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Description

This invention relates to an improved support for electrical devices connected to wiring such as lighting equipment of the kind used in the illumination of theatres, studios and other areas where special lighting effects are required.

The operation of theatres and studios necessitates the use of illumination often of high intensity and provided by light sources which have to be positioned in particular ways in order to enable certain desired lighting effects to be achieved. These effects are normally obtained by the use of numerous lights which are attached to a support. The latter usually takes the form of a frame the size and shape of which depends upon the dimensions of the area to be illuminated. The simplest form of frame can consist of a single straight member which might extend horizontally above a stage. However depending upon circumstances a frame can have a more complex shape incorporating several arms extending in different directions.

In order to facilitate the supply of supports manufacturers make available straight lengths of frame in differing lengths. In addition they provide supports having a variety of shapes for example in the shape of an L, X, Y and + so that a user can assemble a frame of required size and shape from which in effect is a kit of components.

The supports in current use are made in different ways. However one form comprises three cylindrical main members arranged in parallel as a triangle and secured together by struts. The main members consist generally of metal tubes to which electric lights and other devices for example loudspeakers can be fixed by G clamps so that they can be pointed in any desired direction.

One of the main problems affecting not only the manufacturer but also the use of the support stems from the large number of lights which they are required to carry and the extensive wiring associated with the lights.

The weight of all these items is considerable. Consequently the supports have to be correspondingly strong. A greater problem is associated with the wiring itself which has to be disposed of in an aesthetic way and also in accordance with stringent safety regulations. In general the wiring from the different appliances is collected together and enclosed in trunking which is located as closely to the support as circumstances permit. The extent, nature and weight of the wiring which the frame is required to carry imposes certain limitations in the design of the frame components and as a result the manufacturer finds the need to manufacture and maintain stocks of a considerable variety of frame components which are costly to produce. A further problem stemming from the wiring is that the assembly of a supporting frame together with its attachments and wiring is very time consuming.

Closest prior art is represented by:-

FR A 2 335 720 Fenner - D1;

EP A 238 457 Targetti - D2;

FR A 2 106 400 Casanova - D3; and

DE A 3 014 241 Trilux - D4.

D1 discloses a plurality of hollow members connected together to form a supporting frame, electrical wiring being provided within the hollow members. The members are not disposed parallel to each other and connected by struts to form a trussed load-bearing beam. D2 disclosed a trussed load-bearing beam of three elongate elements connected by struts. None of the elements, however, is hollow and adapted to serve as trunking for electrical wiring. D3 discloses a frame similar to that of D1 consisting of connected hollow members distributing electrical power. D4 discloses a frame similar to those of D1 and D3, but like them, does not disclose three elongate members connected by struts to form a trussed supporting beam, one of the elongate members being hollow and constituting trunking.

An object of the invention is to provide an improved support for electrical devices.

The invention provides a support for electrical devices comprising three elongate members (2,3,4) at least one of which (2) is hollow, interconnected by struts (5) to form a frame, wherein: the three elongate members (2,3,4) are arranged, when the support is viewed in cross-section in a plane extending across the longitudinal axes of each of said elongate members, at the apices of triangle; said at least one hollow member (20) has an opening (6) extending lengthwise of said at least one elongate hollow member; and means are provided for securing electrical wiring within said at least one hollow member to enable said at least one hollow member (2) to function as electrical trunking for supported electrical devices.

The effect of this invention is that one or more of the elongate members is utilised as trunking for the wiring and in this way various advantages are obtainable. Thus the cost of separate trunking is avoided. The wiring of a support is achieved more quickly and with better aesthetic effects than hitherto. Furthermore the ends of the components of the support and cornerpieces can be adapted more easily so as to enable strong and complex supports to be assembled quickly from components which are less expensive and less numerous than those which are in current use.

This invention is illustrated but not restricted by the following drawings in which:

Figure 1 is an end view of one preferred form of support made according to the invention

Figure 2 is an exploded side view of the support shown in Figure 1

Figure 3 is an exploded end view of an alternative

form of support.

Figures 4 and 5 are views taken in perspective of a part of a support having an alternative form of construction.

In figures 1-3 the support shown generally as a frame (1) consists of three elongate members (2), (3) and (4) which can conveniently be referred to as trunking member (2) and main members (3 & 4) arranged in parallel in the form of a triangle. The members can be constructed of any strong material for example aluminium or steel tubing which is secured together by struts (5) preferably by welded joints. Trunking member (2) is in the form of a cylindrical box provided with an opening (6) extending lengthwise of the member and provided with a lid (7) which conveniently forms a push-fit with the side walls of member (2). However if desired the lid can be fixed by other means for example nuts, bolts or screws. A wall of trunking member (2) is provided with a series of apertures (8) to enable wiring from each individual applicance (not shown) attached to members (3 & 4) to enter the member (2). If desired the apertures of this series of apertures (8) can be supplemented or replaced by electrical connections for example surface or flush mounting sockets (66) to enable the wire of each individual appliance to be connected to wiring in the trunking member.

The support described above can constitute a component of a more complex support by attachment of extension pieces or angled components. In this connection main members (3 & 4) and trunking member (2) are all provided with bolt holes (9). A spigot (10) is then inserted into the end of each of main members (3 & 4) until holes (9) and (11) are in register thereby enabling a bolt to be inserted and the spigot and the member to be secured together. A similar procedure is followed with respect to trunking insert (12) having bolt holes (13 & 14). The trunking insert is slid into the end of the trunking member (2) until holes are in register after which the insert and the trunking member can be bolted together. Each of members (2, 3 and 4) have now extending from them half a spigot or trunking insert having spare bolt holes on to which straight or branched supports can be bolted.

In Figure 3 the trunking member (2) consists of two hemispherical walls (2 & 7) which can be united by the methods described above. The main members (3 & 4) consist of aluminium or steel having a circular cross section.

The form of the trunking member or members which is made depends on such safely regulations which may have to be observed. Thus where the regulations stipulate that the wiring in the trunking shall be completely enclosed then the lid (7) should preferably extend the full length of trunking member (2). However where regulations permit, other forms of trunking members can be used. For example member (2) can comprise a tube having a circular cross section and the wall of the tube is provided with a longitudinal aperture. Wiring can be secured within the trunking by the use of circular spring clips. The opening in the wall of the trunking member can be either continuous or discontinuous.

The present supports are especially advantageous in the construction of complex structures. These can be made by first fixing the ends of two or more main members and a trunking member to a base plate to form an assembly and then securing the assembly to a connecting member. A single connecting member may have several assemblies connected to it each incorporating a number of main members. This aspect of the invention is illustrated in Figure 4 in which a connecting member (41) comprises a hollow metal sphere having two access holes (42) and a passage (50) in register with the trunking member (52). An assembly of main members (43 & 44) and a trunking member (52) is formed by welding the ends of the members to base plate (45) which has an aperature (49) in register with the interior of member (52). The plate (45) is then secured to connecting member (41) by bolts (not shown) which pass through bolt holes (46) in the base plate (45) and corresponding holes (47) in the connecting member. Access holes (42) enable tools to be inserted into the member for the purpose of tightening the bolts.

The main members (43 and 44) and the trunking member (52) comprise tubes of rectangular cross section. The trunking member is provided with a longitudinal opening (48) to permit the insertion of wiring which passes through hole (50) in the wall of the connecting member (41). The wiring is secured within the trunking member by a push-on lid (not shown). The ends of the members remote from the base plate (45) are provided with holes to enable the assembly to be connected to further lengths of main and trunking members to enable the completion of the final structure. The main and trunking members are connected together by reinforcing struts (51) and are welded on to one face of the base plate, the reverse side of which is shaped to enable it to conform with the curved surface of the spherical connecting member. Additional assemblies of main and trunking members can be fixed in a similar way to other parts of the surface of the connecting member which being curved enables assemblies to project from it at different angles and in different planes. If desired each main or trunking member can be attached directly to the connecting member. However in general the use of some form of base plate is preferred. The connecting member can be in different forms and have different shapes. For example Figure 5 illustrates a part of a support in which the connecting member is a hollow cylinder (55) in which the open end (56) provides access to enable bolts (57) to be inserted through holes (58) in the cylinder into base plate (59). In general the use of a cylindrical connecting member is preferred. The con-

necting member can have any regular shape. For example it can be hexagonal, square, triangular, oval etc. Preferred connecting members are hollow although they can be mainly solid provided that they incorporate any cavities which may be required to enable bolts or other fixing means to be used to connect the connecting member to other members forming the support.

Claims

1. A support for electrical devices comprising three elongate members (2,3,4), at least one of which (2) is hollow, interconnected by struts (5) to form a frame, wherein: the three elongate members (2,3,4) are arranged, when the support is viewed in cross-section in a plane extending across the longitudinal axes of each of said elongate members, at the apices of a triangle; said at least one hollow member (2) has an opening (6) extending lengthwise of said at least one hollow member; and means are provided for securing electrical wiring within said at least one hollow member to enable said at least one hollow member (2) to function as electrical trunking for supported electrical devices.

2. A support as claimed in claim 1 or 2 characterised in that each of the three elongate members (43, 44, 52) is of hollow cross section.

3. A support as claimed in claim 1 or 2 characterised in that the means for securing the wiring within the said at least one elongate member (2) is a lid (7).

4. A support as claimed in any preceding claim wherein said at least one hollow member (2; 52) incorporates additional apertures to provide access for wiring from supported individual electrical devices.

5. A support as claimed in any preceding claim wherein said at least one hollow elongate member (2; 52) is provided with one or more electrical connections.

6. A support as claimed in any preceding claim characterised in that respective one ends of said elongate members (43, 44, 52) are connected to one side of a base plate (45; 59) whose other side is connected to a connecting member (41, 55).

7. A support as claimed in claim 6, characterised in that the connecting member (55) is hollow cylinder.

8. A support as claimed in claim 2 or any claim dependent therefrom, characterised in that inserts (10, 12) are provided complementary to the shapes of said elongate members (2, 3,4) for connecting the support to an adjacent co-axial support.

9. A support as claimed in any preceding claim, characterised in that said elongate members (2, 3, 4 ; 43 , 44, 52) are of rectangular cross-section.

Patentansprüche

1. Eine Halterung für elektrische Geräte, bestehend aus langen Elementen (2,3,4), wovon zumindest eines (2) hohl ist, die mit Streben (5) zu einem Rahmen verbunden sind, wobei: die drei langen Elemente (2,3,4), bei Betrachtung der Halterung im Kreuzschnitt in einer über die Längsachsen der besagten langen Elemente verlaufenden Ebene, in den Scheiteln eines Dreieckes angeordnet sind; zumindest ein Hohlelement (21) eine Öffnung (6) hat, die in Längsrichtung zumindest über ein Hohlelement geht; Vorrichtungen vorgesehen sind, um elektrische Kabel in mindestens einem Hohlelement zu befestigen, so daß zumindest ein Hohlelement (2) als elektrisches Leitungsrohr für die angebrachten elektrischen Geräte dient.

2. Eine Halterung gemäß Anspruch 1 bzw. 2, gekennzeichnet dadurch, daß jedes der drei langen Elemente (43, 44, 52) ein Hohlprofil hat.

3. Eine Halterung gemäß Anspruch 1 bzw. 2, gekennzeichnet dadurch, daß die Vorrichtung, die zur Befestigung der Kabel in mindestens einem langen Element (2) verwendet wird, ein Deckel (7) ist.

4. Eine Halterung gemäß den vorangegangenen Ansprüchen, wobei zumindest ein Hohlelement (2, 52) zusätzliche Öffnungen beinhaltet, um Zugang für die Verkabelung der einzelnen, angebrachten elektrischen Geräte zu erhalten.

5. Eine Halterung gemäß den vorangegangenen Ansprüchen, wobei zumindest ein langes Hohlelement (2, 52) mit einem oder mehreren elektrischen Anschlüssen versehen ist.

6. Eine Halterung gemäß den vorangegangenen Ansprüchen, dadurch gekennzeichnet, daß jeweils ein Ende der besagten langen Elemente (43, 44, 52) mit einer Seite einer Grundplatte (45; 59) verbunden ist, deren andere Seite an einem Verbindungselement (44) angeschlossen ist.

7. Eine Halterung gemäß Anspruch 6, dadurch gekennzeichnet, daß das Verbindungselement (55) ein Hohlzylinder ist.

8. Eine Halterung gemäß Anspruch 2 oder eines davon abhängigen Anspruches, daduch gekennzeichnet, daß Einsätze (10, 12) vorgesehen sind, die den Formen der besagten langen Elemente (2, 3, 4) entsprechen, um die Halterung an eine angrenzende Koaxialhalterung anzuschließen.

9. Eine Halterung gemäß der vorangegangenen Ansprüche, dadurch gekennzeichnet, daß die besagten langen Elemente (2, 3, 4; 43, 44, 52) ein Kastenprofil haben.

Revendications

1. Un support pour les dispositifs électriques, constitué de trois pièces de forme allongée (2, 3, 4), dont l'une au moins est creuse, interconnectées par des montants (5), de manière à former un châssis, dans lequel: les trois pièces de forme allongée (2, 3, 4) sont disposées, lorsque l'on regarde le châssis en coupe transversale selon un plan aligné sur les axes longitudinaux de chacune des pièces susdites, aux sommets d'un triangle; la pièce creuse de forme allongée susdite (2) présente une ouverture (6) qui s'étend sur toute sa longueur; un dispositif est également prévu pour la fixation de câblage électrique à l'intérieur de la (une au moins) pièce creuse, de manière à permettre à au moins une pièce creuse (2) de fonctionner comme tronc de routage des câbles des dispositifs électriques supportés par l'ensemble.

2. Un support correspondant à la description 1 dans lequel chacune des pièces de forme allongée (43, 44, 52) est creuse.

3. Un support correspondant aux descriptions 1 et 2 dans lequel le moyen de fixation des câbles dans la pièce creuse (2) est constitué par un couvercle (7).

4. Un support correspondant aux descriptions précédentes dans lequel au moins une pièce creuse (2, 52) comprend des ouvertures supplémentaires permettant l'accès pour le câblage des dispositifs électriques individuels supportés.

5. Un support correspondant aux descriptions précédentes, où l'une au moins des pièces de forme allongée (2, 52) est pourvue d'un ou plusieurs raccords électriques.

6. Un support correspondant aux descriptions précédentes caractérisé par le fait que les extrémités respectives des pièces de forme allongée susdites (43, 44, 52) sont connectées à un côté d'une plaque de base (45; 59) dont l'autre côté est rattaché à une piece de liaison (44).

7. Un support correspondant à la description 6, caractérisé par le fait que la pièce de liaison (55) est un cylindre creux.

8. Un support correspondant à la description 2 ou toute autre description en découlant, caractérisé par le fait que des pièces rapportées (10, 12) viennent complémenter la forme des dites pièces allongées (2, 3, 4), afin de raccorder le support à un support coaxial adjacent.

9. Un support correspondant aux descriptions précédentes, caractérisé par le fait que les pièces allongées susdites (2, 3, 4; 43, 44, 52) présentent une section rectangulaire.

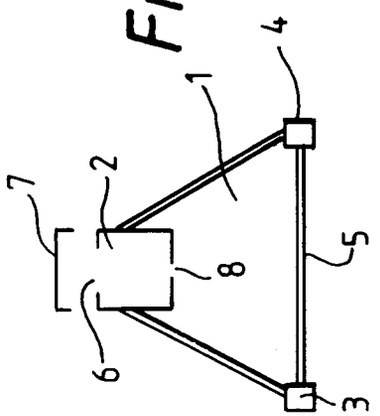


Fig.1.

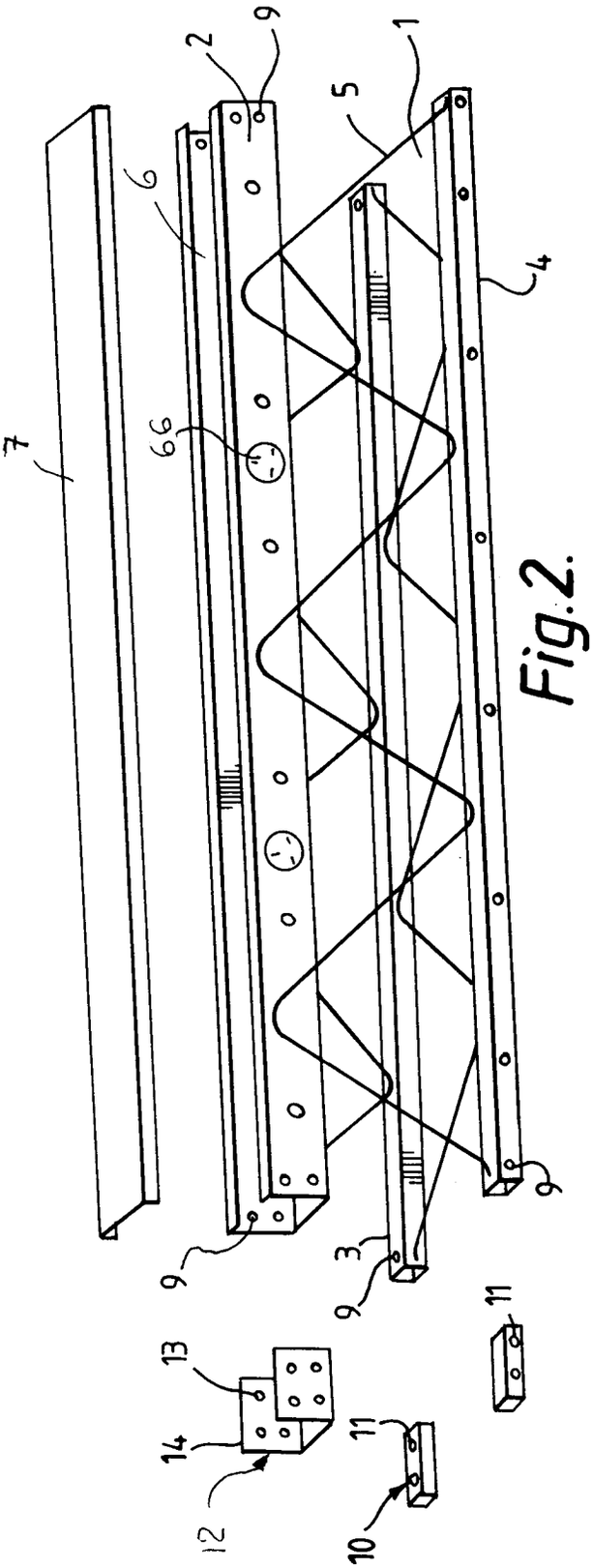


Fig.2.

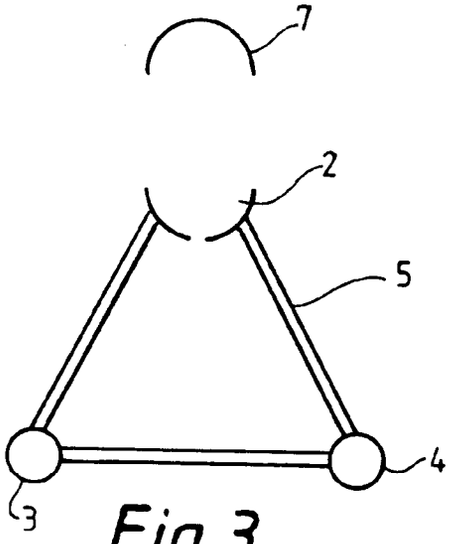


Fig.3.

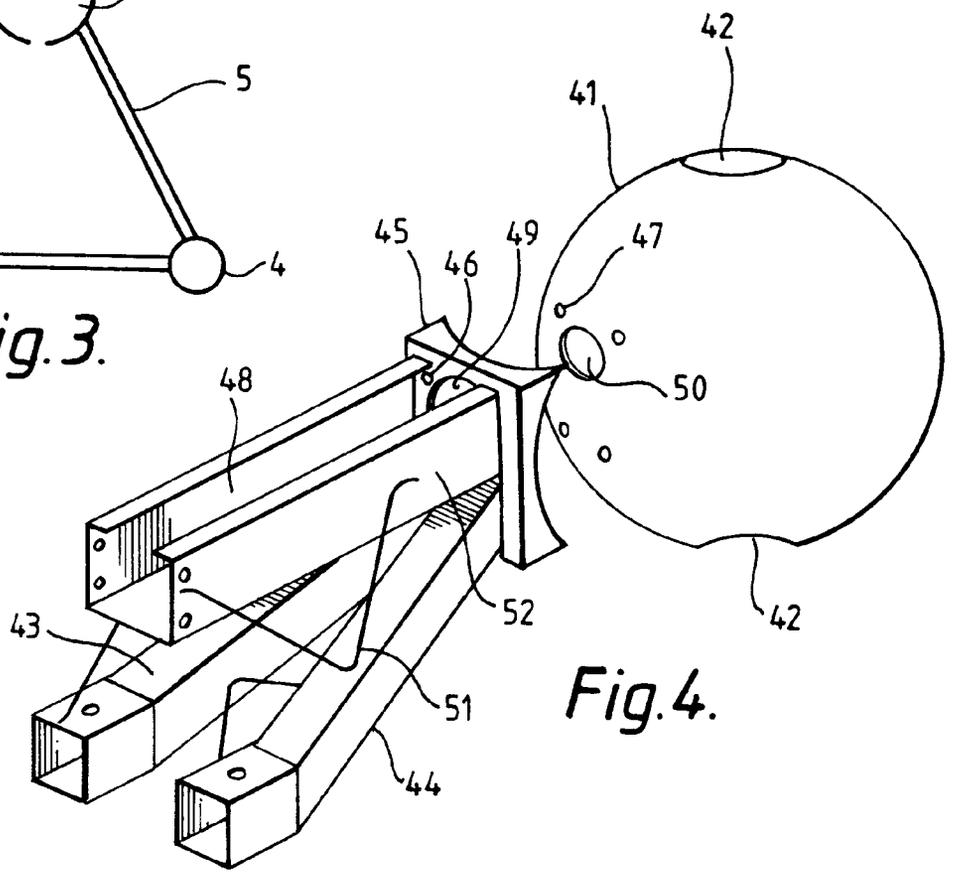


Fig.4.

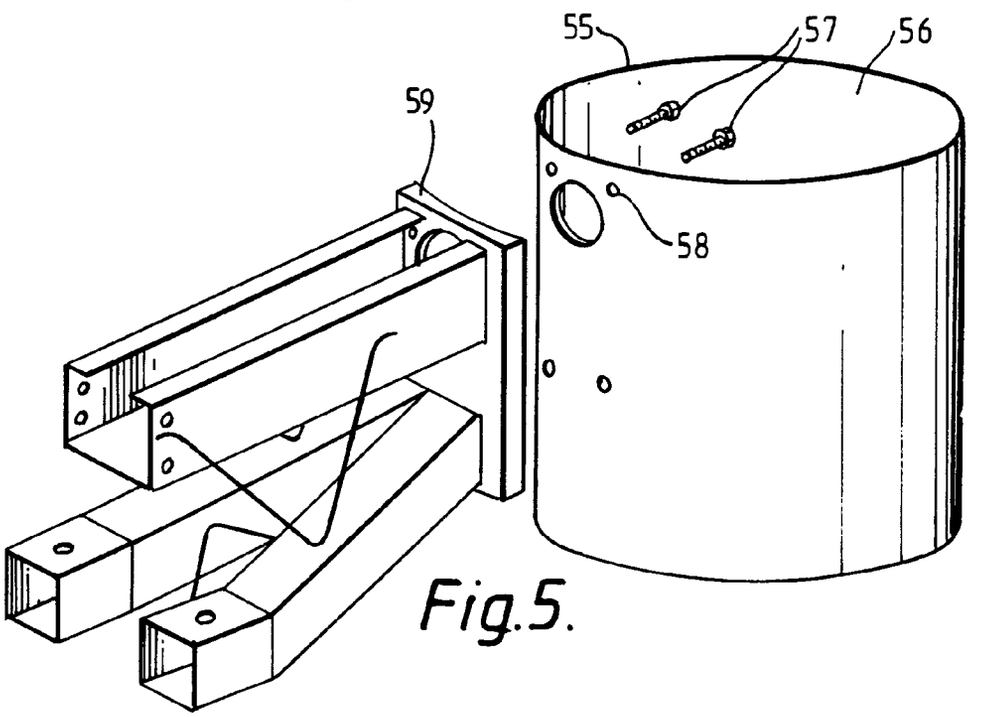


Fig.5.