

Dec. 31, 1929.

O. WAPPLER

1,741,264

HEAD LAMP

Filed Aug. 20, 1925

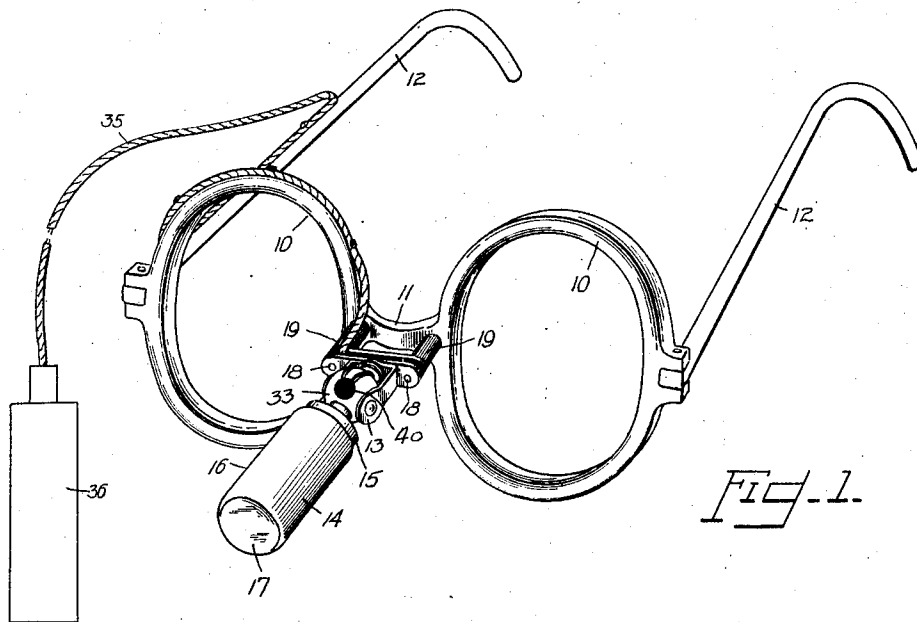


Fig. 1.

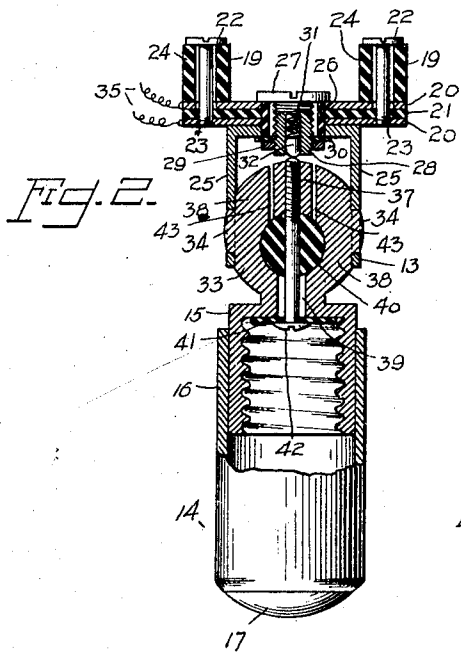


Fig. 2.

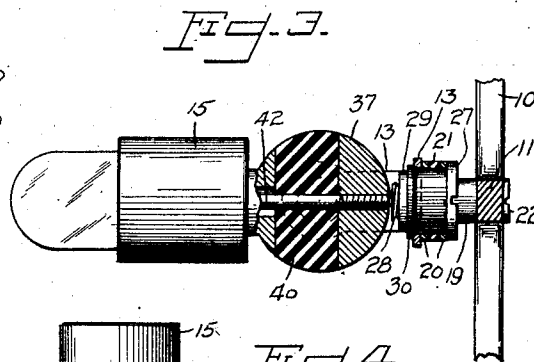


Fig. 3.

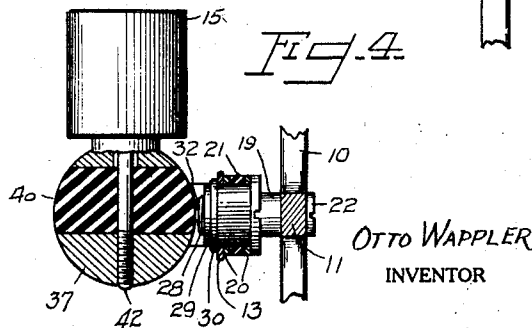


Fig. 4.

OTTO WAPPLER
INVENTOR

BY *Frederick Brutenfeld*
ATTORNEY

UNITED STATES PATENT OFFICE

OTTO WAPPLER, OF PHILADELPHIA, PENNSYLVANIA

HEAD LAMP

Application filed August 20, 1925. Serial No. 51,359.

My present invention relates to head lamps and has particular reference to a device in which a lamp is supported upon a head-piece adapted to be worn by a user.

5 An object of the invention is to provide a lamp of this character particularly suitable for use as a "trouble" lamp by automobilists and mechanics, which will be efficient in operation, of a construction which is staunch and
10 durable and inexpensive to manufacture, yet extremely light and compact and presenting a neat outward appearance.

One feature of the invention lies in connecting a lamp through a universal joint to
15 a head-piece in such a manner that the lamp will project from a point on a line with and between the eyes of the wearer, and will be movable into any radial position of a hemisphere whose center is at the universal joint.

20 In lamps of this general character, utilizing electrical sources of energy, it has heretofore been customary to provide the source of energy in the form of a battery, carried either upon the head-piece itself or at some
25 distance from the device, as for example in the pocket of a user, and switch means have been provided either in close association with the battery or in the electrical connecting means leading from the battery to the device.

30 In either case, the switch manipulation is a source of great inconvenience, necessitating not only additional elements, but causing the user great discomfort by requiring him to grope for the switch with a consequent loss
35 of time.

It is accordingly another object of my invention to provide means for automatically establishing electrical connection to the lamp
40 by movement of the lamp itself into operative position, and for automatically extinguishing the lamp when it is shifted or thrown into certain other positions.

Another object of my invention is to provide a device in which not only the remoteness of the switch control has been eliminated, but in which a head-piece of extremely
45 light and comfortable construction, the stability of which is not affected by movements of the head, has been provided.

50 According to my invention, the head-piece

is provided in the form of an ordinary spectacle frame, which embodies all the desirable features just referred to, and the lamp is mounted by suitable means upon a medial
55 bridge portion thereof.

According to another feature of the invention, the particular movements of the lamp which will disconnect the electrical circuit are those which will simultaneously throw
60 the lamp out of operative position and into a collapsed inoperative position relative to the headpiece. The lamp is preferably of elongated cylindrical shape, and the collapsed inoperative position will be one which brings
65 the lamp into close parallelism with the spectacle frame; this feature, together with the inherent collapsibility of the spectacle frame, in a well-known manner, renders the entire device extremely compact, so that it may be
70 expeditiously inserted into a suitable container or box, or may if desired be slipped into a user's pocket until such time as further use is required. The source of energy is preferably a battery, and electrical connecting
75 means, preferably fine insulated wires, lead from the head-piece to the battery where they are preferably removably attached. In a preferred construction the wiring follows the contour of one eye-rim of the spectacle
80 frame and thence along the adjacent ear-piece, whereby it will be out of annoying proximity when the device is used, and may be coiled around the collapsed frame and lamp in a neat and compact manner when the device is stored away for further use.

For the attainment of the foregoing objects, and such other objects as may hereinafter appear or be pointed out, I have illustrated one form of construction of my device in the accompanying drawings, in which
90 Fig. 1 is a perspective view of the assembled device, in opened position as it would appear upon a wearer when in use;

Fig. 2 is a plan view, partly in cross-section, of the lamp socket and the means for mounting the same upon the spectacle frame;

Fig. 3 is a side elevation, partly in cross-section, of the parts shown in Fig. 2, with the lamp in an operative position; and

Fig. 4 is a view similar to Fig. 3, showing
100

the lamp in an inoperative electrically disconnected position.

Referring to the drawings, and particularly to Fig. 1, it will be seen that I have utilized an ordinary spectacle frame comprising eye-rims 10, a connecting medial bridge portion 11, and ear-pieces 12 pivotally attached to opposite outside edges of the rims 10 in a well-known manner. Rotatably mounted with respect to the frame is a bearing member 13 for pivotally supporting a lamp 14 comprising a socket 15 (Fig. 2) and a preferably elongated cylindrical casing 16 for enclosing the bulb and provided at its outer end with a condenser lens 17. The bearing member 13 is preferably mounted for rotation upon a pedestal 18, comprising legs or supports 19 projecting from each end of the bridge portion 11, and superposed metallic members 20 supported at opposite ends upon the supports 19. The members 20 are insulated from each other by an intermediate insulating element 21, and studs 22 which form the cores of the legs 19 are threaded at their ends to engage threaded openings 23 in the outer member 20 but lie clear of the inner member 20 by virtue of the provision of openings in the latter of a slightly greater diameter than that of the studs. I also prefer to provide insulating spacing members 24 enclosing the studs 22 and interposed between the heads of the latter and the inner member 20. The reason for insulating the members 20 from each other will be described in greater detail hereinafter together with a description of the entire electrical circuit.

Referring now to Fig. 2, the bearing member 13 comprises preferably a U-shaped element or gimbal bearing mounted for rotation upon a suitable pivot carried by the pedestal 18 in a manner to permit of rotation of the bearing member 13 about an axis parallel to the projecting arms 25 of the U. The pivot referred to may comprise a sleeve 26 preferably of insulating material, disposed in an opening through the superposed members of the pedestal and preferably midway thereof. The sleeve 26 encloses a stud having a head 27 of a diameter slightly larger than the outside diameter of the sleeve 26, and accordingly contacting with the inner metallic member 20, as clearly shown in Fig. 2; and having a threaded portion 28 projecting from the sleeve through the base of the U-shaped member 13 and provided at its end with a nut 29 which serves to hold the stud in position. Between the nut 29 and the base of the U-shaped member 13, I prefer to provide an insulating washer 30. The threaded portion 28 of the stud has a longitudinal bore into the base of which I prefer to insert a minute coil spring 31, and on top of the spring a metallic plunger or contact element 32 which is constantly urged out of the bore by the spring 31. The contact ele-

ment 32 is thus concentric with the gimbal bearing 13.

The lamp is mounted for rotation in the bearing member 13 along an axis perpendicular to the axis of rotation of the member 13, that is, transversely of the arms 25. The rotatability of the member 13 along one axis and of the lamp along an axis perpendicular thereto produces a resultant movability of the lamp which is universal in character.

The lamp socket 15 carries a journal member 33, which I prefer to make integral with the socket, the journal member being provided with oppositely disposed journal portions 34 rotatably mounted in a second gimbal bearing formed by suitable aligned openings in the arms 25. The journal member 33 constitutes also a switch member, and a detailed description thereof must therefore be preceded by a description of the electrical circuit.

The fact that the members 20 are insulated from each other makes it possible to utilize them as terminals for connecting wires 35 which are led from a source of energy, indicated generally by the reference numeral 36, to the rearward end of one ear-piece 12, thence along the ear-piece to one rim 10 and around the rim to the bridge portion 11. The bearing member 13 constitutes in itself one element of the circuit, and is accordingly in constant electrical contact with the outer metallic member 20. It is insulated from the inner metallic member 20 by means of the sleeve 26 and the washer 30, which for this purpose is made of a diameter slightly larger than that of the nut 29. The other side of the electrical circuit leads from the inner member 20 through the stud head 27 and the threaded portion 28 to the small plunger 32. The plunger 32 and the member 13 therefore constitute two insulated fixed contacts relative to the lamp. The opposite terminals of the lamp socket are electrically connected with these two fixed contacts respectively when the lamp is in operative position.

With this object in view, the journal member 33 comprises a preferably spherical member having a mid-portion 37 normally contacting with the plunger 32 and in electrical connection with one terminal of the socket, and outer portions or contact members 38 constantly in contact with the bearing member 13 through the journal portions 34 and in electrical connection with the other terminal of the lamp socket. The mid-portion 37 and the outer portions 38 are of course insulated from each other in a manner which will be presently described.

For the purpose of controlling the electrical connection or disconnection by movements of the lamp itself, I have provided insulating portions at opposite sides of the mid-portion 37 and lying in the plane of movement of the portion 37 when the journal por-

tion 33 is rotated about its axis. These insulating portions are inserted, and the mid-portion 37 is insulated from the outer portions 38, by the following method of construction of the journal portion 33.

5 The portion 33 is preferably a spherical member integral with the lamp socket, and a cylindrical bore is made therethrough in a direction perpendicular to the axis of the
10 lamp and to the axis about which the journal portion 33 is to rotate. Thereupon a second hole 39 is bored in a direction along the axis of the lamp socket from the center of the base of the socket through to the first mentioned bore. A cylindrical piece of insulating material 40 is then inserted snugly into the original bore (as clearly shown in Fig. 3), and its ends are preferably rounded off to conform to the outer surface of the spherical
15 member 33. A third bore is then made along the axis of the socket 15, of a diameter slightly smaller than the diameter of the bore 39 and extending through the insulating insert 40 and through that portion of the
20 spherical member 33 which is eventually to constitute the mid-portion 37. That portion of the bore which passes through the mid-portion 37 is then internally threaded; an insulating washer 41 is then laid over the
25 bottom of the socket 15; and a long stud 42 is inserted through the washer 41, and the bore 39, into the smaller last-constructed bore into engagement at its end with the internal threads referred to. The end of the
30 stud 42 is preferably smoothed off to conform to the outer surface of the spherical member 33. The final step consists in making two slots 43 in the member 33 in parallel planes perpendicular to the axis of rotation
35 of the member 33 and extending from each side of the threaded end of the stud 42 inwardly to the insulating insert 40. This process of slotting would ordinarily cause the mid-portion 37 to be cut out entirely from the member 33, but the stud 42 having been previously inserted, serves to hold and retain the mid-portion 37 in its original position.

It will be noted that the mid-portion 37 has been insulated from the outer portions
40 38 by the slots 43 and by the insert 40, at the same time being in electrical connection through the stud 42 with the head of the stud which constitutes one terminal of the lamp socket. It will be further noted that the
45 outer portions 38 now constitute contact members in electrical connection with, and in fact integral with, the walls of the socket which constitute the other terminal of the socket, in a well-known manner. The enlarged diameter of the bore 39, together with the washer 41, prevent short-circuiting between the outer portions 38 and the stud 42. It will be further seen that rotation of the lamp with respect to the bearing member 13
50 will cause the electrical circuit to make and

break, depending upon whether the mid-portion 37 or the insert 40 are in contact with the plunger 32. The bore for the insert 40 is so positioned that the mid-portion 37 will remain in contact with the plunger 32 during
55 movements of the lamp into all of its possible positions except those approaching the plane of the spectacle frame. In other words, the lamp is movable into any radial position of a hemisphere having its center at the universal joint, and the electrical circuit will be closed in all of such radial positions except those approaching the flat surface of the hemisphere.

Figs. 3 and 4 clearly illustrate the ranges
60 between which the lamp may move and still be in electrical connection with the source of energy. Fig. 3 illustratively shows the lamp in an operative position perpendicular to the spectacle frame, and Fig. 4 shows the lamp
65 thrown back into parallelism with the spectacle frame, and shows how the insulating insert 40 replaces the mid-portion 37 in contact with the plunger 32 when the lamp is thus thrown back into an inoperative position.

It will be obvious that various changes may be made in the details herein described and illustrated for the purpose of explaining the nature of my invention, without departing
70 from the spirit and scope of the appended claims, and it is therefore intended that these details shall be interpreted as illustrative and not in a limiting sense.

I claim:—

1. A head lamp device comprising a foldable spectacle frame, a tubular casing, a lamp socket in said casing, a journal portion axially aligned with said tubular casing and behind said socket, means for mounting said journal
75 universally upon the medial portion of the spectacle frame so that the casing may be made to project outwardly therefrom, means for establishing electrical connection between an external source of energy and said socket through said journal, a fixed contact associated with the mounting means, and a contact carried by the journal and cooperating with said fixed contact when the casing is moved, said journal contact including an insulator predeterminedly positioned to encounter the fixed contact and thereby automatically disconnect said electrical connection when the casing is moved.

2. In a head lamp of the character described, a spectacle frame, a pedestal carried thereby and comprising mutually insulated superposed contact members, an electric lamp pivotally mounted on said pedestal through
85 a universal joint, and means for establishing electrical connection through said joint between said members and the opposite terminals of said lamp respectively, said means comprising a journal carried by the lamp and having mutually insulated conducting por-
90

tions electrically connected respectively with one terminal of the lamp and one of said members.

3. In a lamp of the character described, a bearing, a journal carried by the lamp and pivotally mounted in said bearing and including pivot portions engaging said bearing, said journal comprising mutually insulated contact portions, one of which is constituted by said pivot portions, said contact portions being in electrical connection with opposite terminals of the lamp respectively, means for establishing electrical connection through said bearing between said contact portions and a source of energy, and means for automatically disconnecting said electrical connection by movements of the journal.

4. In a head lamp of the character described, in combination, a spectacle frame, an electric lamp pivotally mounted thereon through a universal joint, and means for establishing electric connection through said joint between a source of energy and said lamp, said means comprising an integral journal carried by the lamp and including conducting pivot portions in electrical communication, and a second conducting portion carried by the journal and insulated from said pivot portions, said journal comprising an integral member having a recess, and said second portion comprising a member carried in said recess and spaced from the walls thereof.

5. In a head lamp of the character described, in combination, a spectacle frame, an electric lamp pivotally mounted thereon through a universal joint, and means for establishing electric connection through said joint between a source of energy and said lamp, said means comprising an integral spherical journal carried by the lamp and having a diametrical bore and slots extending from said bore to the surface to provide conducting pivot portions in electrical communication and a second conducting portion spaced from the pivot portions by said slots and bore, said pivot portions being in electrical connection with one terminal of the lamp, and means for simultaneously connecting said second portion physically and electrically to the other terminal of the lamp.

6. In a head lamp of the character described, in combination, a spectacle frame, an electric lamp pivotally mounted thereon through a universal joint, means for establishing electrical connection through said joint between a source of energy and said lamp, said means comprising an integral journal carried by the lamp and including conducting pivot portions in electrical communication and a second conducting portion insulated from said pivot portions, and means for automatically disconnecting said electrical connection by movements of the lamp, said last named means comprising insulating por-

tions carried by said second conducting portion and movable into and out of the electric circuit by movements of the journal.

7. In a head lamp of the character described, in combination, a spectacle frame, an electric lamp pivotally mounted thereon through a universal joint, means for establishing electrical connection through said joint between a source of energy and said lamp, said means comprising an integral journal carried by the lamp and cut to provide conducting pivot portions in electrical communication and a second nesting conducting portion spaced from the pivot portions, and means for automatically disconnecting said electrical connection by movements of the lamp, said last named means comprising an insulating insert extending through the journal between said nesting portions and having exposed surfaces movable into and out of the electric circuit by movements of the journal.

8. As an attachment for a spectacle frame, an electric lamp for pivotal association with said frame, said lamp comprising a pedestal comprising mutually insulated contact members, means for attaching the pedestal to the frame, a universal joint connecting the lamp to the pedestal, and means for establishing electrical connection through said joint between said members and the opposite terminals of the lamp respectively.

9. As an attachment for a supporting frame, an electric lamp for pivotal association with said frame, said lamp comprising a pedestal comprising two superposed metallic members and an intermediate insulating element, means for attaching the pedestal to the frame, a universal joint connecting the lamp to the pedestal, and means for establishing electrical connection through said joint between said members and the opposite terminals of the lamp respectively, said universal joint comprising a bearing rotatably mounted on the pedestal and a journal carried by the lamp and rotatably mounted in said bearing.

10. In a head lamp of the character described, in combination, a spectacle frame, a pedestal carried thereby and comprising two superposed metallic members and an intermediate insulating element, an electric lamp pivotally mounted on said pedestal through a universal joint, and means for establishing electrical connection through said joint between said members and the opposite terminals of said lamp respectively, said means comprising a journal member carried by the lamp and having conducting portions insulated from each other and electrically connected respectively with one terminal of the lamp and one of said metallic members.

11. In a head lamp of the character described, in combination, a spectacle frame, a pedestal carried thereby and comprising two superposed metallic members and an inter-

mediate insulating element, an electric lamp pivotally mounted on said pedestal through a universal joint, and means for establishing electrical connection through said joint between said members and the opposite terminals of said lamp respectively, said means comprising a bearing member having insulated fixed contacts electrically connected with said members respectively, and a journal member carried by the lamp and rotatable in said bearing member, said journal member having insulated conducting portions contacting with said contacts respectively.

12. The combination of an electric spot light mounted on gimbal bearings arranged with sufficient friction to hold the light in different angular adjustments, an electric circuit for said light, and switching means for said circuit comprising a pair of contact members, one contact member being arranged concentric with one of said gimbal bearings and the other contact member being arranged to move about the axis of the other gimbal bearing into and out of engagement with the first mentioned contact member.

In testimony whereof I affix my signature.

OTTO WAPPLER.