March 31, 1970 M. LIBERMAN 3,504,172

LIGHTING FIXTURE SUPPORTING AND WIRING CHANNELS

Filed June 15, 1967 3 Sheets-Sheet 1

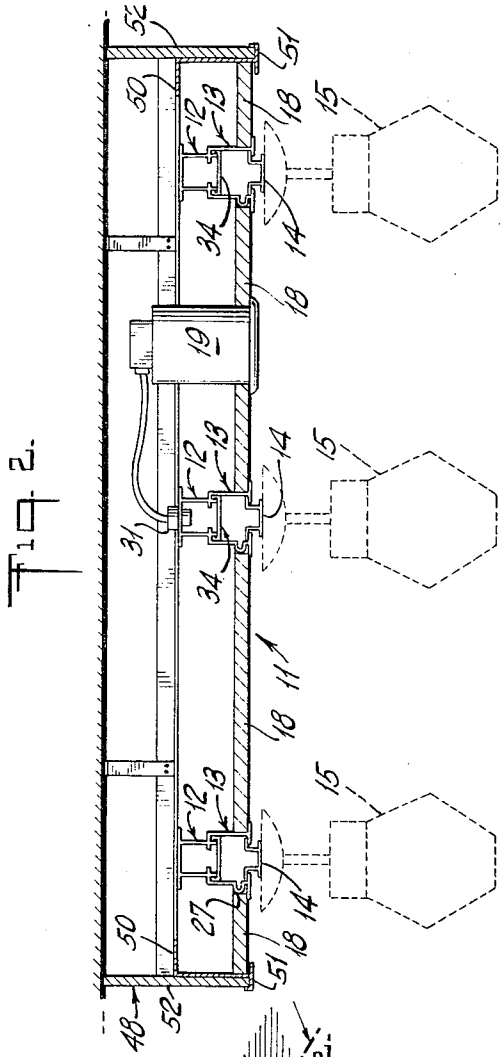


FIG. 2.

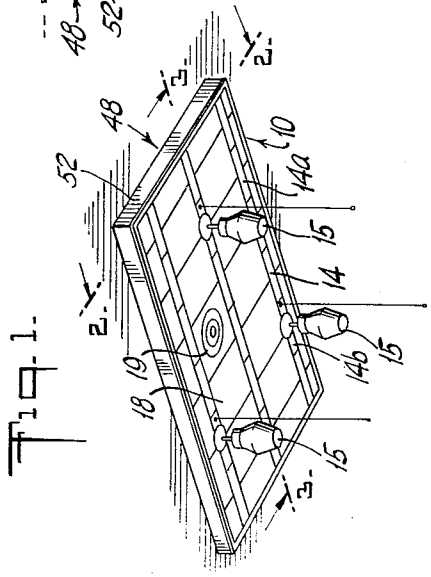


FIG. 1.

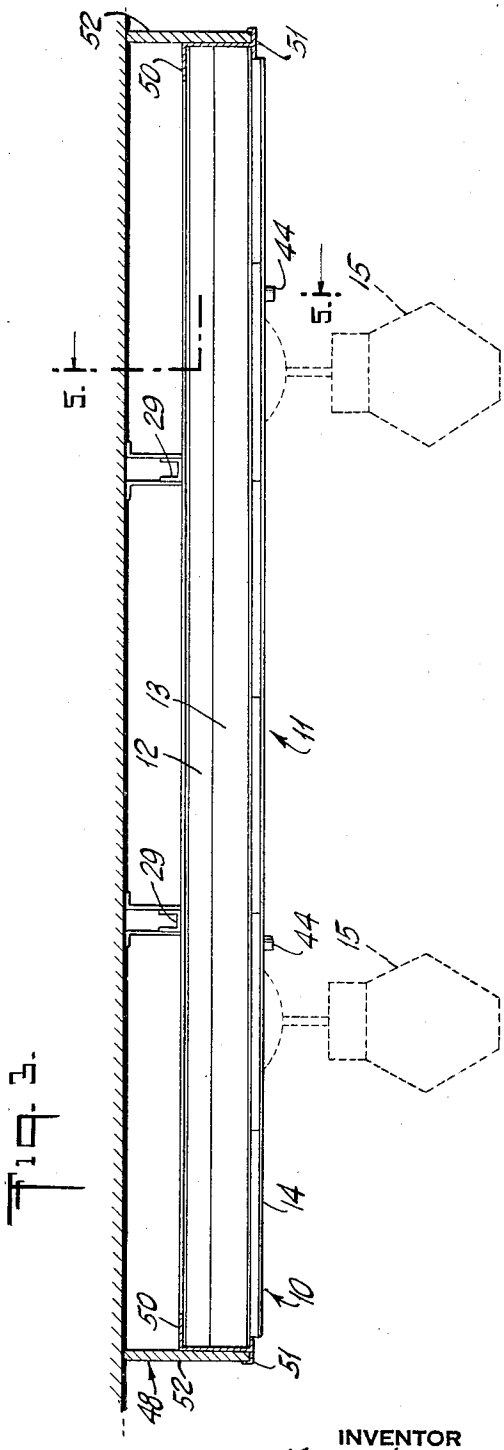


FIG. 3.

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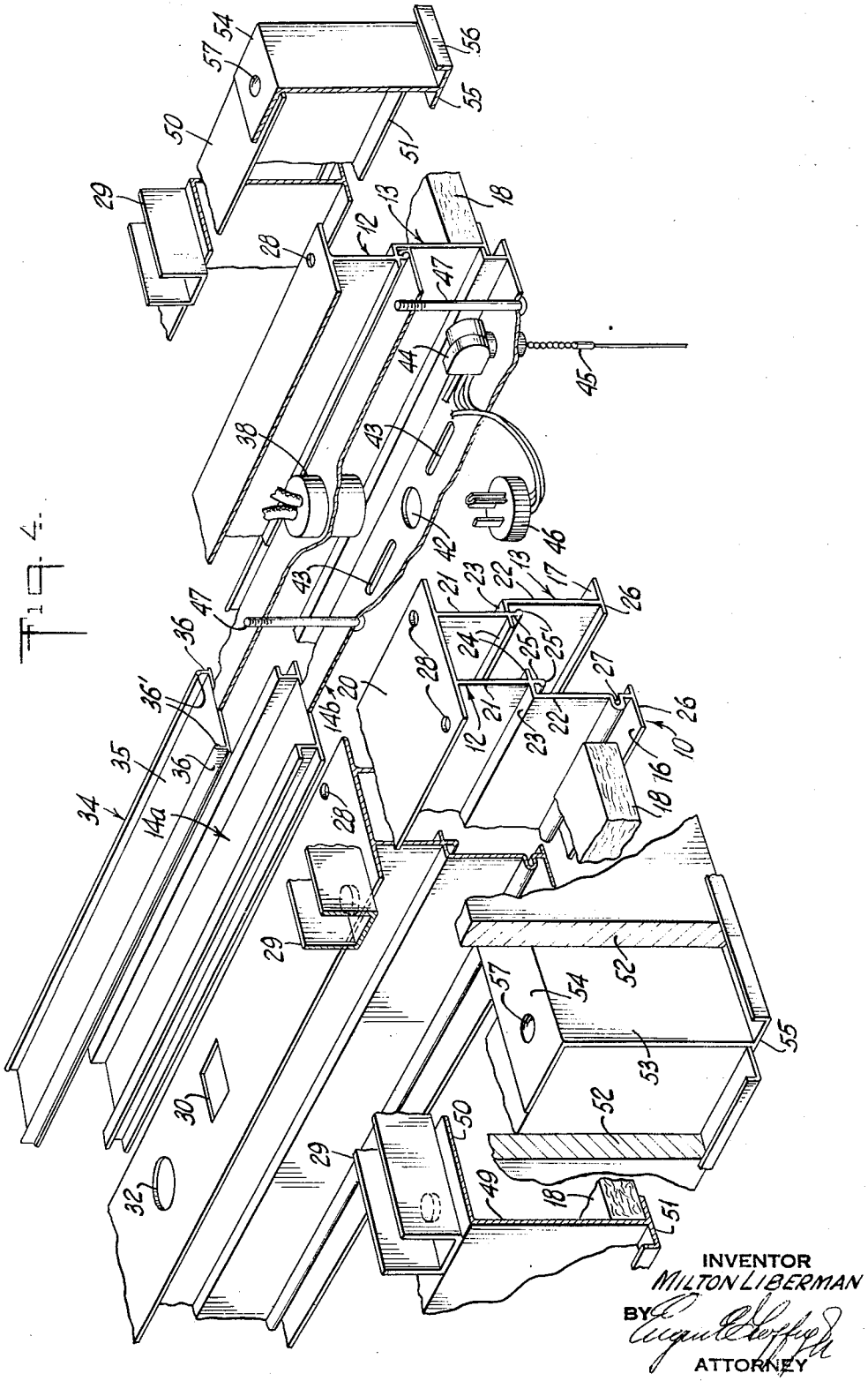


FIG. 4.

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Fig. 5.

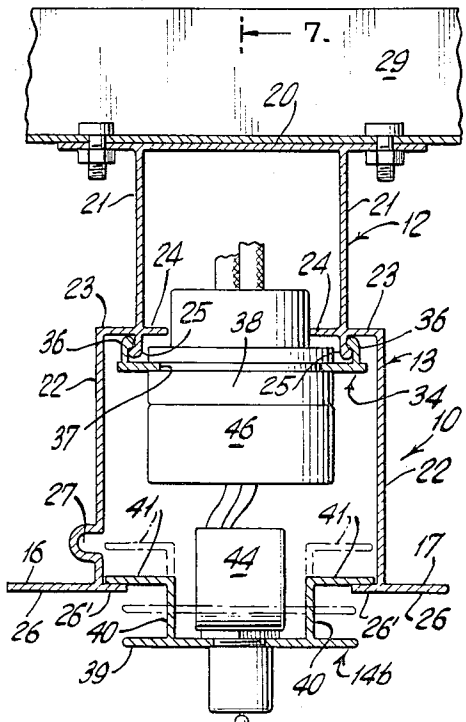
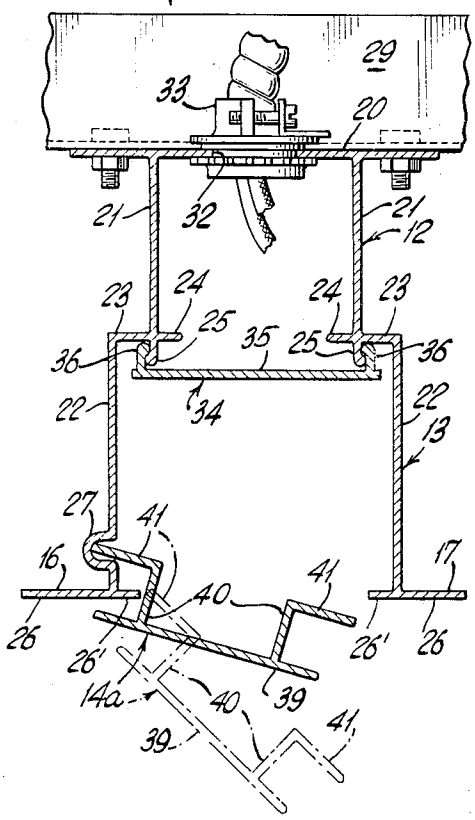


Fig. 6.



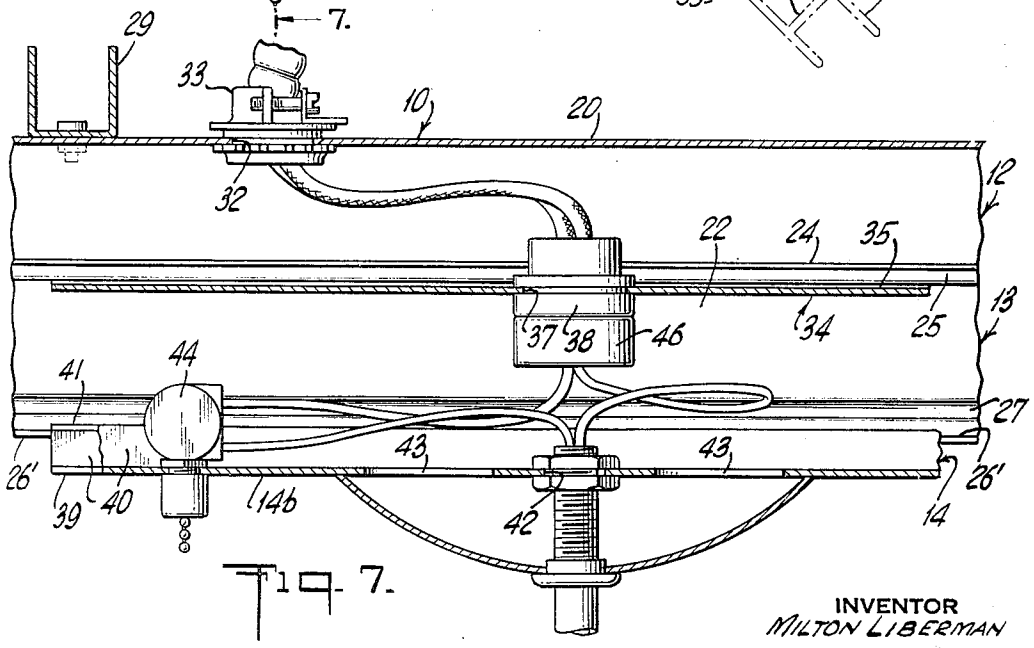


Fig. 7.

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3,504,172

LIGHTING FIXTURE SUPPORTING AND WIRING CHANNELS

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U.S. Cl. 240—78 10 Claims

ABSTRACT OF THE DISCLOSURE

A wiring channel member for supporting light fixtures consists of two integrally formed coextensive wiring channels disposed one above the other. The upper channel accommodates wiring for energizing a plurality of electric outlets while the lower channel accommodates the wiring of the fixtures supported by the channel. An elongated plate is removably supported by the sdie walls and separates the upper and lower channels while providing a positive retaining force to prevent spreading of the side walls. Inwardly extending flanges at the bottom of the lower channel support a plurality of elongated closure elements and pendant lighting fixtures while outwardly extending flanges are provided for supporting ceiling tiles.

This invention relates to a lighting fixture supporting and wiring channel and more specifically to a novel and improved channel readily adaptable for ceiling mounting which facilitates the support and removal of lighting fixtures for display and other purposes. The channels are also arranged to support ceiling tiles and grids therebetween to acommodate recessed lighting fixtures.

The structure in accordance with the invention is arranged with two integrally formed coextensive wiring channels disposed one above the other. The upper channel accommodates wiring for energizing a plurality of electric outlets while the lower channel accommodates the wiring of the fixtures supported thereby. The novel and improved arrangement of the channels facilitates installation of the primary wiring and outlets and installation and removal of the fixtures supported and energized by said outlets.

Another object of the invention resides in the provision of a novel and improved dual channel wireway and fixture support structure including a removable plate in sliding interlocking relationship with said structure to isolate the channels one from the other.

Still another object of the invention resides in the provision of novel and improved fixture mounting means removably carried by and closing the lower channel. The fixture mounting means is arranged to accommodate a wide variety of fixtures and facilitates installation and removal of fixtures for display and other purposes.

A still further object of the invention resides in the provision of improved fixture supporting and wiring channels that can be arranged in parallel relationship and support ceiling elements therebetween as for instance ceiling tiles of wood or other materials, louvers and the like. In this way recessed lighting fixtures can be readily mounted in the ceiling tiles and connected with the wiring in an adjoining channel for illumination of the fixture.

Still another object of the invention resides in the novel and improved display device for lighting fixtures that may be arranged in the form of a separate unit adapted to be supported from a ceiling or may be arranged to cover an entire ceiling area.

The above and other objects of the invention will become more apparent from the following description and accompanying drawings forming part of this application.

In the drawings:

FIGURE 1 is a perspective view of a lighting fixture display unit in accordance with the invention.

FIGURE 2 is a cross sectional view of FIGURE 1 taken along the line 2—2 thereof.

FIGURE 3 is a cross sectional view of FIGURE 1 taken along the line 3—3 thereof.

FIGRUE 4 is an exploded perspective view of a fragmentary portion of the structure shown in FIGURE 1 with parts broken away to show the constructional details.

FIGURE 5 is a cross sectional view of FIGURE 3 taken along the line 5—5 thereof and illustrating the lighting fixture support in position in the wiring channel.

FIGURE 6 is a cross sectional view similar to FIGURE 5 illustrating the manner in which the light fixture support is engaged with and removed from the wiring channel.

FIGURE 7 is a cross sectional view of FIGURE 5 taken along the line 7—7 thereof.

The apparatus in accordance with the invention comprises an elongated channel generally denoted by the numeral **10** and a number of such channels may be arranged in spaced relationship extending the length of an entire ceiling or a plurality of rows of channels may be included within a frame **11** as shown in FIGURE 1 to form a unitary structure that can be supported from the ceiling. Each of the channels **10** is divided into upper and lower channel sections generally denoted by the numerals **12** and **13** and the bottom channel **13** is closed by a series of closure elements **14** which may either be blank or be provided with means for receiving and supporting a light fixture such as the fixture **15** as will be described. The channels are further arranged with outwardly extending flanges **16** and **17** to support bridging tiles of Cellotex, wood, louvers or the like to close the intervening areas between successive rows of channels **10**. These bridging elements are generally denoted by the numeral **18**, and if desired, recessed fixtures such as the recessed fixture **19** may be mounted in one or more of the tiles **18** for display purposes.

Referring specifically to the individual channels **10**, each channel includes a top plate **20** and a pair of downwardly extending side walls **21** forming the upper channel section **12**. The lower channel section **13** has a pair of sides walls **22** each of which terminates at its upper end in a narrow horizontal shoulder **23** which may be integrally joined to the adjoining side wall **21**. The lower ends of the side walls **21** each include an inwardly extending flange **24** and a downwardly extending ridge **25** which is curved outwardly at **25'**.

The lower channel section **13** terminates in a pair of horizontally disposed flanges **26** with a portion of each flange extending inwardly of its associated wall and a portion thereof extending outwardly for the support of the ceiling tile **18** as previously described. The outwardly extending portions of the flanges **26** are denoted by the numerals **16** and **17**. One of the side walls **22** is also provided with a U-shaped channel portion **27** to facilitate installation of the plates **14** as will be described more completely in connection with FIGURES 5 and 6.

The top plate **20** of the channel extends beyond the side walls **21**, **21** and is provided with openings **28** for attachment to supporting channels **29** or T-bars as may be desired. In addition, the top plate includes a plurality of spaced openings **30** for receiving upwardly facing outlets **31** as may be observed more clearly in FIGURE 2 as well as circular openings **32** for attachment of BX connectors **33** for feeding electrical energy into the upper channel **12** as may be observed in FIGURE 7.

The upper channel section **12** is closed by elongated plates **34** having a base **35** and upwardly extending side flanges **36**. Each flange has an inwardly formed portion **36'** at its upper edge and these flanges interlock with the

flanges 25 extending below the upper channel section 12 as illustrated more clearly in FIGURES 5 and 6. The plates 34 are provided with spaced openings 37 for receiving outlets 38.

With the arrangement thus far described, the upper channel 12 contains the basic electric wiring for the upwardly facing series of outlets 31 and the downwardly facing series of outlets 38 and the channel is completely closed to provide adequate protection for the wiring.

The lower channel portion 13 is closed by a series of elongated channel-like elements 14, some of which are blank as denoted by the numeral 14*a* while others such as 14*b* include provision for the attachment of lighting fixtures to be supported thereby. The cross sectional configuration of both types of closures 14*a* and 14*b* are identical and may be observed more clearly in FIGURES 5 and 6. Each closure 14*a* and 14*b* includes a bottom plate 39, a pair of upwardly extending parallel walls 40 spaced inwardly from the longitudinal edges of the plate 39 and a pair of outwardly extending flanges 41. The distance between the outer edges of the flanges 41 is equal to the width of the lower channel section 13. In addition the depth of the recessed portion 27 in the wall 22 is approximately equal to or greater than the length of the portion 26' of the bottom plate 26. With this arrangement the plates 14*a* or 14*b*, as the case may be, can be inserted in position in the lower channel section 13 by moving one flange 41 into engagement with the recessed portion 27 as illustrated in FIGURE 6. This permits the opposing flange 41 to clear the inner edge of the plate 26 whereupon the closure can be moved to the right as shown in FIGURE 6 so that it will be supported in position in the lower channel 13 as illustrated in FIGURE 5. It will be noted that the closure member 14*b* of FIGURE 5 rests on the inwardly extending portions 26' of the face plates 26.

Each of the closures 14*b* is provided with suitable openings for attachment of a fixture such as the fixture 15 to be supported thereby. In the instant embodiment of the invention each element 14*b* is provided with a central opening 42 and a pair of elongated openings 43. The central opening 42 is to accommodate fixtures wherein the mounting means comprises a threaded tubular member while the slots 43 are for accommodation of fixtures requiring a conventional elongated strap having threaded openings for attachment of the fixture. In addition each of the plates 14*b* is provided with an opening for accommodation of a suitable switch 44 and which may include a pull chain 45 so that the fixture can be individually operated. When a fixture is secured to a plate 14*b*, it is connected through the switch 44 to a plug 46 which plug can be engaged with an outlet 38 prior to insertion of the closure 14*b* in engagement with the channel 13 as previously described. In order to prevent accidental disengagement of the plate 43 from the lower channel section 13, a pair of bolts 47 may extend upwardly through appropriate openings in the closure 14*b* and engage cooperating threaded openings in the intermediate closure member 34 as illustrated more clearly in FIGURE 4.

It is evident from the invention thus far described that the channels 10 can be arranged at spaced intervals to cover an entire ceiling and the spaces between the channels can be closed by suitable tiles of wood Cellotex, and the like. If desired, the tiles 18 can be in the form of louvers with suitable lighting means located behind the louvers for general illumination. Recessed fixtures such as fixtures 19 can be displayed by mounting them on tiles 18 as illustrated in FIGURES 1 and 2 and connecting them with the upwardly facing outlets 31 as previously described.

The channels 10 in accordance with the invention may also be arranged in the form of small units adapted to be suspended from a ceiling. Such a unit is shown in FIGURE 1 and denoted by the numeral 11. In this case three spaced channels 10 are provided and are supported by a peripheral frame structure generally denoted by the numeral 48. The frame structure is more clearly shown in FIGURE 4 and comprises a pair of side sections each consisting of a vertical wall 49, an inwardly extending horizontal wall 50 and a bottom face plate 51 having a portion extending inwardly of the wall 49 and a second portion extending outwardly therefrom. The outwardly extending portion carries an upwardly extending lip 51 to accommodate and support an outer facing material 52 of wood or other suitable material.

The end frame sections are similar in configuration to the side sections and include a vertical wall 53, an inwardly extending horizontal wall 54, and a bottom face plate 55 having portions extending inwardly and outwardly from the wall 53. The outwardly extending face plate portion carries a lip 56 to accommodate and support a piece of facing material 52. Each end frame section has a height slightly greater than the height of the side wall sections so that the top wall 54 of the end section will overlie the top wall 50 of the side wall section and similarly the bottom facing 55 of the end wall section will overlie the bottom facing 51 of the side wall section. The side and end sections may be fastened together in any suitable manner as by rivets or bolts 57. When a series of channels 10 are carried by a frame 48, a series of U-shaped channels 29 which carry the wiring channels 10 are secured to the side wall sections as illustrated in FIGURE 4.

While only one embodiment of the invention has been illustrated and described, it is apparent that alterations, modifications and changes may be made without departing from the true scope and spirit thereof as defined by the appended claims.

What is claimed is:

1. A lighting fixture support and display device comprising an elongated channel having a top wall, vertically disposed side walls and a downwardly facing opening, said channel having an upper channel section and a lower channel section, an elongated plate disposed within said channel closing the upper channel section, means carried by said vertically disposed side walls engaging and supporting said plate, engagement of the last said means and said plate preventing outward displacement of said side walls, said plate having a plurality of openings spaced along its length and downwardly facing electric outlets carried in said openings, said upper channel retaining electric wiring for connecting said outlets to a source of electric energy, inwardly formed flanges carried by the lower edges of the side walls of said lower channel section, and a plurality of elongated closure elements removably carried in end to end relationship by said inwardly extending flanges to close said lower channel section, at least certain of said closure elements having openings for attachment of a pendant lighting fixture and switch means thereto, said fixture being provided with a plug for engaging one of said outlets to energize said fixture.

2. A lighting fixture support and display device according to claim 1 wherein said lower edges of said side walls include outwardly formed flanges coplanar with said inwardly formed flanges said outwardly formed flanges being adapted to support tile elements.

3. A lighting fixture support and display device according to claim 1 wherein the top wall of said upper channel section includes upwardly facing electric outlets.

4. A lighting fixture support and display device according to claim 1 wherein said upper and lower channel sections are defined by a pair of opposing longitudinal ridge like members, said plate is provided with upwardly extending longitudinal flanges and the last said flanges and said ridge like elements include cooperating interlocking means to hold said plate in position to close said upper channel section.

5. A lighting fixture support and display device comprising an elongated channel having a top wall, vertically disposed side walls and a downwardly facing opening,

said channel having an upper channel section and a lower channel section, an elongated plate carried within said channel closing the upper channel section, said plate having a plurality of openings spaced along its length and downwardly facing electric outlets carried in said openings, said upper channel being adapted to retain electric wiring connecting said outlets to a source of electric energy, inwardly formed flanges carried by the lower edges of the side walls of said lower channel section, and a plurality of elongated closure elements removably carried in end to end relationship by said inwardly extending flanges to close said lower channel section, at least certain of said closure elements having openings for attachment of a pendant lighting fixture and switch means thereto, said fixture being provided with a plug for engaging one of said outlets to energize said fixture, said lower edges of said side walls including outwardly formed flanges coplanar with said inwardly formed flanges said outwardly formed flanges being adapted to support tile elements, at least one of said side walls of said lower channel section including an outwardly formed longitudinal channel and each of said closure elements includes a flat plate and a pair of spaced upwardly extending longitudinal flanges each terminating in an outwardly formed flange, the distance between the outer edges of said outwardly formed flanges being equal to the inner width of said lower channel section, said closure elements being placed in position to close the lower channel section by placing one outwardly formed flange into said longitudinal channel then pivoting said elements upwardly to clear the inwardly extending flange on the lower channel section and then laterally displacing said closure and lowering it into engagement with said inwardly formed flanges.

6. A lighting fixture support and display device according to claim **5** wherein said upper and lower channel sections are defined by a pair of opposing longitudinal ridge like members, said plate is provided with upwardly extending longitudinal flanges and the last said flanges and said ridge like elements include cooperating interlocking means to hold said plate in position to close said upper channel section.

7. A lighting fixture support and display device according to claim **6** wherein the top wall of said channel includes upwardly facing electric outlets.

8. A lighting fixture support and display device according to claim **5** wherein the top wall of said channel extends beyond the side walls thereof to form supporting means for said structure.

9. A lighting fixture support and display device according to claim **1** wherein a plurality of said channels are arranged in parallel relationship one to the others and said device further includes a rectangular frame, bridging elements extending between at least one pair of opposing edges and means securing said channels to said bridging elements to form a unitary structure.

10. A lighting fixture support and display device comprising an elongated channel having a top wall, vertically disposed side walls and a downwardly facing opening, said channel having an upper channel section and a lower channel section, an elongated plate carried within said channel closing the upper channel section, said plate having a plurality of openings spaced along its length and downwardly facing electric outlets carried in said openings, said upper channel being adapted to retain electric wiring connecting said outlets to a source of electric energy, inwardly formed flanges carried by the lower edges of the side walls of said lower channel section, and a plurality of elongated closure elements removably carried in end to end relationship by said inwardly extending flanges to close said lower channel section, at least certain of said closure elements having openings for attachment of a pendant lighting fixture and switch means thereto, said fixture being provided with a plug for engaging one of said outlets to energize said fixture, said lower edges of said side walls including outwardly formed flanges coplanar with said inwardly formed flanges said outwardly formed flanges being adapted to support tile elements, said fixture further including a plurality of said channels arranged in parallel relationship one to the others, a rectangular frame, bridging elements extending between at least one pair of opposing edges of said frame and means securing said channels to said bridging elements to form a unitary structure, each edge of said frame comprising an elongated element having a vertical wall having a height approximately equal to the height of said channel, an inwardly formed flange on the top edge of said side wall a face plate carried by the lower edge of said side wall and forming inwardly and outwardly extending flange like elements, and an upwardly extending flange on the outer edge of said face plate, said inwardly extending face plate portions on said frame and said outwardly formed flanges on said channels supporting tile elements to close the areas between said channels and between said frame and said channels and said outwardly extending face plate portions on said frame supporting decorative panels about the outer edge of said frame.

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240—9, 51.11