

(21) Application No 8811335
 (22) Date of filing 13 May 1988
 (30) Priority data
 (31) 8715628 (32) 2 Jul 1987 (33) GB

(71) Applicant
 Scirard Roger Lancelyn Green
 102 Walton Street, Oxford, OX 2 6EB
 (72) Inventor
 Scirard Roger Lancelyn Green
 (74) Agent and/or Address for Service
 Rock and Company
 Trelawn, Cassington, Oxford, OX8 1DN

(51) INT CL⁴
 H01R 13/73
 (52) Domestic classification (Edition J):
 H2E 229 CJE DCN
 U1S 1935 H2E
 (56) Documents cited
 GB A 2185863 GB A 2159434 GB 0838008
 GB 0344271 US 4655520
 (58) Field of search
 H2E
 F4R
 F2G
 Selected US specifications from IPC sub-class
 H01R

(54) Method and apparatus for power distribution

(57) A housing of power output (24) includes resilient flanges for resiliently engaging a tube (19) near a hole (20) in the tube, thereby to provide a path for electrical conductors (22). Permanent fixing of the housing, eg by rivets (27), is carried out after the flanges have resiliently engaged the tube. The power output may be used for lighting at exhibitions etc.

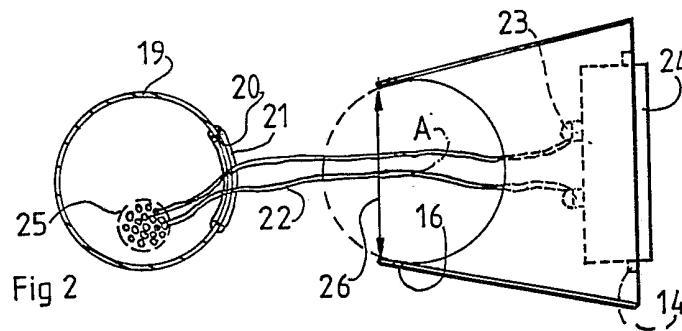


Fig 2

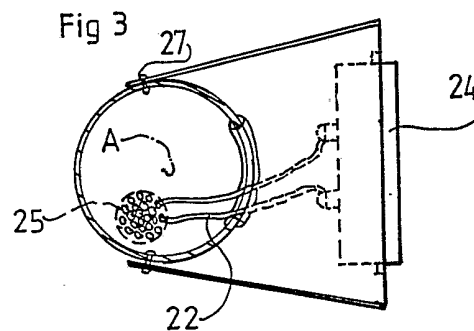
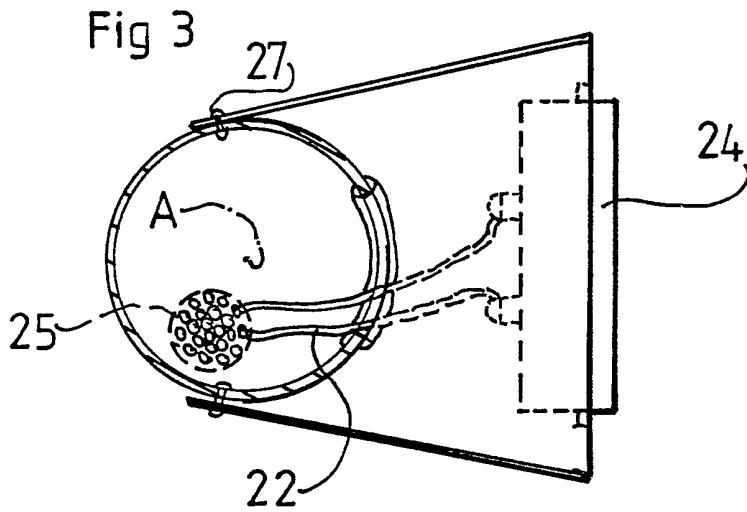
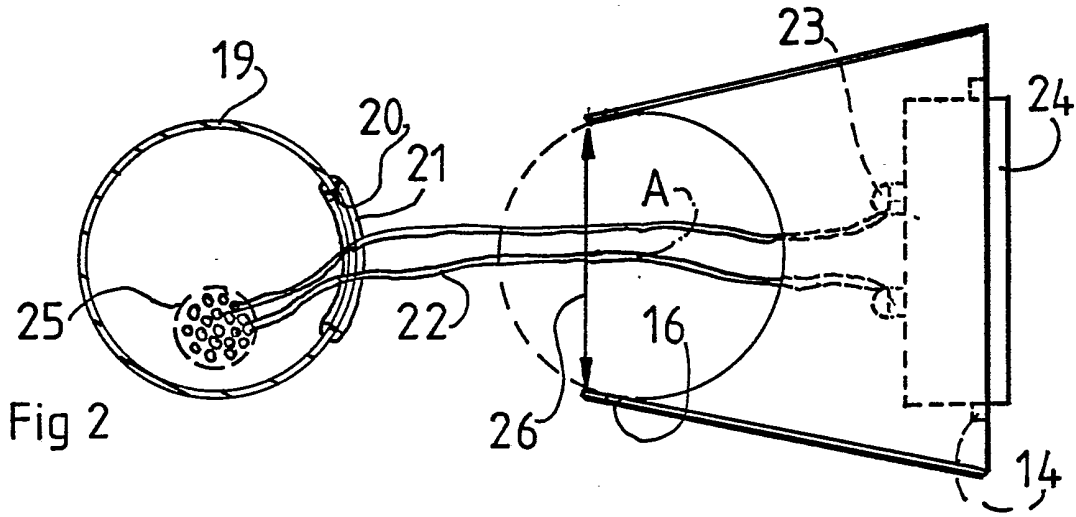


Fig 3



METHOD AND APPARATUS FOR POWER DISTRIBUTION

This invention relates to a method of, and apparatus for, power distribution. It is particularly, though not exclusively, concerned with power distribution for lighting applications in entertainment and exhibition locations. Such applications frequently require the provision of a plurality of light sources on a longitudinal carrier such as a beam or tube which serves to carry conductors to feed each source. The setting up of such an arrangement involving the preparation of the carrier, the mounting of the light sources on it, the installation of the carrier and the checking of the operation of the system is a lengthy business.

According to a first aspect of the present invention there is provided a method of providing a power supply to a plurality of power using or providing devices comprises the steps of:

- a) providing at intervals along a longitudinal member a series of apertures whereby a selected conductor from an array thereof passing along the interior of the member can pass through to the outside of the member;
- b) locating at each aperture a power using or providing device;
- c) coupling one of the devices to a conductor at an aperture;
- d) coupling the device to the member in the vicinity of the aperture by way of a resilient means integral

with the device so as to temporarily secure the device to the member typically to establish the final location of the device on the member; and

- e) permanently securing the device to the member at the final location.

According to a second aspect of the present invention there is provided a power using or transferring device comprising:

- a) a housing;
- b) a power using or transferring element such as a plug or socket secured to the housing the housing serving to define
- c) a substantially tubular passage therethrough bounded partly by at least
- d) one resilient projection integral with the housing and by another part of the housing;

the passage having a longitudinal axis and an unbounded wall section extending the length of the passage which can be offered to a portion of a pipe or pipelike member whereby the housing can be urged onto the pipe or pipelike member so as to cause the or each projection to be displaced by the portion so causing the or each projection to flex and thereafter engage the housing with the portion such that the passage is co-extensive with the portion.

In a preferred version of the second aspect of the present invention the unbounded wall section provides an aperture to receive a pipe or pipelike member which aperture at least in an un-engaged state is narrower in width than an outside diameter of the pipe or pipelike member. Typically the passage is adapted to bound a pipe or pipelike member of circular cross-section.

According to a third aspect of the present invention there is provided an array of power using or transferring devices in the form of a tube having apertures spaced one from another along its length, each aperture being shrouded by a device according to the second aspect of the present invention or a preferred version thereof, an array of conductors within the tubular member, each device being connected to a conductor in the array, each device being secured to the tube by way of a retainer linking the or each integral projection to the tube. Preferably the array is in the form of a lighting unit wherein each device is connected to a lamp secured to the tube.

An exemplary embodiment of the present invention will now be described with reference to the accompanying drawings of which:

Figure 1 is a plan view of an unfolded cut sheet metal housing forming part of a power using or transferring device; a

Figure 2 is a sectional view of part of a lighting bar for a theatre prior to the mounting of a housing of the type

described in connection with Figure 1; and Figure 3 shows the components described in connection with Figure 2 in their finally assembled arrangement.

Figure 1 shows a cut but unfolded sheet metal housing 11 made up of a central panel 12 containing a hole 13 aligned with two mounting holes 14. The central panel 12 is bounded by two pairs of side members. One pair comprises projections 15 with mounting holes 16 on their outer edge. The other pair of side members are bearing sides 17 each with a concave outer edge 18. Figure 1 shows the housing prior to completion at which point the two pairs of sides 15, 17 are folded along the lines shown in broken outline to lie all on the same side of the panel 12 (as is shown in Figure 2).

Figure 2 shows a section of scaffold pipe 19 which has a sequence of circular apertures (typically aperture 20) spaced along its length. The aperture 20 is provided with a grommet 21 to protect an electrical cable 22 secured to the terminals 23 of a power using or transferring element in this case socket 24 which, prior to mounting the housing 11 on the pipe 19, is secured to housing 11 by way of mounting holes 14. The housing and socket form a power using or transferring device which are used as part of a lighting unit as will be hereinafter described. The socket 24 faces outwardly from the housing 11 and the terminals of the socket 24 lie within the housing 11. The cable 22 is one of an array 25 of such

extending along the interior of the pipe 19.

When viewed as shown in Figure 2 an open cross-section passage 27 (shown in broken outline) extends through the housing defined by projections 15 and the bearing sides 17. The passage 27 is for the most part of substantially similar shape to the outside that of the scaffold pipe 19. Prior to permanent location on the pipe 19 the device made up of housing 11 and socket 23 is positioned adjacent the aperture 18 and the cable 21 secured to the terminals 22 as shown. Jaw 26, defined between the outer ends of the resilient extensions 15, is positioned against the pipe 19 with axis A of passage 27 parallel to that of the longitudinal axis of the pipe 19 so that the bearing sides 17 lie transverse the pipe 19. It will be seen that the extensions 14 project further from the housing than the bearing sides 17. The inwardly angled disposition of the extensions 15 result in the jaw 26 being of narrower than the outside diameter of pipe 19. The housing 11 is then pushed to drive the jaw 26 onto the pipe 19 causing the resilient projections 14 to expand slightly and allow the housing 11 to slip onto the pipe 19 until the pipe abuts apertures 18. Thereafter the resilient action of the extensions 14 serve to nip the pipe 19 and enable the housing 11 to be accurately located relative to the aperture and last minute adjustments to be carried out prior to the housing being permanently secured (by rivets 28) with axis A co-axial with the pipe 19.

Figure 3 shows the final disposition of the assembled housing and pipe.

Once scaffold pipe 19 has been equipped with the requisite number of devices the scaffold pole has lights of conventional type secured to it which are each plugged into the device nearest to them on the pipe 19. Thereafter the assembled pipe, housings and lights are mounted in place and the end of the cable array 25 which projects from one end of the pipe is connected to a power supply for the lights.

The form of the housing according to the invention provides for the ready assembly and mounting of a plurality of such housings on a pipe while providing for ready adjustment of the housings prior to their ready mounting on the pipe. The nature of the permanent mounting on the pipe has been found to be particularly effective in maintaining the integrity of an installation subject to handling and modification such as in a theatrical lighting system.

CLAIMS

- 1 A method of providing a power supply to a plurality of power using or transferring devices comprises the steps of:
 - a) providing at intervals along a longitudinal member a series of apertures whereby a selected conductor from an array thereof passing along the interior of the member can pass through to the outside of the member;
 - b) locating at each aperture a power using or providing device;
 - c) coupling one of the devices to a conductor at an aperture;
 - d) coupling the device to the member in the vicinity of the aperture by way of a resilient means integral with the device so as to temporarily secure the device to the member typically to establish the final location of the device on the member; and
 - e) permanently securing the device to the member at the final location.

- 2 A power using or transferring device comprising:
 - a) a housing;
 - b) a power using or transferring element such as a plug or socket secured to the housing the housing serving to define
 - c) a substantially tubular passage therethrough bounded

partly by at least

- d) one resilient projection integral with the housing and by another part of the housing;

the passage having a longitudinal axis and an unbounded wall section extending the length of the passage which can be offered to a portion of a pipe or pipelike member whereby the housing can be urged onto the pipe or pipelike member so as to cause the or each projection to be displaced by the portion so causing the or each projection to flex and thereafter engage the housing with the portion such that the passage is co-extensive with the portion.

- 3 A device as claimed in Claim 2 wherein the unbounded wall section provides an aperture to receive a pipe or pipelike member which aperture at least in an un-engaged state is narrower in width than an outside diameter of the pipe or pipelike member.

- 4 A device as claimed in claim 2 or Claim 3 wherein the passage is adapted to bound a pipe or pipelike member of circular cross-section.

- 5 A power using or transferring device as hereinbefore described with reference to and as illustrated in the accompanying drawings.

- 6 An array of power using or transferring devices in the form of a tube having apertures spaced one from another along its length, each aperture being shrouded by a device as claimed in Claims 2, 3, 4 or 5, an array of conductors within the tubular member, each device being connected to a conductor in the array, each device being secured to the tube by way of a retainer linking the or each integral projection to the tube.
- 7 A lighting unit comprising an array as claimed in Claim 6 wherein each device is connected to a lamp secured to the tube.