This invention relates to bus duct in general and more particularly to means for supporting a vertical section of bus duct.

As is well-known to the art, bus duct is a convenient means for distributing greater than minimal quantities of electrical energy within a localized area. Briefly, bus duct consists of an elongated housing with a plurality of elongated bus bars disposed therein. Means are provided to maintain the bus bars in spaced parallel relationship insulated from each other and also insulated from the housing and the housing is provided with a plurality of side openings through which a device is enterable to take power from the duct.

In general bus duct is manufactured in sections of convenient length, say 10 feet, for handling during installation. For the most part the duct sections are assembled to form a horizontally extending bus duct run typically one hundred or more feet in length. However, certain portions of the run may extend vertically and even be required to pass through the floor of a building. Vertically extending bus duct is referred to as riser duct.

The instant invention is concerned with providing means for the support of riser duct. In particular, this invention provides means for supporting riser duct on the floor through which the duct passes.

The instant invention provides a support plate secured directly to the duct housing and a support mounting angle mounted to the support plate. Adjustable means carried by the support angle are adapted to bear against the floor adjacent to the opening through which the riser duct extends. The adjustable means may be set to raise or lower the riser duct as required.

Accordingly a primary object of this invention is to provide a novel floor support means for riser duct.

Another object is to provide a universal floor support means adapted for use with many different sizes of riser duct.

Still another object is to provide novel support means having provisions for utilizing either spring mounting or direct floor mounting.

A further object is to provide a floor support mounting which is readily installed.

These objects as well as other objects of this invention shall become readily apparent after reading the following description of the accompanying drawings in which:

FIGURE 1 is a perspective of a typical bus duct section.

FIGURE 2 is a transverse cross-section of the duct taken through line 2-2 of FIGURE 1.

FIGURE 3 is a perspective of a through floor riser duct section having the floor support means of the instant invention mounted thereto.

FIGURE 4 is a perspective of the support plate.

FIGURE 5 is a perspective of the support mounting angle.

FIGURE 6 is a schematic illustrating the manner in which the floor support means of the instant invention is mountable to different size duct.

FIGURE 7 is a schematic illustrating a spring mounting means.

FIGURE 8 is a schematic illustrating a direct floor mounting means.

FIGURE 9A through 9C are schematics illustrating a typical method for installing riser duct extending through a floor and a ceiling opening.

Now referring to the figures. Bus duct section 10 illustrated in FIGURE 1 is of a type described in detail in co-pending U.S. patent application, Serial No. 817,548, filed June 2, 1959, now Patent No. 3,104,276 entitled, Through Bolt Joint for Bus Duct with J. B. Cataldo et al. as inventors, and assigned to the assignee of the instant invention. Briefly, duct section 10 comprises elongated housing 11 having four insulation covered elongated laminated bus bars 12 through 15 disposed therein in spaced parallel relationship. Duct housing 11 is constructed of opposed side sections 16, 17 and opposed end sections 18, 19. Case bolts 20 secure side sections 16, 17 to end sections 18, 19 to form an enclosure of generally rectangular cross-section.

The ends of sections 16 through 19 which receive case bolts 20 are offset from the main portions of sections 16 through 19 so that these main portions are somewhat recessed. End section extensions 21 are appropriately spaced from portions of side section 16 and 17 to form tracks 22 for guiding sliding movement of covers 23. As is well-known to the art, covers 23 are provided for each of the plurality of access or plug-in openings 24 in side sections 16, 17.

Clamping members 26, 27 are welded or otherwise secured to the internal surfaces of side sections 16 and 17, respectively. Each of the clamping members 26, 27 is of generally U-shaped cross-section with the arms thereof outwardly turned at their ends. Bus bars 12 through 15 are disposed with their edges abutting the webs of members 26 and 27 while the side surfaces of bus bars 12 and 15 are engaged by the arms of members 26 and 27.

The through floor riser duct section 30 illustrated in FIGURE 3 is a vertically extending duct section of the type shown in FIGURES 1 and 2. Riser section 30 as illustrated is so short that plug-in openings are not provided. However, it is to be understood that a riser section of sufficient length may be provided with plug-in openings. The duct wall or walls having the plug-in openings 24 is often referred to as a plug-in wall. For riser section 30 consider that wall 32 of housing 31 as well as the wall opposed thereto will be extensions of plug-in walls of an aligned riser section.

The mounting means of the instant invention comprises generally U-shaped support plate 35 (FIGURE 4), disposed across plug-in wall 32 and secured in place by means of case bolts 36 which secure plug-in wall 32 to end sections 37, 38. Support plate 35 is mounted with arms 41, 42 thereof extending along end sections 37, 38, respectively. The web 43 and arms 41, 22 of support plate 35 are provided with a plurality of threaded apertures to receive bolts for the fastening of support mounting angle 50.

In FIGURE 3 bolts 51 are shown extending through slots 52 of vertical mounting angle leg 54 to secure mounting angle 50 to support plates 35. The other leg 55 of mounting angle 50 is provided with two square apertures 56 which receive retaining nuts 57 (FIGURE 8). Leveling screws 58 are threadably mounted to nuts 57 so as to be adjustable with respect to leg 55. Lock nuts 59 on the top side of leg 55 are provided to maintain screws 58 in their adjusted positions. As seen in FIGURE 8 the lower end of riser duct section 30 extends through floor aperture 61 and the lower ends of leveling screws 58 rest upon floor 60 which then supports the weight of riser duct section 30.

It is noted that the wall opposed to plug-in wall 32 is also provided with a support plate 35, a mounting angle 50, and adjusting leveling screws 58.

FIGURES 9A through 9C illustrate a typical installa-
tion procedure. First riser section 65 is installed through lower floor 66 with floor support means 67 establishing the vertical position of riser section 65. Thereafter riser section 66 is installed above riser section 65. It is noted that section 66 is not provided with any floor support means. Then another riser section 70 having floor support means 69 is dropped through the opening in upper floor 71 and is received by the upper end of section 68. Any deviation in the dimension between floors 66 and 71 is compensated for by adjusting the leveling screws of the floor support means 67 and 69.

It is noted that the topmost riser section 70 may be dropped straight down into position since the lower ends of its bus bars are provided with open ended slots extending parallel to the longitudinal axes of the bus bars. The plurality of apertures in web 43 of support plate 35 permit an initial vertical adjustment of mounting angle 15 relative to support plate 35. In bus duct construction, as illustrated in FIGURE 6, it is the practice to maintain the width of the plug-in wall constant and merely change the width of the end walls for different bus ratings. For different bus ratings bus bar thickness remains constant. It is only the width of the bus bars which changes. Thus, the floor support means comprising plate 35, mounting angle 50 and leveling screws 58 may be utilized with bus duct extending through a wide size length. This is accomplished by having the webs of support plate 35 across the plug-in wall with arms 41 and 42 extending along the housing end sections. The support mounting angles illustrated in phantom in FIGURE 6 show different size units which may be mounted along the end walls of the duct housing extending from the arm of one support plate to the arm of the other support plate. In this case mounting angles of different lengths are required for different size ducts. This situation arises when a plug-in face passes very close to a building wall as illustrated.

It is noted that the direct floor mounting illustrated in FIGURE 6 may be replaced by a spring mounting of the type illustrated in FIGURE 7. In the arrangement of FIGURE 7 screw 81 is mounted with its head resting upon bearing plate 82 and extending upward through a clearance aperture in the horizontal leg 84 of support angle 85. Compression spring 86 is disposed between leg 84 and screw head 81 so that the weight of riser duct 36 is supported by spring 86. Upward movement of the riser section 36 is limited by a nut 87 mounted to screw 81 above mounting angle 85 and spaced therefrom.

While the invention has been described in connection with plug-in type duct it should be understood that the support means is also useful for distribution duct which does not have plug-in openings.

This invention provides a novel floor support arrangement for positioning riser duct. The arrangement is such that the supporting means may be readily mounted to the riser duct and the same size supporting means may be utilized with many different sizes and riser duct.

Although there has been described a preferred embodiment of this invention, many variations and modifications will now be apparent to those skilled in the art. Therefore, this invention is to be limited, not by the specific disclosure herein, but only by the appending claims.

The embodiments of the invention in which an exclusive privilege or property is claimed are defined as follows:

1. The combination comprising a bus duct section and support means therefor; said section including an elongated housing and a plurality of bus bars disposed therein, extending parallel to the longitudinal axis of the housing, and insulated from each other; said support means including a first member, means securing said member to a side of said housing with a portion of said first member extending outwardly at right angles to said side, and adjusting means mounted on said portion and extending parallel to said longitudinal axis; said means securing said first member to a side of said housing comprising a second member interposed between said first member and said housing, said second member having a series of holes therein spaced along a line extending parallel to said longitudinal axis, and means cooperating with only some holes of said series of holes to secure said first member in position with said portion appropriately positioned along said longitudinal axis.

2. The combination comprising a bus duct section and support means therefor; said section including an elongated housing and a plurality of bus bars disposed therein, extending parallel to the longitudinal axis of the housing, and insulated from each other; said support means including a first member, means securing said member to a first side of said housing with a portion of said first member extending outwardly at right angles to said first side, and adjusting means mounted on said portion and extending parallel to said longitudinal axis; said means securing said first member to said first side of said housing comprising another member interposed between said first member and said housing; means for selectively positioning said first member on said another member at any one of a plurality of predetermined locations; said another member being of a U-shape with a web and an arm at each end of said web; said web extending across said first side and said arm extending opposite other sides of said housing adjacent to said first side.

3. The combination of claim 2 in which the first member includes another portion at right angles to said portion, said another portion abutting said web in face-to-face relationship.

4. The combination of claim 2 in which the adjusting means comprises a screw.

5. The combination of claim 2 in which the housing is of generally rectangular cross-section and includes another side extending between said other side and confronting said first side; bolt means securing said first side, said another side, and said other sides to each other; said bolt means also securing said another member to said housing.

6. The combination of claim 2 in which the housing is of generally rectangular cross-section and includes another side extending between said other side and confronting said first side; an additional member of U-shape, said additional member being mounted to said web extending across said another side and its arms extending opposite said other sides in a direction toward the arms of said another member.

7. The combination of claim 6 in which the housing is provided with bolt means securing said first side, said another side, and said other sides to each other; said bolt means also securing said another member and said additional member to said housing.

8. The combination of claim 6 in which there is a further member secured to said additional member with a portion positioned at right angles to said longitudinal axis, and additional adjusting means mounted to said portion of said further member and extending parallel to said longitudinal axis.

9. The combination of claim 6 in which said first member extends in front of one of said other sides and is secured to an arm of said another member and an arm of said additional member.

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