United States Patent

Arnold

[15] **3,680,238**

[45] **Aug. 1, 1972**

[54] **SIGN DISPLAY APPARATUS**

[72] Inventor: **John L. Arnold,** 1604 W. Riverside Ave., Spokane, Wash. 99201

[22] Filed: **Aug. 20, 1970**

[21] Appl. No.: **65,537**

[52] **U.S. Cl.** .....**40/132 R,** 40/133 R

[51] **Int. Cl.**.....**G09f 13/06**

[58] **Field of Search** .40/106.1, 130, 132, 133, 130 F, 40/131

[56] **References Cited**

UNITED STATES PATENTS

2,707,346	5/1955	Fuller	40/133
2,487,403	11/1949	Wisdom	40/106.1 X
2,496,488	2/1950	Onman	40/130
3,562,942	2/1971	Mabrey	40/132
2,893,148	7/1959	Figman	40/131
2,907,544	10/1959	Harling	40/145 UX
3,137,083	6/1964	George et al.	40/132
3,068,599	12/1962	Myerson	40/132
2,753,640	7/1956	McConnell	40/132
3,163,554	12/1964	Gessler	40/130 F X

Primary Examiner—Robert W. Michell
Assistant Examiner—Richard Carter
Attorney—Wells, St. John & Roberts

[57] **ABSTRACT**

A sign display is described having a plurality of layers including a transparent front layer which absorbs ultraviolet light and transmits visible light. Behind the front layer is located a milk-white translucent layer for reflecting sunlight from the front of the display and for transmitting artificial light generated behind the display. A developed film negative having transparent areas and opaque areas defining a message is interposed between the front layer and the milk-white translucent area to display the message.

5 Claims, 16 Drawing Figures

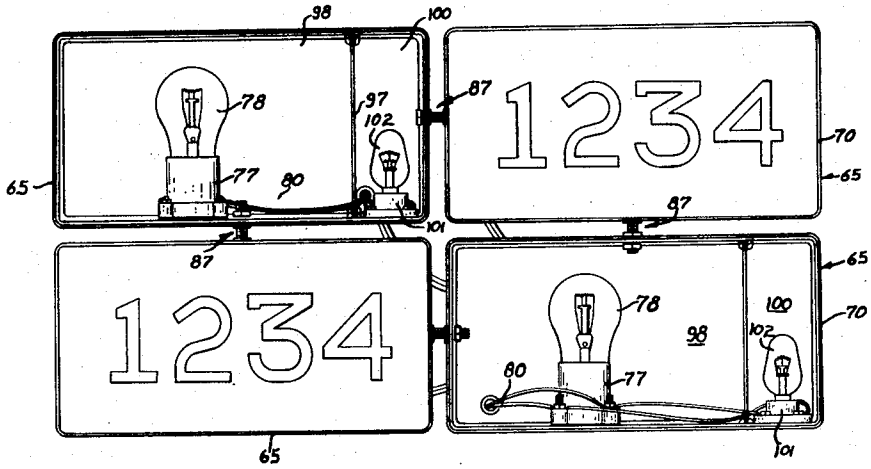


Fig. 1

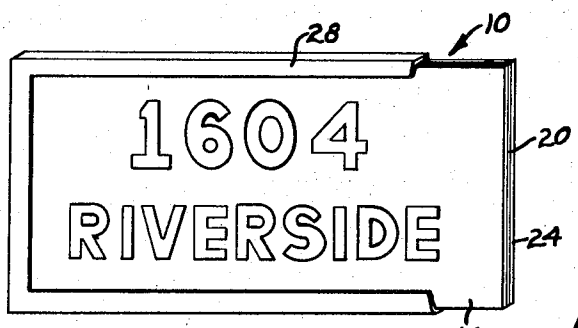


Fig. 2

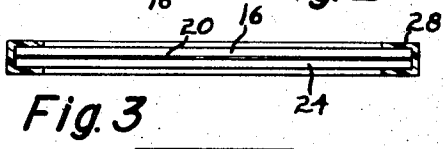


Fig. 3

Fig. 4



Fig. 5

INVENTOR.
John L. Arnold
BY
Wells, St. John & Roberts
Attys.

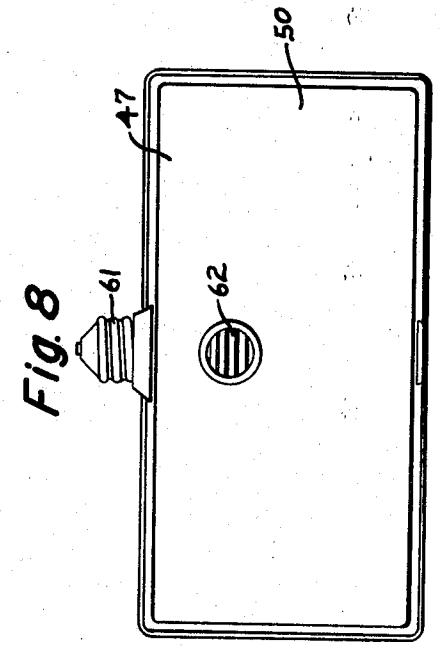


Fig. 8

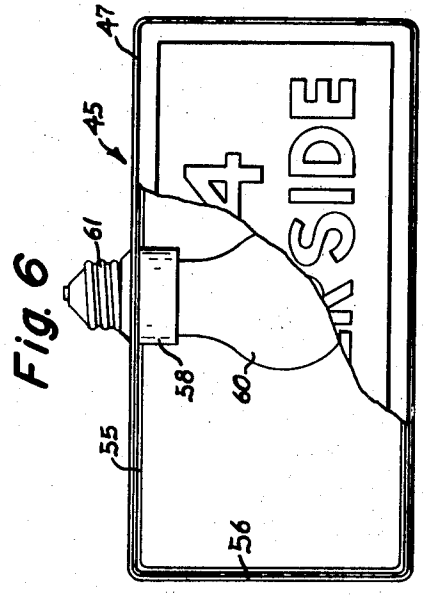


Fig. 6

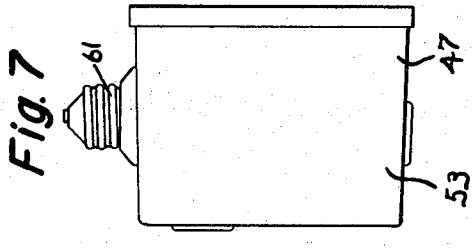


Fig. 7

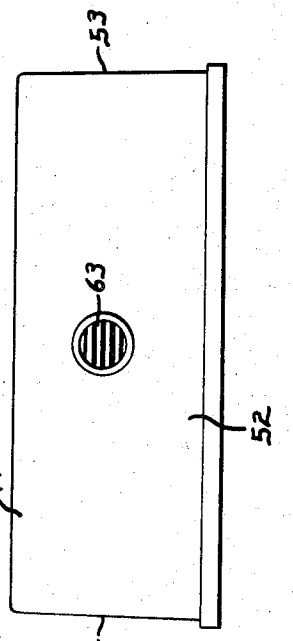


Fig. 10

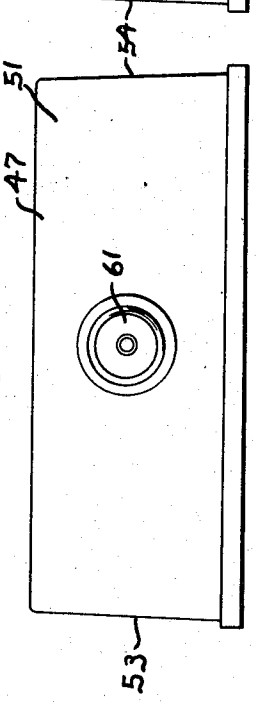
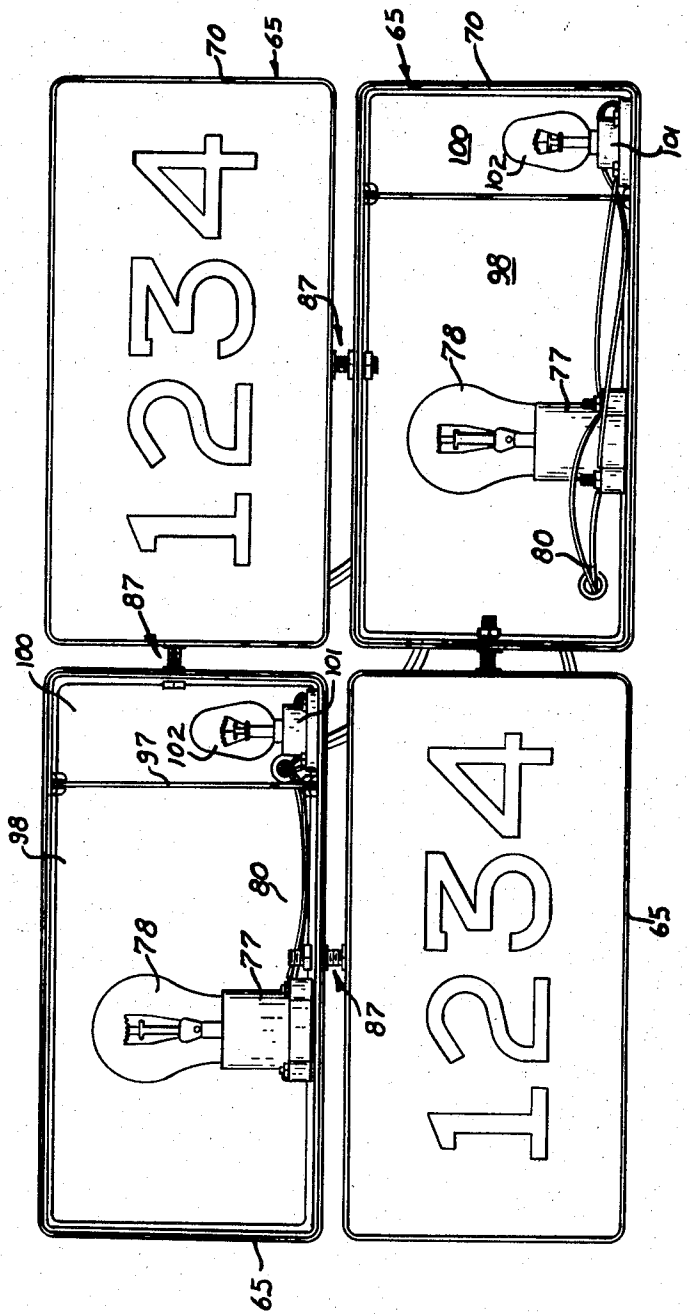


Fig. 9

INVENTOR.
John L. Arnold
BY
Wells, St. John & Roberts
Attys.

Fig. 11



INVENTOR.
John L. Arnold
BY
Wells, St. John & Roberts
Attys.

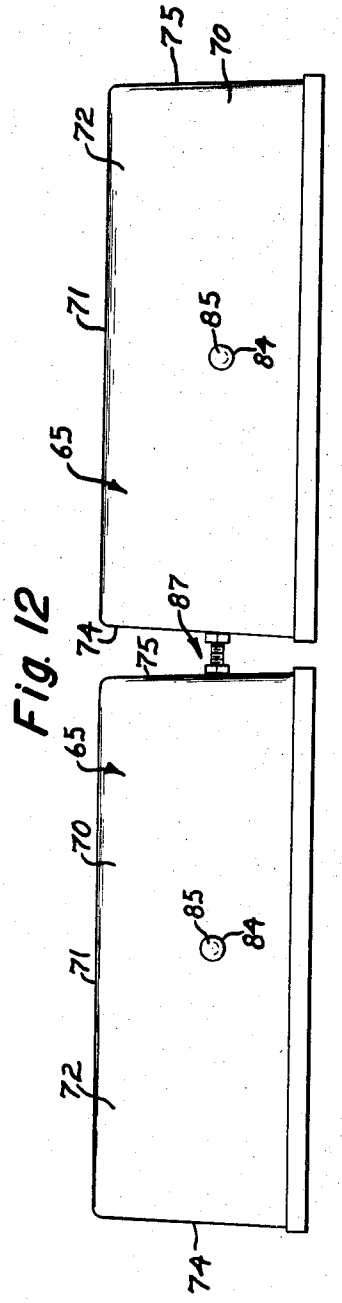


Fig. 12

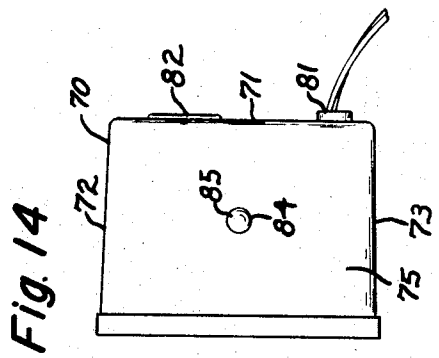


Fig. 14

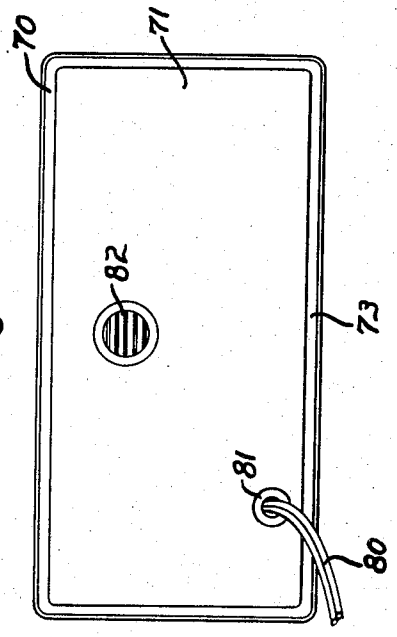


Fig. 13

INVENTOR.
John L. Arnold
BY
Wells, St. John & Roberts
Attys.

Fig. 15

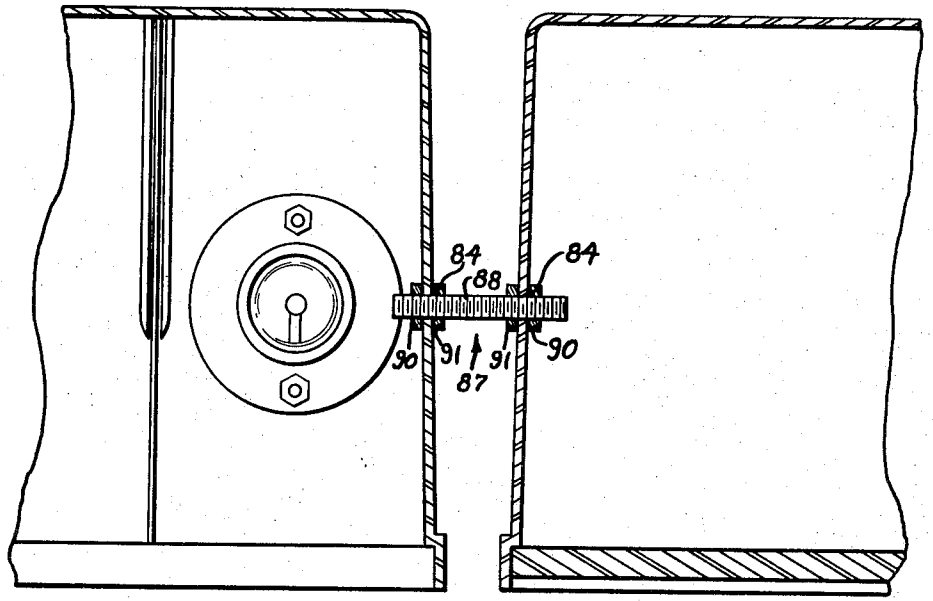
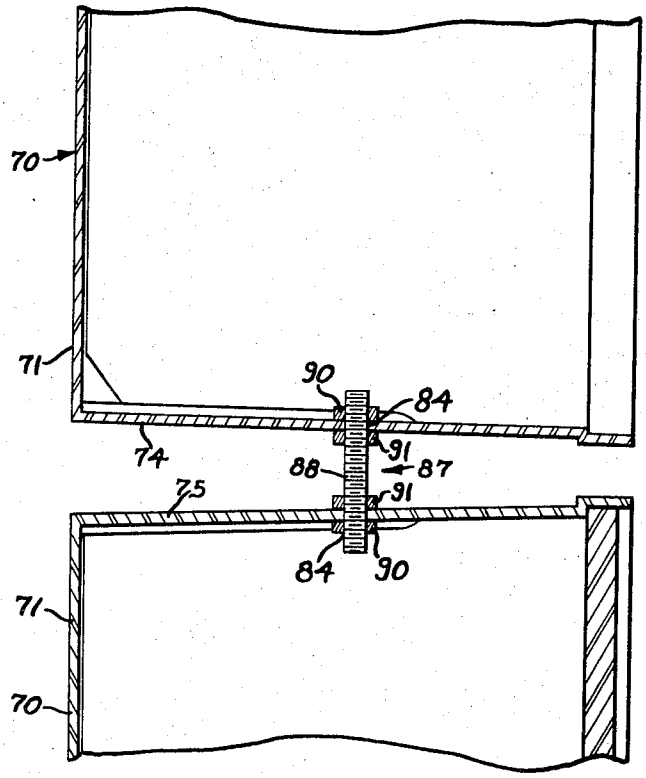


Fig. 16



INVENTOR.
John L. Arnold

BY

Wells, St. John & Roberts

Attys.

SIGN DISPLAY APPARATUS

BACKGROUND OF THE INVENTION

This invention relates to a display device and more particularly to an illuminated sign display.

One of the principal objects of this invention is to provide a very simple and effective sign display that can be manufactured at an economical cost which will make the sign display generally available to the general public.

An additional object of this invention is to provide a sign display that is extremely versatile and can be used for business signs, house number signal and the like.

A further object of this invention is to provide a sign assembly comprised of a plurality of modular signs that can be added to or subtracted from with a minimum effort.

An additional object of this invention is to provide a sign assembly having a plurality of individual signs that are connected together in which the message of each sign can be readily changed.

A further object of this invention is to provide a sign display that utilizes readily available commercial components that when combined provide a sign that can readily withstand the environmental elements.

These and other objects and advantages of this invention will become apparent upon the reading of the following detailed description of preferred and alternate embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred and alternate embodiments of this invention are illustrated in the accompanying drawings, in which:

FIG. **1** is a perspective view of a multi-layer sign display having a plurality of layers for displaying a message;

FIG. **2** is a vertical cross-sectional view taken along line **2—2** in FIG. **1** further illustrating the relative position of the layers;

FIG. **3** is an expanded view of the multi-layer sign display illustrating relative position of each layer of the display;

FIG. **4** is a perspective view of an alternate embodiment of a multi-layer sign display;

FIG. **5** is an expanded view of the sign display illustrated in FIG. **4** showing the relative position of each layer;

FIG. **6** is a front view of a translucent enclosure for receiving the layers illustrated in FIGS. **1–3** to produce a combination entrance light and illuminated house number display;

FIG. **7** is a side view of the enclosure illustrated in FIG. **6**;

FIG. **8** is a back view of the enclosure illustrated in FIG. **6**;

FIG. **9** is a top view of the enclosure illustrated in FIG. **6**;

FIG. **10** is a bottom view of the enclosure illustrated in FIG. **6**;

FIG. **11** is a front view of an assembly having a plurality of signs;

FIG. **12** is a top view of the assembly illustrated in FIG. **11**;

FIG. **13** is a back view of one of the sign displays shown in FIG. **11**;

FIG. **14** is an end view of the sign illustrated in FIG. **13**;

FIG. **15** is a cross-sectional view taken along line **15—15** in FIG. **11** illustrating the interconnection between two horizontally adjacent signs; and

FIG. **16** is a vertical cross-sectional view taken along line **16—16** in FIG. **11** illustrating the connection between two vertically adjacent signs.

DETAILED DESCRIPTION OF A PREFERRED AND ALTERNATE EMBODIMENT

Now referring to the drawings, there is shown in FIG. **1** a sign display generally designated by the numeral **10** having a message in the form of an address "1604 RIVERSIDE" which is broken down into a first set of number characters "1604" and a second set of letter characters "RIVERSIDE." The characters may be transparent and the background opaque or the characters may be opaque and the background transparent. In this embodiment, the characters are transparent to transmit light with an opaque background.

The sign display **10** includes a plurality of display layers comprising a transparent face layer **16** having a substantial rectangular shape with a visible light transmission factor of approximately 85 percent or better. The transparent face layer is constructed of a plastic sheet material that is transparent. It has been found that transparent acrylic sheets of cast polymethyl methacrylate are preferable. The plastic sheet is designed to transmit visible light between 400 millimicrons and 700 millimicrons but to absorb ultraviolet light below 345 millimicrons to prevent ultraviolet light from passing through the face layer **16**. The transparent face layer **16** has a peripheral edge **17**.

An intermediate thin layer **20** of developed photographic film negative is mounted behind the transparent face layer **16**. The thin layer **20** is composed of a developed electromechanical line lithograph film negative having an opaque light sensitive emulsion supported on a transparent base of triacetate, polystyrene, or plastic having a thickness of approximately 0.005 inches. The intermediate thin layer **20** is formed by placing an unexposed lithograph film negative such as described into a camera and exposing the negative to a replica of the message and then developing the exposed film negative to remove emulsion areas of the emulsion to produce transparent and opaque areas that visibly represent the message. In this particular embodiment the film negative is exposed to a message replica having black or darkened characters and a white background so that when the negative is developed the emulsion is removed from those areas representing the characters leaving black or dark gray opaque background. The transparent areas are designated by the numeral **21** and the opaque background area or areas are designated by the numeral **22**.

The sign display **10** also includes a milk-white translucent layer **24** behind the thin negative layer **20**. The milk-white translucent layer **24** is designed to reflect sunlight from the front of the display through the transparent areas during the daylight hours and to transmit artificial light from behind the sign display through the transparent areas **21** at night. It has been found that a milk-white plastic sheet made of acrylic cast polymethyl methacrylate is extremely effective for

reflecting sunlight and for transmitting artificial light in the visible region while absorbing any ultraviolet light below 345 millimicrons. Another advantage of the milk-white translucent layer is to defuse the images of any objects behind the sign display so that any images behind the sign display such as a light bulb will not detract from the effective display and transmission of the message.

Under some conditions it may be desirable to emphasize one or a set of characters as opposed to others by placing a translucent colored layer **27** between the intermediate thin layer **20** and the milk-white translucent layer **24** overlapping the selected character or set of characters. The translucent color layer **27** is constructed of a thin sheet made of a heat resistant translucent theater gelatin colored with an aniline dye. In this particular embodiment it was selected to place the translucent color layer overlying the set of characters "1604" to contrast this set of number characters with the letter characters "RIVERSIDE."

The plurality of layers is held together by a U-shaped rim **28** that extends entirely around the periphery of the edges of the layer to secure the layers together. The U-shaped rim **28** may be made of flexible rubber or plastic material which may be removed when desired to replace the intermediate thin negative layer to replace or change the message.

It should not be overlooked that such a sign display is capable of handling an almost infinite number of various messages having various two-dimensional shapes, colors and designs.

An alternate embodiment of the sign is illustrated in FIGS. **4** and **5** in which the sign display has a transparent plastic face layer **30**, a thin intermediate photographic negative layer **32**, a milk-white translucent plastic layer **34** and a transparent plastic back layer **36**. Both the transparent plastic face layer **30** and the back layer **36** are formed of plastic material that transmits visible light but which absorbs ultraviolet light. In this particular embodiment, three distinct sets of characters—"FALL SALE," "OCTOBER," and "16–17–18"—, are transparent against a dark opaque background.

It may be desirable in this embodiment to provide a multi-colored display in which several translucent color layers **38, 39** and **40** are placed between the milk-white translucent plastic layer **34** and the back transparent plastic layer **36**. The colored layers **38, 39** and **40** may be positioned in substantially the same plane adjacent different transparent areas to emphasize the different sets of characters. In this embodiment the translucent color layer **38** is interposed between the milk-white layer **34** and the clear transparent back layer back of the characters "FALL SALE" whereas the translucent colored layer **38** is located behind the characters "OCTOBER" and the translucent colored layer **40** is back of the number characters "16–17–18." The color of the theater gelatin is chosen from colors other than black or white to emphasize or contrast the characters. Such a display provides for a multi-colored arrangement, in which the display during the daylight hours reflects sun light from the milk-white translucent layer through the transparent areas with the characters appearing white or light grey and at night the artificial light is transmitted through the milk-white translucent layer and the translucent color layers **38, 39** and **40** giving the message a multiple color effect. The layers **30, 32, 34, 36, 38, 39** and **40** are held together by U-shaped rim **42** that extends entirely around the periphery of the layer.

An additional embodiment of the invention concerns the use of the sign display as a combination porch or entrance light and an illuminated house number display **45** (FIG. **6**) having an elongated rectangular enclosure or box **47** shown in several views—FIGS. **6–10**. The enclosure **47** is made of a translucent milk-white plastic material that will transmit artificial light therethrough for illuminating a porch or entrance area. The enclosure **47** includes a back wall **50**, a top wall **51**, a bottom wall **52**, and side walls **53** and **54**. The enclosure **47** has a front opening **55** with a border flange **56** thereabout for receiving the display layers of the sign display illustrated in FIGS. **1–5**.

The combination porch light and house number display **45** includes a female light socket affixed to the inside of the top wall and directed downward for receiving a light bulb **60**. A female light socket **58** is affixed to a male light socket **61** that projects upwardly through the top wall **55** to be screwed into an electrical outlet socket on a porch or entrance. The vent plug **62** is mounted in the back wall **50** and a similar vent plug **63** is mounted in the bottom wall **52** to provide good ventilation to keep the temperature in the enclosure well below the melting point of any of the plastic components.

FIGS. **11–16** illustrate an assembly or stack of display signs **65** that are interconnected to form a display wall. In this embodiment, each display sign has an opaque enclosure **70** with a back wall **71**, a top wall **72**, a bottom wall **73**, side walls **74** and **75** and a front opening **76** to receive the display layers. A female light socket **77** is mounted in each of the enclosures with a separate light cord **80** extending into each enclosure through a grommet **81** in the back wall (FIG. **13**). A light bulb **78** is mounted in the light socket for providing artificial light. As shown in FIG. **13**, a vent plug **82** is mounted in the back of the enclosure for ventilation. Each of the enclosures has mounting apertures **84** formed in the top, bottom and side walls to enable each sign to be conveniently stacked either vertically or horizontally. Plugs **85** enclose those apertures **84** that are not in use.

The assembly is formed by interconnecting the enclosures with connectors **87**. The signs are interconnected leaving a space between the signs. The connectors **87** include threaded bolts **88** having ends that extend through corresponding apertures **84** in adjacent signs. Each end of a bolt is secured to an enclosure by an inside nut **90** and an outside nut **91** that clamps a wall therebetween.

In this particular embodiment the assembly includes four signs that are connected together with two signs mounted above and interconnected to two lower signs. Various numbers of signs can be attached or deleted from the assembly to change and modify the sign assembly as desired. One can readily appreciate the versatility of such an arrangement.

It may be desirable to provide a divider **97** (FIG. **11**) in one or more of the sign enclosures to divide the volume into an enlarged compartment **94** and a smaller

compartment **100**. A flasher light socket **101** is mounted in the smaller compartment **100** for receiving a flashing bulb **102** to draw particular attention to that portion of the message forward of the smaller compartment **100**.

It should be understood that the above described embodiments are simply illustrative of the principles of this invention and numerous other embodiments may be readily devised by those skilled in the art without deviating therefrom. Therefore, only the following claims are intended to define this invention.

What is claimed is:

1. An assembly of individually illuminated signs, each sign comprising:

an enclosure having a front opening;

artificial light generating means mounted within the enclosure for generating artificial light;

a display face affixed to the inclosure enclosing the front opening, said display face having a plurality of closely associated layers, including

a transparent front layer;

a thin intermediate layer consisting of developed photographic film negative having removed emulsions transparent areas and opaque emulsion areas defining the message;

a milk-white translucent plastic layer behind the intermediate layer reflecting daylight passing through the transparent areas in one direction as a milk-white color; a clear transparent back layer positioned behind the milk-white translucent layer; and

a colored translucent layer having a selected color other than the black or white interposed between the milk-white translucent layer and the clear transparent back layer overlying at least one of the transparent areas of the negative layer to transmit the artificial light through the transparent areas in the other direction with the light passing through the transparent areas in the other direction with the light passing through the overlaid transparent area having the selected color to provide a multicolor display when the artificial light is operated,

and wherein two adjacent signs are interconnected together with a threaded bolt having two threaded ends in which one and extends through one enclosure and the other end extending through the other enclosure with nuts mounted on the bolts for securing the enclosures to the bolts at adjustable space intervals.

2. The illuminated sign display as defined in claim **1** wherein the translucent colored layer is made of a thin sheet of theater gelatin colored with a dye of the selected color.

3. A combination outside entrance light and illuminated house number display for inserting into a female electrical outlet light bulb socket of a dwelling adjacent an entrance, comprising:

a translucent enclosure having a male light bulb type socket projecting outward therefrom for inserting into said dwelling female light bulb socket to mount the display adjacent said entrance;

a display face mounted in the enclosure and projecting forward having a clear transparent front layer;

a developed photographic film negative mounted immediately behind the front layer having transparent emulsion-removed number areas representing the house numbers surrounded by an opaque emulsion background;

a translucent milk colored layer immediately behind the developed photographic film negative for reflecting sun light and transmitting artificial light;

a female light bulb socket within the enclosure and electrically communicating with the male light socket for receiving a light bulb for transmitting artificial light through the enclosure to illuminate the entrance and for transmitting artificial light through the transparent areas of the film negative to illuminate the house number.

4. The combination entrance light and house number display as defined in claim **3** wherein the developed photographic film negative is photomechanical lithograph film negative having an emulsion supported on a transparent plastic base.

5. The combination entrance light and house display assembly as defined in claim **3** wherein the clear transparent front layer is made of a sheet of cast polymethyl methacrylate that absorbs ultraviolet radiation below 345 millimicrons to prevent the film from aging due to ultraviolet radiation.

* * * * *