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

(11) EP 0 603 940 B1

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
02.10.1996 Bulletin 1996/40

(51) Int Cl.[6]: **F21V 19/00**

(21) Application number: **93203505.8**

(22) Date of filing: **14.12.1993**

(54) **Luminaire**

Leuchte

Luminaire

(84) Designated Contracting States:
AT BE DE DK ES FR GB IT NL SE

(30) Priority: **21.12.1992 EP 92204042**

(43) Date of publication of application:
29.06.1994 Bulletin 1994/26

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Description

The invention relates to a luminaire comprising:

a base wall with a first contact element and a second contact element electrically insulated from the first;
an electric lamp with a tubular lamp vessel having a first and a second end portion, in which lamp vessel an electric element is accommodated and connected to current conductors which issue from the lamp vessel to the exterior at respective end portions;
wherein each contact element is bent from metal strip material so as to have a base and a first and an opposing second arm extending away from the base and having a longitudinal direction, which arms have a first and a second contact portion, respectively, at a distance from the base and facing one another, thus keeping one of the current conductors of the lamp clamped in between them.

Such a luminaire is known from US 3,267,275.

The contact elements of the known luminaire are substantially U-shaped. Their arms extend away from the base opposite to one another.

If a current conductor is to be gripped with clamping force, the arms must be closer together with their contact portions in the idle position, when there is no lamp, than in their operational position, when a lamp is present. To keep the lamp clamped in between them, the arms must first move apart comparatively far during taking-up of the lamp in order to allow the current conductor access to the contact portions, and then spring back into the operational position. It is important that the arms are not plastically deformed when the lamp is inserted, because this would mean the clamping force in the operational position is lost.

Plastic deformation can be prevented by giving contact elements comparatively long arms. Only a small elastic deformation need occur per unit length of the arms in order to allow the free-end portions to move apart comparatively far. A disadvantage of this is, however, that the constructional height of the contact elements, *i.e.* the distance from their free-end portions to the base, becomes comparatively great. Plastic deformation can also be prevented by the choice of a material which has a strong elastic deformability. Such material has the disadvantage, however, that the clamping force of the contact element formed therefrom is small.

It is an object of the invention to provide a luminaire of the kind described in the opening paragraph whose contact elements have a comparatively small constructional height and allow for a wide choice of material.

According to the invention, this object is achieved in that the first and the second arm cross one another between their contact portions and the base.

The shape of the contact elements with their crossed arms implies that the arms, given a certain constructional height, *i.e.* given a certain distance from their free ends to the base, have a greater length than in the known luminaire with the substantially U-shaped contact elements. As a result, a rigid material may be used to obtain a good clamping force, while nevertheless a sufficient elastic deformability is achieved owing to the length of the arms.

It is an attractive aspect of the contact elements that the electric lamp cannot be pressed to beyond the contact portions towards the base during insertion in the luminaire, which is the case in the known luminaire. The crossing arms prevent this. The crossing forms a stop for the current conductor.

In a favourable embodiment, the first arm has a free-end portion with a first and a second finger and the second arm extends between these fingers. Since the two arms cross, they grip the current conductor of the lamp next to one another. The couple which would result therefrom in the case of arms not provided with fingers could lead to rotation of the conductor. This is counteracted in the said embodiment.

In a modification of this embodiment, the second arm has a narrowed free-end portion with a lateral dimension transverse to the longitudinal direction of the arm which is substantially dual to the sum of lateral dimensions of the fingers, and a dimension in the longitudinal direction of the arm which is substantially dual to the dimension of the fingers in the longitudinal direction of the first arm. This modification has the advantage that the arms have a comparable stiffness. The position of the arms in their operational state is symmetrical relative to their position in the idle state as a result of this.

In a further implementation of these modifications, the fingers have the same lateral dimension. The fingers then exert equal forces on the current conductor and together exert the same force as the second arm. Forces which could lead to a rotation of the current conductor are then counteracted to an even higher degree.

An embodiment of the luminaire according to the invention is shown in the drawing, in which:

Fig. 1 is a longitudinal section of a luminaire with diagrammatically indicated contact elements, one of them in longitudinal section;
Fig. 2a shows a contact element of Fig. 1 taken on the line IIa;
Fig. 2b shows the element of Fig. 2a taken on the line IIb; and
Fig. 2c shows a modification of the element of Fig. 2b taken on the line IIc.

The luminaire of Fig. 1 has a base wall 1 with a first 2 and a second contact element 3 arranged so as to be electrically insulated from the first. In the embodiment drawn, the base wall is made of synthetic resin, but the wall may alternatively be made of a conductive material from which at least one of the contact elements is elec-

trically insulated. The luminaire according to the embodiment drawn has a light-transmitting cover 10 with side walls. Side walls could alternatively be connected to the base wall, for example, could be integral therewith. Alternatively again, the luminaire may be open or may be closed off, for example, by a louvre. The luminaire may be provided with a reflector, with electronics for starting and/or operating the lamp, and may accommodate wiring for supplying the lamp.

An electric lamp 4 with a tubular lamp vessel 40 having a first and a second end portion 41 is present in the luminaire. The lamp shown is a linear low-pressure mercury discharge lamp with a coating of fluorescent powder on the lamp vessel wall. The lamp could alternatively be angled, curved, or, for example, meandering or bent into a three-dimensional shape. The lamp may alternatively contain, instead of mercury and rare gas, only a rare gas, for example, neon, or a mixture of rare gases. An electric element 42 connected to current conductors 43 issuing from the lamp vessel 4 to the exterior at respective end portions 41 is present in the lamp vessel. The electric element in the lamp shown is a pair of electrodes. Each electrode is a hollow metal tube integral with the relevant current conductor. The lamp vessel shown is closed off at either end portion with a respective glass tube 44 which is fused to the current conductor 43 and which is sealed at its free end. The electric element may alternatively be an incandescent body, for example, in a gas comprising halogen.

The luminaire may be used, for example, for, e.g. decorative, lighting purposes or for giving signals.

The contact elements 2, 3 of the luminaire are bent from metal strip material so as to have a base 20 and a first 21 and an opposing second arm 22 extending away from the base and having a longitudinal direction. The arms have a first 23 and a second contact portion 24, respectively, at a distance from the base 20 and facing one another, with which they keep one of the current conductors 43 of the lamp 4 clamped in between them.

The first 21 and the second arm 22 cross one another between their contact portions 23, 24 and the base 20 (see Fig. 2c). It is evident from Figs. 1 and 2 that the contact elements in the embodiment shown are not or hardly larger, especially higher, than is necessary for accommodating the lamp.

The first arm 21 has a free-end portion 25 with a first 26 and a second finger 27, while the second arm 22 projects between these fingers 26, 27 (Figs. 2a, 2b).

The second arm 22 has a narrowed free-end portion 28 with a lateral dimension transverse to the longitudinal direction of the arm 22 which is substantially equal to the sum of lateral dimensions of the fingers 26, 27. The dimension of the narrowed end portion in the longitudinal direction of the arm 22 is substantially equal to the dimension of the fingers 26, 27 in the longitudinal direction of the first arm 21.

The fingers 26, 27 have the same lateral dimension.

The contact element of Fig. 2c is different from the contact elements of the other Figure in that a portion 29 bent outwards is present at the arms so as to guide the current conductor of the lamp towards the contact portions.

It is evident from this Figure that a lamp cannot be pressed towards the base to beyond the contact portions owing to the crossed arrangement of the arms. The distance from the contact portions to the base in the Figure is no more than $1/\sqrt{2}$ of the distance in a substantially U-shaped contact element having arms of the same length.

The contact element shown is made of hardened spring steel and is nickel-plated for obtaining corrosion resistance and for improving the soldering characteristics. The contact element has fins 30 which contribute to the removal of heat transferred by the current conductor. The contact element has soldering tags 31 for connecting the elements to a supply source.

Claims

1. A luminaire comprising:

a base wall (1) with a first contact element (2) and a second contact element (3) electrically insulated from the first (2);
an electric lamp (4) with a tubular lamp vessel (40) having a first and a second end portion (41), in which lamp vessel an electric element (42) is accommodated and connected to current conductors (43) which issue from the lamp vessel (4) to the exterior at respective end portions (41);
wherein each contact element (2, 3) is bent from metal strip material so as to have a base (20) and a first (21) and an opposing second arm (22) extending away from the base and having a longitudinal direction, which arms have a first (23) and a second contact portion (24), respectively, at a distance from the base (20) and facing one another, thus keeping one of the current conductors (43) of the lamp (4) clamped in between them,

characterized in that the first (21) and the second arm (22) cross one another between their contact portions (23, 24) and the base (20).

2. A luminaire as claimed in Claim 1, characterized in that the first arm (21) has a free-end portion (25) with a first (26) and a second finger (27), and the second arm (22) extends between these fingers (26, 27).

3. A luminaire as claimed in Claim 2, characterized in that the second arm (22) has a narrowed free-end portion (28) with a lateral dimension transverse to

the longitudinal direction of the arm (22) which is substantially equal to the sum of lateral dimensions of the fingers (26, 27), and a dimension in the longitudinal direction of the arm (22) which is substantially equal to the dimension of the fingers (26, 27) in the longitudinal direction of the first arm (21).

4. A luminaire as claimed in Claim 3, characterized in that the fingers (26, 27) have the same lateral dimension.

Patentansprüche

1. Leuchte mit:

einer Bodenwand (1) mit einem ersten Kontaktelement (2) und einem von dem ersten (2) elektrisch isolierten zweiten Kontaktelement (3);
einer elektrischen Lampe (4) mit einem röhrenförmigen Lampengefäß (40) mit einem ersten und einem zweiten Endabschnitt (41), in welchem Lampengefäß ein elektrisches Element (42) untergebracht und mit Stromleitern (43) verbunden ist, die bei jeweiligen Endabschnitten (41) aus dem Lampengefäß (4) nach außen treten;
wobei jedes Kontaktelement (2, 3) aus Streifenmaterial aus Metall gebogen ist, um einen Boden (20) zu erhalten und einen ersten (21) und einen gegenüberliegenden, von dem Boden weg verlaufenden zweiten Arm (22) mit einer Längsrichtung, welche Arme auf Abstand von dem Boden (20) einen ersten (23) bzw. einen zweiten Kontaktabschnitt (24) haben, die einander zugewandt sind und somit einen der Stromleiter (43) der Lampe (4) zwischen sich eingeklemmt halten,

dadurch gekennzeichnet, daß der erste (21) und der zweite Arm (22) einander zwischen ihren Kontaktabschnitten (23, 24) und dem Boden (20) kreuzen.

2. Leuchte nach Anspruch 1, dadurch gekennzeichnet, daß der erste Arm (21) einen freien Endabschnitt (25) mit einem ersten (26) und einem zweiten Finger (27) hat und der zweite Arm (22) zwischen diesen Fingern (26, 27) verläuft.

3. Leuchte nach Anspruch 2, dadurch gekennzeichnet, daß der zweite Arm (22) einen verengten freien Endabschnitt (28) mit einer Querabmessung quer zur Längsrichtung des Armes (22), die nahezu gleich der Summe von Querabmessungen der Finger (26, 27) ist, und einer Abmessung in der Längsrichtung des Armes (22), die nahezu gleich der Abmessung der Finger (26, 27) in der Längsrichtung des ersten Armes (21) ist, aufweist.

4. Leuchte nach Anspruch 3, dadurch gekennzeichnet, daß die Finger (26, 27) die gleiche Querabmessung haben.

Revendications

1. Luminaire comportant:

une paroi de base (1) présentant un premier élément de contact (2) et un deuxième élément de contact (3) isolé électriquement du premier (2);
une lampe électrique (4) munie d'un récipient de lampe tubulaire (40) présentant des première et deuxième parties terminales (41), récipient de lampe dans lequel un élément électrique (42) est incorporé et relié à des conducteurs de courant (43) qui sortent du récipient de lampe (4) en s'étendant vers l'extérieur à de propres parties terminales (41);
dans lequel chaque élément de contact (2, 3) est courbé à partir de matériau en bande métallique de manière à présenter une base (20) et un premier (21) et un deuxième bras opposé (22) s'éloignant de la base et présentant une direction longitudinale, lesdits bras présentent une première (23) respectivement une deuxième partie de contact (24) situées à une distance espacée de la base (20) et l'une située vis-à-vis de l'autre, donc maintenant l'un des conducteurs de courant (43) de la lampe (4) enserré entre eux,

caractérisé en ce que le premier (21) et le deuxième bras (22) se croisent l'un l'autre entre leurs parties de contact (23, 24) et la base (20).

2. Luminaire selon la revendication 1, caractérisé en ce que le premier bras (21) présente une partie terminale libre (25) avec un premier (26) et un deuxième doigt (27), et en ce que le deuxième bras (22) s'étend entre ces doigts (26, 27).

3. Luminaire selon la revendication 2, caractérisé en ce que le deuxième bras (22) présente une partie terminale libre rétrécie (28) ayant une dimension latérale transversale à la direction longitudinale du bras (22) qui est sensiblement égale à la somme de dimensions latérales des doigts (26, 27) et une dimension dans la direction longitudinale du bras (22) qui est sensiblement égale à la dimension des doigts (26, 27) dans la direction longitudinale du premier bras (21).

4. Luminaire selon la revendication 3, caractérisé en

ce que les doigts (26, 27) présentent la même dimension latérale.

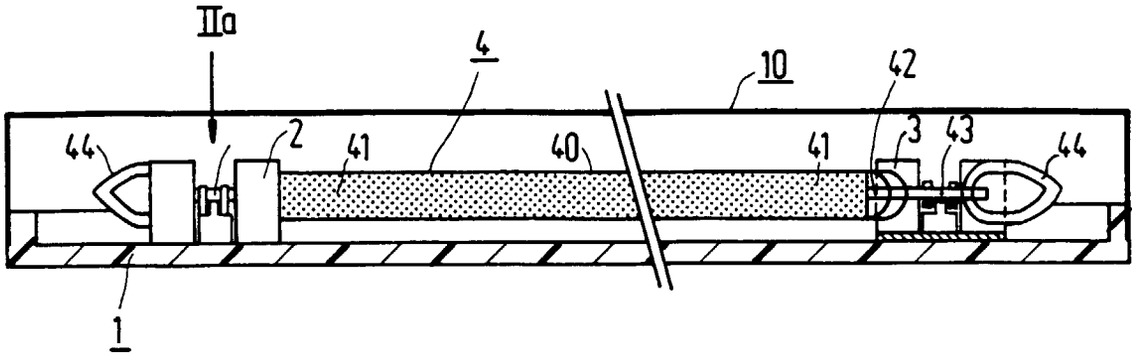

FIG.1

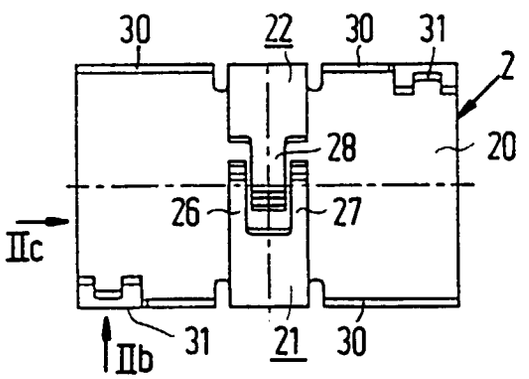

FIG.2a

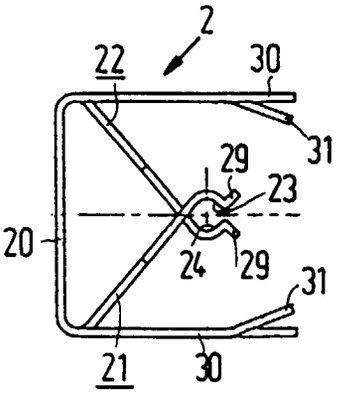

FIG.2c

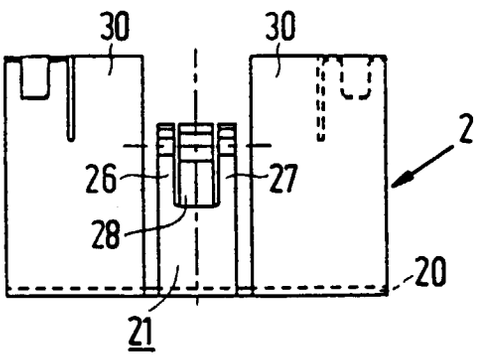

FIG.2b