Jan. 29, 1963 K. L. BLAISDELL 3,076,169

COAXIAL CABLE CONNECTORS

Filed April 21, 1959 2 Sheets-Sheet 1

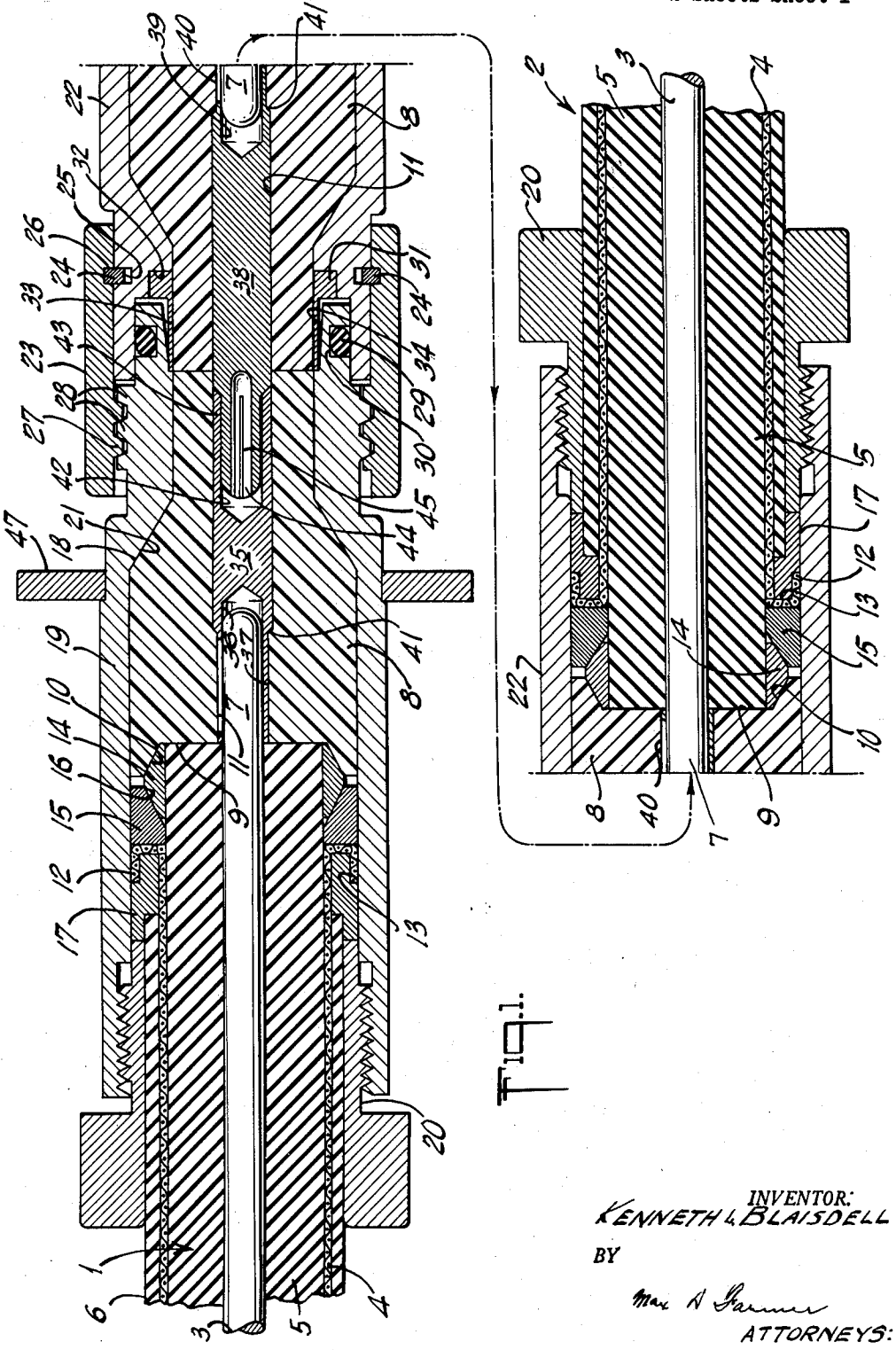

Fig. 1.

INVENTOR:
KENNETH L. BLAISDELL
BY
Max A Farmer
ATTORNEYS:

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Filed April 21, 1959 2 Sheets-Sheet 2

Fig. 2.

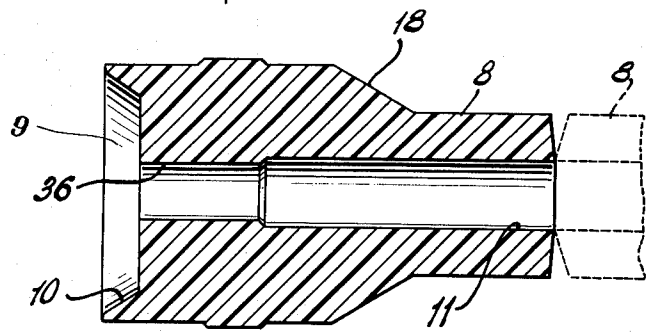


Fig. 3.

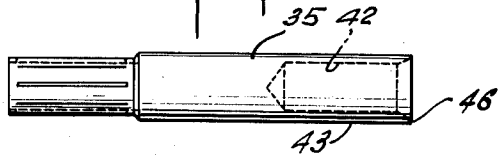
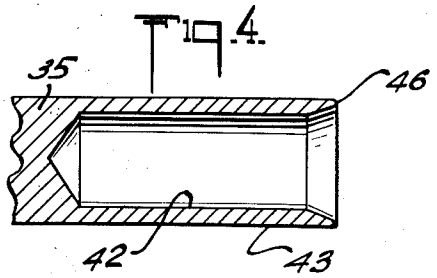


Fig. 4.



INVENTOR.
KENNETH L. BLAISDELL

BY

Max A. Farmer
ATTORNEYS

United States Patent Office

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COAXIAL CABLE CONNECTORS

Kenneth L. Blaisdell, Groton, Conn., assignor to the United States of America as represented by the Secretary of the Navy

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This invention relates to couplings between coaxial cable ends.

Prior couplings between ends of coaxial cables have been not entirely satisfactory because of high voltage breakdowns, particularly in submarine RF transmission-line systems, in the air within the coupling means, such as may be due to avalanches of electrons which occur when a random electron is sufficiently accelerated by a high gradient to ionize molecules of the air by collision. The breakdown voltage in a gas decreases as the frequency is raised. Hence all air should be eliminated from the connectors as far as possible, in the parts where a high voltage gradient exists.

Objects of this invention are to produce an improved coupling between coaxial cable ends, which effectively reduces danger of high voltage breakdowns, which reduces to a minimum the presence of air where there is a high voltage gradient, which insures a tight high pressure contact between flat faces of the abutting ends of the dielectric bodies at the coupling which is free of entrapped air along the inner conductor, with which air is substantially eliminated by contact between the dielectric bodies of the cable ends being coupled before metal-to-metal contact prevents further movement, with practical tolerances in the critical regions, which enables easy, rapid and convenient coupling and uncoupling of the cable ends, which prevents movement of moisture through the coupling between the exterior and interior thereof, and which is relatively simple, practical, durable, effective, compact, strong and inexpensive.

Other objects and advantages will appear from the following description of one embodiment of the invention, and the novel features will be particularly pointed out hereinafter in connection with the appended claims.

In the accompanying drawings:

FIG. 1 is a longitudinal sectional elevation through two coaxial cable ends coupled in accordance with this invention;

FIG. 2 is a similar view separately of one of the dielectric bodies employed in the coupling;

FIG. 3 is a sectional elevation of a coupling part of the same; and

FIG. 4 is a sectional elevation on a larger scale of one end of the coupling part of FIG. 3.

In the illustrated embodiment of the invention, the coupling is between cable ends 1 and 2. Each cable end has an inner conductor 3 and a surrounding concentric conductor 4, such conductors being separated by an interposed body 5 of suitable dielectric material. The outer conductor is encircled by an insulating layer or sheath 6. In preparing each cable end for the coupling, its outer conductor 4 and the dielectric body 5 therein are cut off short of the inner conductor 3 at its free end so as to leave an endwise extension 7 of the inner conductor. Fitted over each free end of the cable which is to be coupled, is a body 8 of high quality dielectric such as a tetrafluoroethylene polymer, one of which is marketed under the trademark "Teflon."

Each such body 8 has a recess 9 in its end face which abuts a cable end, and the peripheral wall 10 of that body which forms the peripheral wall of this recess 9 is outwardly divergent, as illustrated. This body 8 is shown separately in FIG. 2. Each body has a passage 11 from end to end, one end of which fits loosely over the projecting end 7 of an inner conductor 3, and the divergent wall 10 of the recess 9, telescopes over the adjacent end of the dielectric body 5. The outer sheath 6 of insulating material on each cable end is cut back somewhat from the free end of that cable end so as to expose the outer conductor 4 for a short distance from the cable end, and then the outer conductor is turned back outwardly upon and spaced from itself, as at 12, so as to provide a rearwardly facing annular channel 13 which is located some distance from the free end of the dielectric body 5 of the cable. Disposed on the free end portion of each dielectric body 5 is an annular wedge ring 14 which fits fairly snugly with the end of the body 5, but is able to slide lengthwise along the cable on such dielectric body. The inner periphery of the wedge ring 14 is cylindrical and its outer corner edges are beveled to provide tapered side edges. The beveled or tapered edge of the wedge ring nearest the free end of the related dielectric body 5 is complementary to and fits the outwardly divergent peripheral wall 10 of the recess 9.

Another ring 15 surrounds and slides on the exposed periphery of the free end of each body 5 of dielectric, and it has a tapered wall 16 which is complementary to the adjacent tapered edge of the wedge ring 14 against which it abuts. The turned back end 12 of the outer conductor abuts against the untapered or unbeveled side edge of the ring 15, as shown in FIG. 1.

Also surrounding the outer conductor 4 of each cable end and slidable thereon, adjacent the turned back edge 12, is a clamp ring 17, whose opposite side edges are offset radially from one another with the one edge thereof which is of smaller diameter than the other edge received in the channel 13 of the turned back edge 12 of the outer conductor. The edge of the ring 17 which is of larger diameter is slidingly received on the outer periphery of the sheath 6 so as to telescope slightly over the end of sheath 6. The free end of each dielectric body 8 is reduced in diameter through a tapered transition portion 18, and a metal sleeve 19 telescopes over and surrounds the body 8 of dielectric material of one cable end, such as the end 1 and also telescopes over the adjacent rings 14, 15 and 17, and extends along and is radially spaced slightly from the sheath 6.

A tubular gland 20 is threaded into the open end of the metal sleeve 19 at its end which fits over the sheath 6, and its inner end abuts edgewise against a side edge of the ring 17 so as to force it and the turned back edge 12 of the outer conductor against the ring 15. This pressure causes the ring 15 to ride upwardly on the tapered edge of the wedge ring 14 into contact with the inner periphery of sleeve 19 and also force the ring 14 firmly against the peripheral wall 10 of the recess 9 so as to make a firm contact therewith. The sleeve 19, at the end of its passage which is away from the cable end, is reduced in diameter through a tapered transition passage wall 21 which is complementary to the tapered passage wall 18 of the body 8 of dielectric material. This wall 21 of the passage of the sleeve 19 serves as an internal abutment which engages with the tapered wall 18 of the dielectric body 8 and cams it firmly against the end of the dielectric body 5 of the cable. The free end of sleeve 19 extends a short distance beyond the end of the dielectric body 8. The sleeve 19, as well as the rings 15 and 17 are of metal or other electrically conducting material. Ring 14 is of an insulating material having a low loss factor at radio frequency and capable of being deformed to press firmly against the cable

dielectric, thereby compensating for the large tolerance common in coaxial cables and also thereby filling up voids which otherwise might permit corona or promote breakdown.

The other cable end 2 is similarly fitted into a metal sleeve 22 which is generally similar to the sleeve 19 except that at its extreme free end it telescopes over the free end of the sleeve 19 where they meet at the coupling. The sleeve 22 is also made of metal. Encircling the free end of the sleeve 22 and rotatably thereon is another sleeve 23 which is also of metal. It is confined against endwise sliding motion on the free end of sleeve 22 by a split spring ring 24 which is received in an annular channel or groove 25 provided in the external periphery of the sleeve 22 a short distance inwardly from its extreme free end edge. This split ring is also received in an internal annular groove or channel 26 in the sleeve 23, so that this split ring confines the sleeve 23 against endwise movement on the sleeve 22 but leaves it free for rotation thereon. This sleeve 23 acts as an extension of the outer end of sleeve 22, and at its free end has internal screw threads 27 which mesh with external screw threads 28 on the periphery of the sleeve 19 beyond the telescoping portions between the two sections 19 and 22. By rotating the sleeve 23 to engage its threads 27 with the threads 28 of the sleeve 19, it is possible to couple the adjacent ends of sleeves 19 and 22 through sleeve 23 and draw them toward one another while in telescopic relationship on their adjacent ends. An elastic sealing ring or O-ring 29 is confined in an annular channel 30 in the exterior periphery of the extending end of the sleeve 19 where it is in sliding engagement with the inner periphery of the free end of sleeve 22, and where the adjacent ends of the sleeves 19 and 22 are in sliding telescoping relationship. This sealing ring or O-ring is under radial compression between the inner periphery of the sleeve 22 and the body of the channel or groove 30, and thus provides a fluid resistant seal between the telescoping ends of the sections 19 and 22. The lengths of the dielectric bodies 8 on the cable ends are such that the reduced ends of the bodies 8 on the two cable ends will engage endwise and abut with one another firmly before the telescoping ends of the sleeves 19 and 22 are limited by contact with one another at the end edges of the telescoping sleeves. Thus, there is a slight air gap or space between each free end of sleeves 19 and 22 and the abutment on the other sleeve, which enables the sleeves 19 and 22 to be drawn together far enough to ensure firm abutting contact between the adjacent ends of the dielectric bodies 8 of the two cabled ends.

A metal ring 31 is secured flush in a channel or rabbet 32 in the inner periphery or passage of the sleeve 22 a short distance from its free end. The ring 31 has a tubular, thin flange 33 extending endwise thereof along and in contact with the free reduced diameter end of the body 8 within the sleeve 22, and the passage wall of reduced cross section in the sleeve 19, which lies along the flange 33, is slightly outwardly divergent so that as the ends of the sleeves 19 and 22 telescope in coupling the cable ends 1 and 2, this divergent wall 34 will engage and telescope with the flange 33 in a sliding cam action thereon and force it against the reduced end of the body 8 in the sleeve 22, and thus ensure a firm electrical contact and connection between the sleeve 19, flange 33, ring 31, and the sleeve 22. Flange 33 is slit longitudinally into several sections or fingers to provide the flexibility required for this sliding contact. As shown more clearly in FIG. 2 where the body 8 of dielectric material is illustrated, the free end face of the reduced diameter end of at least one body 8, preferably is beveled or deviates slightly from a plane through the free end of that body 8 perpendicular to its longitudinal axis by receding slightly from that plane as it progresses outwardly from the portion of the end face at the passage 11 through the body. Preferably both free ends of the bodies 8 are similarly beveled or made to recede from such plane in order that the bodies 8 can be all identical. Such a deviation from such plane can be advantageously made about 1 degree. Thus, the end face of the reduced end of each body 8 is slightly frustoconical by about one degree deviation from a plane that abuts the free end and is perpendicular to the axis of passage 11.

Since the dielectric material of which the bodies 8 are made is a high-grade dielectric which is slightly elastic, it follows when two such ends of the bodies 8 abut, they will engage first at the margin of the passage 11 and then, as the abutting pressure increases, the contact between those end faces will spread outwardly from the initial line of contact at the margin of the passage until the end faces of the bodies 8 contact firmly with one another over their entire end faces. During this action any air which is disposed between the end faces of the bodies 8 will be progressively squeezed outwardly, so that none will remain trapped between the abutting end faces of the bodies 8 when the coupling of the cable ends has been completed.

The passages 11 in the two bodies 8 of the dielectric material are aligned with one another, and receive and hold therein metal conducting means which fits over and connects the extending ends 7 of the inner conductors of the two cable ends, and this connecting conducting means is formed of endwise telescopic sections that are engaged as the cable ends are brought toward one another before the coupling is completed. This enables preliminary adjustment of the sleeves 19 and 22 to different extents of telescoping relationship when bringing the ends of the bodies 8 of dielectric material into firm strong contact with one another, as explained above.

In the illustrated embodiment of the invention, this connecting means between the inner conductor terminals 7 of the cable ends includes a metal member 35 which has in one end a recess 36 providing a tubular sleeve 37 on its end, which telescopes over and snugly fits the adjacent end 7 of the inner conductor that is received in the passage 11 of the block 8 of dielectric material which fits over the cable end 1. This provides a firm electrical contact between the inner conductor and the member 35. The recess 36 is longer or deeper than the received end 7 of the inner conductor, which permits the member 35 to be adjustable along the received end 7 of the inner conductor.

Another member 38 of metal is received in the passage 11 of the other body 8 which is within the sleeve 22. This member 38 has a recess 39, in one end, which provides a tubular sleeve 40 that snugly fits over and telescopes with the end 7 of the inner conductor on the cabled end 2. Preferably in the passage 11 of each of the blocks 8, there is provided a slight internal shoulder 41 which faces toward the abutting ends between the blocks which limits the movement of the members 35 and 38 along the passage 11 as they telescope over the inner conductor ends 7. The member 35 terminates within the passage 11 of the block 8 which is within the sleeve 19, a short distance from the reduced end of that block 8, and in that end of the member 35 there is another deep recess 42 which provides a tubular sleeve 43 as an end terminal of member 35. The member 38 has a rounded end portion 44 of reduced cross section which is slit endwise from its free end for a substantial distance, as at 45, so as to provide spring fingers which telescope within and resiliently fit the walls of the recess 42 in member 35 so as to provide a firm electrical contact between the members 35 and 38. The free end of the flange 43 which telescopes with the member 38 terminates short of the junction between the reduced end and the larger diameter of the member 38, so as to enable substantial endwise sliding movement of the reduced end 44 of the member 38 in the recess 42 of member 35.

The free end edge of the sleeve 43 is rounded as at 46, in order to reduce the danger of electrical discharge from the free edge of the sleeve 43. For the same reason, the free end of the member 38 is tapered. The maximum

diameters of members 35 and 38 are equal. The inner diameters of the sleeve 19 and of the flange 33 are also equal. The ratio of outer to inner diameters in the vicinity of the abutting ends of the bodies 8 is made approximately equal to 2.7, thereby minimizing the voltage gradient. One of the sleeves such as sleeve 19 may carry a peripheral mounting flange 47, by which the coupled ends may be supported in any suitable manner, not shown.

It is believed that the manner of coupling and uncoupling the cable ends in accordance with this invention will be apparent from the detailed description hereinabove. The two cable ends 1 and 2 may be uncoupled by merely rotating the sleeves 23 to disengage its threads 27 from the threads 28 of the sleeve 19, during which the two cable ends are pulled apart and the member 38 is withdrawn from the recess 42. The cable ends 1 and 2 may be assembled by bringing them into end to end relationship, inserting the rounded end 44 of the member 38 into the recess 42, telescoping the sleeves 19 and 22, and reengaging the threads 27 of the sleeve 23 with the teeth 28 on the sleeve 19. By rotating the sleeve 23 it will draw the telescoping ends of sleeves 19 and 22 together until the ends of the bodies 8 of dielectric material abut and progressively squeeze outwardly any air that may lie between the abutting end faces of the dielectric blocks 8.

It will be observed that with this arrangement, the danger of breakdowns due to high voltage, are substantially eliminated, the entrapped air is reduced to a minimum wherever there is a high voltage gradient, and a firm electrical contact is made at all times between the inner conductor ends 7 of the two cable ends 1 and 2 whenever the cable ends are coupled, as explained above.

A firm electrical connection is made between the outer conductors 4 and the sleeves 19 and 22, and between sleeves 19 and 22 where they are coupled.

It will be understood that various changes in the details, materials and arrangements of parts, which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

I claim:

1. A coupling for connecting together the ends of high voltage coaxial cables in which, at the ends to be coupled, the inner conductor extends endwise outwardly beyond the dielectric between the inner and outer conductors, and a dielectric sheath surrounds the outer conductor, which comprises a dielectric body having a recess in an end which telescopes slightly over the end of the cable dielectric on one cable end, which cable dielectric separates the inner and outer conductors of said cable end, the inner peripheral wall of said body which defines said recess being outwardly divergent from the bottom of said recess abutting the end of the cable, the outer conductor of said cable end being turned back upon and in spaced relation to itself and uncovering the peripheral surface of the free end of said cable dielectric for some distance from the free end of the cable dielectric, an annular deformable insulating wedge ring with a low loss factor at radio frequency having an inner cylindrical periphery surrounding and sliding on said uncovered surface of said cable dielectric, and having its end edges tapered in directions away from one another, with the innermost tapered edge fitting and complementary with said outwardly divergent inner wall of said recess, a clamping ring also surrounding and sliding on said uncovered surface of said cable dielectric disposed on the cable and inwardly from said wedge ring, and having an outwardly divergent end wall which telescopes over and slides on the tapered outer edge of said wedge ring, said turned back end of the outer conductor abutting against an end of said clamping ring, another ring surrounding and sliding on the outer peripheral surface of the outer conductor adjacent the cable end and having one end received in the space formed in the turned back conductor end, and its other end enlarged in diameter and surrounding and sliding on the outer periphery of said sheath, a metal sleeve fitted over said cable end, including said rings and said sheath at the cable end, and having an internal shoulder directly abutting said body and confining it against the free end of said cable dielectric, a tubular gland surrounding said cable end outwardly beyond said sleeve and threaded into the adjacent end of said sleeve and there abutting an end of said another ring, whereby as said gland is threaded into said sleeve, it will force said rings toward one another and against the divergent wall defining the periphery of said recess, with the clamping ring forcing said wedge ring into wedging contact with said divergent wall of said recess to form a seal therewith, and anchoring said sleeve and body to the cable end, means for coupling together the sleeves on adjacent cable ends with the adjacent ends of said dielectric bodies abutting endwise, and means carried by said abutting bodies and detachably coupled to the extending ends of said inner conductors for connecting together the inner conductor ends.

2. A coupling for connecting together the ends of high voltage coaxial cables in which, at the ends to be coupled, the inner conductor extends endwise outwardly beyond the dielectric that spaces apart the inner and outer conductors, which comprises a body of dielectric material telescoping over each cable end having an external tapered shoulder and also abutting against the entire end of the cable dielectric around the inner conductor and having a passage from end to end thereof, the inner end of which passage removably receives the said extension of said inner conductor, with said bodies to be coupled substantially identical and abutting endwise one another and with said passages forming a continuous straight passage from one inner conductor extension to the other, metal means encircling and separable from said abutting ends of said bodies and adjacent ends of the outer conductors of the cable ends, and coupling the cable ends to one another against separation and conductively coupling together said outer conductors, and metal means disposed in said continuous passage and having sliding frictional contact with the ends of said adjacent inner conductor extensions for electrically connecting them together, said encircling means being formed of coupled sleeves, each section of which telescopes over an end of the cable and has an internal tapered shoulder abutting the tapered shoulder of said body therein and removably confining it upon the cable end over which it telescopes.

3. A coupling for connecting together the ends of high voltage coaxial cables in which, at the ends to be coupled, the inner conductor extends endwise outwardly beyond the dielectric that spaces apart the inner and outer conductors, which comprises substantially identical bodies, each of dielectric material for each cable end separate from the cable end and each abutting an entire end of the cable dielectric around the inner conductor therein and having a passage from end to end thereof, the inner end of which passage receives the said extension of said inner conductor with said bodies on cable ends to be coupled abutting solely endwise one another and with said passages forming a continuous straight passage from one inner conductor extension to the other, metal means encircling said abutting ends of said bodies and adjacent ends of the outer conductors of the cable ends, having internal shoulders engaging said bodies and individually and removably confining them upon the cable end on which it is mounted, and coupling the cable ends to one another against separation and conductively coupling together said outer conductors, and metal means disposed in said continuous passage and having sliding frictional contact with the ends of said adjacent inner conductor extensions for electrically connecting them together, said metal means in said passage being formed of two sections frictionally fitting and telescoping with one another end to end, each section at its free end telescoping with and

frictionally fitting the adjacent end extension of said inner conductor.

4. The coupling according to claim 3, wherein the male one of said sections where they telescope with one another, is split lengthwise from its free end to form prongs that are pressed toward one another in fitting and telescoping with the female one of said sections.

5. The coupling according to claim 3, wherein said sections are coupled together closely adjacent the abutting ends of said bodies, and the free end edge of the outside one of said sections is rounded to prevent discharge therefrom of a high voltage along the abutting end faces of said bodies to said encircling means.

6. A coupling for connecting together the ends of high voltage coaxial cables in which, at the ends to be coupled, the inner conductor extends endwise outwardly beyond the dielectric that spaces apart the inner and outer conductors, which comprises a body of dielectric material for and separate from each cable end abutting the end of the cable dielectric and having a passage from end to end thereof, the inner end of which passage receives the said extension of said inner conductor, with said bodies on cable ends to be coupled being substantially identical and abutting endwise one another and with said passages forming a continuous straight passage from one inner conductor extension to the other, said bodies being substantially identical and having their end faces which abut one another slightly divergent outwardly from the said straight passages through them, and individually removable from the ends of the cable against which they abut, metal means encircling but separable from said abutting ends of said bodies and adjacent ends of the outer conductors of the cable ends, and coupling the cable ends to one another against separation and conductively coupling together said outer conductors, and metal means disposed in said continuous passage and having sliding frictional contact with the ends of said adjacent inner conductor extensions for electrically connecting them together, said encircling means including a section telescoping over each cable end, and the free ends of the sections telescoping with one another and having a sliding fit at approximately the abutting ends of said bodies of dielectric material, with inner one of such telescoping ends spaced well from the outer edges of the abutting ends of the dielectric bodies, the telescoping surfaces of said sections having a sealing ring under radical compression confined between them, and means on the exterior of said telescoping parts of said sections for coupling them against separation, the lengths of the dielectric bodies causing their abutting ends to engage endwise before the telescoping ends with the sliding fit reach their maximum coupling movement.

7. A coupling for connecting together the ends of high voltage coaxial cables in which, at the ends to be coupled, the inner conductor extends endwise outwardly beyond the dielectric that spaces apart the inner and outer conductors, which comprises a body of dielectric material for each cable end abutting the end of the cable dielectric and having a passage from end to end thereof, the inner end of which passage receives the said extension of said inner conductor, with said bodies on cable ends to be coupled substantially identical but abutting endwise one another solely in a common plane and with said passages forming a continuous straight passage from one inner conductor extension to the other, metal means encircling and separable from said abutting ends of said bodies and adjacent ends of the outer conductors of the cable ends, and coupling the cable ends to one another against separation and conductively coupling together said outer conductors, and metal means disposed in said continuous passage and having sliding frictional contact with the ends of said adjacent inner conductor extensions for electrically connecting them together, said encircling means including a section separable from but telescoping over the exterior of each cable end including the sheath thereon, and the free ends of the sections telescoping with one another and having a sliding fit at approximately the abutting ends of said bodies of dielectric material, said means on the exterior of the telescoping sections being rotatably confined to one of said sections and threaded to the other of said sections.

8. The coupling according to claim 6, wherein said means on the exterior of the telescoping sections is a sleeve rotatable on one of said sections and confind thereon against endwise movement by a retaining split ring in aligned annular grooves in the abutting surfaces between the said sleeve and one section, and is threaded to the other of said sections.

9. The coupling according to claim 7, wherein the adjacent ends of said bodies of dielectric material engage one another and abut before the adjacent ends of the sections of said encircling means abut endwise and limit their further telescoping movement.

10. A coupling for connecting together the ends of high voltage coaxial cables in which, at the ends to be coupled, the inner conductor extends endwise outwardly beyond the dielectric that spaces apart the inner and outer conductors, which comprises a body of dielectric material for each cable end abutting the end of the cable dielectric and having a passage from end to end thereof, said bodies being substantially identical, the inner end of which passage receives the said etxension of said inner conductor, with said bodies on cable ends to be coupled abutting endwise one another and with said passages forming a continuous straight passage from one inner conductor extension to the other, metal means encircling said abutting ends of said bodies and adjacent ends of the outer conductors of the cable ends, and coupling the cable ends to one another against separation and conductively coupling together said outer conductors, and metal means disposed in said continuous passage and having sliding frictional contact with the ends of said adjacent inner conductor extensions for electrically connecting them together, said encircling means including a section telescoping over each cable end, and the free ends of the sections telescoping with one another and having a sliding fit at approximately the abutting ends of said bodies of dielectric material, means on the exterior of said telescoping parts of said sections for coupling the sections together and drawing them together until the adjacent ends of said bodies of dielectric material engage and abut one another under pressure, the outer part of one of said sections where they telescope having fixed thereto a metal member which lies along and abuts against the periphery of the adjacent end of the body of dielectric material within that one section, the inner periphery of the other of said sections at its end which telescopes with that one section being slightly divergent toward its free end to engage and slide along in a cam action, with said member as said sections are drawn together until the adjacent ends of said bodies abut with one another.

11. The coupling according to claim 3, wherein the ratio of radii of the outer conductor to the inner conductor at the abutting ends of dielectric material is approximately the optimum of approximately 2.7.

12. A coupling for connecting together the ends of high voltage coaxial cables having an inner conductor, a surrounding envelope of a dielectric material for such conductor, and a metal sheath surrounding such envelope and serving as an outer conductor, and an insulating sheath surrounding and enclosing said outer conductor which comprises a dielectric body having one end telescoping over the free end of the inner conductor and uncovered envelope only of each cable end, a two section, metal sleeve-like coupling having one section encircling one of said dielectric bodies and the other encircling the other of said dielectric bodies, the sections being detachably coupled together with the dielectric bodies abutting end to end and held in that relation by said sections, the inner end of each dielectric body where it tele-

scopes over the envelope of that cable end being divergingly tapered outwardly in a lengthwise direction, a wedge ring having an inner periphery within each said section, slidingly fitting said envelope and having its ends tapered, with one tapered end fitting and complementary to the divergingly tapered end of the dielectric body it engages, a metal ring within each section encircling said envelope on that adjacent cable end, abutting endwise against and slidingly overrunning the other tapered end of said wedge ring, said metal ring being operable, when it is forced along the cable end toward the wedge ring, to cam the wedge ring against the adjacent end of the adjacent dielectric body and itself, by engagement with the adjacent tapered end of the wedge ring, be forced against the surrounding section of the coupling, means adjustable along and within each sleeve section for clamping the outer conductor against said metal ring to complete a metal to metal conducting path from the outer conductor on each cable end through the coupled sections to the outer conductor on the other cable end and means carried by abutting dielectric bodies, when they are abutting one another, for electrically coupling the inner conductors of the coupled cable ends.

References Cited in the file of this patent

UNITED STATES PATENTS

2,379,942	Webber	July 10, 1945
2,445,808	Stenstrom	July 27, 1948
2,449,983	Devol	Sept. 28, 1948
2,452,168	Warren	Oct. 26, 1948
2,540,012	Salati	Jan. 30, 1951
2,662,219	Hennesey et al.	Dec. 8, 1953
2,673,233	Salisbury	Mar. 23, 1954
2,703,870	Minto	Mar. 8, 1955
2,762,025	Melcher	Sept. 4, 1956
2,870,420	Malek	Jan. 20, 1959
2,966,645	Bird et al.	Dec. 27, 1960
2,986,720	Chess	May 30, 1961

FOREIGN PATENTS

1,038,560	France	May 13, 1953
568,596	Great Britain	Apr. 12, 1945
778,781	Great Britain	July 10, 1957