

SEÑORES  
DIVISION DE NUEVAS CREACIONES  
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO  
E. S. D.

SUPERINDUSTRIA Y COMERCIO  
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Tramite : 002 PATENTES D 1 REGISTRO/ 329 COMPLETES  
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

COD:01

REF: SOLICITUD N° 00091739  
FECHA SOLICITUD: Noviembre 30, 2000  
PATENTE: UNA VAINA COMPARTIMENTADA SEPARADORA DE CABLES  
SOLICITANTE: BELDEN WIRE AND CABLE COMPANY

ASUNTO: PRESENTACIÓN DE PRIORIDAD

DILIA RODRIGUEZ D'ALEMAN, en mi condición de apoderada de la sociedad  
solicitante, en esta oportunidad por el presente escrito me permito presentar:

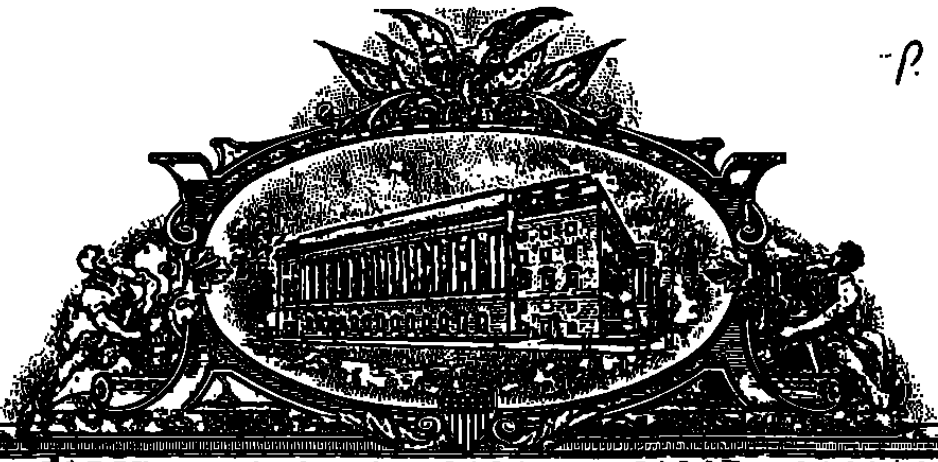
- Copia certificada de la prioridad reivindicada Estadounidense N°.  
09/452,702 de Diciembre 2 de 1999.
- Traducción al Español de la mencionada prioridad

Esta prioridad está siendo presentada dentro del término de 3 meses que  
exige el Convenio de París, toda vez que la solicitud fué radicada el 30 de  
Noviembre de 2.000.

Ruego a usted continuar con el presente trámite.

Señor Jefe,

  
DILIA RODRIGUEZ D'ALEMAN  
LCD/srr  
P-381



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

July 31, 2000

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: 09/452,702

FILING DATE: December 02, 1999



By Authority of the  
COMMISSIONER OF PATENTS AND TRADEMARKS

AL No. 01/618  
PIEDRAHITA AGUILERA  
TRADUCTOR E INTERPRETE OFICIAL  
C. IDONEIDAD 045  
UNIVERSIDAD NACIONAL DE COLOMBIA

*H. Phillips*  
H. PHILLIPS  
Certifying Officer

66/20/21

PATENT APPLICATION TRANSMITTAL LETTER  
(Large Entity)Docket No.  
6500-1801

## TO THE ASSISTANT COMMISSIONER FOR PATENTS

Transmitted herewith for filing under 35 U.S.C. 111 and 37 C.F.R. 1.53 is the patent application of:

Galen M. Gareis

For: A CABLE SEPARATOR SPLINE

Enclosed are:

- ☒ Certificate of Mailing with Express Mail Mailing Label No. EL 350 752 085 US
- ☒ Two sheets of drawings.
- ☐ A certified copy of a application.
- ☒ Declaration ☒ Signed. ☐ Unsigned.
- ☒ Power of Attorney
- ☐ Information Disclosure Statement
- ☐ Preliminary Amendment
- ☒ Other: Assignment and Assignment Recordal Sheet

## CLAIMS AS FILED

| For                                                                      | #Filed | #Allowed | #Extra | Rate      | Fee      |
|--------------------------------------------------------------------------|--------|----------|--------|-----------|----------|
| Total Claims                                                             | 16     | - 20 =   | 0      | x \$15.00 | \$0.00   |
| Indep. Claims                                                            | 3      | - 3 =    | 0      | x \$75.00 | \$0.00   |
| Multiple Dependent Claims (check if applicable) <input type="checkbox"/> |        |          |        |           | \$0.00   |
| BASIC FEE                                                                |        |          |        |           | \$750.00 |
| TOTAL FILING FEE                                                         |        |          |        |           | \$750.00 |

- ☐ A check in the amount of \$800.00 to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. 12-0913 as described below. A duplicate copy of this sheet is enclosed.
- ☐ Charge the amount of as filing fee.
- ☒ Credit any overpayment.
- ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: DECEMBER 2, 1999

Signature

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Lee, Mann, Smith, McWilliams, Sweeney & Ohlson  
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P01LARDREV00

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C. IDONEIDAD 045  
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IN THE U.S. PATENT AND TRADEMARK OFFICE

APPLICATION OF

GALEN M. GAREIS

FOR LETTERS PATENT FOR

A CABLE SEPARATOR SPLINE

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Attorney Docket No.: 6500-1801

Inventor Name: Galen M. Gareis

Title: A Cable Separator Spline

Date: December 2, 1999

Attorney: Robert F. I. Conte

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(312) 368-0034 (facsimile)

Enclosed here are:

1. Patent Application Transmittal under 37 C.F.R. 1.53
2. Declaration and Power of Attorney
3. Check in the Amount of \$800.00
4. Assignment and PTO 1595
5. 2 sheets of Informal drawings
6. Return postcard

"Express Mail" mailing label number

EL 350 752 085 US

Date of deposit: December 2, 1999

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Danna B. Vandenberg

(Typed or printed name of person mailing paper or fee)

  
(Signature of person mailing paper or fee)

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## **A CABLE SEPARATOR SPLINE**

### **FIELD of the INVENTION**

The present invention relates to a separator filler or spline. More particularly the present invention relates to the separator filler or spline having four pockets with each pocket having a cross-sectional area that is less than the envelope area of a pair of cables adapted to be placed in each pocket.

### **BACKGROUND of the INVENTION**

The most popular separator fillers or splines are generally based on a circular cross-section wherein each pocket generally has a cross-sectional area that is greater than the cross-sectional envelope area of the twisted pair cable that is to be placed in the pocket. This type of spline generally has less flexibility and undesirable to skew degradation.

### **SUMMARY of the INVENTION**

The oval envelope provided by my spline has an acceptable NEXT performance and good flexibility. Therefore, it is an object of the present invention to provide a cable separator filler or spline having a plurality and preferably four opened pockets for separating a plurality of cable pairs, preferably one cable pair for each pocket. Preferably when there are an even number of pockets, the pockets are diametrically opposite each other. When there are four pockets, the first and second pockets are diametrically opposite

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each other and third and fourth pockets are diametrically opposite each other.

In a cross-sectional plane of the spline the diametric distance between the ends of the first and second pockets is greater than the diametric distance of the ends of the group of the third and fourth pockets to provide an oval envelope for the spline. All of the pockets have a cross-sectional area that is less than the envelope cross-sectional area of the cable pair that is to be placed in the respective pockets. The longitudinal axis of each of the pockets are all substantially parallel to each other.

A cable manufactured using the spline of my invention generally uses an oval envelope spline having four pockets and has a twisted pair cable in each pocket. The long lay twisted pair cables are both preferably in the pockets on the major axis of the oval envelope. The short lay twisted pair cables are both in the pockets on the minor axis of the oval envelope. In this embodiment the core components are comprised of the elongated separator spline and the four twisted pair cables. The core can of course be shielded and jacketed, just jacketed or any other desired cable construction that would benefit from the use of my elongated separator spline.

With my elongated separator spline long and short lay twisted pairs can be ideally placed for maximum electrical advantages. Short lay pairs, which have the best flexibility can be placed across the minor axis of the separator spline. Short lays typically have improved NEXT and the close proximity to

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one another does little to worsen NEXT. The long lay pairs can be placed across the major axis where bending strain is minimized. This overall cable design will bend across the minor axis based on the fact that the "column" will collapse across its minimum integral bending moment axis. The use of my elongated separator spline also improves skew over a similar round design because two unique cabling lay factors are in practice when the twisted pairs are cabled ( minor and major axis). This helps compensate for the pair lengths between the long and short lay pairs equalizing the final conductor lengths which also tends to improve attenuation delta from the minimum lay pair to the maximum lay pair. My spline may be "metalized", or coated with any form of metallic material that will preserve its exterior shape, and substantially improve NEXT while still enhancing the attenuation delta and skew of pairs.

Generally alien NEXT is minimized since the cables "oval" will provide air spacing between parallel cables of any other type. Also there are economies in my spline over the generally used cylindrical splines in that less filler material generally is used in my elongated separator spline than in a round design for equal performance.

The present invention and the advantages thereof will become more apparent upon consideration of the following detailed description when taken in conjunction with the accompanying drawings



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## BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a perspective view of the elongated separator spline of my invention.

FIGURE 2 is a cross-sectional view taken along lines 2-2 of FIGURE 1.

FIGURE 3 is the same as FIGURE 2 except having a shaded portion to define a cross-sectional area.

FIGURE 4 is a cross-section of a twisted pair cable to be used with the spline of FIGURE 1.

FIGURE 5 is perspective view of a cable utilizing my elongated separator spline.

FIGURE 6 is a cross-section view taken along lines 6-6 of FIGURE 5.

FIGURE 7 is a perspective view of another cable utilizing my elongated separator spline.

FIGURE 8 is a perspective view of still another cable utilizing my elongated separator spline.

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FIGURE 9 is a perspective view of a further cable utilizing my elongated separator spline.

#### DETAILED DESCRIPTION

The following description taken in conjunction with the drawings will further explain the inventive features of my elongated separator spline and cables utilizing my elongated separator spline.

Referring to FIGURES 1 and 2, my elongated separator spline 20 has along its cross-sectional plane a major axis 21 and a minor axis 22. In the preferred embodiment, the minor axis 22 is perpendicular to the major axis 21. The preferred elongated separator spline 20 is shown with four cable pockets 23, 24, 26, and 27. Other oval configurations could have more all less pockets. The pockets 23 and 24 are on the major axis 21 and pockets 27 and 26 are on the minor axis 22. In a preferred embodiment, pockets 23 and 24 have the same cross-sectional area as each other and pockets 26 and 27 have the same cross-sectional area as each other. If desired, they can all have the same cross-sectional area. The cross-sectional area of the pockets as shown in FIGURE 3. These are indicated by the shaded areas 28 and 29.

FIGURE 4 illustrates a cross-section of a twisted pair cable 30 having a pair of conductors 35 with appropriate insulation 35(a). The cable 30 has a circular envelope 31. The cross-sectional area of the twisted pair circular

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envelope 31 is greater than the cross-sectional area of any of the pockets.

Each of the pockets 23 and 24 have a depth 32 and each of the pockets 26 and 27 have a depth 33. The depths 32 and 33 of the pockets is less than the diameter 34 of the twisted pair envelope 31. The cross-sectional depth 32 of the pockets 23 and 24 is less than the cross-sectional depth 33 of the pockets 26 and 27. In a preferred embodiment, each of the cross-sectional areas 28 and 29 is 25% to 75 % of the cross-sectional area of the envelope 31. The preferred elongated separator spline 20 has four longitudinally extending pockets 23, 24, 26 and 27 of two different sizes. However, if it is desired, the sizes of the pocket can all be different depending upon the size of the cables that are to be placed in the pockets. The size of the pockets will scale up or down based on the size of the cable, i.e., 30 (Fig. 4) to be placed in the pocket. If desired, the pockets may even have a depth which is greater than the diameter of the cable pair envelope. The present embodiment's major axis 21, when measured from the inside bases of the pockets 23 and 24, has a length 36 of 0.050 in. to about 0.100 in. The minor axis, when measured from the inside bases of the pockets 26 and 27, has a length 37 of about 0.010 in. to about 0.030 in. The preferred material for the elongated separator spline is any suitable solid or foamed polymer or copolymer depending on the needs of the user for crush resistance, breaking strength, gel fillings, safety, and the need for flame and smoke resistance. In many applications the material will be a polyethylene.

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Referring to FIGURES 5 and 6, there is shown a cable 40, having as its core 44 my elongated separator spline 20 with major axis pockets 23 and 24 each containing a twisted pair cable 42 having a long lay of about 0.5 in. to about 1.5 in. and with minor axis pockets 26 and 27 each containing a twisted pair cable 41 having a short lay of about 0.25 in. to about 0.75 in. The core which contains the elongated separator spline 20 and the cables 41 and 42 in the pockets as shown in FIGURES 5 and 6, is surrounded by a jacket 43 which was extruded thereover. The jacket 43 can be any suitable jacket material normally utilized such as anyone of the following which also may be foamed on non-foamed i.e. polyvinyl chloride, fluorinated polymers, polyethylene, the flame retardant compositions, etc. The twisted pair cables 41 and 42 are the same construction as the twisted pair cable 30.

Referring to FIGURE 7 there is shown a cable 50 having the same construction as the cable 40 except it has shield 51 wrapped around the core 44. The shield 51 may be any suitable shield such as an aluminum tape, BELDFOIL, DUOFOIL, or any suitable metal tape. The shield 51 is generally laterally wrapped around the core 44 and then the jacket 43 is extruded around the shield. Although the shield is shown as a lateral wrapped tape, it can be a helically wound tape. A drain wire (not shown) can be inserted into the cable 50 if desired.

Referring to FIGURE 8, there is shown a cable 60 using a drain wire 61. The

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cable 60 has the same construction as the cable 50 except in this embodiment of the drain wire 61 is helically wrapped around the lateral shield 51 for the dual purpose of being a drain wire and to hold the lateral shield 51 in place. The jacket 43 is then extruded over the shield 51 and drain wire 61.

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Referring to FIGURE 9, there is shown still another cable 70 having the same construction as the cable 50 except it uses a drain wire 71 having a gentle wrap around the lateral shield 51. The jacket 43 is then extruded over the shield 51 and drain wire 71.

The drain wires 61 and 71 are generally made with tinned copper, tinned aluminum, etc.

The size of the twisted pair cables 41 and 42 are generally about 24AWG. to about 22AWG.

The conductors 35 for the twisted pair cables are generally copper, tinned copper, or an appropriate bronze and these are generally insulated with a foamed or non-foamed insulation 35(a) of polyethylene, polypropylene, fluorinated ethylene propylene, tetrafluoroethylene, polyvinyl chloride, etc.

Although I have described my elongated spline as having four pockets, the spline may have more or less pockets.

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It will, of course, be appreciated that the embodiments which have just been described have been given by way of illustration, and the invention is not limited to the precise embodiments described herein. Various changes and modifications may be effected by one skilled in the art at without departing from the scope or spirit of the invention as defined in the appended claims.

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**I CLAIM**

1. A cable separator spline comprising:

a longitudinally extending spline having a plurality of spaced longitudinally extending open pockets,

a cross-section of said spline having a major axis and a minor axis,

at least one pocket being on the major axis, and

at least one pocket being on the minor axis.

2. The spline of claim 1 wherein,

said major axis is substantially perpendicular to said minor axis, and

each of said pockets longitudinally extending substantially parallel to each other.

3. The spline of claim 2 wherein,

each of said pockets have a cross-sectional area which is 75 % or less than a cross-sectional area of a circular envelope of a cable to be placed in said pocket.

4. The spline of claim 1 wherein,

said spline has first, second, third, and fourth spaced longitudinally extending open pockets,

a cross-section of said spline having a major axis and a minor axis,

said first and second pockets having substantially the same cross-sectional area, and

said third and fourth pockets having substantially the same cross-sectional area.

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5. The spline of claim 4 wherein,

said major axis is substantially perpendicular to said minor axis,

said third and fourth pockets having substantially the same cross-sectional area,

5 said first, second, third, and fourth pockets longitudinally extending substantially parallel to each other, and

each of said pockets have a cross-sectional area which is 75 % or less than a cross-sectional area of a circular envelope of a cable to be placed in said pocket.

6. The spline of claim 5, wherein

said first and second pockets having a depth greater than a depth of said third and fourth pockets, and

each of said pockets have a cross-sectional area of about 25% to 75 % the cross-sectional area of the circular envelope of the cable to be placed in said pocket.

7. A communication cable comprising:

a cable core surrounded by a jacket,

said cable core having

20 a longitudinally extending spline having first, second, third, and fourth spaced longitudinally extending open pockets for separating four twisted pair cables,

a cross-section of said spline having a major axis and a minor axis,

said major axis being substantially perpendicular to said minor axis,

25 said first and second pockets been diametrically spaced from each other and being on the major axis,

a twisted pair cable having a long lay being in each of said first and second pockets,

said third and fourth pockets been diametrically spaced from each other and being on the minor axis,

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a twisted pair cable having a shot lay being in each of said third and fourth pockets,

said first and second pockets having substantially the same cross-sectional area,

5 said third and fourth pockets having substantially the same cross-sectional area,

each of said first, second, third, and fourth pockets longitudinally extending substantially parallel to each other,

10 said first and second pockets having a depth greater than a depth of said third and fourth pockets, and

each of said first, second, third, and fourth pockets having a cross-sectional area which is 25% to 75% of the cross-sectional area of a circular envelope of the twisted pair cable in said pocket.

8. A communication cable comprising:

a cable core surrounded by a jacket,

said cable core having

a longitudinally extending spline having a plurality of spaced longitudinally extending open pockets,

a cross-section of said spline having a major axis and a minor axis,

20 at least one pocket being on the major axis,

at least one pocket being on the minor axis, and

at least one cable in at least two of said pockets.

9. The communication cable of claim 8 wherein,

25 said major axis is substantially perpendicular to said minor axis, and

each of said pockets longitudinally extending substantially parallel to each other.

10. The communication cable of claim 9 wherein,

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each of said pockets have a cross-sectional area which is 75 % or less than a cross-sectional area of a circular envelope of the cable in said pocket.

11. The communication cable of claim 9 wherein,

said spline has first, second, third, and fourth spaced longitudinally extending open pockets,

a cross-section of said spline having a major axis and a minor axis,

said first and second pockets having substantially the same cross-sectional area, and

said third and fourth pockets having substantially the same cross-sectional area.

12. The communication cable of claim 11 wherein,

said major axis is substantially perpendicular to said minor axis,

said third and fourth pockets having substantially the same cross-sectional area,

said first, second, third, and fourth pockets longitudinally extending substantially parallel to each other,

a twisted pair cable having a cross-sectional area of a circular envelope being in each of said pockets, and

each of said pockets having a cross-sectional area which is 75 % or less than the cross-sectional area of the circular envelope of the twisted pair cable in said pocket.

13. The communication cable of claim 12, wherein

said first and second pockets having a depth greater than a depth of said third and fourth pockets, and

each of said pockets have a cross-sectional area of about 25% to 75 % the cross-sectional area of the circular envelope of the cable in said pocket.

14. The communication cable of claim 10, wherein

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a shield surrounds said core and said jacket surrounds the shielded core.

15. The communication cable of claim 11, wherein

a shield surrounds said core and said jacket surrounds the shielded core.

16. The communication cable of claim 13, wherein

a shield surrounds said core and said jacket surrounds the shielded core.

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JUAN PABLO PIEDRAHITA AGUILERA  
TRADUCTOR E INTERPRETE OFICIAL  
C. IDONEIDAD 045  
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# **ABSTRACT**

A cable separator spline and a cable containing the cable separator spline in its core. The spline extends longitudinally and has a plurality of spaced longitudinally extending open pockets in which cables, such as twisted pair cables, can be placed and form part of the core. A cross-section of the spline has a major axis and a minor axis with the major axis being longer than the minor axis. At least one and preferably at least two pockets are on the major axis, and at least one and preferably at least two pockets are on the minor axis. The core containing the twisted pair cables in the pockets can of course be shielded and jacketed, just jacketed or any other desired cable construction that would benefit from the use of my elongated separator spline.

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**DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled A CABLE SEPARATOR SPLINE, the specification of which:

☒ is attached hereto.

was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_

and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

**PRIOR FOREIGN APPLICATION(S)**

|         |        |            | Priority Claimed |       |
|---------|--------|------------|------------------|-------|
| Country | Number | Date Filed | Yes              | No    |
| _____   | _____  | _____      | _____            | _____ |

I hereby claim the benefit under Title 35, United States Code Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which

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occurred between the filing date of the prior application and the national or PCT international filing date of this application.

| <u>Application Serial No.</u> | <u>Filing Date</u> | <u>Status</u> |
|-------------------------------|--------------------|---------------|
|                               |                    |               |

And I hereby appoint Robert F. I. Conte, Registration No. 20,354, Thomas E. Smith, Registration No. 18,243, Dennis M. McWilliams, Registration No. 25,195, James R. Sweeney, Registration No. 18,721, William M. Lee, Jr., Registration No. 26,935, Glenn W. Ohlson, Registration No. 28,455, David C. Brezina, Registration No. 34,128, Jeffrey R. Gray, Registration No. 33,391, Timothy J. Engling, Registration No. 39,970, Gerald S. Geren, Registration No. 24,528, Peter J. Shakula, Registration No. 40,808, William J. Lenz, Registration No. 44,208, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith. It is requested that all communications be directed to:

Robert F. I. Conte  
LEE, MANN, SMITH, MCWILLIAMS, SWEENEY & OHLSON  
P.O. Box 2786  
Chicago, Illinois 60690-2786  
telephone number (312) 368-1300  
e-mail rconte@intelpro.com

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor: <sup>M. A. J.</sup> Galen M. Gareis

Signature Galen M. Gareis Date OCTOBER 26, 1999

Country of Residence: United States of America

Country of Citizenship: United States of America

Post Office and Residence Address: 420 South 19<sup>th</sup> Street,  
Richmond, Indiana 47374

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FIG 1

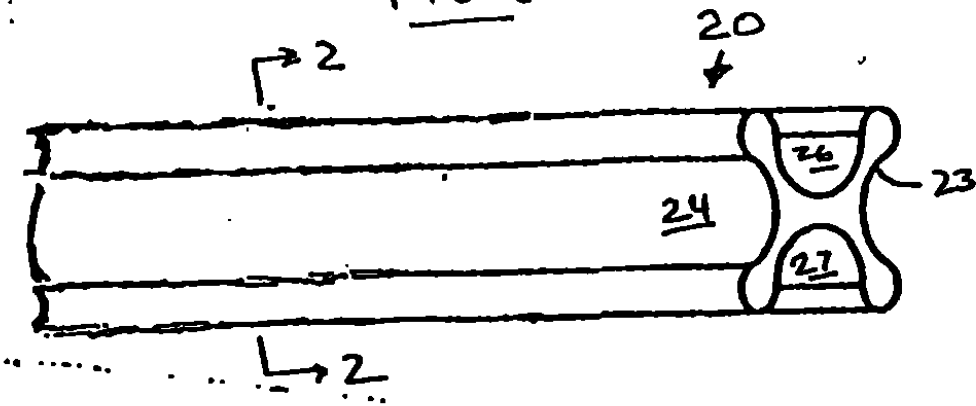


FIG 2

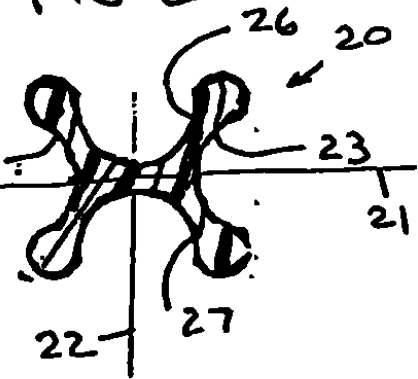


FIG 3

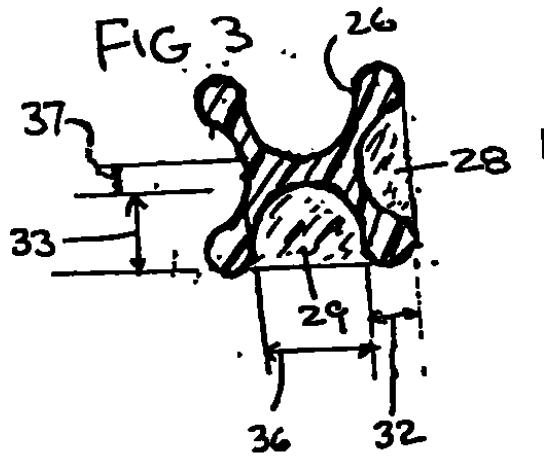


FIG 4

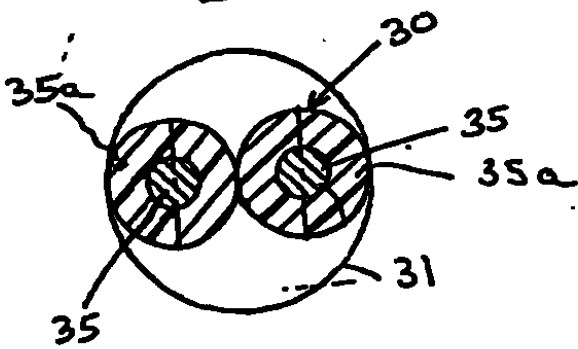


FIG 6

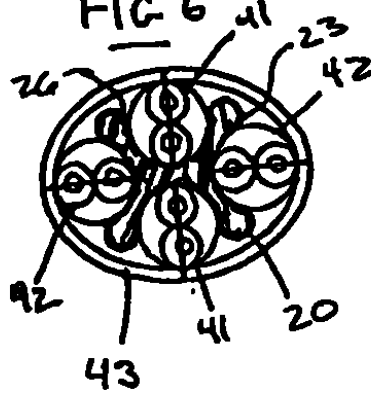


FIG 5

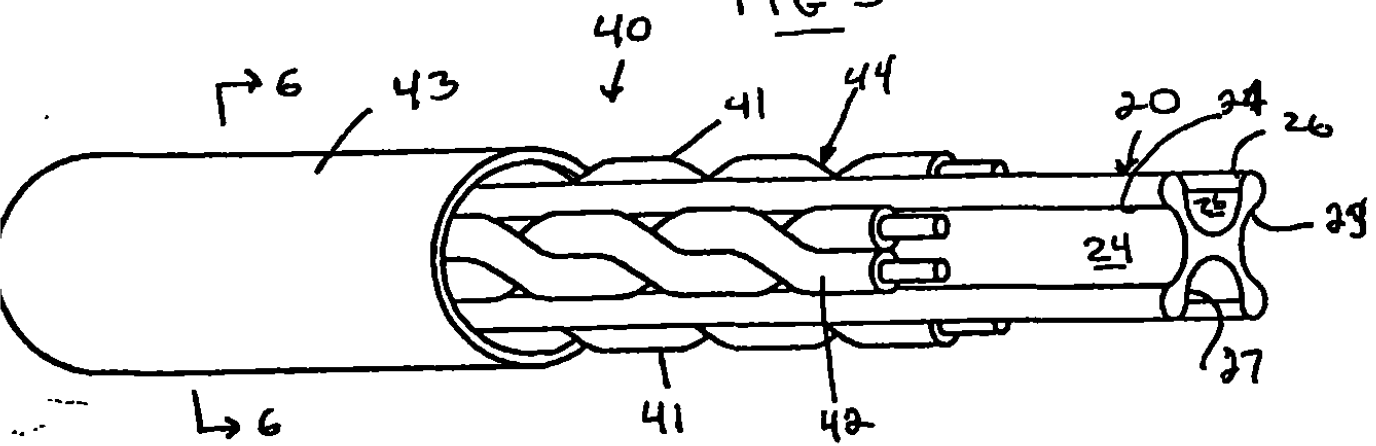


FIG 7

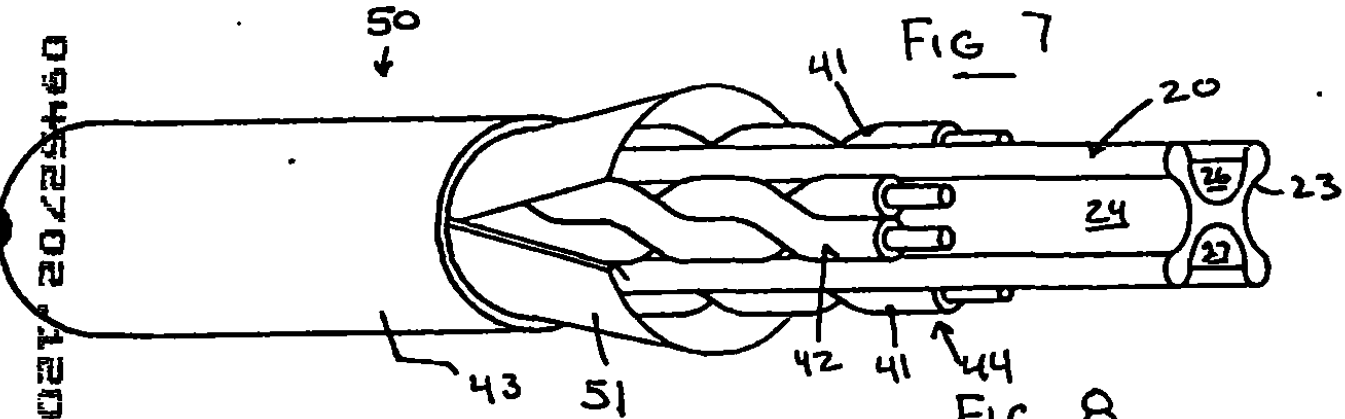


FIG 8

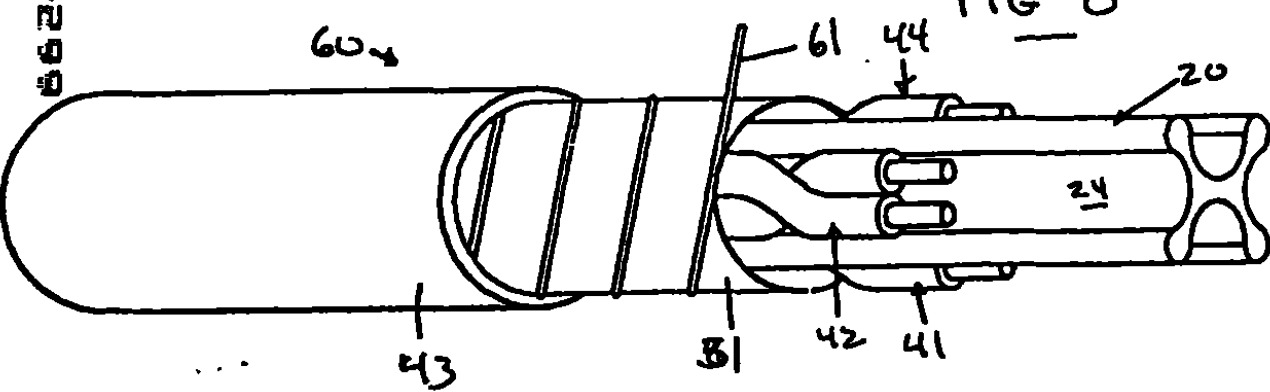
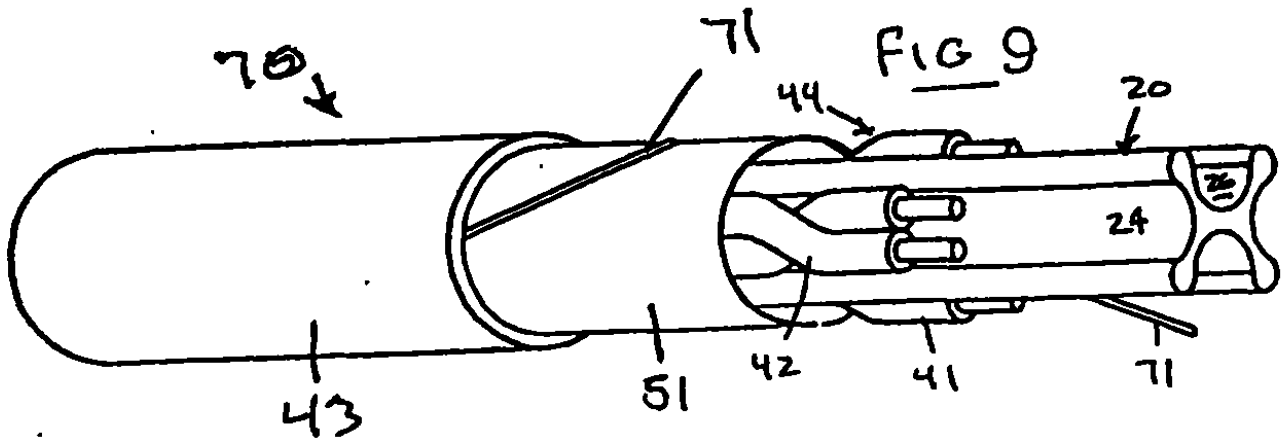


FIG 9



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Se traduce una solicitud de patente de modelo de utilidad, el certificado de la oficina de patentes y marcas y el correspondiente capítulo reivindicatorio.

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**ESTADOS UNIDOS DE AMERICA**

**A TODOS A QUIENES ESTOS PRESENTES LLEGAREN:**

**DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS**

**OFICINA DE PATENTES Y MARCAS DE LOS ESTADOS UNIDOS**

***Julio 31 de 2000***

**POR EL PRESENTE CERTIFICO QUE ADJUNTA SE ENCUENTRA UNA COPIA FIEL DE LOS ARCHIVOS DE LA OFICINA DE PATENTES Y MARCAS DE LOS ESTADOS UNIDOS DE AMÉRICA DE LOS DOCUMENTOS DE LA SOLICITUD DE PATENTE IDENTIFICADOS ABAJO Y QUE CUMPLIERON CON LOS REQUISITOS PARA QUE SE LES OTORGARA UNA FECHA DE PRESENTACIÓN BAJO EL CÓDIGO DE COMERCIO DE LOS ESTADOS UNIDOS DE AMÉRICA TÍTULO 35 SECCIÓN 111.**

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TRADUCTOR E INTERPRETE OFICIAL  
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UNIVERSIDAD NACIONAL DE COLOMBIA

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NÚMERO DE SOLICITUD: 09/452,702

FECHA DE PRESENTACIÓN: Diciembre 02, 1999

Por autoridad del

COMISARIO DE PATENTES Y MARCAS

(Firmado.)

H. PHILLIPS

Funcionario que Certifica

(SELLO DE OBLEA DE LA OFICINA DE PATENTES Y MARCAS DE LOS  
ESTADOS UNIDOS DE AMÉRICA)

(Al margen, Códigos de Barras jc674 Oficina de Patentes y Marcas de los  
EE.UU.12/02/99)

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**AL COMISARIO ASISTENTE DE PATENTES**

Transmitido aquí para presentación bajo 35 U.S.C. 111 y 37 C.F.R. 1.53 es una solicitud de patente de:

**Galen M. Gareis**

Para: **UNA ESTRÍA SEPARADORA DE CABLE**

Adjunto están:

- ☒ Certificado de correo con Correo Expreso etiqueta No. **EL 350752 085 US**
- ☒ Dos hojas de dibujos
- ☐ Una copia certificada de una solicitud \_\_\_\_\_
- ☒ Declaración ☒ Firmada ☐ Sin firmar
- ☒ Poder
- ☐ Declaración de la información divulgada
- ☐ Correcciones preliminares
- ☒ Otro: Cesión y hoja de registro de cesión

**REIVINDICACIONES TAL Y COMO FUERON PRESENTADAS**

| Para                                                                                | # Presentadas | # Admitidas | # Adicionlaes | Tarifa    | Derechos |
|-------------------------------------------------------------------------------------|---------------|-------------|---------------|-----------|----------|
| Total de Reivindicaciones                                                           | 16            | -20=        | 0             | X \$18.00 | \$0.00   |
| Reivindicaciones Independientes                                                     | 3             | -3=         | 0             | X \$78.00 | \$0.00   |
| Reivindicaciones dependientes múltiples (marcar si aplica) <input type="checkbox"/> |               |             |               |           | \$0.00   |
| TARIFA BÁSICA                                                                       |               |             |               |           | \$760.00 |
| TARIFA TOTAL DE PRESENTACION                                                        |               |             |               |           | \$760.00 |

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|                                         |                                                                                                                                                                                               |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/>                | Se adjunta un cheque por valor de \$800.00 para cubrir los derechos de presentación                                                                                                           |
| <input checked="" type="checkbox"/>     | El comisionado por el presente está autorizado para cargar y acreditar la cuenta de depósito No. 12-0913 tal como se describe a continuación. Se adjunta una copia en duplicado de esta hoja. |
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| <input type="checkbox"/>                | Cargar la tarifa de emisión fijada en 37 C.F.R. 1.18 al momento del envío de la notificación de otorgamiento, según 37 C.F.R. 1.311(b).                                                       |
| Fecha: DICIEMBRE 2, 1999 _____(en       |                                                                                                                                                                                               |
| blanco)_____                            |                                                                                                                                                                                               |
| Firma                                   |                                                                                                                                                                                               |
| Robert F. I. Conte                      |                                                                                                                                                                                               |
| Lee, Mann, Smith, McWilliams, Sweeney & |                                                                                                                                                                                               |
| Ohlson                                  |                                                                                                                                                                                               |
| 209 S. LaSalle St., Ste 410             |                                                                                                                                                                                               |
| Chicago, IL 60604                       |                                                                                                                                                                                               |
| 312-368-1300                            |                                                                                                                                                                                               |
| Registro No.: 20,354                    |                                                                                                                                                                                               |
| cc:                                     |                                                                                                                                                                                               |

PC1LARGE/REV08

Yo Reivindico:

1. Una estría separadora de cable que comprende:  
una estría que se extiende longitudinalmente que tiene una pluralidad de bolsillos abiertos espaciados que se extienden longitudinalmente,
- 5 una sección transversal de dicha estría que tiene un eje mayor y un eje menor, por lo menos un bolsillo sobre el eje mayor, y

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por lo menos una bolsa sobre el eje menor.

2. La estría de la reivindicación 1 en donde,

dicho eje mayor está substancialmente perpendicular a dicho eje menor, y

cada una de dichos bolsillos que se extienden longitudinalmente están

5 substancialmente paralelos entre sí.

3. La estría de la reivindicación 2 en donde,

cada uno de dichos bolsillos tiene un área de sección transversal la cual es 75%

o menor que el área de sección transversal del recubrimiento circular de un

cable que se colocará en dicho bolsillo.

10 4. La estría de la reivindicación 1 en donde,

dicha estría tiene un primer, segundo, tercer y cuarto bolsillos abiertos

espaciados que se extienden longitudinalmente,

una sección transversal de dicha estría que tiene un eje mayor y un eje menor,

dichos primer y segundo bolsillos tienen substancialmente la misma área de

15 sección transversal, y

dichas tercer y cuarto bolsillos tienen substancialmente la misma área de sección transversal.

5. La estría de la reivindicación 4 en donde,

dicho eje mayor es substancialmente perpendicular a dicho eje menor,

20 dichos tercer y cuarto bolsillos tienen substancialmente la misma área de sección transversal,

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dichos primer, segundo, tercer y cuarto bolsillos se extienden longitudinalmente substancialmente paralelos entre sí, y

cada una de dichos bolsillos tiene un área de sección transversal la cual es 75% o menor que un área de sección transversal de un recubrimiento circular de un cable que se colocará en dicho bolsillo.

6. La estría de la reivindicación 5, en donde

dichos primer y segundo bolsillos tienen una profundidad mayor que la profundidad de dichos tercer y cuarto bolsillos, y

cada una de dichos bolsillos tiene un área de sección transversal de aproximadamente 25% a 75% del área de sección transversal de un recubrimiento circular de un cable que se colocará en dicho bolsillo.

7. Un cable de comunicación que comprende:

un núcleo de cable rodeado por una chaqueta,

dicho núcleo de cable tiene

una estría que se extiende longitudinalmente que tiene un primer, segundo, tercer y cuarto bolsillos abiertos que se extienden espaciados longitudinalmente para separar cuatro pares trenzados de cables ,

una sección transversal de dicha estría que tiene un eje mayor y un eje menor,

dicho eje mayor está substancialmente perpendicular a dicho eje menor,

dichos primer y segundo bolsillos estando espaciadas diametralmente entre sí y sobre el eje mayor,

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un par trenzado de cable que tiene un paso largo estando en cada uno de dichos primer y segundo bolsillos,

dichos tercer y cuarto bolsillos estando espaciadas diametralmente entre sí y sobre el eje menor,

5 un par trenzado de cable que tiene un paso corto estando en cada una de dichos tercer y cuarto bolsillos,

dichos primer y segundo bolsillos teniendo substancialmente la misma área de sección transversal,

10 cada una de dichos primer, segundo, tercer y cuarto bolsillos se extienden longitudinalmente substancialmente paralelas entre sí,

dichos primer y segundo bolsillos que tienen una profundidad mayor a la profundidad de dichos tercer y cuarto bolsillos, y

15 cada una de dichos bolsillos tiene un área de sección transversal de aproximadamente 25% a 75% del área de sección transversal de un cubrimiento circular del par de cable trenzado en dicho bolsillo.

8. Un cable de comunicación que comprende:

un núcleo de cable rodeado por una chaqueta,

dicho núcleo de cable tiene

20 una estría que se extiende longitudinalmente que tiene una pluralidad de bolsillos abiertos espaciados que se extienden longitudinalmente,

una sección transversal de dicha estría tiene un eje mayor y un eje menor,

por lo menos un bolsillo en el eje mayor,

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por lo menos un bolsillo en el eje menor, y  
por lo menos un cable en por lo menos dos de dichos bolsillos.

9. El cable de comunicación de la reivindicación 8 en donde,  
dicho eje mayor está substancialmente perpendicular a dicho eje menor, y  
5 cada una de dichos bolsillos se extienden longitudinalmente  
substancialmente paralelas entre sí.

10. El cable de comunicación de la reivindicación 9 en donde,  
cada uno de dichos bolsillos tiene un área de sección transversal la cual es 75%  
o menor que un área de sección transversal de un cubrimiento circular del cable  
10 en dicha bolsa.

11. El cable de comunicación de la reivindicación 9 en donde,  
dicha estría tiene un primer, segundo, tercer y cuarto bolsillos abiertos  
espaciados que se extienden longitudinalmente,  
una sección transversal de dicha estría que tiene un eje mayor y un eje menor,  
15 dichos primer y segundo bolsillos substancialmente con la misma área de sección  
transversal, y  
dichos tercer y cuarto bolsillos substancialmente con la misma área de sección  
transversal.

12. El cable de comunicación de la reivindicación 11 en donde,  
20 dicho eje mayor es substancialmente perpendicular a dicho eje menor,  
dichos tercer y cuarto bolsillos tienen substancialmente la misma área de sección  
transversal,



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dichos primer, segundo, tercer y cuarto bolsillos se extienden longitudinalmente substancialmente paralelas entre sí,

un par trenzado de cable que tiene un área de sección transversal de un cubrimiento circular estando en cada uno de dichos bolsillos, y

5 cada uno de dichos bolsillos con un área de sección transversal la cual es 75% o menor que un área de sección transversal de un cubrimiento circular de un cable que se coloca en dicho bolsillo.

13. El cable de comunicación de la reivindicación 12, en donde  
10 dichos primer y segundo bolsillos tienen una profundidad mayor a la profundidad de dichos tercer y cuarto bolsillos, y

cada uno de dichos bolsillos tiene un área de sección transversal de , aproximadamente 25% a 75% del área de sección transversal de un cubrimiento circular de un cable que se coloca en dicha bolsa.

14. El cable de comunicación de la reivindicación 10, en donde una coraza  
15 rodea dicho núcleo y dicha chaqueta rodea el núcleo acorazado.

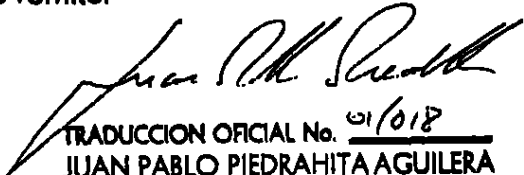
15. El cable de comunicación de la reivindicación 11, en donde una coraza rodea dicho núcleo y dicha chaqueta rodea el núcleo acorazado.

16. El cable de comunicación de la reivindicación 13, en donde una coraza rodea dicho núcleo y dicha chaqueta rodea el núcleo acorazado.

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ES TRADUCCIÓN FIEL Y COMPLETA de la cual se deja copia en los archivos de esta oficina para su confrontación y a la cual me remito.

Bogotá, 29 de enero de 2001.

  
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