H. L. DE ZENG.

HEADLIGHT OR ILLUMINATOR.

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963,036.

Patented July 5, 1910.

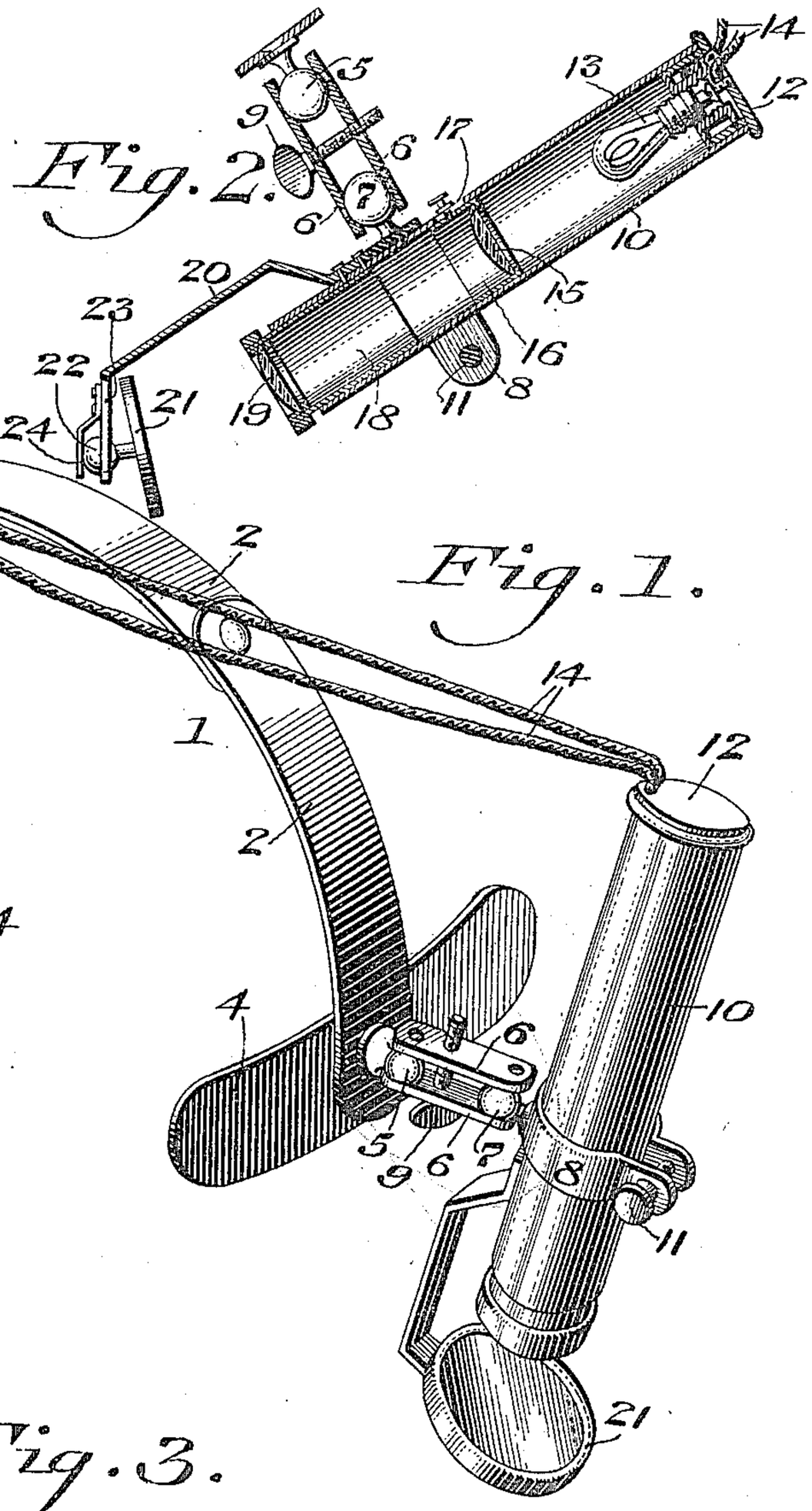

Fig. 2.

Fig. 1.

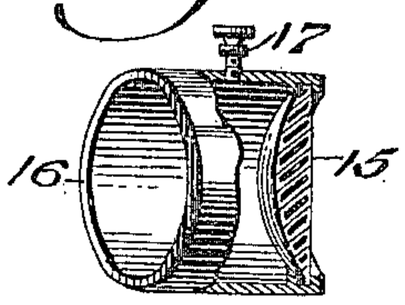

Fig. 3.

WITNESSES

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HEADLIGHT OR ILLUMINATOR.

963,036. Specification of Letters Patent. Patented July 5, 1910.

Application filed October 18, 1909. Serial No. 523,333.

To all whom it may concern:

Be it known that I, HENRY L. DE ZENG, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Headlight or Illuminator, of which the following is a specification.

My invention relates to a new and useful head light or illuminator for use by physicians, dentists and others, wherein I provide means for concentrating the rays of light from an electric lamp by a suitable concentrator system and having an adjustable reflector whereby the rays can be thrown to a desired point.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

Figure 1 represents a perspective view of a reflecting device embodying my invention. Fig. 2 represents a sectional view of the condenser system and reflector. Fig. 3 represents a partial perspective and partial sectional view of a portion of the device in detached position.

I have found in head lights now on the market that the rays of light are diffused and are not conveniently placed with respect to the eye of the operator for the best results. My invention is designed to overcome these defects and in the drawing, I have shown a construction which I have found operates successfully in practice, but it will be understood that changes may be made in the construction, the arrangement of the parts may be varied and other instrumentalities may be employed which will come within the scope of my invention and I do not therefore desire to be limited in every instance to the exact construction as herein shown and described.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates a head band or support which is of suitable construction and, in the present instance, is made up of the several sections 2 pivotally connected, whereby the same may be moved with respect to each other in order that the head band may be varied to suit the requirements of the operator and folded for portability. Upon one of the sections 2 I mount the laterally extending plate 3 for engagement with the back of the head and I also provide the front plate 4 which is adapted to bear against the forehead of the operator and to hold the head-piece in proper position.

Projecting from the section 2, in the present instance, which carries the front plate 4, is a ball 5, which is engaged by the arms 6 which also engage with a ball 7 carried on a sleeve 8, said arms 6 being suitably connected by a set screw 9 for varying the tension thereof upon the balls 5 and 7. Carried by the sleeve 8 is the tube or body portion 10 of my head light which, in the present instance, is held in proper position on the sleeve 8 by a set screw 11.

12 designates a cap carrying the electric lamp 13 which is in suitable connection with the conductors 14 which pass through suitable openings in said cap, said conductors being adapted to be connected with any suitable source of current supply.

15 designates a concentrator lens which is suitably mounted within the body 10 in order to concentrate rays of light from the electric lamp 13, said concentrator lens, in the present instance, being mounted on and carried by a sleeve 16 which is preferably adjustably mounted, by means of the screw 17, on the body 10 whereby the position of the said concentrator lens may be varied with respect to the lamp 13.

18 designates a tube telescoping or fitting within the body 10, said tube 18 being also provided with a concentrator lens 19 and said tube 18 being movably mounted in said body 10 whereby the position of said lens 19 can also be adjusted as desired to properly concentrate the rays of light from the lamp 13.

20 designates a bracket which, in the present instance, is carried by the body 10, said bracket having adjustably mounted thereon a reflector or reflecting device 21 which, in the present instance, is shown as a mirror having a ball 22 thereon, fitting in a suitable socket 23 and held in place by the arm 24 carried by the bracket 20.

Any suitable means may be provided on the head-band 1 for engagement with the conductors 14 to prevent the same from falling in front of the face of the operator, and in Fig. 1, I have shown an eye 25 carried by one of the sections 2 through which the conductors are passed to hold the same back of the head.

The operation of the device is readily apparent. The operator places the head-band upon his head with the reflecting device or

head-light situated preferably between the eyes or directly over one eye and the circuit having been turned on the electric lamp 13 is illuminated. The light therefrom is condensed by the lenses 15 and 19, it being understood that the lens 15 is first adjusted to desired position and the lens 19 can then be adjusted by hand to the desired point or place in order to properly condense the rays. The reflector 21 can now be turned, since it is adjustably mounted, in order to reflect the rays of light passing through the lens 19 and throw the same to the desired point, of observation.

It will be further seen that the body 10 is adjustably mounted so that its position can be varied as desired and it is further to be understood that in some instances I may dispense with either of the lenses 15 or 19 as one or the other may be sufficient in certain instances.

While I have described only one form of head-band and have shown a form in the drawings, to which my concentrator system is connected I of course desire it to be understood that any form of head-band may be employed, it only being necessary to attach my device in any suitable manner to any suitable head-band since in many instances the concentrator system may be sold without the head-band and applied to existing head-bands already in use.

While I have shown one form of reflecting device in the drawing, any suitable form may be employed.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a device of the character described, a head band, a light concentrator system adjustably mounted thereon having a body portion, an electric lamp carried thereby, a concentrator lens carried by said body portion, a second concentrator lens adjustably mounted on said body portion whereby the position thereof may be varied in order to properly concentrate the light, and a reflecting device adjustably mounted with respect to the said concentrating system.

2. In a device of the character described, a body portion, an electric lamp suitably supported thereby, a concentrator lens carried by said body portion, a second concentrator lens adjustably mounted on said body portion, and a reflecting device adjustably supported for reflecting the rays of light from said concentrators.

3. In a device of the character described, a body portion, an electric lamp suitably supported thereby, a concentrator lens carried by said body portion, a second concentrator lens mounted on said body portion, and a reflecting device adjustably supported for reflecting the rays of light from said concentrators.

4. In a device of the character described, a body portion, an electric lamp carried thereby, a concentrator lens adjustably mounted on said body portion, a second concentrator lens carried by said body portion, and a reflecting device carried by said body portion and connected therewith by a universal joint.

5. In a device of the character described, a body portion, an electric lamp carried thereby, a concentrator lens carried by said body portion, a reflecting device carried by said body portion, and means carried by said body portion for universally mounting the said body portion upon a suitable support.

6. In a device of the character described, a body portion, an electric lamp carried thereby, a concentrator lens carried by said body portion, a second concentrator lens carried by said body portion, a reflector carried by said body portion and means carried by said body portion whereby the same may be adjustably mounted upon a suitable support.

7. In a device of the character described, a body portion, a lamp removably supported thereby, a concentrator lens carried by said body portion, a second concentrator lens mounted on said body portion, a bracket carried by said body portion, and a reflecting device movably mounted on said bracket and adapted to reflect concentrated rays of light from the lamp.

8. In a device of the character described, a body portion, a lamp removably supported thereby, a concentrator lens carried by said body portion, a second concentrator lens adjustably mounted on said body portion, a bracket carried by said body portion, a reflecting device movably mounted on said bracket and adapted to reflect concentrated rays of light from the lamp, and means carried by said body portion for adjustably mounting the same upon a suitable support.

9. In a device of the character described, a body portion, an electric lamp carried thereby, a concentrator lens adjustably mounted on said body portion, a second concentrator lens carried by said body portion, and a reflecting device adjustably carried by said body portion by means of a universal joint.

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