(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
9 October 2008 (09.10.2008)

PCT

(10) International Publication Number
WO 2008/120878 A1

(51) International Patent Classification:
G09F 13/22 (2006.01)

(21) International Application Number:
PCT/KR2008/001526

(22) International Filing Date: 18 March 2008 (18.03.2008)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:
10-2007-0032667 3 April 2007 (03.04.2007) KR

(71) Applicant and
(72) Inventor: **YOU, Ni Na** [KR/KR]; #562-440, Simgokbon-dong, Sosa-gu, Bucheon-city, Gyeonggi-do 422-823 (KR).

(74) Agent: **SOHN, Yeong Ho**; Wintec International, 402, Jung Il Bldg., 637-36, Yeoksam-Dong, Gangnam-Gu, Seoul 135-909 (KR).

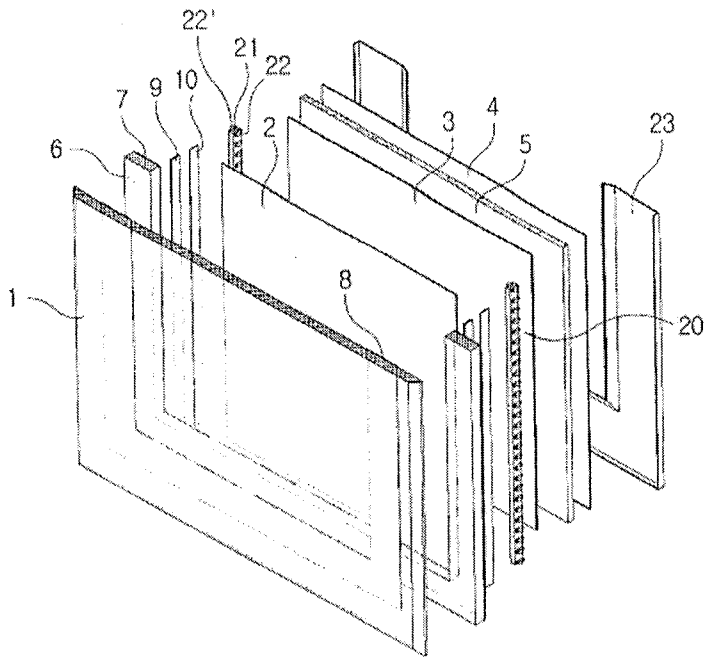
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(54) **Title:** ADVERTIZING SIGNBOARD WITH A FRAME EMITTING COLOR LIGHT

【Figure 2】



(57) **Abstract:** Disclosed is a signboard having a direct-view-type color light-emitting frame, which is used for advertising goods, enterprises, or menus. In the signboard, an advertisement sheet and a light guide plate are disposed on the rear face of a transparent plate so as to have a smaller area than that of the transparent plate. A transparent frame is attached to the rear face of the transparent plate. A color pattern having various colors is formed on a rear face of the transparent frame. A light -emitting means having light emitting diodes on opposite sides thereof is mounted between an inner circumference of the transparent frame and an outer circumference of the light guide plate. A backlighting effect of the advertisement sheet can be obtained because the light -emitting means emits light in opposite directions, and a light emitting effect of the color pattern can be obtained through the transparent frame.

WO 2008/120878 A1

【DESCRIPTION】

【Invention Title】

ADVERTIZING SIGNBOARD WITH A FRAME EMITTING COLOR LIGHT

【Technical Field】

The present invention relates to a signboard for advertising goods, enterprises or menus and, more particularly, to an advertising signboard having a direct-view-type color light-emitting frame, which includes a transparent plate made of a transparent material, an advertisement sheet and a light guide plate, which are disposed on a rear face of the transparent so as to have a smaller area than that of the transparent plate, a transparent frame having a color pattern on an edge of the transparent plate, and a shield pattern on the rear face of the transparent plate between the advertisement sheet and the color pattern, thereby enabling backlighting of the advertisement sheet and color lighting of the edge of the transparent plate by means of light emitting means emitting light in opposite directions, and making it possible to use the signboard by selecting a preferred color for the edge depending on a user' s taste. Further, when the light-emitting means is turned on to emit light toward the transparent frame having the color pattern, the advertisement sheet and its surroundings become bright to increase the saturation and brightness of the color pattern when the advertisement sheet is backlit. In addition, the signboard can be applied to mood lighting for a dim atmosphere at night.

【Background Art】

Most signboards for advertisements are erected on general goods shelves for sale and display, or are hung from the ceilings of buildings when installed, and are typically produced in order not only to realize good visibility by illuminating a front advertising sheet using a backlight, i.e. a light source emitting light from the side or back, but also to obtain a good advertising effect by attracting the eyes of customers and purchasers.

As for the configuration of such an advertising signboard, as illustrated in FIG. 1, a transparent plate 100 made of a transparent material

is disposed at the front of the signboard. An advertisement sheet 101 comes into close contact with the rear face of the transparent plate. A light guide plate 103 having a backlighting lamp 102 is disposed on the rear face of the advertisement sheet 101. When the backlighting lamp 102 is powered and turned on, the light from the lamp is guided toward the light guide plate 103. A reflector 104 and a diffusion plate 105 are in close contact with respective opposite faces of the light guide plate 103, so that the light guided toward the light guide plate 103 travels only to the front of the advertisement sheet 101 by means of the reflector 104. The diffusion plate 105 allows the light guided by the light guide plate 103 to be uniformly diffused toward the front of the advertisement sheet.

As described above, the advertising signboard is, however, adapted merely to backlight the advertisement sheet disposed on the rear face of the transparent plate, so that it can accomplish its original purpose of advertisement, but it is considerably lacking in additional decorativeness or interior effect.

Particularly, the signboard itself has no light emitting color, but expresses colors using only the color of the advertisement sheet closely contacting the transparent plate. Thus, in the case where the advertisement contents are neither unique nor colorful, the signboard fails to arouse much interest from consumers or purchasers.

Further, in order to maximize the advertisement effects of the goods, the recent tendency has showed that signboards for guiding and advertising goods to be promoted have been individually installed. In this manner, when a lot of signboards are installed in the same space, the advertisement effect based on a backlight is greatly reduced due to the large number of typical signboards, and the distinction of the signboard itself is lost, thus failing to attract great attention from consumers and purchasers.

In addition, the signboard is generally designed such that a mirror pattern for hiding the backlighting means on the rear face thereof is formed at an edge of the advertisement sheet, and the transparent plate generally

extends to the outside of the mirror pattern, so that the size of the signboard is unnecessarily increased compared to that of the built-in advertisement sheet, thus causing inconvenience from the viewpoint of treatment. As a result, the signboard does not provide effective advertisement in light of its size.

【Disclosure】

【Technical Problem】

Accordingly, the present invention has been made in an effort to solve the problems occurring in the related art, and an object of the present invention is to provide an advertising signboard having a direct-view-type color light-emitting frame, capable of providing various types of decorativeness using a transparent frame and an excellent interior effect due to the transparent frame itself, and arousing interest, so that an excellent advertisement effect can be expected, because light is reflected from a transparent frame or its color pattern in addition to an advertisement sheet, thereby emitting light of various colors.

【Technical Solution】

In order to achieve the above object, according to the present invention, a transparent frame is attached to the rear face of a transparent plate. A color pattern having various colors is formed on the rear face of the transparent frame. A light-emitting means having light emitting diodes on opposite sides thereof is mounted between the inner circumference of the transparent frame and the outer circumference of the light guide plate.

【Advantageous Effects】

As described above, according to the present invention, the backlighting effect of an advertisement sheet can be obtained by a light-emitting means that emits light in opposite directions, and the light emitting effect of a color pattern can be obtained through a transparent frame. When the light-emitting means is turned off, the color pattern of the transparent frame is viewed from the front of the transparent frame, and thus a differentiated image and an aesthetic feeling can be expressed through

various colors. When the light-emitting means is turned on, saturation and brightness of the color pattern in addition to the backlighting effect of the advertisement sheet are increased, to thus provide more fine decorativeness. A color filter is attached to the inner lateral face of the transparent frame, thereby enabling light of various colors to be emitted through the transparent frame and having a good decorative effect.

【Description of Drawings】

FIG. 1 is a cross-sectional view illustrating the overall structure of a conventional signboard;

FIG. 2 is an exploded perspective view illustrating a signboard according to the present invention;

FIG. 3 is a cross-sectional view illustrating the overall structure of a signboard according to an embodiment of the present invention;

FIG. 4 is an enlarged cross-sectional view illustrating a signboard according to an embodiment of the present invention;

FIG. 5 is a cross-sectional view illustrating the overall structure of a signboard according to another embodiment of the present invention;

FIG. 6 is a cross-sectional view illustrating the overall structure of a signboard according to yet another embodiment of the present invention;

FIG. 7 illustrates examples of signboards, each of which has a frame of a different color, according to the present invention;

FIG. 8 illustrates examples of signboards, each of which has a frame of another different color, according to the present invention;

FIG. 9 illustrates an example of a signboard having an elliptical color light emitting frame according to the present invention;

FIG. 10 illustrates an example of a signboard having a heart-shaped color light emitting frame according to the present invention; and

FIG. 11 illustrates an example of a signboard having a quadrilateral color light emitting frame according to the present invention.

<Description of Reference Numbers of Main Parts in Drawings>

1: transparent plate 2: advertisement sheet

3: diffusion plate
4: reflector
5: light guide plate
5: transparent frame
7: color pattern
8: shield pattern
9: diffusion filter
10: color filter
11: ornamental molding
12: ornamental pattern
20: light emitting means
21: supporting block
22, 22' : LED
23: chassis unit

【Best Mode】

The terminologies or words used in the description and the claims of the present invention should not be interpreted as being limited merely to common and dictionary meanings. On the contrary, they should be interpreted based on the meanings and concepts of the invention in compliance with the scope of the invention on the basis of the principle that the inventor(s) can appropriately define the terminologies or words in order to describe the invention in the best way.

FIG. 2 is an exploded perspective view illustrating a signboard according to the present invention. FIG. 3 is a cross-sectional view illustrating a signboard according to the present invention.

The present invention provides an advertising signboard having a direct-view-type color light-emitting frame, in which an advertisement sheet 2 is disposed on the rear face of a transparent plate 1 made of a transparent material so as to have a smaller area than that of the transparent plate, and a light guide plate 5 is disposed on a rear face of the advertisement sheet 2, and induces light from at least one light-emitting means 20 to be totally reflected toward the advertisement sheet 2, wherein:

a transparent frame 6 is attached to a rear outer circumference of the transparent plate 1, and includes a color pattern 7 on the rear face thereof so as to be visible from the front thereof;

a band-shaped shield pattern 8 is formed on the rear face of the transparent plate 1 between the inner circumference of the transparent frame 6 and the outer circumference of the advertisement sheet 2, and the light-

emitting means 20, emitting light in opposite directions, is disposed on the rear face of the shield pattern 8; and

the light of the light-emitting means 20 is totally reflected toward the advertisement sheet 2 by the light guide plate 5 and is emitted to the color pattern 7, viewed from the front of the transparent frame 6, through the transparent frame 6.

At this time, the color pattern 7 may be applied to one face of the transparent frame 6 with color ink, or may be attached to one face of the transparent frame 6 with a color pattern sheet.

The shield pattern 8 may be formed either by applying a mirror pattern layer of platinum or by attaching an opaque pattern sheet.

Further, the transparent frame 6 may have a diffusion filter 9 or a color filter 10 attached to the inner lateral face thereof. Otherwise, the transparent frame 6 may have a diffusion filter 9 and a color filter 10 sequentially attached to the inner lateral face thereof.

The light-emitting means 20 may include light emitting diodes 22 and 22', which are attached to opposite sides of each supporting block 21 disposed on the rear face of the transparent plate 1 so as to emit the light toward lateral end faces of the light guide plate 5 and the transparent frame 6. The transparent plate 1 and the transparent frame 6 may be coupled with a separate ornamental molding 11 from the lateral end face of the transparent plate 1 to the rear face of the transparent frame 6. The ornamental molding 11 may be formed of acrylonitrile-butadiene-styrene (ABS) by injection, or of aluminum by extrusion, or may be made from an aluminum frame using aluminum diamond cutting.

Among the reference numerals, 23 indicates a chassis unit.

【Mode for Invention】

The advertising signboard having a direct-view-type color light-emitting frame as described above will be described below in greater detail with reference to the accompanying drawings.

As illustrated in FIG. 4, which is an enlarged sectional view,

according to the advertising signboard of the present invention, a transparent plate 1 is made of a transparent material, and an advertisement sheet 2 is disposed on the rear face of the transparent plate. The advertisement sheet 2 has a smaller area than that of the transparent plate. A printed pattern of the advertisement sheet 2 is projected through the transparent plate 1. A light guide plate 5 is disposed on the rear face of the advertisement sheet 2, and totally reflects light from light-emitting means 20 disposed on opposite sides of the light guide plate toward the advertisement sheet 2.

At this time, the transparent plate 1 is attached with a transparent frame 6 on the rear outer circumference thereof, which is spaced apart from the advertisement sheet 2 and the light guide plate 5. The transparent plate 1 and the transparent frame 6 are tightly bonded to each other, for example, using an ultraviolet (UV) transparent adhesive, as is well-known in the art. Particularly, in the state in which the curing UV transparent adhesive is applied to the rear face of the transparent plate 1, the front face of the transparent frame 6 or corresponding faces of the transparent plate 1 and the transparent frame 6, the UV rays are applied to the bonded portion of the transparent plate 1 and the transparent frame 6, so that the UV transparent adhesive is readily cured, and thereby the transparent plate 1 and the transparent frame 6 are tightly bonded to each other.

Further, a color pattern 7 is formed on the entire rear face of the transparent frame 6 such that it can be projected toward the transparent plate 1. Here, a variety of colors is applied to the color pattern 7, so that the signboard, the outer circumference of which is represented by various colors and color patterns, can be obtained. The color pattern 7 may be formed by applying colored ink to the rear face of the transparent frame 6 or bonding a printed sheet having various colors to the rear face of the transparent frame 6.

Thus, the signboard of the present invention can be differentiated through representation of more various colors and patterns, because the outer

circumference of the transparent plate 1 beyond the advertisement sheet 2 is colorful. Thus, the signboard can not only have a color that suits an individual consumer' s taste depending on the preference of the individual consumer, but can also have a color or image compatible with the medium to be advertised.

Further, a strap-shaped shield pattern 8 is formed on the rear face of the transparent plate 1 between the inner circumference of the transparent frame 6 and the outer circumference of the advertisement sheet 2. The shield pattern 8 functions not only to define the boundary of the advertisement sheet 1 but also acts as a hiding means for preventing the light-emitting means 20 from emitting light toward the light guide plate 5 and preventing the transparent frame 6 from being visible from the front of the transparent plate 1.

In forming this shield pattern 8, a mirror pattern layer of platinum is most preferably formed on the rear face of the transparent plate 1 so as to act as a mirror, so that it can provide a more beautiful, elegant feeling, i.e. an aesthetic feeling. Alternatively, an opaque pattern sheet may be attached to the rear face of the transparent plate 1.

Further, as is well-known, the light-emitting means 20 can emit light in opposite directions, so that it casts light to lateral faces of the transparent plate 1 and the transparent frame 6. The light-emitting means 20 includes LEDs 22 and 22' , which are disposed on opposite sides of each supporting block 21 in a longitudinal direction and are turned on/off by an external power source. One of the LEDs emits the light to the light guide plate 5, and the other LED provides the light to the transparent frame 6.

Thus, when the light-emitting means 20 is turned on, the light guided by the light guide plate 5 is totally reflected toward the advertisement sheet 2 by the reflector 4 on the rear face of the light guide plate 5. In this manner, the totally reflected light is uniformly diffused by a diffusion plate 3 between the advertisement sheet 2 and the light guide plate 5, so that its overall brightness is uniform. Thus, the light-emitting means

functions as a backlight of the advertisement sheet 2. A chassis unit 23 having a c-shaped cross section is mounted on the rear faces of the reflector 4 and the transparent plate 6 in order to cover and finish the space and the light-emitting means 20, which exist between the reflector 4 and the transparent frame 6.

Further, when another LED is turned on to emit light to the transparent frame 6, the light has an influence on the color pattern 7 of the transparent frame 6, and the saturation and brightness of the light are improved. As a result, an aesthetic feeling can be obtained as if the LED were emitting color light. In the case in which a diffusion filter 9 is attached to the inner lateral face of the transparent frame 6, the diffusion filter 9 is influenced by the overall uniformly diffused light, so that the saturation and brightness of the light can be improved.

In the case in which another diffusion filter 10 is attached to the diffusion filter 9 attached to the inner lateral face of the transparent frame 6, the light from the LEDs travels through the color filter 10, and is influenced by the color of the color filter 10. Thus, the colored light of the LEDs have an influence on the color pattern 7. As such, when the color pattern 7 has the same color as the color filter 10, the color pattern 7 can be more clearly represented. In contrast, when the color of the color pattern 7 is different from that of the color filter 10, a mixture of their colors is presented. This results in the presentation of a heterochromatic color.

It is also possible to provide ornamental lighting using only the light from the LEDs 22 and 22' themselves without using the color filter 10. Particularly, when the LED of a surface mounted chip type is used in a manner such that the color of its light is changed, the light from the LED can be expressed in colors. Here, the LEDs 22 and 22' are arranged in the form of a belt along the inner lateral face of the transparent frame 6 at intervals of about 1cm to about 2cm, so that they can express a fantastic harmony of colors through an organic change in color, as if the colors were moving.

In addition to the color expression using the colors of the LEDs themselves, the color expression can be more fantastic and marvelous when the color filter 10 is added to the diffusion filter 9.

As illustrated in FIG. 5, a separate ornamental molding 11 is mounted from the lateral end face of the transparent plate 1 to the rear face of the transparent frame 6. The ornamental molding 11 causes the mounted portion to be opaque, so that the color is expressed only in the front of the transparent plate 1. The ornamental molding 11 can be formed of acrylonitrile-butadiene-styrene (ABS) by injection or aluminum (Al) by extrusion, or can be manufactured using alumite corrosion, aluminum diamond cutting, or the like.

In particular, as illustrated in FIG. 6, an ornamental pattern 12 having a variety of engraved depressions is formed in the rear face of the transparent frame 6. The engraved depressions make the ornamental pattern 12 prominent. When the light-emitting means 20 is turned on beside the ornamental pattern 12, the light from the light-emitting means 20 is refracted by the ornamental pattern 12, so that the ornamental pattern 12 is made more brilliant.

Thus, as is illustrated in FIGS. 7 through 11, the signboard of the present invention can obtain the color-edged frame through which the light of various colors is emitted or projected, so that it is allowed not only to express various colors but also to insert various patterns and images. The edge of the transparent plate 1 is machined in various shapes, so that a signboard having a more geometrical beautiful design can be obtained.

While the present invention has been shown and described in connection with the exemplary embodiments and the illustrative drawings, the scope of the present invention is not limited thereby. Rather, it is to be understood that various substitutes and equivalents to the embodiments are possible, without departing from the scope and spirit of the present invention.

【Industrial Applicability】

As described above, the advertising signboard having the direct-view-

type color light-emitting frame can be used for advertising, guiding, illuminating or providing education about a variety of goods or enterprises, and thus it is expected to be effectively used in various fields throughout all of industry. The signboard has excellent decorativeness and an interior effect compared to a known signboard, and furthermore excites interest to thus make it possible to more fully conduct its original purpose. As a result, the signboard is competitive in the field in question.

【CLAIMS】

【Claim 1】

An advertising signboard having a direct-view-type color light-emitting frame, in which an advertisement sheet (2) is disposed on a rear face of a transparent plate (1) made of a transparent material so as to have a smaller area than that of the transparent plate, and a light guide plate (5) is disposed on a rear face of the advertisement sheet (2), and induces light from at least one light-emitting means (20) to be totally reflected toward the advertisement sheet (2), characterized in that:

a transparent frame (6) is attached to a rear outer circumference of the transparent plate (1), and includes a color pattern (7) on a rear face thereof so as to be visible from a front thereof;

a strap-shaped shield pattern (8) is formed on the rear face of the transparent plate (1) between an inner circumference of the transparent frame (6) and an outer circumference of the advertisement sheet (2), and the light-emitting means (20), emitting light in opposite directions, is disposed on a rear face of the shield pattern (8); and

the light of the light-emitting means (20) is totally reflected toward the advertisement sheet (2) by the light guide plate (5) and is emitted to the color pattern (7), viewed in front of the transparent frame (6), through the transparent frame (6).

【Claim 2】

The advertising signboard according to claim 1, wherein the light guide plate (5) has a diffusion plate (3) and a reflector (4) formed on respective opposite faces thereof, and the diffusion plate (3) is in close contact with the advertisement sheet (2).

【Claim 3】

The advertising signboard according to claim 1, wherein the color pattern (7) is applied to one face of the transparent frame (6) using color ink.

【Claim 4】

The advertising signboard according to claim 1, wherein the color pattern (7) is attached to one face of the transparent frame (6) in a form of a color pattern sheet.

【Claim 5】

The advertising signboard according to claim 1, wherein the shield pattern (8) is formed by applying a mirror pattern layer of platinum.

【Claim 6】

The advertising signboard according to claim 1, wherein the shield pattern (8) is formed by attaching an opaque pattern sheet.

【Claim 7】

The advertising signboard according to claim 1, wherein the transparent frame (6) has a diffusion filter (9) attached to an inner lateral face thereof.

【Claim 8】

The advertising signboard according to claim 1, wherein the transparent frame (6) has a color filter (10) attached to an inner lateral face thereof.

【Claim 9】

The advertising signboard according to claim 1, wherein the transparent frame (6) has a diffusion filter (9) and a color filter (10) sequentially attached to an inner lateral face thereof.

【Claim 10】

The advertising signboard according to claim 1, wherein the light-emitting means (20) includes light emitting diodes (22 and 22'), which are attached to opposite sides of each supporting block (21) disposed on the rear face of the transparent plate (1) so as to emit the light toward lateral end faces of the light guide plate (5) and the transparent frame (6).

【Claim 11】

The advertising signboard according to claim 1, wherein the transparent frame (6) includes an engraved ornamental pattern (12) on the rear face thereof.

【Claim 12】

The advertising signboard according to claim 1, wherein the transparent plate (1) and the transparent frame (6) is coupled with a separate ornamental molding (11) from a lateral end face of the transparent plate (1) to the rear face of the transparent frame (6).

【Claim 13】

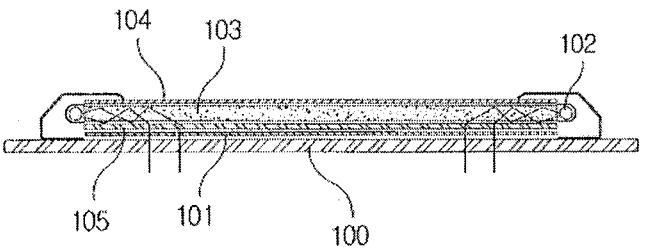
The advertising signboard according to claim 12, wherein the ornamental molding (11) is formed of acrylonitrile-butadiene-styrene (ABS) by injection.

【Claim 14】

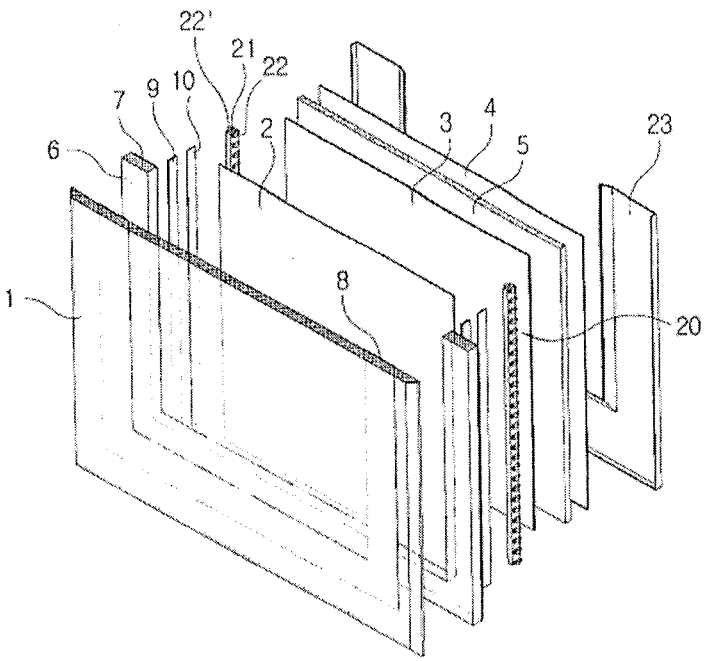
The advertising signboard according to claim 12, wherein the ornamental molding (11) is formed of aluminum by extrusion.

【DRAWINGS】

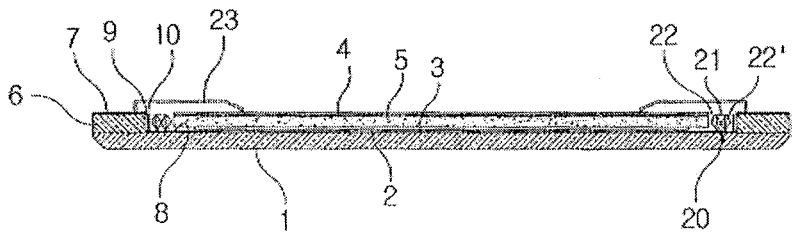
【Figure 1】



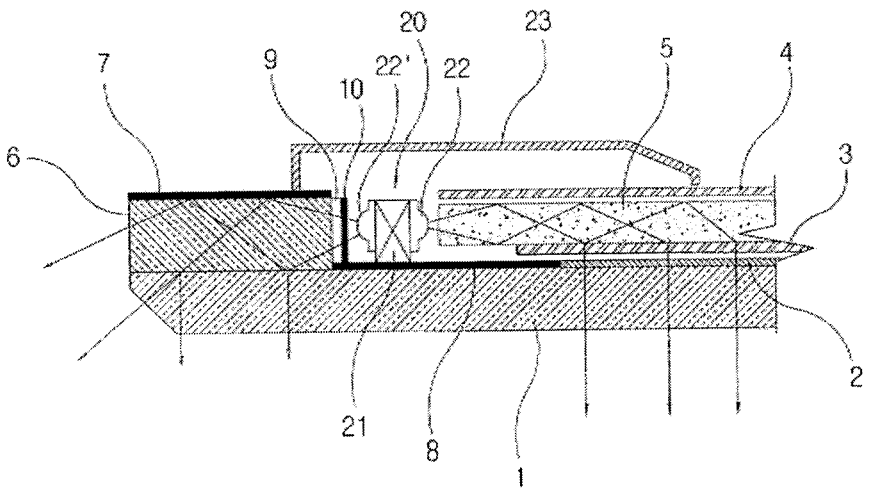
【Figure 2】



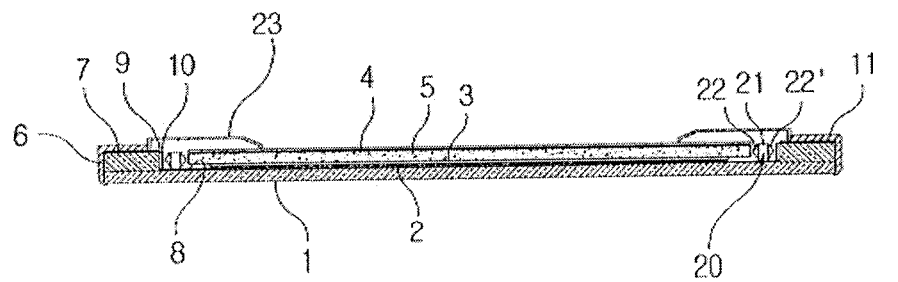
【Figure 3】



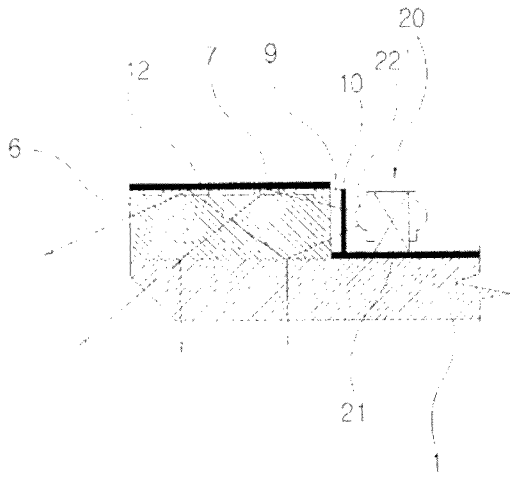
【Figure 4】



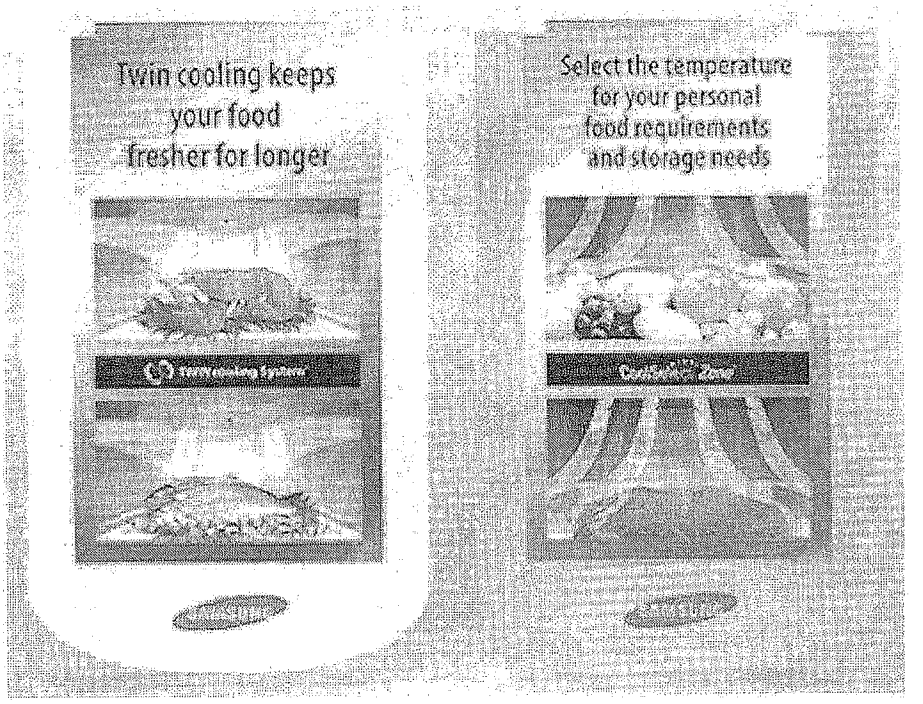
【Figure 5】



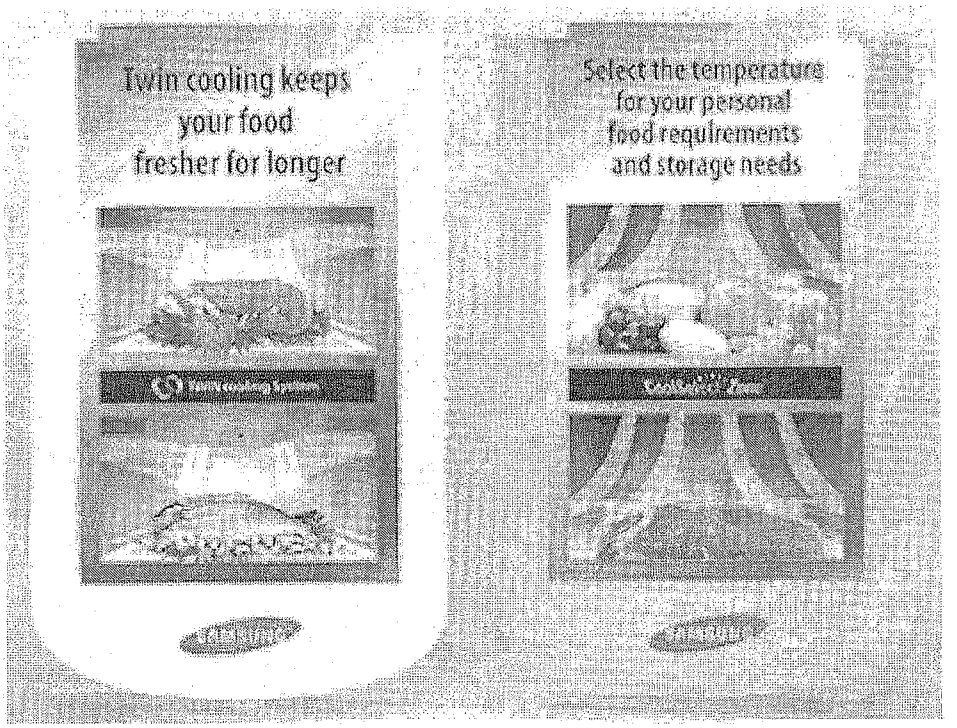
【Figure 6】



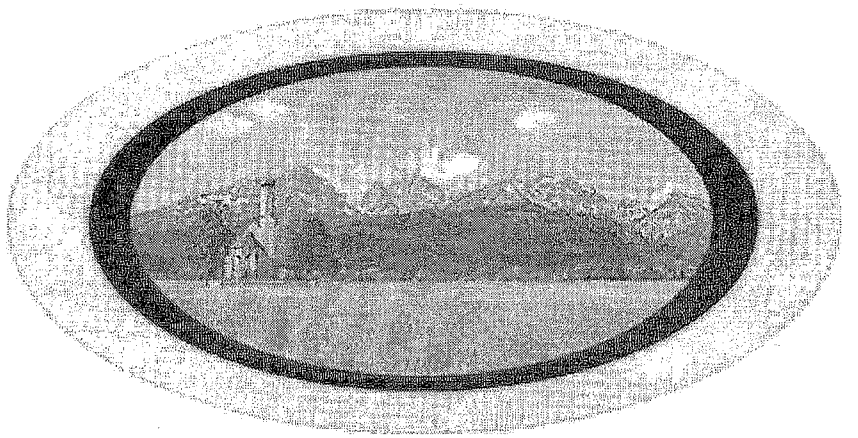
【Figure 7】



【Figure 8】



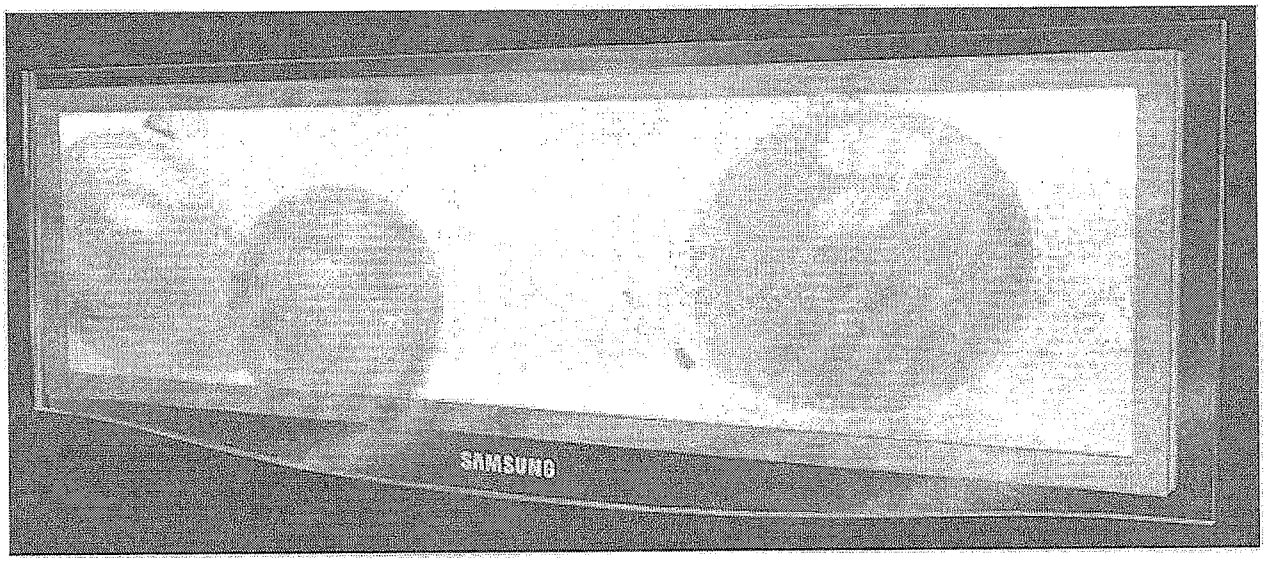
【Figure 9】



【Figure 10】



【Figure 11】



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2008/001526

A. CLASSIFICATION OF SUBJECT MATTER

G09F 13/22(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 8 G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal) & Keyword: "advertise, color, signboard, light"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR200435502 Y1 (Yoo Jong Sik) 26 January 2007 See the Abstract, Fig. 1-12	1-14
A	JP14027359 A (Dong Re Corp.) 25 January 2002 See the Abstract, Fig. 1, 2	1-14
A	KR100613595 B1 (Kim, Kwang Won) 10 August 2006 See the Abstract, Fig, 1, 2	1-14
A	JP12138030 A (Ki Ya No Corp.) 16 May 2000 See the Abstract, Fig. 1	1-14

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 JUNE 2008 (24.06.2008)	**24 JUNE 2008 (24.06.2008)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

JANG Seok Hwan

Telephone No. 82-42-481-8250

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2008/001526

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR200435502 Y1	26.01.2007	None	None
JP 2002-027359 A	25.01.2002	JP 2002-027359	25.01.2002
		JP 2002-027359 A2	25.01.2002
KR100613595 B1	10.08.2006	KR 2006011300 A	03.02.2006
JP 2000-138030 A	16.05.2000	JP 2000-138030	16.05.2000
		JP 2000-138030 A2	16.05.2000
		JP 3647289 B2	11.05.2005