

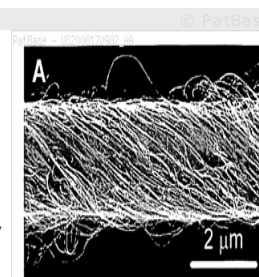
1) Family number: 34194438 (US2008170982A)

FABRICATION AND APPLICATION OF NANOFIBER RIBBONS AND SHEETS AND TWISTED AND NON-TWISTED NANOFIBER YARNS

Abstract: Source: US2008170982A The present invention is directed to methods of making nanofiber yarns. In some embodiments, the nanotube yarns comprise carbon nanotubes. Particularly, such carbon nanotube yarns of the present invention provide unique properties and property combinations such as extreme toughness, resistance to failure at knots, high electrical and thermal conductivities, high absorption of energy that occurs reversibly, up to 13 percent strain-to-failure compared with the few percent strain-to-failure of other fibers with similar toughness, very high resistance to creep, retention of strength even when heated in air at 450 degrees centigrade for one hour, and very high radiation and UV resistance, even when irradiated in air.

Probable Assignee: BOARD OF REGENTS UNIV OF TEXAS SYSTEM

Earliest Publication Date: 20070208



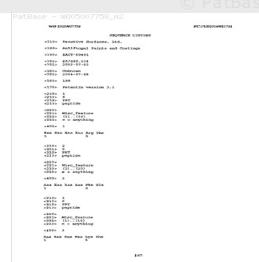
2) Family number: 31485649 (US2005058689A)

ANTIFUNGAL PAINTS AND COATINGS

Abstract: Source: US2005058689A Antifungal and antibacterial peptides, polypeptides and proteins as antifungal additives for paint and other coatings are disclosed, along with antifungal compositions, and coated surfaces with antifungal properties. Methods of using the coatings for treating and/or inhibiting growth of mold, mildew and other fungi and bacteria on objects such as building materials that are susceptible to such infestation are also disclosed.

Probable Assignee: REACTIVE SURFACES LTD LLP

Earliest Publication Date: 20050127



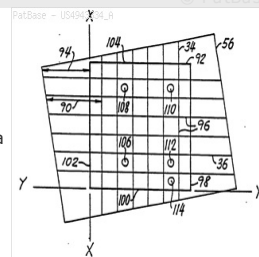
3) Family number: 15027423 (US4943334A)

METHOD FOR MAKING REINFORCED PLASTIC LAMINATES FOR USE IN THE PRODUCTION OF CIRCUIT BOARDS

Abstract: Source: US4943334A A warp-free laminate is produced by winding a first set of strands or filaments about a flat mandrel with a second set of strands being wound transverse to the first set. The two sets may be perpendicular to each other. The filaments are maintained under a controlled tension while being impregnated with a resin and during subsequent cure of the resin. In order to permit the formation of a warp-free product, the winding pattern is such that it forms a mirror image about a neutral axis or plane of symmetry. The winding pattern may be chosen to provide interstices in a predetermined pattern permitting punching out or high speed drilling of hole openings for subsequent printed circuit applications.

Probable Assignee: JONAS MEDNEY

Earliest Publication Date: 19880324



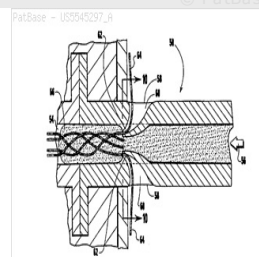
4) Family number: 31985242 (US5545297A)

METHODS FOR CONTINUOUSLY PLACING FILAMENTS WITHIN HYDRAULICALLY SETTABLE COMPOSITIONS BEING EXTRUDED INTO ARTICLES OF MANUFACTURE

Abstract: Source: US5545297A Methods and apparatus for continuously extruding a hydraulically settable mixture and simultaneously placing continuous filaments within the extruding mixture to yield articles having a filament-reinforced, hydraulically settable matrix. The filaments can be placed within the mixtures in a parallel configuration, a helical configuration, or combinations thereof, in order to yield an article having the desired properties of, e.g., tensile strength, flexural strength, hoop strength, burst strength, toughness, and elongation ability. The desired properties of the hydraulically settable mixture, as well as of the cured hydraulically settable matrix of the hardened article, may also be adjusted by including varying amounts and types of aggregates, discontinuous fibers, binders, rheology-modifying agents, dispersants, or other admixtures within the hydraulically settable mixture. Optimizing the particle packing density while including a deficiency of water yields a hydraulically settable mixture which will flow when an extrusion pressure is applied but be form stable upon being extruded.

Probable Assignee: E KHASHOGGI IND LLC

Earliest Publication Date: 19951214



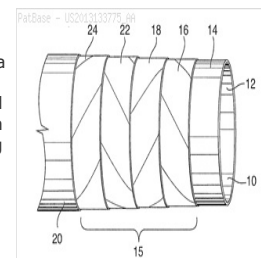
5) Family number: 53800217 (US2013133775A)

FLEXIBLE REINFORCED PIPE AND REINFORCEMENT TAPE

Abstract: Source: US2013133775A A flexible pipe includes: an inner liner formed as a tube and having an outer surface and an inner surface defining an inner diameter; a reinforcement layer bonded to the inner liner and including at least a first ply of reinforcing tape helically wrapped in a first helical direction about the inner liner and a second ply of reinforcing tape helically wrapped about the first ply of reinforcing tape, the second ply of reinforcing tape helically wrapped in a second helical direction opposite to the first helical direction; and an outer jacket applied over and bonded to the reinforcement layer, the outer jacket including a thermoplastic. A reinforcing tape for use in the pipe or other applications includes: a plurality of reinforcing fibers and a matrix about the plurality of reinforcing fibers to hold the reinforcing fibers in the form of a tape, the matrix including thermoplastic and an additive to increase the impact resistance of the thermoplastic

Probable Assignee: SHAWCOR LTD SHAWCOR LTEE

Earliest Publication Date: 20130523



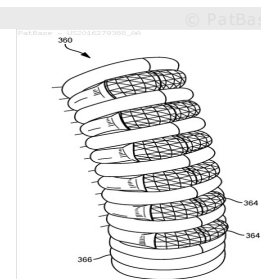
6) Family number: 63664632 (US2016279388A)

ARTICULATION SYSTEMS, DEVICES, AND METHODS FOR CATHETERS AND OTHER USES

Abstract: Source: US2016279388A Articulation devices, systems, methods for articulation, and methods for fabricating articulation structures will often include simple balloon arrays, with inflation of the balloons interacting with elongate skeletal support structures so as to locally alter articulation of the skeleton. The balloons can be mounted to a substrate of the array, with the substrate having channels that can direct inflation fluid to a subset of the balloons. The articulation array structure may be formed using simple planar 3-D printing, extrusion, and/or laser micromachining techniques. The skeleton may comprise a simple helical coil or interlocking helical channels, and the array can be used to locally deflect or elongate an axis of the coil under control of a processor. Liquid inflation fluid may be directed to the balloons from an inflation fluid canister, and may vaporize within the channels or balloons of the articulation system, with the inflation system preferably including valves controlled by the processor. The articulation structures can be employed in minimally invasive medical catheter systems, and also for industrial robotics, for supporting imaging systems, for entertainment and consumer products, and the like.

Probable Assignee: PROJECT MORAY INC

Earliest Publication Date: 20160929



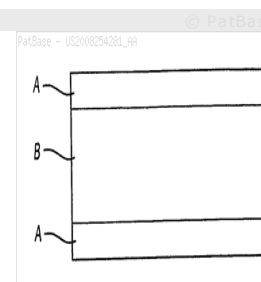
7) Family number: 32879068 (US2008254281A)

MICROLAYER STRUCTURES AND METHODS

Abstract: Source: US2008254281A Improved microlayer structures and methods typically employing at least 4 stacked layers of polymers (e.g., including alternating layers of components A and B), such as that obtained by coextrusion. The layers each have a thickness of less than about 50 microns. One optional approach involves forming an intermediate form that includes at least one elongated member made from the plurality of layers, from which a shaped composite article may be made.

Probable Assignee: DOW GLOBAL TECHNOLOGIES LLC

Earliest Publication Date: 20060504



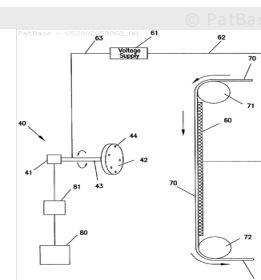
8) Family number: 33539283 (US2002059868A)

AIR FILTER ASSEMBLY FOR FILTERING AN AIR STREAM TO REMOVE PARTICULATE MATTER ENTRAINED IN THE STREAM

Abstract: Source: US2002059868A Filter arrangements for industrial air cleaners include a barrier media, usually pleated, treated with a deposit of fine fiber. The media is particularly advantageous in high temperature (greater than 140 degrees Fahrenheit) operating environments.

Probable Assignee: DONALDSON CO INC

Earliest Publication Date: 20020314



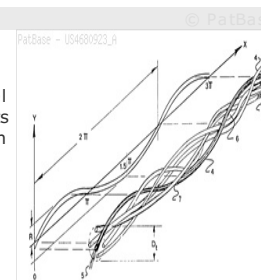
9) Family number: 2763694 (US4680923A)

COMPOSITE TWINE STRUCTURE

Abstract: Source: US4680923A A composite structure comprises at least one ply comprising approximately parallel unidirectional twines comprising helically-configured matrix-impregnated continuous strands of filament reinforcements to provide a flanged composite cantilever spring which serves as the principal constituent of a coupling structure. An interior ply of a coupling structure body member comprises unidirectional longitudinal twines configured at a body member extremity to provide a flange member connected to a cantilever spring. An exterior ply is disposed transversely of and superimposed upon the interior ply to provide the cantilever spring hinge line. The composite cantilever spring can be constructed to deflect about either a straight or curved hinge line. A preferred tubular form of the coupling structure comprises at least one end configured as a polygonal array of flanged cantilever springs which serve as the socket end of a spring-lock coupling used to connect mating flanged spigot-end structures. A preferred segmented form of coupling structure comprises two semi-circular flanged cantilever spring members assembled and deflected by an encircling retaining sleeve. The method and apparatus for making a composite in the form of a preferred coupling structure comprises placing first ply loops of longitudinal twines upon a pin-ended forming surface, transversely placing a second ply of twines upon the first ply twines to deflect them into flange-forming cavities, hardening the twine-impregnating matrix, removing and slotting the flanged spring members to provide the desired coupling structure.

Probable Assignee: CHARLES ROBERT KAEMPEN

Earliest Publication Date: 19861002



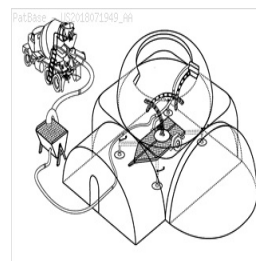
10) Family number: 68878048 (US2018071949A)

METHOD OF REINFORCED CEMENTITIOUS CONSTRUCTION BY HIGH SPEED EXTRUSION PRINTING AND APPARATUS FOR USING SAME

Abstract: Source: US2018071949A The present invention relates to methods and apparatuses for an automated reinforced concrete construction system for onsite slip-form molding and casting a variety of cementitious mixes in a cast in place leave in place externally moldable flexible reinforced containment sleeve providing a wide variety of interchangeable full-scale molding configurations simultaneously optimizing a wide variety of cementitious mix curing characteristics, further having optional internal reinforcement net(s), for layer wise interlocking additive printed brick deposition providing improved slip-form mold casting of a wide variety of reinforced concrete structures; the present invention further includes a variety of operating platforms suitable for on and offsite construction as disclosed herein.

Probable Assignee: ARMATRON SYSTEMS LLC

Earliest Publication Date: 20180315



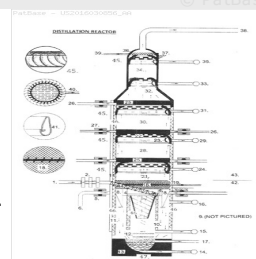
11) Family number: 57414072 (US2016030856A)

DISTILLATION REACTOR MODULE

Abstract: Source: US2016030856A The distillation reactor consists of a reactor apparatus with corresponding method of upstream distilling and purification of carbon based liquid or liquidized streams for use as fuels, lubricating oils and or gaseous energy and electricity production. The distillation reactor consolidates the atmospheric and vacuum distillation processes along with desalting, defueling, deasphalting, fractionation, thin/wiped film evaporation and Hydro finishing into an advanced high velocity, high volume single reactor system. Carbon based feed streams include either a single stream or preferably, a combined stream of liquefied coal slurries, crude oils, spent oils, Pyrolytic oils and or peat or other plant carbon derived liquids, vapors, mists or gases. The method further consists of controlling the mix ratio, flow velocity, sequential fractionation and filtration technology and processing atmospheres of the carbon feeds with the reactor apparatus. The combined apparatus and method allows for a refinery to consistently produce a finished barrel of oil well below traditional costs and at a higher efficiency than current art and prior art.

Probable Assignee: TRANSTAR GROUP LLC

Earliest Publication Date: 20140918



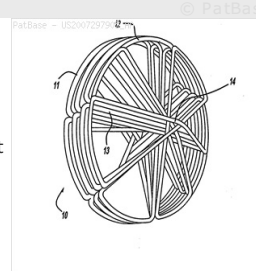
12) Family number: 34174931 (US2007297905A)

WOVEN TURBOMACHINE IMPELLER

Abstract: Source: US2007297905A An impeller is provided that may be used in compressors or turbines. In another aspect of the present invention, a fiber or a bundle of fibers is woven to form at least two blades of an impeller. Yet another aspect of the present invention employs a peripheral component woven around impeller blades. An additional conductive fiber or bundle of fibers is woven into the impeller in a further aspect of the present invention. Moreover, an aspect of the present invention provides a chilling system that includes at least one compressor, at least one wave rotor, and a refrigerant.

Probable Assignee: BOARD OF TRUSTEES OF MICHIGAN STATE UNIV

Earliest Publication Date: 20070201



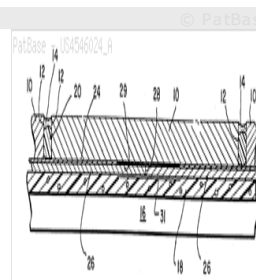
13) Family number: 5012933 (US4546024A)

MODULAR-ACCESSIBLE-TILES PROVIDING ACCESSIBILITY TO CONDUCTORS AND PIPING WITH IMPROVED SOUND ISOLATION

Abstract: Source: US4546024A An array of gravity-held-in-place-load-bearing-horizontal-modular-accessible-tiles, composite-modular-accessible-tiles, and resilient-composite-modular-accessible-tiles with flexible joints between adjacent modular-accessible-tiles in which the flexible joints are cuttable, accessible and resealable to provide accessibility to conductors disposed above or below one or more horizontal-disassociation-cushioning-layers, requiring fluidtight-flexible-assembly-joints between adjacent modular-accessible-tiles to assemble the modular-accessible-tiles by gravity, friction, and accumulated-interactive-assemblage into a floating finished floor array without adhering the modular-accessible-tiles to the horizontal-base-surface. A horizontal-disassociation-cushioning-layer provides accommodation for the thickness variations caused by termination and crossing over of layers of conductors and also provides improved impact sound isolation. An array of gravity-held-in-place-load-bearing-horizontal-modular-accessible-tiles, composite-modular-accessible-tiles, and resilient-composite-modular-accessible-tiles with flexible joints between adjacent modular-accessible-tiles in which the flexible joints are cuttable, accessible and resealable to provide accessibility from the entire top side to a resilient substrate, to horizontal-rigid-foam-insulation or to a three-dimensional-passage-and-support-matrix formed to accept and index varying combinations of electrical conductors, electronic signal and data conductors, fluid energy conductors, fluid conductors, and outlet-junction-boxes. The resilient substrate, horizontal-rigid-foam-insulation or three-dimensional-passage-and-support-matrix provide support for the array of modular-accessible-tiles, composite-modular-accessible-tiles or resilient-composite-modular-accessible-tiles with the cuttable, accessible and resealable fluidtight-flexible-assembly-joints joining the modular-accessible-tiles into an array held in place by gravity, friction and accumulated-interactive-assemblage. One or more horizontal-disassociation-cushioning-layers may be disposed above or below the three-dimensional-passage-and-support-matrix to provide improved impact sound isolation.

Probable Assignee: BROWN J G

Earliest Publication Date: 19851008



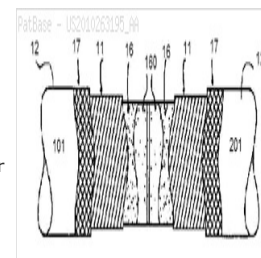
14) Family number: 47319115 (US2010263195A)

STRUCTURAL COMPONENTS FOR OIL, GAS, EXPLORATION, REFINING AND PETROCHEMICAL APPLICATIONS

Abstract: Source: US2010263195A A method to form a pipe system which meets level II fire endurance standard according to IMO A 18/Res.753 fire testing protocol, for use in oil, gas, exploration, refining and petrochemical applications is provided. In the pipe system, each pipe section comprises a plurality of layers, an inner layer in contact with the corrosive petroleum product comprising a thermoplastic material, a structural layer comprising a composite material, and an outer layer comprising a fire resistive material. The method comprises applying energy to join the corrosion resistant layers of the separate pipe sections together forming a joint, applying an external wrap around the joint and at least a portion of the composite structural layers of the at least two pipe sections, and bonding the external wrap to the joint and the composite structural layers by chemical curing, thermal treatment, or combinations thereof.

Probable Assignee: CHEVRON USA INC

Earliest Publication Date: 20101021



15) Family number: 41910964 (US2008139071A)

© PatBase

RESTRAINED BREAST PLATES, VEHICLE ARMORED PLATES AND HELMETS

Abstract: Source: US2008139071A Ballistic resistant fabric laminates are provided. More particularly, reinforced, delamination resistant, ballistic resistant composites are provided. The delamination resistant, ballistic resistant materials and articles may be reinforced by various techniques, including stitching one or more ballistic resistant panels with a high strength thread, melting the edges of a ballistic resistant panel to reinforce areas that may have been frayed during standard trimming procedures, wrapping one or more panels with one or more woven or non-woven fibrous wraps, and combinations of these techniques. The delamination resistant, ballistic resistant panels may further include at least one rigid plate attached thereto for improving ballistic resistance performance.

Probable Assignee: HONEYWELL INT INC

Earliest Publication Date: 20080612

16) Family number: 29213638 (US5227457A)

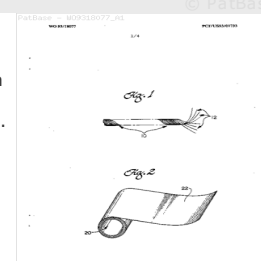
© PatBase

RIGID-ROD POLYMERS

Abstract: Source: US5227457A High-performance polymers having a rigid-rod backbone comprising a chain length of at least 25 organic monomer units joined together by covalent bonds wherein at least about 95 percent of the bonds are substantially parallel; and solubilizing organic groups attached to at least 1 percent of the monomer units. The polymers are prepared in a solvent system which is a solvent for both the monomer starting materials and the rigid-rod polymer product.

Probable Assignee: MISSISSIPPI POLYMER TECHNOLOGIES INC

Earliest Publication Date: 19890824



17) Family number: 40829300 (US2008006338A)

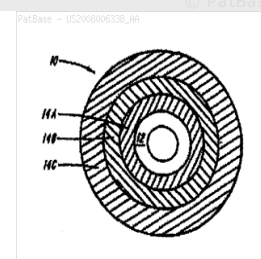
© PatBase

REINFORCING MATRIX FOR SPOOLABLE PIPE

Abstract: Source: US2008006338A A spoolable pipe is disclosed, the spoolable pipe having an internal pressure barrier formed about a longitudinal axis, and a reinforcing layer(s) enclosing the internal pressure barrier that includes a solid hydrocarbon matrix. The pipe can also include an energy conductor(s) integrated with and/or located between the internal pressure barrier and/or the reinforcing layer(s).

Probable Assignee: FIBERSPAR CORP

Earliest Publication Date: 20070921



18) Family number: 49044568 (US2011133132A)

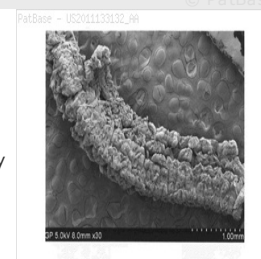
© PatBase

CHEMICALLY FUNCTIONALIZED SUBMICRON GRAPHITIC FIBRILS, METHODS FOR PRODUCING SAME AND COMPOSITIONS CONTAINING SAME

Abstract: Source: US2011133132A The present invention provides a chemically functionalized submicron graphitic fibril having a diameter or thickness less than 1 micro m, wherein the fibril is free of continuous thermal carbon overcoat, free of continuous hollow core, and free of catalyst. The fibril is obtained by splitting a micron-scaled carbon fiber or graphite fiber along the fiber axis direction. These functionalized graphitic fibrils exhibit exceptionally high electrical conductivity, high thermal conductivity, high elastic modulus, high strength and good interfacial bonding with a matrix resin in a composite. The present invention also provides several products that contain submicron graphitic fibrils: (a) paper, thin-film, mat, and web products; (b) rubber or tire products; (c) energy conversion or storage devices, such as fuel cells, lithium-ion batteries, and supercapacitors; (d) adhesives, inks, coatings, paints, lubricants, and grease products; (e) heavy metal ion scavenger; (f) absorbent (e.g., to recover spill oil); (g) sensors; (h) friction and brake components; (i) radiation-shield components; (j) catalyst carrier; and (k) composite materials.

Probable Assignee: NANOTEK INSTRUMENTS INC

Earliest Publication Date: 20110609



19) Family number: 15000039 (US6051175A)

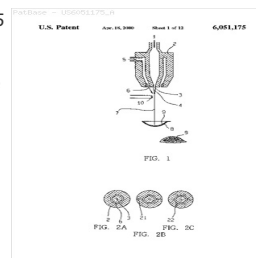
© PatBase

PROCESS FOR PRODUCING FILAMENT AND FILAMENT ASSEMBLY COMPOSED OF THERMOTROPIC LIQUID CRYSTAL POLYMER

Abstract: Source: US6051175A PCT No. PCT/JP94/01454 Sec. 371 Date May 3, 1995 Sec. 102(e) Date May 3, 1995 PCT Filed Sep. 2, 1994 PCT Pub. No. WO95/06765 PCT Pub. Date Mar. 9, 1995A process for producing a filament assembly composed of a thermotropic liquid crystal polymer, includes the step of melt extruding a thermotropic liquid crystal polymer through an orifice nozzle into a high-speed fluid to thereby hold filaments spun right under the spinning nozzle at a high temperature, so that the filaments are taken up at a high draft ratio by the frictional force of the high-speed fluid.

Probable Assignee: POLYMER PROCESSING RESEARCH INST LTD

Earliest Publication Date: 19950309



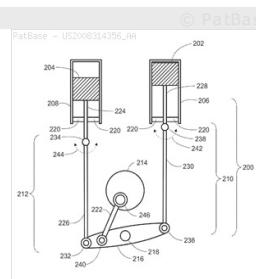
20) Family number: 42439132 (US2008314356A)

STIRLING CYCLE MACHINE

Abstract: Source: US2008314356A A Stirling cycle machine. The machine includes at least one rocking drive mechanism which includes: a rocking beam having a rocker pivot, at least one cylinder and at least one piston. The piston is housed within a respective cylinder and is capable of substantially linearly reciprocating within the respective cylinder. Also, the drive mechanism includes at least one coupling assembly having a proximal end and a distal end. The proximal end is connected to the piston and the distal end is connected to the rocking beam by an end pivot. The linear motion of the piston is converted to rotary motion of the rocking beam. Also, a crankcase housing the rocking beam and housing a first portion of the coupling assembly is included. A crankshaft coupled to the rocking beam by way of a connecting rod is also included. The rotary motion of the rocking beam is transferred to the crankshaft. The machine also includes a working space housing the at least one cylinder, the at least one piston and a second portion of the coupling assembly. A seal is included for sealing the workspace from the crankcase.

Probable Assignee: NEW POWER CONCEPTS LLC

Earliest Publication Date: 20081030



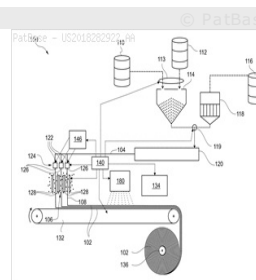
21) Family number: 71413936 (US2018282922A)

NONWOVEN CELLULOSE FIBER FABRIC WITH FIBER DIAMETER DISTRIBUTION

Abstract: Source: US2018282922A A nonwoven cellulose fiber fabric directly manufactured from lyocell spinning solution, wherein the fabric comprises a network of substantially endless fibers differing concerning fiber diameter so that a ratio between a largest fiber diameter and a smallest fiber diameter is more than 1.5.

Probable Assignee: CHEMIEFASER LENZING AG

Earliest Publication Date: 20181004



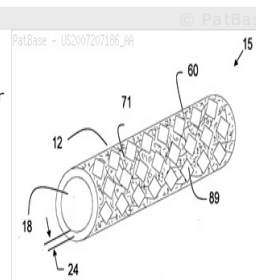
22) Family number: 36001246 (US2007207186A)

TEAR AND ABRASION RESISTANT EXPANDED MATERIAL AND REINFORCEMENT

Abstract: Source: US2007207186A The present invention is a more durable expanded material that enables thinner wall thicknesses and a more flexible reinforcement suitable for stenting. The present invention is especially useful in the construction of grafts, stents, and stent-grafts which are used, for example, in repairing or replacing blood vessels that are narrowed or occluded by disease, aneurismal blood vessels, or other medical treatments. The inventive material and configurations allow expansion or contraction in size or adjustment in size in an incremental manner so that the optimum size, shape, and fit with other objects can be obtained. The present invention is also optionally capable of more accurately delivering one or more active ingredients such as drugs over longer periods of time. The present invention optionally includes surface modifications and additives that increase the surface adhesion of active ingredients, coatings, or combinations thereof. Finally, the present invention optionally includes growing cells on the inventive material so that the expanded material, reinforcement, or combinations thereof are useful, for example, in producing lab-grown blood vessels or organs.

Probable Assignee: SCANLON CATHERINE ANN

Earliest Publication Date: 20070906



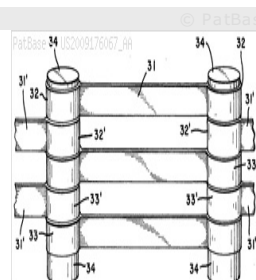
23) Family number: 46226299 (US2009176067A)

BARRIER UNITS AND ARTICLES MADE THEREFROM

Abstract: Source: US2009176067A Barrier units and articles made therefrom, particularly constraining bands of high strength and low weight for containing articles, especially in blast resistant container assemblies, are disclosed. The barrier unit comprises a surface having a regular polygonal perimeter with a plurality of substantially parallel sides, each of which terminates in at least one loop integral with the surface. The surface comprises at least one network of high strength fiber with at least about 50 weight percent of the fiber comprising substantially continuous lengths of fiber aligned in the hoop direction of the loops. The barrier units have utility as constraining bands for loads of articles like logs, and as doors/closures for access openings to the interior of aircraft blast resistant cargo containers. They are also useful as fences and window protectors.

Probable Assignee: ROYAL DSM NV

Earliest Publication Date: 19970403



24) Family number: 31418010 (US2004258910A)

WATER-DISPERSIBLE AND MULTICOMPONENT FIBERS FROM SULFOPOLYESTERS

FIG. 16. Schematic diagrams of the three basic types of beam-column connections

Earliest Publication Date: 20041223

Earliest Publication Date: 20181004

Earliest Publication Date: 19990128

Earliest Publication Date: 19990608

[illegible]

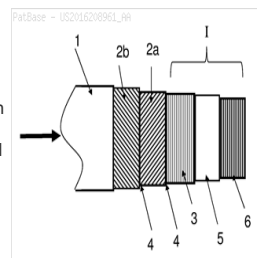
Earliest Publication Date: 19691030

A FLEXIBLE PIPE

Abstract: Source: US2016208961A A flexible offshore pipe includes a plurality of layers forming an inner pipe structure that includes an innermost sealing sheath. A first and a second tensile armor layer each including helically wound elongate armor elements surround the inner pipe structure. The first and the second tensile armor layer each has a winding pitch length and are cross wound. The pipe includes unbonded length sections and holding length sections. The elongate armor elements of the first tensile armor layer in the unbonded length sections are unbonded to said inner pipe structure and in each holding length section at least one of the elongate armor elements of the first tensile armor layer is more restricted to displacement relative to said inner pipe structure than the elongate armor elements of the first tensile armor layer in the unbonded length sections.

Probable Assignee: NATIONAL OILWELL VARCO DENMARK I S

Earliest Publication Date: 20150305



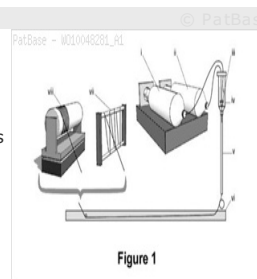
30) Family number: 44937449 (WO10048281A1)

COMPOSITE BIOMIMETIC MATERIALS

Abstract: In an embodiment, composite materials having a fiber of relatively high Young's modulus is embedded in an elastin mimetic material with a relatively low Young's modulus. In an embodiment, the fiber is crimped so as to provide a composite material having a non-linear stress-strain curve, with an initial Young's modulus at lower strains that is less than the Young's modulus at higher strains. The composite materials are optionally formed into medical devices. Further provided are methods of making composite materials, making a collagen fiber, and crimping fibers such as collagen fibers.

Probable Assignee: GEORGIA TECH RES INST

Earliest Publication Date: 20100429



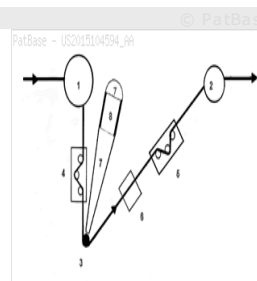
31) Family number: 53988544 (US2015104594A)

TEXTILE REINFORCEMENT COMPRISING CONTINUOUS ARAMID YARN

Abstract: Source: US2015104594A A textile reinforcement, in particular a knitted, spiraled, stranded, braided, linear or woven textile reinforcement including aramid yarn, which yarn is continuous yarn and provided with a finish including mono- or dialkyl phosphate ester or a mixture thereof, which finish is free of compounds with alkoxy groups; and wherein the mono- or dialkyl phosphate ester finish has the formula: wherein R1 is branched or straight-chain C1-C15 alkyl, R2 is H, Li, Na, K or NH4, or branched or straight-chain C1-C15 alkyl, and M is Li, Na, K or NH4. The textile reinforcement may be used for making hoses, tubes, (flexible) pipes, optical fiber cables, power cables, fiber-reinforced composites and ballistic resistant articles.

Probable Assignee: TEIJIN LTD

Earliest Publication Date: 20130606



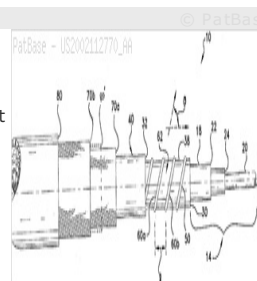
32) Family number: 28231764 (US2002112770A)

HOSE CONSTRUCTION

Abstract: Source: US2002112770A A flexible hose construction adapted for conveying fluids under pressures and capable of withstanding relatively high external pressures without collapsing. The tubular construction includes a first reinforcement layer, an inner jacket surrounding the first reinforcement layer, a second reinforcement layer surrounding the inner jacket, and outer jacket covering the second reinforcement layer.

Probable Assignee: PARKER INTANGIBLES LLC

Earliest Publication Date: 20000629



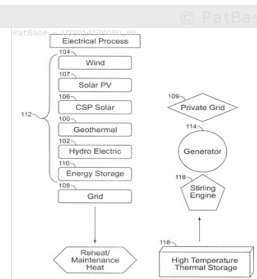
33) Family number: 56489638 (US2014174080A)

HYBRID TRIGENERATION SYSTEM BASED MICROGRID COMBINED COOLING, HEAT AND POWER PROVIDING HEATING, COOLING, ELECTRICAL GENERATION AND ENERGY STORAGE USING AN INTEGRATED AUTOMATION SYSTEM FOR MONITOR, ANALYSIS AND CONTROL

Abstract: Source: US2014174080A Provided is a consumer to industrial scale energy trigeneration process based microgrid combined cooling, heat and power. The present invention includes conversion, processing, extraction and/or storage systems for electrical, chemical and thermal energy. The invention provides a quintessential renewable energy ecosystem incorporating vital energy generation, thermal heating and cooling processes with integrated components installed to encompass a distributed renewable energy generation, energy storage and integrated automation system. The automation system of the invention provides the ability to view, monitor, analyze, control and interact with system components.

Probable Assignee: FRIESTH KEVIN LEE

Earliest Publication Date: 20140522



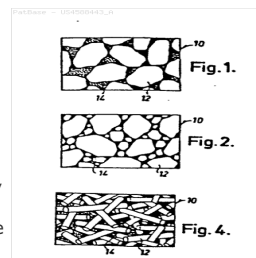
34) Family number: 64741691 (US4588443A)

SHAPED ARTICLE AND COMPOSITE MATERIAL AND METHOD FOR PRODUCING SAME

Abstract: Source: US4588443A PCT No. PCT/DK81/00048 Sec. 371 Date Dec. 30, 1981 Sec. 102(e) Date Dec. 30, 1981 PCT Filed May 1, 1981 PCT Pub. No. WO81/03170 PCT Pub. Date Nov. 12, 1981. Densified systems and articles made therefrom which contain a composite material comprising a coherent matrix of homogeneously arranged inorganic particles (A) of a size of from about 50 Å to about 0.5 μ , such as silica dust, and densely packed particles (B) having a size of from 0.5-100 μ such as Portland Cement and which are at least one order of magnitude larger than the particles A, and embedded in the matrix, solid particles C made from material having a strength exceeding that of ordinary sand and stone used for ordinary concrete, such as refractory grade bauxite and a surface active dispersing agent. Particles A are homogeneously distributed and especially densely packed, in the void volume between the particles B and are made from an easily flowable composite material containing a very low amount of liquid such as water and an extremely high amount of a dispersing agent such as a concrete superplasticizer. High quality concrete made from a Portland Cement/silica dust matrix with refractory grade bauxite embedded therein exhibits high compressive strength and may be used as a replacement for plastic, glass and steel. High performance fiber/metal matrix composites with substantially improved compressive strength and abrasion resistance are produced.

Probable Assignee: DENSIT A S

Earliest Publication Date: 19811102



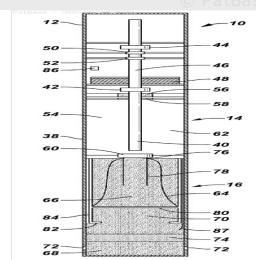
35) Family number: 34113909 (US2007142547A)

POLYMERIC COMPOSITES, OILFIELD ELEMENTS COMPRISING SAME, AND METHODS OF USING SAME IN OILFIELD APPLICATIONS

Abstract: Source: US2007142547A Oilfield elements and assemblies are described comprising a polymeric matrix formed into an oilfield element, and a plurality of expanded graphitic nanoflakes and/or nanoplatelets dispersed in the polymeric matrix. Methods of using the oilfield elements and assemblies including same in oilfield operations are also described. This abstract allows a searcher or other reader to quickly ascertain the subject matter of the disclosure. It will not be used to interpret or limit the scope or meaning of the claims. 37 CFR 1.72(b).

Probable Assignee: SCHLUMBERGER TECHNOLOGY CORP

Earliest Publication Date: 20070616



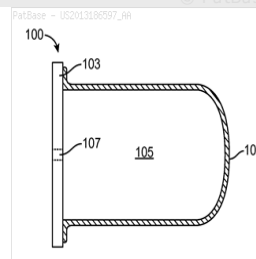
36) Family number: 54382069 (US2013186597A)

COMPRESSED GAS STORAGE UNIT

Abstract: Source: US2013186597A Embodiments of the present invention relate to compressed gas storage units, which in certain applications may be employed in conjunction with energy storage systems. Some embodiments may comprise one or more blow-molded polymer shells, formed for example from polyethylene terephthalate (PET) or ultra-high molecular weight polyethylene (UHMWPE). Embodiments of compressed gas storage units may be composite in nature, for example comprising carbon fiber filament(s) wound with a resin over a liner. A compressed gas storage unit may further include a heat exchanger element comprising a heat pipe or apparatus configured to introduce liquid directly into the storage unit for heat exchange with the compressed gas present therein.

Probable Assignee: LIGHTSAIL ENERGY INC

Earliest Publication Date: 20130725



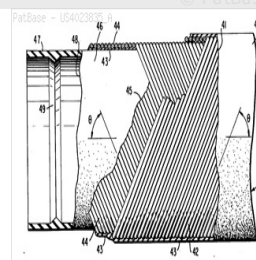
37) Family number: 1395927 (US4023835A)

CONFORMABLE THIN-WALL SHEAR-RESISTANT COUPLING AND PIPE ASSEMBLY

Abstract: Source: US4023835A Lengths of "plain-end" pipe are joined together in underground sewer or drainage systems by flexible sleeves having a specified column expansibility and shear-resistance and containing high modulus helically oriented reinforcement, bonded or encapsulated in elastomeric material. The resultant pipe assemblies represent a significant improvement over previously known "plain-end" pipe-coupling arrangements and bell and spigot pipe assemblies. Pipe sections may be quickly and economically joined without inserting packing, to provide a water-tight, shear-resistant joint which will accommodate significant angular misalignment and circumferential variation. Even if lubricant is placed on the inner surfaces of the flexible sleeves to reduce assembly forces, the resultant pipe assemblies still exhibit more than adequate resistance against shear loads and water infiltration.

Probable Assignee: EWING ENGINEERING CO

Earliest Publication Date: 19770517



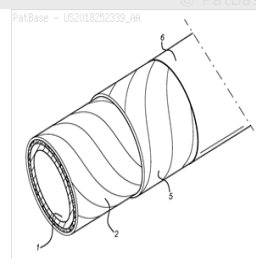
38) Family number: 65268826 (US2018252339A)

HIGH PRESSURE PIPE AND METHOD FOR PRODUCING SUCH PIPE

Abstract: Source: US2018252339A A high-pressure pipe comprises an inner liner (1), an outer coating layer (6) and a reinforcement layer (2, 5) positioned between the inner liner and the outer coating layer. The reinforcement layer has helically wound strips (2, 5) which each comprise a matrix (4) and fibers (3) embedded in the matrix; the fibers consist of a multitude of twisted high-strength filaments. With an aim of providing a relatively high bending flexibility, the filaments of a fiber are sized filaments obtained by subjecting the filaments to a sizing operation.

Probable Assignee: PIPELIFE NEDERLAND BV

Earliest Publication Date: 20170323



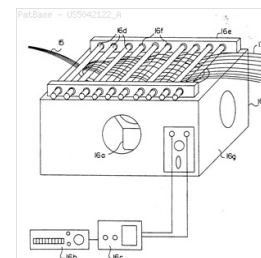
39) Family number: 3154763 (US5042122A)

METHOD AND SYSTEM FOR SPREADING A TOW OF FIBERS

Abstract: Source: US5042122A A method and system for spreading a tow of fibers (12) using the acoustic energy from a speaker (16a) or other vibrating device for a gaseous medium over which the tow passes as the fibers zig-zag between rods (16d) is described. The spread two of fibers are produced at high speed with uniform spacing and are used to make composites with plastics.

Probable Assignee: UNIV MICHIGAN STATE

Earliest Publication Date: 19910827



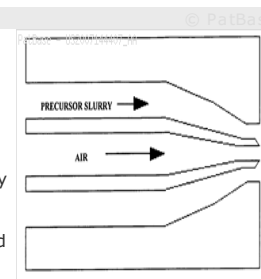
40) Family number: 50122750 (US2007144407A)

GEPOLYMERIC PARTICLES, FIBERS, SHAPED ARTICLES AND METHODS OF MANUFACTURE

Abstract: Source: US2007144407A Shaped geopolymeric particles, fibers, and articles incorporating at least one geopolymer are provided; the geopolymeric particles, fibers, and articles having a structure that is solid, foamed, hollow or with one or more voids. Geopolymers are formed by alkali activation of an aluminosilicate and/or aluminophosphate material. The end-products are shaped as spheres, flakes, fibers, aggregates thereof or articles. Such products are formed at low temperatures; wherein forming includes processing using techniques such as spray drying, melt spinning, or blowing. The shaped geopolymeric particles and fibers have high chemical durability, high mechanical strength, application-targeted flowability and packing properties, and are specially suited for incorporating into composite materials, articles, and for use in cementitious, polymeric, paint, printing, adhesion and coating applications. Shaped geopolymeric particles, fibers and articles having voids, hollow or foam-like structures are formed by adding one or more blowing agents.

Probable Assignee: JAMES HARDIE TECHNOLOGY LTD

Earliest Publication Date: 20070628



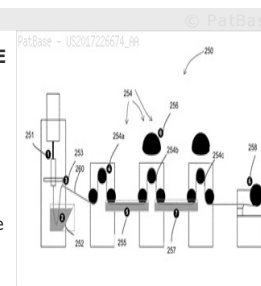
41) Family number: 66216827 (US2017226674A)

LOAD-BEARING COMPOSITE PANELS, MATERIALS, PRODUCTS, AND PROCESSES TO MAKE AND USE SAME

Abstract: Source: US2017226674A Load-bearing composite panels, materials, and products made by surrounding with a long fiber and/or fiber cloth reinforced polyurethane resin, an assembly containing one or more load-bearing members, graphene, a structural polyurethane/resin sandwich composite and/or spider silk protein fiber-cloth-continuous fibers. The composite structures can provide stronger, lighter-weight structural items such as vehicle floor and body panels, bullet-proof anti-ballistic panel products, vehicle bullet-proof anti-ballistic body panel structures and floors, bullet-proof vests, vehicle chassis, monocoque chassis, motor homes chassis-bodies, fuselage floors and frames for aircraft and/or UAV's, bicycle and motorcycle frames, wind turbine blades frames and structures, ship or boat hull body structures, shipment containers, pre-fabricated walls of buildings, train structure body or floor panels, solar panel supports, battery housings, mobile home walls, roof modules, truck beds, and truck trailer floors. Such composite panels, materials, and products can also be utilized in artificial organs, ligaments or tendons, artificial disc vertebrae, ropes, and 3D printing parts.

Probable Assignee: JEREZ ROBERTO VELOZZI

Earliest Publication Date: 20170629



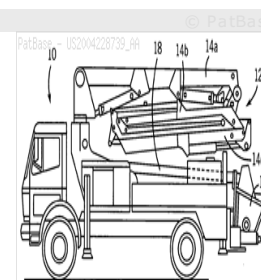
42) Family number: 31340612 (US2004228739A)

FILAMENT-WOUND COMPOSITE BOOM PIPE

Abstract: Source: US2004228739A A mobile concrete pumping vehicle including a reduced-weight boom arm. The pumping vehicle includes a boom arm that is extendible between a folded position and an extended position. The boom arm carries molded and fabricated composite boom pipe sections. Each pipe section is formed from a composite material having a reinforcing outer layer and a wear resistant inner layer. Preferably, the outer layer is formed using a filament winding process while the inner layer is molded of wear resistant urethane. Each boom section is formed by centrifugal molding a urethane tube then secondarily winding carbon fiber onto the exterior of the tube. The centrifugal force created by the rotating mold provides a bubble free urethane tube. The filament winding provides the hoop strength needed to withstand the internal pressures of the concrete pumping process.

Probable Assignee: PUTZMEISTER INC

Earliest Publication Date: 20041118



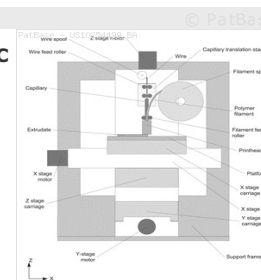
43) Family number: 73917918 (US10254499B)

ADDITIVE MANUFACTURING OF ACTIVE DEVICES USING DIELECTRIC, CONDUCTIVE AND MAGNETIC MATERIALS

Abstract: Source: US10254499B The present disclosure relates to a process, system and apparatus for multi-material additive manufacturing process comprising: extruding an extrudable material through a nozzle capable of moving along one or more axis and concurrently extruding one or more filaments, wherein the filament is embedded in, on or about the extrudable material from the nozzle.

Probable Assignee: SOUTHERN METHODIST UNIV

Earliest Publication Date: 20190409



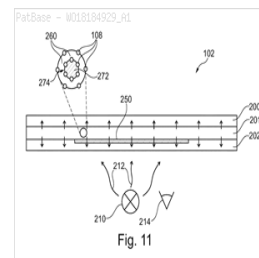
44) Family number: 71444086 (WO18184929A1)

OPTICALLY TRANSPARENT WET NONWOVEN CELLULOSE FIBER FABRIC

Abstract: A nonwoven cellulose fiber fabric (102), in particular directly manufactured from lyocell spinning solution (104), wherein the fabric (102) comprises a network of substantially endless fibers (108), wherein different ones of the fibers (108) are located at least partially in different distinguishable interconnected layers (200, 202), and wherein the fabric (102) is optically transparent when wet.

Probable Assignee: CHEMIEFASER LENZING AG

Earliest Publication Date: 20181010



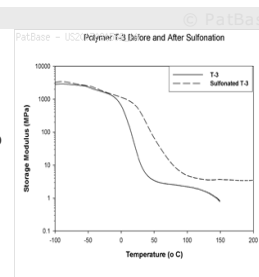
45) Family number: 34114994 (US2007021569A)

SULFONATED BLOCK COPOLYMERS, METHOD FOR MAKING SAME, AND VARIOUS USES FOR SUCH BLOCK COPOLYMERS

Abstract: Source: US2007021569A The present invention is a, solid block copolymer comprising at least two polymer end blocks A and at least one polymer interior block B wherein each A block is a polymer block resistant to sulfonation and each B block is a polymer block susceptible to sulfonation, and wherein said A and B blocks do not contain any significant levels of olefinic unsaturation. Preferably, each A block comprising one or more segments selected from polymerized (i) para-substituted styrene monomers, (ii) ethylene, (iii) alpha olefins of 3 to 18 carbon atoms; (iv) hydrogenated 1,3-cyclodiene monomers, (v) hydrogenated monomers of conjugated dienes having a vinyl content less than 35 mol percent prior to hydrogenation, (vi) acrylic esters, (vii) methacrylic esters, and (viii) mixtures thereof; and each B block comprising segments of one or more polymerized vinyl aromatic monomers selected from (i) unsubstituted styrene monomers, (ii) ortho-substituted styrene monomers, (iii) meta-substituted styrene monomers, (iv) alpha-methylstyrene, (v) 1,1-diphenylethylene, (vi) 1,2-diphenylethylene and (vii) mixtures thereof. Also claimed are processes for making such block copolymers, and the various end uses and applications for such block copolymers.

Probable Assignee: KRATON POLYMERS US LLC

Earliest Publication Date: 20070125



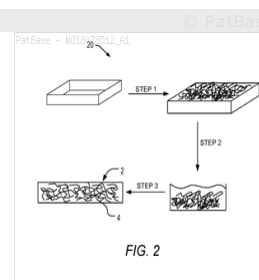
46) Family number: 69572535 (WO18078512A1)

FIBER-REINFORCED ORGANIC POLYMER AEROGEL

Abstract: Fiber-reinforced organic polymer aerogels, articles of manufacture and uses thereof are described. The reinforced aerogels include a fiber-reinforced organic polymer matrix having an at least bimodal pore size distribution with a first mode of pores having an average pore size of less than or equal to 50 nanometers (nm) and a second mode of pores having an average pore size of greater than 50 nm and a thermal conductivity of less than or equal to 30 mW/m·K at a temperature of 20 degrees centigrade

Probable Assignee: BLUESHIFT INT MAT INC

Earliest Publication Date: 20180503



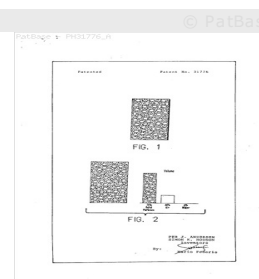
47) Family number: 50074299 (PH31776A)

PLACING FILAMENTS WITHIN EXTRUDED HYDRAULICALLY SETTABLE COMPOSITIONS

Abstract: Source: PH31776A 136 ABSTRACT Methods and apparatus for continuously extruding a hydraulically settable mixture and simultaneously placing continuous filaments within the extruding mixture to yield articles having a filament-reinforced, hydraulically settable matrix. The filaments can be placed within the 5 mixtures in a parallel configuration, a helical configuration, or combinations thereof, in order to yield an article having the desired properties of, e.g., tensile strength, flexural strength, hoop strength, burst strength, toughness, and elongation ability. The desired properties of the hydraulically settable mixture, as well as of the cured hydraulically settable matrix of the hardened article, may also be adjusted by including varying amounts and types of aggregates, 10 discontinuous fibers, binders, rheology-modifying agents, dispersants, or other admixtures within the hydraulically settable mixture. Optimizing the particle packing density while including a deficiency of water yields a hydraulically settable mixture which will flow when an extrusion pressure is applied but be form stable upon being extruded.

Probable Assignee: KHASHOGGI E IND

Earliest Publication Date: 19971103



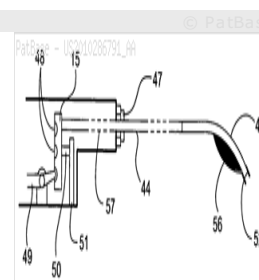
48) Family number: 47547452 (US2010286791A)

INTEGRATED SYSTEM FOR THE BALLISTIC AND NONBALLISTIC INFIXION AND RETRIEVAL OF IMPLANTS

Abstract: Source: US2010286791A Provided are methods and apparatus for the use of magnetic traction to maintain the patency of a tubular anatomical structure, whether a vessel, duct, the trachea, bronchus, bile duct, ureter, vas deferens, fallopian tube, or portions of the digestive tract, as to constitute means for extraluminal stenting. An extraluminal stent consists of a perimedial or medial intravascular and an extravascular component. The intravascular component consists of ferromagnetic spherules implanted aeroballistically or stays implanted by means of a special hand tool, while the extravascular component consists of a pliant jacket or mantle that has magnets mounted about its outer surface. A catheter adapted for use as the barrel of a gas-operated implant insertion gun is so devised that it can be used independently to perform an angioplasty and thereafter have its free or extracorporeal end inserted into the airgun to initiate implantation of the intravascular component without the need for withdrawal and reinsertion through the introducer sheath. When the implants must be spaced too closely together to be controlled by hand, a positional control system is used to effect discharge automatically. Spherules that consist entirely of medication or that have a radiation emitting seed as the core can be implanted with the same apparatus. A glossary of terms follows the specification.

Probable Assignee: GOLDSMITH DAVID S

Earliest Publication Date: 20101111



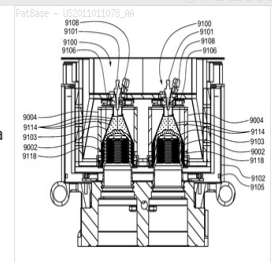
49) Family number: 48019862 (US2011011078A)

STIRLING CYCLE MACHINE

Abstract: Source: US2011011078A A Stirling cycle machine. The machine includes at least one rocking drive mechanism which includes: a rocking beam having a rocker pivot, at least one cylinder and at least one piston. The piston is housed within a respective cylinder and is capable of substantially linearly reciprocating within the respective cylinder. Also, the drive mechanism includes at least one coupling assembly having a proximal end and a distal end. The linear motion of the piston is converted to rotary motion of the rocking beam. Also, a crankcase housing the rocking beam and housing a first portion of the coupling assembly is included. The machine also includes a working space housing the at least one cylinder, the at least one piston and a second portion of the coupling assembly. An airlock is included between the workspace and the crankcase and a seal is included for sealing the workspace from the airlock and crankcase. A burner and burner control system is also included for heating the machine and controlling ignition and combustion in the burner.

Probable Assignee: NEW POWER CONCEPTS LLC

Earliest Publication Date: 20110106



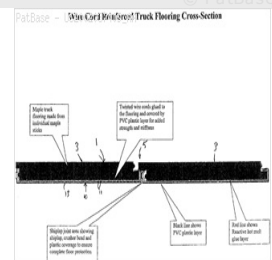
50) Family number: 20294062 (US2002037409A)

WIRE REINFORCED THERMOPLASTIC COATING

Abstract: Source: US2002037409A A structural reinforcing layer made from wire, a structural reinforcing composite layer made from wire, and the resulting load bearing structures made from or retrofitted with wire reinforced plastics and cements. Said layers and structures made from monofilament metallic or pre-cured composite materials twisted into multi-strand wire geometry optimized to mechanically shear load into rigid thermoplastic, thermoset, metallic or cementitious resin systems. Wire geometry, count, size and strength/stiffness can be varied in combination with resin type, sheet structure, permeability and orientation to create layers intended for use in composite and cement based structures as originally molded reinforcement or retrofitted structural upgrades.

Probable Assignee: HARDWIRE LLC

Earliest Publication Date: 20020306



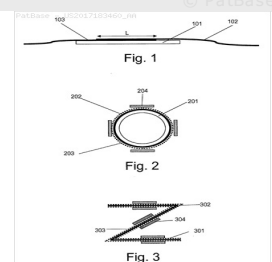
51) Family number: 60612430 (US2017183460A)

METHOD FOR FUSING ARAMID/ARAMID FIBRES

Abstract: Source: US2017183460A A method for welding aramid fibers, wherein a) at least one area of an aramid fiber is treated with an ionic liquid so that the aramid is partially dissolved, b) the aramid fiber is contacted via the dissolved area with another aramid fiber area with pressure being applied to the contact area, and subsequently c) the partially dissolved area of the aramid is re-coagulated.

Probable Assignee: PROIONIC GMBH

Earliest Publication Date: 20151022



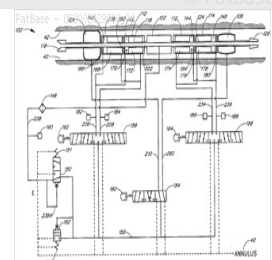
52) Family number: 28189141 (US2002029908A)

ELECTRICALLY SEQUENCED TRACTOR

Abstract: Source: US2002029908A A downhole drilling tractor for moving within a borehole comprises a tractor body, two packerfeet, two aft propulsion cylinders, and two forward propulsion cylinders. The body comprises aft and forward shafts and a central control assembly. The packerfeet and propulsion cylinders are slidably engaged with the tractor body. Drilling fluid can be delivered to the packerfeet to cause the packerfeet to grip onto the borehole wall. Drilling fluid can be delivered to the propulsion cylinders to selectively provide downhole or uphole hydraulic thrust to the tractor body. The tractor receives drilling fluid from a drill string extending to the surface. A system of spool valves in the control assembly controls the distribution of drilling fluid to the packerfeet and cylinders. The valve positions are controlled by motors. A programmable electronic logic component on the tractor receives control signals from the surface and feedback signals from various sensors on the tool. The feedback signals may include pressure, position, and load signals. The logic component also generates and transmits command signals to the motors, to electronically sequence the valves. Advantageously, the logic component operates according to a control algorithm for intelligently sequencing the valves to control the speed, thrust, and direction of the tractor.

Probable Assignee: WWT NORTH AMERICA HOLDINGS INC

Earliest Publication Date: 20000618



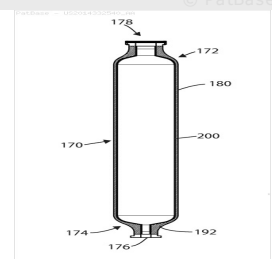
53) Family number: 54077917 (US2014332540A)

ROTATIONAL MOULDING METHOD

Abstract: Source: US2014332540A The present invention relates to a method of rotational moulding where a heating structure is incorporated into the mould. Further aspects of the invention relate to a mould for rotational moulding comprising a heating element. In an embodiment, the mould is a pressure vessel for transporting and storing compressed natural gas. The heating element may be incorporated into the pressure vessel, or may be placed in contact with the pressure vessel for the duration of the rotational moulding process.

Probable Assignee: BLUE WAVE CO SA

Earliest Publication Date: 20130613



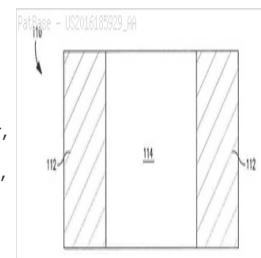
54) Family number: 58498099 (US2016185929A)

TECHNIQUE FOR SELECTIVELY CONTROLLING THE POROSITY OF A POLYMERIC MATERIAL

Abstract: Source: US2016185929A A method for selectively controlling the degree of porosity in a polymeric material is provided. The material is formed from a thermoplastic composition containing a microinclusion additive and nanoinclusion additive that are dispersed within a continuous phase of a matrix polymer in the form of discrete domains. At least a portion of the polymeric material is strained so that a porous network is formed therein. Further, at least a portion of the strained polymeric material is heat treated so that it exhibits a Sower pore volume than the material prior to heat treatment, in this manner, the polymeric material can exhibit a high degree of initial flexibility, but this flexibility can be selectively reduced when desired.

Probable Assignee: KIMBERLY CLARK CORP

Earliest Publication Date: 20150212



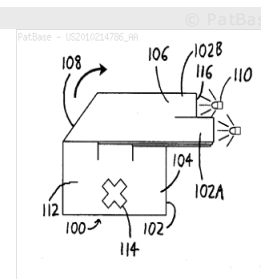
55) Family number: 43144817 (US2010214786A)

LIGHT COUPLING INTO ILLUMINATED FILMS

Abstract: Source: US2010214786A A flexible translucent sheet is folded to have portions of its bounding edge closely situated in overlapping relationship, and these overlapping portions are illuminated by a light source. The illumination is transmitted through the interior of the sheet to any adjacent unfolded area of the sheet, which may bear emission areas which are treated so that the light emits from the sheet at these areas. Preferred versions of the invention have a series of legs cut into one edge of the sheet, and the legs are then bundled in stacked relationship, with a light source providing light input into the bundle.

Probable Assignee: FLEX LIGHTING II LLC

Earliest Publication Date: 20090416



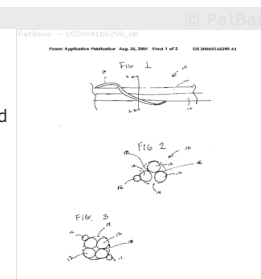
56) Family number: 30827910 (US2004166299A)

REINFORCING STRUCTURE

Abstract: Source: US2004166299A A reinforcing structure designed for handling compression stress states when the structure is molded into a composite. The structure, specifically a wrapped cord with metallic filaments contained therein, is suitable for both compression and tension load forces. The reinforcing structure has a core comprising a plurality of essentially straight, nested filaments arranged in parallel, the filaments forming a line of contact with adjacent filaments that extends along the length of the filaments. Wrapped about the core is at least one helically wound wire.

Probable Assignee: HARDWIRE LLC

Earliest Publication Date: 20040826



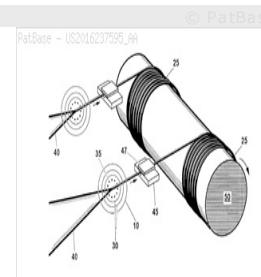
57) Family number: 61747993 (US2016237595A)

HIGH-STRENGTH REFRACTORY FIBROUS MATERIALS

Abstract: Source: US2016237595A The disclosed materials, methods, and apparatus, provide novel ultra-high temperature materials (UHTM) in fibrous forms/structures; such "fibrous materials" can take various forms, such as individual filaments, short-shaped fiber, tows, ropes, wools, textiles, lattices, nano/microstructures, mesostructured materials, and sponge-like materials. At least four important classes of UHTM materials are disclosed in this invention: (1) carbon, doped-carbon and carbon alloy materials, (2) materials within the boron-carbon-nitride-X system, (3) materials within the silicon-carbon-nitride-X system, and (4) highly-refractory materials within the tantalum-hafnium-carbon-nitride-X and tantalum-hafnium-carbon-boron-nitride-X system. All of these material classes offer compounds/mixtures that melt or sublime at temperatures above 1800 degrees centigrade -and in some cases are among the highest melting point materials known (exceeding 3000 degrees centigrade). In many embodiments, the synthesis/fabrication is from gaseous, solid, semi-solid, liquid, critical, and supercritical precursor mixtures using one or more low molar mass precursor(s), in combination with one or more high molar mass precursor(s). Methods for controlling the growth, composition, and structures of UHTM materials through control of the thermal diffusion region are disclosed.

Probable Assignee: DYNETICS INC

Earliest Publication Date: 20160225



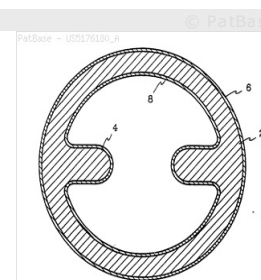
58) Family number: 11589335 (US5176180A)

COMPOSITE TUBULAR MEMBER WITH AXIAL FIBERS ADJACENT THE SIDE WALLS

Abstract: Source: US5176180A A composite tubular member having an outer cylindrical member containing fibers oriented to resist internal pressure and provide low bending stiffness, and two inner smaller core members located near the neutral axis of the composite tubular members containing fibers oriented to provide high axial stiffness, high tensile strength and low bending stiffness and fibers oriented to resist shear stress, positioned opposite each other and adjacent to the inner walls of the outer cylindrical member.

Probable Assignee: FIBERSPAR CORP

Earliest Publication Date: 19910916



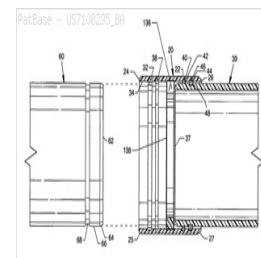
59) Family number: 33358067 (US7108295B)

FILAMENT-WOUND COMPOSITE COUPLING

Abstract: Source: US7108295B A filament-wound composite coupling for use in assembling a restrained joint between large diameter pipes with complementary retaining grooves, such as 16 inch or larger outer diameter polyvinyl chloride pipes. The coupling has first and second ends and ported retaining grooves associated with each end. Preferably, the coupling also includes O-ring seals and a pipe stop to index the pipes to be coupled. The composite coupling has a cylindrical composite body with a plurality of concentrically arranged layers of wound filaments in a thermoset plastic matrix. Each of the layers is characterized by a winding angle opposing the winding angle of the adjoining layers.

Probable Assignee: NORTH AMERICAN SPECIALTY PRODUCTS LLC

Earliest Publication Date: 20060919



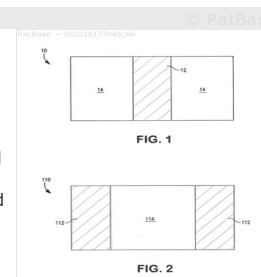
60) Family number: 58498102 (US2016177048A)

ANISOTROPIC POLYMERIC MATERIAL

Abstract: Source: US2016177048A A polymeric material having anisotropic properties, such as mechanical properties (e.g., modulus of elasticity), thermal properties, barrier properties (e.g., breathability), and so forth, is provided. The anisotropic properties can be achieved for a single, monolithic polymeric material through selective control over the manner in which the material is formed. For example, one or more zones of the polymeric material can be strained to create a unique network of pores within the strained zone(s). However, zones of the polymeric material that are not subjected to the same degree of deformational strain will not have the same pore volume, and in some cases, may even lack a porous network altogether.

Probable Assignee: KIMBERLY CLARK CORP

Earliest Publication Date: 20150212



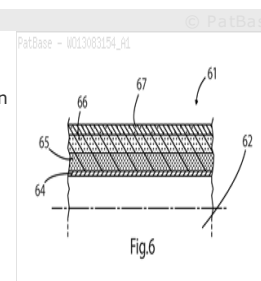
61) Family number: 54077920 (WO13083154A1)

HYBRID PIPING FOR CNG OPERATIONS AND METHOD OF PRODUCING THE SAME

Abstract: A pressure vessel is produced for storing and transporting CNG. The vessel comprises a body defining an internal volume in which the CNG can be stored, and an inlet for loading the CNG into the vessel. The body of the vessel comprises a structural shell made entirely of a fibre-reinforced fibre-wound composite material, which is provided with fibres to carry mechanical loads and a matrix to keep the fibres together and to make the composite impermeable to the CNG. Because the vessel is not provided with any liner, the CNG is in direct contact with an inner side of the structural shell.

Probable Assignee: BLUE WAVE CO SA

Earliest Publication Date: 20130613



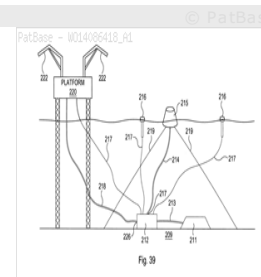
62) Family number: 56663729 (WO14086418A1)

LOADING-OFFLOADING BUOY FOR CNG OPERATIONS

Abstract: A buoy system for loading or offloading CNG comprising a buoy at or near the water's surface and a subsea piping manifold at or near the seabed, wherein a riser connecting the buoy to the subsea piping manifold comprises a composite or hybrid pipe along at least a portion of its length.

Probable Assignee: BLUE WAVE CO SA

Earliest Publication Date: 20140612



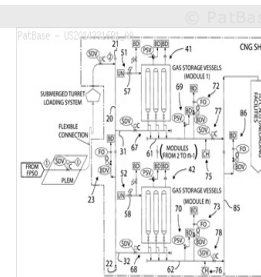
63) Family number: 54077932 (US2014331691A)

SYSTEM AND METHOD FOR LOADING, STORING AND OFFLOADING NATURAL GAS FROM A BARGE

Abstract: Source: US2014331691A A system for loading and storing CNG onboard of a barge and for unloading it therefrom comprises CNG loading facilities for loading CNG on board of the barge, CNG storage facilities for storing the loaded CNG on board of the barge at nominal storage pressure and temperature, and CNG unloading facilities for unloading CNG to a delivery point. The delivery point requires the unloaded CNG to be at delivery pressure and temperature generally different from the storage pressure and temperature. Thus, the CNG unloading facilities comprise a CNG heater for heating the to-be-unloaded CNG prior to unloading, and a lamination valve for allowing the to-be-unloaded CNG to expand from its storage pressure to the delivery pressure. A compressor may also be provided to compress CNG that would not otherwise be spontaneously delivered.

Probable Assignee: BLUE WAVE CO SA

Earliest Publication Date: 20130613



64) Family number: 1395926 (US4023834A)

PUSH-TYPE COUPLING AND CONDUIT PIPE ASSEMBLY

Abstract: Source: US4023834A Lengths of pipe are joined together in above- or below-ground telephone conduit systems by flexible sleeves having specified coefficient of friction, column expansibility and pull-out resistance and containing helically oriented high modulus reinforcement, bonded or encapsulated in elastomeric material. The resultant pipe assemblies represent a significant improvement over previously known cemented conduit-coupling arrangements. Pipe sections may be quickly and economically joined without field application of adhesive, to provide water-tight, pull-out-resistant joints which will accommodate significant bending moments and shearing forces.

Probable Assignee: EWING ENGINEERING CO

Fig. 38

SEM image showing a cross-section of a polymer film. The image displays a layered structure with a scale bar indicating 500 nm. The image is labeled with 'PatBase' and 'PatSax - US2016177044.00'.

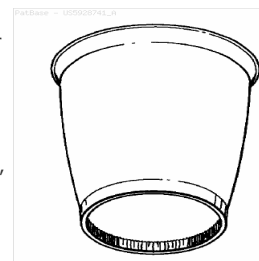
Figure 1 consists of five panels labeled (a) through (e). Panel (a) shows a cylindrical droplet of a stretched polymer with a central vertical line and arrows pointing outwards from the sides. Panel (b) shows the droplet breaking into smaller pieces, with the text 'breaks up' below it. Panel (c) shows a polymer chain with arrows pointing outwards from the ends, with the text 'Solvent diffuses out' below it. Panel (d) shows a horizontal line with several small vertical lines (entanglements) and the text 'Low entanglement' below it. Panel (e) shows a horizontal line with many small vertical lines (entanglements) and the text 'High entanglement' below it. Arrows indicate the flow from (a) to (b) to (c) to (d) and (e).

PatBase PDF Export - Page: 14 23/07/2019

Abstract: Source: US5928741A Compositions, methods, and apparatus for manufacturing sheets having a highly inorganically filled matrix. Suitable inorganically filled mixtures are prepared by mixing together an organic polymer binder, water, one or more aggregate materials, fibers, and optional admixtures in the correct proportions in order to form a sheet which has the desired performance criteria. The inorganically filled mixtures are formed into sheets by first extruding the mixtures and the passing the extruded materials between a set of rollers. The rolled sheets are dried in an accelerated manner to form a substantially hardened sheet, such as by heated rollers and/or a drying chamber. The inorganically filled sheets may have properties substantially similar to sheets presently made from traditional materials like paper, paperboard, polystyrene, plastic, or metal. Such sheets can be rolled, pressed, scored, perforated, folded, and glued. They have especial utility in the mass production of containers, particularly food and beverage containers.

Probable Assignee: E KHASHOGGI IND LLC

Earliest Publication Date: 19990727



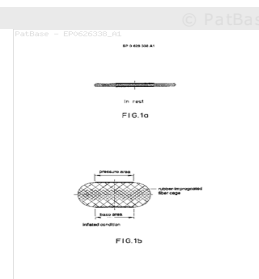
70) Family number: 10073203 (EP0626338A1)

INFLATABLE BODY.

Abstract: Source: EP0626338A1 The invention is directed to an inflatable body, such as a lifting body, comprising a fiber reinforced elastomer body which is flat in unflated condition and has in inflated condition a mechanical equilibrium shape that is predominantly geometrically continuous, non-spherical and non-cylindrical.

Probable Assignee: ZUMRO B V

Earliest Publication Date: 19941127



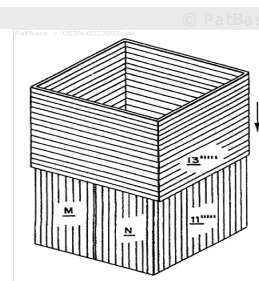
71) Family number: 46234264 (US2008223857A)

BLAST RESISTANT AND BLAST DIRECTING CONTAINER AND ASSEMBLIES

Abstract: Source: US2008223857A Blast resistant and blast directing container assemblies for receiving explosive articles and preventing or minimizing damage in the event of an explosion. The container assembly comprises a container of blast resistant material and a blast mitigating material located within the container. The container is collapsible for storage when empty. The container assemblies have utility in aircraft, where weight is an important consideration, as cargo holders or containment devices in the passenger cabin. They also are useful as transport devices for hazardous materials such as gunpowder and explosives, e.g., bombs and grenades.

Probable Assignee: ROYAL DSM NV

Earliest Publication Date: 19971219



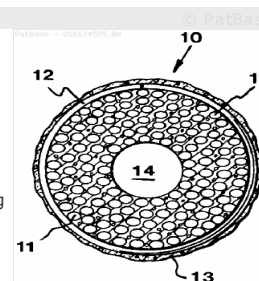
72) Family number: 14947294 (US6174595B)

COMPOSITES UNDER SELF-COMPRESSION

Abstract: Source: US6174595B Fiber reinforced brittle matrix composites are disclosed with improved mechanical properties. The composites comprise extensible, somewhat elastic fibers and hardened brittle matrix materials. The fibers are positioned to support the composite in a three dimensional manner. Temporary tension forces are applied to some of the fibers before the matrix has completely hardened. The resulting three dimensional array of aligned fibers acts to improve the properties of the composite by providing self-compression. Self-compression is enabled by the alignment and stored elastic energy resulting from the temporary tension and from other deformations acting with the fiber network. The composites have improved response to challenges such as matrix shrinkage during hardening or bending forces and impacts. The invention is particularly useful with brittle, high modulus matrixes, such as cementitious materials and elastic fibers such as polymeric fibers. The composites are useful as structural members and as barriers to protect materials such as steel or fiberglass and articles such as plastic pipes. Selected composites of this invention can exhibit self-healing after having been damaged by destructive deformations.

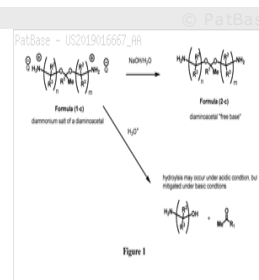
Probable Assignee: SANDERS JAMES F

Earliest Publication Date: 20010116

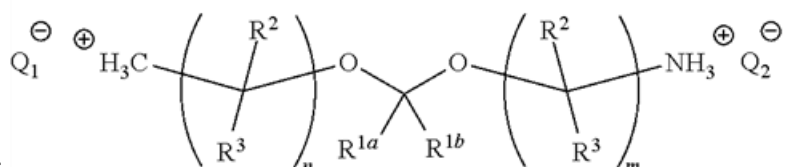


73) Family number: 72870436 (US2019016667A)

SALTS OF DIAMINOACETALS AND DIAMINOKETALS AND THEIR SYNTHESIS, AND THEIR TRANSFORMATIONS TO DIAMINOACETALS AND DIAMINOKETALS



Abstract: Source: US2019016667A This application relates, in part, to novel salts represented by the following
Formula (1)



structure of Formula (1):

wherein R^{1a} is selected from the group consisting of hydrogen and optionally substituted alkyl (e.g., unsubstituted C_{1-6} alkyl, e.g., $-CH_3$); R^{1b} is optionally substituted alkyl (e.g., unsubstituted C_{1-6} alkyl, e.g., $-CH_3$); each occurrence of R^2 and R^3 is independently selected from the group consisting of hydrogen, optionally substituted alkyl, optionally substituted cycloalkyl, and optionally substituted aryl; R^2 and R^3 can combine with each other to form optionally substituted cycloalkyl; each m and n is independently an integer ranging from 1 to 20 (e.g., m and n is independently an integer ranging from 1 to 5); and each of $Q_1^{\ominus}$ and $Q_2^{\ominus}$ is independently a counterion (e.g., each of $Q_1^{\ominus}$ and $Q_2^{\ominus}$ is independently a counterion selected from the group consisting of chloride, bromide, fluoride, iodide, acetate, carboxylate, hydrogen sulfate, nitrate, and phenolate, and sulfonate, e.g., chloride), and methods of making the same.

Probable Assignee: CONNORA TECH INC

Earliest Publication Date: 20190117

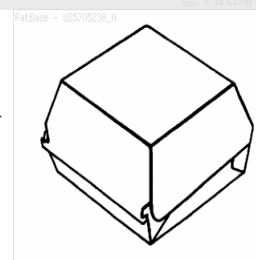
74) Family number: 33376245 (US5705238A)

ARTICLES OF MANUFACTURE FASHIONED FROM SHEETS HAVING A HIGHLY INORGANICALLY FILLED ORGANIC POLYMER MATRIX

Abstract: Source: US5705238A Compositions, methods, and apparatus for manufacturing sheets having a highly inorganically filled matrix. Suitable inorganically filled mixtures are prepared by mixing together an organic polymer binder, water, one or more aggregate materials, fibers, and optional admixtures in the correct proportions in order to form a sheet which has the desired performance criteria. The inorganically filled mixtures are formed into sheets by first extruding the mixtures and then passing the extruded materials between a set of rollers. The rolled sheets are dried in an accelerated manner to form a substantially hardened sheet, such as by heated rollers and/or a drying chamber. The inorganically filled sheets may have properties substantially similar to sheets presently made from traditional materials like paper, paperboard, polystyrene, plastic, or metal. Such sheets can be controlled, pressed, scored, perforated, folded, and glued to fashion articles for the sheets. They have especial utility in the mass production of containers, particularly food and beverage containers.

Probable Assignee: E KHASHOGGI IND LLC

Earliest Publication Date: 19980106



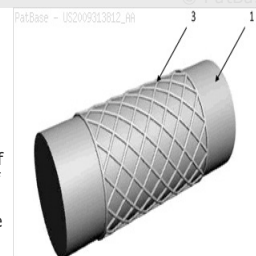
75) Family number: 44148056 (US2009313812A)

METHOD FOR MAKING ELECTRICAL WINDINGS FOR ELECTRICAL APPARATUS AND TRANSFORMERS AND WINDING OBTAINED BY SAID METHOD

Abstract: Source: US2009313812A This invention relates to a method of manufacturing electrical windings for electrical apparatus and transformers. This method comprises the following steps: manufacturing a metal mandrel defining the internal shape of the winding; installation of an internal insulation and support; installation of side rings; pouring impregnation compound on horizontally turning mandrel for obtaining a thin layer on the operational area of the mandrel and side surface of the side rings; optionally curing this layer; fixation of the first end wire using one of side rings; manufacturing winding with simultaneous pouring of compound onto the mandrel; possibly introducing intermediate insulation and/or reinforcing layers of preimpregnated reinforced plastics; optionally inserting premade sleeves around section of the winding; fixation of the second end wire using one of side rings; possibly introducing external insulation or reinforcing layers of preimpregnated reinforced plastics; possibly manufacturing secondary windings on top of the wound winding; curing the winding; extraction of the cured winding or a set of cured windings from the mandrel. The invention also relates to winding structures obtained by this method.

Probable Assignee: PULNIKOV SERGEY

Earliest Publication Date: 20091224



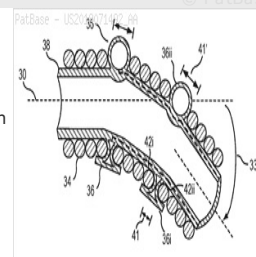
76) Family number: 67086524 (US2018071492A)

FLUID-ACTUATED SHEATH DISPLACEMENT AND ARTICULATION BEHAVIOR IMPROVING SYSTEMS, DEVICES, AND METHODS FOR CATHETERS, CONTINUUM MANIPULATORS, AND OTHER USES

Abstract: Source: US2018071492A Catheter-supported therapeutic and diagnostic tools can be introduced into a patient body with a sheath slidably disposed over the tool. Once the tool is aligned with a target tissue, a fluid-driven actuator can move the sheath axially from over the tool, for example, to allow a stent, stent-graft, prosthetic valve, or the like to expand radially within the cardiovascular system, without having to transmit large deployment forces along the catheter shaft and sheath from outside the patient. Well-behaved articulation structures will often include simple balloon arrays, with inflation of the balloons interacting with elongate skeletal support structures so as to improve articulation behavior of the skeleton. The array can be used to improve uniformity of bending along a segment of a flexible body such as a catheter. The articulation improvement structures can be employed in minimally invasive medical catheter systems, and also for industrial continuum robotics, for supporting imaging systems, for entertainment and consumer products, and the like.

Probable Assignee: PROJECT MORAY INC

Earliest Publication Date: 20170928



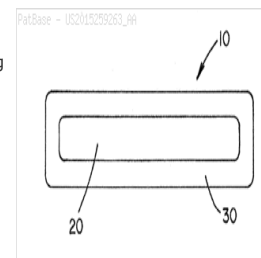
77) Family number: 56731619 (US2015259263A)

MATERIAL AND METHOD OF MANUFACTURE FOR ENGINEERED REACTIVE MATRIX COMPOSITES

Abstract: Source: US2015259263A A high strength engineered reactive matrix composite that includes a core material and a reactive binder matrix combined in high volumes and with controlled spacing and distribution to produce both high strength and controlled reactivity. The engineered reactive matrix composite includes a repeating metal, ceramic, or composite particle core material and a reactive binder/matrix, and wherein the reactive/matrix binder is distributed relatively homogeneously around the core particles, and wherein the reactivity of the reactive binder/matrix is engineered by controlling the relative chemistry and interfacial surface area of the reactive components. These reactive materials are useful for oil and gas completions and well stimulation processes, enhanced oil and gas recovery operations, as well as in defensive and mining applications requiring high energy density and good mechanical properties.

Probable Assignee: TERVES INC

Earliest Publication Date: 20140619



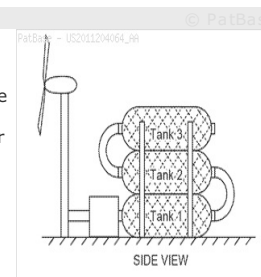
78) Family number: 49432141 (US2011204064A)

COMPRESSED GAS STORAGE UNIT

Abstract: Source: US2011204064A Embodiments of the present invention relate to compressed gas energy storage systems exhibiting one or more desirable characteristics. Certain embodiments of such systems may be efficient (80 percent round-trip), cost-effective (system cost <\$100 kWh), and/or quickly rampable (<10 minutes). Particular embodiments may use water sprays to facilitate heat transfer at high pressures during compression and expansion. The use of gas storage units of a filament-wound design, may significantly reduce the cost of gas storage.

Probable Assignee: LIGHTSAIL ENERGY INC

Earliest Publication Date: 20110825



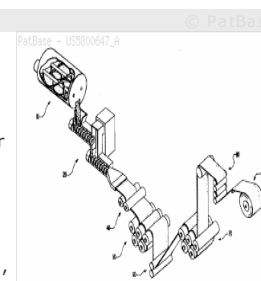
79) Family number: 33376258 (US5800647A)

METHODS FOR MANUFACTURING ARTICLES FROM SHEETS HAVING A HIGHLY INORGANICALLY FILLED ORGANIC POLYMER MATRIX

Abstract: Source: US5800647A Compositions, methods, and apparatus for manufacturing sheets having a highly inorganically filled matrix. Suitable inorganically filled mixtures are prepared by mixing together an organic polymer binder, water, one or more aggregate materials, fibers, and optional admixtures in the correct proportions in order to form a sheet which has the desired performance criteria. The inorganically filled mixtures are formed into sheets by first extruding the mixtures and the passing the extruded materials between a set of rollers. The rolled sheets are dried in an accelerated manner to form a substantially hardened sheet, such as by heated rollers and/or a drying chamber. The inorganically filled sheets may have properties substantially similar to sheets presently made from traditional materials like paper, paperboard, polystyrene, plastic, or metal. Such sheets can be rolled, pressed, scored, perforated, folded, and glued. They have especial utility in the mass production of containers, particularly food and beverage containers.

Probable Assignee: E KHASHOGGI IND LLC

Earliest Publication Date: 19980901



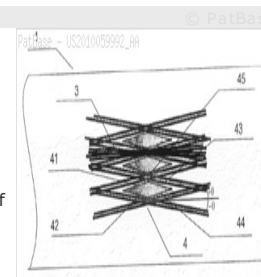
80) Family number: 40993089 (US2010059992A)

INTERFACE BETWEEN STIFF PIECE AND A COMPOSITE MATERIAL, A METHOD FOR THE FORMATION OF SUCH AN INTERFACE AND A STIFF PIECE THEREFORE

Abstract: Source: US2010059992A The present invention discloses an interface between a stiff piece (1) and a composite material (2), said composite material (2) comprising fibres (3), said stiff piece (1) comprising two or more vanes (4a, 4b,...) protruding from a surface of said stiff piece (1), said vanes (4) comprising two or more lateral surfaces (41, 42, 43, 44), in which one or more fibres (3) of said composite material (2) are arranged for passing through one or more funnel-shaped throats (45) formed between lateral surfaces (41a, 43a, 41b, 43b,...) of adjacent vanes (4a, 4b,...), in which a fixing matrix material (7) is arranged around said one or more fibres (3), at least in or near said funnel-shaped throats (45), in which said vanes (4) are arranged for exerting counteracting transversal and axial forces on said fibres (3) and said fixing matrix material (7) when said interface is subject to forces.

Probable Assignee: NTNU TECHNOLOGY TRANSFER AS

Earliest Publication Date: 20071217



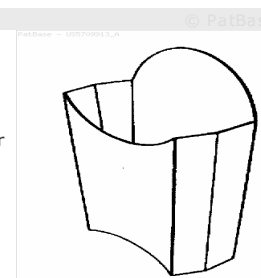
81) Family number: 33376250 (US5709913A)

METHOD AND APPARATUS FOR MANUFACTURING ARTICLES OF MANUFACTURE FROM SHEETS HAVING A HIGHLY INORGANICALLY FILLED ORGANIC POLYMER MATRIX

Abstract: Source: US5709913A Compositions, methods, and apparatus for manufacturing sheets having a highly inorganically filled matrix. Suitable inorganically filled mixtures are prepared by mixing together an organic polymer binder, water, one or more aggregate materials, fibers, and optional admixtures in the correct proportions in order to form a sheet which has the desired performance criteria. The inorganically filled mixtures are formed into sheets by first extruding the mixtures and then passing the extruded materials between a set of rollers. The rolled sheets are dried in an accelerated manner to form a substantially hardened sheet, such as by heated rollers and/or a drying chamber. The inorganically filled sheets may have properties substantially similar to sheets presently made from traditional materials like paper, paperboard, polystyrene, plastic, or metal. Such sheets can be cut, rolled, pressed, scored, perforated, folded, and glued to fashion articles from the sheet. They have especial utility in the mass production of containers, particularly food and beverage containers.

Probable Assignee: E KHASHOGGI IND LLC

Earliest Publication Date: 19980120

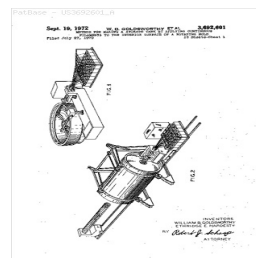


82) Family number: 18816681 (US3692601A)

METHOD FOR MAKING A STORAGE TANK BY APPLYING CONTINUOUS FILAMENTS TO THE

INTERIOR SURFACE OF A ROTATING MOLD

Abstract: Source: US3692601A ABSTRACT OF THE DISCLOSURE A fiberglass reinforced storage tank formed by constructing a filament reinforced cylindrical side wall and enclosing the transverse ends with a pair of end domes. The end domes are prefabricated in a circular mold of proper contour and size. A solvent-dispersed mold release agent is sprayed into the mold over the entire mold surface. Glass filaments are then laid along with a spray., of catalyzed binder resin in the rotating heated mold, beginning at the center and extending to the outer periphery thereof to form the resin cured rigid end domes. The annular cylindrical side wall is formed by applying fiberglass resin to the interior surface of a rotating cylindrical mold in the presence of a catalyzed binder resin with the formed end domes secured to the transverse ends of the mold during side wall formation. A particulate matter such as sand may be added to the composition. The mold is divided into longitudinal arcuate sections which are capable of separating for removal of a finally formed storage tank. DISCLOSURE This invention relates in general to certain new and useful improvements in apparatus and process for making fiberglass reinforced storage tanks. More particularly, the invention relates to an improved method of making fiberglass reinforced storage tanks by initially forming a pair of tank end domes. A cylindrical side wall of the tank is centrifugally cast making the prefabricated end domes for the tank an integral inclusion in the annular side wall. It has long been a common practice to construct underground storage tanks for the containment of liquid fuels such as gasoline, fuel oil, etc. from sheet steel or other heavy metals. It has also been a common practice to coat all exterior surfaces of such tanks with a corrosion preventive film such as bitumastic, filled resins, etc. However, these external coatings when applied to the tanks have not been entirely successful in preventing the encroachment of metal corroding fluids. In addition, the majority of these tanks are not coated on the inner surface which very often leads to corrosion from the interior surface. In order to obviate the problems encountered with metal tanks, many industries such as the petroleum industry have attempted to employ glass reinforced plastic tanks which are resistant to corrosive soil conditions or normally corrosive liquid contents. In addition, reinforced plastic tanks are not subjected to the possible incidental damage from stray electric currents resulting in galvanic attack as is oftentimes the case in steel tanks. In view of the evident advantages of glass reinforced tanks for underground service, many industries have sought suppliers for these tanks. Typically, the presently available reinforced plastic tanks are constructed by standard filament winding techniques to accumulate the cylindrical side wall and the end dome structure. These filament winding techniques are more fully described in U.S. Letters Patent No. 2,731,376. Filament winding techniques are often quite expensive and require a substantial amount of time in order to complete the fabricating of the structure. Another technique of forming the tank side wall resides in the application of glass mat or a combination of filament strands and chopped glass along with glass mat which are directly applied to the surface of a mandrel. However, conventional glass mats and chopped glass do not provide sufficient hoop strength and more importantly do not provide for adequate buckling resistance against external loading. There have been other attempts to cylindrically cast the tank side wall by applying strands, glass mats, or chopped glass, or a combination of these elements to the interior surface of a mold. The glass reinforced material is then resin impregnated and cured in order to form the cylindrical structure. However, in underground tanks where the primary loading is a compressive buckling, (as opposed to hoop tension in the case of the above ground tanks), it is desirable to produce a relatively inexpensive but fairly thick tank wall. The extant techniques result in tanks with high strength hoop tension. Accordingly, the conventional hand lay-up and spraying techniques have severe shortcomings in the fabrication of underground tanks and similar structures. The present invention is, therefore, designed to provide an apparatus and method for producing a thick wall tank section with inexpensive raw materials that are combined in such manner to provide adequate compressive buckling resistance as well as economic feasibility. OBJECTS It is, therefore, the primary object of the present invention to provide a method and apparatus for the production of filament reinforced storage tanks adaptable for use in underground systems. It is another object of the present invention to provide a method and apparatus of the type stated for the manufacturing of fiber reinforced storage tanks by separately forming various components forming part of the storage tank and finally assembling these components into a unitary structure. It is an additional object of the present invention to " provide an apparatus for producing fiber reinforced storage tanks on a mass-production basis which eliminates the necessity of employing conventional filament winding techniques and manually directed spray-up. It is another salient object of the present invention to provide an apparatus and method of the type stated which is readily adaptable to produce storage tanks of a wide variety of sizes and shapes. It is a further object of the present invention to provide a method of producing filament reinforced fiberglass storage tanks which enables formation of a tank with all of the necessary physical capabilities and mechanical attributes normally found in filament wound tanks, but which eliminates the undesirable conventional filament winding techniques. It is also an object of the present invention to provide both a method and apparatus of producing filament reinforced fiberglass storage tanks where particulate matter such as sand may be incorporated into the composite for enhancing the structural properties and the overall appearance of the final tank. With the above and other objects in view, our invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims. FigureS In the accompanying drawings (10 sheets): Fig. 1 is a perspective view showing the apparatus for preforming cylindrical end domes which form part of the storage tanks of the present invention; Fig. 2 is a perspective view showing the apparatus for forming the annular cylindrical side wall of the storage tanks of the present invention with the end domes as an inclusion thereof; Fig. 3 is a top plan view of the apparatus of Fig. 1 for constructing the end domes forming part of the filament reinforced tank, and which is constructed in accordance with and embodies the present invention; Fig. 4 is a side elevational view of the apparatus of Fig. 3 for constructing the end domes; Fig. 5 is a top plan view of the apparatus of Fig. 2 for making the side wall of a filament reinforced storage tank, and which is constructed in accordance with and embodies the present invention; FIGS. 6 and 7 are vertical sectional views taken along lines 6-6 and 7-7 respectively of Fig. 3; Fig. 8 is a fragmentary sectional view taken along line 8-8 of Fig. 7. Fig. 9 is a vertical fragmentary sectional view taken along line 9-9 of Fig. 3; Fig. 10 is a vertical fragmentary sectional view taken along line 10-10 of Fig. 9; Fig. 11 is a vertical fragmentary sectional view taken along line 11-11 of Fig. 10; Fig. 12 is a horizontal fragmentary sectional view taken along line 12-12 of Fig. 10; Fig. 13 is a front elevational view of a portion of the apparatus of FIGS. 2 and 5 for forming the side wall of the tank; Fig. 14 is a vertical sectional view taken along line 14-14 of Fig. 13; FIGS. 15 and 16 are fragmentary sectional views taken along lines 15-15 and 16-16, respectively, of Fig. 13; Fig. 17 is an end elevational view showing the carriage forming part of the apparatus of Fig. 13; Fig. 18 is a vertical fragmentary sectional view taken along line 18-18 of Fig. 17; Fig. 19 is a vertical fragmentary sectional view taken along line 19-19 of Fig. 17 and showing the lance supporting frame forming part of the present invention; FIGS. 20-27 are a series of sequential schematic sectional views showing the application of strands to a mold to form the side wall shell of a tank, of which; Fig. 20 is a schematic side elevational view showing the initial laying of circumferential filament strands in a groove forming part of the mold of the present invention; Fig. 21 is a top plan view showing the laying of circumferential filament strands in the grooves forming part of the mold of the present invention; Fig. 22 is a schematic end elevational view showing the laying of a second layer of fiberglass strands in the form of spirals; Fig. 23 is a schematic top plan view showing the application of the second layer of strands in the form of spirals in the fabrication of the side wall shell; Fig. 24 is a schematic side elevational view showing the application of the third layer of strands in the form of circumferential elements in the fabrication of the side wall shell; Fig. 25 is a top plan view showing the application of the third layer in the form of circumferential strands; Fig. 26 is a schematic side elevational view showing the laying of filament strands in the form of spirals to constitute the fourth layer; Fig. 27 is a schematic top, plan view showing the laying of the filament strands in the form of spirals to constitute the fourth layer. Fig. 28 comprises three schematic sectional views showing the various stages in securing the end domes to the tank side wall of which: Fig. 28a is a fragmentary vertical sectional view showing a portion of the mold used to form the tank side wall; "Fig. 28b is a fragmentary vertical sectional view showing a portion of the side wall formed in the mold; and Fig. 28c discloses the technique of incorporating a flange on the end dome integrally into the tank side wall. Fig. 29 is a perspective view showing the finished tank forming part of the present invention; Fig. 30 is a vertical sectional view showing the interior of the finished tank of Fig. 28; Fig. 31 is a perspective view of a modified form of apparatus for forming the storage tank side wall of the present invention; and Fig. 32 is a side elevational view of the apparatus of Fig. 30. GENERAL DESCRIPTION The present invention provides a unique method for constructing underground storage tanks on a rapid and economical basis. This method is described hereinafter in detail. A particular embodiment of an apparatus suitable for accomplishing the method of the present invention is also illustrated and described herein. The storage tanks of the present invention are constructed by separately forming an annular cylindrical tank shell or so-called "annular side wall" in a three-piece mold. The end domes, which are ultimately secured to the annular side wall, are also formed in a separate female mold. The end domes are prefabricated in a circular metal female mold.



wall are also formed in a separate female mold. The end domes are prefabricated in a circular metal female mold which is positioned horizontally and has a concave major surface, contoured to form the dome portion. The mold is also provided with an integral circular ring extending upwardly from the concave major surface. The mold is heated and a thin film of solvent dispersed mold release is sprayed upon the concave surface thereof. Thereafter a resin gel coating may be optionally sprayed over the entire mold surface. The gel coating, if employed, should be pigmented with an inert colloid. After the gel has been allowed to stiffen slightly, fiberglass filaments are layed on the entire surface in a spray of catalyzed binder resin. The mold is rotated about its axis of rotation and the speed of rotation is automatically programmed to coincide with the rate and pattern at which the glass filaments are applied. As the fiberglass deposition path increases radially outward from the axis of rotation of the mold, the speed of the mold is proportionally reduced. The circular upstanding peripheral flange only carries a sufficient amount of binder-resin to hold the filaments in place to create a slightly rigid self-supporting flange. The end dome will have a raised center embossment forming a small hole in the end dome which is locally reinforced about its periphery and root. This hole formed in the end dome allows access for subsequent processing. The annular side wall of the storage tank is formed in a three-piece external cylindrical mold. In essence, the mold is divided into three curved longitudinal plates arranged 120° apart. One of the curved plates is hinged along both edges to each of the other two plates. These plates are, in turn, fastened together along the remaining respective edges by a full length quick release cam lock mechanism. The interior surface of the mold is highly polished and contains a plurality of circumferential grooves longitudinally spaced along the length of the cylinder. The grooves are approximately 6" wide by 2" deep and form the tanks reinforcing ribs, or so-called "external -hoops." These ribs assure adequate buckling resistance in the finished tank wall structure. In addition, the ends of the cylindrical mold are recessed to receive the circumferential rim flanges of both of the end domes which are separately prefabricated. External restraining lugs are also provided to hold the end domes securely and accurately in position. The cylindrical metal mold is also warmed and is rotated about its major axis. The lance carries a plurality of axially spaced radially directed tubes for transporting the glass filament rovings. Additional tubes are carried by the lances to deliver the liquid binder-resin. It is also possible to have the lance carry high intensity lights for allowing an operator to view the process and monitor the operations. When the prefabricated end domes are locked into position, and the lance is inserted for its full length into the tank mold interior the mold is rotated initially at a relatively slow speed. A solvent dispersed mold release agent is sprayed by "the leading tube on the inner metal surface as the lance is being inserted into the cylindrical metal mold. Following this, an exterior gel coat is applied and allowed to stiffen. These materials are substantially the same as those employed in the end dome fabrication. After the application of the mold release agent and the binder-resin, the speed of rotation of the cylindrical mold is increased. All but two of the filament nozzles lay circumferential rovings into the grooves longitudinally spaced along the length of the mold. It is also possible to add a particulate matter to the resin-glass composition during the formation of the side wall of the tank, as well as in the end dome fabrication. A separate nozzle carried by the lance would be capable of applying the proper amount of metered sand or other particulate matter during the formation of the component. The amount of sand added is regulated in accordance with the structural properties desired in the final product as well as the surface appearance to be achieved. In addition, the particulate matter filler is a relatively inexpensive component and the amount used would be dependent upon the overall economies which are desired in the fabrication of the components. This coverage is obtained by reciprocating the lance back and forth horizontally. Furthermore, this filament application is continued until an initial high-density structural layer in the form of a flat ring is obtained in each hoop. Thereafter, the speed of rotation of the mold is reduced or the glass feed rate is increased and glass filaments are caused to lay down in the form of overlapping continuous flat spirals until the groove is filled. Flat bands of filament spirals are also applied by the two remaining filament nozzles to the peripheral flanges of the end dome. Thereafter, the rotational velocity of the mold is again increased to its original velocity to lay down complete and continuous layers of circumferential windings or so-called "circumferentials" over the entire inner mold surface. The lance reciprocates during the rotation of the mold. Simultaneously with the laying of the continuous filaments, a light spray of liquid, catalyzed binder resin has also been applied. Particulate matter may also be added during this time as well. After the application of the surface shell of circumferential strands, the mold is again slowed and a flat spiral core deposition is resumed in the manner as previously described. This spiral deposition is applied to the entire inner surface and also to the end dome flanges. This filament application is continued until the design shell-wall thickness has been achieved. Thereafter, the mold speed of rotation is increased and additional liquid resin is applied in the form of a very thin resin float on the inner surface. The inherent centripetal force from the rotation of the mold aids in compacting the glass-resin composite. Furthermore, the end dome rims are now merged into an integral part of the whole tank structure with a resin-rich inner surface now extended to bond with- that of the prefabricated end dome. This type of construction essentially forms a unitized one-piece structure with an unbroken shell structure and inner "skin." After allowing sufficient time for the resin to cure, the mold is stopped and the end dome restraining lugs are relieved. The mold is unlocked and swung open and the finished tank is lifted out. Thereafter, subsequent finishing operations and hardware attaching operations may be employed. The present invention includes a number of unique aspects in the fabrication of storage tanks and similar structures. One of the unique aspects resides in the centrifugal application to the interior surface of a rotating mold of a combination of glass strands and resin in predetermined properly metered quantities to form a structural shape. Furthermore, the invention includes the application of glass strands in combination with a curable resin and a particulate matter such as sand or the like, to the interior surface of a rotating mold in such quantities as to produce a tank structure with sufficient wall thickness to resist compressive buckling loads in a relatively inexpensive manner. The quantities of these materials are all properly metered and deposited on the interior surface of the mold in properly timed relationship to form the predetermined desired structure. A further unique aspect of the present invention resides in a mechanism for employing a lance capable of depositing the resin, the particulate matter and the glass strands to the interior surface of the mold where the rate of reciprocative movement of the lance is properly programmed to the speed of rotation of the mold in such manner that glass strands can be applied to the interior surface of the mold in a circumferential pattern, such as occurs in filament winding on an external surface, or in helically formed strands, or in a swirl pattern. In addition to the foregoing, the present invention also provides an apparatus which includes a number of unique aspects for accomplishing the various operations necessary in the fabrication of both the end domes and the tank side wall. In addition to the foregoing, the present invention provides a unique method of bonding the end dome to the tank side wall by providing an end dome with a resin starved peripheral flange which is capable of being wound into the tank side wall during the formation of the tank side wall so that the end dome actually becomes an integral inclusion in the formation of the tank side wall. METHOD The entire tank is constructed by preforming each of the end walls or so-called "end domes" in the apparatus illustrated in Fig. 1. In essence, a pair of end domes are formed and these end domes are connected to and structurally intergrated into a tank side wall hereinafter described. In the formation of the end domes, a resin matrix is laid in the mold surface and the fiber reinforced material is thereafter deposited on the resin layer. Generally, the mold is rotated at a speed which is programmed to the filament deposition rate. In one embodiment of the invention, it is possible to rotate the mold and employ a series of feeding heads which extend for the radius of the mold, thereby applying a continuous layer of filament to the mold surface as it rotates. As another embodiment, it is possible to reciprocate the filament feeding tube for a distance equal to the radius of the mold as the mold rotates. Furthermore, it is also possible to rotate the filament feeding tube about the mold in circles of increasing radii in order to lay continuous filament strands on the entire surface of the mold. The mold is also heated in order to obtain faster solidification of the binder resin and shorter cure time in the completed lay-up. If desired, a solvent-dispersed mold release may be sprayed upon the surface of the mold prior to the time that the resin matrix and filaments are laid therein. The filaments are laid in such fashion that they cover the entire crown surface of the mold and extend up onto a center embossment in order to provide a locally reinforced center aperture. In addition, the mold has a side wall which is also designed to receive the filament strands. However, this latter portion of the mold will have a resin starved layer so that the portion of 1 filament strands which form a peripheral flange on the end dome is rather dry and contains only enough resin to hold the filaments in place. After the end domes have been formed, they can be conveniently removed from the mold. For this purpose, 1 the mold may be a segmented mold divided into a plurality of arcuate sections which are designed to shift radially in order to enable the removal of the mold. Any conventional mechanism, however, for removing the final end dome from the mold may be employed. 2 The mechanism for producing the annular side wall of the tank and for integrally including the end domes in the formation of the annular side wall is more fully illustrated in Fig. 2. A number of sequences are performed during the actual tank formation. By reference to Fig. 2, it can be seen that the mold for producing the annular side wall is segmented and each of

the sections is arcuately pivotal so that the side wall formed therein can be removed. It can be seen that a pallet containing a series of roving spools are shiftable with a feed carriage, the latter containing a lance which extends into the mold. As an initial step in the formation of the tank structure, the previously prefabricated end domes are inserted into the transverse ends of the cylindrical mold. Thereafter, a lance which feeds both the filament from the pallet and which contains resin applicators is inserted through the aperture of the end dome into the cylindrical mold. After the lance arrangement which carries the filament and resin matrix has been inserted into the mold, the resin applicators are actuated to lay a thin resin layer on the surface of the mold while the mold is rotating. Furthermore, the mold is rotating at a relatively slow speed which is only sufficient to cause the centrifugal force to hold the resin against the side wall. Thereafter, the filament feeding nozzles which are mounted on the lance are advanced to a point where they are close to grooved surfaces on the interior of the mold. The mold is provided with a series of longitudinally spaced circumferential grooves which are designed to form external hoops in the final tank side wall. After the filament feed nozzles have been advanced close to the surface of the grooves, a layer of filament is laid into each of the grooves at a rate identical to the peripheral speed of the surface through the rotation of the mold. At this point, the lance is advanced causing the fibers to lay side-by-side within the confines of each of the grooves. It should be recognized that an individual feeding nozzle is provided for each groove. In order to provide a fiber thickness of several layers, the lance may be shifted so that the feed nozzles are shifted several times between the limits of the grooves. After each of the mold grooves have been filled with the filament applied in a side-by-side pattern, much in the same manner as employed in conventional filament winding techniques, the rate of filament feeding to the feeding nozzles is changed. Metering rollers are provided for regulation of feed rate and are programmed to account for the change in peripheral speed of the deposition surface. As the filaments are applied to the groove, the build-up will reduce the overall radius of filament application and accordingly, the peripheral speed thereof will change. Inasmuch as the filament must be applied at the same rate as the peripheral speed of the deposition surface moving past the filament nozzles, the metering rollers are designed to account for this change in peripheral speed. After the grooves have been completely filled, the amplitude of the lance reciprocation is increased to a distance which is slightly greater than the distance between the two grooves. Actually, each feeding nozzle will move from the midpoint of the area between one set of grooves to the midpoint of the area existing between the next adjacent set of grooves. The filament is laid down in flat strands which are adjacent to each other until the nominal wall thickness has been attained. The speed of rotation of the mold and the speed of reciprocation of the lance is held constant and the glass feed rate is materially increased by an order of magnitude to cause the filaments to lay in a swirl or spiral pattern. Simultaneously with the laying of the enlarged quantity of filament in these patterns, a resin spray from the resin feeding heads is applied and the rate of application is commensurate with the amount of glass deposited in the mold. It should be recognized that as an alternative, the glass feed rate could be maintained constant and the speed of rotation of the mold could be reduced in order to increase the amount of glass laid in the mold per unit of time. This build-up of swirl pattern filaments is continued until the desired wall thickness is attained. Thereafter, the resin application is ceased and the speed of rotation of the mold is increased. By placing a maximum centrifugal force on the deposited materials, it is possible to densify the materials and "float out" the entrained air. In addition, this type of action will cause the resin to move to the inner surface since the resin has a lower density than the reinforcing material. This will also cause a resin-rich inner layer which, in turn, forms a rather unique seal which can be further enhanced by the addition of small thin glass flakes. The mold is continually rotated at this speed and the lance is removed. As an alternative, particulate matter, such as sand, may be added during the formation of either the end domes or the tank side wall, or both. The amount of sand typically would range from approximately 10 percent by weight of the total composition to approximately 90 percent by weight of the total composition. The sand is added either simultaneously with the application of the resin or at intermittent time intervals with respect to the resin. Separate nozzles are provided on the lance for adding the sand. In addition, the sand would be metered in order to provide the proper amount. A longitudinally shiftable heater is located on the opposite side of the cylindrical mold with respect to the lance structure. After removal of the lance, the heater can be inserted through the central aperture of the opposite end dome and into the mold causing the resin impregnated reinforced fiberglass to cure. It should be noted that the relatively resin-poor peripheral flange on each of the end domes has been integrally included in the winding process during the formation of the annular side wall. Furthermore, this flange becomes an integral part of the side wall during the impregnation of the resin and overwindings of filament strands, thereby causing a structurally rigid fluidtight seal to exist between each of the end domes and the annular side wall. It should be recognized that the side wall could be discretely formed with the end domes adhesively or otherwise secured to the side wall after the latter has been cured. By the unique methods described herein, it can be seen that it is possible to produce a relatively large tank for liquid storage by centrifugal casting of continuous filament strands. Furthermore, it is possible to build a relatively thick side wall in a relatively short period of time and to produce a resin-rich inner surface on the interior surface of the tank. In addition, the glass is transported by an air vehicle in the lance and this type of arrangement materially reduces the normal problem encountered in the transporting of fiberglass. The tank produced by the method and the apparatus of the present invention is rather unique in that it is capable of withstanding high compression loads. Normally, surface tanks are designed to have a high burst strength with high top loads. However, the underground tanks must also be able to withstand high compression loads. Accordingly, the conventional filament winding techniques are not applicable for producing the desired type of underground storage tank. The tank of the present invention is uniquely designed to produce a side wall with a high buckling modulus. The filament winding technique alone will provide a tank shell or side wall with a high degree of tensile strength and some compressive strength. By using the combination of filament placement and the type of resin and fiber reinforced deposition employed herein, it is also possible to obtain the high buckling modulus. In order to accomplish the method of the present invention, a preferred embodiment of the apparatus for producing the storage tank described herein is more fully illustrated and described. It should be recognized that there are a number of components which can be substituted for the components herein described in this particular embodiment of the apparatus. For example, pneumatic drive systems could be conveniently substituted for the gear drive systems illustrated and described herein. Nevertheless, the particular embodiments of the apparatus herein described and illustrated have been found to be the most preferred embodiments.

Probable Assignee: GOLDSWORTHY ENG INC

Earliest Publication Date: 19720919

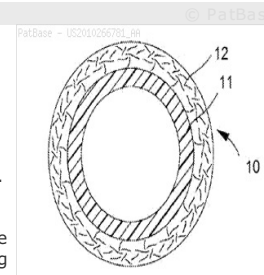
83) Family number: 47337563 (US2010266781A)

STRUCTURAL COMPONENTS FOR OIL, GAS, EXPLORATION, REFINING AND PETROCHEMICAL APPLICATIONS

Abstract: Source: US2010266781A A method to improve corrosion, abrasion, and fire resistant properties of structural components for use in oil, gas, exploration, refining and petrochemical applications is provided. The structural component is suitable for as refinery and/or petrochemical process equipment and piping, include but are not limited to process vessels, transfer lines and process pipes, heat exchangers, cyclones, and distillation columns. The method comprises providing the structural component with a plurality of layers, a corrosion resistant layer in contact with the corrosive petroleum products comprising a material selected from amorphous metals, ceramic materials, or combinations thereof; a structural layer; and an outer layer comprising a fire resistive material. In one embodiment, the structural component is further provided with at least another layer selected from a metal sheeting layer, an adhesive layer, and a containment layer. The structural component is characterized as having excellent corrosion/abrasion/erosion properties and fire-resistant properties.

Probable Assignee: CHEVRON USA INC

Earliest Publication Date: 20101021



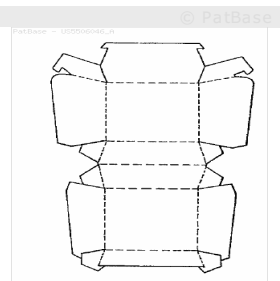
84) Family number: 33376227 (US5506046A)

ARTICLES OF MANUFACTURE FASHIONED FROM SHEETS HAVING A HIGHLY INORGANICALLY FILLED ORGANIC POLYMER MATRIX

Abstract: Source: US5506046A Compositions, methods, and apparatus for manufacturing sheets having a highly inorganically filled matrix. Suitable inorganically filled mixtures are prepared by mixing together an organic polymer binder, water, one or more aggregate materials, fibers, and optional admixtures in the correct proportions in order to form a sheet which has the desired performance criteria. The inorganically filled mixtures are formed into sheets by first extruding the mixtures and then passing the extruded materials between a set of rollers. The rolled sheets are dried in an accelerated manner to form a substantially hardened sheet, such as by heated rollers and/or a drying chamber. The inorganically filled sheets may have properties substantially similar to sheets presently made from traditional materials like paper, paperboard, polystyrene, plastic, or metal. Such sheets can be cut, rolled, pressed, scored, perforated, folded, and glued to fashion articles from the sheets. They have especial utility in the mass production of containers, particularly food and beverage containers.

Probable Assignee: E KHASHOGGI IND LLC

Earliest Publication Date: 19960409



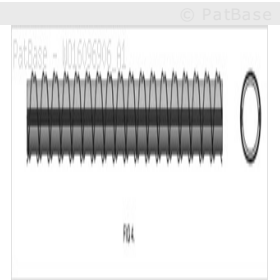
85) Family number: 62737858 (WO16096906A1)

FILAMENT-WOUND LINER-FREE PIPE

Abstract: The current invention concerns a filament-wound liner-free GRP pipe. The reinforcement filaments comprise one or more spiral fibre windings wrapped in a first direction, one or more spiral fibre cross windings wrapped in a second direction and one or more longitudinal fibre rovings, the longitudinal fibre rovings extending along the length of the pipe in the rigid sides of the pipes. It also concerns a process for manufacturing the same via a filament winding process. Furthermore, it concerns the production line and the mandrel and winding stations used therein. Finally, it concerns the use of the new pipe, for offshore and onshore applications, in particular as flexible riser pipe.

Probable Assignee: GLOBAL COMPOSITE PIPE SYSTEM BV

Earliest Publication Date: 20160623



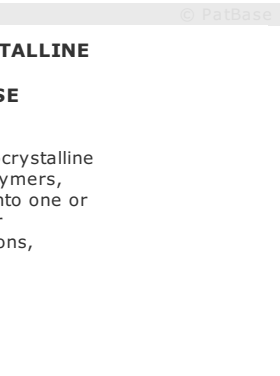
86) Family number: 64813858 (US2017027168A)

METHODS, PRODUCTS, AND SYSTEMS RELATING TO MAKING, PROVIDING, AND USING NANOCRYSTALLINE (NC) PRODUCTS COMPRISING NANOCRYSTALLINE CELLULOSE (NCC), NANOCRYSTALLINE (NC) POLYMERS AND/OR NANOCRYSTALLINE (NC) PLASTICS OR OTHER NANOCRYSTALS OF CELLULOSE COMPOSITES OR STRUCTURES, IN COMBINATION WITH OTHER MATERIALS

Abstract: Source: US2017027168A Methods, apparatus, products, and/or systems relating to making or using nanocrystalline (NC) products comprising a combination of one or more of nanocrystalline cellulose (NCC), nanocrystalline (NC) polymers, nanocrystalline (NC) plastics or other nanocrystals of cellulose composites or structures that have been processed into one or more of solid, flake, particles or other forms with vapor processing, solid state processing, liquid processing or other processing methods that can optionally be combined with other materials for different nanocrystalline (NC) applications, products or uses, and the like.

Probable Assignee: HEATH STEPHAN

Earliest Publication Date: 20170127



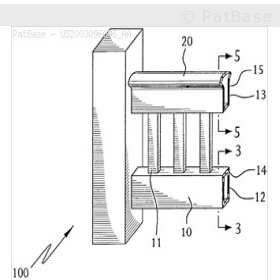
87) Family number: 30516419 (US2003096096A)

PLASTIC RAIL SYSTEM REINFORCED WITH FIBERGLASS THERMOPLASTIC COMPOSITES

Abstract: Source: US2003096096A The present invention relates to a consolidated form of the commingled continuous filaments of glass fibers and polymeric fibers as reinforcement. The consolidation of the commingled fibers into composite reinforcement can be used in a continuous form or bulk molding compound pellets. The consolidation of the commingled fibers into composite reinforcement can be made in-situ during in-line extrusion of the final end product extrudate, or prepared as a tape or rod and incorporated into an off-line extrusion of final product. The bulk molding pellets are used solely or diluted with an addition of polymeric material for mono or co-extrusion or compression molding.

Probable Assignee: CERTAINTED CORP

Earliest Publication Date: 20030522



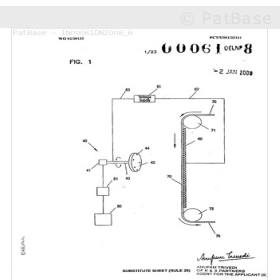
88) Family number: 41672987 (IN00061DN2008A)

AIR FILTER ASSEMBLY FOR FILTERING AN AIR STREAM TO REMOVE PARTICULATE MATTER ENTRAINED IN THE STREAM

Abstract: Source: IN00061DN2008A Filter arrangements for industrial air cleaners include a barrier media, usually pleated, treated with a deposit of fine fiber. The media is particularly advantageous in high temperature (greater than 140 Degrees F) operating environments.

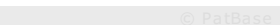
Probable Assignee: DONALDSON CO INC

Earliest Publication Date: 20080404



89) Family number: 54104516 (WO13087803A1)

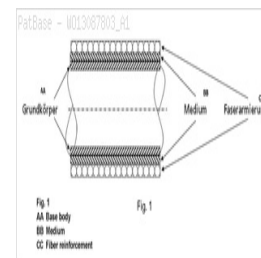
LOAD BEARING REINFORCEMENT OF HOLLOW BODIES UNDER INTERNAL PRESSURE



Abstract: The invention relates to a high-temperature resistant hollow body which can be subjected to internal pressure and which can be used, for example, for hot-gas lines in power plants, for heat exchangers and recuperators in high-temperature systems, for pressurized, liquid-conveying pipes in the chemicals industry or for heating pipes, which comprises a main body for receiving liquids having a temperature greater than approximately 100 degrees centigrade, a fiber reinforcement enclosing the main body on the outside having a lower thermal expansion coefficient relative to the main body and an inside diameter which exceeds the outside diameter of the main body at room temperature, characterized in that there is a medium between the main body and the inside of the fiber reinforcement, which medium allows for a reduction of the distance between the main body and the inside of the fiber reinforcement, wherein the medium has a solid intermediate layer enclosing the main body, which intermediate layer consists either of an inorganic material or comprises such a material or is created by heat treatment / pyrolysis and has optionally cracks, gaps and/or pores. The invention furthermore relates to an intermediate product for producing the hollow body and a method for the production thereof.

Probable Assignee: FRAUNHOFER GES

Earliest Publication Date: 20130620



90) Family number: 33376254 (US5738921A)

COMPOSITIONS AND METHODS FOR MANUFACTURING SEALABLE, LIQUID-TIGHT CONTAINERS COMPRISING AN INORGANICALLY FILLED MATRIX

Abstract: Source: US5738921A Sealable liquid-tight containers and methods for economically manufacturing containers for storing and dispensing substances and any other purposes for which conventional sealable liquid-tight containers are utilized. The containers are readily and economically formed from inorganically filled mixtures comprising a water-dispersible organic polymer binder, aggregate fillers, fibers, and water. Alternatively, such containers are formed from high starch-containing compositions which optionally include inorganic fillers up to about 90 percent. Such compositions can be directly molded, formed into wet sheets and then molded, formed into dry sheets and then reformed, or extruded into the container components. The containers or components thereof may optionally be coated, lined, laminated, and/or receive printing.

Probable Assignee: E KHASHOGGI IND LLC

Earliest Publication Date: 19980414

