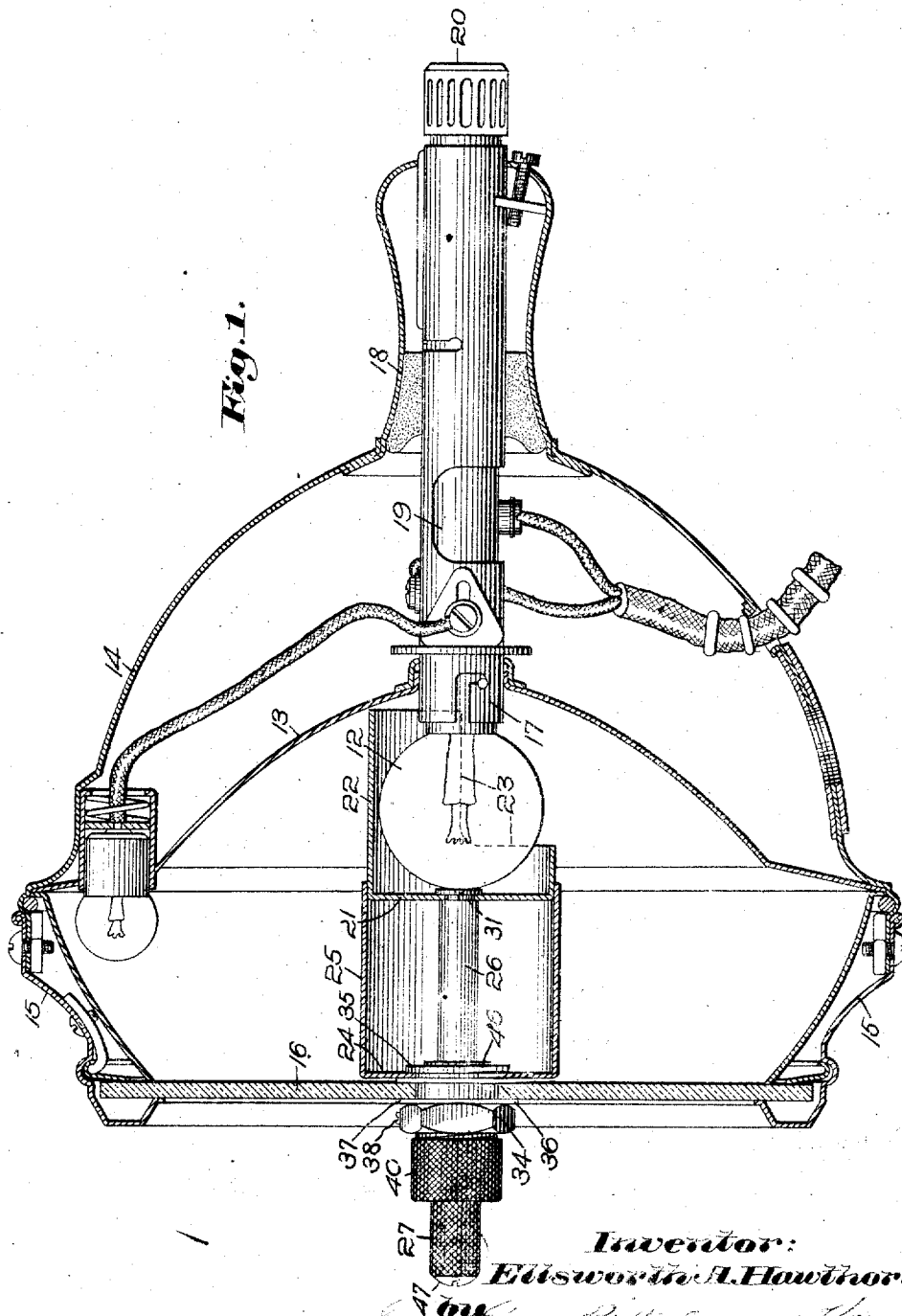


1,258,898.

E. A. HAWTHORNE.
LIGHTING APPARATUS.
APPLICATION FILED JULY 2, 1917.

Patented Mar. 12, 1918.
2 SHEETS—SHEET 1.

Fig. 1.



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Attys

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2 SHEETS—SHEET 2.

Fig. 4.

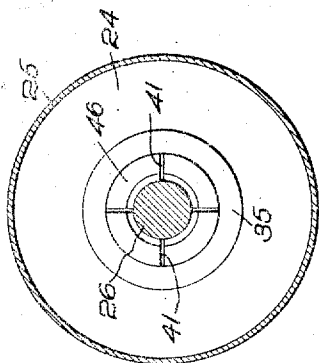


Fig. 5.

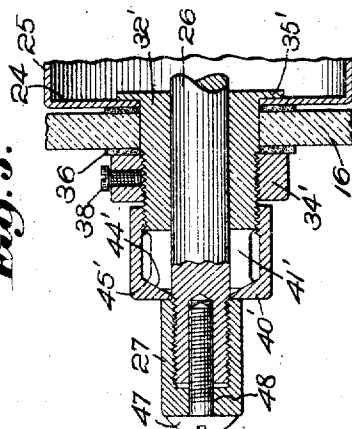


Fig. 2

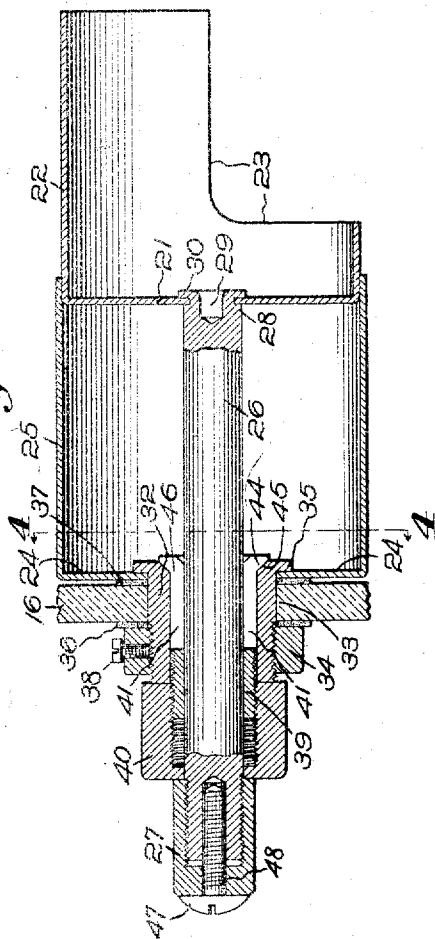
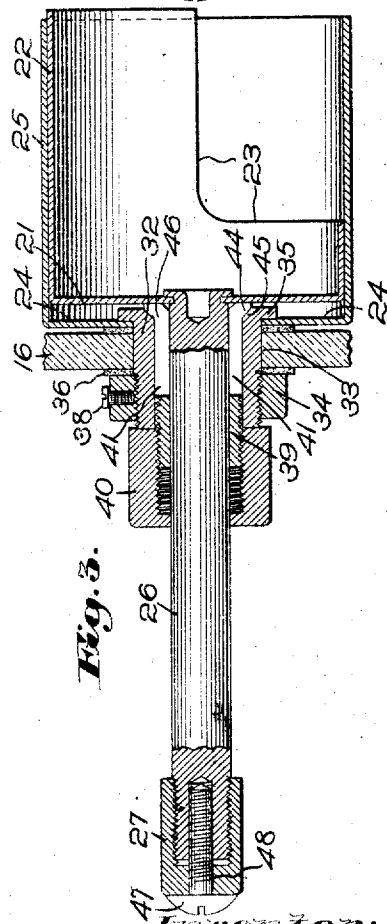


Fig. 3.



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LIGHTING APPARATUS.

1,258,898.

Specification of Letters Patent.

Patented Mar. 12, 1918.

Application filed July 2, 1917. Serial No. 178,133.

To all whom it may concern:

Be it known that I, ELLSWORTH A. HAWTHORNE, a citizen of the United States, and a resident of Bridgeport, county of Fairfield, and State of Connecticut, have invented an Improvement in Lighting Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to lighting apparatus of that class in which light-controlling means in the form of a shield is arranged to cut off more or less of the light rays at will, in accordance with the needs of the particular circumstances, especially in a lamp of the type in which a parabolic reflector is associated with the light source. My invention is more particularly concerned with a lamp of this type having means for quickly and conveniently adjusting the light-controlling shield so that more or less of the surface of the reflector may be cut off or shielded from the light source at will.

My invention will be best understood by reference to the following description, when taken in connection with the accompanying drawings of two specific embodiments thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a central, longitudinal sectional view of one form of lighting apparatus embodying my invention;

Fig. 2 is an enlarged, detail sectional view of some of the parts shown in Fig. 1 illustrating the shield in one position of adjustment;

Fig. 3 is a sectional view similar to Fig. 2, showing the shield in another position;

Fig. 4 is a sectional view on line 4-4 of Fig. 2; and

Fig. 5 is a longitudinal, sectional view of a portion of another form of my invention.

Referring to Figs. 1 to 4 inclusive of the drawings, and to the embodiment of my invention which is therein illustrated, I have shown, for example, a lighting apparatus comprising a suitable light source 12, herein an incandescent electric bulb associated with a cooperating reflector 13, preferably of the parabolic type, and both mounted within a suitable casing comprising a body 14 and a door or bezel 15, the latter serving as a mounting for an appropriate glazing

or light-transmitting element 16. In the illustrated apparatus, the bulb 12 is mounted in a socket tube 17, the latter extending in a rearward direction through a handle 18 forming a part of the lamp casing, said tube constituting a means for axially adjusting and focusing the light source 12 with relation to its reflector 13, and also serving as a mounting for a switch 19 having an operating handle 20 at the rear of the handle 18.

Associated with the light source 12 is a suitable shield 21 for controlling the light rays. This shield may be of any suitable construction, but herein has a somewhat cup-like form and has a tubular portion 22 of such dimensions as to receive the bulb 12. As herein shown, a part of the cylindrical portion 22 is cut away as at 23, so that some of the light rays will at all times reach that portion of the reflector 13, which will reflect them through the glazing 16. Preferably, the shield 21 is arranged co-axially with relation to the bulb 12, and is mounted to move axially toward and from the reflector 13, so as to shield a greater or less area from the rays of light, according as circumstances may require. Preferably, the shield 21 is associated with a second shield 24, having a cylindrical portion 25 with which it is telescopically arranged in co-axial alinement. Preferably, also, the cylindrical portion 22 slides within and is guided by the cylindrical portion 25, and is thus supported and held in axial alinement with the bulb 12.

It has been stated that the shield 21 is mounted for axial adjustment with relation to the reflector 13. Preferably, also, it is mounted for adjustment so that it may be turned about its axis, thereby to bring the interrupted portion 23 of the shield into co-operation with any desired portion of the reflector. To the end that these adjustments may be quickly and conveniently effected, I have herein provided adjusting means comprising a longitudinally slidable rod or plunger 26, secured to the shield 21 and extending in a forward direction through the glazing 16 to the exterior of the lamp where it is provided with a suitable handle 27, by means of which it may be manipulated. The shield 21 may be secured to the plunger 26 in any suitable manner, but herein the latter is reduced at its rear end to provide a shoulder 28, and onto this reduced por-

tion the shield 21, which is perforated for this purpose, is brought against the shoulder after which it is fastened by any suitable means. Herein the inner end of the plunger 26 is provided with a recess 29, and the outer edge of this recess is spun or riveted down to form a flange 30 which firmly holds the shield 21 in fixed position against the shoulder 28. The recess 29 has the further advantage of providing a chamber to receive a usual spur or tip 31 of the bulb 12 to prevent the same from becoming broken, as might otherwise be the case due to the end of the plunger 26 striking the tip.

The plunger 26 may be guided by any suitable means, but herein I have provided for this purpose means including a bushing 32 encircling the plunger and extending through a perforation 33 in the glazing 16. This bushing may be secured in its place by any appropriate means, such for example as a nut 34 encircling and having screw-threaded engagement with the bushing, while the latter is provided with a flange 35 constituting an abutment. By turning the nut 34 in the proper direction, the glazing 16, which is interposed between the nut and the flange, is clamped between them. If desired, I may provide suitable yielding washers 36 and 37 of appropriate material such as fiber to form a tight joint, and to prevent the bushing from turning in the glazing these washers may be cemented in place if desired when the parts are assembled, but in practice I have found this to be unnecessary.

The bushing 32 may also serve as a convenient means for securing the shield 24 in its place, and to that end the latter is centrally perforated in order that it may be slipped onto the bushing and brought against the flange 35, so that when assembled it is interposed between said flange and the inner washer 37. In this way the shield 24 can be clamped against the washer 37 and held rigidly in its proper position. Any suitable means may be provided for securing the nut 34 so that the same shall not become accidentally unscrewed, but herein I have provided for such purpose a set screw 38 threaded into the nut 34 in a radial direction and bearing against the bushing 32.

The plunger 26 is preferably cylindrical, and may therefore be moved axially as well as turned within the bushing 32 for the purpose of adjusting the shield 21. As a means for securing the shield in the desired position of adjustment, I have herein provided frictional clamping means encircling the plunger 26, said means herein including a contractible clamping ring or collar 39 and a nut 40 having screw-threaded engagement with said collar. The collar 39 may be rendered contractible in any suitable manner, but herein is provided with a plurality of longitudinal slots 41. As a means for uti-

lizing the nut 40 to contract the ring 39 and cause the same to grip or clamp the plunger 26, I have herein provided the ring 39 and bushing 32 with cooperating inclined or wedge-like surfaces 44 and 45, preferably of frusto-conical form. The conical surface 44 is herein formed on a flange 46 on the inner end of the collar 39. By turning the nut 40 in one direction, it tends to produce an axial movement of the collar 39 in an outward direction, whereby the cooperating inclined surfaces 44 and 45 contract the split portion of the ring 39 and cause the latter to bind or grip the plunger 26, thus to hold the latter in the desired position of adjustment. When, however, the nut is turned in the opposite direction, the collar is loosened and the plunger may then be moved axially or turned to carry the shield 21 to the desired position, after which the nut 40 is operated to clamp the plunger once more. To facilitate turning the nut 40 by means of the fingers, its circumferential surface may be knurled, as shown in Fig. 1.

When the shield 21 is adjusted to its extreme forward position, as illustrated in Fig. 3, it may, and preferably does recede entirely into the shield 24. Under these circumstances the latter serves as a means to cut off direct rays from the bulb 12 to the glazing 16. The shield 25, however, cuts off no rays from the reflector 13. When the shield 21 is moved in a rearward direction from the position shown in Fig. 3, however, it will gradually cut off more and more rays from the reflector 13, until it reaches its extreme rearward position. As a means for preventing the shield 21 from touching the reflector 13 and thereby possibly injuring the highly polished surface of the latter, I have herein provided suitable means to limit the rearward movement of said shield, such means herein consisting of the handle 27, to which I have hereinbefore referred as being secured to the plunger 26. In assembling the lamps it is found that owing to slight variations in dimensions of certain parts, it is desirable to provide adjustable means to limit the inward movement of the shield 21. To this end I have shown the stop 27 in the form of a nut, encircling and having screw-threaded engagement with the plunger 26. By turning the nut in one direction or the other, the inward limit of movement of the shield 21 may be determined with great accuracy. When thus adjusted the nut 27 may be secured by any suitable means, as for example, a locking-screw 47 extending through a perforation 48 in the forward end of the nut 27 and threaded axially into the plunger 26. By slightly loosening the screw the nut 27 may be turned and adjusted and again locked by means of the locking-screw. To facilitate the turning of the nut 27, as well as the backward and forward and turning

movements of the plunger 26, the circumferential surface of the nut may be knurled, as illustrated in Fig. 1.

Referring now to Fig. 5, I have there shown a modification of the means for clamping the plunger. In this form a bushing 32', encircling the plunger 26 and extending through the glazing 16, is secured therein by a nut 34' having screw-threaded engagement with the bushing, while the latter is provided with a flange 35' constituting an abutment. By turning the nut 34' in the proper direction, the glazing 16, which is interposed between the nut and the flange, is clamped between them. In this respect the bushing 32' and its mode of abutment is similar to the bushing 32 hereinbefore described.

Here, however, the resemblance ends, for instead of providing a separate contractible collar, as in the form first described, I have made the bushing 32' itself contractible by providing the bushing with a plurality of slots 41'. In this form a nut 40', threaded onto the bushing 32', serves as a means for contracting the split portion of the bushing. To this end, the bushing and nut are herein provided with cooperating inclined surfaces 44' and 45', preferably having a frusto-conical form. By simply turning the nut 40' in the proper direction, the contractible portion of the bushing 32' is caused to contract and clamp the plunger 26, thereby to hold the latter in the desired position of adjustment. In other respects, this form of my invention is similar to that hereinbefore described in connection with Figs. 1 to 4 inclusive.

While I have herein shown and described two forms or embodiments of my invention for illustrative purposes, and have disclosed and discussed in detail the constructions and arrangements incidental to two specific applications thereof, it is to be understood that the invention is limited neither to the mere details or relative arrangement of parts, nor to its specific embodiments herein shown, but that extensive deviations from the illustrated forms or embodiments of the invention may be made without departing from the principles thereof.

Having thus described two embodiments of my invention, what I claim and desire by Letters Patent to secure is:

1. A lighting apparatus comprising, in combination, a source of light, a reflector associated therewith to project light rays emanating from said source, a glazing through which said rays may be projected, means to intercept some rays emanating from said source, and instrumentalities for adjustably positioning the intercepting means with reference to said light source, the last mentioned means including slidable adjusting means and securing means therefor comprising a contractible collar extending

ing through said glazing and means to contract said collar about said adjusting means.

2. A lighting apparatus comprising, in combination, a source of light, a reflector associated therewith to project light rays emanating from said source, a glazing through which said rays may be projected, means to intercept some rays emanating from said source, and instrumentalities for adjustably positioning the intercepting means with reference to said light source, the last mentioned means including slidable adjusting means and securing means therefor comprising a threaded contractible collar extending through said glazing and a nut threaded onto said collar to contract the latter about said adjusting means.

3. A lighting apparatus comprising, in combination, a source of light, a reflector associated therewith to project light rays emanating from said source, a glazing through which said rays may be projected, means to intercept some rays emanating from said source, and instrumentalities for adjustably positioning the intercepting means with reference to said light source, the last mentioned means including slidable adjusting means and securing means therefor comprising a contractible collar extending through said glazing and provided with an inclined surface and means cooperating therewith to contract said collar about said adjusting means.

4. A lighting apparatus comprising, in combination, a source of light, a reflector associated therewith to project light rays emanating from said source, a glazing through which said rays may be projected, means to intercept some rays emanating from said source, and instrumentalities for adjustably positioning the intercepting means with reference to said light source, the last mentioned means including slidable adjusting means and securing means therefor comprising a collar extending through said glazing and provided with one or more longitudinal slots to render the same contractible, and means cooperating therewith to contract said collar about said adjusting means.

5. In a lighting apparatus, the combination with a light source of a shield therefor, and instrumentalities for adjustably positioning said shield with reference to said light source, including an adjusting member, an inner collar through which said member slides, said collar being provided with one or more slots rendering the same contractible, an outer collar encircling said inner collar, said collars being provided with cooperating inclined surfaces, and means relatively to actuate said collars to cause the inner collar to contract and clamp said adjusting member therein.

6. In a lighting apparatus, the combination

tion with a light source of a shield there-
for, and instrumentalities for adjustably po-
sitioning said shield with reference to said
light source, including an adjusting mem-
ber, an inner collar through which said
member slides, said collar being provided
with one or more slots rendering the same
contractible, an outer collar encircling said
inner collar, said collars being provided
10 with cooperating inclined surfaces, and a
nut threaded onto said inner collar to rela-
tively actuate said collars to cause the in-
ner collar to contract and clamp said ad-
justing member therein.

15 7. In a fighting apparatus, the combina-

tion with a light source of a shield there-
for, and instrumentalities for adjustably po-
sitioning said shield with reference to said
light source, including an adjusting mem-
ber, an inner collar through which said mem- 20
ber slides, said collar being provided with
one or more slots rendering the same con-
tractible, an outer collar encircling said in-
ner collar, said collars being provided with
cooperating inclined surfaces, and a nut 25
threaded onto said inner collar and bearing
endwise against said outer collar.

In testimony whereof, I have signed my
name to this specification.

ELLSWORTH A. HAWTHORNE.