



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 643 187 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
05.04.2006 Bulletin 2006/14

(51) Int Cl.:
F21V 15/01 (2006.01)

(21) Application number: **05380126.2**

(22) Date of filing: **14.06.2005**

(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 MC NL PL PT RO SE SI SK TR**
Designated Extension States:
AL BA HR LV MK YU

(72) Inventor: **Perez Nebot, Ramon**
c/o C. & G. Carandini, S.A.
08007 Barcelona (ES)

(74) Representative: **Morgades y Manonelles, Juan**
Antonio
C/ Rector Ubach, 37-39, bj. 2a
08021 Barcelona (ES)

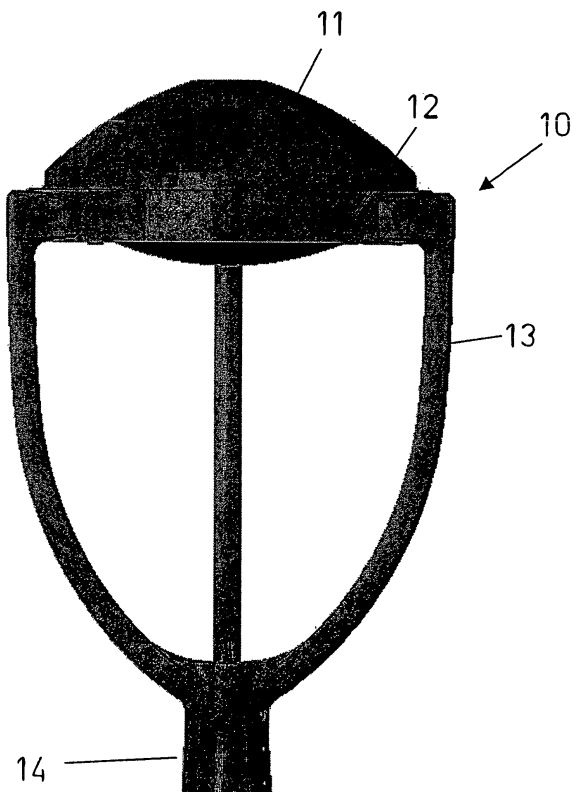
(30) Priority: **30.09.2004 ES 200402225 U**

(71) Applicant: **C & G Carandini, S.A.**
08007 Barcelona (ES)

(54) **Modular system for construction of luminaires**

(57) Is comprises common elements for all of the embodiments with three, two or one arm (13), comprising a dome (11) secured to a frame (12), to which the heads (17) of the arms (13) are coupled and the supports (20) to the lower ends of said arms (13) clamping on the base (14) and this on the corresponding column. The arm (13) has a concave body in which upper end an upper head (17) is provided, with coupling surfaces for resting on the hoop (12). A channel (16) is provided inside the arm (13) formed by a steel tube and reinforcing ribbing (40). The base (14) is formed of a frusto conical body (27) with a first area (26) upwardly extending to a second area (28) of smaller diameter and joined through a circular projection (47). The area of the frusto conical body (26) has a machined side surface for the formation of recesses (43) into which the stumps (38) of the support (20) are inserted.

FIG.1



EP 1 643 187 A2

Description

[0001] The present application for a Patent of Invention consists, as stated in its title, of a "MODULAR SYSTEM FOR CONSTRUCTION OF LUMINAIRES" which novel construction, conformation and design features fulfill the purpose to which it has been specifically projected with a maximum safety and effectiveness.

[0002] More particularly, the invention refers to a system for construction of different types of luminaires to be coupled to the corresponding shafts or upright supports, but keeping the same common parts, such as for example the base that is coupled to the shaft, the dome support for receiving a light projector, as well as the arms supporting said dome and the elements fitted therein, whereby having all these elements in common, it can assume a number of different configurations, but keeping the same design line, making it possible the installation of the same family of luminaires with a style uniformity, but covering specific necessities without breaking the assembly harmony.

[0003] The advantages experienced with said system are derived in the first place from a speed of assembly of the different types of elements forming these luminaires, which in this embodiment are specially designed to be coupled to each other with a minimum number of pieces and operations, so with a reduced tooling different embodiments of luminaires are possible with a high level of standardization, thus conforming to different fields of illumination, as reflectors, bulbs and turning on devices thereof having different power and features may be interchanged, by using common elements, and therefore there is an important reduction of costs due to said system modularity.

[0004] The system comprises a base or support having a substantially frusto conical configuration that is coupled to the shaft of the luminaire so that the upper end of said shaft penetrates into the base lower portion and it is solid therewith by means of stems passing through the side surface of said base and they are received into the shaft clamping both elements.

[0005] Said base or support has been machined so that substantially concave, one-piece arms preferably made of aluminum can be coupled thereon, with a steel reinforcing tube allowing wiring to be passed therethrough, in a simple and quick fashion by means of simple screws, since said arms are provided, at one of their ends, with angular supports in which inner surface stumps are provided received into recesses specially designed for said stumps and which further prevent all possible assembly errors as they can be coupled only in a single position.

[0006] In the construction of said arms, foundry will be preferably used but being provided therein with an iron or steel tube allowing wiring to be passed and channeled therethrough at the same time that the arm becomes reinforced and its strength increased, since it or they, depending on embodiments, should bear the weight of the

whole luminaire, that is to say the dome, the reflector and the other turning on electric and electronic parts, besides the possible effects of the wind when installed in open spaces.

[0007] Depending upon said modularity on said base or coupling support to the column, one to three arms can be mounted on the basis of light necessities in the premises or open spaces where the luminaire is to be installed, the purpose of said arms is to support, through their ends opposed to that of the base, a dome by means of a hoop. In said dome made from aluminum plate the optical sealed assembly or reflector is received and a circular crown serving the purpose of closure hoop surrounding thereto, the bulb holder and other lighting up parts arranged between the reflector and the dome. On said hoop a quick coupling closure is adapted.

[0008] In the case that a single arm is to be used and for covering the base or support, angular covers have been provided that, keeping the modular system general design, cover it and take up the place that would be taken up if the luminaire is provided with of two arms.

[0009] Other details and features will be revealed from the description that is herein provided, which refer to the drawings accompanied to this specification, in which possible embodiments of the invention are shown having the essential features thereof. Said embodiments and features are cited and described however only by way of a non limiting example of the present invention.

[0010] Here follows below a detailed list of the main parts of the present invention which are shown with reference numerals in the figures herein accompanied to the present specification: (10) luminaire, (11) sealed optical assembly or reflector, (12) hoop shaped frame, (13) arms, (14) base or coupling member to the column or shaft, (15) walls of the arm (13), (16) inner channel of (13), (17) head, (18) stumps, (19) holes, (20) support, (21) projection, (22) holes, (23) luminaire coupling surface, (24) protrusions, (25) holes, (26) supports, (27) support base (26), (28) support head (26), (29) alveolar protrusion, (30) concave walls, (31) stumps, (32) lying planes, (33) covers, (34) horizontal portion of (33), (35) vertical portion of (33), (36) drill, (37) protrusions, (38) stumps, (39) holes, (40) ribbing, (41) horizontal portion of the support (20), (42) vertical portion of the support (20), (43) recess or housing for fixing of the arm (13), (44) plate, (45) reflector, (46) bulb holder, (47) projection, (48) vertex.

Fig. 1 is an elevational front view of the luminaire (10) in one of the possible embodiments of the invention.

Fig. 2 is a longitudinal section elevational view of the arm (13).

Fig. 3 is a side elevational view of the arm (13).

Fig. 4 is an enlarged view of the detail 1 of the inner surface of the head (17).

Fig. 5 is a perspective view of the arm (13).

Fig. 6 is a detail 2 of the support (20), located at the

lower end of the arm (13).

Fig. 7 is an exploded perspective view of the arm (13), the support (26) and the covers (33).

Fig. 8 is an enlarged view of the detail 3 of the support (26) shown in the preceding figure.

Fig. 9 is a side elevational view of one arm (13) fitted in a support (26).

Fig. 10 is a perspective view of one arm (13) fitted in a support (26).

Fig. 11 is an exploded perspective view of a support (26) on which two arms (13) are fitted with their supports (20) and a cover (33).

Fig. 12 is a detail 4 of the preceding figure.

Fig. 13 is an overall perspective of a support (26) having two arms (13) and a cover (33) coupled thereto.

Fig. 14 is another overall perspective of a support (26) having two arms (13) and a cover (33) coupled thereto.

Fig. 15 is an exploded perspective view of a support assembly (26) having two arms (13) coupled thereto.

Fig. 16 is a detail 5 of the preceding figure.

Fig. 17 is a front elevational view of a support (26) having three arms (13) coupled thereto.

Fig. 18 is a perspective view of the preceding figure.

Fig. 19 is a front elevational view of one of the possible embodiments of the present invention, with one arm (13).

Fig. 20 is a front elevational view of one of the possible embodiments of the present invention, with two arms (13).

Fig. 21 is a perspective of the luminaire (10) with its reflector (45).

[0011] In one of the preferred embodiments of what is the object of the invention, and as it can be seen from figs. 1, 19 and 20, the system depicted allows forming, thanks to its modular feature, with the same parts, the following:

- Dome (11), with different configurations although having the same diameter.
- Frame or hoop (12).
- Arms (13).
- Support (20).
- Coupling (14).

of a luminaire (10) in its different variants, as those shown in the above mentioned figures, in which embodiments with one, two or three arms (13) may be seen, but all of them using the same elements (11), (12), (13) and (14), all of them (10) may be provided with different reflectors (45) which, in turn, may be combined with different power lamp turning on devices, as well as the possibility of alternating, according to the technical necessities, flat glass, lenticular glass, and polycarbonate closures so the resulting applications of said modularity are wide.

[0012] The use of said common elements is due to its

configuration which has been projected in such a way that the dome (11) of the luminaire (10) is round in shape, allowing the support of the surfaces (23) of the heads (17) provided at the upper end of the arms (13), in the side surface of (11), the dome (11) being secured to (17) due to studs not shown in the figures which are inserted into holes (19) provided in the stumps (18), as shown in Fig. 4.

[0013] At the lower end of the arms (13) angular supports (20) are projected comprising a horizontal portion (41) and a vertical portion (42), see Fig. 6. Said vertical portion (42) is curved and having a radius of curvature almost identical to the base for coupling to the column or shaft (14). The base (14) in turn comprises a frusto conical body (26), with a first area (27) that is also frusto conical in shape and extending upward to a second area (28) of smaller diameter and joined through one projection (47), see Fig. 8.

[0014] The area (28) of the frusto conical body (26) has been machined so that it has recesses (43) in its side surface into which stumps (38) are inserted emerging from the curved vertical portion (42) of the support (20) of the arm (13), while in the upper base thereof it has an alveolar surface (29), having concave walls (30), in which protrusions (37) are fitted so that between two of them the vertex (48) is provided.

[0015] Inside the arms (13), as a conventional solution, steel channels (16) are provided stiffening the arms (13) at the same time allowing conductors passing between their walls (15); see Fig. 2, from the lower portion of the column not shown in the figures to the base thereof, where luminaire turning on switches are arranged. With the purpose of further provide a higher strength to the arm (13) in its lower portion a sideplate (40) is provided affecting said lower portion and the support (20).

[0016] Assembly of the system is initially carried out from the base (14) on which arms (13) are provided for the embodiment chosen, in case the luminaire has less than three arms, coupling covers (33) are provided in the head of the support (28) with corresponding studs or screws inserted into holes (39) and housed into the side surface of the recess (43), the upper portion of the luminaire (10), that is to say, the dome (11) with its sealed optical assembly or reflector (45) is subsequently fitted and bulb holders (46) and plates (44) will be chosen as shown in Fig. 21 for turning on adapted to the specific purposes to which the luminaire (10) is intended.

[0017] Once having been sufficiently described the present invention in accordance to the enclosed drawings, it is understood that any detail modifications considered as convenient may be introduced therein, provided the essence of the invention that is summarized in the following claims is not altered.

Claims

1. "MODULAR SYSTEM FOR CONSTRUCTION OF

LUMINAIRES" of those using common elements for all of the embodiments of the system itself, **characterized in that** any embodiment of the system with three, two or one arm (13) will be formed of a dome (11), secured by means of the corresponding studs (17) of the arms (13) are coupled by means of the corresponding screws and the supports (20) to the lower ends of said arms (13) clamping on the base (14) and this on the corresponding column.

2. "MODULAR SYSTEM FOR CONSTRUCTION OF LUMINAIRES" as claimed in claim 1, **characterized in that** the arm (13) has a concave body in which upper end a upper head (17) is provided, with coupling surfaces (23) for resting on the hoop (12).
3. "MODULAR SYSTEM FOR CONSTRUCTION OF LUMINAIRES" as claimed in the preceding claims, **characterized in that** a channel (16) is provided inside the arm (13) formed by a steel tube and a ribbing (40) for reinforcing (13) with its supporting lower end (20) on the base (14).
4. "MODULAR SYSTEM FOR CONSTRUCTION OF LUMINAIRES" as claimed in claim 1, **characterized in that** the support (20) is formed of a flat horizontal portion (41) and a vertical portion (42), having a curvature with a radius similar to the radius of curvature of the coupling base (14), the stumps (38) emerging perpendicularly outward from the inner surface of the vertical portion (42) with an inwardly threaded drill (22), threaded drills (25) being provided at the portion (41) for fixing the support (20) to the base (14).
5. "MODULAR SYSTEM FOR CONSTRUCTION OF LUMINAIRES" as claimed in claim 1, **characterized in that** the base (14) is formed of a frusto conical body (27) with a first frusto conical area (26) upwardly extending to a frusto conical second area (28) of smaller diameter and joined through a circular projection (47).
6. "MODULAR SYSTEM FOR CONSTRUCTION OF LUMINAIRES" as claimed in claims 1 and 5, **characterized in that** the area (28) of the frusto conical body (26) has a machined side surface for the formation of recesses (43) into which the stumps (38) of the support (20) are inserted.
7. "MODULAR SYSTEM FOR CONSTRUCTION OF LUMINAIRES" as claimed in claims 1 and 5, **characterized in that** the frusto conical body (26) has an alveolar upper base (29) having concave walls (30), in which the protrusions (37) are fitted so that between two of them the vertex (48) is provided.

FIG. 1

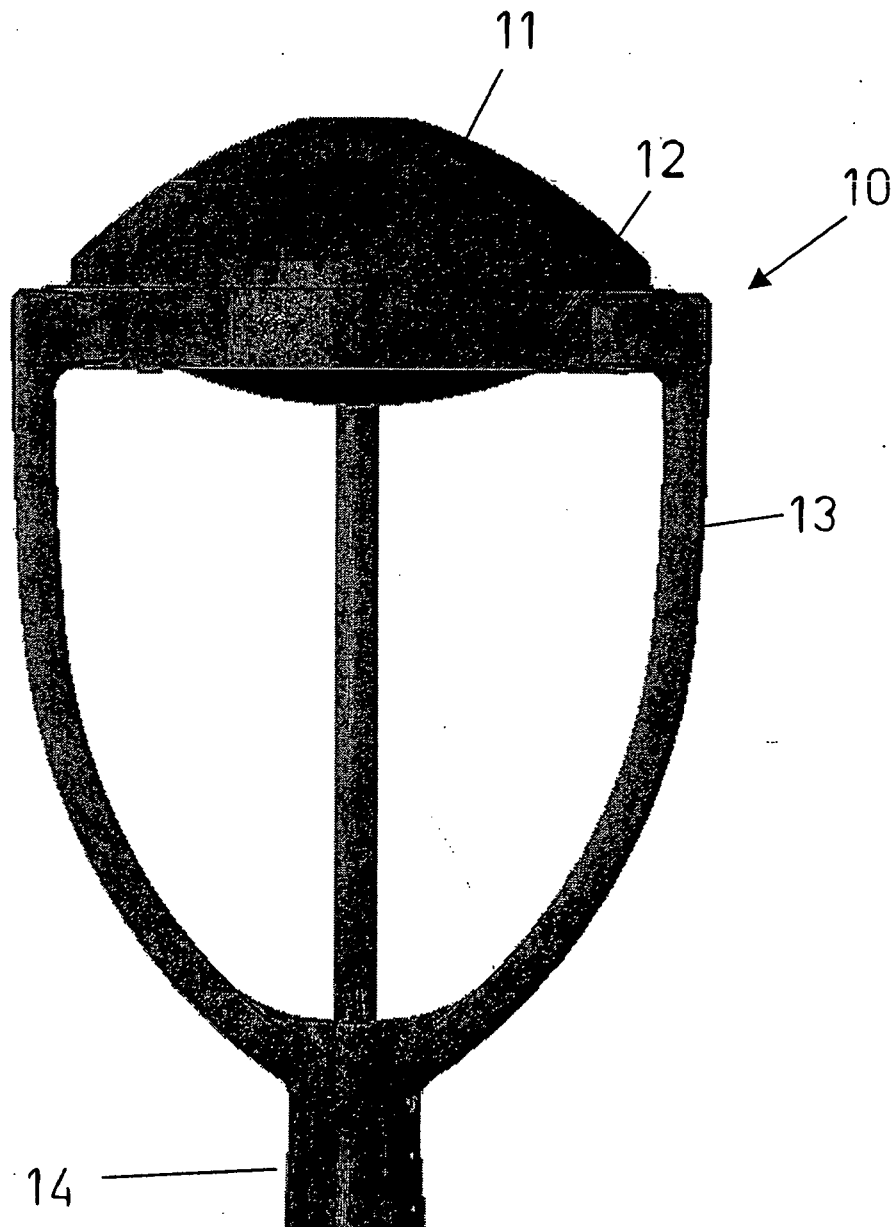


FIG.2

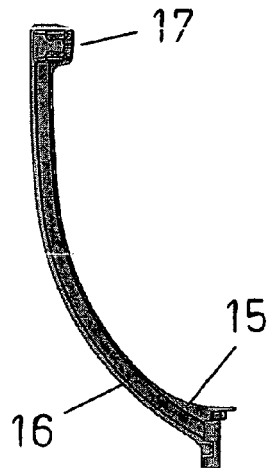


FIG.3

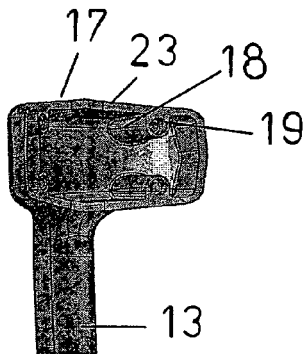
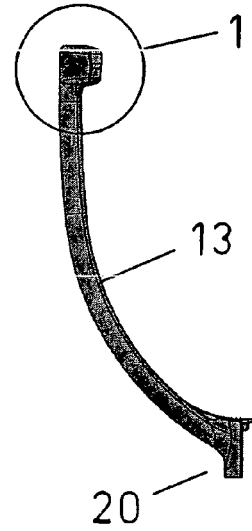


FIG.4

FIG.5

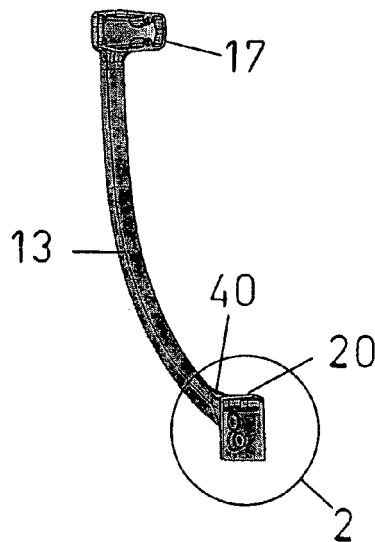
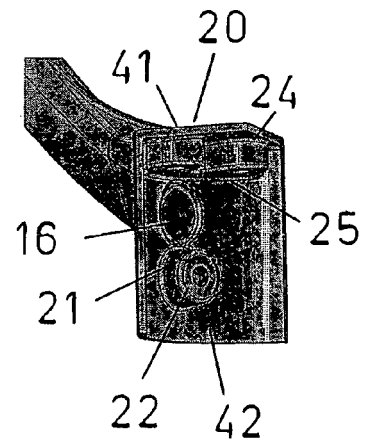
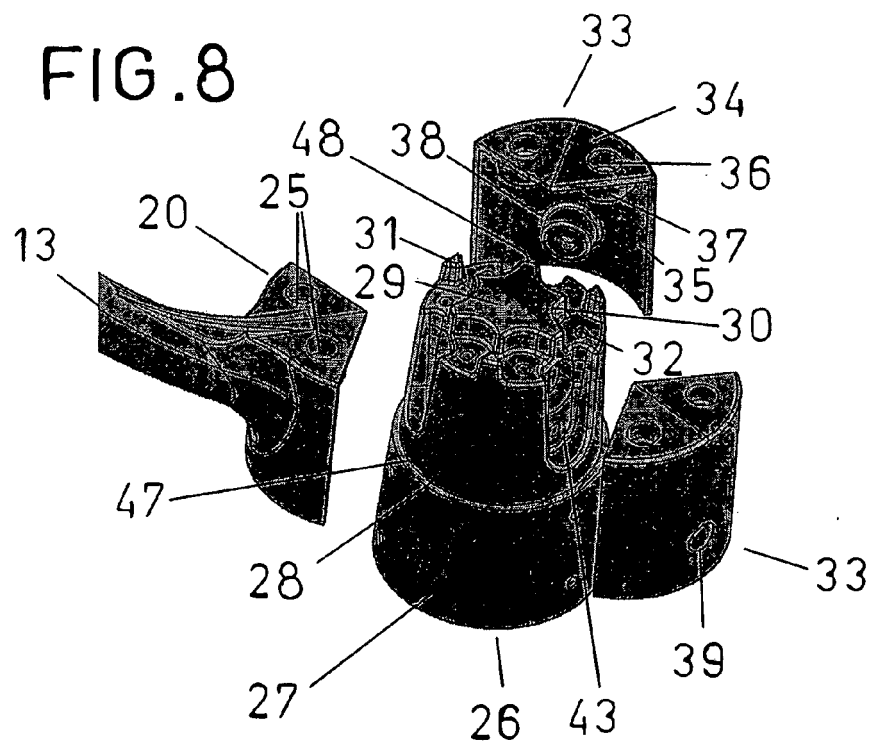
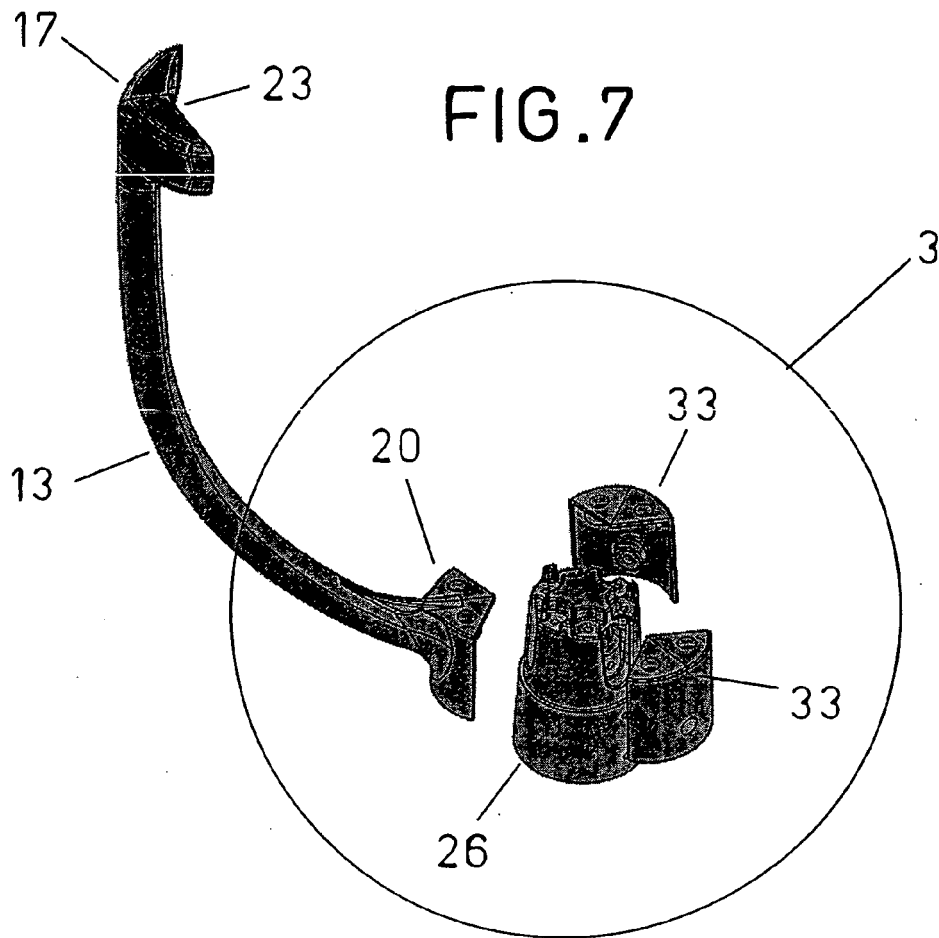


FIG.6





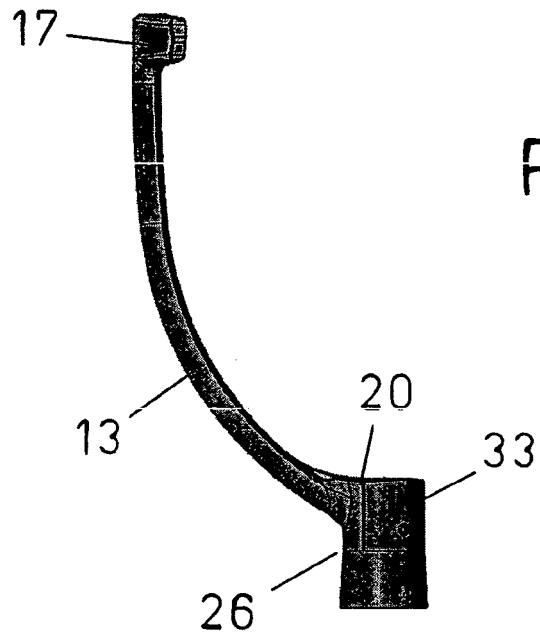


FIG. 9

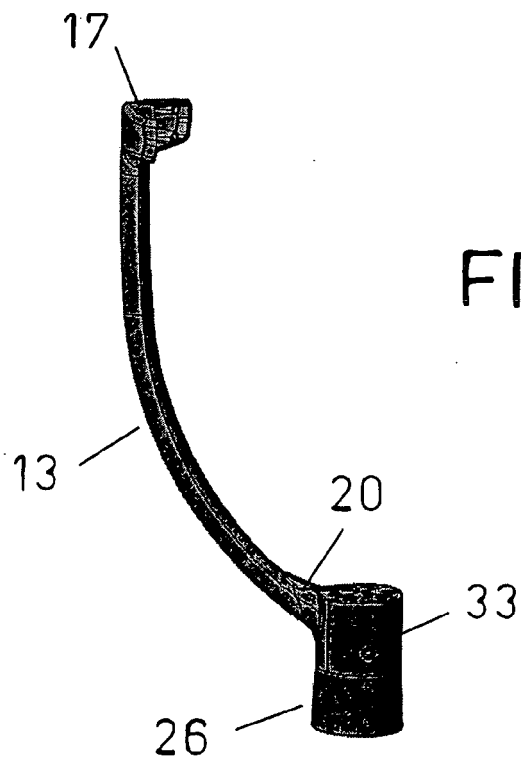
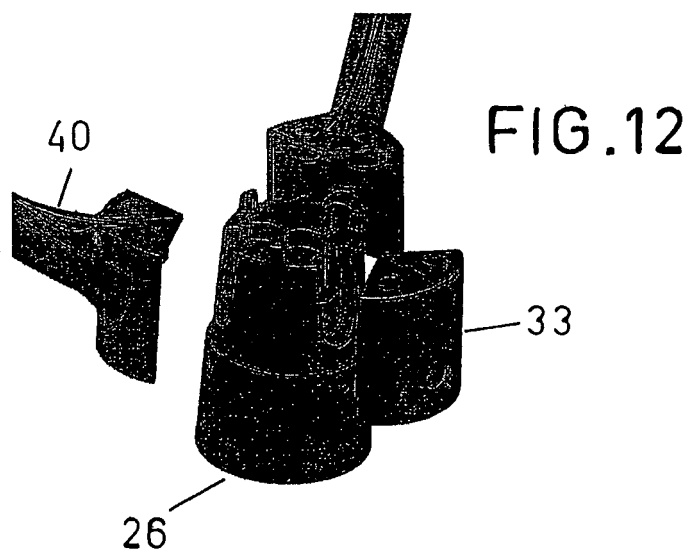
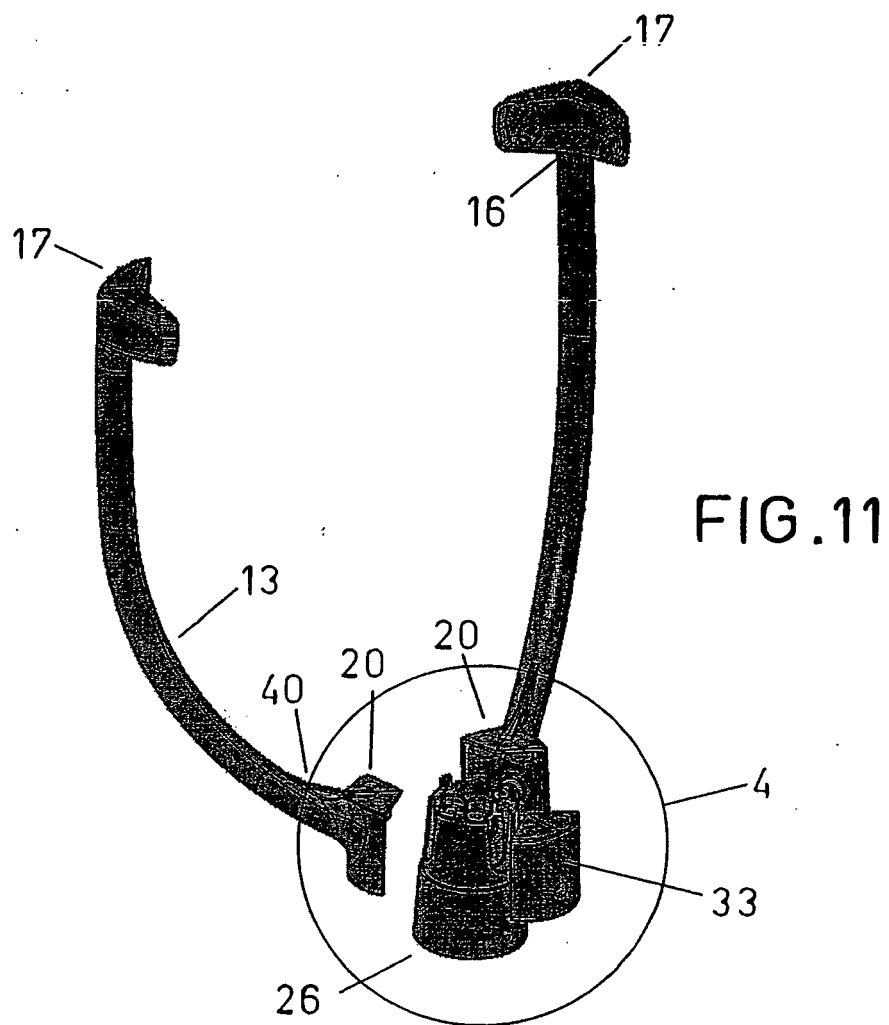


FIG. 10



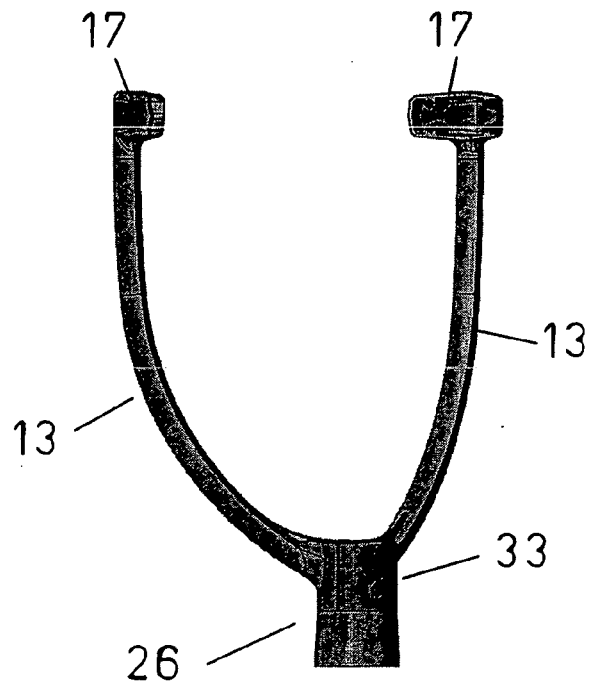


FIG. 13

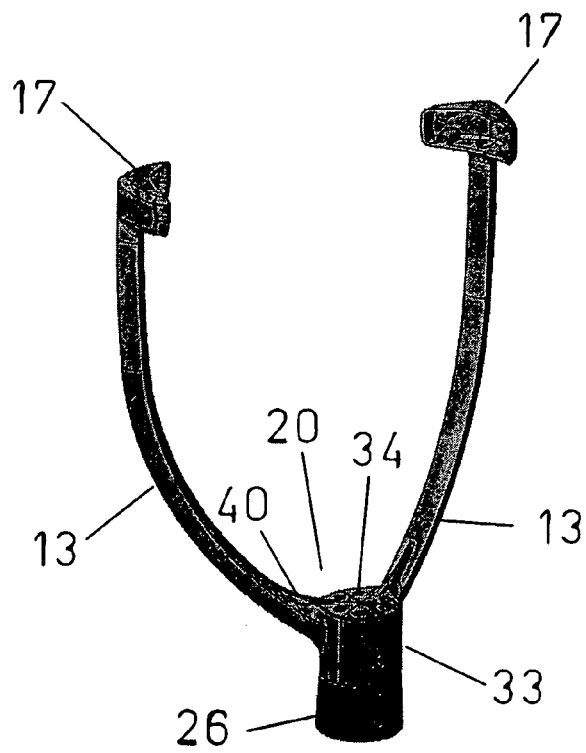
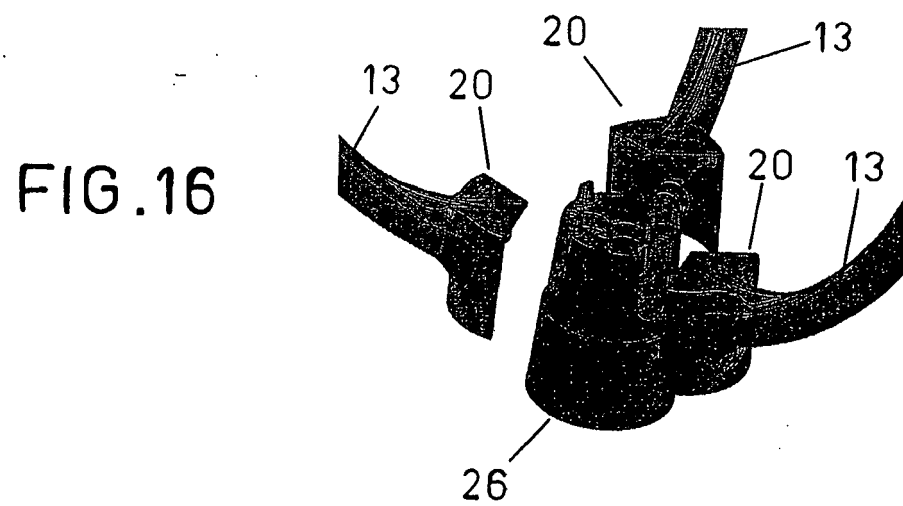
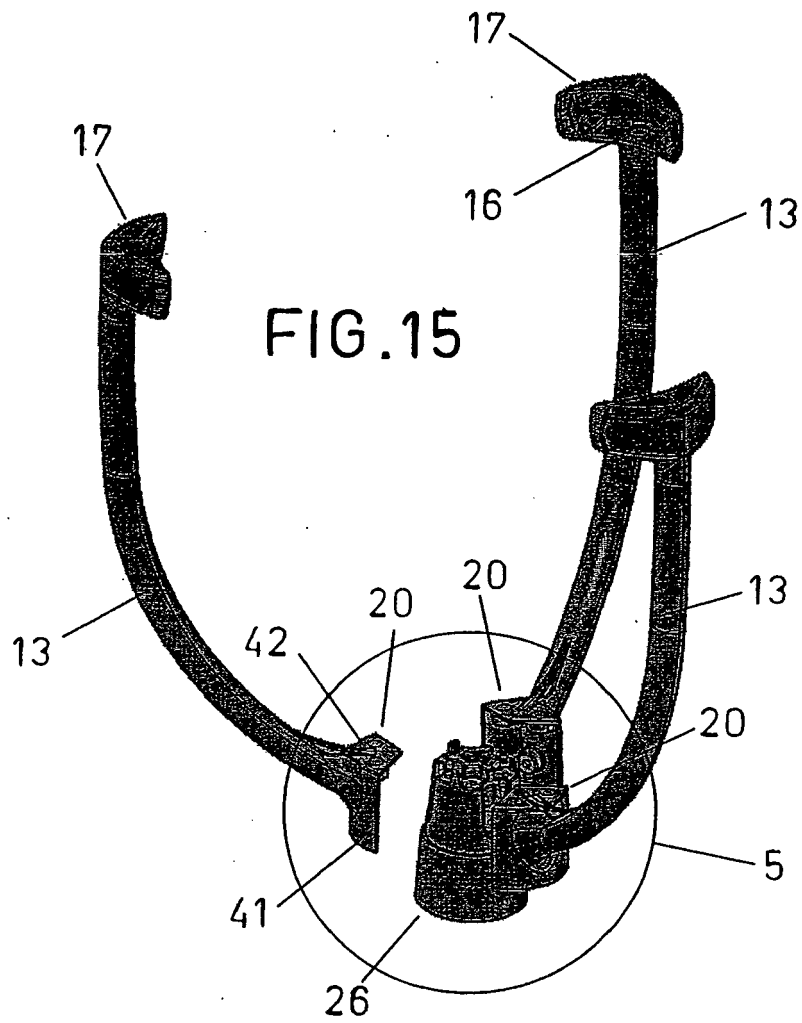


FIG. 14



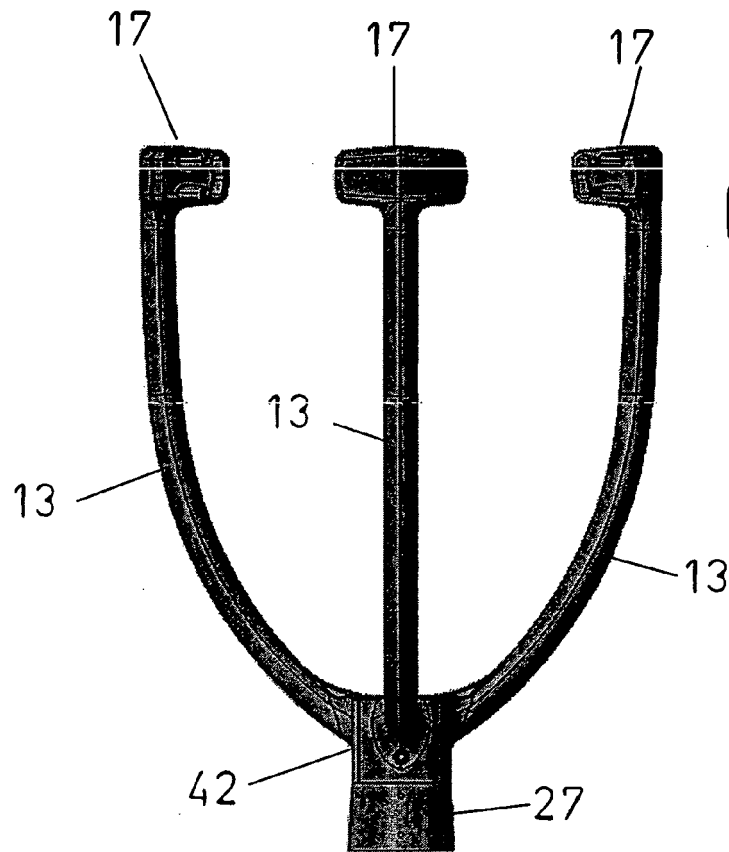


FIG. 17

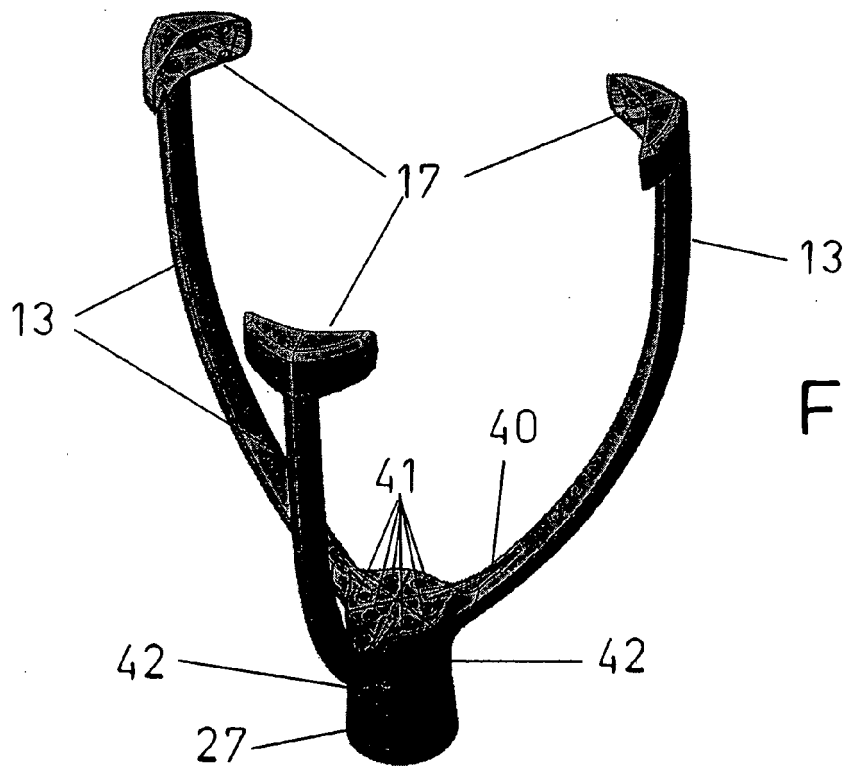


FIG. 18

FIG.19

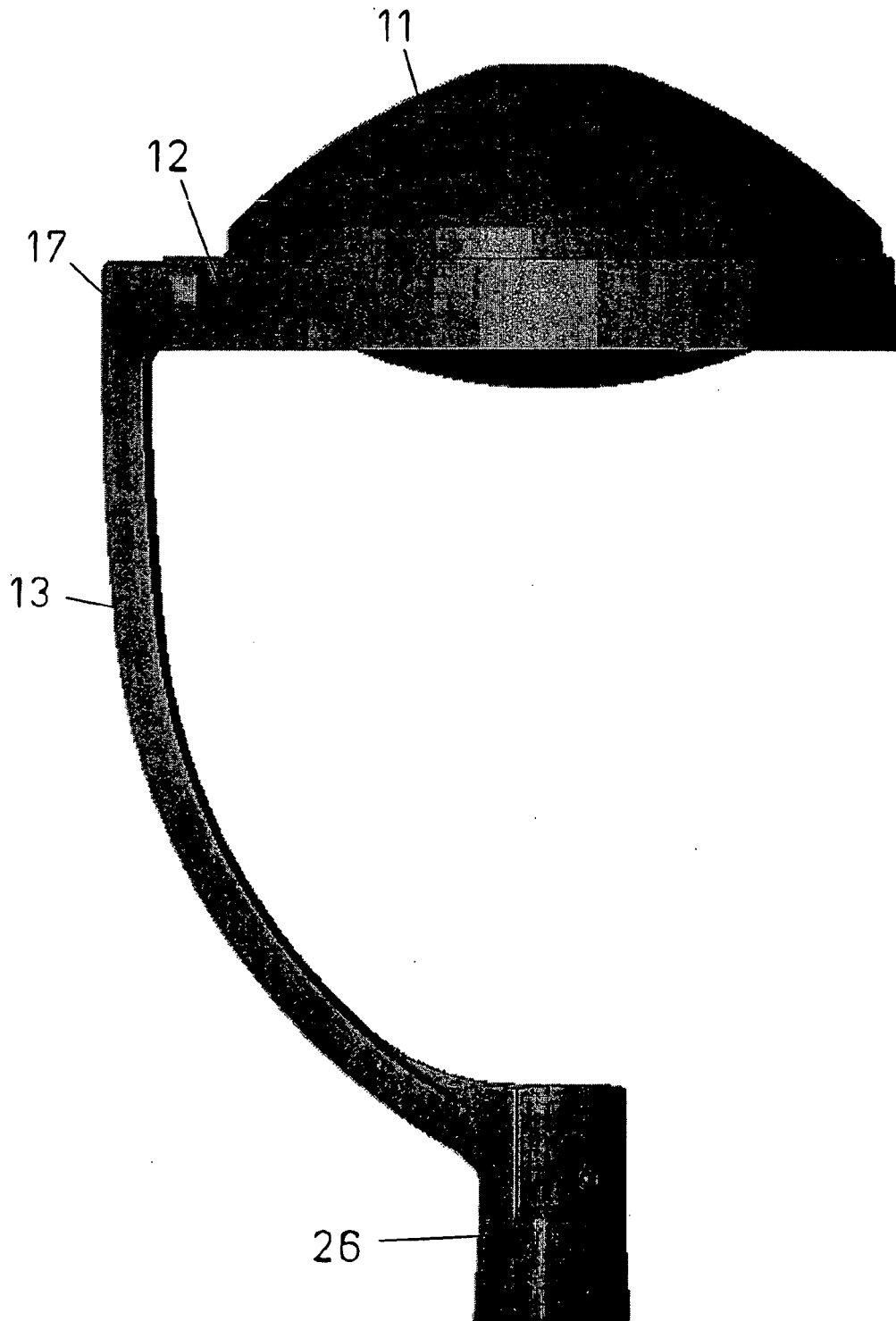


FIG.20

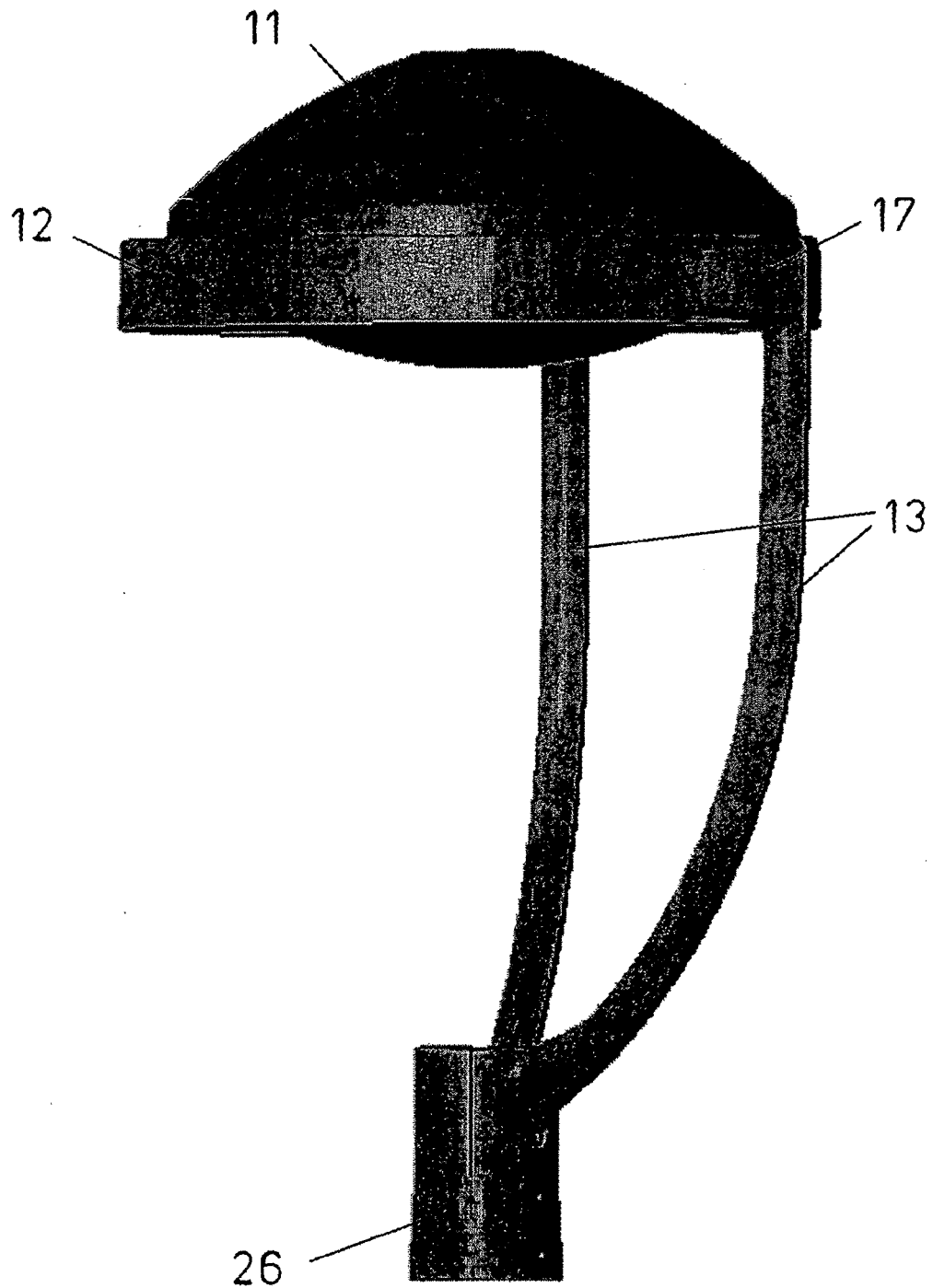


FIG.21

