No. 666,381. Patented Jan. 22, 1901.

R. R. GAREAU.

ILLUMINATED CLOCK.

(Application filed Dec. 18, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

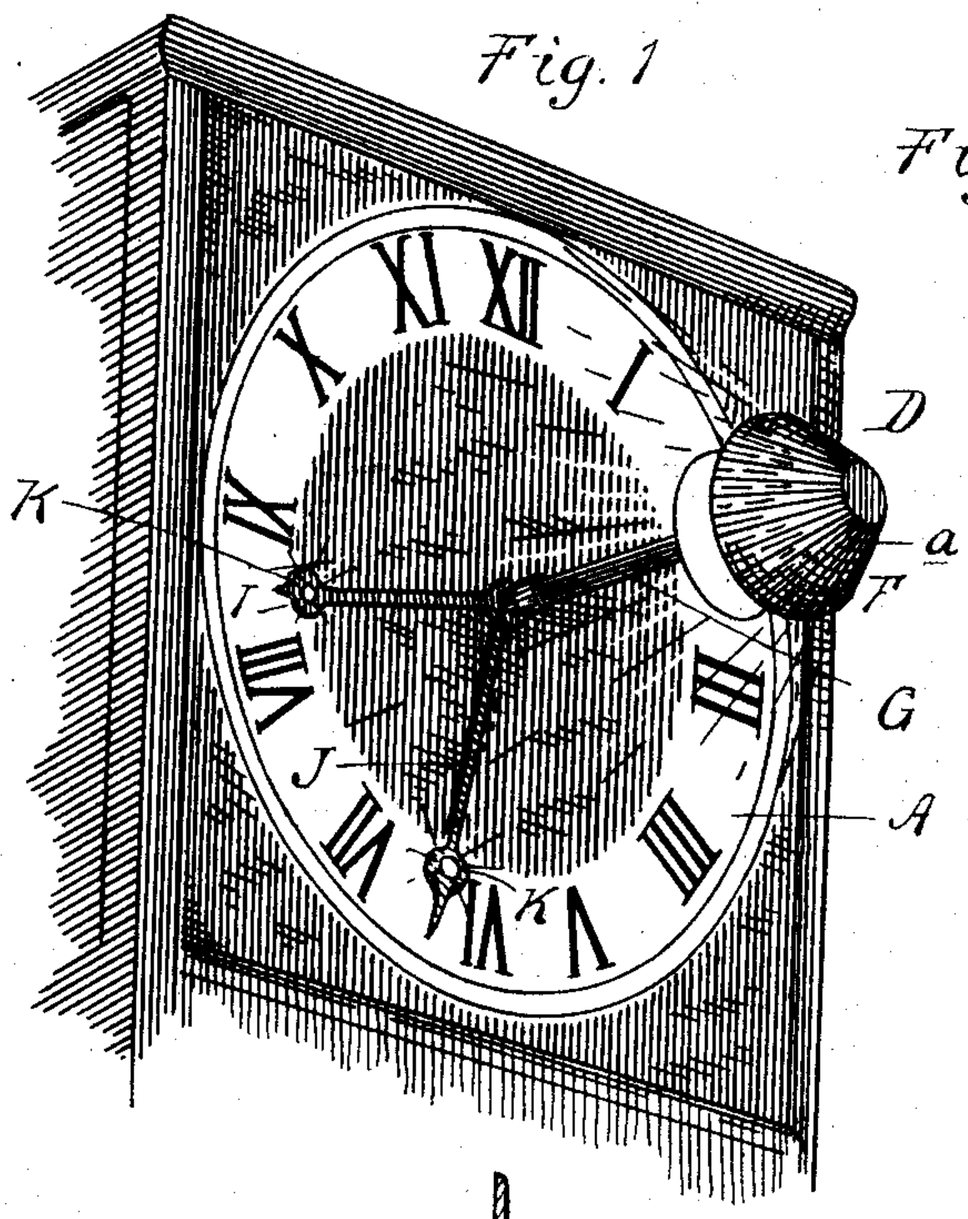


Fig. 3

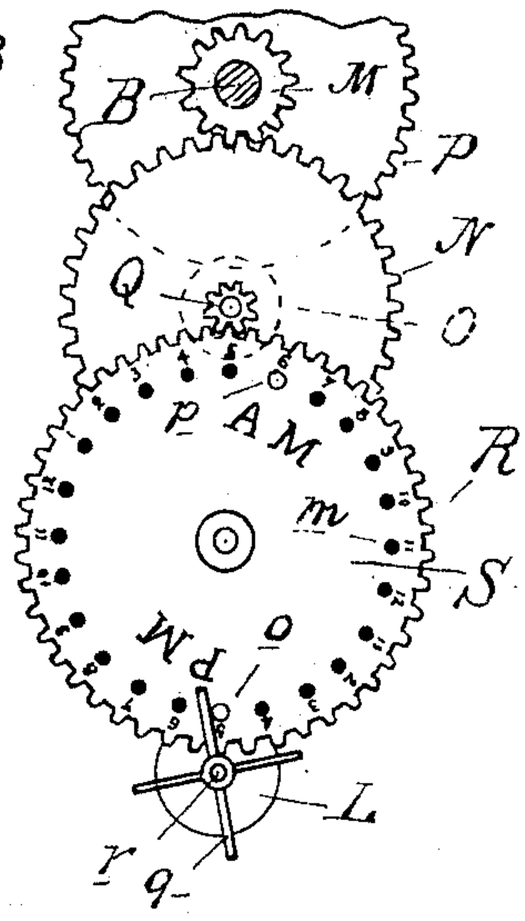
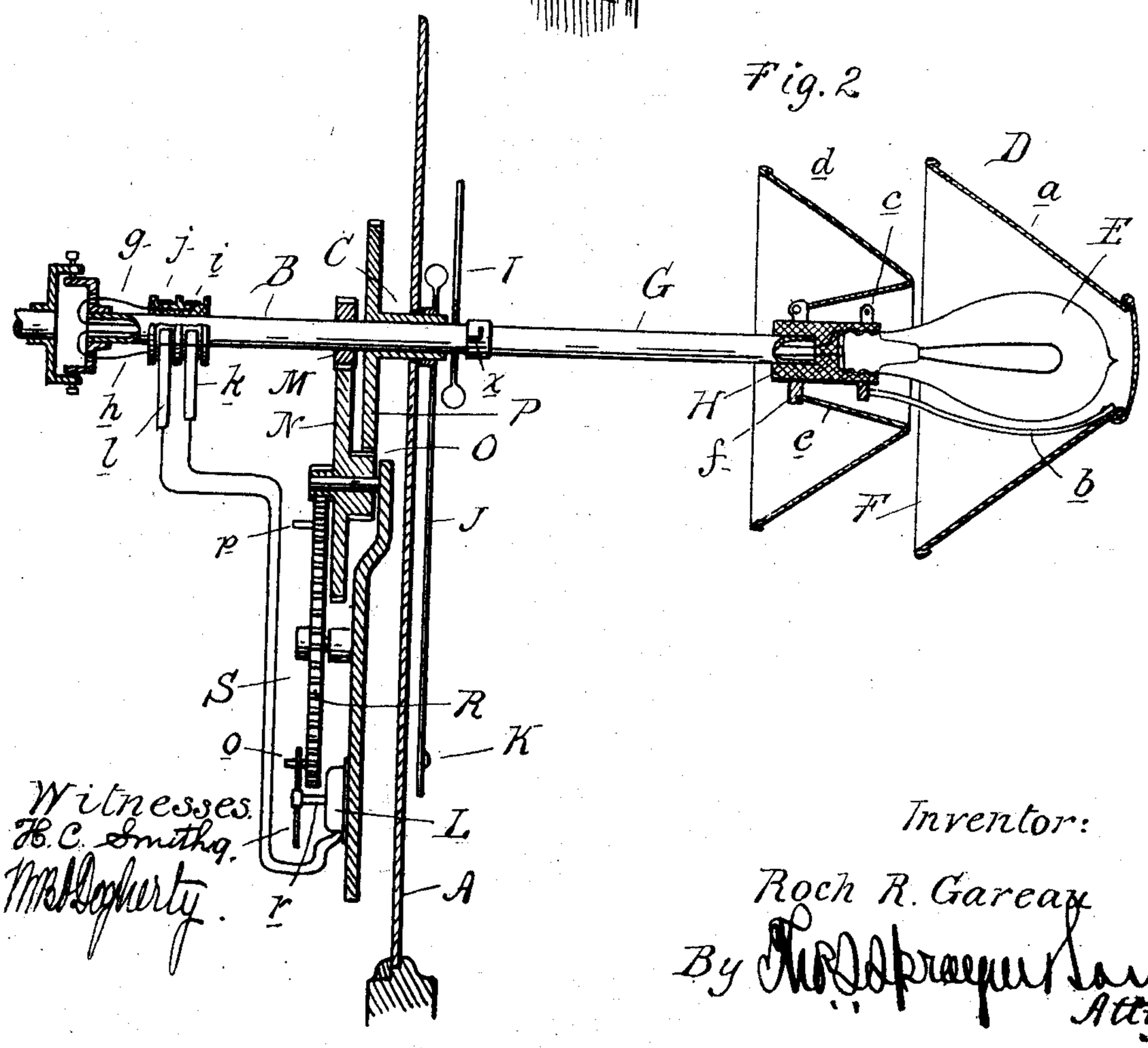


Fig. 2



Witnesses.
H. C. Smith.
M. B. Dogherty.

Inventor:
Roch R. Gareau
By Thos. D. Sprague Son & Sons
Attys

No. 666,381.

Patented Jan. 22, 1901.

R. R. GAREAU.

ILLUMINATED CLOCK.

(Application filed Dec. 18, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 4

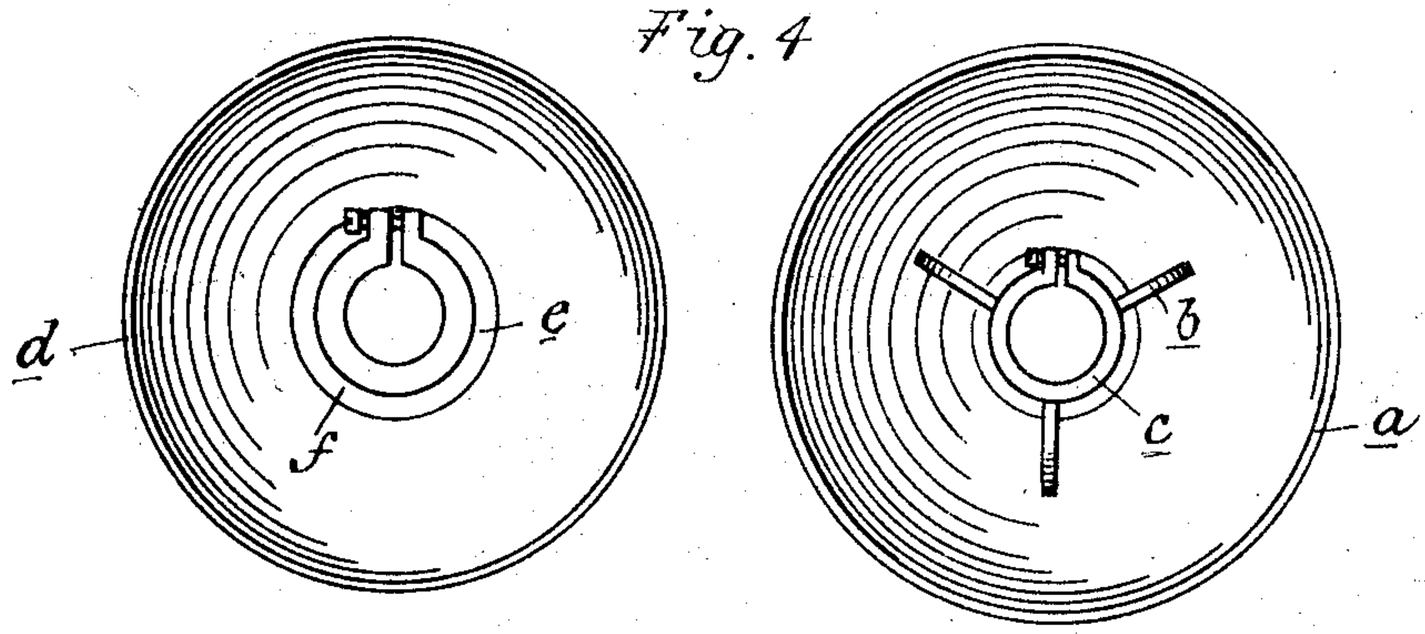


Fig 5

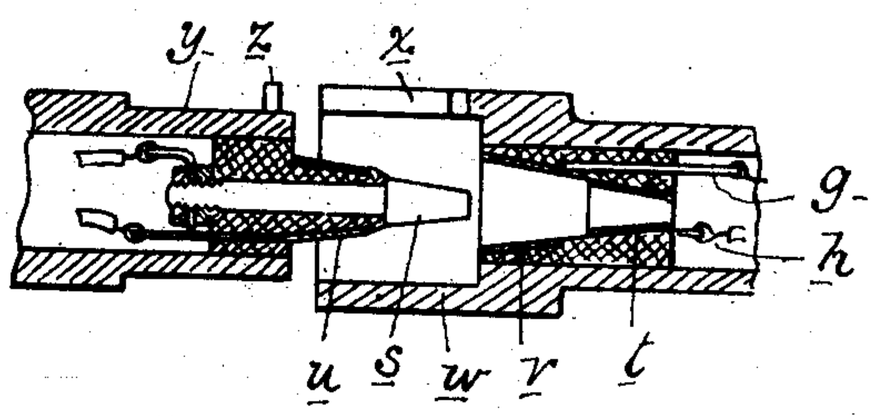
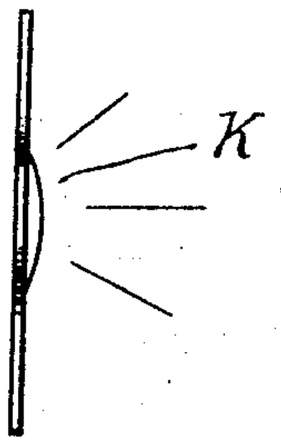


Fig. 6



Witnesses:
H. C. Smith.
W. B. Dogherty.

Inventor:
Roch R. Gareau
By Thos. D. Sprague Jr. & Co. Attys.

UNITED STATES PATENT OFFICE.

ROCH R. GAREAU, OF DETROIT, MICHIGAN.

ILLUMINATED CLOCK.

SPECIFICATION forming part of Letters Patent No. 666,381, dated January 22, 1901.

Application filed December 18, 1899. Serial No. 740,662. (No model.)

To all whom it may concern:

Be it known that I, ROCH R. GAREAU, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Illuminated Clock-Dials, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to illuminated clock-dials; and the object of the invention is to produce with a lamp of minimum power a maximum illuminating effect of the figured portion of the dial.

To this end the invention consists, first, in the peculiar construction and arrangement of a lamp and reflector whereby the light is concentrated in an annular beam which falls upon the figured portion of the dial; further, in the means employed for supporting said lamp and reflector in proper relation to the dial; further, in the means for illuminating the hands; further, in the means whereby the light may be automatically turned on and off at any desired hour of the day or night, and, further, in the peculiar construction, arrangement, and combination of parts, as more fully hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of the clock provided with my illuminated dial. Fig. 2 is a vertical section in the plane of the arbor for the hands. Fig. 3 is an elevation of the switch-controlling mechanism. Fig. 4 is an elevation of the two parts of the dial and illuminator detached. Fig. 5 is a section through the coupling, between the hand-arbor and supporting-post, for the illuminator. Fig. 6 is a detail view of one of the hands.

My improvement is especially applicable to tower-clocks; but its use is not limited thereto, as it may also be employed for the ordinary house-clocks.

In the drawings, A is the dial of the clock, and B is the arbor for the minute-hand, and C the usual sleeve or hollow arbor for the hour-hand, of a clock of any ordinary construction.

D is my illuminator, which comprises, essentially, a lamp E and a reflector F, the latter being so constructed as to concentrate the rays of the lamp into an annular beam. This illuminator is preferably supported in front of the dial upon a post G, forming an extension of the hand-arbor. It is obvious, however, that it might be supported in some other way, and in the broader scope of my invention I wish to include the peculiar construction of my illuminator supported in any suitable manner.

For the lamp E, I preferably employ an incandescent electric lamp, and this construction I have shown in the drawings, in which H is a socket formed at the outer end of the post G, in which the lamp may be secured in the usual way.

The reflector F comprises the conical member *a*, surrounding the lamp-bulb and supported in this position by arms *b*, connected to an adjustable clamping device *c*, secured upon the lamp-socket. The reflector also comprises the conical member *d*, arranged upon the opposite side of the lamp and forming, in connection with the member *a*, the means for reflecting the light of the lamp in an annular path. The member *d* is also adjustably clamped upon the lamp-socket H, and in order to leave room for the clamp *c* said member is provided with the oppositely-flaring reflector portion *e*, uniting the clamp *f* with the portion *d*.

With the construction of reflector just described it will be seen that the lamp itself is completely hidden from view, while all its illuminating power is concentrated into an annular beam. The length of the post G and the adjustment of the portions *a* and *d* of the reflector are such that this annular beam will fall upon the dial so as to illuminate the figured portion thereon only, as shown in Fig. 1. As this portion is only a fraction of the entire area of the dial, it is obvious that with a lamp of equal strength a much greater illuminating effect is produced where the light is concentrated in the manner described over a construction in which it is distributed across the entire dial. Moreover, the effect is intensified by reason of the contrast between the shadowed portion of the dial and the illumi-

nated circle. The circle of light upon the dial is of sufficient width to include the numerals and also the ends of the hands I and J, and in order to make the latter more readily discernible I preferably arrange a reflector K near the outer end of each hand. This reflector is slightly convex in form, so that the light reflected thereby may be seen from any point of view and will give the appearance of a star of light surrounded by the dark portion of the hand.

The current for the lamp E is conducted through the post G and arbor B, both of which are preferably hollow to receive the insulated conductors *g* and *h*. As the arbor is continuously rotating the inner ends of the conductors *g* and *h* are connected to insulated rings *i* and *j* upon the arbor, from which the current is conducted through brushes *k* and *l* to the stationary conductors.

To automatically turn on or off the current at any predetermined time, I provide a switch L, for which any ordinary construction, such as the usual rotary snap-switch, may be employed. To operate this switch, I have provided intermediate mechanism between it and the arbor of the clock and adjustably-operating arms carried by this mechanism, whereby the switch may be operated at any predetermined point of time. The construction which I preferably employ is illustrated in Figs. 2 and 3, in which M, N, O, and P are the gears of the usual train between the minute and hour hand arbors. Upon the shaft of the gears O and N, I arrange a pinion Q, adapted to mesh with a gear R upon the periphery of a wheel or disk S. The pinion Q and gear R are so proportioned relatively to the gears N and M that the disk S will be given one complete revolution to every twenty-four revolutions of the minute-hand arbor B, and thus will complete a revolution once in twenty-four hours. Around this disk are arranged a series of sockets *m*, which I have shown as twenty-four in number, of which there may be a greater or less number, as desired.

o and *p* are pins adapted to be inserted in the socket *m*.

q represents arms secured to the rotary shank *r* of the switch L, which project into the path of the pins *o* and *p*, so that in the rotation of the disk S said pins will successively engage with the arms *q*. Each time one of the pins engages with one of the arms a switch will be operated, and successive operations of the switch will alternately turn on and off the current. Thus if one of the pins *p* is placed in the socket marked "6 A. M." and the other pin *o* in the socket marked "5 P. M." the effect will be to turn on the light at five o'clock in the afternoon and to shut it off again at six in the morning.

In order to provide means for readily detaching the lamps and reflector from the hand-arbor, I preferably provide a combined mechanical and electrical coupler, whereby a mechanical coupling of the post G to the arbor B will simultaneously effect the coupling of the electric circuit. This coupler I have illustrated in Fig. 3, in which *s* is a contact-pin secured in an insulated plug at the outer end in the hollow arbor B. *t* is a socket, in like manner secured in the insulated plug at the end of the post G.

u and *v* are contacts adjacent to the contacts *s* and *t*, respectively, and insulated therefrom, these contacts being adapted when the post and arbor are coupled to contact with each other. The tubular post G is provided with a socket *w*, adapted to receive the end *y* of the arbor B, and said socket is formed with an L-shaped slot *x*, with which the lug or pin *z* upon the arbor B is adapted to engage. With this construction the post may be secured to the arbor by engaging the portion *y* of the latter with the socket *w*, and then by slightly rotating the posts the pin *z* will lock with the L-shaped portion of the slot *x* and at the same time the contacts *s t* and *u v* will be brought together in electrical contact. Thus if one of the electrical conductors is connected to the contacts *s* and *t* and the other to the contacts *u* and *v* the lamp-circuit will be completed whenever the post is thus mechanically coupled to the arbor, and this will facilitate the ready removal of the illuminator whenever desired and its equally ready replacement.

What I claim as my invention is—

1. The combination with the dial of a lamp or illuminant arranged in front of said dial, and means for shadowing the center portion of said dial to form an illuminated outer circle on the figured portion thereof.

2. The combination with the dial of an illuminator therefor comprising a lamp or illuminant arranged in front of the dial, a reflector for concentrating the light upon the dial and a counter-reflector shadowing the center portion of said dial and adapted in conjunction with the main reflector to direct the light falling thereupon onto the outer annular portion of the dial.

3. In a clock, the combination with the dial and the hand-arbor passing therethrough of a post forming an outward extension of said arbor beyond the hands, a lamp at the outer end of said post, and a reflector for concentrating the rays of said lamp upon the figured portion of the dial.

4. In an illuminated clock, a lamp or illuminant arranged centrally in front of the dial and a reflector carried by the hand near the outer end thereof adapted to reflect the rays from said lamp to form the appearance of a star of light on said hand.

5. An illuminated clock, comprising an incandescent lamp arranged in front of the dial with its socket extending inward, a reflector in front of the transparent end of the lamp-

bulb, for concentrating the light therefrom into an annular beam, and a supporting-bar extending from the socket to the center of said reflector adjacent to the bulb, whereby said reflector is supported without casting a defined shadow across on the illuminated circle on the dial.

In testimony whereof I affix my signature in presence of two witnesses.

ROCH R. GAREAU.

Witnesses:
M. B. O'DOGHERTY,
H. C. SMITH.