

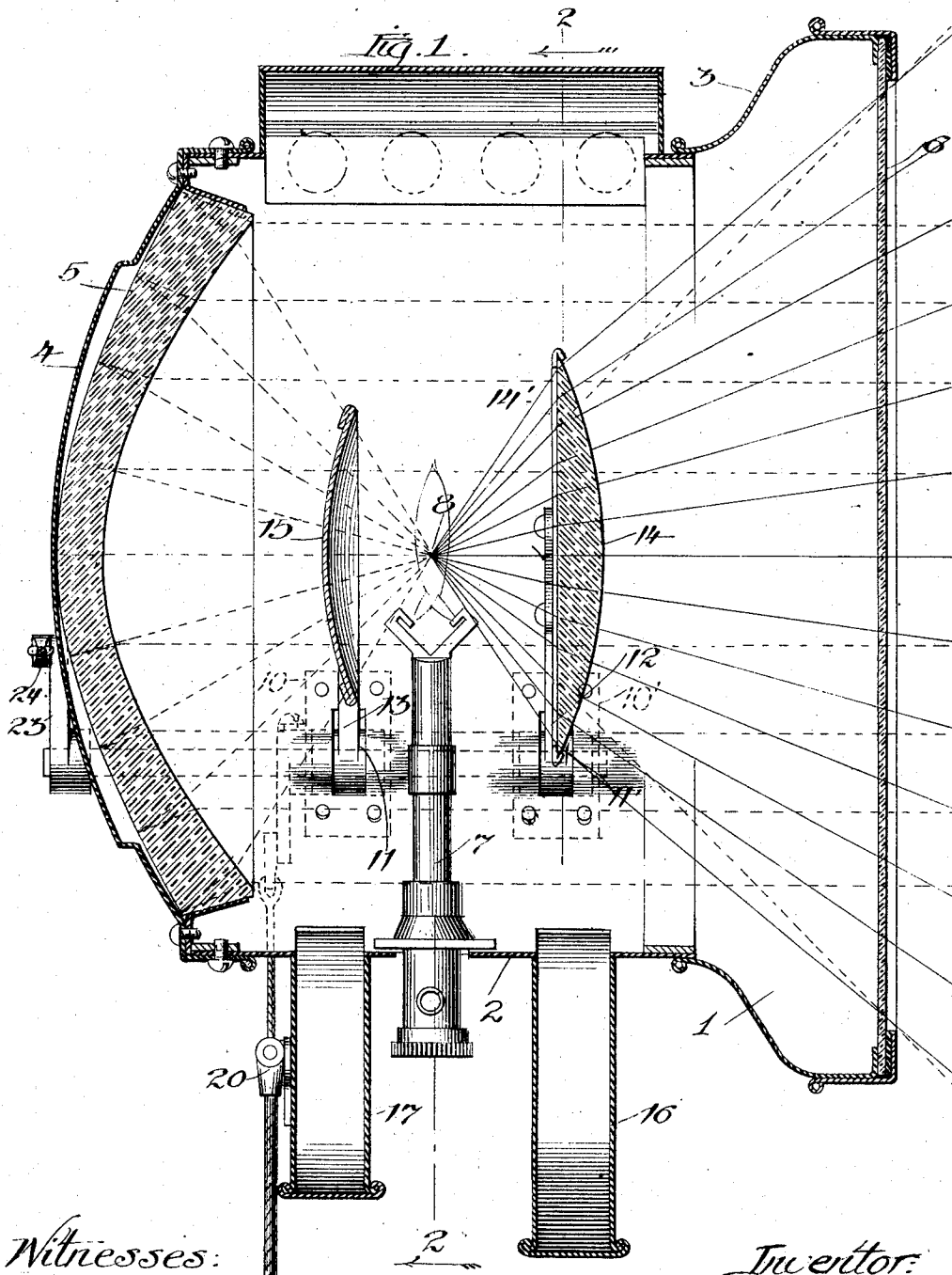
R. H. WELLES.
HEADLIGHT.

APPLICATION FILED SEPT. 19, 1907.

Patented Oct. 4, 1910.

2 SHEETS—SHEET 1.

971,709.



Witnesses:

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Frank L. Belknap

Inventor:

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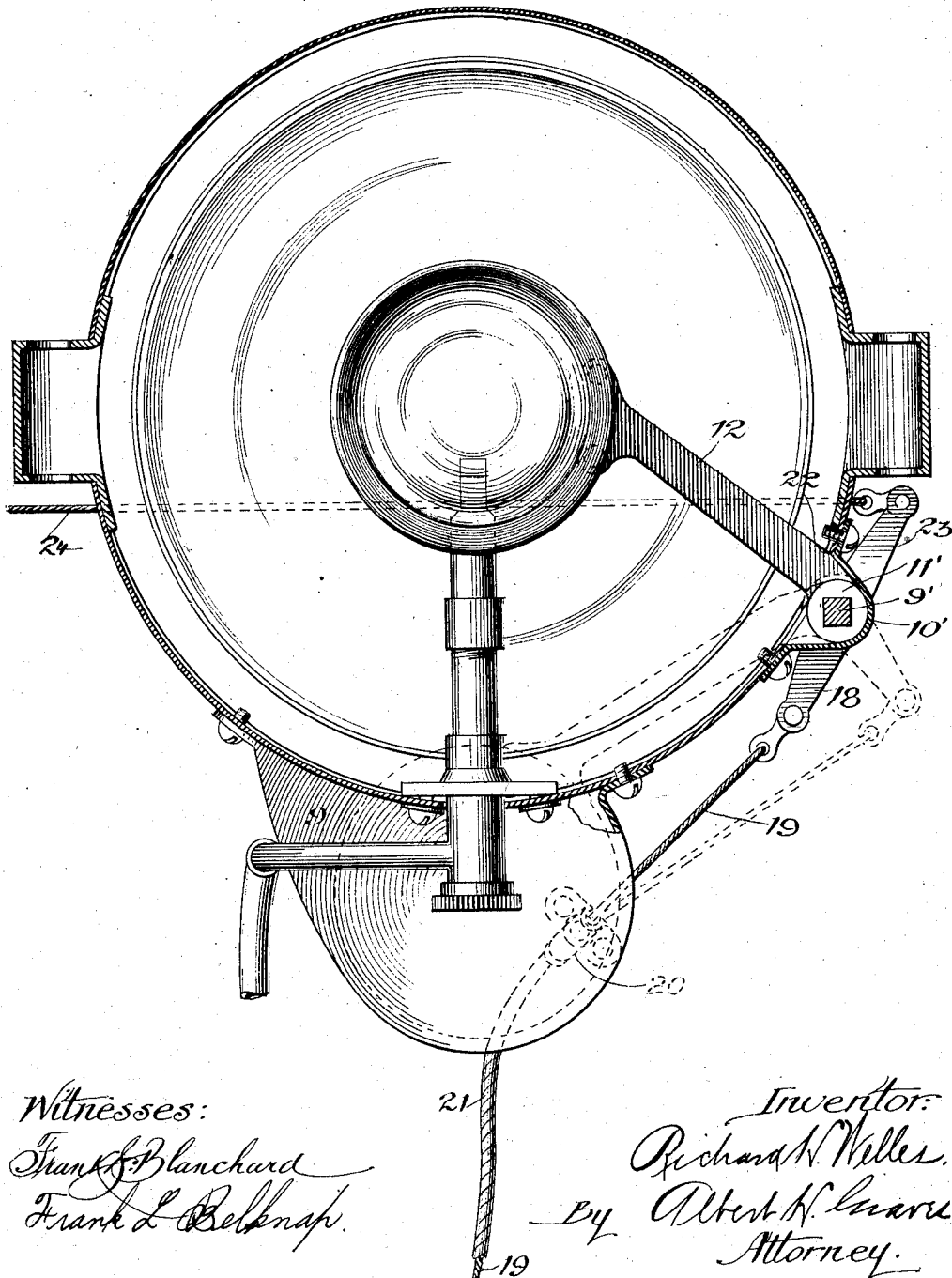
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Fig. 2.



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UNITED STATES PATENT OFFICE.

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HEADLIGHT.

971,709.

Specification of Letters Patent.

Patented Oct. 4, 1910.

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To all whom it may concern:

Be it known that I, RICHARD H. WELLES, a citizen of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented certain new and useful Improvements in Headlights, of which the following is a specification.

This invention relates to improvements in headlights, and refers more specifically to improvements in headlights of that type which are employed for lighting the roadway in advance of vehicles or boats; the particular embodiment shown herein being suitable for use in connection with automobiles.

The salient object of the present invention is to provide in conjunction with a headlight an auxiliary mechanism whereby the normal light may be modified or dimmed.

Subsidiary objects of the invention are to provide a simple and practical construction whereby the reflected light may be shut off and the direct light refracted in such manner as to cause it to serve more effectively its purpose in the absence of a reflected light; to provide to this end a mechanism whereby these two modifications of the light are effected simultaneously and by a single act on the part of the operator; to provide a mechanism of this character which is extremely simple in construction and operation and is devoid of springs and other unnecessary complications; to provide a mechanism which when out of operative position does not in the slightest interfere with the normal functions of the headlight; to provide a construction which utilizes the combined weight of a shutter and lens to return these members to their normal retracted or inoperative position; and in general to provide a simple and improved construction of the character referred to.

The invention will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical axial sectional view through a headlight equipped with a preferred embodiment of the invention; Fig. 2 is a transverse sectional view taken on line 2—2 of Fig. 1 and looking in the direction of the arrows.

In headlights as now commonly organized for use in connection with automobiles,

locomotives, boats, etc., both the light which emanates directly from the front side of the burner and that which emanates from the rear side thereof is utilized; the latter being reflected, and often refracted, by a suitable reflector or combined reflector and refractor located in rear of the light. The present invention has to do with headlights of this character and, as will hereinafter appear, is capable of embodiment in a construction which uses a reflector devoid of refracting means, or, as shown in the preferred embodiment illustrated, may be utilized with a refracting reflector.

Referring to the drawings, 1 designates as a whole the headlight casing or barrel, which is shown as consisting of a cylindric side wall member 2, a flaring front rim 3 and an outwardly convex rear end wall 4. Seated in the rear end of the casing is a reflector 5 of that type known as a Mangin mirror; this reflector being of well-known construction and serving to not only reflect the rays but to modify their direction so that the rays emanating from a focal point are reflected and at the same time brought into parallelism with each other. For the protection of the burner the front end of the casing is closed by a plain glass 6 which as shown is made of uniform thickness throughout and therefore does not substantially vary the direction of the rays passing therethrough.

7 designates the burner nozzle which, as usual, enters through the lower side of the headlight casing, rises vertically therein and terminates in a burner tip located just below the focal point 8 of the headlight so that the burning jet will occupy this focal position. The burner is in this instance shown as an acetylene gas burner, and accordingly a gas supply pipe 9 is arranged to connect with the lower end of the burner nozzle at a point outside of the casing.

Referring now more particularly to the dimming mechanism, 9' designates a rock-shaft journaled to extend through suitable cap-like bearing housings, as 10 and 10' mounted upon the cylindric exterior of the casing, conveniently at points slightly below the horizontal diameter of the casing. This rock-shaft extends parallel with the axis of the headlight and as a convenient construction is made rectangular in cross section and has mounted thereon hubs, as 11 and 11' exte-

riorly cylindric and journaled at their peripheries between the housing caps 10, 10', and the opposed portions of the side wall or casing, as seen clearly in Fig. 2. With each
 5 of the hubs 11 and 11' is integrally formed an arm, as 12 and 13; these arms being arranged to extend parallel with each other and carrying at their free ends, the one a lens 14 and the other a shutter 15. The lens 14 is
 10 a converging lens of moderate power, and is of such diameter that when held in axial alinement with the focal point 8 of the headlight it intercepts all of the direct rays which
 15 emanating from the focus of the headlight would, except for said lens, pass through the front opening or front glass 5 of the headlight. Conveniently the lens is mounted in a peripheral ring 14' which is in turn rigidly
 20 mounted upon the end of the arm 12. In a generally similar manner, the shutter 15 is mounted upon the end of the arm 13 and is of such diameter that when held in axial alinement with the focal point of the headlight it intercepts all rays which would
 25 otherwise impinge upon the Mangan mirror 5. That side of the shutter toward the light is unpolished or black so as to absorb the rays and not reflect them; the function of the shutter being to cut off the reflected
 30 light. In the construction shown the shutter is made concavo-convex but this form is merely adopted as a convenient means of cutting off the rear light with a shutter of as small diameter as practicable without at
 35 the same time bringing the latter too close to the heat of the flame.

At the lower side of the headlight casing are formed two pockets, as 16 and 17, respectively adapted to receive the principal
 40 portions of the lens and shutter when the latter are lowered; these pockets being of sufficient depth to permit the upper edges of the lens and shutter and the upper edges of the arms which support the latter to descend below or radially outside of the beam
 45 of light reflected by the mirror 5. In order to place this mechanism under manual control of the operator, a crank-arm 18 is rigidly mounted upon the rear end of the
 50 shaft 9' in approximately right-angled relation to the arms 12 and 13, and with the outer end of this crank-arm is connected a cord 19 which leads thence downwardly to and through a suitably fixed guide 20, conveniently mounted upon the rear side of
 55 the pocket 17. From thence the cord leads onward to a position accessible by the operator; being conveniently inclosed in a flexible protecting tubing 21. Normally the lens
 60 and shutter rest by gravity in the pockets 16 and 17, respectively, but upon pulling upon the cord the rock-shaft is oscillated and the dimming devices lifted upwardly into operative position. In order to arrest them in
 65 proper relation to the focal point of the

headlight, the upper side of the arm 12 is arranged to impinge against the opposed upper side of the bearing, the latter thus forming a stop as indicated at 22. As soon as the
 70 tension on the cord is released the dimming devices obviously return by gravity to the pockets. In order that the dimming mechanisms of a pair of headlights may be operated together by the same operating cord, a
 75 second crank-arm 23 may be mounted upon the rock-shaft 9', and from the upper end of this crank-arm a cord 24 is extended horizontally across to the companion headlight where it connects with a corresponding arm
 80 upon the rock-shaft of that mechanism. It will be noted that in order to avoid interference, on the part of the arm 23 with the headlight casing, the rock-shaft 9' is extended rearwardly beyond the rear end of
 85 the headlight, as shown clearly in Fig. 1, and the arm 23 mounted on its extreme end.

The operation of controlling the light by means of this dimming mechanism will be obvious from the foregoing description. It
 90 is to be noted, however, that whenever the dimming mechanism is in operative position the beam of parallel reflected rays is completely cut off while the beam of direct light is converged from the normally wide
 95 angle bounded by the inner perimeter of the front rim of the headlight to a considerably narrower angle, with a corresponding intensification of the field illuminated by this direct light. It is the beam of parallel rays which causes the glare which tends
 100 to blind and confuse those within its range, and the cutting off of this beam obviously eliminates that objection. At the same time the direct light is normally so diffused, *i. e.* it covers such a wide angle, as to insufficiently illuminate the roadway, but when
 105 converged by the lens 14 the field of illumination, though narrowed, is intensified and made amply strong for temporary purposes. The light is, however, not sufficiently
 110 converged to produce the objectionable glaring effect of the beam of parallel rays.

It will be obvious from the foregoing that the dimming mechanism is not necessarily
 115 associated with a reflecting mirror of the Mangan type, nor with a headlight provided with a plain glass front, and accordingly I have claimed the same broadly as well as in combination with these elements.

I claim as my invention:

1. In a headlight, the combination with a headlight casing, burner therein and reflecting device in rear of the burner, of a shutter adjustably mounted to move into or
 120 out of a position interposed between the burner and said reflecting device, and a lens adjustably mounted to move into and out of position between the burner and the front opening of the headlight.

2. In a headlight, the combination with a 133

headlight casing, burner therein and reflecting device in rear of the burner, of a shutter adjustably mounted to move into or out of a position interposed between the burner and said reflecting device, and a lens adjustably mounted to move into and out of position between the burner and the front opening of the headlight, said shutter and lens being connected to move together.

10 3. In a headlight, the combination with a headlight casing, of a concave reflector arranged in the rear of the headlight, a burner arranged in the focus of said reflector, a shutter adapted to be interposed between
15 the burner and reflector, and a converging lens mounted to move laterally into and out of position in front of the burner.

4. In a headlight, the combination with a headlight casing, of a Mangan mirror arranged in the rear portion thereof, a burner
20 arranged in the focus of said Mangan mirror, a shutter mounted to move laterally into position to screen the Mangan mirror, and a converging lens mounted to move into
25 position in front of the burner.

5. In a headlight, the combination with a barrel-shaped headlight casing, of a concave reflector arranged in the rear closed end of said casing, a burner arranged in the

focus of said reflector, a rock-shaft arranged 30 to extend longitudinally along one side of the casing above the lower side of the latter, a pair of arms projecting laterally from said rock shaft within the casing and respectively in front and in rear of the burner, 35 a shutter mounted upon the rear arm, a converging lens mounted upon the front arm, pockets located outside of the headlight casing and communicating with the interior of the latter in register with the respective 40 arms, and means for oscillating said rock-shaft.

6. In a headlight, the combination with a suitable headlight casing, of a burner therein, a reflector arranged in the rear of the 45 headlight, a lens adjustably mounted in front of the burner, bell crank mechanism for rocking said lens bodily into and out of the front field of light, and an operating cable extending from said leverage mech- 50 anism to a point remote from the headlight and accessible to the operator whereby the lens may be quickly shifted into and out of said field of light.

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