Nov. 20, 1934. L. RIVIER 1,981,330

IGNITION DEVICE

Filed Feb. 9, 1934

Fig. 1

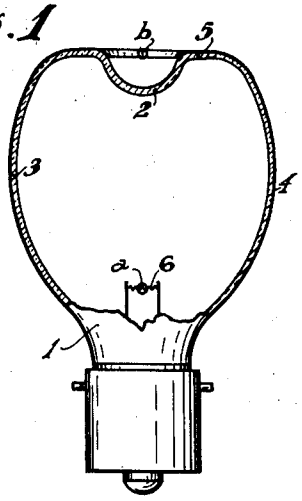


Fig. 2

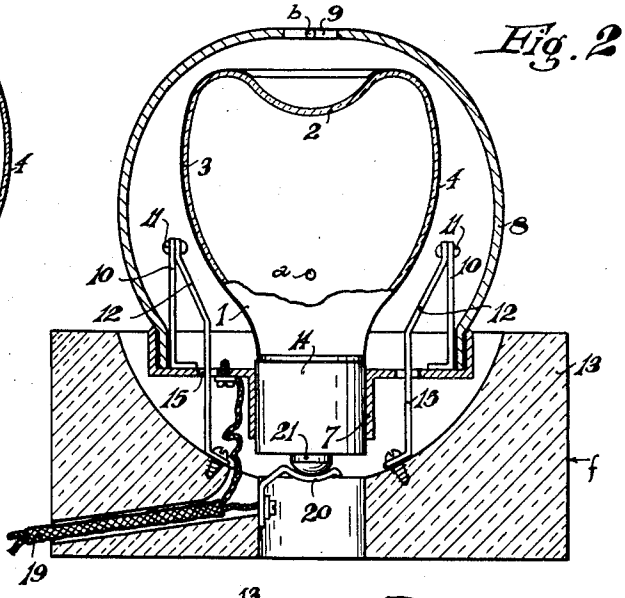


Fig. 5

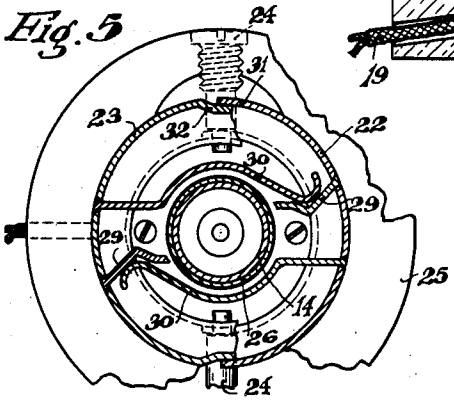


Fig. 3

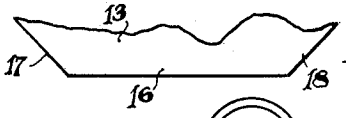


Fig. 4

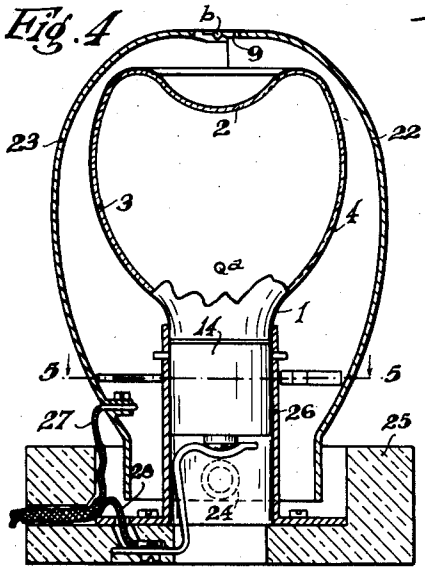
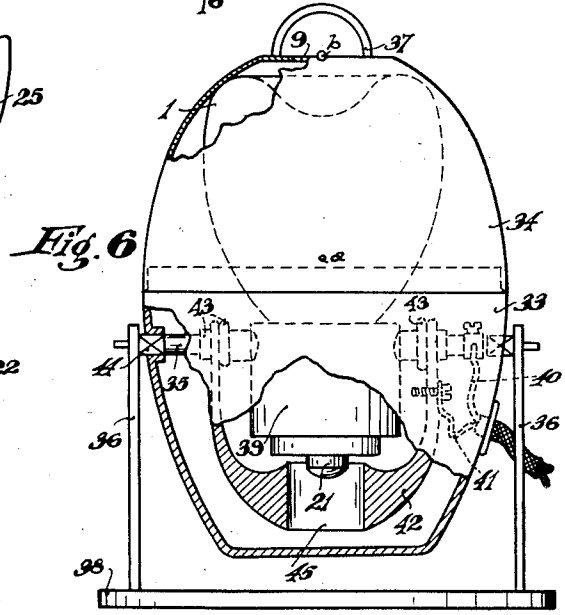


Fig. 6



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IGNITION DEVICE

Louis Rivier, Jouxtens, Switzerland

Application February 9, 1934, Serial No. 710,521
In Switzerland February 22, 1933

6 Claims. (Cl. 219—32)

This invention relates to ignition devices of the type using an electric incandescent light source as heat radiator.

The primary object of the invention is the provision of an ignition device in which the light source is enclosed in a bulb a portion only of which is transparent and another portion is formed as an ellipsoidal reflector having one focus situated in the region of the light source, while the second focus is formed outside of the bulb whereby the rays emitted by the light source are reflected to converge to the region of the focus situated outside of the bulb to form an image of the light source in this exterior focus. Considerable heat will thus be developed in the region of this focus and an object placed into proximity thereof may be readily ignited.

A further object is the provision of a light screen placed around the region of the exterior focus of the bulb in order to prevent the escape of such light rays which are not converging to form the image of the light source and which would have a dazzling effect on persons utilizing the igniter.

Other features and objects will be clearly understood from the following specification, reference being had to the accompanying drawing showing preferred forms of embodiment of my invention.

In the drawing,

Figure 1 represents an ignition device constituted by an electric incandescent light bulb.

Figure 2 shows a second form of an ignition device in section.

Figure 3 shows a detail of the second form in elevation.

Figure 4 shows a third form in section.

Figure 5 is a section taken on line 5—5 of Fig. 4.

Figure 6 shows a fourth form of an ignition device in elevation, partly drawn in section.

The ignition device according to Fig. 1 is constituted by an electric incandescent light bulb 1 made of glass. A portion 3 of the bulb is shaped to form a fragment of an ellipsoid of revolution and is covered with a material 4 to render the walls of the bulb reflective. The top 2 of the bulb is transparent and this transparent portion is bulged towards the interior so as to form an exterior cavity on top of the bulb. A suitably curved connecting surface 5 connects the end of the ellipsoidal portion 3 with the transparent bulged portion 2. The material 4 extends also over this connecting surface 5. The two foci of the ellipsoidal portion are indicated at *a* and *b*. The transparent portion 2 is curved in such a manner that the focus *b* is formed exteriorly of the glass of the bulb. This focus *b* is moreover situated in proximity of a plane extending at right angles to the axis of the ellipsoidal portion and passing through the upper end of the ellipsoidal portion.

An incandescent filament 6 is situated in the region of the focus *a* of the ellipsoidal portion of the lamp. The light rays emitted by the light source 6 will be reflected to converge towards the region of the focus *b* and considerable heat will thus be developed in the neighbourhood of this focus and within the cavity formed by the transparent portion 2 of the bulb, so that an object, for example the end of a cigarette can be lighted when the cigarette is made to rest on the surface 5 with its end extending into the center of the cavity in the bulb. The reflecting layer 4 covering also the surface 5 of the bulb acts as light screen, leaving only a circular transparent opening for the light rays which is smaller than the cross-sectional area of the upper end of the ellipsoidal portion 3, to permit only such rays from passing out of the bulb which converge towards the focus *b* and preventing persons using the igniter from being dazzled by the light. The described light bulb will not act only as ignition device, but may be used also for illuminating purposes since a beam of diffused light passes out of the bulb. The bulb will preferably be mounted on a suitable supporting foot in the manner of a standing lamp.

The device according to Fig. 2 comprises a light bulb 1 similar to that represented in Fig. 1. The cap 14 of the bulb is inserted in a holder 7 secured to a ball-shaped casing 8 provided at its upper end with an opening 9 situated in the plane of the focus *b* of the ellipsoidal portion 3 of the bulb 1.

The holder 7 carries arms 10 which are rotatably connected by means of pins 11 to two supports 12 secured to a base member 13 and traversing slots 15 in the holder 7. Figure 3 shows the lower portion of the base member seen in direction of the arrow *f* in Fig. 2. This base member is provided with three faces 16, 17 and 18. A current supply cord 19 passes through the base member. One wire of the cord is connected to the holder 5 which makes contact with the cap 14 of the bulb and the second wire abuts on a resilient blade 20 to cooperate with the contact 21 of the bulb.

The point of suspension 11 of the holder 7, casing 8 and bulb 1 is placed at such a level

that the center of gravity of the suspended structure is below the axis of rotation. When the igniter is not used, the base 13 will be placed on the surface 17 or 18. The bulb being always maintained in vertical position, will not make contact with the blade 20 and the electric circuit is interrupted. When the igniter is to be used, the object to be ignited will be introduced into the opening 9 of the casing 8 and the base will be placed on its surface 16, so that the bulb swings to the position represented in Figure 2 in which the contact 21 bears against the blade 20 and the bulb will be lighted. The light rays are reflected by the ellipsoidal portion 3 of the bulb to converge towards the region of the focus *b*, and the portion of the casing 8 surrounding this focus acts as light screen and prevents the person using the igniter from being dazzled by the reflected light.

The device according to Figures 4 and 5 comprises a protective casing formed by two halves 22 and 23 which are rotatably mounted on pivot screws 24 screwed into the base 25 in transverse direction relative to the axis of the light bulb 1. The two parts of the casing can thus be opened to permit insertion of the bulb into its holder 26. When the parts 22 and 23 are closed towards each other, they form again an opening 9 in the plane of which is situated the focus *b* of the ellipsoidal part 3 of the bulb. The wire 27 of the current supply is connected to the part 23 of the casing and the other wire 28 abuts on a contact 21 of the bulb. The parts 22 and 23 forming the casing carry each a V-shaped contact piece 29 which, in the position shown in Figure 5, has its end slightly remote from the holder 26 of the bulb. Each part 22 and 23 of the casing carries further a spring blade 30, the spring blade 30 of one of the parts cooperating with the contact piece 29 of the other part to maintain the two parts in the represented position.

The edge portions 31 and 32 of the two casing halves overlap each other, and by a pressure exerted by the hand of the person desiring to use the igniter, the two halves can be brought nearer towards each other than they are in the represented position. The two contact pieces then touch the holder 26 for the bulb cap 14, which will close the electric circuit and ignite the bulb, so that an object placed into the opening 9 of the casing may be ignited. As soon as the pressure exerted on the parts 22 and 23 ceases, these parts return to their position represented in Fig. 5, owing to the springs 30 coacting with the contact pieces 29, and the circuit is interrupted. The electric circuit may also be closed when the two parts 22 and 23 of the casing are opened and the two springs 30 make contact with the holder 26 when they disengage from the contact pieces 29. In this position the device may serve also for illuminating purposes.

The device according to Fig. 6 comprises a protective casing constituted by two halves 33 and 34 closing upon each other like a cover on a container. The cover portion 34 is again provided with an opening 9 situated in the plane of the focus *b* of the ellipsoidal bulb 1, the edge portion of the casing around the opening forming a light screen about the focus. An abutment 37 forms an arch above the opening and serves as a rest for the object to be ignited. The part 33 is provided with a flat bottom so that, if desired, the casing can be placed on a table. The drawing shows however the casing suspended on two spindles 35 having each one end rotatably mounted in arms 36 of a base plate 38. The inner end of each spindle 35 is fixed to the holder 39 of the light bulb 1. One wire 40 of a current supply conductor is connected to one of the spindles 35 and the other wire 41 is connected to a contact member 42 which is rotatably suspended on the spindles 35. An insulating sleeve 43 is interposed between each spindle 35 and the contact piece 42. The casing 33 is engaged on square portions 44 of the spindles 35 so as to rotate with the spindles and with the bulb holder 39, while the contact member 42 is loosely mounted on the spindles.

The contact member 42 is provided with an opening 45 into which penetrates the contact 21 of the bulb 1. The center of gravity of the casing 33, 34 and the bulb and holder therefor turning with the spindles 35, is below the axis of rotation, as also the center of gravity of the contact piece 42.

The device is therefore normally in a position in which the contact 21 of the bulb is in the center of the opening 45 in the member 42 and does not touch this member. The electric circuit is then interrupted. When the casing is inclined, the bulb turns with the casing, but the contact piece 42 stays in its normal position, so that the contact 21 abuts against the wall of the opening 45 and the circuit is then closed. The movement of inclination of the casing can for example be applied with the end of a cigar bearing against the abutment 37 when being ignited.

While I have described some preferred embodiments of my invention, it is obvious that various changes in the form, construction and combination of the elements may be resorted to without departing from the spirit of the invention. A light bulb as described may also be used for example to heat a table hot plate when the bulb is placed underneath a suitable metallic or other plate.

I claim:—

1. An ignition device comprising an electric light bulb containing a light source, a portion of the bulb being transparent and another portion of the bulb forming an ellipsoidal reflecting surface having one focus situated in the region of the light source and having the second focus situated outside of the bulb in proximity of a plane laid through the end of the ellipsoidal portion of the bulb at right angles to the major axis of this portion, and a light screen provided with an opening disposed in proximity of said second focus and having a smaller diameter than that of the cross-sectional area of the end of the ellipsoidal portion of the bulb.

2. An ignition device comprising an electric light bulb containing a light source, a portion of the light bulb forming an ellipsoidal reflecting surface having one of its foci situated in the region of the light source and having the second focus situated outside of the bulb, the portion of the bulb situated around the point of intersection of the major axis of said ellipsoidal surface with the bulb being transparent whereby the rays of the light source are compelled to converge through said transparent bulb portion to said second focus, and another portion of the bulb forming a light screen limiting an opening around said transparent portion, the diameter

of said opening being smaller than the diameter of the cross-sectional area of the end of the ellipsoidal portion of the bulb.

3. An ignition device comprising an electric light bulb containing a light source, a portion of the bulb forming an ellipsoidal reflecting surface having one of its foci situated in the region of the light source and having the second focus situated outside of the bulb, the portion of the bulb situated around the point of intersection of the major axis of said ellipsoidal surface with the bulb being transparent whereby the rays of the light source are compelled to converge through said transparent portion to the region of said second focus, a casing surrounding said bulb, said casing being constituted by two halves hingedly mounted on an axis extending transversely to the axis of the bulb to disclose or conceal said bulb, contact members carried by said halves to close the circuit of said light source upon closing the casing, said two halves when in closed position forming an opening around said second focus, the diameter of said opening being smaller than that of the cross-sectional area of the end of the ellipsoidal portion of the bulb.

4. An ignition device comprising an electric incandescent light bulb containing a light source, said bulb having a cap forming one terminal of the light source and a contact forming the second terminal, a holder for said cap included in an electric circuit, a base member, means for pivotally mounting the holder to the base member, a resilient contact carried by the base member and included in said circuit, said resilient contact being situated in the path described by said contact of the bulb upon a pivoting movement being imparted to the bulb holder.

5. An ignition device comprising an electric incandescent light bulb containing a light source, a portion of said bulb forming an ellipsoidal reflecting surface having one of its foci situated in the region of the light source and having the second focus situated outside of the bulb, the portion of the bulb situated around the point of intersection of the major axis of said ellipsoidal surface being transparent whereby the rays of the light source are compelled to converge across the transparent portion to the region of the second focus, said bulb having a cap forming one terminal of the light source and a contact forming the second terminal, a holder for said cap included in an electric circuit, a base member, means for pivotally mounting the holder to the base member, a resilient contact member carried by the base member and included in said circuit, said resilient contact member being situated in the path described by said contact of the bulb upon a pivoting movement being imparted to the bulb holder, and a light screen arranged to move with said bulb, said light screen having an opening surrounding the region of said second focus, the diameter of said opening being smaller than that of the cross-sectional area of the end of the ellipsoidal portion of the bulb.

6. An ignition device comprising an electric incandescent light bulb containing a light source, said bulb having a cap forming one of the terminals of the light source and a contact forming the second terminal, a portion of the bulb forming an ellipsoidal reflecting surface having one of its foci situated in the region of the light source and having the second focus situated outside of the bulb, the portion of the bulb situated around the point of intersection of the major axis of the ellipsoidal surface with the bulb being transparent whereby the rays of the light source are compelled to converge through said transparent portion to the region of said second focus, a holder for the cap of said bulb and included in an electric circuit, a base member, two aligned shafts secured to the holder and journalled in the base member, a casing surrounding the bulb and fixed to said shafts for movement therewith, the center of gravity of said bulb, holder and casing being below the axis of rotation of said shafts, a contact member included in said circuit and rotatably suspended on said shafts, said contact member projecting into the path described by said contact of the bulb upon a movement of rotation being imparted to said shafts, said casing being provided with an opening disposed in the region of said second focus of the ellipsoidal reflector, and an abutment on said casing in proximity of said opening therein whereby an object to be ignited may be pressed against said abutment to pivot said casing and said bulb relative to said contact member to close the electric circuit of the bulb.

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