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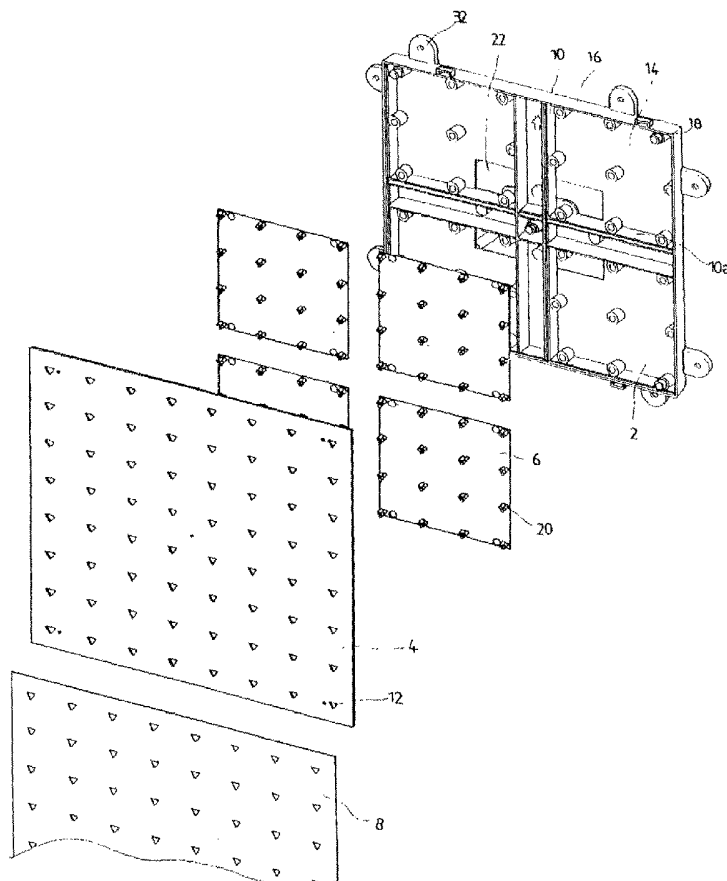
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[Continued on next page]

(54) Title: A MULTI DISPLAY BOARD



(57) Abstract: The invention displays in daytime by printed advertising board layered on the front of PCB base plates installed with combination of LED, and in night time displays various moving advertising pictures by several LED devices that are displaying moving picture signals.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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A Multi Display Board

Background of the invention

Field of the Invention

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This invention is regarding the multi-advertising signboard convertible day and night time with the complex functions of Para-flex, neon sign and electric signboard. In further detail, by attaching a set of printed and perforated boards at a certain distance on PCB board
10 equipped with the grid combination of 3 primary colored LED, the printed front board functions as day time advertising board, while the electric LED backdrop board displays various moving pictures through perforated front board in night time. Thus the purpose of this invention is to enhance the advertising effectiveness by a multi-convertible advertising
15 board.

In modern society, as the advertisement functions as an important means of information communication to the people and the communication of information becomes faster, various means of information communication have been developed. Accordingly, the clients
20 are seeking faster and various media to promote their advertising information to the customers.

Discussion of Related Art

25

As known to general public, the conventional advertising display boards for specific products and companies were placed on the roof of building, inside of subway station and on the road. The main structure of the board, as shown on FIG. 6 of conventional Para-flex, was made of squared supporting panel (42). The several luminescent lamps (44) were placed at certain intervals on the face of the supporting panel (42) and on the perimeter of the panel reflecting panels are placed vertically (46). Reflecting plates (48) are installed on the reflecting panel and advertising printed sheet is attached on the front of the reflecting panels (46).

The conventional Para-flex advertising board above works by rear projection of the lights of luminescent lamps installed on the supporting panel, and the effectiveness of advertising by rear reflecting plate is very low since the direction of lights of the luminescent lamps above is not projecting toward for a specific direction. Accordingly, for the front advertising printed sheet to meet a required advertisement standard, it requires several amount of back lightings of luminescent lamps, which cause a certain amount of economic burden to the client as a result.

In addition, since the para-flex advertising board above is installed as a type that advertising printed sheet is attached on the certain size of case, the client should not only replace himself the board if he intend to advertise other contents of advertisement, but also the board could not attract the visual attraction and interest from the passerby since the advertising printed sheet usually has been exhibited too long period without any movement and change of content. Thus, it

caused decrease of the effectiveness of advertisement. In case of the advertisement boards installed on the roof or on the wall, the supporting panel becomes large in proportion to the size of advertising printed sheet that it causes not only difficulties in transporting and installing, but also several problems like risk of incidents in installing and shortage of life cycle because of transformation by surrounding weather conditions (temperature, rain and wind, etc).

Even such electric advertising boards as CRT (cathode-ray tube) and FDT were introduced recently to complement the defects mentioned above, but most of the electric boards are adopting changed type of LED device because of the limit of size of CRT and FDT.

This type of electric board, as is changing from large to mid size, low to high density and advertisement-oriented to means of information communication, is installed around the plaza of large number of public passing from the cross road of large traffic passing.

However, since the electric board using CRT monitors is advertising only still displays and cannot attract present-day people's interest with such still advertising displays, it has a problem that it cannot perform its public relations and advertisement function satisfactorily.

The life of the electric board above using LED is over 70,000 hours if it is working 6 hours daily and the luminosity of it is 2,000cd/cm².

It has the advantage of digital display with LED devices placed at 62.5m/m intervals.

However, the conventional electric board is displaying moving pictures through controller that is transforming and controlling video

signals input from video signal output devices. The controller has such disadvantages as complicated system and large system size since the device have to transform and control video signals live.

In addition, the system required such complicated systems as LED
5 display board, personal graphic computer, video signal input, video
output server and other programs/devices to display pictures. The
effectiveness of the system was not so satisfactory compared to the
excessive investment considering such facts that in the event of system
breakdown, it required long repairing time and equipments, and decrease
10 of visual conspicuousness of its display in daytime.

Meanwhile, the effective value of neon sign is below expectation
because of impossibility of program change.

15

Summary of the Invention

This invention is to solve the defects mentioned before and the
purpose of this invention is to providing the multi-advertising signboard
convertible day and night time with the complex functions of para-flex,
20 neon sign and electric sign board. In further detail, by attaching in
consecutive orders layers of printed boards punched matching to the
LED light to the front of several PCB boards equipped with the grid
combination of 3 primary colored LED, the printed front board functions
as day time advertising board, while the electric LED backdrop board
25 displays various moving pictures through perforated front board in night
time. Thus the purpose of this invention is to enhance the advertising

effectiveness by a multi-convertible advertising board.

Another purpose of this invention is to providing advertising board that projects brighter luminosity with quite less amount of electricity consumption compared with that of existing display systems equipped with several luminescent lamps per unit Sq.m of Para-flex.

Brief Description of the Attached Drawings

FIG. 1 is an ideal perspective view of disassembled invention
FIG. 2 is a rear perspective view of panel body
FIG. 3 is a rear perspective view of blocking panel
FIG. 4 is a combination perspective view of panel body
FIG. 5 is an perspective view of an alternative embodiment of the invention
FIG. 6 is a view of the prior advertising board

Detailed Description of Preferred Embodiment

The drawings below show the most desirable example of a structure of the invention. Above all, the reference number of each part is referred as same number in explaining other drawings.

As shown on FIG. 1 and FIG. 4, the present invention consists of PCB base plate (6) equipped with LED (Light Emitting Diode) of three primary color placed at certain intervals and in grid pattern, panel body (2) fastening several PCB panels (6) and perforated blocking panel (4)

printed with advertising content on the face of it.

Above panel body forms several compartments (14) by vertical (10), lateral (10a) and outside wall (16). The center of the compartments (14) is perforated for outlet (22) of electric code connected to LED (20) inserted on the PCB base plate (6) and fastened on it. The outside wall (16) is formed with several fixed protrusions (32) to fasten panel body (2) to the walls or to the frame supporting the advertising panel.

At this time, the fixed protrusions are placed mingled in all directions to fasten both the frame and panel body tightly.

The above PCB base plates (6) fastening LED are fastened to the panel body (2) by tightening connecting bolts to the several inserted protrusions (18) in compartments which are spacing out the PCB base plates (6) and walls at certain intervals.

At this time, the gaps between panel body (2) and base plate (6) should be filled with silicon lest the rain and humidity should penetrate the gaps and damage the parts of the system.

The display of the system is made by combination of primary colored LED fastened to PCB base plate and LED can be fastened to the base plate in grid type or other pattern in accordance with the display contents of advertisement.

At this time, the LED (20) inserted in base plate should be coated with required thickness of silicon from the front of the base plate that it cannot be exposed to outside environment and can be protected from vibration, humidity and weather.

The blocking advertising panel (4) attached to the panel body (2)

and placed on the face of base plate (6) is punched with holes (12) matching to LED light lest the quality of display should decrease because of diffusion of LED light. The four corners of back of the blocking panel (4) are provided with connecting protrusions (24) for connection with walls (16) of the panel body (2) and on the top and bottom of it are provided with connecting holes (26) to connect with fastening protrusion (28) on the panel body that LED (20) protrude the face of the advertising blocking panel (4).

At this time, the face of the blocking panel (4) printed with required advertisement can be used as daytime advertising board, while LED light display can be used for various moving picture advertising board in night time.

The FIG. 5, as an alternative to this invention, shows that the client can change easily the advertisement by laying another advertising board (8) on the existing blocking panel (4).

As described above, this invention is made by the combination of three primary colored LED devices (20) fastened on PCB base plate (6) at certain intervals and coated with silicon for tight protection and fastening of them (20) on the base plate (6).

After PCB base plate (6) equipped with LED (20) is inserted into the compartment, the gaps between wall (16) and the base plate (6) are filled with silicon for complete water-tightening. The electric code connected to the PCB base plate (6) is extracted (22) for connection with input & output terminal for display of advertisement and the layered advertising blocking panel (4) that protecting LED (20) light from

diffusing is used for daytime advertisement effectively.

At this moment, the blocking panel (4) is designed as removable with the combination of connecting protrusions and holes that the user can replace it (4) easily and place another advertising board (8) on the
5 face of it.

In addition, the size of displaying board can be changed freely with the combination of another panel bodies (2) by the necessity of the client when fastening the mingled and fixed protrusions (32) installed on the panel body (2) to the wall or supporting frame.

10 Accordingly, the invention displays in daytime printed advertising board and in night time moving advertising pictures by display of several LED devices that are installed in PCB base plate (6) and are displaying output signals from the video output signal device.

At this moment, the PCB base plate (6) equipped with numerous
15 LED devices placed at certain intervals displays moving advertising pictures by the combination of three primary colored LED radiating as a group.

What is claimed is:

1. The multi-advertising signboard convertible day and night time comprising;

5 is characterized and consist of PCB base plate (6) displaying moving advertising pictures by combination of three primary colored LED devices (20) placed at certain intervals and in grid pattern on the base plate, printed blocking panel (4) punched (12) matching to the location of LED and layered in consecutive orders on the panel body

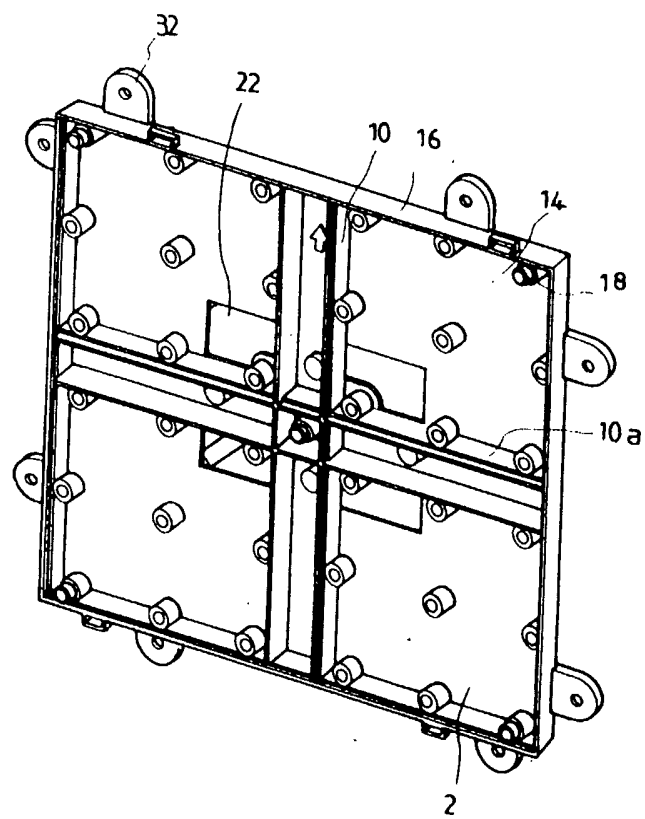
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2. In article 1 above, the multi-advertising signboard convertible day and night time is characterized that panel body (2) is divided into several compartments (14) by vertical (10), lateral (10a) and outside walls (16) and the invention is formed by the combination of several PCB
15 base plates (6).

3. In article 1 above, the multi-advertising signboard convertible day and night time is characterized that the printed blocking panel (4) above is designed as removable from the panel body (2) with connecting
20 protrusions (28) on the panel and connecting holes (26) on the panel body. The blocking panel is enclosing the PCB base plate (6) completely.

4. In article 1 above, the multi-advertising signboard convertible day and night time is characterized that the blocking panel (4) is layered
25 with printed advertising sheet (8) on the face of it.

Fig. 1



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Fig. 2

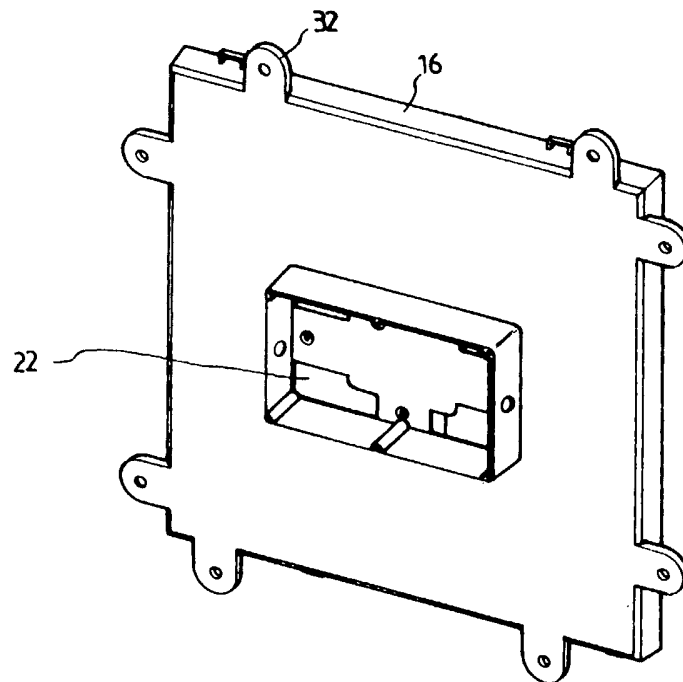
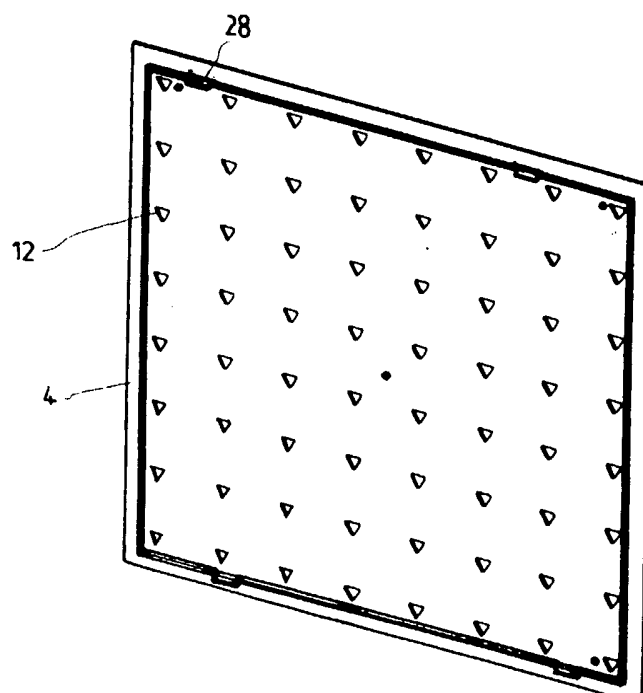
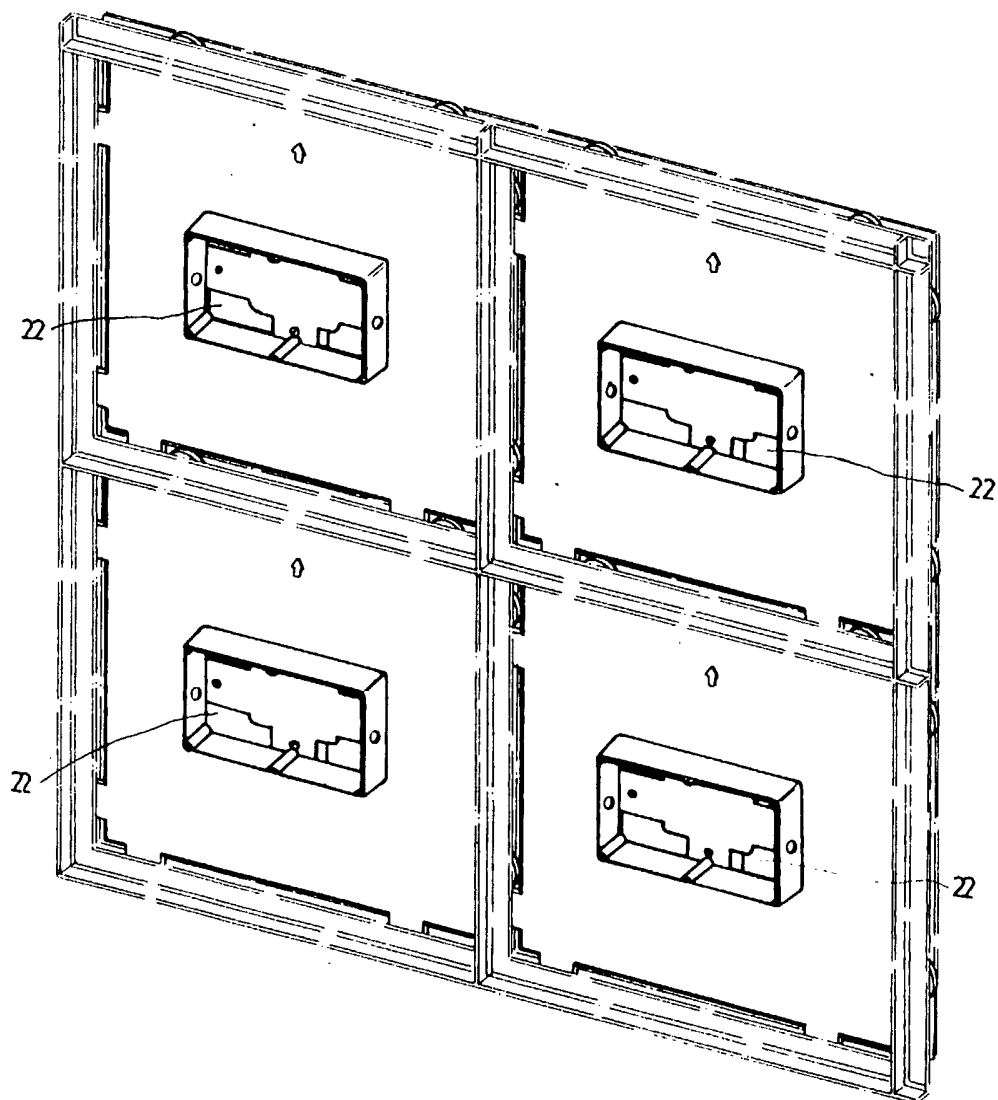


Fig. 3



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Fig. 4



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Fig. 5

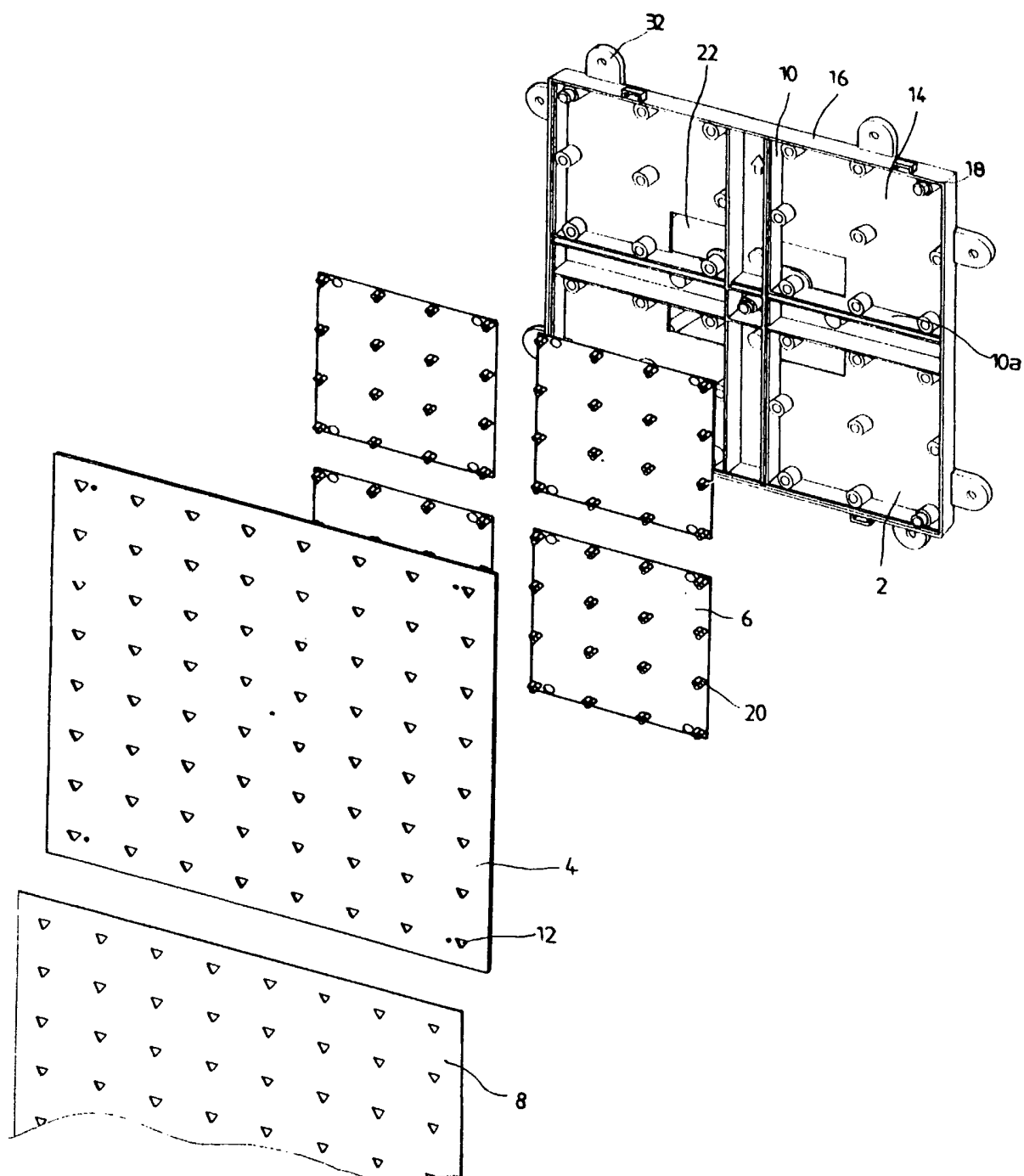
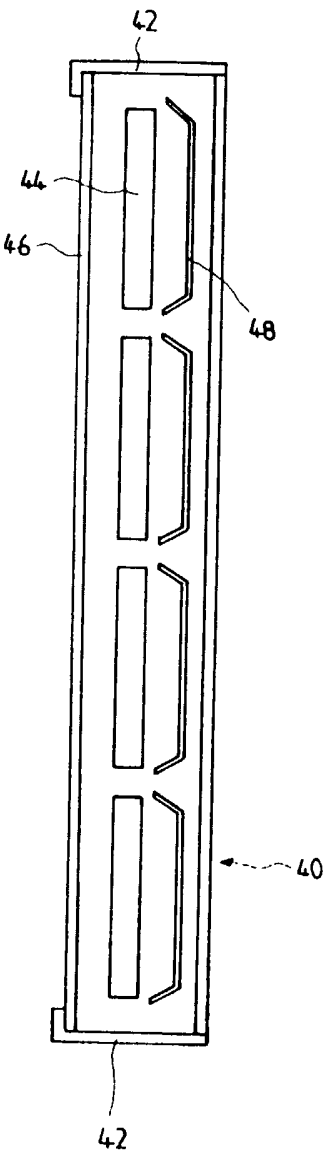


Fig. 6



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR01/01411

A. CLASSIFICATION OF SUBJECT MATTER**IPC7 G09F 9/302**

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)

IPC7 G09F

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

KR as above

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 2000-205941 Y (KIM, JONG KIL) 1 DECEMBER 2000	1-4
Y	KR 2001-209452 Y (SAMIK ELECTRONICS IND. CO., LTD.) 15 JANUARY 2001	1-2
Y	KR 2000-192570 Y (SAMIK ELECTRONICS IND. CO., LTD.) 16 AUGUST 2000	1-2
Y	KR 2000-196078 Y (KOREA AUTOMATION IND. CO., LTD.) 15 SEPTEMBER 2000	1
Y	KR 1999-920 U (CNM INC.) 15 JANUARY 1999	1
Y	KR 2001-223474(SAMIK ELECTRONICS IND. CO., LTD.) 15 MAY 2001	1

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

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