F. W. GAY.

LUMINOUS LOCATOR OR MARKER.

APPLICATION FILED AUG. 15, 1919.

1,361,380. Patented Dec. 7, 1920.

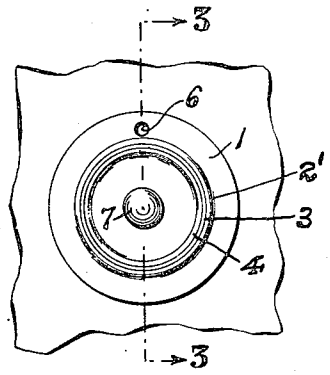


Fig. 1

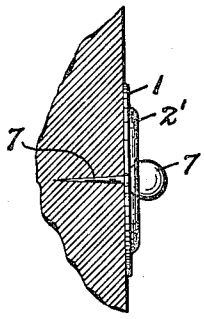


Fig. 2

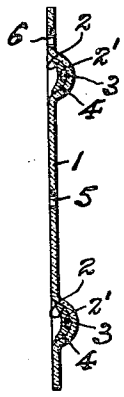


Fig. 3

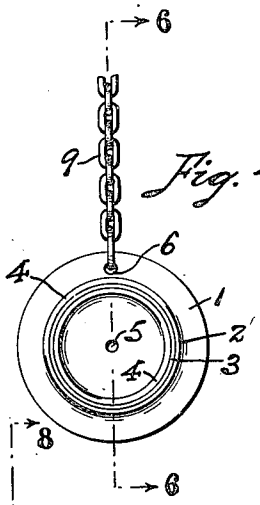


Fig. 4



Fig. 5

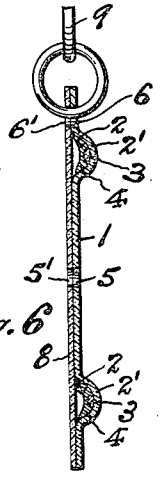


Fig. 6

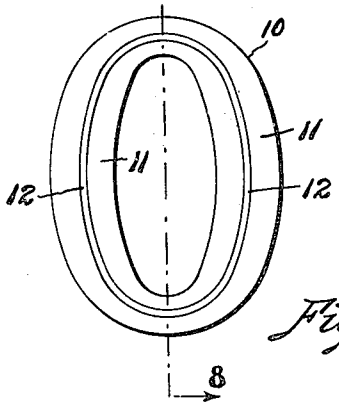


Fig. 7

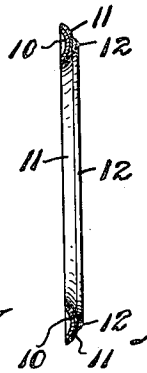


Fig. 8

INVENTOR

Frazer W. Gay,

BY

Fraser & Richards,

ATTORNEYS

UNITED STATES PATENT OFFICE.

FRAZER W. GAY, OF NEWARK, NEW JERSEY.

LUMINOUS LOCATOR OR MARKER.

1,361,380. Specification of Letters Patent. Patented Dec. 7, 1920.

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To all whom it may concern:

Be it known that I, FRAZER W. GAY, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Luminous Locators or Markers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The present invention has reference, generally, to a novel construction of luminous locator devices; and the invention relates, more particularly, to a novel construction of locator or marker device employing in its structure a novel combination and arrangement of inherently luminous material with a material adapted to be activated by light rays to produce a luminosity after said light rays are cut off.

The present invention has for its principal object to provide a cheap, simple and efficient locator or marker device employing for the production of its luminous effects a novel combination and association of a light activiated material, such as crystallin phosphorescent zinc sulfid which absorbs and stores light and subsequently yields up the same when the charging light rays are discontinued, with an inherently luminous or light generating material, such as a radium charged phosphorescent material.

A further object of the present invention is to provide a novel construction of locator or marker device adapted to yield the maximum of visibility with a minimum of material.

Other objects of the present invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

With the various objects of the present invention in view, the same consists, primarily, in the novel construction of luminous locator or marker device hereinafter set forth; and the invention consists, furthermore, in the novel arrangements and combinations of the device, parts and substances, as well as in the details of the construction of the same, all of which will be hereinafter more fully described, and then finally embodied in the claims appended hereto.

The invention is clearly illustrated in the accompanying drawings, in which:

Figure 1 is a face view of one form of my novel luminous locator or marker device made according to and embodying the principles of my present invention; Fig. 2 is a side elevation or edge view of the same; and Fig. 3 is a vertical cross-section of the same, taken on line 3—3 in said Fig. 1, and drawn on an enlarged scale.

Fig. 4 is a face view of a slightly modified construction of my novel luminous locator or marker device; Fig. 5 is a side elevation or edge view of the same; and Fig. 6 is a vertical cross-section of the same taken on line 6—6 in said Fig. 5, and drawn on an enlarged scale.

Fig. 7 is a face view of another modified form of my novel luminous locator or marker device; and Fig. 8 is a vertical cross section of the same taken on line 8—8 in said Fig. 7.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

The novelty of my present invention, broadly considered, lies in combining on a suitable base or carrying element two kinds of light emitting substances; one of said substances being a cheap phosphorescent material and the other a phosphorescent material charged with a radio-active element, such as radium, meso thorium, or similar inherently luminous substance, all in such a manner as to secure a greater combined efficiency than has heretofore been attained in luminous locator or marker devices. The cheap phosphorescent material may be a crystallin phosphorescent zinc sulfid, or other phosphorescent sulfid or similar material, which is capable of being activated by light rays, so that it will glow or yield up the light produced by such activation when the activating light rays are cut off. The inherently luminous material may be a phosphorescent sulfid or similar material actually charged with a radio-active material. A desired area of the base or carrying element may be coated with the

light activated phosphorescent sulfid, upon which is superimposed, in a smaller area, a strip or belt of material charged with a radio active substance rendering the same inherently luminous. The radio-active substance produces a bombardment of radium rays upon the sulfid with which it is incorporated, such rays being caused by explosions of the atoms of radio-active material, and such rays in turn causing an activation of the sulfid rendering the same luminous, so that the whole substance glows in the dark. When this so called inherently luminous material is placed in proximity to the non-radio-active charged phosphorescent material, the radium rays of the former, which carry an appreciable distance from their source, slightly activate the latter material causing the same to glow.

The use of the two characters of material in combination in connection with luminous locator or marker devices is also intended to compensate for the time lag in the human eye, that is to compensate for that interval of time required for the adjustment of the eye to sudden and great change in the intensity of illumination of visible objects. In other words, if a person turns out the light in a room, so that he is in total darkness, it is necessary for easy visibility to have objects glow very brightly, whereas when the eye has adjusted itself to the darkness a much dimmer glow is sufficient to give the same easy visibility. I therefore propose to combine in the locator or marker device a portion which will glow very brightly when suddenly transferred from light to dark surroundings, this relatively great intensity to be obtained by the use of a relatively large quantity of cheap light activated phosphorescent material, together with a smaller portion which will provide a long continued glow of lesser intensity to be obtained by the use of a small quantity the more expensive radio actively charged or inherently luminous material.

Referring to the said drawings I have illustrated therein certain desired forms of luminous locator or marker devices employing the materials and principles above set forth. In said drawings the reference-character 1 indicates a disk of some suitable transparent material, preferably provided in its body with a concentric depressed portion 2' providing a seat or groove 2, in the bottom of which is arranged a strip or ring, relatively narrow in width, of radio-actively charged material 3. The outlying or bordering areas of said seat or groove 2 being coated with a covering of cheap phosphorescent material 4, capable of being activated to produce luminosity when exposed to light rays. This disk so treated with respective materials 3 and 4 is provided with a central perforation 5, and also with a second perforation 6 located near the circumferential edge or periphery of the same The base or carrying element provided by the disk 1 being of transparent material renders the luminosity of the materials 3 and 4 clearly visible therethrough. Consequently the marker or locator so constructed may be attached to or near any article, the location of which is desired to be indicated in the dark, by means of a suitable fastener, such as a push-pin 7. If it is desired to secure the marker or locator by suspending the same from the device or article to be located, then a cord or other suspending means may be passed through the perforation 6, so as to connect the same to said device or article. The arrangement of the luminous materials 3 and 4 in ring form or annular disposition relative to the disk 1 is best since it provides the greatest visibility with a minimum amount of the materials.

Referring to Figs. 4 to 6 inclusive, I have illustrated therein a slightly modified form of my locator or marker somewhat better adapted for use when suspended, as, for example, from the switch pull chain of an electric lamp. In this modified arrangement I employ the transparent disk 1 having the seat 2 containing respective luminous materials 3 and 4, but in addition thereto I employ a second transparent cover disk 8, which I cement or otherwise secure over the back of said disk 1, thereby protecting the materials 3 and 4 from being dislodged from the seat 2 or overlaid with soil from contact with the fingers. The disk 1 possesses the above-mentioned perforations 5 and 6, and the cover disk 8 likewise possesses similarly located perforations 5' and 6' which register with the respective perforations of the disk 1 when said cover disk is secured thereto. In these views I have illustrated the modified locator or marker attached to a chain 9 engaged through the perforations 6 and 6', such for example, as a switch pull of an electric lamp, although it will also be understood that the modified form of locator or marker may also be attached to a desired place or object by thrusting a push-pin through the central perforations 5 and 5'.

Referring now to Figs. 7 and 8 of the accompanying drawings, I have illustrated therein another modified form of my present invention, the same being arranged to provide luminous letters or numerals adapted to be attached to places or objects desired to be easily identified in darkness. In this modified structure I employ a base 10 of any desired material and of desired shape, the surface of which is coated with a covering of cheap phosphorescent material 11 which is subject to light activation, upon which coating is superimposed a smaller zone or area of radio-actively charged material 12. It will be apparent that all the

advantages above mentioned broadly considered, will be provided by this last-described modification of my invention, in a manner rendering the same peculiarly adaptable for house-numbers and similar purposes.

Having thus described my invention, I claim:—

1. A locator device comprising a carrying disk of transparent material provided with an annular groove, a ring of inherently luminous radio-actively charged material seated in the bottom of said groove, the area of said groove adjacent to the ring of inherently luminous material being coated with a covering of phosphorescent material adapted to be activated for luminosity by exposure to light, and a cover disk of transparent material secured to said carrying disk to close said groove.

2. A locator device comprising a carrying disk of transparent material provided with an annular groove, a ring of inherently luminous radio-actively charged material seated in the bottom of said groove, the area of said groove adjacent to the ring of inherently luminous material being coated with a covering of phosphorescent material adapted to be activated for luminosity by exposure to light, a cover disk of transparent material secured to said carrying disk to close said groove, said carrying disk and said cover disk having alined perforations to receive attaching means.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 13 day of August, 1919.

FRAZER W. GAY.

Witnesses:

FREDK. C. FRAENTZEL,

BARBARA W. SUTTERLIN.