

[54] **ILLUMINATED ADVERTISING DEVICE**

[76] Inventor: **Maximilian Friedrich Mutzhas**,
Pigersheimerstrasse 64, 8 Munich
90, Germany

[22] Filed: **Sept. 12, 1973**

[21] Appl. No.: **396,863**

Related U.S. Application Data

[63] Continuation of Ser. No. 123,202, March 11, 1971,
abandoned.

[52] U.S. Cl. **40/130 G; 40/130 L**

[51] Int. Cl.² **G09F 13/26**

[58] Field of Search **40/130 G, 130 H, 130 L,
40/130 E, 52 R; 315/107**

[56] **References Cited**

UNITED STATES PATENTS

1,824,204	9/1931	Fitch	40/130 G
1,885,973	11/1932	Wilson	40/130 G
2,166,036	7/1939	Bertoye	40/130 H
2,234,745	3/1941	Rarrel	40/130 L
2,810,862	10/1957	Smith	315/107 X
2,885,538	5/1959	Mahon et al.	40/130 G X

3,222,572	12/1965	Powell	315/151
3,404,475	10/1968	Coad	40/130 R
3,408,557	10/1968	Horgan et al.	323/1
3,550,298	12/1970	O'Neill	40/130 G
3,659,147	4/1972	Widmayer	315/107

FOREIGN PATENTS OR APPLICATIONS

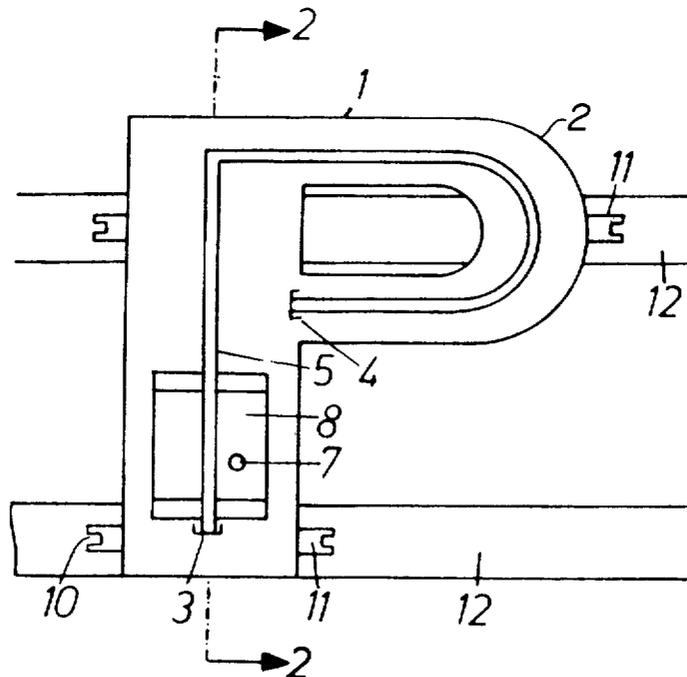
163,152	10/1933	Switzerland	40/130 G
7,902	6/1932	Australia	40/130 G

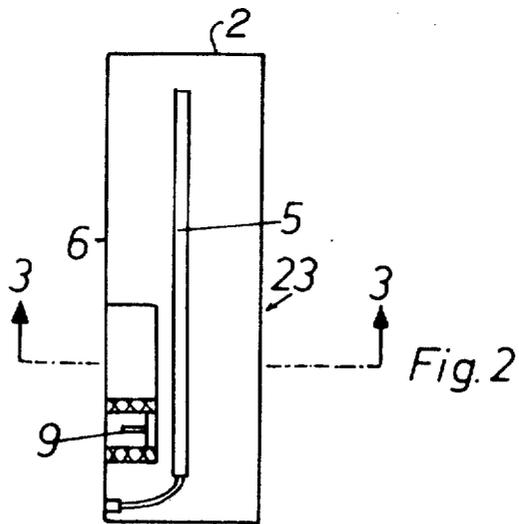
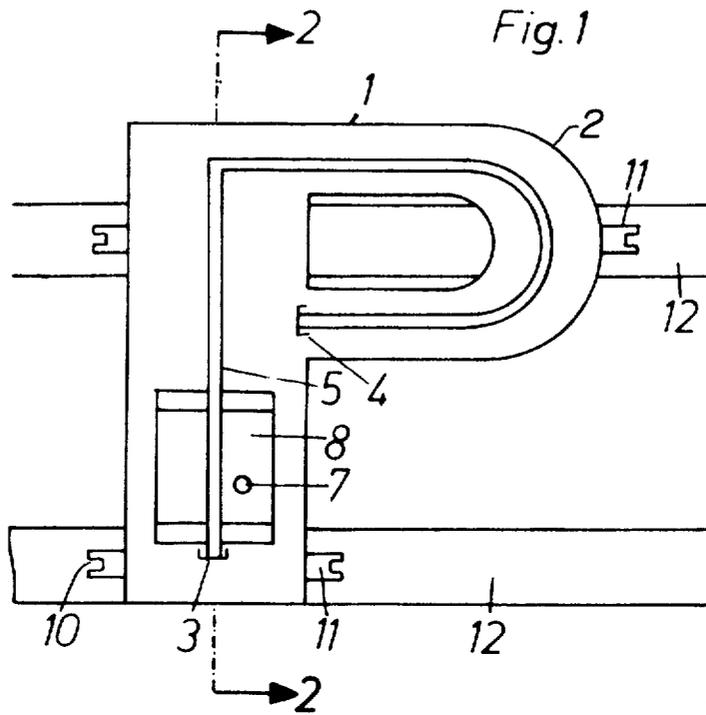
Primary Examiner—Robert W. Michell
Assistant Examiner—Vance Y. Hum
Attorney, Agent, or Firm—Burns, Doane, Swecker & Mathis

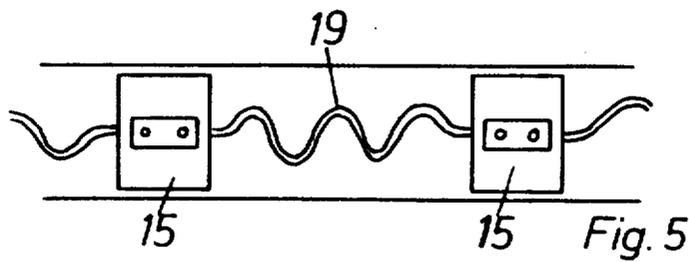
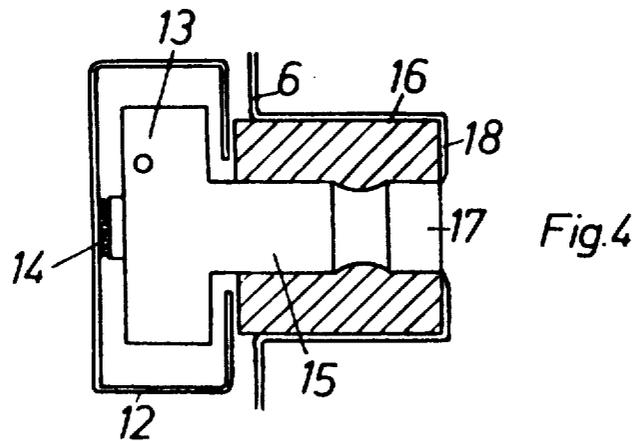
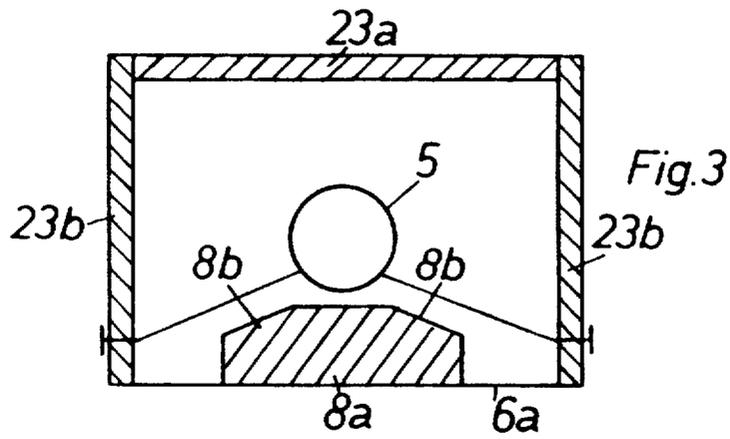
[57] **ABSTRACT**

An illuminated sign where each letter is provided with its own current control mechanism and with means operable to mechanically and electrically, detachably connect the letter to mounting rails. In another aspect of the invention, rotary bars or lugs provided with slip clutch means and position locking means are provided to secure the rails to a sign base or bracket means.

7 Claims, 21 Drawing Figures

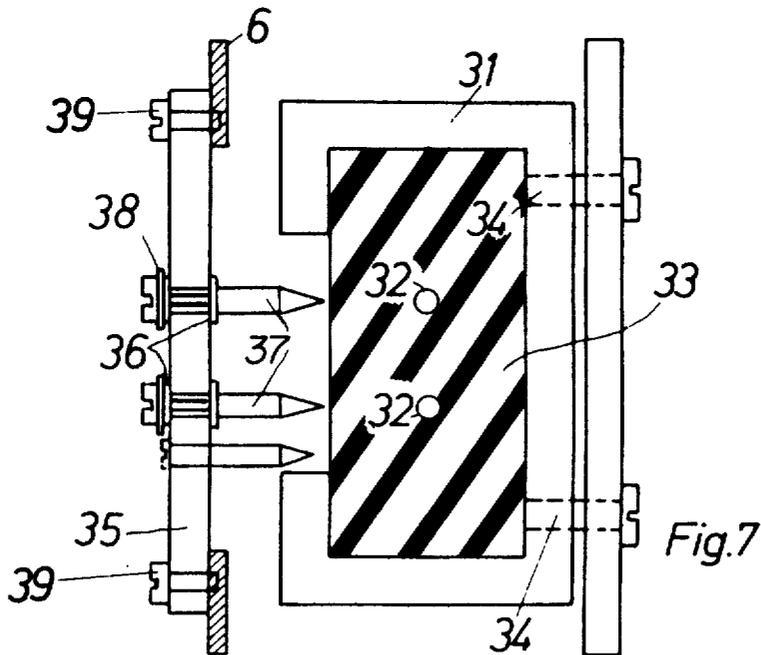
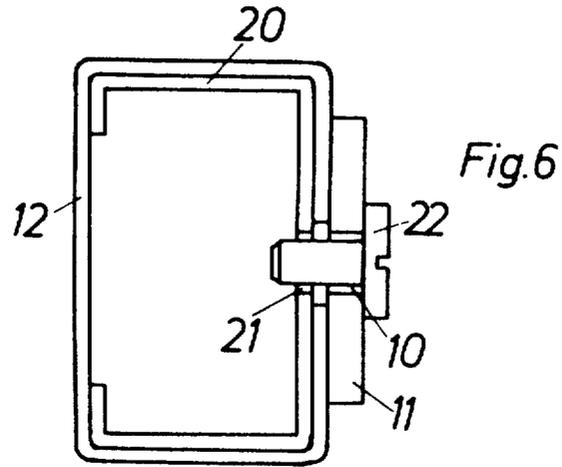






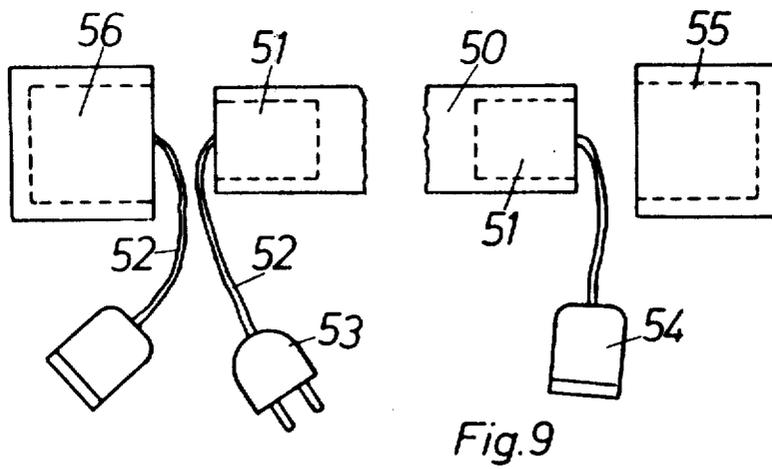
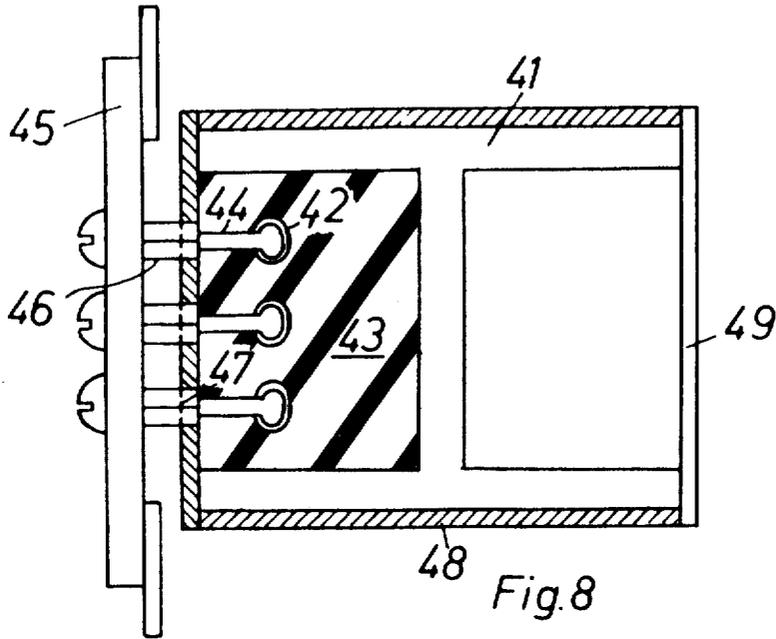
INVENTOR

BY



INVENTOR

BY



INVENTOR

BY

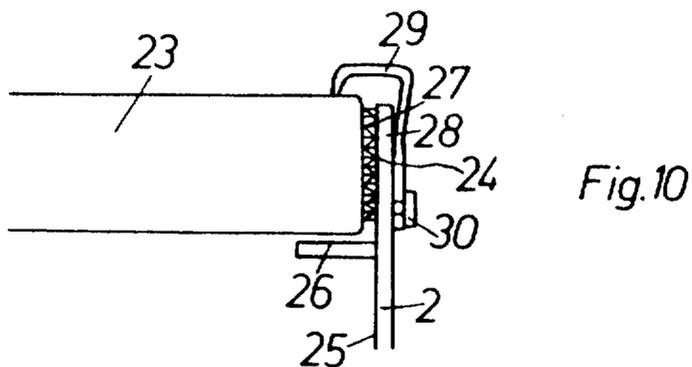


Fig. 10

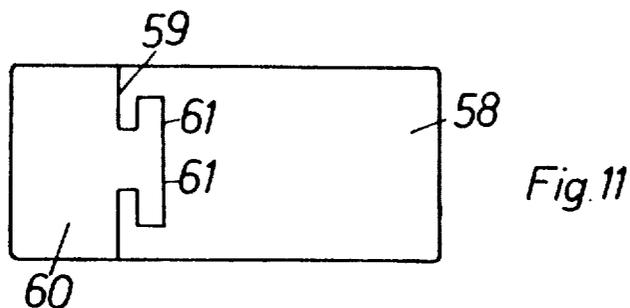


Fig. 11

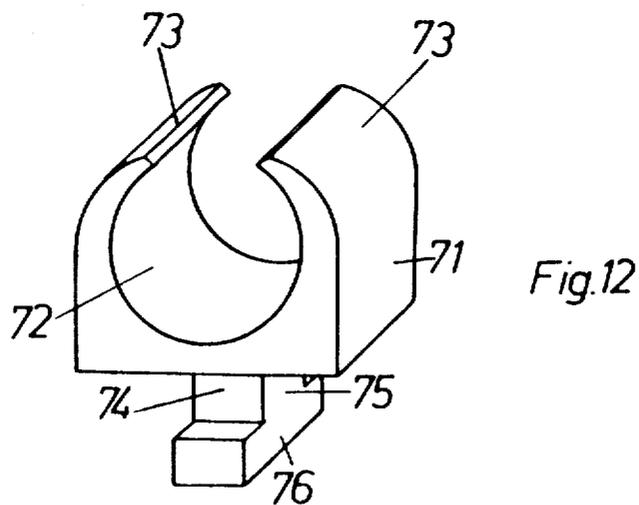


Fig. 12

INVENTOR

BY

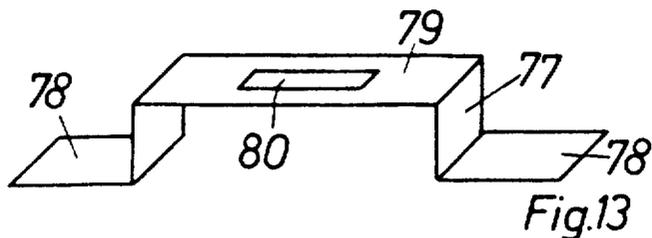


Fig.13

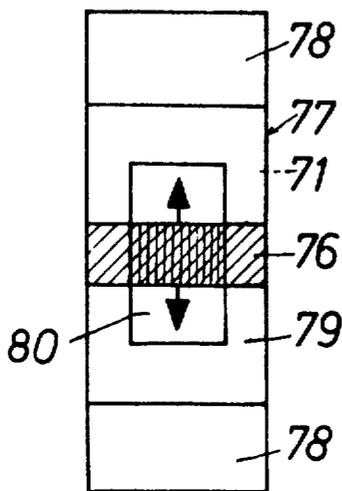


Fig.14

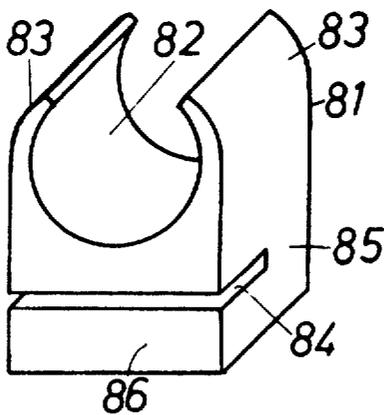


Fig.15

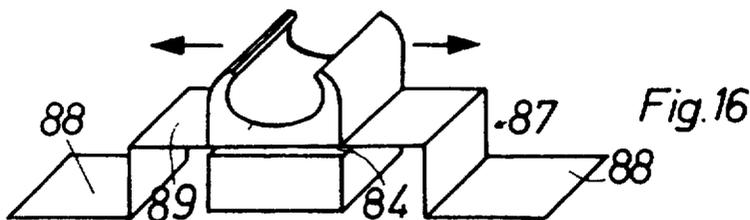
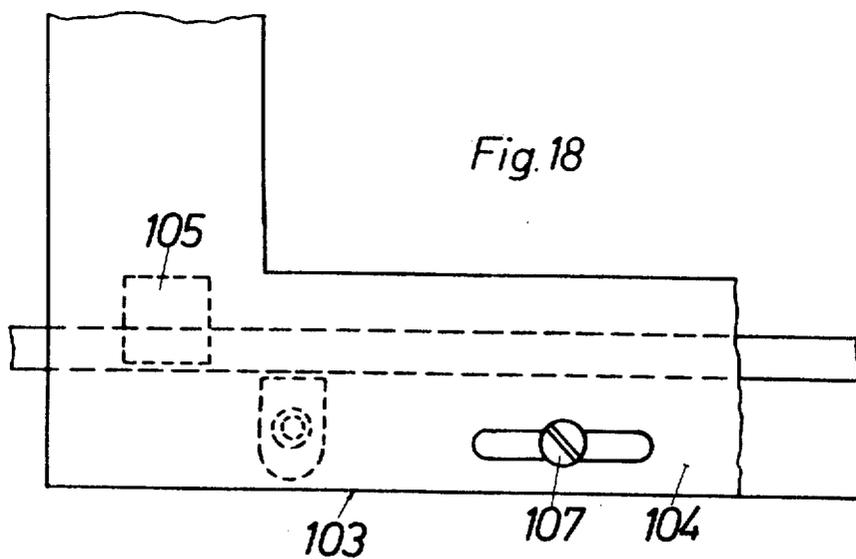
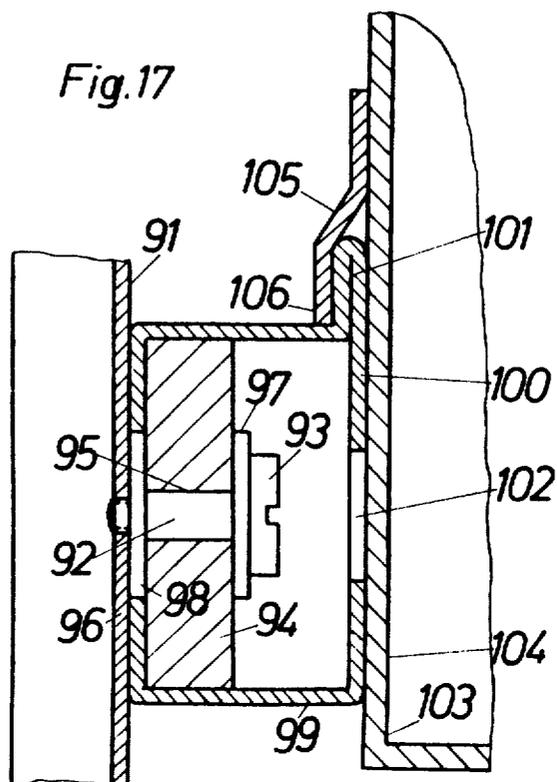


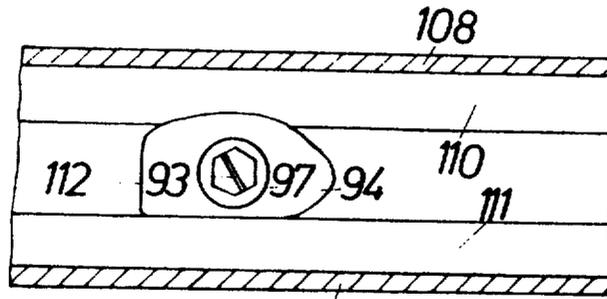
Fig.16

INVENTOR



INVENTOR

BY



109 Fig. 19

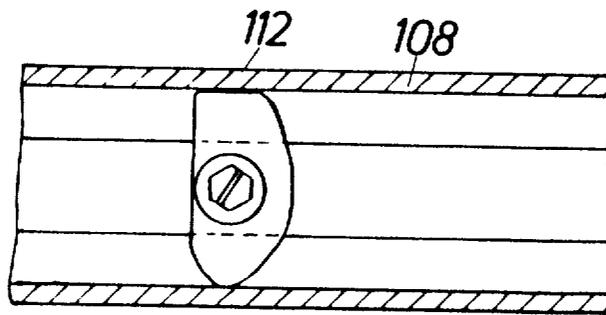


Fig. 20

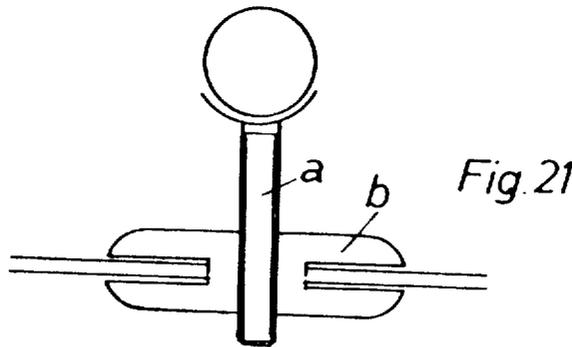


Fig. 21

INVENTOR

BY

ILLUMINATED ADVERTISING DEVICE

This is a continuation, of application Ser. No. 123,202 filed Mar. 11, 1971, now abandoned.

GENERAL BACKGROUND, OBJECTS AND SUMMARY OF INVENTION

This invention concerns an illuminated advertising device in which fluorescent tubes are provided with a device for the supply of operating current.

Hitherto, due to the practical realization of the many requirements concerning a large variety of forms, illuminated advertising devices have been manufactured individually and have therefore been very expensive as a result of high labour costs.

In order to reduce the costs, the means of supplying current to conventional illuminated advertising devices has been simplified by connecting a comparatively large number of fluorescent letters in series with associated fluorescent tubes and supplying the letters with current from a common transformer.

On the one hand, this involved the necessity of using high voltage, whereby the savings achieved by the reduction of costs for materials for the current supply means was lost. This loss resulted from the connections for the individual letters which were expensive because of the safety regulations for high tension, and because of the necessity of having the assembling effected by skilled workers.

On the other hand, special planning, manufacture and assembling by skilled workers was necessary for each individual illuminated advertising device.

In the case of conventional illuminated advertising installations on the modular or building block system, it is not necessary to make high voltage connections between the letters at the place of assembly. However, the arrangement of transformers on the outside of the back of the casing or frame for the letters makes the use of damp-proof connections and covers for the transformers necessary and, moreover, prevents the close contact of the letter with the surface of a wall.

Although it is known to mount the transformer of illuminated letters supporting the freely radiating fluorescent tubes at the front, partly within the base wall, the transformer is exposed externally. Moreover, these conventional, illuminated advertising installations require a main supply connection on each individual fluorescent letter and the positioning of the leads on the assembly frame to be effected by skilled labor.

Hitherto illuminated advertising devices have usually been secured to their rails by means of brackets, or the like, screwed into wall plugs. The attachment has preferably been effected by means of plugs mounted in the wall surface by screws screwed into the rail through bores. In addition, the rail with the fluorescent letters has first been held against the wall, the points of attachment marked, then the fluorescent or luminous sign removed, the holes for the plugs made, the plugs inserted, and then the brackets and/or the rail screwed on tight. Since these illuminated advertising devices were frequently of considerable weight and had to be attached to the wall in places which were accessible only with difficulty, this work involved not only much time and expense, but also danger to the fitters.

The object of the present invention resides in providing an illuminating advertising device of the above-mentioned kind which can be mounted without difficulty by unskilled labor and which can be manufac-

ured very cheaply on the mass production principle. In achieving this object, the attachment can be effected more rapidly and simply, than hitherto, with an absolutely reliable and secure fit, with the device being fixed in position with only very few manipulations.

This is achieved in accordance with the present invention by the feature that each fluorescent tube system has its own switching mechanism and that the relief bodies, on which the luminous bodies are arranged, may be mounted on a corresponding base by means of a securing device.

Due to this arrangement of the present invention, the manufacture of luminous signs is greatly simplified. More particularly, assembling can be effected in a very short time even by unskilled or semi-skilled workers, since no high tension leads are involved in the assembling. Luminous signs can also be assembled in situ, a feature which hitherto was always extremely difficult on account of the rigid safety regulations concerning high voltage. The actual high voltage supply has very short connecting leads which can be made quite damp-proof. Since the entire voltage part is located within the letter, maximum safety is obtained. Each item of the sign can be cast from a block of suitably transparent plastics material, the fluorescent and at least the most essential parts of the means supplying operating voltage being pre-cast in plastics material. Reliable operation is still further increased by this arrangement, since the penetration of moisture and the risk of sparking or flash-overs are avoided without special safety measures.

The means of supplying operating voltage can be interchanged, at least with most essential parts. When the individual sign has a box-shaped body in which a transparent cover plate, with sealing surfaces at right angles to its outer surface, is parallel to the countersurface of the box-shaped casing, elastic sealing members are preferably provided between these surfaces located perpendicularly to the plane of the sign. At the same time these sealing members may have an undulated or corrugated cross-section and comprise strips of elastic rubber which enclose the marginal area of one of the surfaces by a U-shaped cross-sectional portion along one edge.

The fluorescent tube system is preferably designed so that the ignition voltage is below 1,000 volts. This arrangement is possible, in accordance with the present invention by the supplying of operating current to each individual tube from its own means. If desired, several tubes may be provided in one sign and, for each tube, its own means of supplying the operating current may be provided within the sign. By this means, even with relatively large letters and high fluorescent density, operating voltages below 1,000 volts can be maintained and safety measures for high voltages thereby avoided. Moreover, it is then possible, in accordance with the present invention, to use a choke coil or a relatively simple current field transformer as means of controlling the operating current supply system. The series connecting means is a constant current device which is formed on the secondary side of the transformer by a parallel or series connection of inductances and capacitors, or it may be build up from non-linear electronic components, such as diodes, transistors, thyristors. A constant current device in this case is one which delivers a constant tube operating current independently of the luminous tube load, without external mechanical operations.

In order to obtain complete and uniform illumination of the transparent surfaces by appropriate reflection, the series connecting device may be provided on its side facing the luminous tube with bevelled or rounded edges or be trapezoidal or semi-circular. Further improvement of the illumination may be achieved if the series connecting device is provided on its outer sides with a reflecting coating. In order to render possible the use of identical series connecting devices independently of the construction of the individual signs, the series connecting device is provided with a device for regulating the operating current.

This regulating device may be a fixing or adjusting screw located with its head against the upper side of the series connecting device. The tightening of this screw influences the position of the field or core. However, a threaded bore may also be formed in the field or core of the series connecting device. In the bore a wing screw is screwed, and influences the action of the core or field.

The letters are preferably provided with devices for securing them to at least one common rail which is mounted on a base or mounting surface. The rail preferably has a rearwardly open, C-cross section. The mounting surface or surfaces of this sign latching bars spaced therefrom by a clearance corresponding to the thickness of the C-section. At least two such rotatable bars may be provided, each having eccentric peripheral edges. The distance between these edges corresponds approximately to the inner clearance between spaced free edges of the rail section. The maximum radius of each bar is approximately equal to half the height of the rail section. By this arrangement of the present invention, and after positioning of the bars in the mounting surface or surfaces in a line corresponding to the desired direction in which the fluorescent signs to be fixed, the rail with the fluorescent sign can be simply mounted on the bars, with each bar being located with its maximum length in the direction of a rail opening and received in the opening. The bar can then be turned so that the rail is supported, by the inside of its upper wall, on the bar portion with a maximum radius. The rail is simultaneously prevented from slipping off of the bar, by the feature that the bar is now disposed by its longest length transversely to the rail and overlapping rail portions on opposite sides of the rail opening.

In order to prevent unintentional turning of the bar into the locking position, a circumferential edge of the C-shaped bar is preferably formed as a straight supporting edge disposed at right angles to an associated straight radial line at the place of maximum radius. This straight supporting edge becomes disposed against the inner side of the upper length of the C-section so that the weight of the illuminated sign checks the bar against further rotation.

In order to enable the rail to be placed over the bar easily, the bar may be formed along one edge, in a straight line at right angles to the contact edge. This straight line extends along the elongate bar direction, parallel to the maximum length or radius direction.

Operation of the rotatable bar may be effected by any of the variously known means. A threaded bore is preferably provided on securing surfaces such as mounting brackets. A fixing screw, capable of being tightened from the rear of the securing surface, is mounted in the bore and is disposed in the rear of the securing surface, is mounted in the bore and is disposed

in frictional, rotary clutching, engagement with the bar. An opening for access to the screw may be provided in the cross-piece of the rail section opposite a rail opening through which the bar is inserted.

The bar may be mounted, by a bar bore, and via a friction producing sleeve on the fixing screw. This screw serves as a pivot pin for the bar and the frictional engagement between the screw, sleeve, and bar produces rotation of the bar only as far as the locking position of the bar.

In these arrangements therefore, during the tightening of the locking screw, the bar is brought to the locking position and is then stopped by the weight of the rail effectively engaging the bar. During any further tightening of the locking screw, the bar and simultaneously the rail, are stressed by their mutually engaged edges becoming inclined toward each other. By this means further locking of the bars and of the rail on the bar is achieved so that any unintentional detachment without other means is reliably prevented.

The friction sleeve, i.e. a bushing of elastic material, is disposed in the bore of said bar. A suction collar is disposed on the rail side of the bracket and is slightly thicker than the wall thickness of rail, adjacent the rail opening. By this arrangement, when the screw is tightened, the bar is pressed against the collar and joint rotation further resisted. In order to prevent vertical displacement of the rail, the maximum diameter of the bar may be approximately equal to the inner height of the C-section of the rail in the region of the bar contact.

In the event that a bar should become disposed below a letter, such that tightening of the bar would have to be effected in the region of the cross-piece of the rail covered by letters, and so as to facilitate the mounting of the letters at the place of assembly, the upright wall of the rail C-section may be extended upwardly beyond the section. Each letter may be provided with at least one hook operable to engage over the extension of the upright wall.

Thus, the letter can simply be removed upwardly from the rail after the releasing of any locking devices. This letter, after being placed in position, becomes fixed in position by its weight at any accurately predetermined height on the rail. Any letter can also be screwed to the crosspiece of the rail by at least one screw.

On the one hand, by this arrangement, the letter is prevented from tilting sideways in the plane of the rail by the provision of only one inserted hook. On the other hand, any unintentional raising of the letter by moving the hook upwardly may be prevented by the use of a fastening screw between the rail and letter. In order to render possible easy adjustments of the letter within certain limits, each such fastening screw may extend through a slot in the letter.

DRAWINGS

The invention will be described in greater detail hereinafter with reference to the embodiments illustrated in the accompanying drawings, in which:

FIG. 1 is a plan view of an illuminated letter according to the present invention, with the outer surface removed;

FIG. 2 is a section of the FIG. 1 letter taken on the line 2—2 of FIG. 1;

FIG. 3 is a cross-section through a modified form of a sign according to the present invention, in the place where the voltage transformer is secured;

FIG. 4 is a section on a magnified scale of a plug connection according to the present invention between the letters and the supporting rail;

FIG. 5 shows two socket-like parts for the plug connection with the coiled connecting cables;

FIG. 6 is a section through the rail showing a clamping or terminal screw for the attachment of the illuminated letter;

FIG. 7 is a view similar to FIG. 4 through a variant of the plug connection;

FIG. 8 is a view similar to FIG. 7 through another variant of the plug connection;

FIG. 9 is a schematic plan view of a supporting rail with current connection;

FIG. 10 is a partial section through a seal, according to the present invention, between transparent front wall surfaces and the side wall of the box-shaped letter casing;

FIG. 11 is a schematic plan view of a series connecting device with inserted ignition capacitor;

FIG. 12 is a perspective view of the holding block of the first embodiment of the invention;

FIG. 13 is a perspective view of the associated stirrup or yoke;

FIG. 14 is a schematic view of the stirrup assembled with the FIG. 12 holding block;

FIG. 15 is a perspective view of the holding block of a second embodiment;

FIG. 16 is a perspective view of the holding block according to FIG. 15 mounted on the stirrup;

FIG. 17 is a schematic cross-section through a device of the present invention for securing the illuminated sign;

FIG. 18 is a plan view of the illuminated letter and the rail according to FIG. 17;

FIG. 19 is a plan view of the interior of the rail with the rotatable bar, with the upright wall of the section removed, the bar being disposed in the position for receiving the rail;

FIG. 20 is a view similar to FIG. 19, but with the bar in the locking position;

FIG. 21 is a schematic view of the arrangement of a fluorescent tube supporter holder on the relief body by means of an elastic socket.

DETAILED DESCRIPTION

Overall Letter Structure

The illuminated letter 1 in FIGS. 1 and 2 comprises a letter or indica defining means such as a box-shaped casing 2, of sheet metal, the side walls of which may extend along outer contours of the letter. The front of this casing is covered by a transparent colored plastic sheet which is secured by means of screw connections (not shown) or in any other way.

An illuminating means such as a fluorescent tube 5 adapted to the shape of the letter is arranged in sockets 3 and 4. A transformer 8 is mounted on the base 6 of the casing by means of a screw 7 or any other securing screws (not shown). The secondary winding of said transformer 8 is connected to the sockets 3 and 4 and the primary winding thereof is connected to the plug connection 9, or socket means, for attachment to the mains supply.

Connecting means such as straps 11, provided with end slots 10, are mounted on the letter casing 2 with a clearance and position suitable for all letters to the same size. By means of these straps, the letter is at-

tached to rails 12, through the use of terminal screws engaging end slots 10. In the FIG. 1 embodiment, the lower rail 12 contains the main current supply means for all the letters of an illuminated sign.

The letter shown in cross-section in FIG. 3 comprises a baseplate 6a and a transparent front wall 23a and a side wall 23b. The transformer 8 includes a series connecting device 8a, located below the fluorescent tube 5, has bevelled edges 8b, so that the transparent wall surfaces 23b are uniformly illuminated. In the case of a box shaped embodiment also of the sign letter, in which the side wall consists of slightly opaque material, a more uniform illumination of the transparent front wall 23a is obtained by this design of the series connecting device, as a result of better reflection, the surface of the series connecting device 8a being also provided with a reflecting surface means such as a reflecting sheet is desired. As was previously described, the series connecting device is a constant current device formed on the secondary side of the transformer to deliver a constant operating current to the fluorescent tube independently of luminous tube load and without external mechanical operations.

Plug Connections

FIGS. 4 and 5 show an embodiment of the plug connections. Insulating housings 13 having a T-cross section for the socket-like corresponding parts are provided in the rail 12 having a C-cross section. The lower side is provided with a compression spring 14 which urges the plug portion 15 outwardly projecting through the slot and simultaneously renders possible displacement of the housing 13 along the rails.

The base wall 6 of the letter casing 2 is provided with a depression 16 in which the plug member 17 of the connection is disposed. A rubber sleeve 18, projecting outwardly beyond the base wall in its relaxed condition, is disposed on the peripheral wall of the depression. When the plug connection is assembled, the projecting part of the sleeve 18 engages rail 12 and presses inwardly and compresses the internal sleeve surface into a damp-proof contact with the peripheral wall of the projecting plug member 15.

All the plug-like corresponding parts 13 of a set of luminous signs can be connected by an extensible or coiled cable connections 19 so that the space between the plug-like members for the illuminated sign can be adjusted, corresponding to the construction of each letter. The space between adjacent letters can thus be selected without electrical connections having to be established or changed.

The electrical current supply means, comprising plug means such as the plug-like member 13 and a cable 19, can be manufactured practically as an endless chain. When ordered or on the site, this means can be separated to provide a component chain including the desired cable length and number of connections 13-15. One end of the resultant component chain can be used for producing the connection to the current supply source.

Clip Mounting for Letter on Rails

As shown in FIG. 6, the letters may be attached to the rails 12 by clip means such as clips 20 consisting of C-shaped flat metal members. These members have, on their uprights, a threaded bore 21 in which a terminal screw 22 is screwed. The screw 22, or threaded fastening means, is disposed in an end slot 10 of the straps 11.

In this embodiment the clips 20 are located in telescoping or flush relation with the inner walls of the rail so that the cable 19 passes smoothly through the clips 20 and does not prevent their displacement.

In the assembling operation, the rails 11, 12 are cut to the desired length, the corresponding number of clips 20 and the plug-like members 13 for the current connection are slipped alternately into the rails serving for the supply of current from the open end.

The individual letters are then inserted into the plug connections and easily secured by means of the clamping screws and straps 11. The letters are displaced along the rails, with the clamping screws, straps, clips and plugs 15 into their desired position and then the clamping screws on the upper rail 12 are tightened. The clips 20 located on the upper rail 12 can then be tightened on the corresponding straps 11 via the clamping screws of the clips on this upper rail.

Removable Letter Wall

The screw 7 on the transformer 8 is used not only for purposes of attachment, but also for setting the secondary voltage of the transformer.

In order to effect an adjustment of the voltage for influencing the intensity of the illumination of the letter, or in order to exchange parts within the casing of the letter, the outer surface of the letter formed by a plastic strip 23 is removable. In order, on the other hand, to prevent the penetration of moisture into the casing, and on the other hand not to restrict the possibility of removal, the seal shown in FIG. 10 can be used. The plastic strip 23 is disposed with its edge 24 against the inner surface 25 of the side wall of the casing 2, namely on bearing supports 26. Inserted between the wall surfaces 24, 25 is a sealing strip 27 of rubber with a corrugated cross section which merges at its upper edge into a U-shaped cross section 28 enclosing the free edge of the side wall 2. The strip is secured in position by a J-profiled strip 29 which is secured to the side wall of the casing 2 by means of screws 30.

Alternates to Plug Connection

A variant of the current connection is shown in FIG. 7.

In FIG. 7, the guide rail 31 having a C-shaped cross section contains tubular electrical conductors 32 which are embedded in a synthetic, cast plastic material 33. In addition, the rail has longitudinal bores 34 which receive mounting screws. The base 6 of the letter is provided with an opening closed by a cover plate 35, of aluminum, for example, into which contact prongs or mandrel means 37 are inserted through insulated holders 36. The lowest mandrel in the drawing can be inserted in the plate without insulation. The mandrels have terminals 38 for the connection of the lead. Fastening screws engage the cover plate 35 and extend into the rail of sign base plate so that when the fastening screws are tightened, the mandrels are pressed through the casting material 35 into the corresponding conductors 32. In order to ensure the necessary space between the individual mandrels, said mandrels may be obliquely staggered.

FIG. 8 shows a variant of this connection in which an H-shaped metal ring 41 is provided with conductors 42, embedded in plastic or rubber 43, and having slots at the front. The composition 43 has longitudinal slots 44 putting the conductors into communication with the outside. The letter base plate 45 of insulated material,

for example, carries conductor mandrels 46 with prongs 47 similarly to the mandrels 37.

The rail and the outside casting composition is provided with a plastic cover 48. When fixing screws are tightened, the plate 45 is pressed against a clip 49 enclosing the rail. This presses the mandrels 46 through the seal-defining plastic cover 48 and the prongs 41 through slots 44 into the conductors 42 and thus producing the voltage.

Rail Connections

For the connection of several rails coupled together, a rail 50 may have a cavity 51 at its ends. The conductors of each rail are connected to cables, at the ends of which plugs 53 or plug couplings 54 are mounted. The cavity 51 is large enough for the "schuko" plug 53 and the cable to find sufficient space therein. Either the "schuko" part can be inserted in the cavity and the end of the rail be closed with a sleeve 55 or, for coupling two rails together, the associated plugs 52, 53 can be assembled together, then inserted into their cavities and the two rails connected by means of a connecting plug sleeve 56.

Transformer and Starter

For simplifying the assembling and facilitating interchanging, the voltage transformer 58 according to FIG. 11 may be provided on its face with a T-shaped guide 59 in which the igniting capacitor 60 is inserted.

Conductor rails 61 are provided at the front, forming slide contacts. After the insertion of the capacitor 60 into the guide 59, these contacts connect the capacitor electrically with the potential transformer.

Tube Mounting

A holding block 71, or support means, has on its upper side a partial cylindrical depression 72, for resilient gripping means, the diameter of which corresponds to the diameter of the fluorescent tube, taking into consideration a slight force of interference fit. The circumference of depression 72 amounts to more than half the circumference of the fluorescent tube. Thus, the side surfaces 73 enclose the inserted fluorescent tube like claws and holds them firmly in the block.

The base of the holding block 71 has slots 74 forming a web 75 which connects the block 71 to the base 76.

A mounting yoke 77 is bent U-shaped from a metal strip as shown in FIG. 13. The sides of yoke 77 are bent at an angle outwardly to form securing flanges 78. The cross piece 79 of the strip contains a longitudinal slot or hole 80.

The web 75 passes through the slot 80 and has an approximately square cross section with a side length of approximately the width of the slot 80.

As shown in FIG. 14, after the assembling of block 71 and yoke 77, the base 78 extends transversely through the slot 80. The holding block 71 can thus be displaced along the slot 80. Assembling is effected simply by inserting the base 76 longitudinally into the slot 80 and turning with a locking effect, as permitted elastic deformation of the edge of the part 75 is allowable. With a suitable selection of the width of the slot 80, relative to the thickness of the cross piece 79 of the strip 77, and by slightly tilting the block 71 longitudinally of the inserted fluorescent tube, the block can be secured after adjustment onto the strip 77.

The alternate block 81 shown in FIG. 15, also has a partially cylindrical recess 82 for receiving the fluores-

cent tube via its surface 83 corresponding to the recess 72 and the side surfaces 73 in FIG. 12.

In its lower part the block has only one transverse slot 84 which forms a web 85 on the front of the block 81. This web connects the block 81 to the base 86. The stirrup 87 has no slot 80, like that of embodiment according to FIGS. 13 and 14, but a width corresponding approximately to the width of the slot 84. When the stirrup 87 is secured by its flanges 88 on the base, the block 81 is slipped by the slot 84 on the web 89 of the stirrup 87, the fluorescent tube is inserted and, after alignment, the block 81 is displaced somewhat to the side where the slot 84 is located. The block 81 is thereby kept with resilient pressure on the stirrup through the edge of the slot 84. Since at least two holders are required for each tube, the tube can be secured with an opposing arrangement of these holders.

Rail Mounting

Screwed into mounting surface means such as sign base bracket 91, is a screw 92, or pivot, with head 93. A rotatable locking lug or bar 94 is mounted on the screw 93. Screw 93 passes through a bar bore 95. A bushing 96 of plastic material is disposed in the bore 95. A collar 97 is disposed between the bar and the screw head. A collar 98 is disposed between the bar and the securing surface on the bracket 91. Bushing 97 and collars 97 and 98 frictionally impede rotation of bar 94.

The rail 99 has a C-cross section open at the rear towards the securing surface 91. The upright wall 100 merges upwardly into an extension 101 projecting above the section. The wall 100 is also provided with an opening 102 through which the screw head 93 can be gripped by a tool.

A letter 103 is disposed by its base 104 on the front of the wall 100 of the rail 99. A securing bar 105, is secured to the wall 104 by spot welding, for example and engages, by its free end 106, the extension 101 of the wall 100.

As shown in plan view in FIG. 18, the inserted bar 105 is secured to one side of the letter, whilst on the other side a screw 107 is screwed into a threaded bore of the wall 100 of the rail 99 through a slot in the base 104 of the letter 103. By this arrangement the letter 103 is easily detachable by means of the hook 105 and the screw 107.

In FIGS. 19 and 20 the rail 99 is shown in plan from the right of FIG. 17, the wall 100 and the extension 101 being "removed" however.

The upper side wall 108 and the lower side wall 109, as also the spaced side edges 110 and 111 of the rail are shown.

In FIG. 19 the bar 94 is shown in a position in which its maximum expansion is horizontal. Thus, the shortest diameter of the bar 94 corresponding approximately to the inner diameter of the edges 110 and 111 is located in the direction of this inner space so that the rail can be mounted on the bar.

While the height of the bar is somewhat greater than the bar-receiving opening between 110 and 111, the rail can be easily slipped behind the bar, first by the upper edge 110, and then the other edge 111 can be brought over the bar 94 when the rail is placed vertically. When the bar 94 is thus positioned inside the C profile of the rail, the screw head 93, or suitable means for rotating the bar, can be gripped and turned by means of a screwdriver through the bore 102, a number

of which can be prepared in advance at pre-determined spaced intervals or which can be punched out at the site. The friction between the screw 92 in the bushing 96 and the bore 95 in the bar 94, functions like a yieldable friction clutch to rotate the bar into the locking position shown in FIG. 20, in which the flat supporting edge 112 substantially rests against the inside of the upper wall 108, the bar point opposite from edge 112 permitting this rotation. The resistance formed by this complex is greater than the friction between the screw 92, by way of the bush 96, on the bore 95 in the bar 94, so that the bar remains in the position shown in FIG. 20, if the screw 92 is tightened further by means of the head 93. At the same time the bar is pressed against the edges 110, 111 and simultaneously the collar 98 is pressed between the bar and the wall surface 91, so that a further locking position is reached. Thus, after the screw 92 is completely tightened, this arrangement is fixed so that displacement of the rail on the bar or sliding from the bar is reliably prevented. The securing is effected after the rail is suspended from the bar 94 in the position shown in FIG. 19, so that it is not necessary to secure the sign during the tightening. Thus, the installation work is considerably simplified, compared with an attachment by means of screwing, for example, with a screw extending through a bore in the wall.

The bore in the bar may also be a threaded bore and a head screw screwed through the then smooth bore in the bracket from the back of said bracket 91. Instead of the plastic bushing 96, 97 and 98, a conventional plastic screw connection may be used for increasing friction.

SUMMARY OF CERTAIN ADVANTAGES AND OVERALL SCOPE OF INVENTION

As will be appreciated, the letter mounting arrangement described in connection with FIG. 1 provides an arrangement where each letter includes its own current controlling device and transformer. This arrangement minimizes the level of voltages required to be maintained at the sites of the mounting rails.

The reflecting surfaces provided by the current regulator housing tends to provide uniform sign body illumination, internal obstructions in the sign notwithstanding.

The sliding mounting clips of the rails in conjunction with the letter mounting strips provide a convenient and simple arrangement for detachably securing letter in place on the mounting rings.

The various electrical connectors described, for connecting the rail mounted conductors to the letter carried fluorescent tubes enable electrical connections to be made substantially all along the rail length, and substantially independent of the position of the letter on the rails.

The rail mounting arrangement described in conjunction with FIGS. 17-20 facilitates the mounting of rails on a frame mounting surface or bracket.

As will be appreciated, the letters may be attached to the rails and the rails then installed on the mounting surface. Alternately, the rails may be installed first on the mounting surface after which the letters may be positioned as desired on the rails.

In any event, the simple rail arrangement, including the foolproof rail locking lugs or bars contribute to overall ease of installation of a sign including the letter arrangements described in connection with FIG. 1.

The fluorescent tube mounting units with their inherent ease of installation and adjustability, facilitates minor positioning of the fluorescent tube elements necessary to achieve proper presentation or visual effect in the illuminated letter itself.

Modifications such as those described in the application may be made, however, those skilled in the advertising sign art and familiar with the disclosure of this invention may envision other additions, deletions, substitutions or modifications which would fall within the purview of the invention as set forth in the appended claims.

What is claimed is:

1. An advertising device comprising:

indicia defining means;

illuminating means mounted on said indicia defining means;

current regulating means mounted on and carried by said indicia defining means and for automatically regulating current supplied to said illuminating means at a substantially constant value thereby regulating light intensity;

rail means;

selectively attachable and detachable connecting means and operable to detachably connect said rail means and indicia defining means;

electric current supply means carried by said rail means and operable to detachably engage said indicia defining means and supply electrical current to said illuminating means through said regulating means;

mounting surface means;

pivot means carried by and projecting outwardly from said mounting surface means;

rotatable locking lug means supported by said pivot means for pivotal movement relative to said mounting surface means and having an elongate direction,

a relatively narrow direction,

a generally flat locking surface operable to engage one longitudinal extending, interior portion of said rail means, disposed at one extremity of said lug means, and extending transversely of said elongate direction;

lug receiving opening means carried by said rail means and extending longitudinally thereof;

operating means for rotating said lug means; and, means interposed between said operating means and said lug means for providing yieldable frictional engagement therebetween;

said lug means being operable to be inserted through said opening means of said rail means;

said lug means when inserted through said opening means being operable to be rotated by said operating means to bring the locking surface thereof into generally mating engagement with one interior portion of said rail means;

said frictional engagement providing means being operable to cause said locking surface means to remain in mating engagement with said one interior portion of said rail means, when said operating means is actuated, by interrupting the transmission of lug rotating movement from said operating means to said lug means.

2. An advertising device comprising:

letter defining means;

fluorescent tube means mounted on said letter defining means;

current regulating means mounted on and carried by said letter defining means for delivering alternating current to said fluorescent tube means at a substantially constant current value independently of the load presented by the fluorescent tube means to thereby regulate light intensity at a substantially constant predetermined level;

rail means;

selectively attachable and detachable connecting means and operable to detachably connect said rail means and letter defining means;

alternating current supply means carried by said rail means and operable to detachably engage said letter defining means and supply alternating electrical current to said fluorescent tube means through said current regulating means;

said current regulating means being individually associated with said letter defining means to supply said current of constant value to only said associated letter defining means;

said current regulating means including body means housed said letter defining within means between a portion of said fluorescent tube means and an interior wall portion of said letter defining means, said body means including reflecting surface means extending longitudinally of said fluorescent tube means, and operable to reflect light from said fluorescent tube means toward side wall portions of said letter defining means.

3. An advertising device as described in claim 2 wherein:

said rail means includes an elongate rail having a generally C-shaped cross section defining an elongate opening;

said connecting means comprises

generally C-shaped clip means mounted within and longitudinally slidable along the interior of said rail,

threaded fastening means carried by said clip means and projecting outwardly from said elongate opening of said rail; and

said letter defining means includes

connecting means which extend longitudinally of said rail and provide end portions displaced longitudinally of said rail,

said threaded fastening means carried by said clip means being operable to engage and secure end portions of said connecting means.

4. An advertising device as described in claim 2 wherein:

said rail means comprises at least one rail having a generally C-shaped cross-section defining an elongated opening;

said electrical current supply means includes at least one plug means for each letter defining means mounted within and longitudinally slideable within the interior of said rail and projecting outwardly through the opening thereof; and,

said letter defining means includes additional socket means operable to matingly engage said plug means and transmit electrical current from said plug means through said socket means to said current regulating means.

5. An advertising device as described in claim 2 wherein:

said rail means comprises at least one rail having a generally C-shaped cross section defining an elongate opening;

13

said electrical supply means includes
 electrical conductor means extending longitudinally within said rail means, and
 insulating means within and generally filling the interior of said rail means,
 said conductor means being embedded within said insulating means; and
 said letter defining means includes mandrel means operable to project through said insulating means into said conductor means and electrically connect said conductor means and said fluorescent tube means.

6. An advertising device as described in claim 2 further comprising:

support means operable to support said fluorescent tube means within said letter defining means, said support means including
 resilient gripping means having a generally C-shaped opening at one end thereof which peripherally engages and grips a portion of said fluorescent tube means; and
 mounting yoke means carried by said letter defining means and operable to slideably support but yieldably resist lateral movement of said gripping means in relation to said mounting yoke means.

7. An advertising device comprising:

letter defining means;
 fluorescent tube means mounted on said letter defining means;
 current regulating means mounted on and carried by said letter defining means for delivering current to said fluorescent tube means at a substantially constant value independently of the load presented by the fluorescent tube means to thereby regulate light intensity;
 rail means;
 selectively attachable and detachable connecting means and operable to detachably connect said rail means and letter defining means;
 electric current supply means carried by said rail means and operable to detachably engage said letter defining means and supply electrical current to said fluorescent tube means through said current regulating means;
 said device further including rail mounting means comprising:

14

mounting surface means;
 pivot means carried by and projecting outwardly from said mounting surface means;
 rotatable locking lug means supported by said pivot means for pivotal movement relative to said mounting surface means and having an elongate direction,
 a relatively narrow direction,
 a generally flat locking surface operable to engage one longitudinally extending, interior portion of said rail means, disposed at one extremity of said lug means, and extending transversely of said elongate direction,
 a generally straight edge surface extending generally transversely of said locking surface,
 point means disposed at an end of said lug means opposite from said locking surface, said point means being generally aligned with a diameter extending perpendicular to said locking surface means and through the axis of rotation of said pivot means;
 lug receiving opening means carried by said rail means and extending longitudinally thereof;
 means for rotating said lug means;
 means interposed between said operating means and said lug means for providing yieldable frictional engagement therebetween;
 said lug means being operable to be inserted through said opening means of said rail means with the elongate direction of said lug means extending longitudinally of said opening means;
 said lug means when inserted through said opening means being operable to be rotated by said operating means to bring the locking surface thereof into generally mating engagement with one interior portion of said rail means while said point means abuttingly engages another, longitudinally extending, interior portion of said rail means;
 said frictional engagement providing means being operable to cause said locking surface means to remain in mating engagement with said one interior portion of said rail means, when said operating means is actuated, by interrupting the transmission of lug rotating movement from said operating means to said lug means.

* * * * *

50

55

60

65