

July 18, 1967

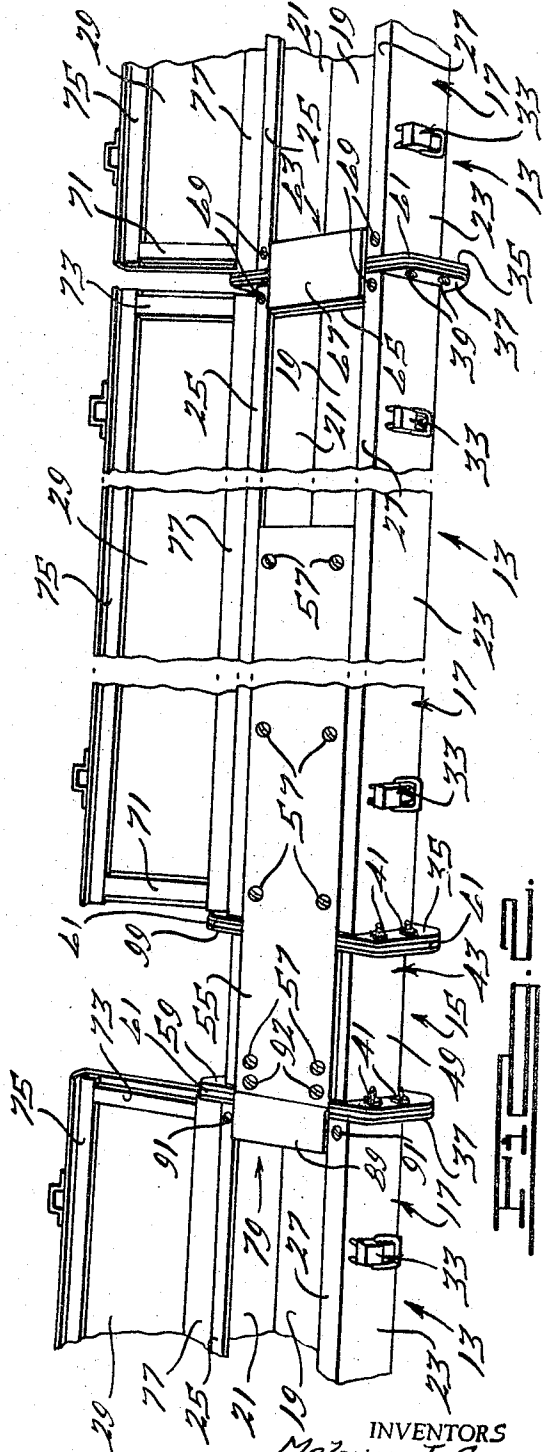
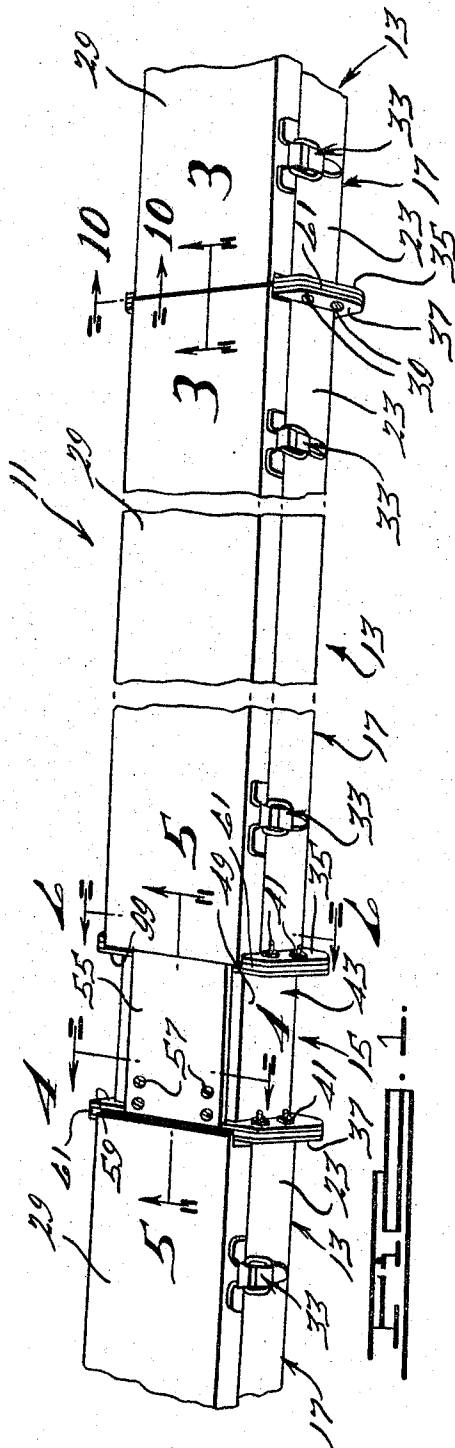
M. J. GEORGE ET AL

3,331,916

LAY-IN WIREWAY

Filed Dec. 30, 1965

3 Sheets-Sheet 1



INVENTORS
Melvin J. George,
Richard L. Foddy
BY
Darness, Dickey & Pierce
ATTORNEYS.

July 18, 1967

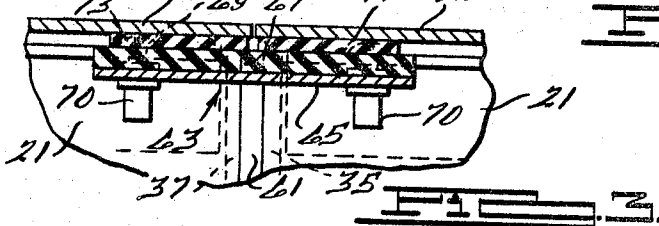
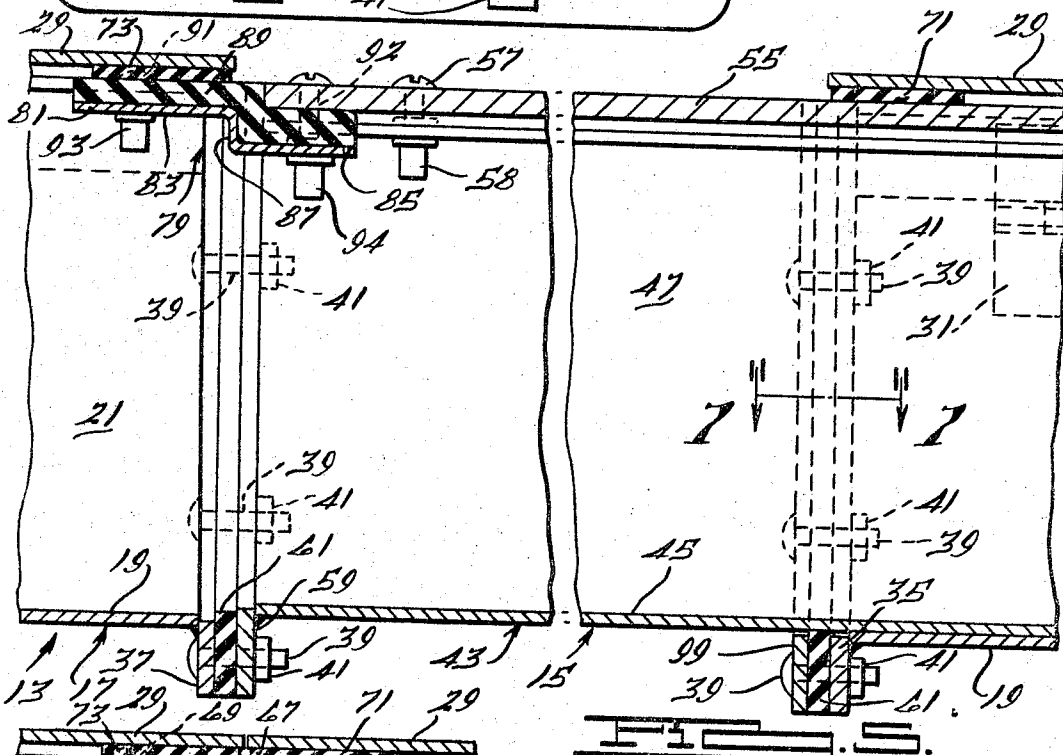
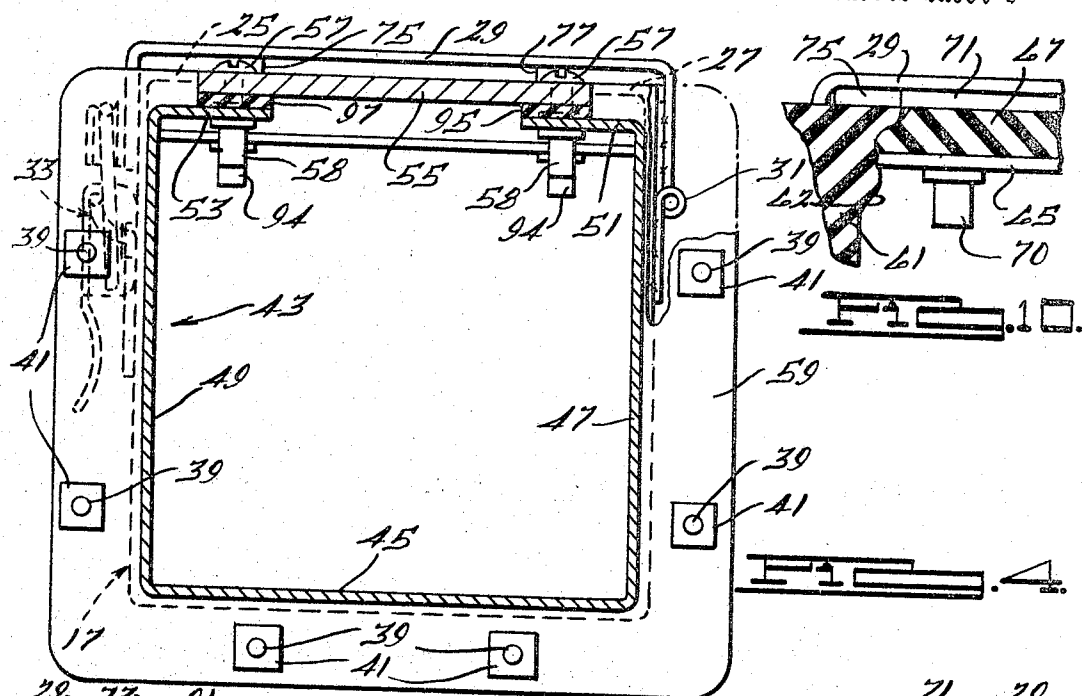
M. J. GEORGE ETAL

3,331,916

LAY-IN WIREWAY

Filed Dec. 30, 1965

3 Sheets-Sheet 2



INVENTORS
Melvin J. George
Richard L. Foldy

BY *Harness, Dickups, Perce*
ATTORNEYS

July 18, 1967

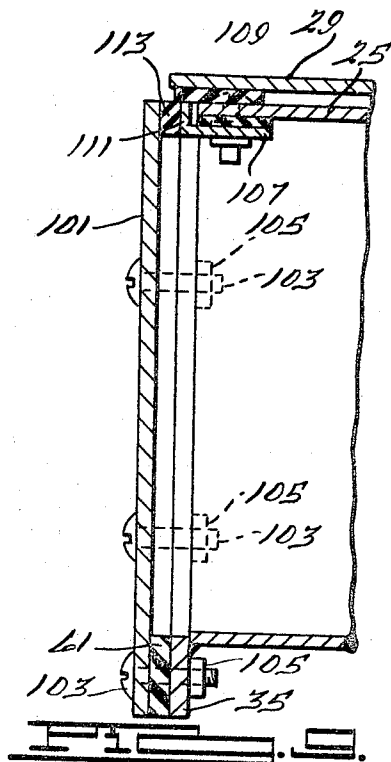
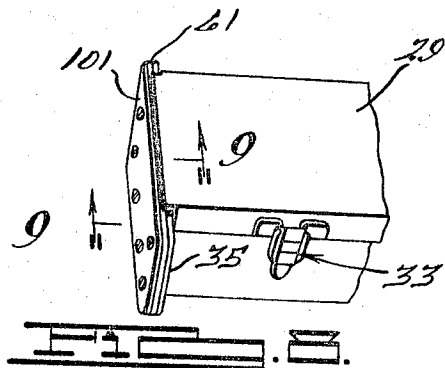
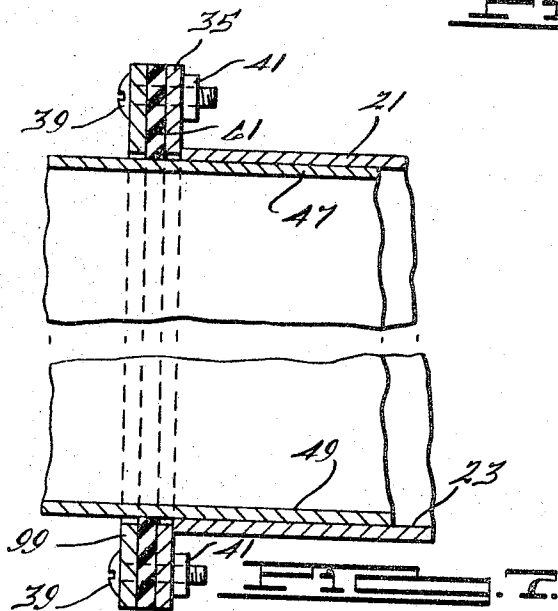
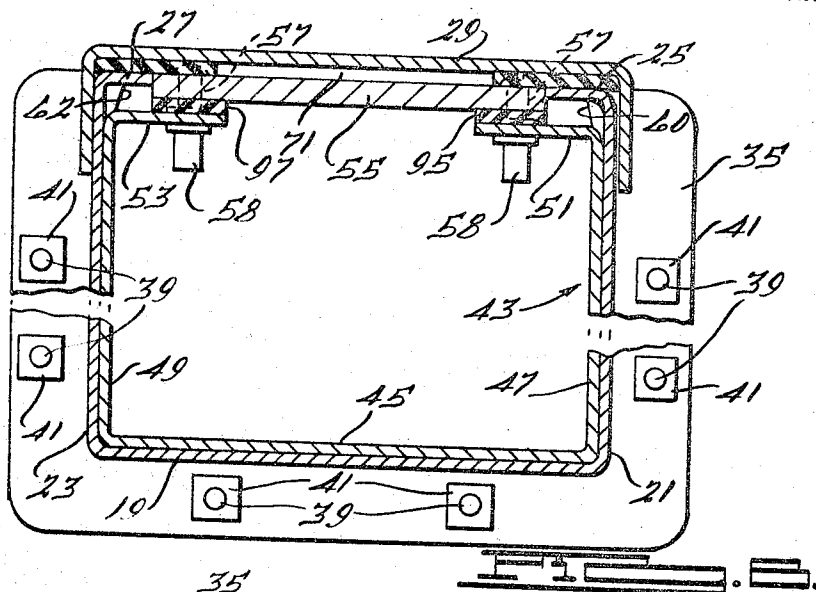
M. J. GEORGE ET AL

3,331,916

LAY-IN WIREWAY

Filed Dec. 30, 1965

3 Sheets-Sheet 3



INVENTORS
Melvin J. George,
Richard L. Foldy
BY
Harness, Dickey & Fiere
ATTORNEYS

1

3,331,916

LAY-IN WIREWAY

Melvin J. George, Southfield, and Richard L. Foldy, Roseville, Mich., assignors to Keystone Manufacturing Company, Division of Avis Industrial Corporation, Warren, Mich., a corporation of Michigan

Filed Dec. 30, 1965, Ser. No. 517,713

14 Claims. (Cl. 174—68)

This invention relates generally to wireways, and particularly to an improved lay-in wireway which permits relatively free lateral access thereto and which provides an oil, moisture and dust-proof construction.

In general, lay-in wireways, as their name implies, are used to house electrical wiring and connections for various fixtures, appliances and machinery and are constructed so that the wiring and connections may, for the most part, be "laid in" from one side thereof after a cover therefor has been opened or removed rather than having to feed the wiring and connectors longitudinally through the wireway. The wireway is made up of a plurality of hollow rectangular units secured together in end-to-end abutting relation and each of which is provided with a cover. This construction is particularly advantageous in manufacturing and other plant installations where unusually complex and heavy-duty wiring systems are required and wherein the system is subject to frequent change and modification requiring that the wiring and connectors be easily accessible. Thus, any part of the wiring system is readily made accessible simply by opening or removing the appropriate cover.

One of the inherent problems arising in this type of installation is that of providing an effective seal between abutting unit ends and between the wireway body and the cover which, when the cover is in place, prevents moisture, dust, oil and other destructive agents from gaining access to the wireway interior where they can do damage to the wiring and/or connectors and which permits easy cover opening or removal and relatively free access to the wireway interior. Another and related problem in these wireway installations arises from the fact that the wireway units are conventionally produced in only a small number of different standard lengths and often are not exactly suited for a particular installation. Thus, to accommodate different dimensional requirements, telescopic type units are provided for one or more of the units which make the sealing problem referred to above even more complex. Thus, a need exists for a lay-in wireway construction adapted to meet all existing convenience and sealing requirements for both standard wireway units as well as the telescopic units.

Main objects of the present invention, therefore, are to provide a lay-in wireway which permits relatively free lateral access thereto and which provides an oil, moisture and dust-tight seal for the interior thereof for both standard and telescopic-type units.

Further objects include a lay-in wireway of the above character which is relatively inexpensive to manufacture, durable in construction and reliable in use.

Further objects and advantages of the present invention will become more apparent from a consideration of the following detailed description taken in conjunction with the drawings in which:

FIGURE 1 is a perspective view of a lay-in wireway, including both standard and telescopic units embodying the present invention;

FIG. 2 is a view similar to FIG. 1 showing the wireway standard unit covers in an opening position;

FIG. 3 is an enlarged fragmentary sectional view of FIG. 1 taken along the line 3—3 thereof;

FIG. 4 is an enlarged sectional view of FIG. 1 taken along the line 4—4 thereof;

2

FIG. 5 is an enlarged sectional view of FIG. 1 taken along the line 5—5 thereof;

FIG. 6 is an enlarged sectional view of FIG. 1 taken along the line 6—6 thereof;

FIG. 7 is a sectional view of FIG. 5 taken along the line 7—7 thereof;

FIG. 8 is a fragmentary perspective view illustrating a novel wireway sealed terminal end construction;

FIG. 9 is an enlarged sectional view of FIG. 8 taken along the line 9—9 thereof; and

FIG. 10 is a sectional view of FIG. 1 taken along the line 10—10 thereof.

Broadly described, the present invention includes at least two channel members each having a radial flange at one end adapted to be positioned in confronting relation and having one side thereof substantially completely open, inwardly turned flanges along the longitudinal edges of said open side of each said channel member, sealing means for said confronting radial flanges including resilient means substantially coextensive with said radial flanges and positioned therebetween, fastening means engaging said radial flanges moving them together and squeezing said resilient means causing it to protrude radially beyond said radial flanges, removable cross plate means having a resilient portion beneath said inwardly turned flanges on either side of said confronting radial flanges and spanning said open sides and biased against said inwardly turned flanges to cause a portion thereof to extend outwardly beyond said inwardly turned flanges and engaging said resilient means, a cover member for each said channel member extending the full length thereof and slightly beyond said radial flanges, said cover members having resilient members engaging said inwardly turned flanges, said resilient means and said resilient portion.

The present invention further includes at least two channel members, each having a radial flange at one end and having one side thereof substantially completely open, inwardly turned flanges along the longitudinal edges of said open side of each said channel member, a telescopic member slidably disposed in one of said channel members, said telescopic member comprising a channel member having a radial flange at one end thereof and coextensive with the radial flanges of said first-mentioned channel members and having an open side adjacent the open sides of said first-mentioned channel members, inwardly turned flanges along the longitudinal edges of said telescopic member open side extending inwardly beyond the inwardly turned flanges of said first-mentioned channel members, a loose collar on said telescopic channel member substantially coextensive with said radial flanges, resilient means substantially coextensive with and positioned between said collar and the radial flange of said channel member, fastening means engaging said collar and said last-mentioned radial flange moving them together squeezing said resilient means inwardly to engage said telescopic channel member and outwardly beyond said radial flange and said collar, a removable cover plate for said telescopic channel member positioned between the inwardly turned flanges of said one channel member and provided with resilient means engaging the intumed flanges of said telescopic channel member and spanning the opening therebetween, a second resilient means coextensive with the radial flanges on said telescopic channel member and the other of said first-mentioned channel members and positioned therebetween, fastening means engaging said last-mentioned radial flanges moving them together squeezing said second resilient means to extend outwardly of said last-mentioned flanges, joggle cross plate means having a resilient portion beneath said radially intumed flanges of said telescopic channel member and said other channel member on either side of said last-mentioned confronting flanges and spanning said open

sides, said resilient portion biased against said inwardly turned flanges of said telescopic channel member and said other channel member causing a portion of said resilient member to extend outwardly beyond said inwardly turned flanges and engaging said second resilient means, a cover member for each said first-mentioned channel member extending its full length and slightly beyond said radial flanges thereof, said cover members having resilient members engaging said inwardly turned flanges, said first and second resilient means, said resilient portions and said telescopic channel member cover plate.

Referring now more specifically to the drawings, a wireway embodying the present invention is illustrated generally at 11 in FIGS. 1 and 2 and is seen to include a plurality of standard units 13 and a telescopic unit 15. Each of the standard units includes a body 17 having a bottom 19, a pair of upstanding sides 21, 23 and a pair of inwardly turned flanges 25, 27 at the top thereof. The portion of the body 17 between the flanges 25, 27 is substantially completely open and is adapted to be closed by a cover member 29 pivotally mounted on the side 21 by hinges 31 and releasably secured to the side 23 by keepers or latches 33. The wireway bodies 17 are provided with a radially outwardly extending three-sided flange 35, 37 at either end thereof which is adapted to be secured to a confronting one of these flanges on an adjacent body 17 by bolts 39 and nuts 41. The telescopic unit 15 comprises a body 43 having a bottom 45, upstanding sides 47, 49 and a pair of intumed flanges 51, 53 at the top thereof which extend inwardly of the flanges 25, 27 and is slidably disposed in one of the bodies 17. See also FIG. 6. The telescopic unit 15 also is substantially completely open between the flanges 51, 53 and is adapted to be closed by a cover plate 55 secured to the flanges 51, 53 between the flanges 25, 27 by screws 57 threaded into blind posts 58 on the flanges 51, 53, these posts 58 preventing leakage past the screws 57. The outer end of the telescopic unit body 43 has a radially outwardly extending flange 59 adapted to be secured to the flange 37 of an adjacent one of the unit bodies 17 also by bolts 39 and nuts 41. The telescopic unit 15 is of a length substantially equal to the standard units 13 so that virtually any straight length wireway 11 can be formed by using a maximum whole number of standard units 13 and one telescopic unit is slidably positioned within one unit 13 to make up the difference.

As described above, it is important in achieving an effective wireway 11 that all joints in the wireway be sealed against moisture, oil and dust, that the covers 29 and the cover plate 55 be adapted to be opened and removed, respectively, permitting free access to the wireway interior without destroying the seals and that an effective seal be provided for the telescopic unit 15 and between this unit and its associated units 13 for all telescoped positions.

In accordance with the present invention, then, each of the radial flanges 35, 37 is substantially three-sided and coincides with the bottom 19 and the sides 21, 23 of its respective body 17. A three-sided resilient rubber or rubber-like sealing member 61 is positioned between the confronting flanges 35, 37 of adjacent ones of the standard units 13 with the bolts 39 extending through these sealing members 61 to thereby effectively seal the joint between the flanges 35, 37. By way of example, an effective seal is achieved when using members 61 constructed from neoprene. In addition, when the nuts 41 are pulled up tight on the bolts 39, the sealing member 61 is squeezed and caused to extend slightly radially outwardly of the flanges 35, 37 and slightly into the open top of the bodies 17 beyond the inwardly turned flanges 25, 27. Preferably, the upper ends of the seal 61 are tapered inwardly forming wider portions 60, 62 to accommodate manufacturing errors and insure that the seal extends inwardly of the flanges 25, 27 when the nuts 41 are tightened (FIG. 10). A cross plate 63 is positioned at each joint formed by the confronting radial flanges

35, 37 and bridges the opening between the inwardly turned flanges 25, 27. This cross plate 63 includes a rigid generally rectangular base 65 having a resilient sealing member 67 constructed from the same or similar material as the members 61 and is secured to the upper surface thereof and the cross plate is secured beneath the intumed flanges 25, 27 by screws 69 threaded into blind posts 70 in the base 65. When the screws 69 are pulled up tight, the sealing member 67 is caused to extend slightly above the upper surface of the flanges 25, 27 and is forced into sealing engagement with the inwardly squeezed tapered portions 60, 62 of the three-sided sealing member 61. This upper portion of the member 61 and the member 67 therefore present a continuous sealing surface across the top of the bodies 17 on both sides of the confronting flanges 35, 37 and this surface is engageable with a pair of resilient rubber or rubber-like sealing members 71, 73 secured to the end edges on the underside of the cover 29 when the cover is closed. Preferably, the covers 29 are slightly longer than the bodies 17 and extend slightly beyond the radial flanges 35, 37 so that the end seals 71, 73 engage the sealing member 61 when the cover 29 is closed. Another pair of resilient rubber or rubber-like seals 75, 77 are secured to the underside of the covers 29 and extend longitudinally thereof interconnecting the seals 71, 73 so that when the covers 29 are closed, these seals 75, 77 seat against the inwardly turned flanges 25, 27 thereby completely sealing the interior of the bodies 17. In addition, the blind posts 70 on the cross plate 65 have their bottom ends closed so that there is no danger of moisture, dust or oil leakage past the screws 69.

A similar sealing arrangement is effected at the joint between the radial flange 37 of the body 17 and the radial flange 59 of the telescopic unit 15. Thus, another three-sided sealing member 61 having tapered portions 60, 62 is positioned between these confronting flanges with the bolts 39 extending therethrough so that when the bolts are pulled up tight, the seal 61 is squeezed in the same manner as described above. However, here the telescopic unit 15 fits inside one of the standard units 13 and therefore has a smaller dimension so that instead of using the cross plate 63 described above to bridge the opening between the flanges 25, 27, a joggle plate 79 is used. This joggle plate 79 is illustrated perhaps best in FIG. 5 and is seen to include a rigid base 81 having offset portions 83, 85 connected by a right angle step portion 87. A resilient rubber or rubber-like sealing member 89 is secured to the upper surface of the base 81 and the joggle plate 79 is secured beneath the intumed flanges 25, 27 by screws 91 threaded into blind posts 93 on the underside of the base 81 and beneath the cover plate 55 by screws 92 threaded into blind posts 94 on the underside of the plate 55. When the screws 91, 92 are pulled up tight, the sealing member 89 is squeezed upwardly slightly beyond the intumed flanges 25, 27 and into sealing engagement with the tapered portions 60, 62 of the three-sided seal 61. In addition, that portion of the resilient seal 89 beneath the cover plate 55 is squeezed into sealing engagement therewith and with and slightly above the intumed flanges 51, 53 of the telescopic unit 15. A pair of rubber or rubber-like sealing members 95, 97 secured to the underside of the cover plate 55 are squeezed beyond the intumed flanges 51, 53 when the screws 57 holding the cover plate on the telescopic body 15 are tightened so that the seals 95, 97 engage the seal 89 thereby completely sealing the joint adjacent the confronting flanges 37, 59 of the standard and telescopic units 13, 15, respectively. The blind posts 93, 94 prevent leakage past the screws 91, 92, respectively.

To effect a seal between the telescopic unit 15 and the standard unit 13 in which it is mounted irrespective of the particular telescopic position of these units, a three-sided loose collar 99 is loosely disposed on the telescopic unit body 43. This collar 99 is substantially co-

extensive with the radial flange 35 on the standard unit 13 and is secured thereto by bolts and nuts 39, 41. Another one of the three-sided sealing members 61 is positioned therebetween and is squeezed when the bolts 39 are tightened in the same manner as described above thereby forcing it into sealing engagement with the cover plate 55. When the cover 29 on this standard unit 13 is closed, the cover seal 71 engages the top of the three-sided seal 61 while the cover plate 55 and the longitudinal cover seals 75, 77 engage the inturned flanges 25, 27 and effect a completely moisture, vapor and grease-tight seal between these members irrespective of the telescopic position therebetween. This, then, completes the sealing of all the joints between the standard and telescopic units 13, 15.

It is sometimes desirable to close one or both ends of the wireway 11 and to retain the moisture, vapor and grease-proof construction described above, it is necessary to provide a seal at the closed end. To achieve this, one of the three-sided seals 61 is positioned between the radial flange 35 on the end standard unit and a solid rectangular plate 101 secured to the flange 35 by bolts 103 and nuts 105, the bolts 103 extending through the seal 61 (FIGS. 8 and 9). An L-shaped plate 107 is secured to the flanges 25, 27 by screws 109 threaded into blind posts 110 in the plate 107. The plate 107 also has a leg 111 extending upwardly between the ends of the open top of the seal 61 and has a sealing member 113 secured to the outer surface thereof. The cover seal 71 is engageable with the top of the seal 61 and the sealing member 113, and the seal 61 and the sealing member 113 together form a rectangular seal against which the plate 101 seats so that when the nuts 105 are tightened and the cover 29 is closed, a completely sealed joint is formed. Should it be desired to extend the length of the wireway 11, it is only necessary to remove the bolts 103, the plate 101, the screws 109 and the plate 107 and attach one or more standard units 13 in the manner described above.

By the present invention, there has been provided an improved, sealed and extremely versatile wireway and while a preferred embodiment has been illustrated and described above in detail, various additions, substitutions, modifications and omissions may be made thereto without departing from the spirit of the invention as encompassed by the appended claims.

What is claimed is:

1. A lay-in wireway comprising at least two channel members each having a radial flange at one end adapted to be positioned in confronting relation and having one side thereof substantially completely open, inwardly turned flanges along the longitudinal edges of said open side of each said channel member, sealing means for said confronting radial flanges including resilient means substantially coextensive with said radial flanges and positioned therebetween, fastening means engaging said radial flanges moving them together and squeezing said resilient means causing it to protrude radially beyond said radial flanges, removable cross plate means having a resilient portion beneath said inwardly turned flanges on either side of said confronting radial flanges and spanning said open sides and biased against said inwardly turned flanges to cause a portion thereof to extend outwardly beyond said inwardly turned flanges and engaging said resilient means, a cover member for each said channel member extending the full length thereof and slightly beyond said radial flanges, said cover members having resilient members engaging said inwardly turned flanges, said resilient means and said resilient portion.

2. A lay-in wireway comprising at least two channel members each having a radial flange at one end and having one side thereof substantially completely open, inwardly turned flanges along the longitudinal edges of said open side of each said channel member, a telescopic member slidably disposed in one of said channel mem-

bers, said telescopic member comprising a channel member having a radial flange at one end thereof and coextensive with the radial flanges of said first-mentioned channel members and having an open side adjacent the open sides of said first-mentioned channel members, inwardly turned flanges along the longitudinal edges of said open side extending inwardly beyond the inwardly turned flanges of said first-mentioned channel members, a loose collar on said telescopic channel member substantially coextensive with said radial flanges, resilient means substantially coextensive with and positioned between said collar and the radial flange of said one channel member, fastening means engaging said collar and said last-mentioned radial flange moving them together squeezing said resilient means inwardly to engage said telescopic tubular member and outwardly beyond said radial flange and said collar, a removable cover plate for said telescopic channel member positioned between the inwardly turned flanges of said one channel member and provided with resilient means engaging the inturned flanges of said telescopic channel member and spanning the opening therebetween, a second resilient means coextensive with the radial flanges on said telescopic channel member and the other of said first-mentioned channel members and positioned therebetween, fastening means engaging said last-mentioned radial flanges moving them together squeezing said second resilient means to extend outwardly of said last-mentioned flanges, joggle cross plate means having a resilient portion beneath said radially inturned flanges of said telescopic channel member and said other channel member on either side of said last-mentioned confronting flanges and spanning said open sides, said resilient portion biased against said inwardly turned flanges of said telescopic channel member and said other channel member flanges, said cover members having resilient members engaging said inwardly turned flanges, said resilient means and said resilient portion.

3. A wireway as defined in claim 1 wherein said fastening means includes bolt means extending through said confronting radial flanges and said sealing means therebetween.

4. A wireway as defined in claim 2 wherein said fastening means includes bolt means extending through said collar and radial flange and said confronting radial flange, respectively, and the sealing means therebetween.

5. A wireway as defined in claim 1 which includes screw means extending through openings in said inwardly turned flanges and said cross plate means, threaded posts secured to said cross plate means beneath each opening therein and receiving said screw means, said posts each having closed lower ends.

6. A wireway as defined in claim 2 which includes screw means extending through openings in said cover plate and said inwardly turned flanges on said telescopic member, threaded posts secured to said last-mentioned inwardly turned flanges beneath each opening therein and receiving said screw means, said posts each having closed lower ends.

7. A wireway as defined in claim 2 which includes first screw means extending through openings in said cover plate and said inwardly turned flanges on said telescopic member, threaded posts secured to said last-mentioned inwardly turned flanges beneath each opening therein and receiving said screw means, said posts each having closed lower ends, second screw means extending through openings in said cover plate and said joggle plate means, and said inwardly turned flanges on said other channel member and said joggle plate means, threaded posts secured to said joggle plate beneath each opening therein and receiving said screw means, said posts each having closed lower ends.

8. A wireway as defined in claim 1 wherein said sealing means between said confronting radial flanges extends inwardly of said flanges adjacent each edge of said channel member open sides.

7

9. A wireway as defined in claim 2 wherein said sealing means between said radial flange and said collar and between said confronting radial flanges extends inwardly of said flanges and collar adjacent each edge of said telescopic and channel member open sides.

10. A lay-in wireway member comprising a channel member having an open end and one open side, inwardly turned flanges along the edges of said open side, a radially outwardly extending flange at said open end, an end plate overlying and removably secured to said radial flange, resilient sealing means between said radial flange and said end plate including a resilient member substantially co-extensive with said radial flange, fastening means engaging said radial flange and said end plate moving them together and squeezing said resilient member and causing it to protrude radially beyond said radial flange and said end plate; removable cross plate means having a resilient portion beneath said inwardly turned flanges and spanning said open side and biased against said inwardly turned flanges to cause a portion thereof to extend outwardly beyond said inwardly turned flanges and engaging said resilient member, a cover member for said channel member extending the full length thereof and slightly beyond said radial flange, said cover member having

8

resilient members engaging said inwardly turned flanges, said resilient member and said resilient portion.

11. A wireway as defined in claim 10 wherein said cross plate means has a leg extending radially outwardly of said channel member and adjacent said end plate, and a resilient sealing member on said leg engaging said end plate.

12. A wireway as defined in claim 10 which includes screw means extending through openings in said inwardly turned flanges and said cross plate means, threaded posts secured to said cross plate means beneath each opening therein and receiving said screw means, said posts each having closed lower ends.

13. A wireway as defined in claim 10 wherein said fastening means includes bolt means extending through said radial flange, said end plate and said sealing means therebetween.

14. A wireway as defined in claim 10 wherein said sealing means between said radial flange and said end plate extends inwardly of said flange adjacent each edge of said channel member open side.

No references cited.

DARRELL L. CLAY, *Primary Examiner.*