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Humphries

[11] **3,778,994**

[45] **Dec. 18, 1973**

[54] **CORROSION RESISTANT WIRE ROPE AND STRAND**

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[21] Appl. No.: **278,413**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 112,211, March 30, 1971, Pat. No. 3,681,911, which is a continuation-in-part of Ser. No. 850,148, Aug. 14, 1969, abandoned.

[52] **U.S. Cl.** **57/149**, 57/162

[51] **Int. Cl.** **D07b 1/16**

[58] **Field of Search** 57/35, 139, 144, 57/149, 153, 156, 160, 162, 164

[56] **References Cited**

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[57] **ABSTRACT**

A wire rope or strand is provided with a plastic foam type internal sealant and corrosion resistant outer strands or wires to provide superior corrosion resistance at low cost for wire strands and ropes requiring a bare metal surface.

15 Claims, 12 Drawing Figures

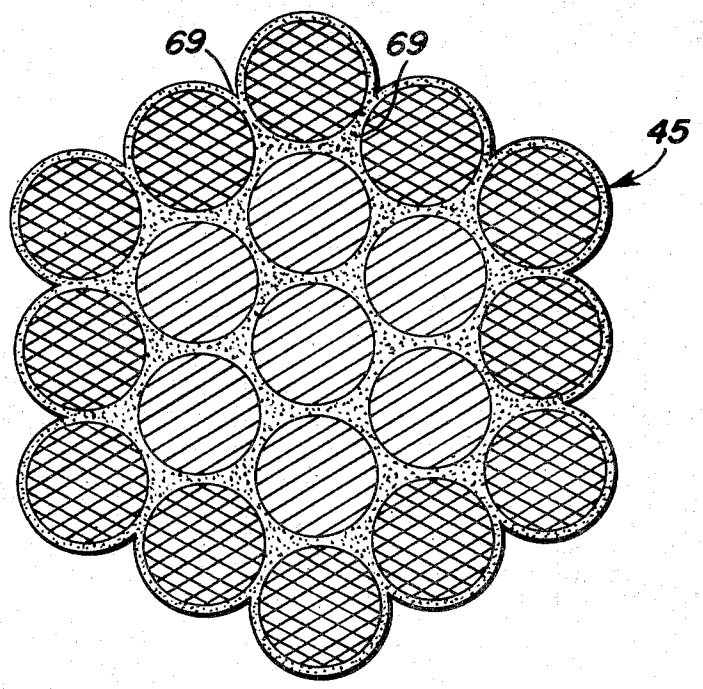


Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

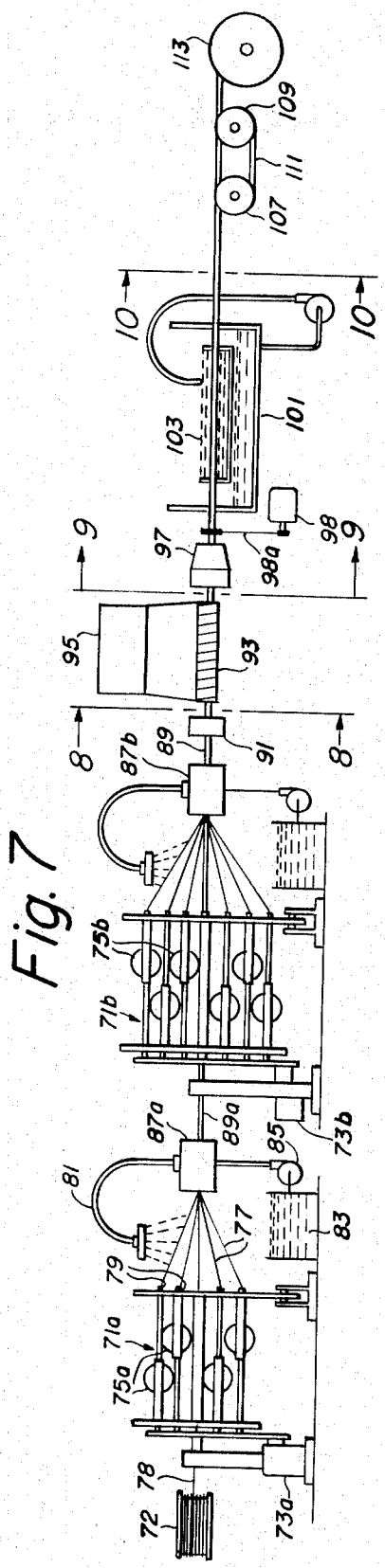


Fig. 7

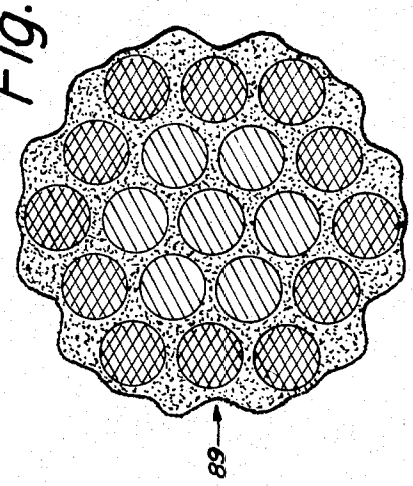


Fig. 9

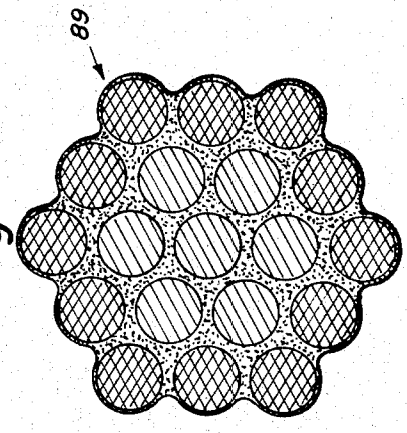


Fig. 8

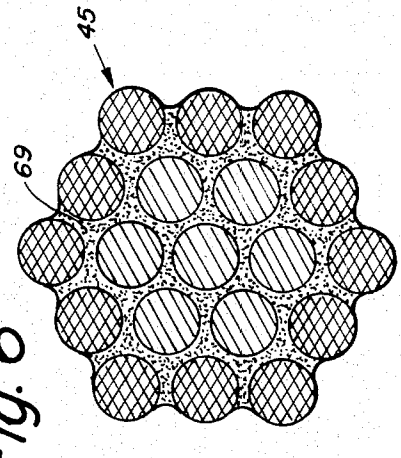


Fig. 6

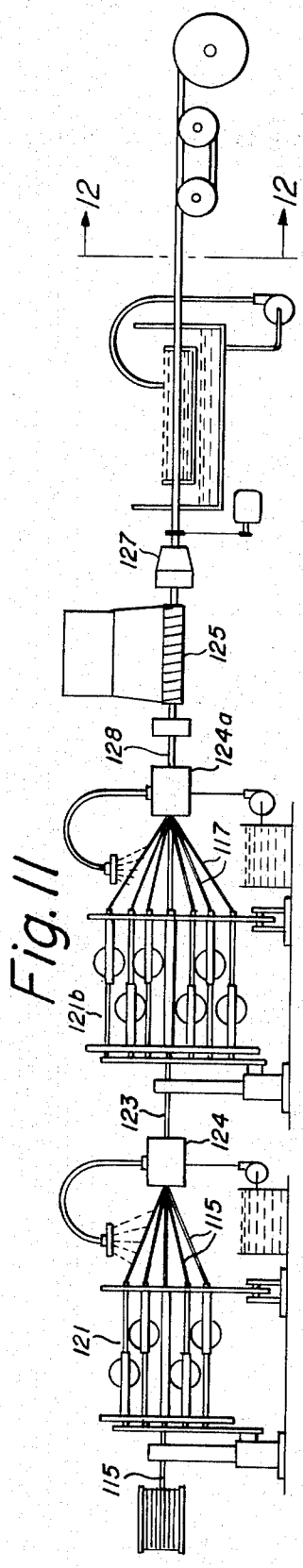


Fig. 11

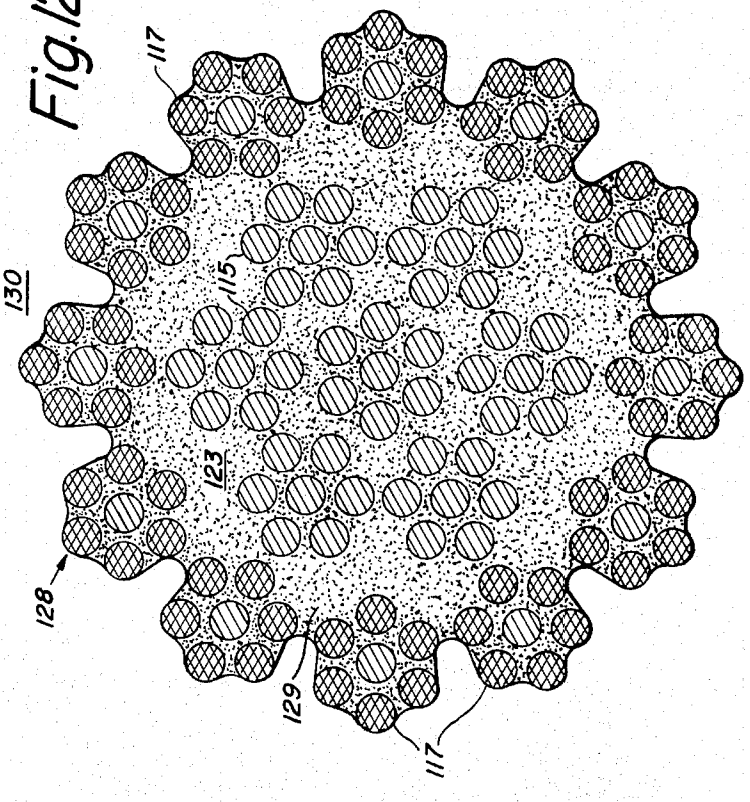


Fig. 12

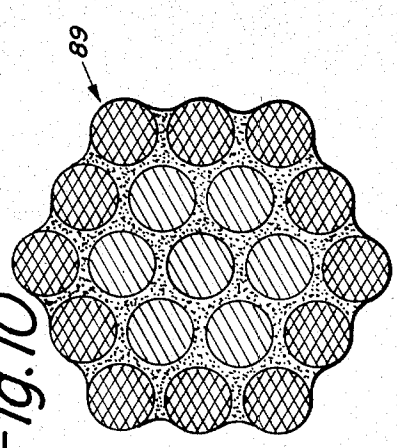


Fig. 10

CORROSION RESISTANT WIRE ROPE AND STRAND

CROSS-REFERENCES TO RELATED APPLICATIONS

This application is a continuation-in-part of U. S. application Ser. No. 112,211 filed Mar. 30, 1971, now U.S. Patent Number 3,681,911, which was in turn a continuation-in-part of U. S. application Ser. No. 850,148 filed Aug. 14, 1969, now abandoned.

BACKGROUND OF THE INVENTION

This invention relates to the sealing of wire rope and strand for protection against corrosive environments.

Steel wire ropes and strands are subject to internal and external corrosion of the component wires due to entrapment of water and other corrosive agents within the structure of the strands between the individual wires and because of the action of corrosive agents such as moisture upon the surface wires of the wire strand or wire rope.

Various expedients have been used to bar the entrance of the water and moisture into the interior of wire strand and rope including the provision of heavy lubricants,external plastic coatings and encapsulation of the individual wires, strands, or even an entire wire rope, in solid plastic sheaths. Lubricants are soon lost from an otherwise unprotected rope or strand. External coatings and sheaths are subject to wear and upon rupture of the sheath at any point will admit moisture into the entire strand or rope. Solid encapsulation of a wire rope or strand, on the other hand, not only makes the rope or strand structure too stiff and inflexible for many uses but is also difficult to attain.

Encapsulation of individual wires prior to fabrication also may result in considerable stiffening of a rope subsequently fabricated from the wires and the wire density in the rope is undesirably reduced by the additional thickness of the plastic. In addition the corrosion protection afforded to the wires by the plastic polymer coating is lost if the coating is damaged during rope or strand manufacture, a rather common occurrence. In many applications in addition it is necessary for the external wires of the strand or rope to be inspected periodically and any plastic coating over the wires would interfere with such inspection. While clear plastics are available through which the wires of the strand could be observed such plastics are either subject to degradation by light or otherwise not corrosion resistant or are not sufficiently flexible for application to working wire ropes and strands.

The individual wires of wire ropes have also been coated with metals such as zinc and aluminum to prevent corrosion. While such coatings are quite effective for a time, the coating tends to wear, particularly in the internal portions of the strand or rope where the individual wires rub against each other and such coatings are in addition rather costly. The individual wires of the rope or strand have also been made from corrosion resistant materials such as stainless steel, but such material is expensive and also may not always have properties suitable for construction of certain types of wire strands and ropes due to brittleness or the like of the stainless material, especially after aging.

Various expedients have been tried to alleviate the foregoing difficulties but none has heretofore been completely successful. The present invention prevents

the entrance into and migration of moisture and other corrosive agents in liquid or vapor form through a wire rope or strand and at the same time presents a durable wear resistant as well as corrosion resistant surface upon the strand while avoiding the foregoing disadvantages of the prior art.

SUMMARY OF THE INVENTION

In the practice of the present invention a wire strand or a series of wire strands are initially fabricated in a conventional manner with ferrous wires of appropriate size and composition located in the interior portions of the strand but with corrosion resistant wires such as, for instance, galvanized, aluminized or stainless steel wires disposed upon the surface of the strand in place of the usual ferrous wires. If a rope is to be made a series of such strands are then stranded into the outer portions of a wire rope. The wire strand or rope (if a rope has been made) is then impregnated or treated with a heat foamable plastic composition and the body of the strand or rope is heated to expand the plastic into a substantially closed cell plastic foam. The plastic foam is preferably wiped from the surface of the strand either before or after hardening, or alternatively a fairly thin layer of plastic foam may be left on the surface of the strand or rope. The plastic foam is light and flexible, prevents the entrance and migration of moisture into and through the internal portions of the wire rope or strand, provides a cushion for the individual wires or strands and does not significantly decrease the wire density in the wire strand or rope. The corrosion resistant surface wires of the single strand or the series of outer strands of a wire rope, on the other hand, provides a hard durable and corrosion proof outer surface to the wire strand. Thus while the outer corrosion resistant wires of the strand or strands provide surface corrosion for the wire strand or rope, the plastic foam sealant, which is closely adherent to the back or interior surfaces of the corrosion resistant wires and to the circumferential surfaces of the inner wires, prevents the admission of moisture or other corrosive agents into the interior of the wire strand or rope when it might corrode the internal wires of the strand or rope. The plastic foam also acts as a vibration damper when the wire rope or strand is subjected to fluctuating loads in service. The plastic foam is economical due to the low average density of the plastic filling between the wires and/or strands of the strand or rope. Thus the strand or rope is more econmical than a comparable strand or rope composed entirely of corrosion resistant wires, internal corrosion is decreased over that of a conventional corrosion resistant strand or rope since no moisture can gain entrance to and remain for long periods in the interior of the strand or rope and the normal surface of thestrand or rope is exposed or substantially exposed for running over sheaves or the like and for examination or periodic inspection of the surface wires for wear such as is necessary in applications such as ski lift ropes, hoist ropes and strands and the like.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 schematically shows a fabrication line for a parallel wire strand according to the present invention.

FIG. 2 is a cross-sectional elevation of a portion of FIG. 1 showing a plastic coating bath.

FIG. 3 is an enlarged cross-sectional view along 3—3 of FIG. 1.

FIG. 4 is an enlarged cross-sectional view along 4—4 of FIG. 1.

FIG. 5 is an enlarged cross-sectional view along line 5—5 of FIG. 1.

FIG. 6 is an enlarged cross-sectional view along line 6—6 of FIG. 1.

FIG. 7 schematically shows a fabrication line for a twisted wire strand according to the present invention.

FIG. 8 is an enlarged cross-sectional view along line 8—8 of FIG. 7.

FIG. 9 is an enlarged cross-sectional view along 9—9 of FIG. 7.

FIG. 10 is an enlarged cross-sectional view along 10—10 of FIG. 7.

FIG. 11 is a schematic view of a fabrication line for a wire rope according to the present invention.

FIG. 12 is an enlarged cross-sectional view along 12—12 of FIG. 11.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIG. 1 there is shown a parallel wire strand fabrication line adapted for the production of foam filled parallel wire strand having corrosion resistant outer wires disposed just under a thin outer skin of plastic or, alternatively, at the outer surface of the strand.

Four groups of reels 11*a* and 11*b* and 13*a* and 13*b* rotatable in opposite directions are arranged to provide wires 15*a* and 15*b* and 17*a* and 17*b* respectively for fabrication into a parallel wire strand. (For convenience in illustration only a representative sample of reels 11 and 13 are shown.) Wires 15*a*, which are ferrous wires, are guided by guide plates 19 to plastic coating chamber 23 where the wires are coated with a foamable plastic composition. Wires 15*b*, which may be previously galvanized ferrous wires, previously aluminum coated ferrous wires, aluminum wires, stainless steel wires, chromium plated or coated wires, plastic jacketed ferrous wires jacketed with a dense corrosion and abrasion resistant plastic, or any other type of corrosion resistant wires suitable for a particular application, are similarly guided by the guide plates 19 to the plastic coating chamber 23 where the corrosion resistant wires are also coated with a foamable plastic composition. Wires 17*a* and 17*b*, which are respectively ferrous and corrosion resistant wires from reels 13*a* and 13*b*, are in like manner guided to coating chamber 23 by the guide plates 19. The wires 15*a* and 15*b* and 17*a* and 17*b* may be coated in chamber 23 in any convenient manner, but as illustrated the wires are deflected by guide rollers 27 within chamber 23 into and below the surface of a foamable plastic composition 28. See in particular FIG. 2. The plastic coating bath is composed of a suspension or solution of foamable plastic material in a solvent. The wires 15*a*, 15*b*, 17*a* and 17*b* after leaving the plastic coating bath pass through wiping dies 29 located in the side of coating chamber 23 and pass to drying chamber 31 where the foamable plastic composition is firmly dried upon the individual wires by exposure to a low heat to evaporate the solvent from the plastic composition and form a coating 30 of foamable plastic upon the individual wires. As the wires pass from the coating chamber 23 to drying chamber 31 they may be exposed to an air blast from compressed air nozzle 33.

From the drying chamber 31 the wires 15*a* and 17*a* pass through a series of converging lay plates 35, 37 and 39 which direct the two groups of wires into a first stranding die 41. Die 41 may be a roller type die to reduce friction. Lay plates 35, 37 and 39 will desirably have anti-friction surfaces within their guide holes such as polytetrafluorethylene inserts or even roller type bearing surfaces in order not to scrape the solidified foamable plastic coating 30 from the wires.

The wires 15*a* and 17*a* pass from die 41 to an identical die 43. The wires are formed in these two dies into a section 45*a* of a parallel wire strand 45. Meanwhile the wires 15*b* and 17*b* which, as explained previously, are corrosion resistant wires, are led through the outer portions of lay plate 35 and then through a series of lay plates of decreasing size 37*a*, 39*a* and 40 into a second roller die 41*a* where the corrosion resistant wires are laid about the first section 45*a* of the parallel wire strand 45 to form the second operation, or lay 45*b*, of the parallel wire strand 45. The strand 45 may then pass through a second identical die 43*a*.

Preferably dies 41, 41*a*, 43 and 43*a* will have a hexagonal cross-section so as to form a hexagonal parallel wire strand as disclosed in U.S. application Ser. No. 575,038, filed Aug. 26, 1966, now U. S. Pat. No. 3,526,560. The hexagonal shape of the strand 45 aids in obtaining an effective grip upon all the wires of the strand to pull them evenly through the dies and prevent rotation of the wires as taught in the referred to application. It will be understood, however, that the cross-sectional shape of the strand may take other configurations besides hexagonal if the exact disposition of the wires in the strand is not critical in the parallel wires strand being fabricated.

In the dies 41 and 43 and 41*a* and 43*a* the wires of the strand are subjected to a considerable transverse force which deforms the foamable plastic coating 30 on the wires at the contact line between the wires so that the resultant strand has a high wire density with a minimum separation between the bodies of the wires.

From the die 43*a* the strand 45 passes to a mold 47 which may be formed from some dielectric substance such as hard rubber, plastic or other similar composition. Preferably mold 47 is water-cooled through inlet pipe 49 and hose 49*a* and outlet pipe 51 and hose 51*a*. Within the mold the cooling water flows through cooling pipes 50 shown in FIG. 4. Mold 47 has an internal cross-section identical in size and shape with the shape and outside dimensions of the parallel wire strand 45.

Induction heating rings 53 surround the initial sections of the mold 47 to heat the wires of the strand therein to a temperature sufficient to melt the plastic coating 30 on the wires and cause the foaming agent therein to expand the plastic into a plastic foam 55. The heat also causes the plastic material to cure. The strand 45 then passes through the portion 57 of the mold 47 through which the cooling water initially passes and about which no induction heating coils are disposed. The strand 45 and foamed plastic 55 are cooled in this section of the mold to set the plastic. Preferably there is a fair clearance between the side of the mold 47 and the metallic surface of the strand. A fairly thick foamed plastic layer is thus deposited upon the surface of the strand.

Immediately after the strand 45 passes through the mold 47 the strand passes through a series of rotatable wire brushes 56 which serve to strip off the outer layer of plastic foam leaving a bar surface upon the strand. The bare surface is composed primarily of the surfaces of the corrosion resistant wires 15*b* and 17*b*. The newly

solidified plastic foam as it is removed by the brushes **56** tears at the point of closest spacing between the component wires of the strand leaving a bare surface composed of the corrosion resistant wire surfaces upon the strand. The stripped strand **45** is shown in cross section in FIG. **6** after having passed through the wire brushes **56.**

The strand **45** passes from the wire brushes **56** to dies **59** and **61** which are preferably roller type dies, and is wrapped between the dies at spaced intervals along the strand as it passes between the two dies with a plastic tape or other securing means to maintain the shape of the strand. The wrapping may be applied manually or by means of any suitable automatic wrapping machine.

After the wrapped strand passes through die **61** it passes to any suitable catapullar device **63** which serves to pull wires **15** and **17** and the strand **45** from the respective reels and through the previous apparatus. From catapullar **63** the strand passes through a traverse device **65** and is reeled onto a large diameter reel **67.**

As the strand passes through the mold **47** its component internal wires are heated by currents induced in the wires by the induction coils and the plastic composition on the wire foams as shown in cross-section in FIG. **4** and is then cooled into a permanent plastic foam seal **69** between the internal wires of the strand. The wire brushes **56** then completely strip the surface layers of plastic from the strand to expose the corrosion resistant surface wires **15***a* and **15***b* for inspection or the like. If desired the thin layer of foam and the thin surface layer of fairly dense solidified plastic which forms adjacent to the mold surface may be left upon the surface of the underlying corrosion resistant surface wires of the strand **45** to provide additional corrosion protection. In this case the wire brushes **56** are rendered inoperative and preferably the clearance between the inside of the plastic foaming die and the surface of the strand is decreased so that a thinner but denser outer layer of plastic is left upon the surface of the strand.

The plastic foam completely fills the interstices between the wires effectively sealing the strand against the entrance into or migration through the strand of any corrosive agents. The plastic foam **69** is flexible and has little bulk so that it neither interferes with the flexibility of the strand as in reeling upon the reel **67** nor decreases the wire density within the strand significantly. The term "wire density" as used in this application refers to the amount of space in the strand physically occupied by the component wires.

The plastic foam can be of any suitable composition such as a vinyl plastic having an organic nitrogen compound such as azodicarbonamide as a foaming agent. This plastic when heated above the decomposition temperature of the organic nitrogen compound decomposes into nitrogen and carbon dioxide and expands the plastic into a foam. Another suitable composition would be a foamable polyurethane consisting of a thermosetting elastomer filled with expandable plastic beads. When exposed to heat the plastic of the beads softens and an entrapped gas therein expands the plastic into a foam. The polyurethane elastomer matrix provides cross linking. Any other plastic composition which is flexible, tough and adherent to metal may be used with a foaming agent to coat the strand.

A large number of types of corrosion resistant outer wires may be used. For example the outer wires may be solid stainless steel wires or aluminum or aluminum alloy wires among other substances. The corrosion resistant wires may also be constituted by clad or coated ferrous or other wires of various types such as galvanized wire, aluminized or aluminum coated wire, chromium plated or clad wire, a wire coated with a mixture of aluminum and zinc or even a wire coated with an outer coating of an abrasion and corrosion-resistant plastic such as polyurethane elastometer, nylon or high density polyethylene.

Representative combinations of materials which can be used in the above construction include those shown in the following table:

Inner Lay	Outer Lays	Plastic Foam Filler
Carbon steel	Galvanized steel	Flexible vinyl
Do.	stainless steel	Do
Do.	Aluminum alloy	Do.
Do.	Abrasion resistant plastic sheath over metal core	Thermosetting elastometer

A large number of other material combinations are also possible and the outer lays of wires can be surface coated prior to stranding by anodizing, flame spraying, electroplating and other means for special applications.

FIG. **7** is a schematic view of a fabrication line for twisted or helical wire strand made in accordance with the present invention. The particular method of impregnating the strand with plastic foam shown in FIG. **7** and described hereinafter and as well as in some other portions of the present application is the subject of an application for patent by Charles R. Hughes and Hugh S. Graham entitled "Sealed Wire Rope and Strand and Method of Making," which is being filed concurrently herewith. The present inventor makes no claim that any of the inventions covered by the claims of that application are his invention. The present applicant's invention is concerned entirely with a plastic foam impregnated cable having corrosion resistant surface wires and the particular methods of making such a combined impregnated strand as claimed hereinafter.

In FIG. **7** a first layer **71***a* rotatable by a motor **73***a* supports a series of rotatable reels **75***a* each of which has coiled thereupon a ferrous or steel wire **77.** The wires **77,** which may previously have been primed with a material such as a phenolic-acrylic type primer to promote adhesion between the wires of the strand and a later applied vinyl type plastic-foam material, pass through guides **79** mounted in the flyer **71***a* to one end of the flyer where the wires pass through a spray apparatus **81** which sprays a copious amount of a vinyl type foamable plastic-material onto the strands **77.** Excess fluid plastic drops into collection pan **83** below the spray apparatus and is recirculated by the pump **85** through the spray apparatus **81.** Pump **85** also circulates some of the fluid foamable plastic material to a stationary stranding die **87***a* through which the strands **77** pass. The ferrous wires **77** are stranded within die **87***a* around a central wire **78** derived from a reel **72** into a core portion **89***a* of a helical wire strand **89** comprised of the various wires **77** and **78.** As the wires **77** and **78** pass through the first operation stranding die **87***a* chafing and friction between the wires and the die is reduced by the lubricity of the foamable plastic bathing the individual wires **77** as they pass through the stranding die **87***a.*

As the wires **77** pass through the first operation stranding die **87***a* the outside of the resulting wire core strand **89***a* is wiped clean except for any foamable plas-

tic material which may be left in the interstices between the wires **77.**

The wire core strand **89***a* is next passed through the center of a second rotatable flyer **71***b* rotatable by a motor **73***b*. The flyer **71***b* supports a series of rotatable reels **75***b* each of which has coiled thereupon a corrosion resistant wire composed of stainless steel but which could comprise a corrosion resistant wire formed from any other suitable material or composite of materials as explained supra. These corrosion resistant wires are led through the flyer **71***b* as the flying **71***a* and laid around the core strand **89***a* in the die **87***b* as a second operation to form the complete helical strand **89** which is impregnated with a foamable plastic composition in the same manner and by similar apparatus as associated with the stranding die **87***a*. If desired an additional wiping die **91** may be positioned after the stranding die **87***b* to wipe excess foamable plastic from the surface of the strand **89.**

The wire strand **89** is next passed through coil **93** of an induction furnace **95** where the individual wires of the strand **89** are induction heated. The heat from the metal wires is transferred to the plastic material and induces foaming of the plastic due to the gas generated by the foaming agent contained in the plastic when it is exposed to the heat induced by the induction furnace **95.** The strand **89** is completely unconfined during this foaming step.

Before the plastic foam material has hardened or set after the free foaming step in the induction coil **93** the strand **89** is next passed through a rotating die **97** having a special interior orifice matching the spiral outer configuration of the outer wires in the helical strand **89.** As the wire strand passes through the die **97** and die is rotated by a motor **98** through a belt **98A** to allow the rope to pass freely. The die **97** could, if necessary, be rotated by the passage of the helical wire strand through the die **97.** The die **97** is preferably formed from a medium hardness rubber or like material. The central orifice of the die **97** is slightly smaller than the diameter of the wire strand so that the outside of the strand is thoroughly wiped by the inner surfaces of the die as the rope passes therethrough. The die **97** is best positioned very near and preferably within a few inches of the induction foaming coil **93** so that the surface of the strand is wiped clean of foamed plastic material before the plastic has a chance to begin to solidify or cure. After the wiped wire strand passes from the rotating die **97,** it passes immediately through a quench trough **103** of a weir type quench apparatus **101** where the bar corrosion resistant outer wires of the strand are quenched. The quenched metal wires of the strand immediately quench the adjacent foam plastic material so that it cannot extrude, under the pressure of any remaining gas pressure in the foamed plastic, outwardly between the wires onto the surface of the wire strand.

After the wire strand passes from the quench trough **101** it has an adherent internal foam impregnant and a bare surface as seen in FIG. **10.** The bare strand is then passed about the drums **107** and **109** of a capstan **111** and onto a storage or take-up reel **113.**

In FIG. **11** there is shown an apparatus for fabricating a wire rope according to the present invention. This apparatus is substantially similar to the apparatus shown in FIG. **7.** Instead of wires being passed through the various stranding dies, however, to be stranded into a wire strand, wire strands **115** and **117** are passed through the dies to form a wire core rope **128.** The strands **115** are conventional ferrous strands while the strands **117** have been previously made up in a suitable stranding machine such as is shown in the initial portions of FIG. **7** in advance of the plastic impregnation apparatus so as to have an inner core of ferrous wires and an outer layer or operation of corrosion resistant wires.

The strands **115** are first laid up through the action of the initial flyer **121** and stranding die **124** into a wire rope core **123** and the strands **117** from flyer **121***b* are then laid or stranded in stranding die **124***a* about this core **123** to provide an outer layer or operation **130** of strands **117** which have an outer layer in turn of corrosion resistant wires. When the foamable plastic material which has been supplied to the wire rope sections is foamed in the induction coil **125** and impregnates the wire rope **128** with plastic-foam material and the rotating rubber die **127** then wipes the excess surface foam material from the surface of the wire rope, the rope is left with a bare surface composed of corrosion resistant wires and an internal impregnation of foam material as seen in cross section in FIG. **12.** As is the case with the fabrication of impregnated helical wire strand the rubber wiping die **127** has an internal cross section which conforms closely to the outer configuration of but is slightly smaller than the outside dimensions of the wire rope.

I claim:

1. A ferrous wire strand having a flexible plastic foam composition completely filling the interstices between the wires of the strand and adherent to the wires to seal the strand against corrosive agents and moisture and a series of corrosion resistant wires disposed about the outer circumference of said strand and contacting the outer portions of the flexible plastic foam composition.

2. A plastic impregnated wire strand comprising:

a. a plurality of ferrous metal wires stranded together,

b. a flexible plastic foam composition filling the interstices between the wires of the strand and adherent to the wires, and

c. a plurality of corrosion resistant wires disposed about the stranded wires of (*a*).

3. A plastic impregnated wire strand according to claim **2** wherein the wire density of the strand is not substantially less than the wire density of a similar unimpregnated wire strand having identical metallic components and lay arrangement.

4. A wire strand according to claim **3** wherein the corrosion resistant wires are solid metallic wires composed throughout of the corrosion resistant material.

5. A wire strand according to claim **3** wherein the corrosion resistant wires are ferrous wires coated with a corrosion resistant material.

6. A wire strand according to claim **5** wherein the corrosion resistant material is a member of the group consisting of zinc, aluminum, aluminum-zinc, chromium, abrasion resistant plastic and alloys of zinc, aluminum, aluminum-zinc and chromium.

7. A wire strand according to claim **6** wherein the strand is a helical wire strand.

8. A wire strand according to claim **6** wherein the strand is a parallel wire strand.

9. A plastic impregnated wire rope comprising:

a. a plurality of ferrous wire strands stranded together into a core strand,

b. a plurality of wire strands having outer corrosion resistant wires and stranded about the core strand as an outer operation; and

c. a flexible plastic-foam filling the interstices between the wires of the component strands and between the strands in the interior of the rope and adherent to the wires.

10. A plastic impregnated wire rope according to claim **9** wherein the wire density of the component strands of the rope is not substantially less than the wire density of a similar unimpregnated wire strand having identical metallic components and lay arrangements.

11. A plastic impregnated wire rope according to claim **10** wherein the corrosion resistant wires are composed entirely of a corrosion resistant metal.

12. A plastic impregnated wire rope according to claim **10** wherein the corrosion resistant wires are corrosion resistant by virtue of being coated with a corrosion resistant substance.

13. A plastic impreganted wire rope according to claim **12** wherein the corrosion resistant substance is a member of the group consisting of zinc, aluminum, aluminum-zinc, chromium alloys and corrosion and abrasion resistant plastic.

14. A method of fabricating a corrosion resistant plastic-foam impregnated wire strand having corrosion resistant outer wires comprising:

a. forming a core strand of ferrous metallic material,

b. stranding an operation of corrosion resistant wires about the core strand,

c. impregnating the strand with a foamable plastic composition; and

d. foaming the plastic-foam composition to fill all the internal interstices of the strand with a flexible plastic-foam.

15. A method of fabricating a plastic-foam impregnated wire rope having outer corrosion resistant wires comprising:

a. forming a core of ferrous metal strands,

b. stranding an outer operation of wire strands, having corrosion resistant wires stranded about the outer circumference of the strands, about the core of ferrous metal strands,

c. impregnating the wire strands and the wire rope with a foamable plastic composition, and

d. foaming the foamable plastic composition under the influence of induction heating of the component wires of the strands to fill all the internal interstices of the strands and rope with a flexible plastic-foam.

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