

Description

The present invention relates to a process of manufacturing a low pressure mercury vapor discharge lamp comprising the features of claim 1.

In a known process of this kind (US—A—3 501 662) holes are preformed in two glass tubes and — after juxtaposition with said holes aligned to each other — a tight connection is made by a sealing ring. According to a similar known process (FR—A—2 453 495) connecting collars are formed at two glass tubes from the outside thereof by means of a burner and thereafter the glass tubes are communicatively connected at said collars.

There has been known a fluorescent lamp such as a low pressure mercury vapor discharge lamp provided with a U-shaped bulb formed with bending or connecting processes, from a publication such as Japanese Unexamined Patent Publication No. 155675/1979 (Figure 1) or Japanese Unexamined Patent Publication No. 133744/1980 (Figure 2). The fluorescent lamp having such a construction is advantageous because a lamp is made in a compact form. However, the U-shaped bulb 1 as shown in the figure has a space of gap 31 between both legs 1a, 1b. Therefore, in manufacturing steps, when the legs 1a, 1b of the bulb 1 are gripped from their outer sides so that a force is applied in its central direction, a connecting part 2a between the both legs 1a, 1b is apt to cause breakage. Accordingly, a device A is generally used to grip the both legs 1a, 1b of the bulb 1 in a plan passing through the legs 1a, 1b, as shown in Figure 3 which is disclosed in Japanese Unexamined Patent Publication No. 124928/1980. On the other hand, the fluorescent lamp in a compact form which is substituted for an incandescent lamp generally has the legs 1a, 1b of the bulb 1 of about 100—150 mm in height, on account of which the bulb has to be supported in only one direction in the manufacturing steps. This means that it is necessary to prepare the device A used for various manufacturing steps at a high accuracy thereby to cause problems of complicated maintenance and inspection.

Further, there has been proposed a fluorescent lamp in which a U-shaped bulb 1 is further bent into two parts (hereinbelow referred to as a double U-shaped bulb) aiming at further compactness of the lamp. Figure 4 shows a lamp, as an example, disclosed in Japanese Unexamined Patent Publication No. 108162/1980. In this case, two U-shaped bulbs 1, 1 are arranged so that there remain spaces of gap 31, 32, 33 and 34 between all adjoining legs among the legs 1a, 1b, 1c and 1d. Therefore, when the two U-shaped bulbs have to be supported by a supporting device A without causing breakage of the connecting parts 2a, 2b, the structure of the device A must be complicated in comparison with the device for a single U-shaped bulb 1, this prohibiting a large scale production. The same condition applies to a fluorescent lamp of a double tube

structure in which a U-shaped bulb is placed inside an outer bulb.

The problem of the present invention is to simplify a process for manufacturing a low-pressure mercury-vapor discharge lamp, particularly as regards assembling of two juxtaposed glass tubes of such a lamp. This problem is solved by claim 1.

Further preferred developments of the process of the invention are mentioned in the subclaims.

Brief Description of Drawing

Figures 1 and 2 are respectively front views of conventional U-shaped fluorescent lamps;

Figure 3 is a perspective view showing how U-shaped bulb is gripped by a device in manufacturing steps;

Figure 4 is a perspective view of a conventional double U-shaped fluorescent lamp;

Figure 5 is a front view partly cross-sectioned of an embodiment of the U-shaped bulb according to the present invention;

Figure 6 is a perspective view showing another embodiment of the present invention;

Figure 7 is a schematic view of the bulb shown in Figure 6 in a developed state;

Figure 8 is a plan view of the bulb shown in Figure 6;

Figure 9 is a developed view of another embodiment of the lamp according to the present invention;

Figure 10 is a developed view of still another embodiment of the present invention;

Figures 11 to 18 are diagrams showing an example of preparation of U-shaped glass tube;

Figure 19 is a perspective view in a disassembled state of a splittable mold; and

Figures 20 to 22 are diagrams showing another example of preparation of a double U-shaped glass tube by using single U-shaped glass tubes.

Figure 5 is a front view partly omitted of an embodiment of the U-shaped fluorescent lamp according to the present invention. In Figure 5, a reference numeral 1 designates a U-shaped bulb formed by juxtaposing two linear tubes of soda-lime glass of 16.5 mm in outer diameter and 0.8 mm thick and connecting each one end so that the interior of the tubes is communicated with each other while keeping air-tightness to the outside. The height of thus obtained bulb 1 is 140 mm. Both the legs 1a, 1b of the bulb 1 are substantially in close contact with each other to constitute a contacting state. The contacting state referred in the specification means that a space of gap 31 between the end part 1a' of the leg 1a and the end part 1b' of the leg 1b of the bulb 1 is in the range of 0—0.8 mm. In other words, in the U-shaped bulb, when a force is applied to both the end parts 1a', 1b' toward the gap 31 from the outside, namely, when a force is applied to the both legs 1a, 1b from the side of plane perpendicular to a plane passing between the legs 1a, 1b, a tensile stress is applied to the connecting part 2a of the bulb 1 to cause elastic deformation in the connecting part 2a. However, since the both end parts

1a, 1b' of the legs are brought into a contacting state in the range not to exceed limitation of the elastic deformation breakage of the connecting part 2a is prevented. A reference numeral 4 designates a fluorescent layer, a numeral 5 designates a stem, a numeral 6 designates electrodes, a number 7 designates a base metal, a numeral 8 designates a base metal pin, a numeral 9 designates an adhesive and a number 10 designates an end plate, all of which are the same as those used in the conventional lamp as shown in Figures 1 to 4.

In the fluorescent lamp constructed as above-mentioned, the both legs 1a, 1b of the bulb 1 are brought into a contacting state before the connecting part 2a exceeds limitation of the elastic deformation even through the elastic deformation is resulted in the connecting part 2a by a force applied to the both legs 1a, 1b toward the central part of them. Accordingly, the contacting part can resist against an external force applied after the legs have been contacted with each other to thereby avoid breakage of the connecting part 2a.

The construction of the embodiment utilizes a property of glass that it withstands compression stress although glass is apt to break against tensile stress. Therefore, there is no particular restriction to a manner of gripping the bulb 1 in manufacturing of the lamp whereby the structure of a manufacturing device is simplified and handling operations for bulbs in manufacturing steps can be flexible. However, when the gap 31 between the end parts 1a', 1b' of the legs 1a, 1b exceeds 0.8 mm in the above-mentioned embodiment, there greatly increase breakage of connecting part 2a. Naturally, dimension of the gap 31 is variable depending on the thickness of glass constituting the bulb 1 and the height of the bulb 1. When the outer configuration of the bulb 1 corresponds to a known incandescent lamp as is in the above-mentioned embodiment, it is effective to determine the gap 31 in the range of 0—0.8 mm, as stated above.

Figures 6 to 8 show another embodiment of the present invention in which Figure 6 is a perspective view, Figure 7 is a developed view and Figure 8 is a plan view. In these Figures, numerals 1, 1 designate two U-shaped glass tubes, each being similar to that as shown in Figure 5, in which they are integrally connected through a connecting part 2b which connects each one leg 1b, 1d of the both tubes so as to keep air-tightness to the atmosphere. The outer dimension of the U-shaped glass tubes is the same as that of Figure 5 provided that the height of the tubes is 92 mm. In the bulb 1 formed by integrally connecting two U-shaped tubes, the end parts 1a', 1b', 1c' and 1d' of the legs are sealingly bonded to a disc-like ceramic end plate 10 with an adhesive of glass frit. Further, the legs 1a, 1b of the bulb 1 and the legs 1c, 1d of the other bulb 1 are firmly connected to the end plate 10 in such a manner that the legs 1a, 1c and the legs 1b, 1d which are respectively ones of adjacent bulbs 1, 1, are opposed in a contacting state. Namely, gaps 31,

32, 33, 34 of mutually adjoining legs 1a, 1b, 1c, 1d are respectively in the range of 0—0.8 mm.

Further, an electrode 6 projects into each one end part 1a' or 1c' of the bulbs 1, 1 and each end part 1b' or 1d' without receiving therein an electrode 6 is sealingly connected with each other at a position near the end plate 10. Accordingly, a discharge path formed between the two electrodes 6 takes a course of one of the electrode 6 arranged in the leg end part 1a' of the bulb 1—the leg 1a—the leg 1b—the leg 1d—the leg 1c—the other electrode 6 arranged in the leg end part 1c' of the bulb.

The fluorescent lamp having the construction as above-mentioned allows easiness of gripping of it in manufacturing steps, in addition that after completion of assemblage, breakage of the bulb 1 which may be caused when the lamp is attached to or detached from a lamp socket (not shown) is effectively prevented. Generally, in case of attaching or detaching operation of a lamp of this kind, the bulb 1 is gripped by an operator and a torque is applied to the bulb 1. Accordingly, in the attaching or detaching operation of the lamp, a torque and a force bringing the U-shaped glass tubes in contact with each other are centralized to the leg end parts 1a'—1d' of the bulb 1 whereby breakage of the leg end parts 1a'—1d' often takes place. However, in the embodiment of the lamp having four legs 1a—1d each being in contacting state, the legs 1a—1d can sufficiently withstand an external force which causes the legs to come in mutual contact. Further, because all the leg end parts 1a'—1d' are firmly connected to the end plate, the torque applied to the leg end parts 1a'—1d' is dispersed to reduce a risk of the breakage. In addition, this embodiment can be further in a compact form while elongate a discharge path and lamp efficiency can be further improved.

In the embodiment shown in Figures 6—8, however, all of the leg end parts 1a'—1d' of the serially connected bulb 1 are in contact with a single common end plate 10 and are sealingly bonded with the adhesive 11 of glass frit. Accordingly, each of the leg end parts 1a'—1d' cooperates to resist against an external force to fall down the bulb 1 if such external force is applied to the bulb 1. Accordingly, a trouble that there takes place cracks in the adhesive 11 of glass frit in the bonding part to break air-tightness in the bulb 1, owing to a force to fall down the bulb, can be eliminated. On the other hand, since the bulb 1 is so constructed that the legs 1a—1d are arranged in a bundled condition as shown in Figure 6, it is unnecessary to provide an auxiliary means to support the bulb 1 in order to prevent the bulb 1 from falling down even at the time of solidifying operations of the adhesive 11 of glass frit, whereby the manufacturing steps for the lamp can be remarkably simplified.

A structure for preventing falling down of the bulb 1 is disclosed, for example, in Japanese Patent Application No. 213158/1982 which shows a lamp having a double tube structure. In such

lamp, when legs of the bulb are gathered and when the glass bulb and an outer bulb are connected to a common end plate with use of glass frit, the glass bulb, the outer bulb and a glass stem can be simultaneously attached and solidified since the glass bulb can stand itself. Industrial merit obtained by such structure is great. The glass bulb shown in Japanese Patent Application No. 213158/1982 is formed in a double U-shape and the leg end portion at the side without receiving therein an electrode constitutes a curved portion which corresponds to the connecting part of this embodiment. In connecting the U-shaped glass bulbs, there is no limitation to use two U-shaped glass bulbs as in this embodiment but it may use more than two number of U-shaped glass bulbs with both legs which contain no electrode. In this case, when more than two number of U-shaped glass bulbs are arranged on the end plate so as to represent a polygon, it can impart an excellent design.

Material for the end plate 10 may be any as far as it has the coefficient of expansion the same as or approximate to the glass bulb 1 beside ceramics.

Figure 9 is a developed view showing another embodiment of the present invention in which numerals 1, 1 designate double U-shaped bulbs formed in the same manner as that shown in Figures 6 to 8. A reference numeral 10 designates an end plate made of ceramics such as forsterite which is attached with a pair of electrodes 6 in sealing condition. The electrodes 6 are received respectively in the end parts 1a', 1c' of the serially connected bulbs 1, 1. The electrodes 6 are communicated each other so as not to cause electric discharge by bonding the end parts 1a', 1c' of the bulbs to the end plate 10 with an adhesive 11 of glass frit. End parts 1b', 1d' without receiving therein any electrode 6 are in contact with the end plate 10. On the other hand, the end plate 10 is provided at its part where the end parts 1b', 1d' are contacted a recess as an opening portion 12 through which the bulbs 1, 1 are communicated with the inner portion of an outer bulb 13. The outer bulb 13 is a cylindrical tube made of glass having the inner surface coated with a light diffusion layer 14 and having an opened bottom. The opened bottom of the outer bulb 13 is sealingly closed by the end plate 10 and an discharging medium is filled in the outer bulb to form a discharging space.

The fluorescent lamp having the double tube structure as above-mentioned forms, in one hand, a double U-shaped electric discharge path as similar to the embodiment shown in Figures 6 and 8 and, on the other hand, causes the outer bulb 13 to form the mostly cooled part, whereby a mercury vapor pressure in the electric discharge space can be properly maintained to increase lamp efficiency. In this embodiment, since bulbs 1, 1 are arranged in mutually contacting state, the outer configuration of the lamp can be in a compact form in comparison with the conventional lamp having a double tube structure. Fur-

ther, since the lamp is so made that any external force is not applied to the bulbs after completion of assemblage, it is sufficient to bond only the leg end parts 1a', 1c' receiving therein electrodes 6 to the end plate 10 with the adhesive 11 of glass frit. Accordingly, simplification of the manufacturing steps can be performed without reducing strength of the lamp required at the time of attaching or detaching operation. In addition, the lamp is of a structure that when the bulbs 1, 1 are bonded to the end plate 10, the leg end parts 1a'—1d' formed integrally with each other by means of connecting parts 2a, 2b, 2a are to be brought into contact with the end plate 10. Accordingly, bonding operation can be satisfactorily conducted without requirement of any auxiliary means to support the bulbs 1, 1.

Also the recess is formed in the end plate 10 to use it as the opening portion 12 in the embodiment shown in Figure 9, the opening portion 12 can be an aperture formed at a part of the bulb 1 or formed by cutting an edge portion of a bulb 1 as shown in Figure 10. It is always unnecessary to use the two U-shaped bulbs 1 and use of single bulb 1 provides the same effect as the embodiment shown in Figures 9 and 10.

For all the embodiments described before, description has been made as to the end plate 10 of ceramics; however, it is possible to use glass or metal other than ceramics.

A process for preparing a U-shaped bulb is now described, which is applicable to the above-mentioned embodiments.

In this embodiment, a U-shaped bulb is prepared by connecting glass tubes by the following steps.

1. As shown in Figure 11, two linear glass tubes 100, 110 are respectively gripped by holders 500 in a contacting state.

2. As shown in Figure 12, gas burners 600 are respectively inserted into the glass tubes 1a, 1b from their open ends and are fixed at given positions so that flames of the burners 600 are opposed each other.

3. Each inner surface of opposed portions in the two glass tubes 100, 110 is heated to melt it at the local portions. In this case, an aperture as a communicating aperture 120 is formed at the molten portion by wind pressure of the burners 600; surface tension of glass acts on the molten portion to enlarge the communicating aperture 120 to thereby form masses of molten glass 120a, 120b at upper and lower circular edge portions of the communicating aperture 120. The masses of molten glass 120a, 120b are respectively forced outward by wind pressure of the burners 600 and finally, they are bridged at the extruded portions of the two glass tubes 100, 110 whereby they are communicated each other in an air-tight manner against the atmosphere (Figure 13 shows connected condition).

4. The burners 600 are withdrawn and both lower end parts of the glass tubes 100, 110 are heated by other burners 700 as shown in Figure 14. Such heat treatment softens the ends of the

glass tubes 100, 110 to cause shrinkage of them due to surface tension of glass whereby the ends are closed as shown in Figure 15.

5. Around the connecting parts and the joined end part, now softened, of the glass tubes 100, 110, a splittable shaping mold 900 is applied as shown in Figure 16, the splittable mold being provided with in its cavity a curved groove 910 as shown in Figure 19. As soon as applying the splittable mold around the above-mentioned portions, air feeding nozzles 800 are put in end parts at the opposite side of the softened end part of the glass tubes 100, 110 to feed air in the glass tubes 100, 110 to thereby pressurize inside the glass tubes. The air feeding operations cause expansion of the softened glass portions to be closely fitted to the groove 910 inside the mold 900.

6. Air is stopped; the inside of the glass tubes 100, 110 is brought to the atmospheric pressure and the mold 900 is removed. Then, the glass tube 1 having a curved into a U-shape is completed as shown in Figures 16 and 18.

Two U-shaped glass tubes 200, 210 which have been prepared by the steps 1—6 are gripped by holders 500 with each leg of them closely faced as shown in Figure 20.

8. The burners 600 are inserted in the gripped glass tubes from each one end part and the U-shaped glass tubes are connected each other with use steps the same steps 2 and 3 previously mentioned, as shown in Figures 21 and 22; thus, a double U-shaped glass tube is completed.

The contacting state referred in this embodiment means condition that a part of or all of the glass tubes 100, 110, 200 and 210 arranged in juxtaposition are in contact with each other or that if not in contact with each other, they are in a position to the extent that no breakage takes place at the connecting part of the communication hole 220 when an external force is applied to the glass tubes 200, 210 at a position without having the communication hole 220 to bring the end parts in contact with each other.

Since the double U-shaped glass tube formed by the process as above-mentioned does not employ bending operation at all, there causes no problem that the thickness in a bent portion is small; the strength of glass is reduced and unevenness of wall thickness of the glass causes fault of a molded product, in comparison with a molded product obtained by the bending operation. Further, a glass tube forming apparatus (not shown) for glass tubes used in the present invention needs no glass tube lifting means whereby the structure can be simplified, manufacture of the apparatus can be easy as well as its maintenance and inspection.

In accordance with the manufacturing process as above-mentioned, two glass tubes 100, 110 are arranged in a contacting state and are connected with each other to be a substantially U-shape and then, two U-shaped glass tubes 200, 210 thus formed are arranged in a contacting state and connected with each other. Accordingly, it is equivalent to a glass tube which is formed by

bending it at the maximum curvature whereby the entire configuration of the glass tube is made compact.

The description concerning the manufacturing steps 1—8 was for a preferred embodiment for forming linear glass tubes into a double U-shaped tube. Among the steps 1—8, the steps 1—6 provide a U-shaped glass tube 200. The U-shaped glass tube 200 has the same effect as the double U-shaped glass bulb 1 as previously mentioned. The U-shaped glass tube 200 enables the manufacturing steps to be very easy since the glass tubes 100, 110 are directly connected to each other unlike the conventional U-shaped glass bulb as shown in Figure 2 in which a connecting collar is used to connect the glass tubes 100 and 110.

On the other hand, in accordance with the manufacturing steps 1—3, the glass tubes 100, 110 are arranged in a contacting state; the inner surfaces of the glass tubes 100, 110 are heated by the opposed burners 600; the inner walls are molten and apertures are formed by wind pressure of the burners; and molten portions of the glass tubes 100, 110 are directly connected at the peripheral edges of the apertures to form a communicating hole 120 in air-tight condition. Thus, aperture forming operations for the communicating hole 120 and connecting operations of the two glass tubes 100, 110 for mutual communication can be conducted at the same time. It is unnecessary to use a connecting collar and connecting operations are remarkably simplified. Further, since the glass tubes 100, 110 are in a contacting state, portions other than the connecting part become in contact state before the connecting part is broken and absorb a stress applied to the connecting part; thus the breakage of the connecting part is prevented.

The glass tubes connected by the steps 1—3 may be utilized as a glass tube for an electric discharge lamp such as a fluorescent lamp by further forming it in such a manner that after the end parts of the glass tubes 100, 110 are melt bonded as shown in Figures 14—16, melting operations are carried out to form a glass tube in a U-shape or a glass tube consisting of alternately continuous connection of a U-shape and an inverted U-shape. When the steps 1—3 are carried out, the end parts of the glass tubes 100, 110 may be closed like a test tube before connecting operations or they may be previously bent in a U-shape. Further, it is also possible that except for at the end parts of the glass, tubes 100, 110 are closed, a cylindrical body with a closed end (not shown) made of separate material such as glass, ceramics or metal is sealingly bonded to the glass tube with an adhesive.

Claims

1. A process for manufacturing a low pressure mercury vapor discharge lamp comprising an electric discharge path in a bulb placed on a base plate, said bulb being formed by juxtaposed U-

glass tubes 100, 110 to cause shrinkage of them due to surface tension of glass whereby the ends are closed as shown in Figure 15.

5. Around the connecting parts and the joined end part, now softened, of the glass tubes 100, 110, a splittable shaping mold 900 is applied as shown in Figure 16, the splittable mold being provided with in its cavity a curved groove 910 as shown in Figure 19. As soon as applying the splittable mold around the above-mentioned portions, air feeding nozzles 800 are put in end parts at the opposite side of the softened end part of the glass tubes 100, 110 to feed air in the glass tubes 100, 110 to thereby pressurize inside the glass tubes. The air feeding operations cause expansion of the softened glass portions to be closely fitted to the groove 910 inside the mold 900.

6. Air is stopped; the inside of the glass tubes 100, 110 is brought to the atmospheric pressure and the mold 900 is removed. Then, the glass tube 1 having a curved into a U-shape is completed as shown in Figures 16 and 18.

7. Two U-shaped glass tubes 200, 210 which have been prepared by the steps 1—6 are gripped by holders 500 with each leg of them closely faced as shown in Figure 20.

8. The burners 600 are inserted in the gripped glass tubes from each one end part and the U-shaped glass tubes are connected each other with use steps the same steps 2 and 3 previously mentioned, as shown in Figures 21 and 22; thus, a double U-shaped glass tube is completed.

The contacting state referred in this embodiment means condition that a part of or all of the glass tubes 100, 110, 200 and 210 arranged in juxtaposition are in contact with each other or that if not in contact with each other, they are in a position to the extent that no breakage takes place at the connecting part of the communication hole 220 when an external force is applied to the glass tubes 200, 210 at a position without having the communication hole 220 to bring the end parts in contact with each other.

Since the double U-shaped glass tube formed by the process as above-mentioned does not employ bending operation at all, there causes no problem that the thickness in a bent portion is small; the strength of glass is reduced and unevenness of wall thickness of the glass causes fault of a molded product, in comparison with a molded product obtained by the bending operation. Further, a glass tube forming apparatus (not shown) for glass tubes used in the present invention needs no glass tube lifting means whereby the structure can be simplified, manufacture of the apparatus can be easy as well as its maintenance and inspection.

In accordance with the manufacturing process as above-mentioned, two glass tubes 100, 110 are arranged in a contacting state and are connected with each other to be a substantially U-shape and then, two U-shaped glass tubes 200, 210 thus formed are arranged in a contacting state and connected with each other. Accordingly, it is equivalent to a glass tube which is formed by

bending it at the maximum curvature whereby the entire configuration of the glass tube is made compact.

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The glass tubes connected by the steps 1—3 may be utilized as a glass tube for an electric discharge lamp such as a fluorescent lamp by further forming it in such a manner that after the end parts of the glass tubes 100, 110 are melt bonded as shown in Figures 14—16, melting operations are carried out to form a glass tube in a U-shape or a glass tube consisting of alternately continuous connection of a U-shape and an inverted U-shape. When the steps 1—3 are carried out, the end parts of the glass tubes 100, 110 may be closed like a test tube before connecting operations or they may be previously bent in a U-shape. Further, it is also possible that except for at the end parts of the glass, tubes 100, 110 are closed, a cylindrical body with a closed end (not shown) made of separate material such as glass, ceramics or metal is sealingly bonded to the glass tube with an adhesive.

Claims

1. A process for manufacturing a low pressure mercury vapor discharge lamp comprising an electric discharge path in a bulb placed on a base plate, said bulb being formed by juxtaposed U-



shaped glass tubes (200; 210), the ends of which are sealingly connected to said base plate by means of an adhesive, said process comprising a connecting step wherein said juxtaposed glass tubes (200; 210) are opposed to each other, a portion to be opened in an end of each of said glass tubes is heated by a flame of a burner (600) inserted into the interior of each of said glass tubes (200; 210) to cause fusion of said portions, thereby forming a communication hole (220) by wind pressure of said burners, a mass of molten glass at the outer peripheral edges of said molten portions being forced outwardly, whereby said outer peripheral edges are mutually connected by the mass of molten glass.

2. A process according to claim 1, characterized in that each end of said juxtaposed glass tubes is closed by said end plate.

3. A process according to claim 2, characterized in that said U-shaped glass tubes are formed by connecting two linear glass tubes (100; 110) with the connecting step of claim 1, the ends at the side of the communication hole (120) of said linear glass tubes (100; 110) being heated to cause melt-bonding due to shrinkage in the ends and being put in a mold (900) having a predetermined shape, a pressure being then applied to the inside of said glass tubes (100; 110) to shape said ends.

Patentansprüche

1. Verfahren zum Herstellen einer Niederdruck-Quecksilber-Entladungslampe mit elektrischen Endladungsstrecken in einer an einer Grundplatte angeordneten Röhre, welche durch zwei nebeneinander angeordnete, U-förmige Glasröhren (200; 210) gebildet ist, deren Enden dicht mit der Grundplatte mittels Klebstoff verbunden sind, und mit einem Verbindungsschritt, wobei die nebeneinander liegenden Glasröhren (200; 210) einander gegenüber angeordnet werden, ein zu öffnender Abschnitt in einem Ende jedes Glasrohres mittels der Flamme eines Brenners (600) erhitzt wird, der in das Innere der Glasröhre (200; 210) eingebracht wird, um die genannten Abschnitte miteinander zu verschmelzen, wodurch ein Verbindungsloch (220) durch den Winddruck der Brenner erzeugt wird, eine Masse geschmolzenen Glases an den Umfangsrändern der geschmolzenen Abschnitte nach außen gequetscht wird, wodurch die äußeren Umfangsränder gegenseitig miteinander mittels der Masse geschmolzenen Glases verbunden werden.

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß jedes Ende der nebeneinander angeordneten Glasröhren durch die Endplatte verschlossen wird.

3. Verfahren nach Anspruch 2, dadurch gekennzeichnet, daß die U-förmigen Glasröhren durch Verbinden zweier geradliniger Glasröhren (100; 110) im Verbindungsschritt nach Anspruch 1 verbunden werden, wobei die Enden auf jeweils der Seite des Verbindungsloches (120) der geradlinigen Glasröhre (110; 110) erhitzt werden, um Schmelzschweißen aufgrund von Schrumpfung der Enden zu erzeugen, und in eine Form (900) vorbestimmter Gestalt eingebracht werden, worauf Druck auf die Innenwände der Glasröhren (100; 110) zum Formen der genannten Enden ausgeübt wird.

Revendications

1. Procédé destiné à fabriquer une lampe à décharge dans une vapeur de mercure à basse pression comportant une trajectoire de décharge électrique dans une ampoule placée sur une plaque de base, ladite ampoule étant formée par deux tubes en verre en forme de U juxtaposés (200; 210) dont les extrémités sont reliées de façon étanche à ladite plaque de base à l'aide d'un adhésif, ledit procédé comportant une étape de liaison pendant laquelle lesdits tubes en verre juxtaposés (200; 210) sont placés face à face tandis qu'une portion destinée à être ouverte dans une extrémité de chacun desdits tubes en verre est chauffée à l'aide de la flamme d'un brûleur (600) introduit à l'intérieur de chacun desdits tubes en verre (200; 210) afin de provoquer une fusion desdites portions et former ainsi un trou de communication (220) sous l'effet de la pression dynamique desdits brûleurs, une masse de verre fondu située au niveau des bords périphériques extérieurs desdites portions fondues étant repoussée vers l'extérieur, moyennant quoi lesdits bords périphériques extérieurs sont reliés mutuellement par la masse de verre fondu.

2. Procédé selon la revendication 1, caractérisé en ce que chaque extrémité desdits tubes en verre juxtaposés est fermée par ladite plaque terminale.

3. Procédé selon la revendication 2, caractérisé en ce que l'on forme lesdits tubes en verre en forme de U en reliant deux tubes en verre linéaires (100; 110) grâce à l'étape de liaison de la revendication 1, les extrémités situées sur le côté du trou de communication (120) desdits tubes en verre linéaires (100; 110) étant chauffées pour provoquer un collage par fusion dû au rétrécissement dans les extrémités, et mises dans un moule (900) de forme prédéterminée, une pression étant ensuite appliquée à l'intérieur des tubes en verre (100; 110) pour mettre en forme lesdites extrémités.

