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 Continuation-in-part of application Ser. No. 707,084, Feb. 21, 1968, now Patent No. 3,497,281.

[56] **References Cited**

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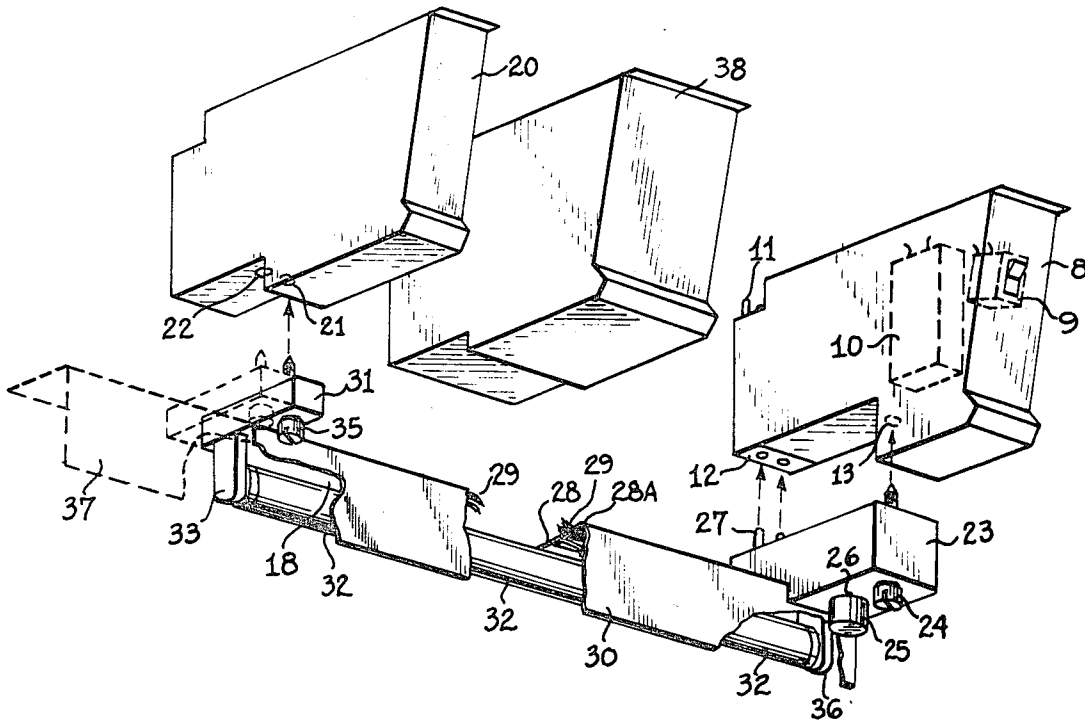
[54] **MODULAR LIGHTING FIXTURE**  
 6 Claims, 5 Drawing Figs.

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 240/73 QD

[51] Int. Cl. .... F21v 21/08

[50] Field of Search..... 240/9,  
 51.11, 52.0, 52.1, 73, 73 QD

**ABSTRACT:** A modular lighting assembly including an elongated support member, a similarly elongated light directing shade and modular enclosures for supporting the ends of the support members. At least one of the modular enclosures contains the lamp ballast, switch elements and electrical connectors necessary to control the supply of electrical power to the lighting assembly. The assembly also has an elongated channel which carries the electrical wiring for interconnecting the end members of the lamp sockets. Alternatively, the lighting assembly may have several lamps arranged in end-to-end alignment.



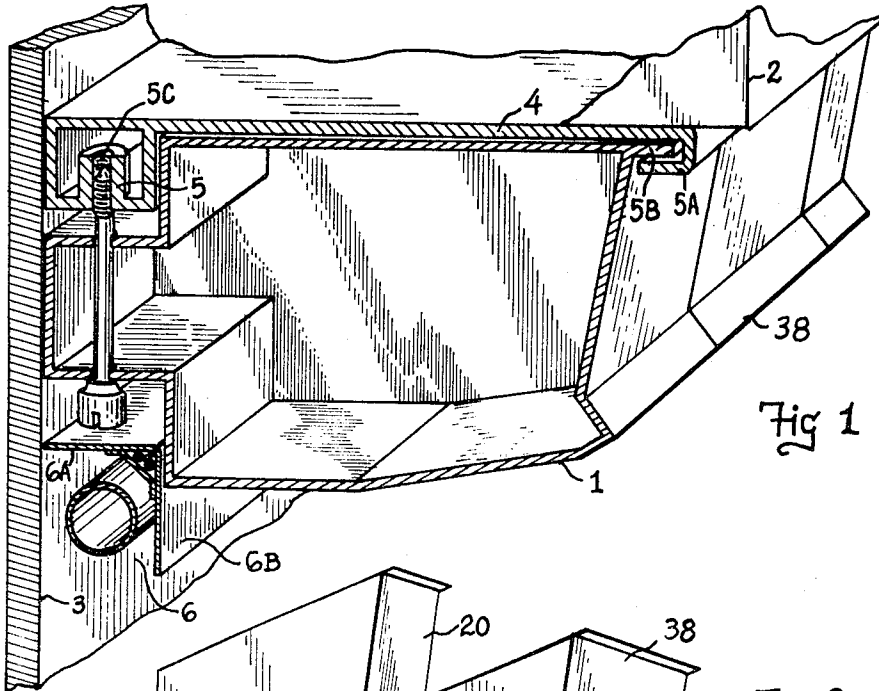


Fig 1

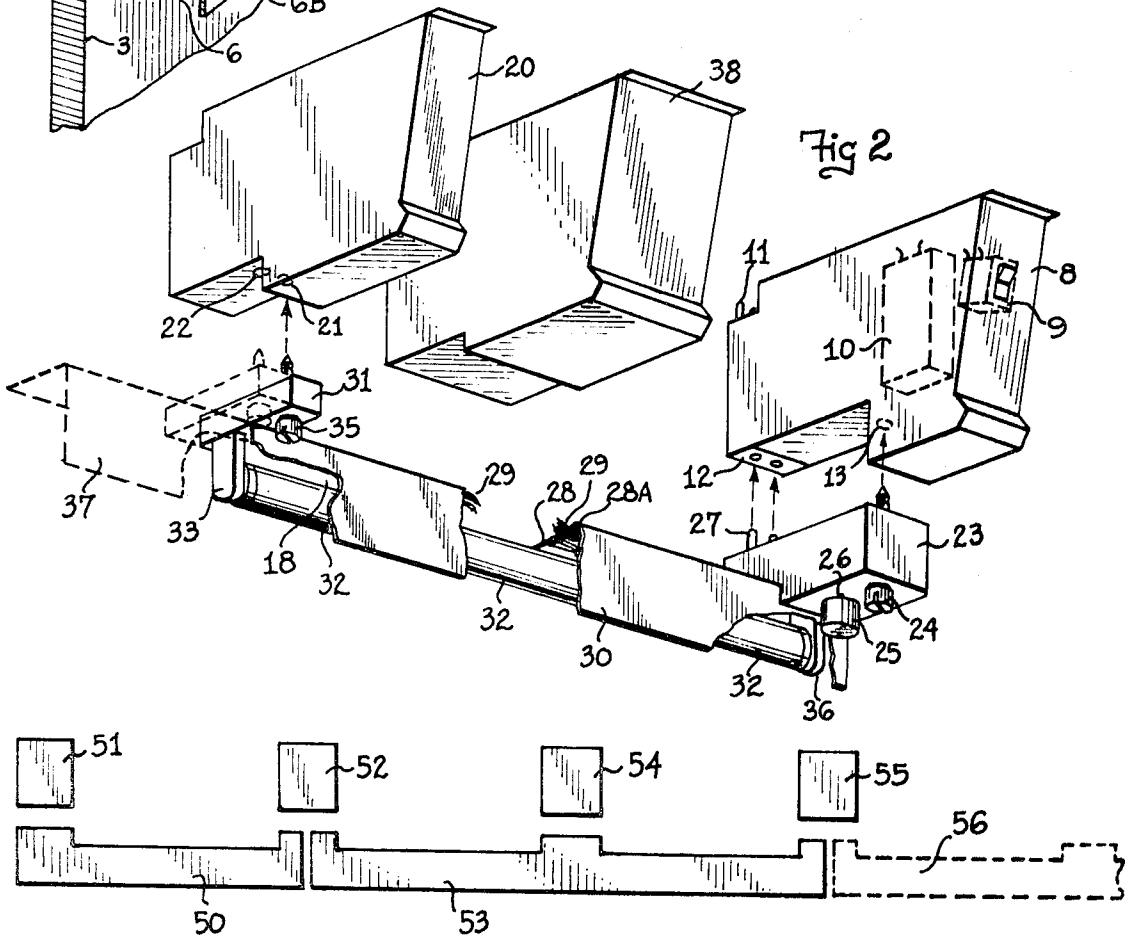
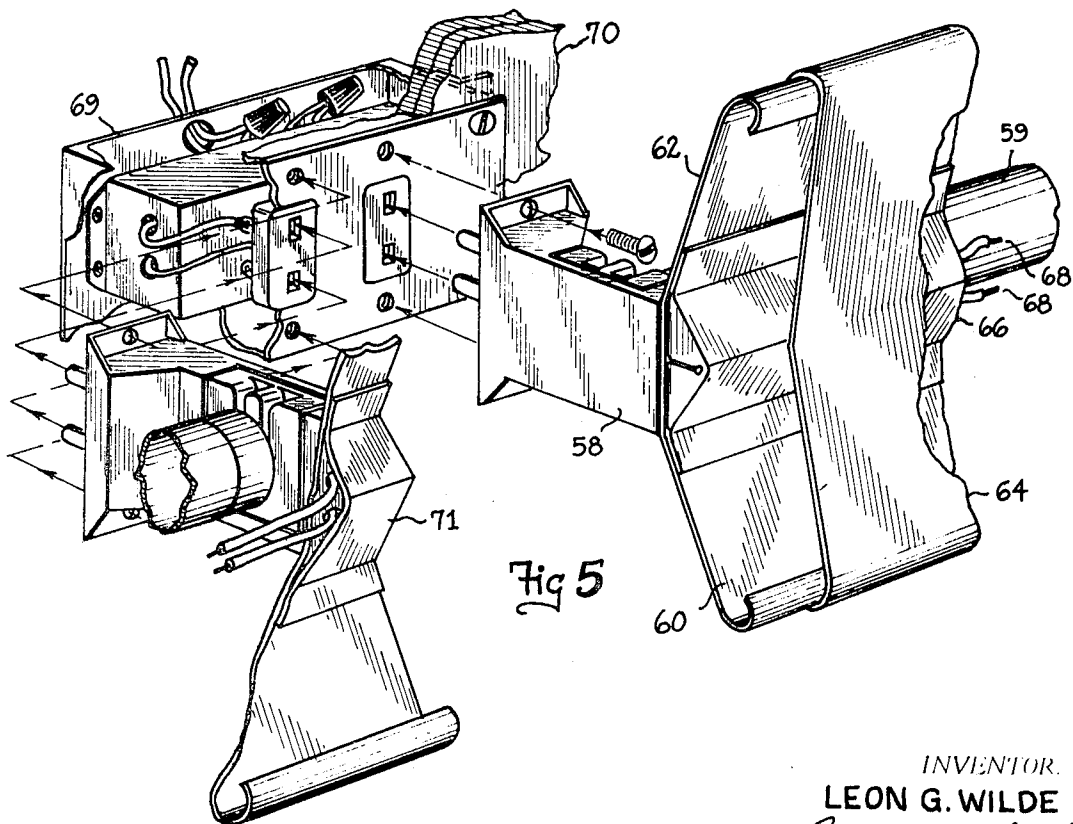
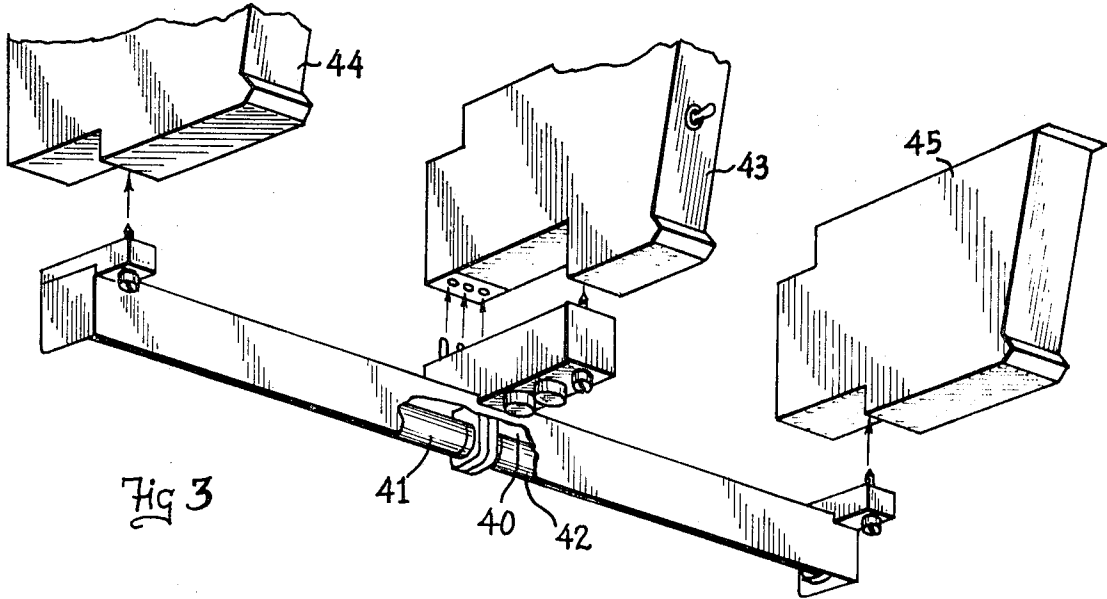


Fig 2

Fig 4

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**MODULAR LIGHTING FIXTURE**

This application is a continuation-in-part of my copending application, Ser. No. 707084, filed Feb. 21, 1968, now U.S. Pat. No. 3,497,281 and entitled "Modular Enclosures."

**BACKGROUND OF THE INVENTION****1. Field of the Invention**

This invention relates to lighting fixtures, and in particular to lighting fixtures adapted to be mounted upon a supporting surface in electrical and mechanical connection with the supporting surface, either singly or in end-to-end relationship.

**2. Description of the Prior Art**

In the construction and layout of kitchens and laboratories, it is desirable that the cabinets or enclosures for electrical, electronic and mechanical appliances, as well as equipment for containing and dispensing various liquid, solid and gaseous materials, be compact modular enclosures which are not only standardized and quickly and easily installed and removed, but which also provide for a safe and convenient means for introducing electrical or other inputs to the enclosure.

In addition to providing such modular enclosures, it is desirable to provide lighting for work areas, such as counter-tops or work bench areas, which is easily and quickly installed in combination with such modular enclosures, for example, and which is compact, permits continuous or strip lighting, and easy, safe and convenient connection to electrical input.

In my copending application herein mentioned above, there is disclosed a modular enclosure comprising a mounting member adapted to be supported from a supporting surface and at least one modular enclosure removably supported on said mounting member and having a substantially uniform cross section along the width of the modular enclosure. The mounting member has at least one electrical connector adapted for engagement with an electrical connector carried by a modular enclosure.

In U.S. Pat. No. 3,089,042, to Hickey et al., there is disclosed a continuous outlet surface extension assembly in which a continuous outlet cable of selected length is installed on a surface and then electrically energized from an existing outlet. The assembly is provided with a plurality of outlet receptacles.

U.S. Pat. No. 2,551,305, to Tompkins and U.S. Pat. No. 3,378,324, to Earle each disclose kitchen utility units. Neither of these patents provide for a compact lighting fixture for illumination of the work area.

U.S. Pat. No. 2,852,663, to Stuffer et al. and U.S. Pat. No. 2,932,728 to Thomas are each directed to lighting fixture systems. Neither of these patents provides a modular lighting fixture which provides for compact construction, easy plug-in installation, compactness in width, and which can be installed as a single unit or provide for continuous strip lighting.

In kitchens and other work places, illumination of work surfaces is frequently by means of fluorescent or similar lamps located above the work surface at the rear of the work surface. Such lighting is superior to overhead lighting alone as the user does not obstruct the light source with his person. Lighting fixtures suitable for this type of lighting are not easily installed by the average person, and when installed often prevent the use of the space by other equipment or appliances.

Accordingly, it is desirable to provide a modular lighting unit which overcomes the disadvantages of the prior art.

It is also desirable to provide a modular lighting fixture suitable for use with modular enclosure units such as, for example, the modular enclosure unit described in my copending application, Ser. No. 707084.

It is further desirable to provide a modular lighting unit which is inexpensive to manufacture, simple to install and remove, and easy to maintain.

These and other desirable features of the invention will in part be obvious and will in part appear hereinafter.

**SUMMARY OF THE INVENTION**

The invention is directed to modular lighting units which preferably comprise an elongated support member and attaching means adjacent the ends of the support member. The support member is provided with a channel for carrying interconnecting wires and a light directing means. The support member is also provided with at least one socket member adjacent each end to hold an elongated lamp. At least one of its attaching means is provided with an electrical connector carried by the supporting surface. In a preferred embodiment of the present invention, part of the electrical wiring and components are carried by the modular lighting unit. Therefore, in accordance with one embodiment of the present invention, the supporting surface may comprise a pair of spaced-apart supporting units, one of which also serves as a power unit and contains a portion of the electrical wiring and components and a connection to a source of electrical energy, while the modular lighting unit contains the remaining electrical wiring and components, which when connected together function as a light source. The modular lighting units are constructed and arranged to provide for single or continuous strip lighting.

The invention accordingly comprises the apparatus possessing the construction, combination of elements, and arrangement of parts which are exemplified in the following detailed disclosure and the scope of the application of which will be indicated in the claims.

**DESCRIPTION OF PREFERRED EMBODIMENT(S)**

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings wherein

FIG. 1 is a cross-sectional, schematic view showing the modular lighting fixture in accordance with the present invention as secured to a supporting surface of a modular enclosure.

FIG. 2 is a perspective view partially exploded and partially in section of one type of modular lighting fixture in accordance with the principles of the present invention adapted to be secured to supporting modular enclosures.

FIG. 3 is a perspective view partially exploded and partially in section of a modified form of the modular lighting unit of FIG. 2 showing a dual unit having lamps on either side of the electrical connector.

FIG. 4 is a diagrammatic, schematic view illustrating the invention as it applies to continuous strip lighting.

FIG. 5 is a fragmentary perspective view partially in section of an alternate embodiment of the modular lighting unit of the present invention.

Referring now to the various figures of the drawing wherein like reference characters refer to like elements, there is shown, reference being made in particular to FIG. 1 of the drawing, a modular enclosure 1 mounted beneath a cabinet 2 adjacent to a wall 3 and over a work surface (not shown). The cross section of the modular enclosure is preferably substantially uniform to provide a uniform and attractive appearance as described in my copending application described above. The modular enclosure, as described in my copending application, may be varied in size and shape, the principal requirement being that a particular system or series of modular enclosures have substantially the same cross section and that the length of the various modular enclosures for a given system be multiples of the smallest modular unit of the system.

The modular enclosure 1 is supported by a mounting member 4 which is provided with spaced-apart attaching means 5, 5A. Preferably the front attaching means 5A consists of the edge of the mounting member which forms an inwardly opening groove adapted to engage the flange 5B of the modular enclosure.

The rear attaching means 5 preferably consists of a threaded sleeve mounted on mounting member 4 so as to engage the threaded portion of screw 5C of the modular enclosure.

Preferably each modular enclosure is provided with a volume or space 6 to provide for reception of the modular lighting unit 6A and its light-directing means 6B. In this manner the modular lighting unit 6A does not interfere with the use of the modular enclosures such as 38 positioned on the mounting bracket 4 along the length of the lighting unit.

Referring now to FIG. 2, there is illustrated a modular lighting fixture suitable for preheat-type fluorescent lamps. In this embodiment of the invention the modular lighting unit 18 is supported between two modular supports 8 and 20. In this embodiment the modular unit 8 also serves to enclose a portion of the electrical components and thus serves as a power unit.

Preferably the modular enclosure 8 contains a plug 11 for electrical connection through the mounting bracket (not shown) to an outside source of electrical current. Also, preferably contained within modular unit 8 is a switch 9, a lamp ballast 10, and a socket 12 for providing electrical connection to the modular lamp unit 18.

The modular enclosure 20 has no electrical function, but serves to support the modular lighting unit, 18. It is to be understood that modular support 20 may also serve as an enclosure.

The modular lighting unit 18 comprises lamp 32, end members 23 and 31 which carry respective lamp sockets 36 and 33, and end member 23 is preferably provided with a starter socket 26 and starter 25, and also connector plug 27 for electrical connection with socket 12 carried by the modular enclosure unit 8.

The elongated support member 28 of the modular lighting unit preferably contains a raceway or channel 28A for containing interconnecting wiring 29 and a light directing means 30. The modular lighting unit mounts or attaches to the modular enclosure 8, which also serves as a power unit and modular enclosure 20 by respective fastening means 24 and 35 connecting respectively with fastening means 13 and 21. The modular enclosure unit 20 is provided with an additional fastening means 22 to support one end of an additional modular lighting unit 37 (shown by dotted lines) where continuous or strip lighting is required.

Referring now to FIG. 3 of the drawing, there is illustrated an alternate embodiment of the invention. In this embodiment of the invention a single modular lighting unit 40 contains two lamps 41 and 42 in end-to-end relationship and is supplied with regulated power contained within the modular enclosure unit 43, which provides for electrical power to lamps 41 and 42 when the lighting fixture 40 is brought into electrical contact with the electrical power contained within enclosure 43. Preferably the lighting unit 40 is supported by support units 44 and 45 in the same manner as described with respect to modular support unit 20 of FIG. 2.

Referring now to FIG. 4 of the drawing there is shown the application of a plurality of modular lighting units placed in end-to-end relationship to form a continuous strip lighting of the required length. It is to be understood that a single lamp unit 50 and an associated single lamp power supply unit 51 may be used in conjunction with a double lamp unit 53 and an associated double lamp power supply unit 54 to obtain the required overall length. Support units 52 and 55 support the ends of the lamp units as described above with respect to FIGS. 2 and 3. It is to be noted that support unit 52 is constructed and arranged to support two lamp units 50 and 53 and in a similar manner support unit 55 may be constructed and arranged to support an additional lamp unit 56 shown by the dotted lines.

Referring now to FIG. 5 of the drawing, there is illustrated an alternate embodiment of the modular lighting unit of the present invention as adapted to valance lighting. In this embodiment there is provided a socket and mounting bracket 58 which carries lamp 59 and the lamp and shade assembly illustrated generally as 60. The lamp and shade assembly comprise an inner reflector 62 and an outer shade 64 which may be covered with a fabric or other covering as required. There is

also provided a raceway or channel 66 for containing interconnecting wires 68. The lamp assembly is mounted on fixture box 69 which may be flush or surface mounted to the wall 70. The fixture box may be constructed and arranged to receive an additional lamp assembly unit 71.

While the invention has been described with respect to particular embodiments thereof, numerous modifications may be made within the scope of the invention. For example, electrical components may be added or deleted to the lighting unit and/or the power unit to accommodate other types of lamps, such as incandescent or rapid-start fluorescent lights. Additionally, the physical placement of the electrical elements in different units may be varied. For example, the lamp starter 25 may be part of the power unit 8. Additionally, since each power unit and its associated lamps are electrically independent they may be operated from different power circuits without interference.

Since certain changes may be made in the above apparatus without departing from the scope of the invention herein involved, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A modular lighting assembly comprising:
  - a mounting member adapted to be supported from a supporting surface, said mounting member having spaced apart attachment means and a first electrical connector adapted for connection to a source of electrical power;
  - a plurality of modular enclosures removably supported on said mounting member by cooperative engagement with said attachment means, at least one of said modular enclosures having a second electrical connector adapted to engage said first electrical connector, said modular enclosures having a first fastening means, said one of said modular enclosures having a third electrical connector;
  - an elongated support member;
  - a plurality of end members, one on each end of said elongated support member, each end member having second fastening means adapted to engage said first fastening means thereby connecting said elongated support member to said modular enclosures, one of said end members having a fourth electrical connector adapted to engage said third electrical connector;
  - a lamp socket mounted to each end member for holding an elongated lamp therebetween;
  - elongated light directing means mounted to and substantially coextensive in length with said elongated support member; and
  - switching means mounted in said one modular enclosure; said switching means and said second and third electrical connectors being electrically interconnected within said one modular enclosure to provide selective control of the electrical power applied to said lamp sockets.
2. The modular lighting assembly of claim 1 wherein said elongated lamp is a fluorescent lamp.
3. A modular lighting assembly according to claim 1 and further including:
  - channel means contained by said elongated support member for carrying interconnecting wiring between said end members; and
  - a lamp ballast mounted in said one modular enclosure and electrically connected therein.
4. A modular lighting assembly according to claim 1 wherein said one end member is located between the ends of said elongated support member, a pair of lamp sockets being mounted to said one end member for holding at least two elongated lamps in end-to-end relationship, said one modular enclosure being located adjacent said one end member for attachment thereto.
5. A modular lighting assembly according to claim 1 wherein said one modular enclosure is adapted to support the ends of two elongated support members in end-to-end relationship and to selectively supply electrical power thereto, whereby continuous strip lighting is provided.

6. A modular lighting assembly according to claim 1 wherein said modular enclosures are formed with recesses in their lower walls adapted to receive said end members and elongated support member.

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