

**[SS 17] ..fi epodoc**



Database: EPODOC

**[EPODOC: SS 17] hose and layer+ and reinforcement**

Results in EPODOC **1.007**

**[SS 18] \* and PD<20141218**

Results in EPODOC **856**

**[SS 19] \* and extensible**

Results in EPODOC **1**

**[SS 20] 18 and flexible**

Results in EPODOC **275**

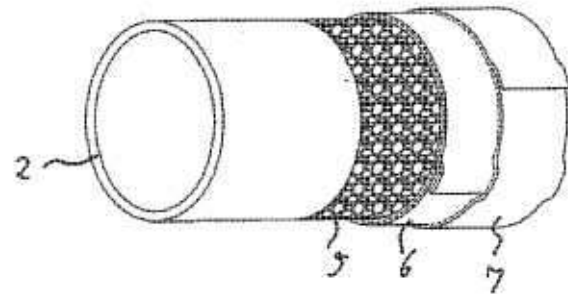
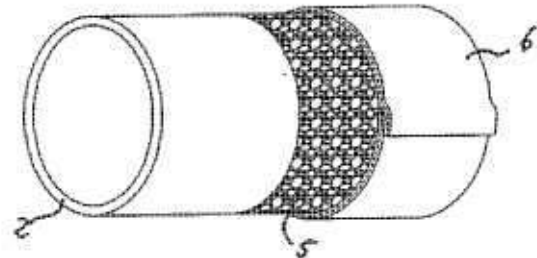
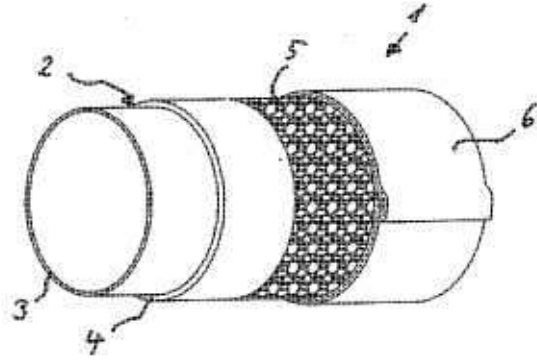
**[SS 21] \* and (liquid or water)**

Results in EPODOC **19**

**[SS 22] ..li**



PN - [US2011023988](#) A1 20110203  
 PNFP - US8997795 B2 20150407  
 PR - DE20081009598  
 20080215; DE20081055480  
 20081205; WO2009EP50297  
 20090113  
 AP - US20100805661 20100812  
 DT - \*\*  
 CT - || STSE (B2)  
[US1798798](#) A 19310331 [  
 ] (GOODRICH CO B F)  
[US1972755](#) A 19340904 [  
 ] (FIDELITY MACHINE CO)  
[US2358743](#) A 19440919 [  
 ] (ELIJAH SMITH FRANKLIN)  
[US2424315](#) A 19470722 [  
 ] (COLUMBUS COATED FABRICS  
 CORP)  
[US3190315](#) A 19650622 [  
 ] (GOODYEAR TIRE & RUBBER)  
[US3418404](#) A 19681224 [  
 ] (ANGUS GEORGE CO LTD)  
[US3462177](#) A 19690819 [  
 ] (HEWITT ROBINS INC)  
[US3535891](#) A 19701027 [  
 ] (ROBERT J COREY)  
[US3886980](#) A 19750603 [  
 ] (ACME HAMILTON MFG)  
[US3905399](#) A 19750916 [  
 ] (UNIROYAL LTD)  
[US4102724](#) A 19780725 [  
 ] (GOODYEAR TIRE & RUBBER)  
[US4111237](#) A 19780905 [ ] (GEN  
 MOTORS CORP)  
[US4181157](#) A 19800101 [  
 ] (FLEXFAB INC [US])  
[US4273160](#) A 19810616 [  
 ] (PARKER HANNIFIN CORP)  
[US4380252](#) A 19830419 [  
 ] (GATES RUBBER CO)  
[US4488577](#) A 19841218 [  
 ] (PARKER HANNIFIN CORP [US])  
[US4675221](#) A 19870623 [  
 ] (TITEFLEX CORP [US])  
[US4706712](#) A 19871117 [  
 ] (DAYCO PRODUCTS INC [US])  
[US5052444](#) A 19911001 [  
 ] (FLUOROCARBON CO [US])



[US6099925](#) A 20000808 [  
 ] (COFLEXIP [FR])  
[US6455115](#) B1 20020924 [  
 ] (MILLIKEN & CO [US])  
[US6742545](#) B2 20040601 [  
 ] (PARKER HANNIFIN CORP [US])  
[US7063181](#) B1 20060620 [  
 ] (DANA CORP [US])  
[US7694695](#) B2 20100413 [  
 ] (GATES CORP [US])  
[US2002100516](#) A1 20020801 [  
 ] (POWELL STEVEN M [US], et al)  
[US2003113495](#) A1 20030619 [  
 ] (OSSUR HF [US])  
[US2004144440](#) A1 20040729 [  
 ] (LUNDBERG CHRIS A [US], et al)  
[US2005199308](#) A1 20050915 [  
 ] (SWAILS MICHAEL R [US], et al)  
[US2005238832](#) A1 20051027 [  
 ] (KOSTAMO DALE E [US])  
[US2009049869](#) A1 20090226 [  
 ] (MALLOY CASSIE M [US], et al)

- || R141 (A1)

[US1972755](#) A [ ];  
[US2358743](#) A [ ];  
[US2424315](#) A [ ];  
[US3418404](#) A [ ];  
[US4111237](#) A [ ];  
[US4181157](#) A [ ];  
[US4706712](#) A [ ];  
[US5052444](#) A [ ];  
[US6455115](#) B1 [ ];  
[US6742545](#) B2 [ ];  
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[US4488577](#) A [ ];  
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[US7063181](#) B1 [ ];  
[US2005199308](#) A1 [ ];  
[US4102724](#) A [ ];  
[US2003113495](#) A1 [ ];  
[US2009049869](#) A1 [ ];  
[US3462177](#) A [ ];  
[US3535891](#) A [ ];  
[US6099925](#) A [ ];  
[US7694695](#) B2 [ ];  
[US2002100516](#) A1 [ ];  
[US2004144440](#) A1 [ ];

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|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | <a href="#">US3190315</a> A [ ];<br><a href="#">US3905399</a> A [ ];<br><a href="#">US2005238832</a> A1 [ ];<br><a href="#">US1798798</a> A [ ];<br><a href="#">US2008000540</a> A1 [ ];<br><a href="#">US2007186989</a> A1 [ ];<br><a href="#">US2006223399</a> A1 [ ];<br><a href="#">US5683773</a> A [ ];<br><a href="#">US5077108</a> A [ ]                                                                                                                                                                                                                                                                                                                                                         |
| CCI | - <a href="#">F02M35/10321</a> ;<br><a href="#">F02M35/10334</a> ; <a href="#">F16L11/042</a> ;<br><a href="#">F16L11/086</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| CCA | - <a href="#">F01P11/04</a> ; <a href="#">F02M35/10157</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| PA  | - (B2)<br>LUDWIG LIGIA [DE]; WILL<br>GERHARD [DE]; DILL ROBERT [DE];<br>CONTITECH MGW GMBH [DE]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| TI  | - (A1 B2)<br><b>Flexible hose</b> for high pressures<br>and temperatures including a<br>charge-air <b>hose</b> and a cooling-<br><b>water hose</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| AB  | - (A1 B2)<br>A <b>flexible hose</b> (1) has at least<br>two textile <b>reinforcement</b> inlays<br>or inserts (5, 6, 7) and an<br>inner <b>layer</b> (2) made of<br>elastomeric material.<br>The <b>flexible hose</b> can assume<br>various curvature geometries<br>and, on the other hand, is still<br>pressure-resistant because a<br>textile <b>reinforcement</b> inlay (5)<br>made of a peripherally closed,<br>tubular knitted or woven fabric<br>is applied to the elastomeric<br>inner <b>layer</b> (2). A textile <b>layer</b> (6),<br>which is rubber-coated on both<br>sides, is wound as a further<br>textile <b>reinforcement</b> inlay onto<br>the tubular knitted or woven<br>fabric (5). |

PN - [EP2154403](#) A2 20100217  
 PNFP - EP2154403 A3 20110727  
 PR - IT2008VI00188 20080805  
 AP - EP20090010048 20090804  
 DT - \*; Rep  
 CT - || STSE (A3)  
       [WO02076734](#) A1 20021003  
       [XI] (PARKER HANNIFIN CORP  
       [US])  
       [X] 1,2,6,8,11,12  
       \* page 8, line 6 - page 9,  
       line 21 \*  
       \* page 12, lines 3-13 \*  
       \* page 13, lines 9-26 \*  
       \* figure - \*  
       [I] 3-5,7,9,10,13;  
       [WO03089829](#) A1 20031030  
       [XI] (PARKER HANNIFIN CORP  
       [US])  
       [X] 1,2,4-6,8,11  
       \* page 13, line 27 - page 14,  
       line 14 \*  
       \* page 15, line 3 - page 16,  
       line 7 \*  
       \* figure - \*  
       [I] 3,13;  
       [US5555913](#) A 19960917  
       [AD] (WAIDELE ARMIN [DE], et al)  
       [AD] 1-12  
       \* the whole document \*  
 CCI - [B32B5/026](#) ; [B32B27/12](#) ;  
       [B32B27/20](#) ; [B32B27/302](#) ;  
       [B32B27/304](#) ; [B32B27/308](#) ;  
       [B32B27/32](#) ; [B32B27/34](#) ;  
       [B32B27/36](#) ; [B32B27/365](#) ;  
       [B32B1/08](#) ; [F16L11/083](#) ;  
       [F16L11/124](#)  
 CCA - [B32B2264/105](#) ; [B32B2307/412](#) ;  
       [B32B2597/00](#)  
 PA - (A2 A3)  
       FITT SPA [IT]  
 TI - (A2 A3)  
       **Flexible hose** having metallized  
       look  
 AB - (A2)  
       **Flexible hose**, particularly a  
       shower or gardening **hose**,

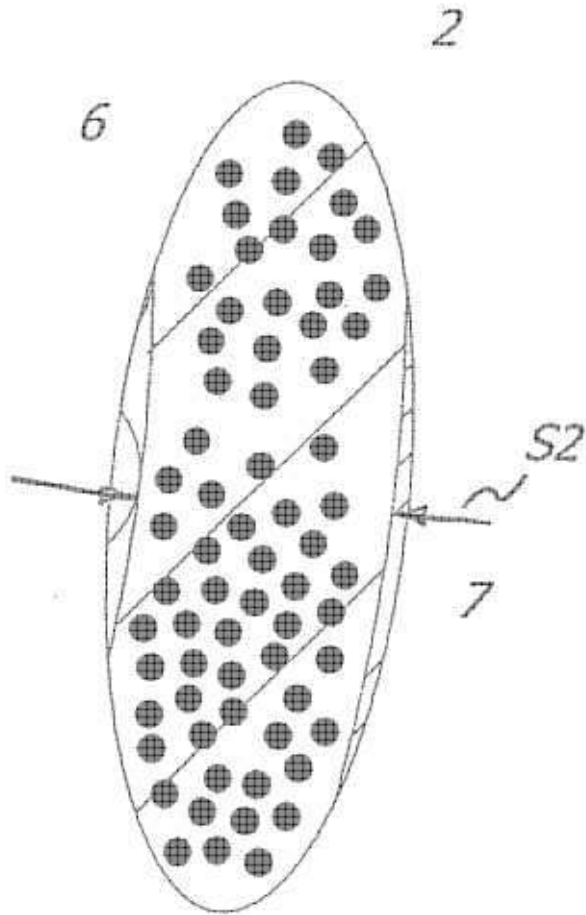


**FIG. 2**

comprising, as viewed from the inside: - at least one inner supporting **layer** (4) susceptible of contacting the **liquid** to be conveyed; - at least one fibrous **reinforcement layer** (5) of braided or tricot knitted type; - at least one outer **layer** (2); wherein said at least one inner supporting **layer** (4) or said at least one outer **layer** (2) is visible from the outside and has a metallized appearance, said **layer** visible from the outside being formed of a first thermoplastic polymeric material that includes metal particles (6) embedded in a polymer-based matrix (7).

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- PN - [US2005042448](#) A1 20050224
- PR - GB20020016180 20020712
- AP - US20030616870 20030710
- DT - \*\*
- CT - || R141 (A1)  
[US3953270](#) A 19760427 [  
 ] (FORD GARY P);  
[US4121962](#) A 19781024 [  
 ] (HOPKINS CARL E)
- CCI - [B29D23/001](#) ; [B32B1/08](#) ;  
[F16L11/086](#)
- CUI - [B32B25/10](#) ; [B32B25/14](#)
- CCA - [B29K2105/0827](#) ; [B29K2011/00](#) ;  
[B29L2023/005](#) ; [B29C47/0023](#) ;  
[B29C35/02](#) ; [B29C47/021](#) ;  
[B29C47/065](#) ; [B29K2021/00](#) ;  
[B29L2009/00](#) ; [B29C2035/0822](#) ;  
[Y10T428/2933](#)
- TI - Multiple **layer hose**, method of producing a multiple **layer hose** and apparatus therefor
- AB - In one aspect the present invention provides a multilayer **hose** comprising an inner **layer** surrounded by a first **layer** of **reinforcement**

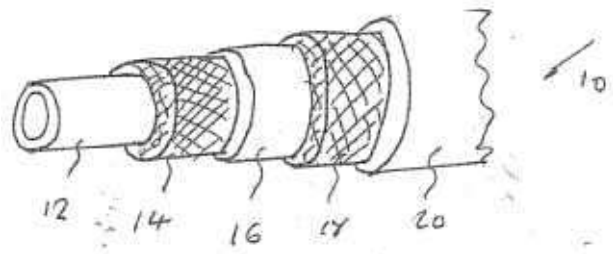
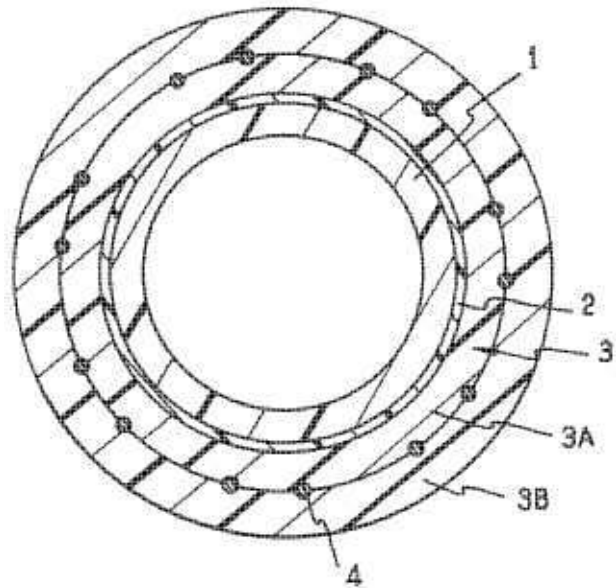


FIG 1

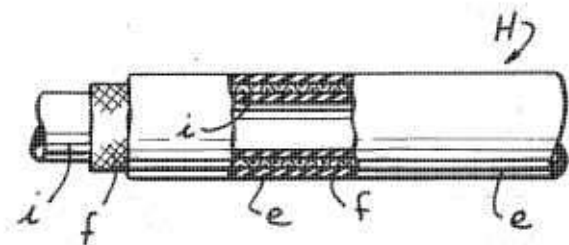
material around which is formed a second **layer** of reinforced material and over which is placed an outer cover, in which the two **reinforcement layers** have an intermediate **layer** of elastomeric material applied as a **water**-based emulsion. In another aspect of the invention there is a method of producing a multilayer **hose** of the type comprising internal and external **flexible** resilient **layers** between which is located a **reinforcement layer**, in which inner and outer **reinforcement layers** have an intermediate bonding **layer**; the said method comprising the steps of: providing a first **reinforcement layer** over the said internal **flexible** resilient **layer**; applying a **water**-based elastomeric emulsion over the said first **reinforcement layer** to form an intermediate **layer**; drying the said **water**-based emulsion to reduce the moisture content thereof; providing a second **reinforcement layer** over the said elastomeric **layer** and subsequently curing the said elastomeric **layer** to bond the two **reinforcement layers** together.

PN - [US6302151](#) B1 20011016  
 PR - FR19990006636 19990526  
 AP - US20000578680 20000526  
 DT - \*\*  
 CT - [US3828112](#) A [ ]; [US3977440](#) A [ ];  
[US4007070](#) A [ ]; [US4652475](#) A [ ];  
[US4998564](#) A [ ]; [US5232645](#) A [ ];  
[US5373870](#) A [ ]; [US5538513](#) A [ ];  
[US5588469](#) A [ ]; [US5918642](#) A [ ];  
[US6062269](#) A [ ]  
 CCI - [F16L11/08](#)  
 CCA - [Y10S138/01](#)  
 PA - TRICOFLEX SA [US]  
 TI - **Flexible hose** of multilayer plastics material  
 AB - A **flexible hose** of multilayer plastics material for transporting fluids, the **hose** comprising from the inside towards the outside: an inner **layer** of a polyolefin that is inert relative to **water**; a bonding **layer** having adhesive properties relative to the polyolefin and to the **flexible** polyvinyl chloride; a **layer** of **flexible** polyvinyl chloride; and tubular **reinforcement** in contact with the polyvinyl chloride.



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PN - [US3972757](#) A 19760803  
 PR - US19740506660 19740916  
 AP - US19740506660 19740916  
 DT - \*  
 CT - [US408376](#) A [ ]; [US1730639](#) A [ ];  
[US2513106](#) A [ ]; [US3684602](#) A [ ];  
[US3776794](#) A [ ]; [US3824141](#) A [ ]



|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CCI | - <a href="#">B29D23/001</a> ; <a href="#">F16L11/08</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| CCA | - <a href="#">B29K2021/00</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| PA  | - UNIROYAL INC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| TI  | - Manufacture of vulcanized elastomeric <b>hose</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| AB  | - A batch process for vulcanizing, without the use of a lead press, reinforced elastomeric <b>hose</b> built up on a solid mandrel, preferably a <b>flexible</b> mandrel of rubber or thermoplastic material, is disclosed. In the preferred embodiment of the process, the uncured <b>hose</b> is first annularly tightly clamped at its opposite ends and is then immersed in a bath of <b>liquid</b> , e. g. <b>water</b> , sufficient to cover the <b>hose</b> substantially completely. The entire assembly is then subjected in a pressurized heating environment, e.g. in a steam-filled vulcanizer or autoclave, to the action of fluid pressure against the outer <b>hose</b> surface and the pressure due to the thermal expansion of the mandrel against the inner <b>hose</b> surface. The clamping of the <b>hose</b> ends prevents entry of fluid pressure into the space between any two proximate <b>layers</b> of elastomeric material occupied by a <b>layer</b> of the filamentary <b>reinforcement</b> . The heating operation is continued until the elastomeric material is vulcanized and is forced into the interstices of the <b>reinforcement</b> , so as to achieve good adhesion between the latter and the elastomeric material in the ultimate molded <b>hose</b> . This abstract is not to be taken as a complete exposition or as a limitation of the present invention, however, |

the full nature and extent of the  
invention being discernible only  
by reference to and from the  
entire disclosure.

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PN - [US2005120471](#) A1 20050609

PR - US20040026671 20041231; US20040983552 20041108; US20040751546  
20040105; US20030731180 20031209

AP - US20040026671 20041231

DT - \*; Rep

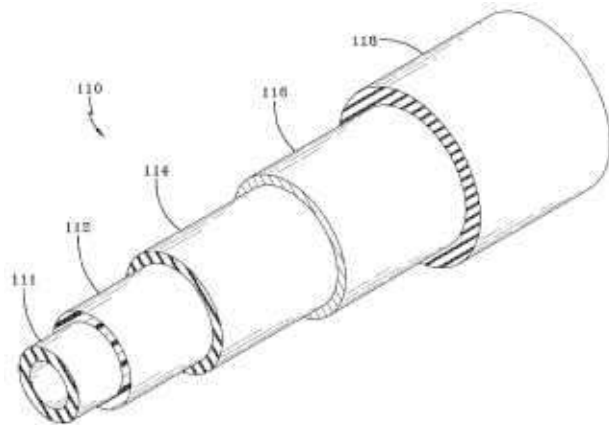
CT - || R141 (A1)  
[US4000742](#) A [ ];  
[US4069519](#) A [ ];  
[US4135255](#) A [ ];  
[US4181985](#) A [ ];  
[US4242764](#) A [ ];  
[US4366584](#) A [ ];  
[US4495018](#) A [ ];  
[US4636474](#) A [ ];  
[US4638514](#) A [ ];  
[US6178568](#) B1 [ ];  
[US6671892](#) B1 [ ];  
[US3425066](#) A [ ];  
[US4371993](#) A [ ];  
[US4642820](#) A [ ];  
[US4807311](#) A [ ];  
[US4989643](#) A [ ];  
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[US5295274](#) A [ ];  
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[US4510630](#) A [ ];  
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[US5419363](#) A [ ];  
[US5754988](#) A [ ];

[US6729355](#) B2 [ ];  
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[US4451943](#) A [ ];  
[US4596058](#) A [ ];  
[US5765238](#) A [ ];  
[US5911516](#) A [ ];  
[US6073275](#) A [ ];  
[US6397406](#) B1 [ ];  
[US6408451](#) B1 [ ];  
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[US4340980](#) A [ ];  
[US5652971](#) A [ ];  
[US5933881](#) A [ ];  
[US5937451](#) A [ ];  
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[US4406025](#) A [ ];  
[US5809585](#) A [ ];  
[US5953766](#) A [ ];  
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[US4123807](#) A [ ];  
[US4233696](#) A [ ];  
[US4551867](#) A [ ];  
[US4553274](#) A [ ];  
[US4620569](#) A [ ];  
[US4967423](#) A [ ];  
[US5264262](#) A [ ];  
[US5991937](#) A [ ];  
[US6321396](#) B1 [ ];  
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[US4127904](#) A [ ];  
[US4237560](#) A [ ];  
[US4304016](#) A [ ];  
[US4422189](#) A [ ];  
[US5477888](#) A [ ];

- [US6487732](#) B1 [ ];  
[US6665888](#) B1 [ ];  
[US6973679](#) B1 [ ];  
[US6978492](#) B1 [ ]
- CCI - [A47K13/00](#) ; [E03D9/085](#)
- TI - Toilet system attached a multi-purpose hand held **water** sprayer
- AB - The invention relates to the new features for the earlier applications of toilet system attached a multi-purpose hand held **water** sprayer affording personal and environmental hygiene. The sprayer that delivers tempered **water** includes the lock elements on the components to secure connection, various types of spray tip cap for the use of general and medical purposes, an injection apparatus to supply external fluid, a fortified **flexible hose**, a **water** hammer arrester or air chamber to reduce **water** pressure shock, a **water** heater, a valve to control **water** flow, a mixing valve, check valves for the mixing valve to stop in reverse flow, a **water** pressure regulator with a pressure meter, a return line with a check valve for guarding against hot **water** spike, a thermometer at the outlet, a holder for placement of the sprayer, and various types of valves and sources for the hot and cold **water** supply. The new features also include the fortified **flexible hose** having the rollup attachment of middle **layers** over the flange for **reinforcement** .

7/19 © EPODOC / EPO

- PN - [KR20050007178](#) A 20050117
- PR - US20030486519P 20030711
- AP - KR20040053358 20040709
- DT - I
- CCI - [B32B25/08](#) ; [B32B1/08](#) ;  
[B60H1/00571](#) ; [C08L23/16](#) ;  
[F16L11/081](#) ; [F16L11/085](#)
- CUI - [B32B27/12](#) ; [B32B27/34](#)
- CLC - [C08L23/16](#) , [C08L2666/06](#) , INV
- CCA - [B60H2001/006](#) ; [C08L2205/02](#) ;  
[F16L2011/047](#) ; [Y10T428/1393](#)
- CUA - [B32B2262/0276](#) ; [B32B2274/00](#) ;  
[B32B2305/08](#) ; [B32B2305/72](#) ;  
[B32B2323/16](#) ; [B32B2597/00](#)
- PA - GOODYEAR TIRE & RUBBER
- TI - AIR REGULATING **HOSE** ASSEMBLY  
USED IN AIR REGULATOR OF  
VEHICLE FOR  
CONNECTING **FLEXIBLE HOSE** OR  
PIPE TO COOLING APPARATUS
- AB - PURPOSE: An air regulating **hose**  
is provided to reduce noise, to  
stream coolant and **water**  
actively, to increase the



flexibility, and to prevent vibration by coupling the **flexible hose** efficiently with the innermost rubber **layer**, the polyamide **layer**, the friction rubber **layer**, the **reinforcement layer** and the cover **layer**.

CONSTITUTION: An air regulating **hose**(110) is composed of an innermost rubber **layer**(111), a polyamide barrier **layer**(112) placed on the innermost rubber **layer**, a friction rubber **layer**(114) placed on the polyamide barrier **layer**, a **reinforcement layer**(116) placed on the friction rubber **layer**, and a cover **layer** (118) placed on the **reinforcement layer**. The innermost rubber **layer** is composed of the rubber composite having primary ethylene propylene diene terpolymer of about 70 to 90 wt% including ethylene of 45 to 65 wt%, and secondary ethylene propylene diene terpolymer of about 10 to 30 wt% including ethylene of 65 to 80 wt%.

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PN - [JP2006266274](#) A 20061005

PNFP - JP4616041B B2 20110119

PR - JP20040060560 20040304; JP20050054886 20050228; JP20050060643 20050304

AP - JP20050060643 20050304

DT - I

CT - (A)  
[JP2002250483](#) A []; [JP2002257266](#) A [];  
[JP2003293265](#) A []; [JPH071663](#) A []

FI - B32B1/08&B; F16L11/08&B

FT - 3H111/AA02; 3H111/BA15; 3H111/BA25; 3H111/CB05; 3H111/CB14; 3H111/CC03;  
3H111/DB03; 3H111/EA15; 4F100/AJ04C; 4F100/AK03B; 4F100/AK03E; 4F100/AK04A;  
4F100/AK08A; 4F100/AK17A; 4F100/AK21C; 4F100/AK41C; 4F100/AK41D; 4F100/AK41E;  
4F100/AK48C; 4F100/AK51D; 4F100/AK51E; 4F100/AL09B; 4F100/AL09D; 4F100/AL09E;  
4F100/BA05; 4F100/BA07; 4F100/CA23C; 4F100/CB00E; 4F100/DA02; 4F100/DA11;  
4F100/DG04C; 4F100/DG07C; 4F100/DG13C; 4F100/EH20; 4F100/GB90; 4F100/JB16B;

4F100/JB16D; 4F100/JB16E; 4F100/JK04; 4F100/JK17; 4F100/YY00C

PA - (A)  
BRIDGESTONE CORP

TI - (A)  
**FLEXIBLE HOSE**

AB - (A)  
PROBLEM TO BE SOLVED: To provide a **flexible hose** having an inner **layer** tube, a **reinforcement layer** and a coating **layer** integrally combined with one another via especially selected adhesive **layers** respectively provided between the inner **layer** tube and the **reinforcement layer** and between the **reinforcement layer** and the coating **layer** so as to be resistant to bending by external force without deteriorating the flexibility of the **hose** and to maintain a diameter enough large for passing **water**, thereby facilitating the piping work and improving the durability.

- SOLUTION: The **flexible hose** for use in pipe arrangement for supply of **water** or hot **water**, comprises the inner **layer** tube having elasticity, at least one **reinforcement layer** braided around the periphery of the inner **layer** tube and the coating **layer** arranged around the periphery of the **reinforcement layer**. The inner **layer** tube, the **reinforcement layer** and the coating **layer** are integrally adhered to one another via the adhesive **layers** provided between the inner **layer** tube and the **reinforcement layer** and between the **reinforcement layer** and the coating **layer**. In the drawing, reference numeral 1 shows the inner **layer** tube, 1a shows an inner **layer**, 1b shows an outer **layer**, 2 shows the **reinforcement layer**, 3 shows the coating **layer**, 4 and 5 show the adhesive **layers**, and 10 shows the **hose**.

- COPYRIGHT: (C)2007,JPO&INPIT

9/19 © EPODOC / EPO

PN - [JP2002181250](#) A 20020626

PNFP - JP4362841B B2 20091111

PR - JP20000378601 20001213

AP - JP20000378601 20001213

DT - I

FI - B60T17/04&Z; F16L11/02

FT - 3D049/BB10; 3D049/CC02; 3D049/HH43; 3D049/KK03; 3H111/AA02; 3H111/BA15; 3H111/BA25; 3H111/CA53; 3H111/CB04; 3H111/CB11; 3H111/CB14; 3H111/CC03; 3H111/DA26

PA - (A)  
NICHIRIN CO LTD

TI - (A)  
HYDRAULIC BRAKE **HOSE** FOR AUTOMOBILE

AB - (A)  
PROBLEM TO BE SOLVED: To provide a new resin brake **hose** having improved characteristic of bending fatigue resistance by reducing moisture transmitting amount and lowering expansion. SOLUTION: The brake **hose** has a fiber **reinforcement layer** formed by braiding one or more **layers** on an outer circumference of an inner tube, and disposed around an outer circumference of the fiber **reinforcement layer** is coated with an outer cover. In the brake **hose**, an inner **layer** of the inner tube or an inner **layer** of the

outer cover is made of thermoplastic resin of low **water** vapor permeability, and the inner tube has a **layer** made of **flexible** thermoplastic resin.

**10/19** © EPODOC / EPO

- PN - [JP2000018447](#) A 20000118
- PR - JP19980180460 19980626
- AP - JP19980180460 19980626
- DT - I
- FI - F16L11/12&Z
- FT - 3H111/AA02; 3H111/BA34; 3H111/CB03; 3H111/CB08; 3H111/CB30; 3H111/CC02; 3H111/CC08; 3H111/DA26; 3H111/DB01
- PA - SAKURA GOMME KK
- TI - **FLEXIBLE HOSE**
- AB - PROBLEM TO BE SOLVED: To decompose the bled gas in a **flexible hose** having a two-**layered** structure by coating a **reinforcement layer** with the optical catalyst decomposing the fluid bled out from the inside. SOLUTION: A tube **layer** 1 is a Teflon (R) tube, and a wire braid is braided on its outer peripheral surface to form a **reinforcement layer** 2. The **reinforcement layer** is coated with the **liquid** optical catalyst 3 composed of at least one kind of tungsten oxide, vanadium oxide, zirconia oxide or the like. In a **flexible hose** used for transporting, for example, the gas or **liquid** of hydrazine, Freon (R) gas or the like, the **hose** permeates the gas of low molecular weight because the tube **layer** 1 is the Teflon (R) tube 1. Since the **reinforcement layer** 2 is coated with the optical catalyst 3, the bled out gas is brought into contact with the optical catalyst 3, and exposed to the ultraviolet ray, the gas is decomposed. That is, the air pollution can be prevented even in the transportation of the harmful gas without diffusing the bled gas into the atmosphere.

**11/19** © EPODOC / EPO

- PN - [JPH069933](#) A 19940118
- PR - JP19920169645 19920626
- AP - JP19920169645 19920626
- DT - I
- FI - B32B25/08; B32B25/10; B32B27/02; C08J5/12; C09J123/18; C09J123/22; C09J123/22+JBZ; F16L11/08&B
- FT - 3H111/AA02; 3H111/BA12; 3H111/BA15; 3H111/BA25; 3H111/BA31; 3H111/BA34; 3H111/CA53; 3H111/CB09; 3H111/CC02; 3H111/CC03; 3H111/CC19; 3H111/DA26; 3H111/DB27; 4F071/AA01B; 4F071/AA10B; 4F071/AA21A; 4F071/AA41A; 4F071/AA54B; 4F071/AA79A; 4F071/AF19; 4F071/AF26; 4F071/AF26A; 4F071/AF57; 4F071/AF58A; 4F071/AG05; 4F071/AH07; 4F071/CA02; 4F071/CB01; 4F071/CD03; 4F100/AH02G; 4F100/AH02J; 4F100/AK01A; 4F100/AK09G; 4F100/AK09J; 4F100/AK09K; 4F100/AK28G; 4F100/AK28J; 4F100/AK28K; 4F100/AK33G; 4F100/AK33J; 4F100/AK34G; 4F100/AK34K; 4F100/AK42; 4F100/AK48; 4F100/AK54G; 4F100/AK54J; 4F100/AK75; 4F100/AL01G; 4F100/AN00B; 4F100/AN00D; 4F100/AN02G; 4F100/BA04; 4F100/BA07; 4F100/BA10A; 4F100/BA10D; 4F100/BA13; 4F100/CB00; 4F100/DA11; 4F100/DG01C; 4F100/GB90; 4F100/JK01C; 4F100/JK06; 4F100/JK13; 4F100/JK17; 4F100/JL00; 4F100/JM01G;

4F100/YY00G; 4F100/YY00J; 4J040/DA141; 4J040/DA181; 4J040/EB062; 4J040/JA03;  
4J040/LA06; 4J040/MA10; 4J040/MA12; 4J040/MB06

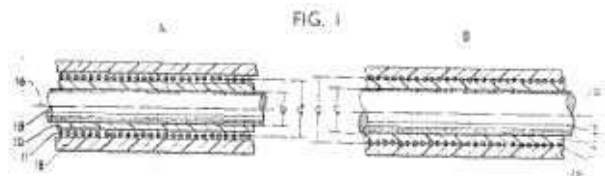
- PA - NICHIRIN KK
- TI - **WATER-BASE ADHESIVE FOR COMPOSITE FLEXIBLE HOSE**
- AB - PURPOSE: To obtain a **water**-base adhesive which has excellent storage stability and long pot life and is suitable for a composite **flexible hose** for transporting a cooling medium. CONSTITUTION: A **water**-base adhesive is a **water**-base mixture containing a **water**-dispersible resol phenol resin obtained from a phenol and formaldehyde in a molar ratio of the resin to the aldehyde of (1:0.5)-(1:3) and a butyl rubber latex in a dry wt. ratio of the resin to the latex of (5:95)-(40:60). The adhesive is used for making a composite **flexible hose** comprising an inner tube 1, an adhesive **layer** 2, an intermediate rubber **layer** 3, a fibrous **reinforcement layer** 4, and an outer rubber **layer** 5. The adhesive has a long pot life, is excellent in workability and applicability in a uniform thickness, and gives a **hose** excellent in durability and flexibility.

**12/19** © EPODOC / EPO

- PN - [JP2000257761](#) A 20000919
- PR - JP19990062194 19990309
- AP - JP19990062194 19990309
- DT - I
- FI - F16L11/08&B; F16L11/26
- FT - 3H111/AA02; 3H111/BA15; 3H111/CB04; 3H111/CB05; 3H111/CB06; 3H111/CB14; 3H111/CC03; 3H111/DA13; 3H111/DA15; 3H111/DA26; 3H111/DB03; 3H111/DB25
- PA - TOYOX KK
- TI - **HOSE**
- AB - PROBLEM TO BE SOLVED: To absorb a **water** hammer without bursting. SOLUTION: In this **hose** provided peripherally a fiber **reinforcement layer** 2 to the outside of the **flexible** synthetic resin made inner pipe 1 and adhered the foaming synthetic resin made outer pipe 3 with the same system as the inner pipe 1 to the outer surface of the inner pipe 1 through this fiber **reinforcement layer** 2, the maximum expansion diameter of the inner pipe 1 is regulated by the fiber reinforcement **layer** 2 at the same time when the inner pipe 1 and outer pipe 3 are expanded, when the flow speed in the inner pipe 1 is suddenly changed by the sudden opening/closing of a control valve B1 and the inner pressure is increased abnormally by the generation of a **water** hammer.

**13/19** © EPODOC / EPO

- PN - [GB1342243](#) A 19740103
- PR - GB19700020262 19700428
- AP - GBD1342243 19700428
- DT - \*
- CCI - [B29D23/001](#) ; [B29C47/023](#) ;  
[B29C47/028](#)
- CCA - [B29L2023/005](#) ; [B29C47/0023](#) ;  
[B29C47/0064](#) ; [B29C47/0066](#) ;  
[B29C47/025](#) ; [B29C47/065](#) ;



[B29K2021/00](#) ; [B29K2105/06](#)

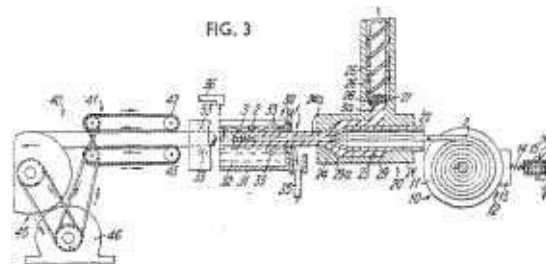
- PA - WINSTER HOSE LTD
- TI - **FLEXIBLE** REINFORCED **HOSE** AND METHODS OF MANUFACTURING SAME
- AB - 1342243 **Hose** WINSTER **HOSE** Ltd  
22 April 1971 [28 April 1970]  
20262/70 Heading F2P [Also in Divisions B4-B5] A **hose**, Fig. 1, comprises a non-metallic or metallic spiral winding or braiding **reinforcement** 11, e.g. of brass coated steel wire, enclosed by an extruded cured material **layer** 12 and between the interstices of which **reinforcement** 11 has been forced can extruded curable material lining 10, during the heat curing thereof by expansion of a mandrel 13 upon which it has been extruded (see Divisions B4-B5) and in the absence of external non- fluid support for the **layer** 12. The outer **layer** 12 comprises material of a faster curing rate. The material of the lining 11 may comprise butadiene-acrylonitrile co-polymer containing mineral filler, carbon reinforcing black, plasticizers, sulphur based vulcanizing agent, and activators and accelerators; the material of the outer **layer** 12 may comprise polychloroprene. Prior to or concurrently with the application of the **reinforcement** (111), Fig. 2 (not shown) an additional winding or braiding may be applied intermediate thereof and the lining (110), but which is of larger pitch or interstitial spacing to cause a more even outward flow of the lining being forced into the **reinforcement** (111). In the described embodiment the

mandrel 13 comprises a plurality of mandrel elements each comprising polypropylene or nylon around metal wire cores, interconnected by crimped connectors or welding to facilitate separation thereof, which are continuously fed by driven rollers through an extrusion head wherefrom the lining 10 is applied and cooled during passage through an open top **water** cooling trough which may be horizontally or downwardly inclined with only the lower part thereof containing **water** to avoid cooling of the extrusion die face. A device may apply a marking medium or locally deform the lining 10, at the mandrel joints at which separation into lengths each of one or more mandrel elements and storage, e.g. in coiled form may be effected prior to passage of the lining 10, extruded upon the mandrels 13, from one extruder, through one of a plurality of **reinforcement** applying machines 23, e.g. braiders, each preceded by a heat exchanger 22 through which the linings and mandrels pass for cooling of the lining to -60 C. to -95 C., to enable the **reinforcement** , or **reinforcement layers**, to be applied without significant penetration of the lining. A mandrel joint marker may be provided. The mandrel lengths from the braiders may be joined into a continuous length for feeding through a further extruder, whereat the outer **layer** 12 may be applied with curing thereof, simultaneously with the lining 10 and expansion thereof into the braid interstices, being

effected by pressurized superheated **water** or steam during passage in the form of a catenary through a heat curing housing. The mandrel joints are marked by a marker, with cutting thereat by a cutter, the mandrel lengths being subsequently expelled from each **hose** piece by hydraulic pressure.

14/19 © EPODOC / EPO

- PN - [GB1192149](#) A 19700520
- PR - US19670680853 19671106
- AP - GB19680049956 19681022
- DT - \*\*
- CCI - [B29D23/001](#) ; [B29C47/0016](#) ;  
[B29C33/505](#) ; [B29C47/02](#)
- CCA - [B29C47/0023](#) ; [B29K2021/00](#) ;  
[B29K2105/06](#)
- PA - UNIROYAL INC [US]
- TI - Improvements in **Flexible**  
Mandrels
- AB - 1,192,149. Coating cores by extrusion. UNIROYAL Inc. 22 Oct., 1968 [6 Nov., 1967], No. 49956/68. Heading B5A. [Also in Division F2] A **flexible** mandrel, for use in the production of **hose** by a method involving the extrusion of a **layer** of rubber or plastic material over the mandrel followed by either further extrusion or coating of a second **layer** over the first **layer** and **reinforcement** , e.g. of yarn or wire, thereon and vulcanization of the **hose** at temperatures ranging between 298 and 350 F., is composed of a core of resilient material surrounded by a **flexible** sleeve of less resilient material, the core 2 being stretched during manufacture of the mandrel by extrusion of the sleeve 3 around it and being maintained



stretched during setting of the sleeve in a cooling tank 31, whereby upon release of the stretching force the core 2 is maintained in a state of radial compression. The apparatus shown consists of a supply spool 11 from which the core 2, of rubber or a similar elastomer, is fed by gripping the mandrel, after extrusion and setting of the sleeve 3, between a pair of conveyer belts 42, 43 driven from a motor 46, a take-up spool 45 also being driven from the motor 46 via a slip clutch in known manner. A brake shoe 13 acted, on by an adjustable spring 14 applies a braking force to the spool 11 to cause the core 2 to be stretched as it passes from the spool 11 to the conveyer belts 42, 43 via an extruder, which applies the **layer** 3, and the cooling tank 31. The extruder comprises a crosshead 20 the housing 21 of which has a large-diameter bore 23 communicating with a feed tube 25 which contains a feed screw 26 for feeding molten plastic having a high melting point (when set) and a high coefficient of expansion, e.g. a resin of polyamide, acetal, polyphenylene oxide, polysulphone or polypropylene, to an extruder orifice 24a. In passing to this orifice the plastic passes around a tubular inner member 22 through which the core 2 passes. After extrusion the mandrel passes through an opening 34<SP>1</SP> into the cooling tank and is supported by rollers 33 within the tank, cooling **liquid** being allowed to ooze out from the tank into a drain 35 and being maintained

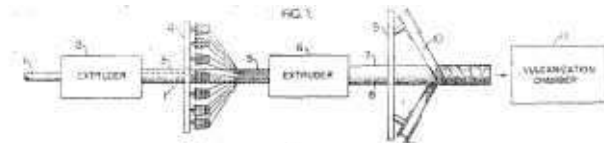
at a level slightly above the top  
of the mandrel by a filler pipe 36.

**15/19** © EPODOC / EPO

- PN - [GB1357886](#) A 19740626
- PR - GB19700049084 19701015
- AP - GB19700049084 19701015
- DT - \*
- CCI - [B29D23/001](#) ; [F25D3/10](#)
- CCA - [B29K2021/00](#) ; [B29L2023/005](#)
- PA - DUNLOP HOLDINGS LTD
- TI - MANUFACTURE OF **FLEXIBLE HOSE**
- AB - 1357886 Making reinforced **flexible** hoses DUNLOP HOLDINGS Ltd 15 Oct 1971 [15 Oct 1970] 49084/70 Heading F2P In a method of manufacturing reinforced **flexible hose**, a **hose** carcass of curable material is cooled to render it rigid prior to the application thereon of at least one **layer of reinforcement**. The cooling is effected in apparatus comprising a chamber through which the **hose** carcass is passed continuously and wherein it is sprayed with a liquefied gas, e.g. **liquid nitrogen**, the **liquid** gas evaporating on contact with the **hose** thus also cooling the chamber which leads, via an extension, to a **reinforcement** applying machine. The cooling apparatus may be attached to a conventional **reinforcement** application machine, e.g. winding or braiding machines and a multi-**layer reinforcement** may be applied to the **hose** carcass by repeatedly cooling the carcass by spraying with liquefied gas before the carcass enters each winding or braiding head. The liquefied gas may be sprayed from a length of tube in the cooling chamber having holes therealong.

**16/19** © EPODOC / EPO

- PN - [GB1048788](#) A 19661123
- PR - US19650436249 19650301
- AP - GB19650045221 19651026
- DT - \*\*
- CCI - [B29D23/001](#) ; [B29C47/023](#)
- CCA - [B29C47/0016](#) ; [B29C47/0021](#) ;  
[B29C47/0023](#) ; [B29K2021/00](#) ;  
[B29K2105/06](#) ; [Y10T156/1002](#)
- PA - GOODYEAR TIRE & RUBBER
- TI - Method of producing  
reinforced **hose**
- AB - 1,048,788. Making reinforced  
tubes. GOODYEAR TIRE & RUBBER  
CO. Oct. 26, 1965 [March 1,  
1965], No. 45221/65. Heading  
F2P. A method of making  
reinforced **hose** in long lengths  
consists of passing a **flexible**



mandrel 1 through an extruder 2 to form therein an elastomeric inner tube 3, applying a reinforcing **layer** 5 to the tube 3 and passing it through an extruder 6 to form an elastomeric cover 7 over the **reinforcement**, applying under tension at 9 a **flexible**, tape-like restraining wrap 10, applying heat to vulcanize the tubes whilst they are still subjected to the pressure of the wrap 10 and removing the mandrel and the wrap from the finished tube. The **hose** is coiled previous to subjecting it to heat. The elastomeric material may be rubber and the reinforcing **layers** 5 of metal, fibreglass, synthetic or natural textile materials and may be braided, helically wrapped, knitted or woven. The wrap 10 may be wetted after application to cause shrinkage. The mandrel may be hollow and steam or hot **water** may be circulated through it. It may be removed by applying **water** pressure inside the **hose** (Fig. 3, not shown).

17/19 © EPODOC / EPO

- PN - [GB2390883](#) A 20040121  
 PR - GB20020016180 20020712  
 AP - GB20020016180 20020712  
 DT - \*\*  
 CT - || STSE (A)  
       [GB2010435](#) A 19790627 [  
       ] (PARKER HANNIFIN CORP);  
       [JPS6114950](#) A 19860123 [  
       ] (TOYODA GOSEI KK);  
       [US3953270](#) A 19760427 [  
       ] (FORD GARY P);  
       [US4121962](#) A 19781024 [  
       ] (HOPKINS CARL E)  
 CCI - [B29D23/001](#) ; [B32B1/08](#) ;  
       [F16L11/086](#)

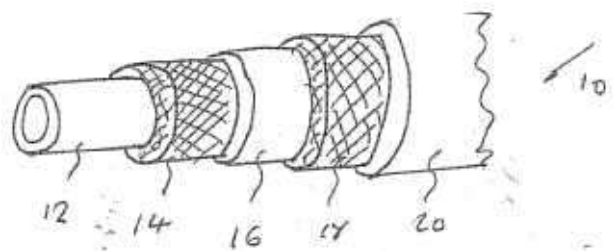


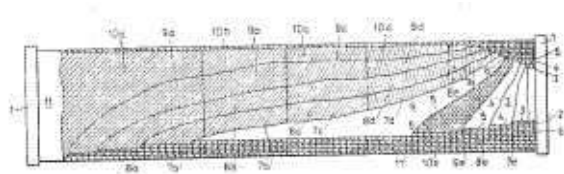
FIG 1

- CUI - [B32B25/10](#) ; [B32B25/14](#)
- CCA - [B29K2105/0827](#) ; [B29K2011/00](#) ;  
[B29L2023/005](#) ; [B29C47/0023](#) ;  
[B29C35/02](#) ; [B29C47/021](#) ;  
[B29C47/065](#) ; [B29K2021/00](#) ;  
[B29L2009/00](#) ; [B29C2035/0822](#) ;  
[Y10T428/2933](#)
- PA - NELSON STOKES LTD [GB]
- TI - Multiple **layer hose**, method of producing a multiple **layer hose** and apparatus therefor
- AB - In one aspect the present invention provides a multilayer **hose** comprising an inner **layer** surrounded by a first **layer of reinforcement** material around which is formed a second **layer** of reinforced material and over which is placed an outer cover, in which the two **reinforcement layers** have an intermediate **layer** of elastomeric material applied as a **water**-based emulsion. In another aspect of the invention there is a method of producing a multilayer **hose** of the type comprising internal and external **flexible** resilient **layers** between which is located a pair of inner and outer **reinforcement layers**, in which inner and outer **reinforcement layers** have an intermediate bonding **layer**; the said method comprising the steps of: ``providing a first **reinforcement layer** over the said internal **flexible** resilient **layer**; ``applying a **water**-based elastomeric emulsion over the said first **reinforcement layer** to form an intermediate **layer**; ``drying the said **water**-based emulsion to reduce the moisture content thereof; ``providing a second **reinforcement layer** over the said elastomeric **layer** and

subsequently curing the said elastomeric **layer** to bond the two **reinforcement layers** together.

18/19 © EPODOC / EPO

- PN - [GB1455881](#) A 19761117
- PR - GB19730000194 19730102
- AP - GB19730000194 19730102
- DT - \*\*
- CCI - [F16L11/133](#) ; [F16L11/088](#)
- PA - UNIROYAL LTD
- TI - **LIQUID-CONVEYING HOSE**
- AB - 1455881 Hoses UNIROYAL Ltd 27 Dec 1973 [2 Jan 1973] 194/73  
 Heading F2P A **liquid** conveying **hose**, e.g. an oil suction and discharge **hose**, which is substantially rigid at one end and relatively **flexible** at the other end, includes at least one ply of cord reinforcing material having cords, threads, filaments or yarns extending around the **hose** body at an angle to the **hose** body, the angle being lower at one end of the **hose** than at the other. As described the **hose** includes a lining 3 of nitrile rubber, a breaker **layer** 4 of textile material coated with nitrile rubber, a burst **reinforcement layer** 5 consisting of four plies of weftless polyester cord material or wire cords coated with styrene-butadiene rubber, alternate plies being wound on in opposite directions, a **layer** 6 of hard rubber, four plies of cord reinforcing material 7 to 10 and a cover **layer** 11 of styrene-butadiene rubber. Each of the plies of cord reinforcing material 7 to 10 is divided into axial sections indicated by the suffices a to e, the angle of the



cords in each section increasing progressively along the **hose**. Preferably all four plies 7 to 10 are applied with the cords extending in the same direction. A wire **reinforcement** may be helically wound along the **hose** between the **layers** 6 and 7. The **hose** may be rendered buoyant by fitting floats to the **hose** or by adding **layers** of buoyant material between the **layers** 10 and 11.

19/19 © EPODOC / EPO

PN - [EP1380787](#) A2 20040114  
 PNFP - EP1380787 A3 20040526  
 PR - GB20020016180 20020712  
 AP - EP20030254339 20030709  
 DT - \*; Rep  
 CT - || STSE (A3)  
[JP2000094537](#) A 00000000 [X];  
[JPH069933](#) A 00000000 [X];  
[US5974649](#) A 19991102  
 [X] (MARENA ALFONSO [US])  
 [X] 1-9  
 \* column 3, line 7 - line 57 \*  
 \* column 4, line 51 - column 5, line 12 \*  
 \* column 8, line 9 - column 9, line 60 \*  
 \* figure - \*  
 \* claims 1,4,5 \*;  
[GB2010435](#) A 19790627  
 [X] (PARKER HANNIFIN CORP)  
 [X] 1,6-9  
 \* claims 1,2,5,6,8 \*  
 \* figure 2 \*  
 \* page 1, line 52 - line 68 \*  
 \* page 1, line 84 - line 96 \*  
 \* page 2, line 72 - line 75 \*  
 \* page 2, line 48 - page 3, line 65 \*;  
[US3750712](#) A 19730807  
 [X] (BRAND K)  
 [X] 1-15  
 \* claims 1,3-7 \*  
 \* column 3, line 7 - column 6,

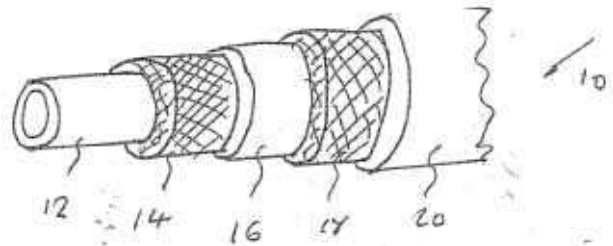


FIG 1

line 4 \*

CTNP - || STSE (A3)  
[X] - PATENT ABSTRACTS OF  
JAPAN, (20000929), vol. 2000,  
no. 07,  
& JP2000094537 A 20000404  
(MEIJII RUBBER &CHEM CO  
LTD)  
[X] 1-15  
\* paragraph [0009] -  
paragraph [0016] \*  
\* paragraph [0021] \*  
\* figures 1,2 \*  
[X] - PATENT ABSTRACTS OF  
JAPAN, (19940418), vol. 018, no.  
215, Database accession no. (C -  
1191),  
& JP06009933 A 19940118  
(NICHIRIN:KK)  
[X] 1-15  
\* abstract \*  
\* paragraph [0010] -  
paragraph [0014] \*  
\* paragraph [0020] -  
paragraph [0024] \*  
\* paragraph [0029] -  
paragraph [0030] \*  
\* paragraph [0035] -  
paragraph [0039] \*  
\* figure 1 \*

CCI - [B29D23/001](#) ; [B32B1/08](#) ;  
[F16L11/086](#)

CUI - [B32B25/10](#) ; [B32B25/14](#)

CCA - [B29K2105/0827](#) ; [B29K2011/00](#) ;  
[B29L2023/005](#) ; [B29C47/0023](#) ;  
[B29C35/02](#) ; [B29C47/021](#) ;  
[B29C47/065](#) ; [B29K2021/00](#) ;  
[B29L2009/00](#) ; [B29C2035/0822](#) ;  
[Y10T428/2933](#)

PA - (A2 A3)  
NELSON STOKES LTD [GB]

TI - (A2 A3)  
Multiple **layer hose**, method of  
producing a multiple **layer hose**  
and apparatus therefor

AB - (A2)  
In one aspect the present

invention provides a multilayer **hose** (10) comprising an inner **layer** (12) surrounded by a first **layer** of **reinforcement** material (14) around which is formed a second **layer** of reinforced material (18) and over which is placed an outer cover (20), in which the two **reinforcement layers** (14, 18) have an intermediate **layer** of elastomeric material (16) applied as a **water**-based emulsion. In another aspect of the invention there is a method of producing a multilayer **hose** (10) of the type comprising internal and external **flexible** resilient **layers** between which is located a **reinforcement layer**, in which inner and outer **reinforcement layers** (14, 18) have an intermediate bonding **layer** (16); the said method comprising the steps of: providing a first **reinforcement layer** (14) over the said internal **flexible** resilient **layer**; applying a **water**-based elastomeric emulsion over the said first **reinforcement layer** to form an intermediate **layer** (16); drying the said **water**-based emulsion to reduce the moisture content thereof; providing a second **reinforcement layer** (18) over the said elastomeric **layer** (16) and subsequently curing the said elastomeric **layer** (16) to bond the two **reinforcement layers** (14, 18) together. <IMAGE>