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CORNER FITTING FOR A CABLE TRUNKING SYSTEMFIELD OF THE INVENTION

The present invention relates to cable trunking systems
5 for use in buildings, such as trunking systems that
distribute services around a room in a building.
Specifically, the present invention relates to a corner
fitting used to take a section of trunking around an
external corner of the room.

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BACKGROUND OF THE INVENTION

Cable trunking systems may be used to distribute cables
such as power cables and data cables, and to provide service
points such as electrical sockets and telephone points. The
15 trunking system is flexible in that it allows the service
points to be located where desired around the room.

Cable trunking systems generally comprise extruded
lengths of trunking ducts. The services are distributed
around a room by mounting the trunking on walls to extend
20 horizontally, akin to a dado rail. Further sections may
extend to ceiling voids or floor voids in the building
through which services are routed to supply the entire
building.

The trunking generally comprises a base, sidewalls and
25 a cover that fit together to form a sealed enclosure to
conceal the cables they carry. Thus the trunking carries
cables in a safe and aesthetically pleasing manner. It is
usual for the trunking to comprise internal dividing walls
extending from the base to abut against the cover to form
30 two or more separate compartments. These compartments allow
segregation of cables within the trunking. For example, it
is common to segregate power cables from data cables.

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A common configuration is a single wall that divides the trunking into two compartments. An alternative configuration is two dividing walls that separate the trunking into three (upper, middle and lower) compartments.

5 In the latter arrangement, the middle compartment is the largest and is used to mount the service points where desired. The smaller top and bottom compartments contain cables, with data cables in one compartment and power cables in the other. The dividing walls ensure that the cables are
10 segregated at all times. Cables may be passed through holes drilled in the dividing walls to allow the cables to enter the middle compartment to connect to the service points. Each service point has enclosing walls to ensure segregation of data and power cables in the middle compartment.

15 In use, an installer will mount the base to a wall, will place cables along one or both of the compartments, add service points as required and connecting to the appropriate cables, before completing installation by fitting the cover.

In a typical installation, it will be necessary to join
20 lengths of trunking at an angle to each other, for example when navigating corners in the room. The corners may be either internal or external. Both joins are usually formed by using a corner fitting that overlaps the ends of the trunking where they terminate adjacent to the corner, such
25 that the trunking is received within the fitting. The corner fitting also has dividing walls and a cover that abut to ensure the continued segregation of the cables in the trunking system as the cables pass around the corner.

A factor influencing the design of corner fittings is
30 that cables cannot be bent too sharply, otherwise the cable may be damaged or there may be degradation of the signal it carries. For internal corners, the problem is easily

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solved. The base of the corner fitting is curved so that it cuts the corner, thereby following at least the minimum bend radius around the corner rather than following closely the angled corner of the walls. Typical minimum bend radii recommended for cables in operation is four times their outside diameter, typically 32mm or so. The fact the corner fitting projects into the room from the internal corner rarely, if ever, presents a significant problem.

The situation is different for external corners. The usual solution is to provide a bulbous fitting that provides a curved surface that extends away from the wall on either side of the corner to follow the minimum bend radius. Such a bulbous fitting is aesthetically displeasing. Worse still, as it is located on an external corner, the bulbous shape means that the corner fitting is particularly prone to damage from accidental impacts or being knocked off.

To avoid the bulbous profile, parts are available that have a curve to adopt the minimum bend radius. However, the part must be retained inside the flush-fitting cover such that the depth of the fitting is much reduced. Effectively, this part must define a constricted passage through the corner fitting. Thus there is a major problem in that fewer cables can be passed around the corner.

25 SUMMARY OF THE INVENTION

Against this background, and from a first aspect, the present invention resides in a corner fitting for connecting two sections of a cable trunking system that extend to either side of an external corner, the two sections having aligned compartments for containing cables. The corner fitting comprises respective aligned end apertures for interfacing with the compartments of the two sections of

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adjacent trunking, and a corner compartment extending between the aligned end apertures. The corner compartment comprises a stop member positioned out of alignment with the aligned end apertures for guiding the cable between the aligned compartments of the two sections of adjacent trunking around the corner fitting and for deflecting the cable along the length of the corner, the stop member being positioned for stopping the cable from being pulled back into alignment, and thus causing a bulbous mass of cables.

Thus a compartment is provided that allows a cable to be passed around an external corner of a wall from one section of trunking to the other. The cable could pass around the corner undeflected, i.e. to stay aligned with the end apertures as per the arrangement adopted in the bulbous prior art corner fittings. However, the stop member of the present invention ensures that the cable is also deflected along the length of the corner as it bends around the corner. This deflection may be in either direction.

The advantage of the present invention can be understood by considering the bulbous prior art corner fittings. The cable in the prior art loops away from the corner of the wall as it passes around the corner to ensure its minimum bend radius is observed. Essentially, the present invention can be thought of as pushing the loop of cable towards the corner while allowing the loop to move in the direction of the length of the corner: in this way, the cable is kept closer to the corner while the minimum bend radius is preserved. Keeping the cable closer to the corner allows a more compact corner fitting. In fact, the corner fitting may have a flush fit of the corner fitting to the adjacent trunking.

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Advantageously, the corner fitting according to the present invention allows the same volume of cables to be passed around the corner while maintaining a flush fitting. This is in contrast to the prior art arrangement that uses a constricted passage to avoid a bulbous passage.

As will be appreciated, it is the stop member that provides the deflection of the cable such that the loop of cable remains close to the corner of the wall. Moreover, the stop member has a further advantage in that it acts to stop the cable from being pulled back into alignment. For example, an installer may pull on the cable or the cable may contract over time and, without the stop member, the cable would adopt an undeflected shape that would decrease its bend radius.

In order to provide a smooth curvature in a cable passing through the corner compartment, the stop member may be provided with a convex surface. This convex surface may deflect the cable to deflect in the sense of its curvature around the corner. Of course, the cable may not press against the stop member, e.g. the cable may be forced to pass around the stop member but sag in the cable may mean it droops below the stop member.

Preferably, the corner compartment further comprises a convex wall for guiding the cable around the corner. Advantageously, this prevents the cable from kinking as it passes around the corner.

Optionally, the corner compartment further comprises a wall extending between the aligned end apertures, wherein the wall is curved such that a portion extends out of alignment with the aligned end apertures for guiding the cable around the corner as it is deflected along the length of the corner. This wall may be a dividing wall that

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separates the corner fitting into the corner compartment and a further compartment.

In a first arrangement, the stop member is positioned to face the wall. This is particularly advantageous where
5 the stop member faces downwardly, such that cables will tend to sag away from the stop member. In this case, the wall may then provide a support surface for supporting the cables. The portion of the dividing wall is preferably concave where it faces the stop member such that it follows
10 the curvature of the cables as they pass around the corner.

In an alternative arrangement, the stop member forms part of the wall. This is particularly advantageous where the wall curves upwardly along the length of the corner such that the cable will rest on the wall.

15 Optionally, the corner fitting further comprises a base part and a cover that assemble to form an enclosure. The cover may define part of the corner compartment. This allows an open face to be used for installing cable into the corner fitting that is only closed when the cover is fitted.

20 Optionally, the corner compartment may have a sidewall that meets the cover and the convex wall provided by the base part. The dividing wall may face the sidewall and meet cover and convex wall, thereby forming the corner compartment. The sidewall may be part of the base part or
25 cover.

While the corner fitting, in the broadest sense of the present invention, may be applied to a cable trunking system comprising only a single compartment for containing cables, it is most likely to be used with cable trunking systems
30 that comprise two or three separated compartments. Thus, the corner fitting may comprise a second corner compartment extending between further aligned end apertures, the second

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corner compartment corresponding to any of the corner compartments described above. Optionally, the second corner compartment is a mirror image of the first corner compartment. In this arrangement, the respective first and second stop members will act to deflect cables in opposed directions corresponding to the length of the corner. The cables may be either deflected towards one another or they may be deflected further apart from each other.

From a second aspect, the present invention resides in a cable trunking assembly comprising a first section of trunking having a first compartment for receiving a cable, a second section of trunking comprising a second compartment for receiving the cable, and the corner fitting of any preceding claim joining the first and second sections such that the corner compartment extends from the first compartment to the second compartment.

BRIEF DESCRIPTION OF THE DRAWINGS

Specific embodiments of the invention will now be described, by way of example, with reference to the following drawings, in which:

Figure 1 is a perspective view of a section of a trunking system including a corner unit according to an embodiment of the present invention;

Figure 2 corresponds to Figure 1, but shows the trunking assembly with the cover of the corner unit removed;

Figure 3 corresponds to Figures 1 and 2, but shows the trunking assembly with all covers removed;

Figure 4 shows the base part of the corner fitting; and

Figure 5 corresponds to a detail from Figure 3, and shows the trunking assembly with cables installed.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

A section of trunking assembly 10 is shown in Figure 1. that may be used to carry cables 60 around an external corner 12 in the walls 11 of an office or the like. The trunking 10 shown in Figure 1 is intended to be installed on the walls 11 of the office at dado rail height. The section of trunking shown at 10 comprises three parts; first and second straight sections 20 and 30 respectively that are joined by a corner fitting 40. The trunking 10 forms a sealed enclosure for carrying power and data cables 60. The corner fitting 40 has an external surface provided by a cover 41 which is rounded and that follows the profile of the straight sections 20 and 30, such that a bulbous shape does not result.

As can be best seen from Figure 3, each section comprises a base part 22, 32 and 42 from which a pair of longitudinally extending dividing walls 23, 33 and 43 project.

Turning to the straight sections 20 and 30, the sides of their base parts 22 and 32 are provided with snap-fit fixings 24 and 34. The tops of the dividing walls 23 and 33 are also provided with like snap-fit fixings 24 and 34. These snap-fit fixings 24 and 34 couple with co-operating snap-fit fixings 25 and 35 provided on the covers 21 and 31. Thus the covers 21 and 31 may simply be snapped into place to complete installation of the trunking 10.

In fact, each cover 21, 31 comprises three sections; a centre panel 21a, 31a that forms the front of the trunking 20 and 30, and top and bottom wall panels 21b, 31b and 21c, 31c respectively that form the side walls of the trunking 20

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and 30. The top panels 21b and 31b are identical to the bottom panels 21c and 31c, but are merely installed in different orientations. Although snap-fit fixings are used, other forms of fastening may be used.

5 When assembled, the trunking is divided into three compartments 50, 52 and 54 by the dividing walls 23, 33 and 43. The middle compartment 52 of the two straight sections of trunking 20 and 30 is used to mount power points and data points, as described with respect to the prior art. The
10 middle compartment 52 of the corner fitting 40 is not suitable for mounting service points. The top and bottom compartments 50 and 54 are used for carrying cables 60. Data cables 60 are routed through one compartment and power cables 60 are routed through the other compartment to ensure
15 segregation: it does not matter which way around. Connections are made to power and data points provided in the centre section 52 through the removable knock-outs 26 and 36 best shown in Figure 3.

 The corner fitting 40 fixes top the trunking system 10
20 as follows. Figure 4, that shows the base part 42 of the corner fitting 40 in greater detail, makes it clear that the ends of the base part 42 are provided with wings 46a and facing stubs 46b. These wings 46a and stubs 46b are spaced
25 apart to receive a dividing wall 23 and 33 of the adjacent trunking 20 and 30. Hence, these wings 46a and stubs 46b hold the base part 42 of the corner fitting 40 in position. When in position, as shown in Figure 3, the dividing walls
43 of the corner fitting 40 extend to abut the dividing walls 23 and 33 of the adjacent sections of trunking 20 and
30 30. The cover 41, that is unitary rather than the three-part covers 21 and 31, attaches to the base part 42 via the stubs 46b provided adjacent the wings 46a. These stubs 46b

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are received in brackets provided on the corresponding internal surfaces of the cover 41.

The base part 42 of the corner fitting 40 provides several surfaces for guiding cables 60 around the corner 12 in as compact a fashion as possible while preserving the required minimum bend radius. This is achieved by guiding the cables 60 to bend both sideways around the corner 12 and also either upwardly or downwardly as the cables 60 negotiate the corner 12, as can best be seen from Figure 5.

10 A first surface for guiding the cables 60 is provided by the curved back wall 48 of the base part 42. This curved back wall 48 comes away from the corner so as to curve smoothly around the corner. However, the bend radius of the back wall 48 may be less than that permitted for the cables 15 60 because the cables 60 are swept either upwardly and downwardly along the corner 12.

A second surface for guiding cables is provided by the dividing walls themselves 43. As can be seen, the dividing walls 43 do not follow the line of the dividing walls 23 and 20 43 of the adjacent trunking 20 and 30. Instead, the dividing walls 43 of the corner fitting 40 smoothly curve towards the centre of the corner fitting 40 symmetrically from each side, such that the height of the centre compartment 52 is much reduced in the corner fitting 40, 25 whereas the top and bottom compartments 50 and 54 are much enlarged. The upper dividing wall 43a provides a support surface for the cables 60 that will naturally tend to sag towards and possibly onto the wall 43a. When the cable 60 extends around the corner 12 resting against or close to the 30 dividing wall 43a, its bend radius will not fall below the minimum allowed value.

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Nonetheless, there may be a tendency for the cables 60 to move away from the dividing wall 43a, for example if the cable 60 contracts over time or if it is pulled taut. To prevent the cable 60 from riding up and away from the
5 dividing wall 43a and causing inappropriate bunching of the cables 60 such that they form a bulbous mass, a stop member 49a is provided that extends from the curved back wall 48 and that has a curved surface that follows the curve of the dividing wall 43a. The stop member 49a is positioned lower
10 than the dividing walls 23 and 33 of the adjacent sections of trunking 20 and 30 to ensure that cables 60 are swept downwardly as they turn the corner 12.

A corresponding stop member 49b is provided to face the lower dividing wall 43b. In this lower part of the corner
15 fitting 40, cables 60 tend to sag away from the dividing wall 43b. Hence, the stop member 49b and its curving surface act to support the cables 60. Again, a cable 60 passing around the corner 12 by running over the stop member 49b will not bend below the its minimum bend radius.

20 Further routing channels are provided around the corner fitting 40. Cables 60 may be routed to pass above stop member 49a in addition to passing cables 60 below stop member 49a. The cables 60 passing above the stop member 49a will be supported by the curved back wall 48 and are
25 prevented from interfering with attachment of the cover 41 by finger 47a. Cables 60 passing above stop member 49a are not swept downwardly as much as cables 60 passing below stop member 49a and so adopt a lesser bend radius. As a result, it is preferred to route cables with higher minimum bend
30 radii below the stop member 49a and cables 60 with lower minimum bend radii above stop member 49a. Similar cable routing may be adopted in the lower half of the corner

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fitting 40, i.e. routing cables 60 between stop member 49b and finger 47b.

Therefore, a corner fitting 40 is provided that allows cables 60 to be passed around an external corner 12 of a room to extend from a pair of compartments 50 and 52 of one length of trunking 20 to corresponding compartments 50 and 52 of another length of trunking 30 while maintaining the separation of the compartments 50 and 52. Furthermore, the corner fitting 40 still maintains the required minimum bend radius of the cables 60 and yet provides a compact fitting that remains substantially flush to the adjacent lengths of trunking 20 and 30.

As will be appreciated by those skilled in the art, modifications may be made to the embodiment described above without departing from the inventive concept defined by the appended claims.

For example, the above embodiment describes an arrangement where the dividing walls 43 of the corner fitting 40 curve towards the centre of the fitting 40. This is convenient in the embodiment shown in Figures 1 to 3 because the top and bottom compartments 50 and 54 are smaller than the centre compartment 52. However, where space permits, the dividing walls 43 may curve outwardly towards the edges of the corner fitting 40. This is likely to be more convenient where a two-compartment trunking is used: the single dividing wall may split to form two dividing walls that act to guide cables either up and around or down and around the corner before rejoining on the other side.

The above embodiment is described with respect to a corner fitting 40 fixed to a vertically extending corner of a wall. However, the corner fitting may be used with a

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horizontally extending corner, e.g. to take a vertically extending length of trunking around a shelf or ledge present in a wall. Thus, all references to top, bottom, upper, lower, left and right should not be construed to be
5 limiting, but are merely relative to any particular orientation of the corner fitting 40.

While the corner fitting 40 described above takes cables around a corner 12, other angles may be formed as required.

10 Separate guide members 49 and tongues 47 are described above, but these may be combined into a single element. For example, one side of the element may provide the curved surface against which the cable 60 may rest while the reverse side provides a fixing means. Alternatively, if the
15 element is received in a bracket, this bracket may provide the curved surface.

While snap-fit fixings are described for assembling the trunking 10, other fastenings may be used. In addition, details regarding how the trunking is mounted to a wall have
20 been omitted as they are trivial: any commonly known fastening method, such as screws, may be used.

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CLAIMS:

1. A corner fitting for connecting two sections of a cable trunking system that extend to either side of an external corner, the two sections having aligned compartments for
5 containing a cable, wherein the corner fitting comprises:

respective aligned end apertures for interfacing with the compartments of the two sections of adjacent trunking; and

10 a corner compartment extending between the aligned end apertures; wherein

the corner compartment comprises a stop member positioned out of alignment with the aligned end apertures for guiding the cable between the aligned compartments of
15 the two sections of adjacent trunking around the corner fitting and for deflecting the cable along the length of the corner, the stop member being positioned for stopping the cable from being pulled back into alignment.

20 2. The corner fitting of claim 1, wherein the stop member has a convex surface for deflecting the cable.

3. The corner fitting of claim 1 or claim 2, the corner compartment further comprising a convex wall for guiding the
25 cable around the corner.

4. The corner fitting of any preceding claim, the corner compartment further comprising a wall extending between the aligned end apertures, wherein the wall is curved such that
30 a portion extends out of alignment with the aligned end apertures for guiding the cable around the corner as it is deflected along the length of the corner.

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5. The corner fitting of claim 4, wherein the wall is a dividing wall that separates the corner fitting into the corner compartment and a further compartment.

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6. The corner fitting of claim 5, wherein the dividing wall defines part of the compartment.

7. The corner fitting of any of claims 4 to 6, wherein the stop member is positioned to face the wall.

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8. The corner fitting of claim 7, wherein the portion of the dividing wall is concave where it faces the stop member.

9. The corner fitting of any of claims 4 to claim 6, wherein the stop member forms part of the wall.

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10. The corner fitting of any preceding claim, further comprising a base part and a cover that assemble to form an enclosure.

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11. The corner fitting of claim 10, wherein the cover defines part of the corner compartment.

12. The corner fitting of claim 10 or 11 when dependent upon claim 3, wherein the base part is curved to form the convex wall.

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13. The corner fitting of claim 12, wherein the stop member projects from the convex wall.

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14. The corner fitting of claim 13, wherein the stop member projects directly away from the convex wall so that, in use, the stop member projects directly away from the corner.

5 15. The corner fitting of any preceding claim, wherein the dividing wall projects from the base part.

16. The corner fitting of any preceding claim, wherein the corner compartment comprises a side wall, a dividing wall, a
10 convex wall, and a cover that meet to define the corner compartment.

17. The corner fitting of any preceding claim, wherein the corner fitting comprises a second corner compartment
15 extending between further aligned end apertures, the second corner compartment corresponding to the corner compartment of any preceding claim.

18. The corner fitting of claim 17, wherein the second
20 corner compartment is a mirror image of the corner compartment of any of claims 1 to 16.

19. The corner fitting of claim 18, comprising a second
dividing wall to divide the corner fitting into the first
25 corner compartment, the second corner compartment and a third corner compartment interposed between first and second corner compartments.

20. A cable trunking assembly comprising a first section of
30 trunking with a first compartment for receiving a cable, a second section of trunking with a second compartment for receiving the cable, and the corner fitting of any preceding

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claim joining the first and second sections such that the corner compartment extends from the first compartment to the second compartment.

5 21. A corner fitting substantially as described herein with reference to any of the accompanying drawings.

22. A cable trunking assembly substantially as described herein with reference to any of the accompanying drawings.