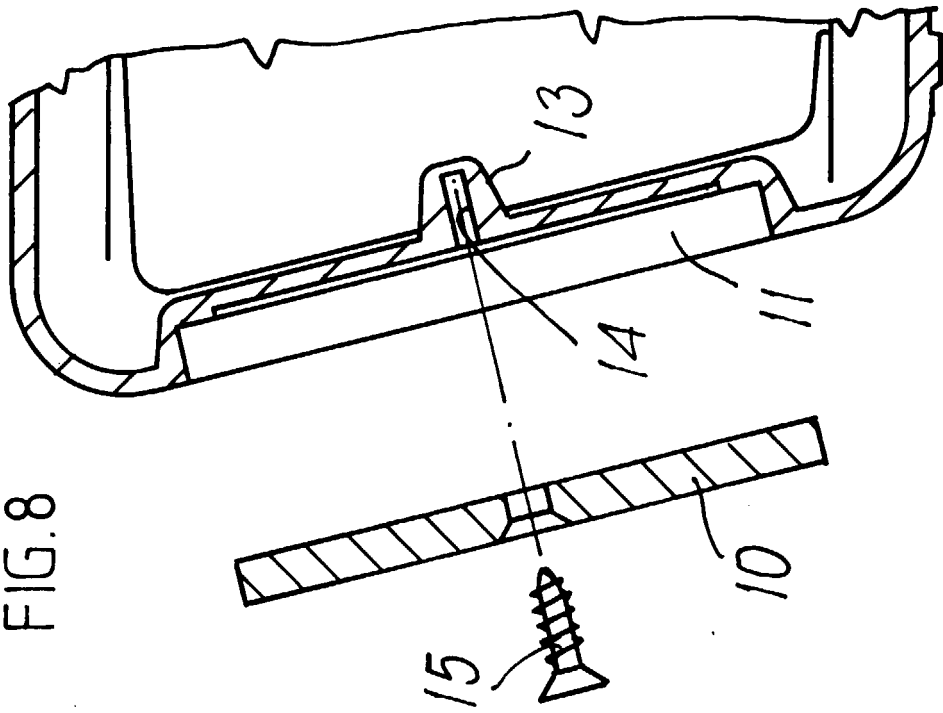


FIG. 8

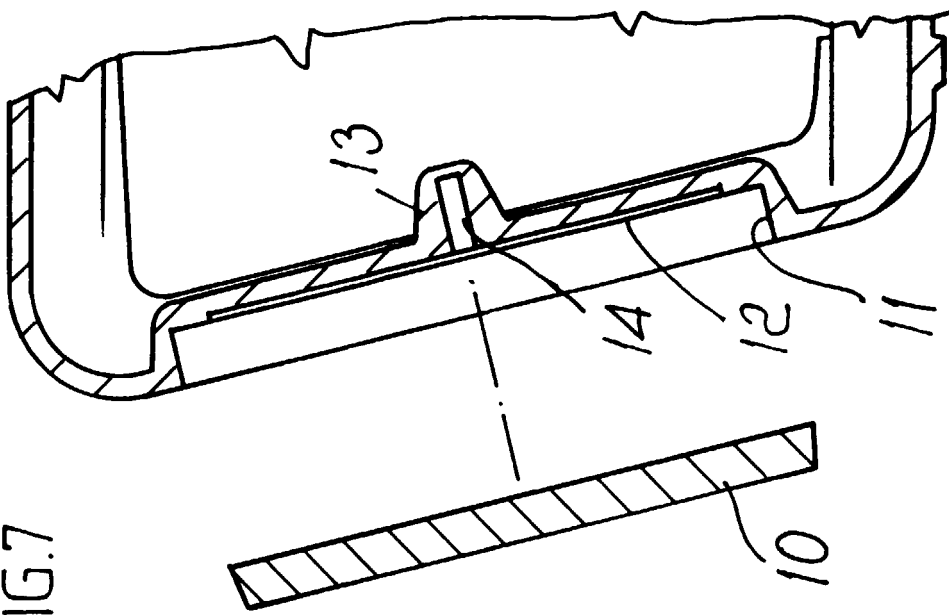


FIG. 7

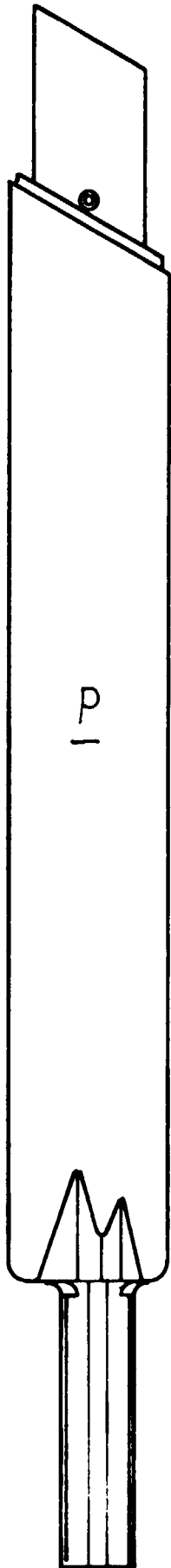


FIG.9

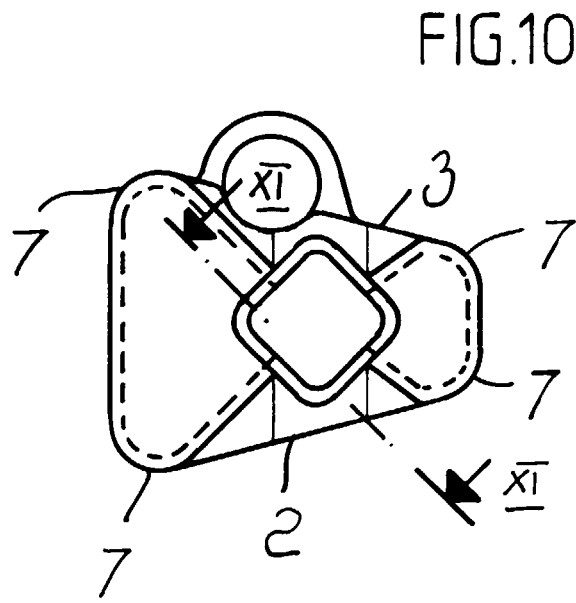


FIG.10

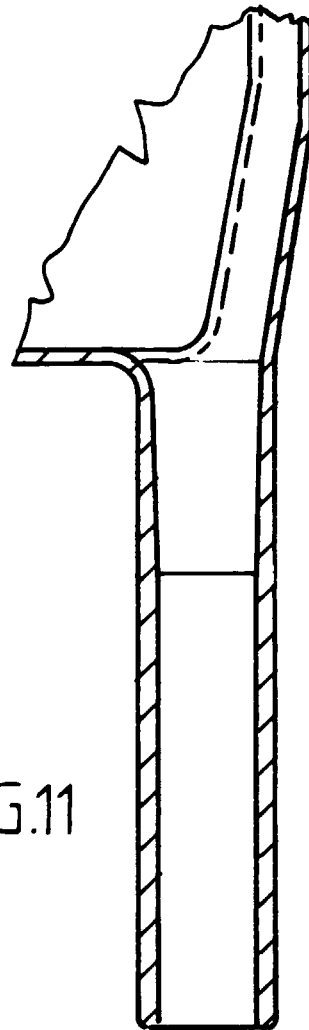


FIG.11



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EUROPEAN SEARCH REPORT

Application Number
EP 00 10 9059

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X	WO 98 38613 A (STAR HEADLIGHT & LANTERN CO IN) 3 September 1998 (1998-09-03)	1,5	E01F9/03 E01F9/016
Y	* page 2, line 19 - page 3, line 13; figures *	8	
Y	US 5 122 939 A (KAZDAN DAVID ET AL) 16 June 1992 (1992-06-16)	8	
A	* column 3, line 15 - column 4, line 43; figure 2 *	5	
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7) E01F
Place of search THE HAGUE		Date of completion of the search 17 August 2000	Examiner Verveer, D
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	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 10 9059

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