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G09F 13/12

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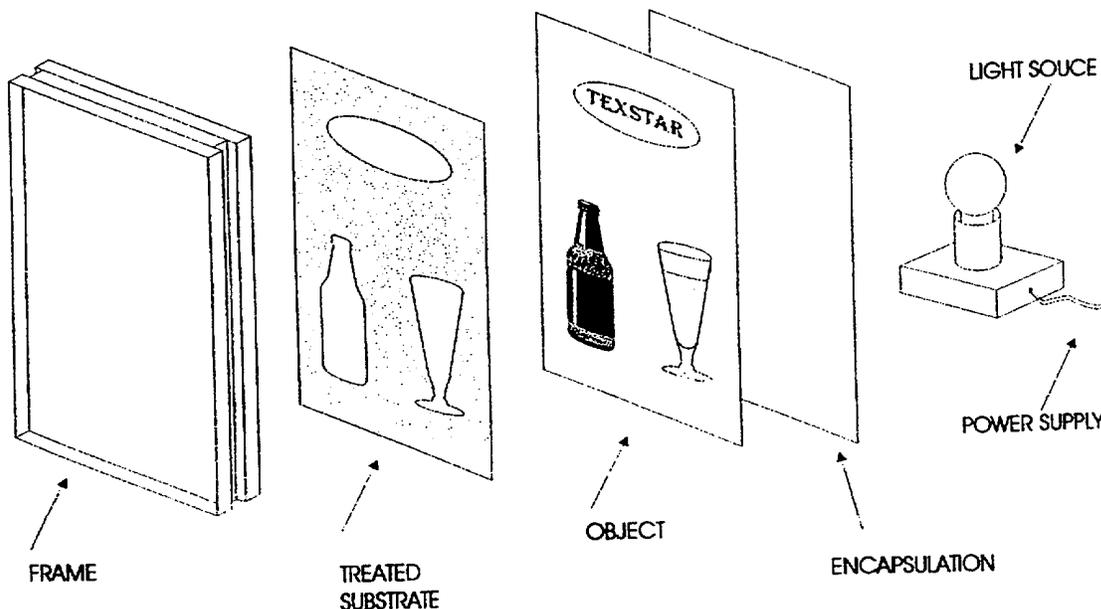
(56) Documents Cited
GB 2141280 A GB 0653927 A FR 002393383 A
US 5863109 A US 5787618 A US 5210967 A
US 4796170 A US 4747223 A US 3682531 A

(58) Field of Search
UK CL (Edition R) **G5C CEL**
INT CL⁷ **G09F 13/12**
Online : EPODOC,WPI,JAPIO

(54) Abstract Title
Backlit mirror display

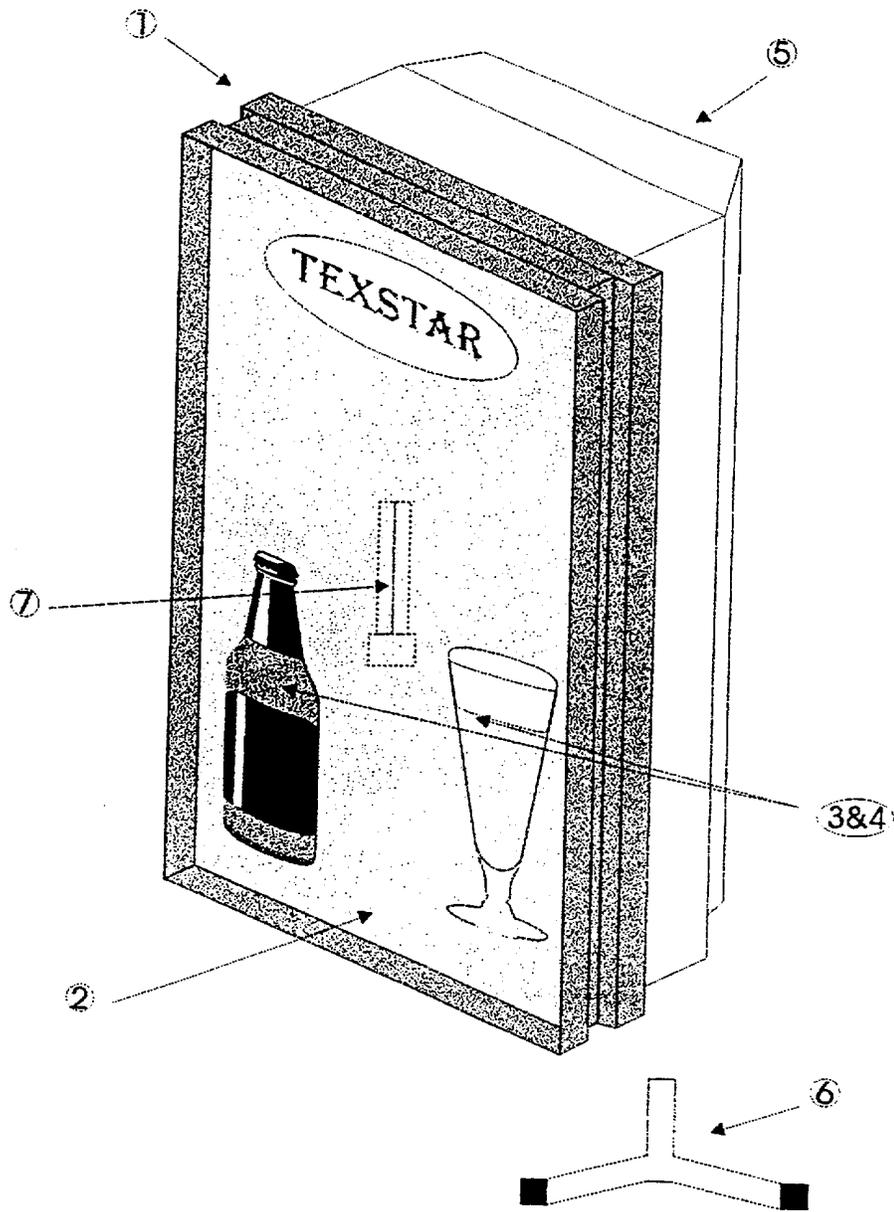
(57) A backlit mirror display mounted in a frame includes a mirror treated to produce non-reflecting areas shaped to correspond to an object located behind the mirror and a light source located behind the object. An encapsulation may be provided to protect the object. The object may be in the form of a slide and represent eg a cosmetic or wig whereby a user may see their own reflection with the object superimposed on it.

FIGURE 2



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FIGURE 1



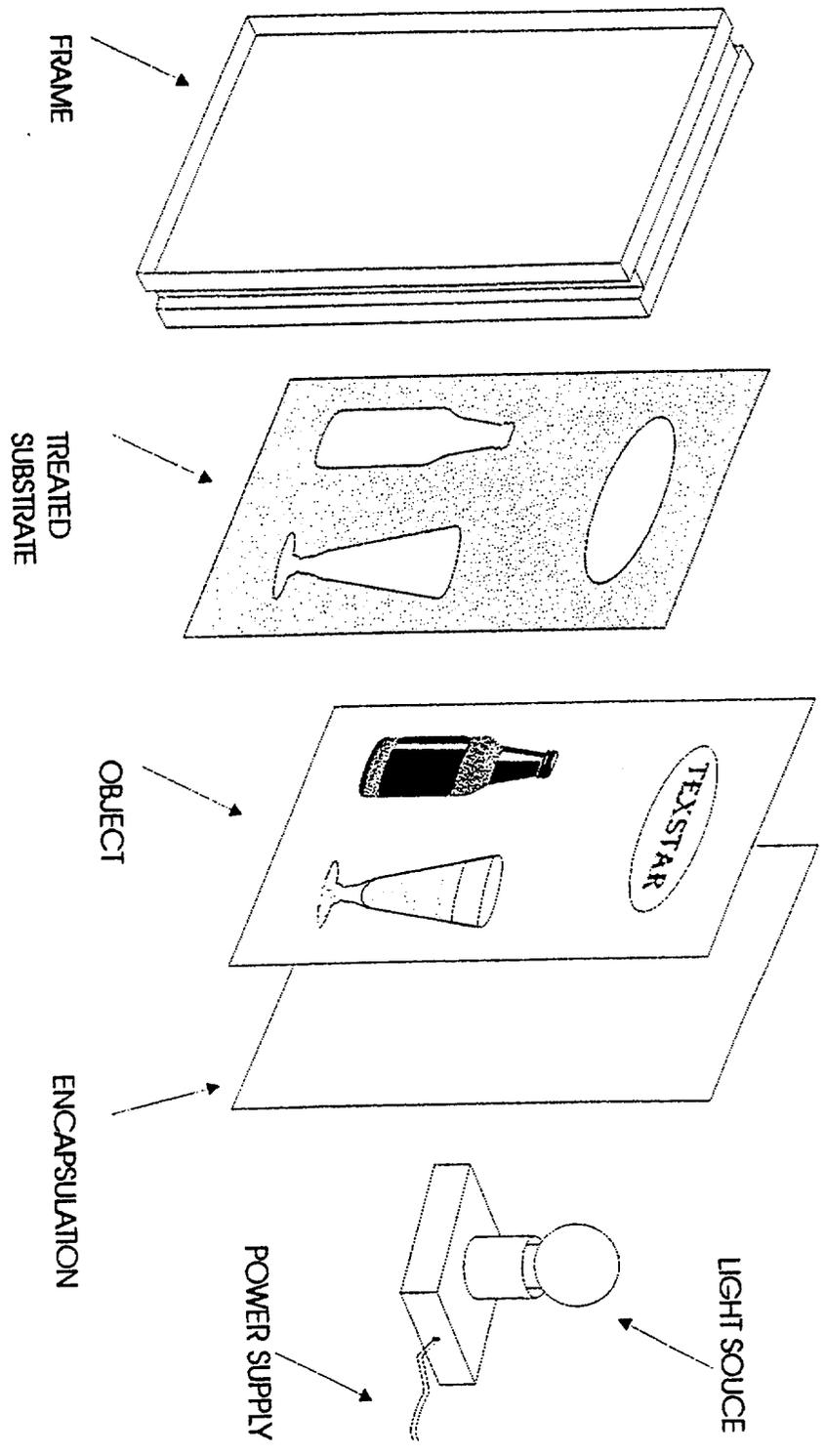
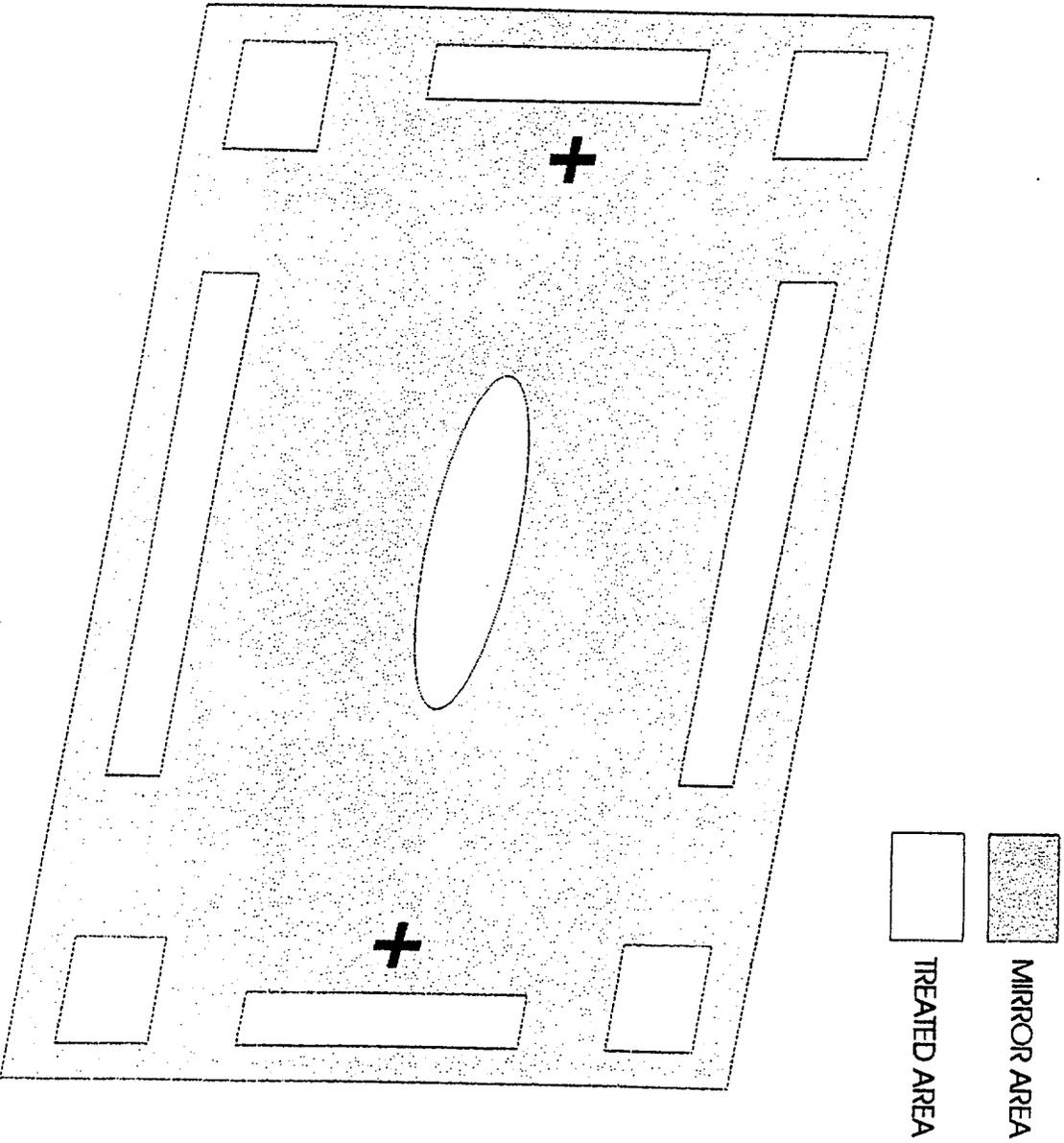


FIGURE 2

FIGURE 3

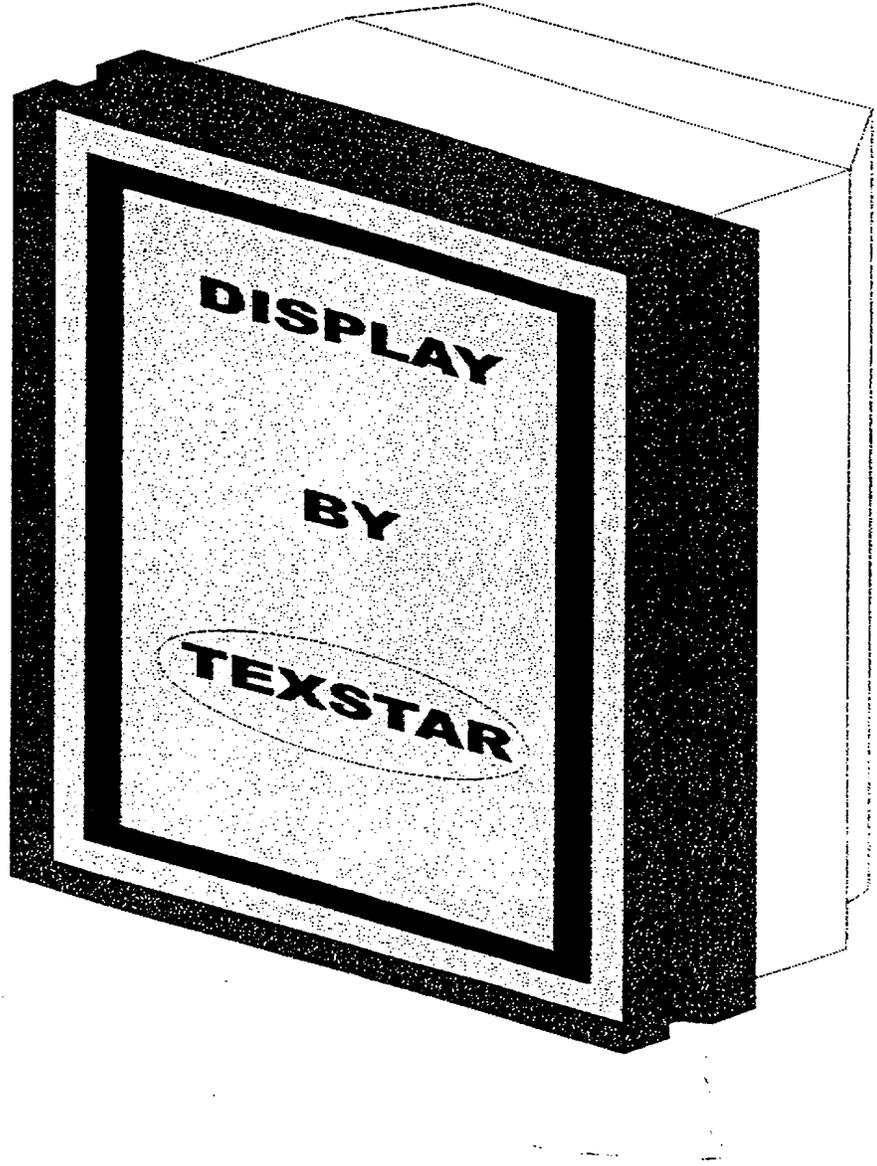
THE SUBSTRATE



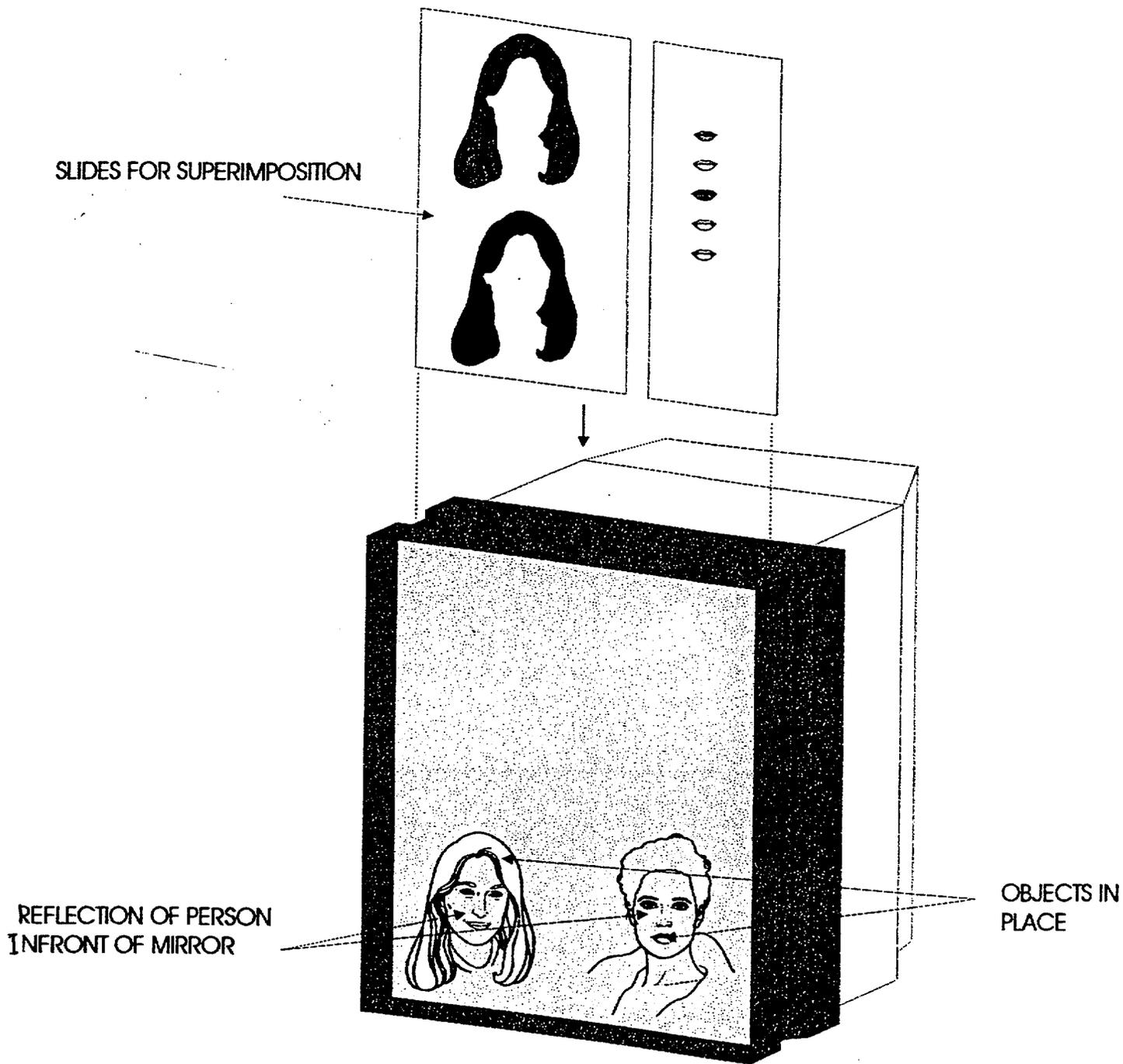
4/6

FIGURE 4

INVENTION AS A DISPLAY BOX



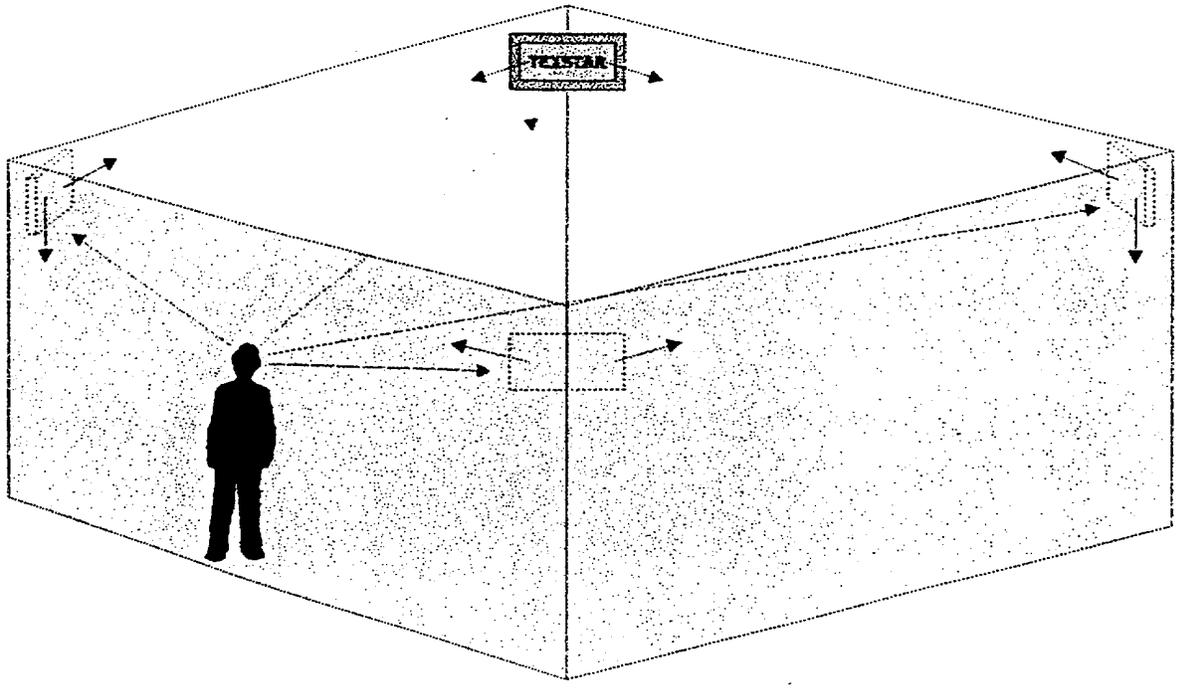
INVENTION AS SUPERIMPOSED UNIT



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FIGURE 6

INVENTION AS SECURITY AID



BACK LIT MIRRORS

Description :

This invention relates to back lighting of mirrors and similar substrates in areas specifically treated chemically, mechanically, electrically or by any other means e.g. masking that permits transmission of light through the glass within the areas that have been specifically treated.

At present the legend, be it text or graphic are on the front face of the mirrors. This is usually printed / etched / painted / bonded or any such means to display the image on the mirror. Since the image is on the front of the mirror, the display enhancement by lighting can take place from top / bottom / side / edge of the substrate. It cannot be lit from the rear since there is no transmission of light through the substrate.

Background :

Images on the front of the mirrors tend to be open to the environment and can be affected in due course both in terms of clarity and eventual fading.

This major problem can be overcome by having the image behind the mirror and then enclosing or encapsulating the rear appropriately to protect any or all sections of the environment be it atmospheric, chemical, physical, UV etc.

Lighting of images on the front of the mirrors is limited since some of the intensity of light is reflected onto the mirror itself thereby shining into the viewer's eyes and either causing discomfort to the viewer or distorting the image in terms of foreground and background lighting.

Since several advances are made within the lighting industry with regards to technology, the applications of the same is restricted when the image is on the front since the 'hardware' e.g. cables / mounting methods / and the light source itself is at the front. All of it can be hidden / masked or covered but this affects the presentation of the mirror in terms of appearance, and restricts therefore the marketability of the end product.

Summary of advantages :

This invention overcomes all of the above with additional practical advantages, its capability to accept old, current and new lighting technologies thereby offers a wide range of applications e.g. displays, reflective, multi directional viewing etc on mirrors and similar substrates.

Furthermore, maximum intensity of light cannot be focused on the main area of the subject matter. These factors limit the marketability of mirrors as a display / reflective unit.

A rear cover is fixed into position either within the frame or fixed to the rear side of the frame. The rear cover is optional but is used to hold the lighting and its accessories in safe position and also to prevent and control light escaping away from the object. It is also used as a means of mounting or standing the complete unit.

Figure 2 (sheet 8) shows the exploded view of the assembly of the concept and also the options for mounting arrangement

- a) Frame : This can be wood, plastic or metal or any such material that can be used as a frame.
- b) Treated substrate : mirror
- c) Subject : image on a transparency or backlit paper or any object.
- d) Encapsulant : any means of protection of the object where required.
- e) Light source : refer item 1
- f) Power supply : refer item 2
- g) Mounting accessories.

Figure 3 (sheet 9) describes the substrate (mirror) and defines the concept of use. The shaded area is mirrored whilst the clear areas are shown as back lit.

Note : the drawing is a figure representation of the substrate to indicate the scope for treated area. It is for definition purposes only and not to be misunderstood as the physical location permitted by this invention. The mirror area can be treated in any size / position / location within the mirror area.

The figure shows only the concept of the invention of the substrate.

Figure 4 (sheet 10) shows the invention as a display box. It can be used for reflection and relay information, advertisement or promotional material etc. and such purposes.

The emphasis is on the dual use of the invention i.e. reflection and communication and / or visual display of the object.

Figure 5 (sheet 11) shows the invention as a superimposition unit.

This shows the inventions ability to superimpose any object onto a reflective substrate (mirror) giving its actual effect.

This adds a new dimension to the application of cosmetics, beauty products and plastic surgery. It permits the preview of the beauty product on a persons reflection and or shape correction in plastic and enhancement surgery.

Instead of physically wearing the product or the product profile, the image of the product or the product profile is placed behind the substrate. By positioning correctly on the front of the substrate and then aligning oneself into the correct position the 'actual effect' can be realised. It would give the effect that the product has been physically worn by the person in front of the mirror.

The backlighting gives the product on the person a realistic and an all round reflection in terms of dimension colour and depth.

Figure 6 (sheet 12) shows the invention in security application.

By backlighting a strip on the periphery of the substrate visibility is enhanced slightly permitting clearer reflections.

By having a display on the mirror backlit the unit doubles up as a display box and also acts as a discreet means of surveillance.

ITEM 1) LIGHT SOURCES

- 1) Fluorescence
- 2) Photoluminescence
- 3) Electroluminescence
- 4) Chemiluminescence
- 5) Thermoluminescence
- 6) Solar
- 7) Others

ITEM 2) POWER SUPPLY

- 1) Battery
- 2) Mains
- 3) Generator (petrol, diesel etc)
- 4) Solar

In reference to drawings.

Figure 1

1. Frame.
2. Mirror.
3. Treated area
4. Object.
5. Rear cover.
6. Mounting accessories.
7. Light source & power supply.

Figure 3

This figure representation of the substrate is to indicate that the treated area can be in any location.

This is to define a concept and not to be taken as a physical references of the treated areas.

Figure 6

Four display boxes, one in each corner.
Used as discreet means of surveillance.

6.

CLAIMS

This invention comprises of a treated mirror, an object, a frame, an encapsulant, a rear cover, means of mounting and lighting equipment and power supply.

Claim 1

This invention comprises of a mirror or similar substrate which is treated chemically, mechanically, electrically, by masking or any such technique or technology that permits light transmission through the treated area. The remainder of the area will not be affected and this remaining area could be used from the front for its original purpose i.e. a mirror for reflection purposes. The treated area will be used to backlight an image / text / legend / graphic or any such matter.

The lighting of objects on mirrors is presently done on the front i.e. mirror face with both the object and light source at the front of the mirror.

This presents several problems amongst them being :

- 1) The exposure of the object to the environment thereby leading to deterioration of the object image quality.
- 2) Reflection of light from the mirror giving 'glare' effects.
- 3) Inability to provide uniform lighting onto the object.
- 4) Restrictions on the use of cleaning agents to clean mirrors.
- 5) Restrictions on the type of light source presented onto the object.
- 6) limitations on the mounting of both the object and the light source in front, sides, top or bottom in terms of onto the path of the mirror.

All of the above restrictions or limitations can be overcome by this invention with added advantages of marketability in terms of technical and presentation by the invention.

The specific claims and embodiment of the invention is described by way of examples and with reference to figures sheets 6 to 12.

Item 1 and 2 (sheet 6)

This describes the light and power sources used.

Figure 1 (sheet 7) shows the assembly of the concept.

The invention consists of the substrate with the area of backlighting treated to permit maximum light transmission. The substrate can be mounted straight onto the backing e.g. a wall or into a frame. The frame can be fixed or detachable. The object is placed in position behind the substrate and secured in position by bonding, encapsulating, fixing or any other means of fixing.

The light source is placed in such a position to transmit light through all of the treated area in order to effect maximum transmission through the most important area of the object i.e. the area that requires maximum enhancement.



INVESTOR IN PEOPLE

Application No: GB 9904733.4
Claims searched: --

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Examiner: R E Hardy
Date of search: 24 August 2000

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.R): G5C CEL
Int CI (Ed.7): G09F 13/12
Other: Online : EPODOC, WPI, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB2141280 A REID : See the Figures, picture 18 on back of mirror layer 16	ALL
X	GB0653927 A DUDLEY : See Figures 2 and 3	ALL
X	FR2393383 A BLANCHET : See the Figures	ALL
X	US5863109 A HSEIH : See the Figures	ALL
X	US5787618 A MULLIS : See Figures 1-3, pattern nlayer 34 on mirror 12	ALL
X	US5210967 A BROWN : See Figures 4,5	ALL
X	US4796170 A PEDERSEN : See the Figures and col 1 lines 51-60	ALL
X	US4747223 A BORDA : See the Figures, col 3 lines 54-46 and col 4 line 41 onwards	ALL
X	US3682531 A JEFFERS : See Figures 2 and 3	ALL

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.