

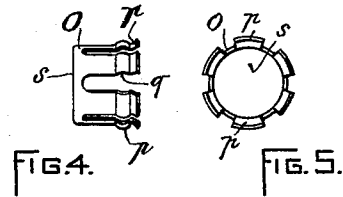
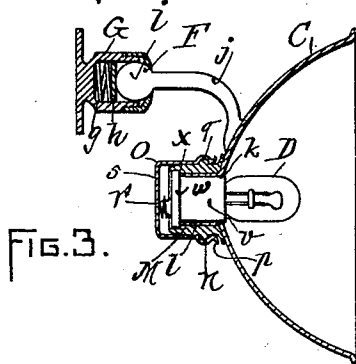
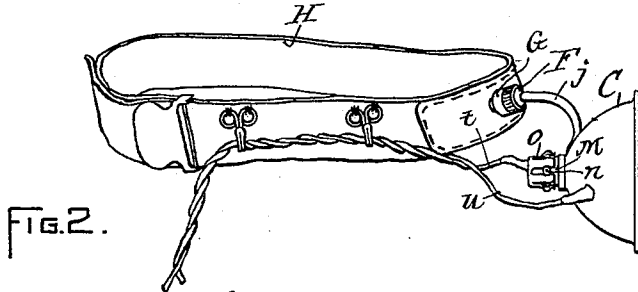
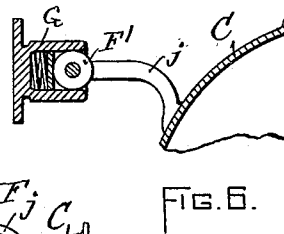
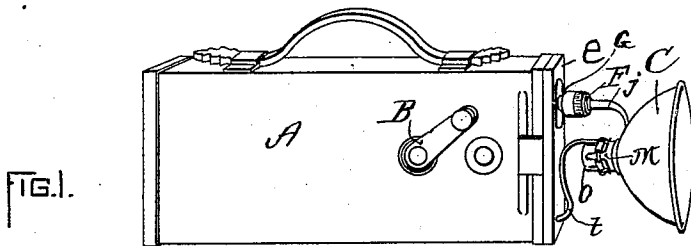
No. 640,729.

Patented Jan. 2, 1900.

W. A. FENNER.
ELECTRIC LAMP.

(Application filed May 15, 1899.)

(No Model.)



WITNESSES:

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WILLIS A. FENNER, OF PROVIDENCE, RHODE ISLAND.

ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 640,729, dated January 2, 1900.

Application filed May 15, 1899. Serial No. 716,947. (No model.)

To all whom it may concern:

Be it known that I, WILLIS A. FENNER, a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Electric Lamps, of which the following is a specification.

My invention consists in the improved combination of the lamp with the reflector and its supporting means and in the improved electric connection with the lamp, as herein-after fully set forth.

In the accompanying drawings, Figure 1 represents a perspective view of an electric lamp provided with my improvement and also of the case which serves to hold the galvanic battery. Fig. 2 represents a perspective view showing an electric lamp provided with my improvement, the reflector being attached to a head-band. Fig. 3 represents an axial section of the reflector and the attaching joint-piece. Fig. 4 represents a side view, and Fig. 5 an end view, of the improved spring-cap by means of which electric connection is made with the lamp. Fig. 6 represents a hinge-joint for the reflector.

In the drawings, Fig. 1, A represents the case in which the electric battery is held, and B the switch by means of which the electric circuit is made and broken. The reflector C of the electric lamp D is secured to the end *e* of the case A by means of the ball-and-socket joint F. (Shown in section in Fig. 3.) Within the cavity of the attaching joint-piece G is placed the spring *g* and disk *h*, which are employed to properly friction the ball *i* of the joint in order to hold the lamp and reflector in any of their set positions relatively to the case A. The ball *i* of the joint F is connected with the parabolic reflector C by means of the curved arm *j*, the said ball *i* being arranged eccentric with the axis of the lamp D and the reflector C, as shown in the drawings, so that unobstructed access may be had to the axial opening *k* of the reflector for the insertion or removal of the lamp D. Upon the hollow cylindrical projection *l* at the rear of the reflector is secured the annular collar M, of insulating ma-

terial, the said collar being preferably provided with the peripheral rib *n*. The electric lamp D is made removable from the axial opening *k* in the reflector and arranged in electric connection with the concentric reflector C by means of the metallic case *v* of the lamp, provided at its outer end with the collar *w*, which serves, in connection with the shoulder *x*, to limit the inward position of the lamp within the reflector. Electric connection is also made with the lamp by means of the spring-cap O, (shown in side and end views in Figs. 4 and 5,) the spring-arms *p p* of the cap O being bent to form the internal groove *q*, adapted for frictional engagement with the rib *n* of the insulating-collar M, whereby the cap O will be properly retained in electric connection with the lamp D, the said lamp being preferably provided with the electric-contact spring *r*, adapted to bear against the inner side of the head *s* of the cap O, and by means of the cap O the engagement and disengagement of the lamp D with the reflector C may be readily effected, the said spring-cap forming a convenient and economical means for effecting electrical connection with the lamp. Electric connection is made with the cap O from one of the poles of the battery by means of the wire *t*, electric connection with the opposite pole being made through the joint F, which may also be made in the form of a hinge-joint F', if preferred, as shown in Fig. 6.

In Fig. 2 the lamp is shown as connected to a strap H for attachment to the head, the electric wire *t* being connected to the cap O and the opposite electric wire *u* connected with the reflector.

I claim as my invention—

1. The combination of an electric lamp, and the reflector, provided with the axial opening adapted to hold the lamp, with the insulating-collar secured to the reflector, the cap provided with the spring-arms for holding engagement with the insulator, and for making electric connection with the lamp, and the opposite electric connection made with the reflector, substantially as described.

2. The combination of an electric lamp, and

the reflector, provided with the axial opening adapted to hold the lamp, with the insulating-collar secured to the reflector, the cap provided with the spring-arms for holding
5 engagement with the insulator, and for making electric connection with the lamp, the ball-and-socket connection with the support

for the lamp, and electric connection with the reflector, substantially as described.

WILLIS A. FENNER.

Witnesses:

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