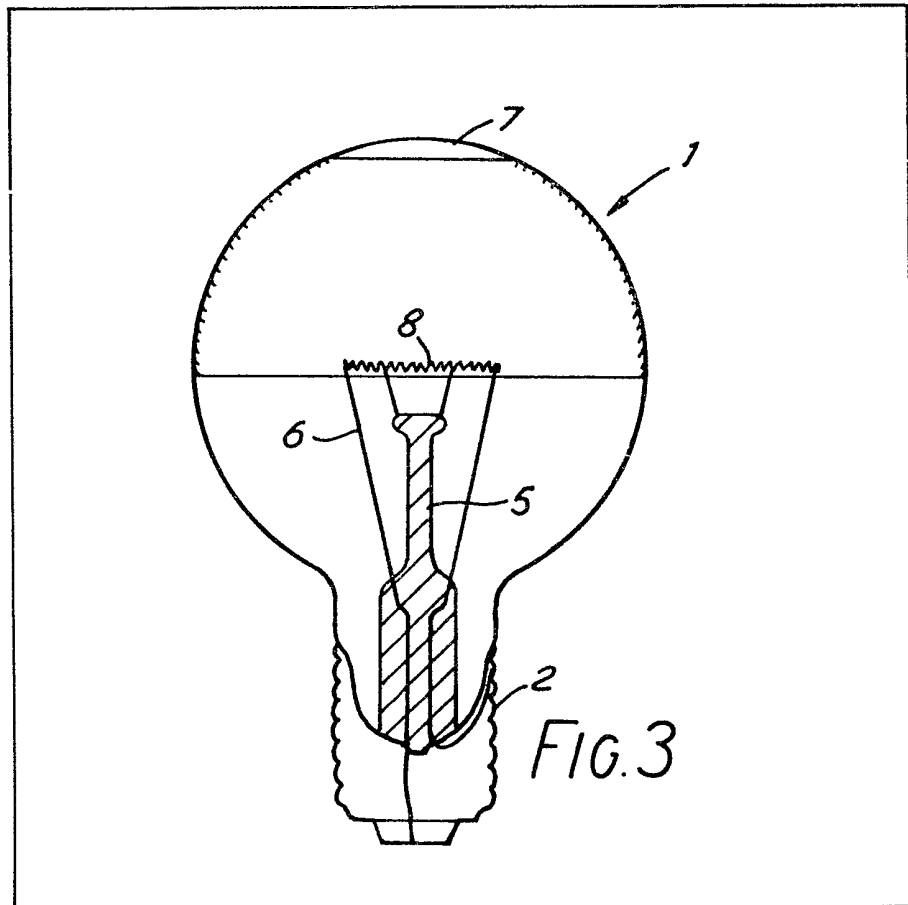


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GB 0269029
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(54) Incandescent lamp

(57) In crown silvered lamps the silvering reflects heat back to the lamp cap having an adverse affect, especially on the cement joining it to the envelope. This invention provides at least one part (7) of the envelope (1) opposing the cap (2) which is not silvered so that at least some of the energy radiated from the filament (8) is transmitted from the envelope in a direction away from the cap.



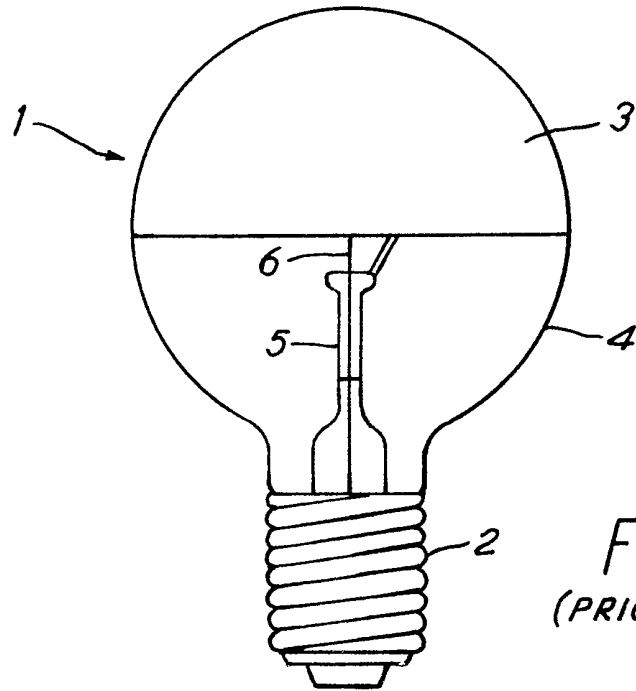


FIG. 1
(PRIOR ART)

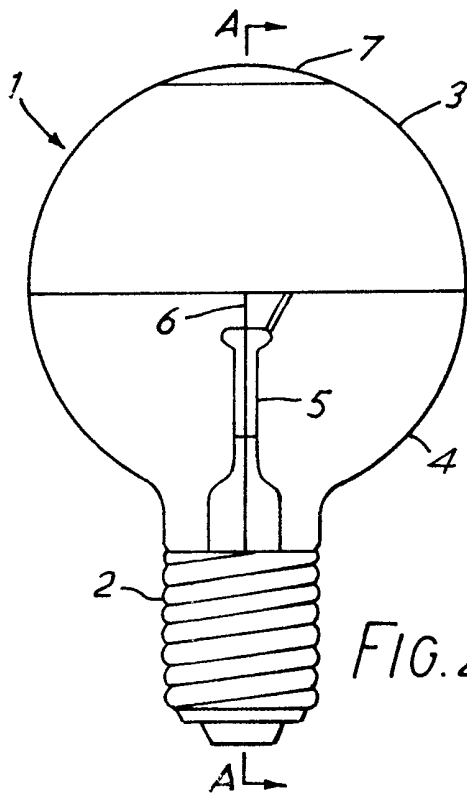


FIG. 2

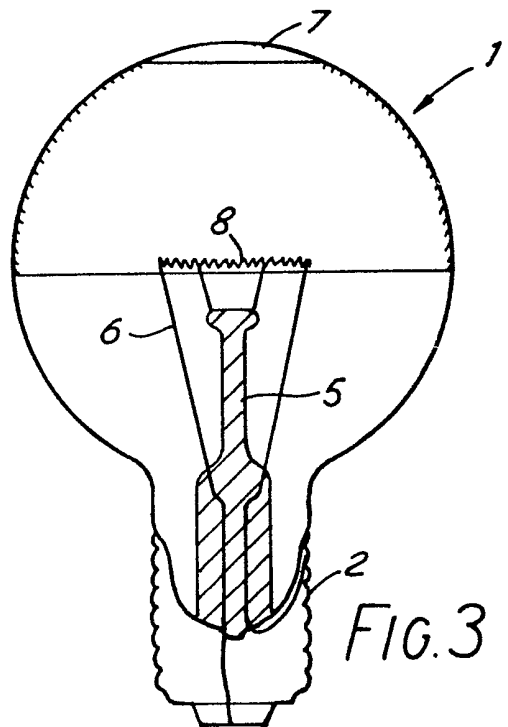


FIG. 3

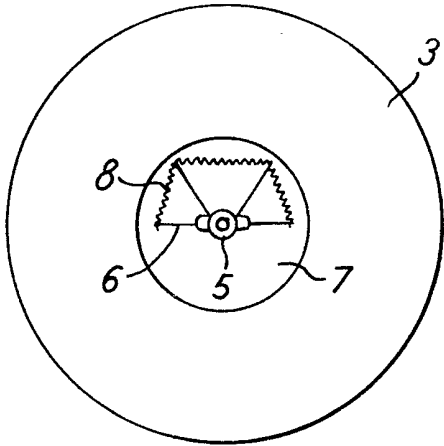


FIG. 4

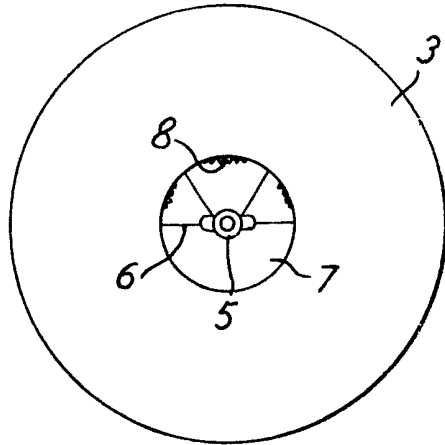


FIG. 5

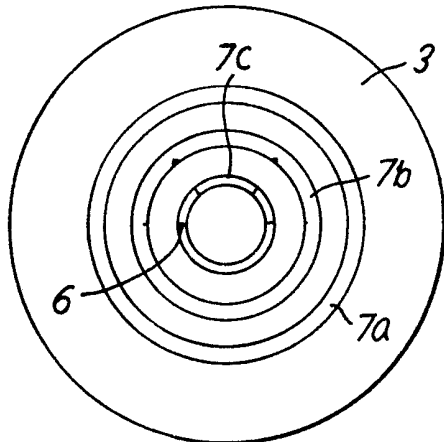


FIG. 6

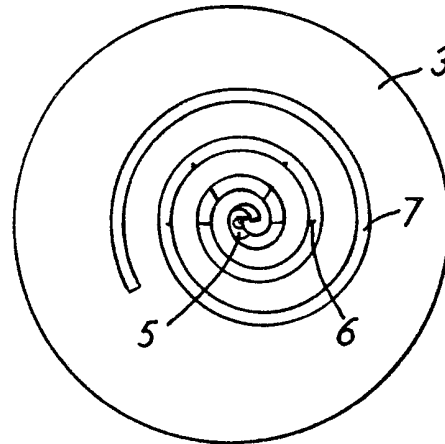


FIG. 7

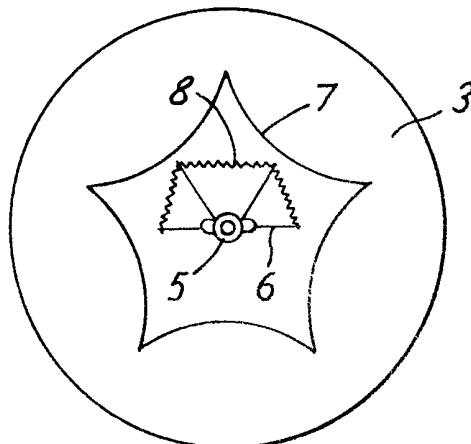


FIG. 8

SPECIFICATION

Incandescent lamp

5 The present invention relates to incandescent lamps of the type known as crown silvered (CS). Such lamps have a lamp envelope with a filament disposed within it and a lamp cap, generally of the edison screw type, by which electrical connection is
10 made to the filament. The part of the lamp envelope opposite to the cap, which part is generally hemispherical, is silvered by the application of a reflective metallic coating visually inside the envelope.

Such a lamp is shown in Figure 1 in which the
15 glass lamp envelope 1, terminated by an edison screw cap 2 has a silvered hemisphere 3. Visible through the clear lower portion 4 of envelope 1 is a glass support stem 5 and wires 6 providing electrical connection to and support for the filament. The
20 filament is, however, not visible behind the silvered part 3.

As can clearly be seen from Figure 1, the silvered part will reflect towards the lamp cap 2 light which would, in the absence of silvering, have been
25 transmitted by the upper hemisphere. Such lamps find application when it is desired to hide the filament from direct view. Uses are for example in types of projectors in which it is desired to avoid dazzling, the light transmitted in the region of the
30 lamp cap being reflected by an external reflector (not shown) in which the lamp is mounted.

It will also be realised, however, that in addition to reflecting light towards the lamp cap the silvering also reflects heat thereto. The cap of a CS lamp
35 receives much more heat than in an otherwise similar General Lighting Service (GLS) incandescent lamp. This excessive heating has been found to have an adverse effect on the cap, particularly on the cement fixing the cap to the envelope.

40 Proposals have been made to deal with this problem. For example British Patent No. 1 477 272 provides an arrangement in which the lamp is shaped in the hemisphere opposite to the cap to cause double reflection in the light path and thus
45 reduce the energy transmitted to the cap.

This is however complex and expensive to manufacture it is an object of this invention to provide a crown silvered lamp, in which the heat transmitted to the lamp cap is reduced without the need for such
50 complex shapes of envelope.

A crown silvered incandescent lamp having a lamp envelope, a filament and a lamp cap providing electrical connection to the filament, the envelope being coated with a reflective coating over the
55 hemisphere opposing the lamp cap wherein there is at least one non-coated part disposed substantially opposite to the lamp cap to transmit from the envelope at least some of the energy radiated from the filament in a direction away from the lamp cap.

60 In order that the invention may be clearly understood and readily carried into effect it will now be described by way of example with reference to the

accompanying drawings of which,

Figure 1 has the significance explained hereinbefore,
65 fore,

Figure 2 shows a lamp according to the invention in elevation,

Figure 3 shows a section view on AA of Figure 2,

Figure 4 shows the lamp of Figure 2 in plan,

70 Figure 5 shows in plan an alternative to Figure 2 with a smaller aperture,

Figure 6 shows in plan another alternative with concentric ring apertures,

Figure 7 shows in plan another alternative with a
75 spiral aperture,

Figure 8 shows in plan another alternative with an irregular aperture.

The invention provides a CS lamp in which there are breaks in the silvering opposing the lamp cap
80 allowing some light, and heat, to be directly transmitted away from the cap.

The preferred embodiment of the lamp is shown in elevation in Figure 2. In this and later Figures the same reference numerals have the same significance as in Figure 1. It can be seen that the difference
85 from the prior art lamp of Figure 1 is that the silvered part has a non-silvered circular opening 7 at the top thereof opposite lamp cap 2.

This may further be seen in Figure 3 which is a
90 section on AA of Figure 2 and in Figure 4 which is a plan view of the lamp. Also visible in these Figures is the filament 8. It can be appreciated from the plan of Figure 4 that in this example the Filament 8 is clearly visible through the non-silvered opening 7 when the
95 lamp is viewed from opposite the cap 2, since the radius of the opening is greater than that of the curve effectively followed by the filament. If it is found desirable, however, the radius of the opening 7 may be reduced as shown in Figure 5 to be radius equal
100 to or less than that of the filament, so that the filament is substantially not visible in a direct upper view and only partly visible in a angled view.

It is not necessary for the opening 7 to be of a circular or even of a regular shape to achieve the
105 effect. Figures 6, 7 and 8 all show plan views of lamps with different shaped breaks in the silvering. Apart from the shapes of these breaks, which can more clearly be seen in plan views, the lamps are substantially as shown in Figures 2 and 3. Figure 6
110 shows non-silvered part 7 divided into three concentric rings 7a, 7b and 7c. Figure 7 shows the non-silvered part 7 as a spiral and Figure 8 shows it as an irregular generally star-shaped opening.

All of these shapes for the non-silvered part 7
115 share the effect that some of the energy emitted by the filament away from cap 2 is transmitted and not reflected back to the cap.

Where the silvering is applied to the envelope, inside or out, by evaporation the shapes shown may
120 be provided by the use of suitable masks.

Other embodiments of the invention will be readily apparent to those skilled in the art.

CLAIMS

1. A crown silvered incandescent lamp having a

- lamp envelope, a filament and a lamp cap providing electrical connection to the filament, the envelope being coated with a reflective coating over the hemisphere opposing the lamp cap wherein there is
- 5 at least one non-coated part disposed substantially opposite to the lamp cap to transmit from the envelope at least some of the energy radiated from the filament in a direction away from the lamp cap.
2. A lamp according to claim 1 in which the
- 10 non-coated part is a substantially circular aperture in the coating.
3. A lamp according to claim 2 in which the aperture is of radius greater than the radius of a curve followed by the filament.
- 15 4. A lamp according to claim 2 in which the aperture is of a radius equal to or less than the radius of a curve followed by the filament.
5. A lamp according to claim 1 in which the non-coated part is a spiral aperture in the coated
- 20 part.
6. A lamp according to claim 1 in which the non-coated part is a plurality of ring shaped apertures in the coated part.
7. A lamp according to claim 6 in which the ring
- 25 shaped apertures are concentric.
8. A lamp according to claim 1 in which the non-coated part is a substantially star shaped aperture in the coated part.
9. A lamp according to claim 1 in which the
- 30 non-coated part is an irregular aperture in the coated part.
10. An incandescent lamp including a lamp envelope, a filament supported within the envelope and a lamp cap providing electrical connection to the
- 35 filament, the envelope having a reflecting coating over a substantial part of the hemisphere opposing the lamp cap, wherein there is formed at least one non-coated aperture in the reflecting coating.
11. A lamp according to claim 10 in which the at
- 40 least one non-coated aperture is disposed substantially opposite the lamp cap to transmit light emitted by the filament away from the lamp cap.
12. An incandescent lamp substantially as herein described with reference to Figures 2 and 3 and one
- 45 of Figures 4-8 of the accompanying drawings.