

Search history

Search 1: pump and diaphragm and disc and seal and ethylene (Results 742)
Search 2: piston and 1 (Results 360)
Search 3: IC=(f04b) (Results 286440)
Search 4: 2 and 3 (Results 46)

1) Family number: 7630341 (US4184809 A)

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Title: DIAPHRAGM PUMP CONSTRUCTION HAVING PULSATOR PISTON AND MECHANICALLY ACTUATED MEANS TO SUPPLY PULSATOR FLUID

Abstract: A piston diaphragm pump includes a driving fluid chamber and a driven fluid chamber. A flexible diaphragm separates the fluid chambers from one another. An electric motor drives a reciprocating piston through a crankshaft, and the piston moves in the driving fluid chamber from a forward position to a rearward position on a suction stroke and from the rearward position to the forward position on a pressure stroke. An inlet passage extends between a crankcase and the driving fluid chamber, and a normally closed inlet valve in the inlet passage is opened by a cam on the crankshaft when the piston reaches a predetermined position on its suction stroke. The driving fluid in the driving fluid chamber drives the flexible diaphragm back and forth, and the back and forth movement of the diaphragm pumps the driven fluid into and out of the driven fluid chamber.

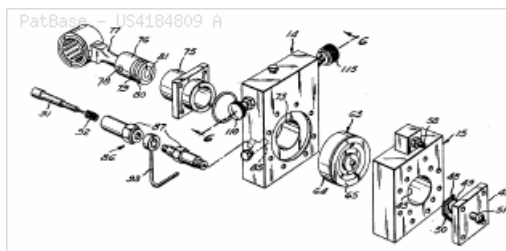
Classifications:

International (IPC 8-9): F04B43/06 F04B43/067

International (IPC 1-7): F04B35/02 F04B43/06 F04B9/08

CPC: F04B43/067

US: 417/360 417/387 417/388



Family:

Publication number	Publication date	Application number	Application date
US4184809 A	19800122	US19770795957	19770511

Priority:

US19770795957 19770511

Probable Assignee:

BECK LOUIS

Assignee(s): (std):

BECK LOUIS

Assignee(s):

LOUIS BECK

Inventor(s): (std):

KELLEY ZAR W

2) Family number: 61689268 (US2016047365 AA)

© PatBase

Title: CANTED OFF-AXIS DRIVER FOR QUIET PNEUMATIC PUMPING

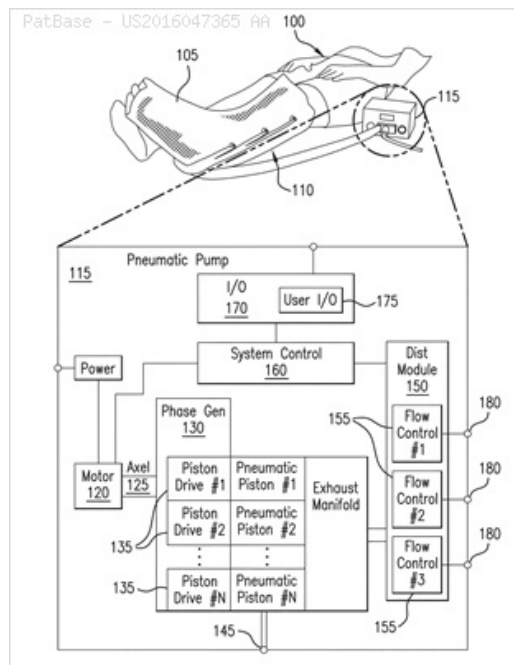
Abstract: Apparatus and associated methods relate to nutating a piston drive linkage oriented around a longitudinal axis in response to the rotation of a drive shaft about a drive axis of rotation, said longitudinal axis being offset and canted with respect to said drive axis of rotation. In an illustrative example, the piston drive linkage may be formed as an umbrella shape with multiple arm members extending radially from the longitudinal axis. The distal ends of each of the radial arm members may attach to a stationary piston crank. The nutating motion of the piston drive linkage may impart a substantially linear motion profile substantially parallel to the drive axis of rotation. A shaft extending along the longitudinal axis from the piston linkage may advantageously freely insert into and rotate within a receptacle of a spinner body being rotated around the drive axis of rotation.

Classifications:

International (IPC 8-9): F01B3/00 F01B7/04 F04B1/14 F04B1/28
F04B43/02 F04B43/04 F04B45/04 F04B45/047 F04B45/053 F04B9/02
F16H23/04

CPC: F04B43/021 F04B43/04 F04B45/04 F04B45/043 F04B45/047
F04B1/148 F04B45/0533 F16H23/04

US: 1/1 29/888.02 417/222.1 417/53 74/25



Family:

Publication number	Publication date	Application number	Application date
CN106337800 A	20170118	CN201610535088	20160708
CN106337800 B	20200317	CN201610535088	20160708
CN107120260 A	20170901	CN201710554222	20160708
US2016047365 AA	20160218	US20150796756	20150710
US9920753 BB	20180320	US20150796756	20150710
US2016047370 AA	20160218	US20150796833	20150710
US9822773 BB	20171121	US20150796833	20150710
US2018010587 AA	20180111	US20170625962	20170616

Priority:

US20140036959P 20140813	US20150171725P 20150605	US20150796756 20150710
US20150796833 20150710	US20160351669P 20160617	CN201610535088 20160708
US20170625962 20170616		

Probable Assignee: NEXTERN INC

Assignee(s): (std): NEXTERN INC

Inventor(s): (std): BERKE DENNIS ; BONTRAGER DAVID ; CARLSON CASEY ; CASEY CARLSON ; DENNIS BERKE ; DOUGLAS RYAN ; RYAN DOUGLAS

Agent(s): CRAIG; CRAIGE; THOMPSON PATENT LAW

3) Family number: 19898188 (GB682225 A)

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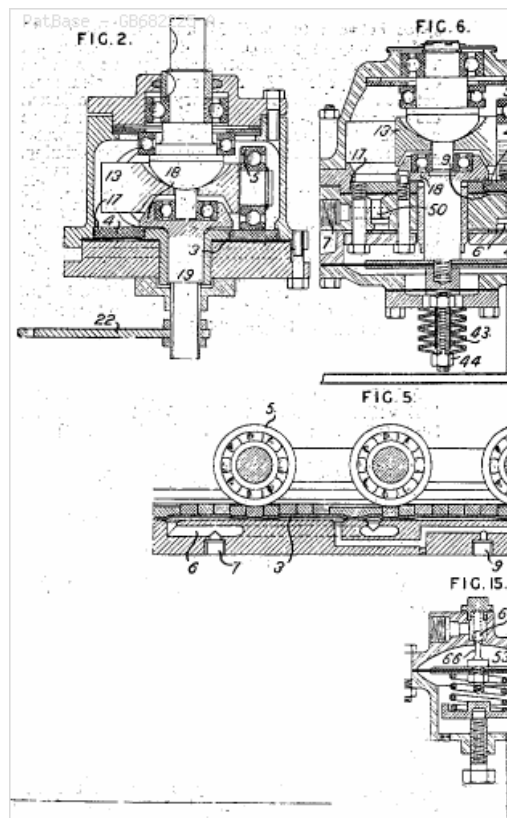
Title: IMPROVEMENTS IN OR RELATING TO FLEXIBLE TUBE PUMPS

Abstract: 682,225. Flexible tube pump; speed of governors. MAILLOT, L. A. Jan. 17, 1951 [Jan. 17, 1950: May 24, 1950], No. 1313/51. Classes 57 and 110(ii) The pump chamber comprises an elongated tube having a single deformable wall 3 of plastic material or metal, the other walls being rigid, the wall 3 being subjected to a succession of pressures from piston-pushers 4 caused by the passage of rollers 5. Alternatively the tube may be in a flattened, closed, condition under spring pressure Fig. 11 (not shown) the wall 3 being deflected by a roller-pressed pusher forcing down the spring at one or more places on the tube. Synthetic rubber or poly-tetra ethylene fluor may be used for the tube. Fig. 2 shows a roller 5, carried by a rotor 13, which bears on pushers 4, to flatten the wall 3 which, in its free position, is supported by an annular abutment 17. The inner edge of each pusher is supported by an edge 18. Adjustment of the pumping capacity is caused by vertical adjustment of the rotor, relative to the pump stator, by means of an arm 22 or by an adjustable wall 11 at the back of the pushers. An inlet 7 leads to passages 6, supplying the pumping chamber and discharge passages lead to an outlet 9. Fig. 6 shows a pump for injecting fuel into the cylinders of an internal-combustion engine, the number of working chambers being equal to the number of engine cylinders. The size of each working chamber is governed by a diaphragm 42 which is moved up or down in accordance with pressure variations above and below the diaphragm and the pressure exerted by a spring 43 built up of Belleville washers. The effect of the spring 43 may be varied by altering the number of washers or rotation of a nut 44 by hand or by control of a thermostat. The port 46 may be connected to the atmosphere or to a vacuum pump or bellows. Fuel enters through a port 7 and an annular passage 50 and is delivered through a number of outlets. The supply may be under control of a pressure governor Fig. 15 interposed between a feed pump and the pump 3. The governor is of a known type having a diaphragm 53 dividing a chamber into two parts, and supporting a needle valve, 66. The needle valve 66 lifts a ball valve 64 when the pressure in the lower chamber 68, leading to the valve chamber of an internal-combustion engine, rises. In a modification a metal disc 34, Fig. 12 (not shown) is inserted between the pusher and the plastic sheet. The plastic sheet may be replaced by a metal one of one or several laminations.

Classifications:

International (IPC 8-9): F04B43/02

CPC: F04B43/021 F04B43/14



Family:

Publication number	Publication date	Application number	Application date
GB682225 A	19521105	GB19510001313	19510117

Priority:

GB19510001313 19510117

Probable Assignee:

LEON ALFRED MAILLOT

Assignee(s): (std):

LEON ALFRED MAILLOT

4) Family number: 1506618 (US4411603 A)

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Title: DIAPHRAGM TYPE BLOOD PUMP FOR MEDICAL USE

Abstract: A positive displacement pump for delivery of blood, or the like, from patients to an extracorporeal circuit, for purification, as in hemodialysis treatments. The pump is small, and sufficiently inexpensive to be discarded after one use. The pump comprises a single blood chamber attached to inlet and outlet conduits separated from the chamber and each other by low resistance flapper valves. The flapper valves are integral with a flexible diaphragm which forms one side of the blood chamber and are operative to close the outlet valve and to open the inlet valve to fill the blood cavity responsive to withdrawal of the diaphragm from the blood chamber cavity and to reverse each valve upon penetration of the diaphragm into the blood chamber to deliver uniformly small increments of blood to an artificial kidney or other blood treatment device.

Classifications:

International (IPC 8-9): A61M1/10 A61M5/00 F04B43/02

International (IPC 1-7): A61M1/00 A61M1/02 A61M1/03 A61M1/10

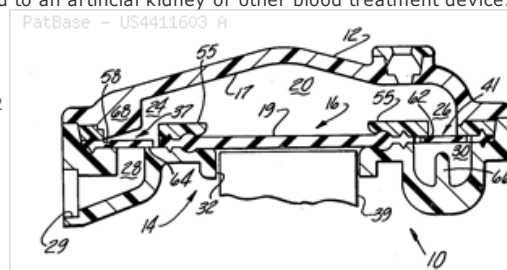
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CPC: A61M60/113 A61M60/205 A61M60/268 A61M60/40 A61M60/892

A61M60/894 A61M60/896 F04B43/02 Y10S128/12 Y10T137/7891

A61M1/1037 A61M1/1046 A61M2001/1094

US: 128/DIG.12 137/855 417/479 604/153 128/DIG.012



Family:

Publication number	Publication date	Application number	Application date
BE893639 A	19821018	BE19820208440	19820624
CA1176933 A1	19841030	CA19820405794	19820623
DE3221725 A1	19830113	DE19823221725	19820609
DE3221725 C2	19941103	DE19823221725	19820609
FR2508320 A1	19821231	FR19820010947	19820623
FR2508320 B1	19861121	FR19820010947	19820623
GB2101232 A1	19830112	GB19820018138	19820623
GB2101232 B2	19850411	GB19820018138	19820623
IT1157213 A	19870211	IT19820048680	19820621
IT8248680 A0	19820621	IT19820048680	19820621
JP1629976 C3	19911220	JP19820095582	19820603
JP2055051 B4	19901126	JP19820095582	19820603
JP58049152 A2	19830323	JP19820095582	19820603

NL191927 B	19960701	NL19820002264	19820604
NL191927 C	19961104	NL19820002264	19820604
NL8202264 A	19830117	NL19820002264	19820604
US4411603 A	19831025	US19810276752	19810624

Priority:

US19810276752 19810624 CA19820405794 19820623

Probable Assignee: BAXTER INT INC

Assignee(s): (std): ALTHIN MEDICAL ; ALTHIN MEDICAL INC ; CD MEDICAL INC ; CORDIS DOW CORP

Assignee(s): ALTHIN MEDICAL INC MIAMI LAKES FLA US ; BAXTER INT ; BAXTER INT INC ; CONTINENTAL ILLINOIS NATIONAL BANK AND TRUST CO ; CONTINENTAL ILLINOIS NATIONAL BANK AND TRUST CO OF ; CONTINENTAL ILLINOIS NATIONAL BANK AND TRUST CO OF CHICAGO ; CORDIS DOW CORP A CORP ; CORDIS DOW TE MIAMI FLORIDA VER ST V AM CORP ; KELL MICHAEL J ; KOODEISU DAU CORP

Inventor(s): (std): KELL M ; KELL MICHAEL ; KELL MICHAEL J ; MAIKERU JIEI KERU

Inventor(s): J KELL MICHAEL ; MAIKERU JEI KERU ; MICHAEL J KELL ; MICHAEL KELL

Agent(s): GOWLING LAFLEUR HENDERSON LLP

5) Family number: 21947717 (US3256825 A)

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Title: SLURRY PUMP

Abstract: (Claim 1) 1. A pump for supplying liquid to a line comprising, in combination, a pump Chamber, a pressure Chamber, and a diaphragm therebetween; bias means, in one of said Chambers, operatively connected to the diaphragm and normally retaining the diaphragm in a first position; liquid connections to the pumping Chamber for flow of liquid to and from the Chamber, and a liquid connection to the pressure Chamber for flow of pressure liquid to the Chamber to pulse the diaphragm against the action of the bias means, the bias means acting to restore the diaphragm to the first position upon reduction of liquid pressure in the pressure Chamber; a valve and valve seat disposed across the line of liquid flow through the pump Chamber for controlling the flow of liquid therein, the valve being reciprocally mounted for movement between open and closed positions, respectively away from and toward the valve seat; liquid pressure-responsive means operatively attached to the valve, and a liquid connection communicating the pressure responsive means with one of the Chambers of the pump for operation of the valve in response to liquid pressure in the said Chamber.

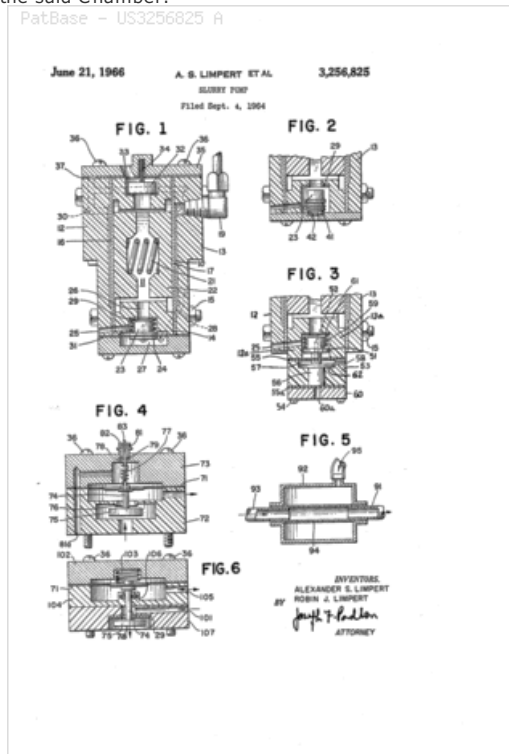
Classifications:

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International (IPC 1-7): F04B43/06

CPC: F04B43/025 F04B43/0733 Y10S417/90

US: 417/317 417/395 417/488 417/507 417/900



Family:

Publication number	Publication date	Application number	Application date
US3256825 A	19660621	US19640396794	19640904

Priority:

US19640396794 19640904

Probable Assignee: LIMPET ALEXANDER S

Assignee(s): (std): LIMPET ALEXANDER S ; LIMPET ROBIN J

Inventor(s): (std): LIMPET ALEXANDER S ; LIMPET ROBIN J

6) Family number: 68506930 (US2019162177 AA)

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Title: FLUID DRIVEN DIAPHRAGM PUMP

Abstract: In at least some implementations, a diaphragm for a fluid pump includes a first layer formed from a first material that inhibits or prevents vapor permeation through the diaphragm, and a second layer coupled to the first layer and formed from a second material different than the first material. The first material may include at least one of fluoropolymers,

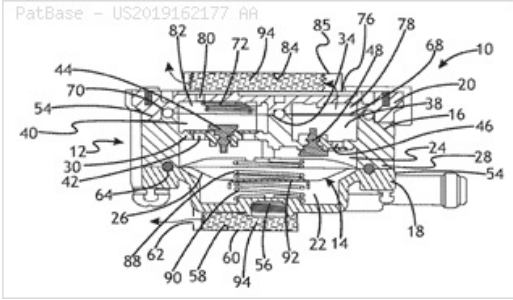
perfluoroalkoxy (PFA), polyfluoroethylenepropylene (FEP), polytetrafluoroethylene (PTFE), liquid crystal polymers, nylons, thin metal foil or film, or ethylene vinyl alcohol, and the fluoropolymer may be a fluoroelastomer. The first layer may be continuous and without perforations in an area of the diaphragm adapted to be exposed to a fluid. The first layer may include a base material and a coating that prevents vapor permeation therethrough. The second material may include at least one of NBR rubber, H-NBR, NBR coated or impregnated fiber or nylon materials, or a fluoroelastomer.

Classifications:

International (IPC 8-9): F02M37/04 F04B43/00 F04B43/02 F04B43/06

CPC: F02M17/04 F02M37/12 F04B43/0054 F04B43/06 F04B53/06

US: 1/1



Family:

Publication number	Publication date	Application number	Application date
CN109563796 A	20190402	CN201780047961	20170801
DE112017003863 T5	20190425	DE201711003863T	20170801
US2019162177 AA	20190530	US20170322247	20170801
WO18026778 A1	20180208	WO2017US44837	20170801

Priority:

US20160369541P 20160801 US20170474136P 20170321 WO2017US44837 20170801
US20170322247 20170801

Probable Assignee: WALBRO LLC

Assignee(s): (std): WALBRO LLC

Inventor(s): (std): HAMATAKA KATSUAKI ; KUROKI NOBUYUKI ; SWANSON MARK S ; TAKAHASHI TETSUYA ; TOBINAI TERUHIKO

Agent(s): SCHMIDT MATHEW J

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

7) Family number: 12334048 (US6079959 A)

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Title: RECIPROCATING PUMP

Abstract: Pumps of this invention comprise a pump housing having at least one pressurizing chamber disposed therein, and a pressurizing member is disposed within the pressurizing chamber. The pressurizing member has a body with a solid imperforate head at one end, a thin-walled skirt extending away from the body head, and a flange extends circumferentially around a terminal edge of the skirt. A piston is disposed within the pump housing and is connected at one end to the pressurizing member. A piston gland is attached to the chamber and includes a diametrically positioned piston guide through which the piston is disposed. The flange is interposed between the chamber and the piston gland and includes sealing means to provide a fluid-tight seal therebetween. A pressurizing member plug is attached to the pressurizing member and has an outside wall surface that contacts and carries a variable portion of the skirt inside surface during reciprocating pressurizing member axial displacement. The thin-wall skirt has a sufficient axial length to roll between the plug outside wall surface and the gland inside diameter to permit pressurizing member reciprocating axial displacement within the pressurizing chamber.

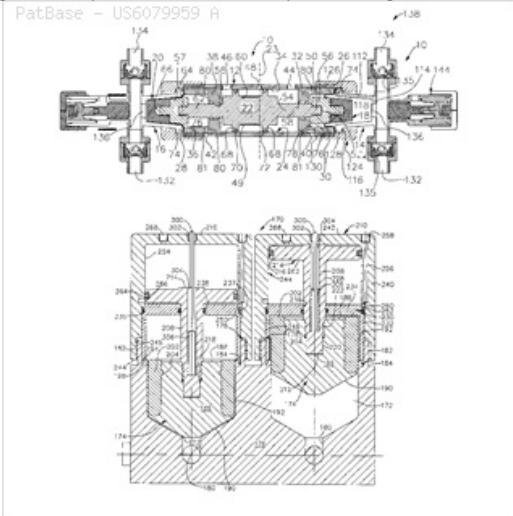
Classifications:

International (IPC 8-9): F04B43/00 F04B43/02 F04B43/06 F04B43/073 F04B53/00 F04B53/16 F04B9/00 F04B9/10 F04B9/105 F04B9/113

International (IPC 1-7): F01B19/00 F04B17/00 F04B43/02 F04B43/06 F04B43/073 F04B53/16 F04B9/105 F04B9/113 F09B23/04 F09B35/00

CPC: F04B2201/0201 F04B43/0054 F04B43/0063 F04B43/026 F04B43/0736 F04B53/164

US: 417/393 417/397 417/454 417/533 417/536 92/980 92/98D 92/98.00D



Family:

Publication number	Publication date	Application number	Application date
AT278106 E	20041015	AT19970932611T	19970715
AU199736019 A1	19980209	AU19970036019	19970715
DE69730964 D1	20041104	DE19976030964T	19970715
DE69730964 T2	20051006	DE19976030964T	19970715
DE69919063 D1	20040909	DE19996019063T	19990413

DE69919063 T2	20050804	DE19996019063T	19990413
EP0912830 A1	19990506	EP19970932611	19970715
EP0912830 A4	20000223	EP19970932611	19970715
EP0912830 B1	20040929	EP19970932611	19970715
EP0950815 A2	19991020	EP19990302850	19990413
EP0950815 A3	20000614	EP19990302850	19990413
EP0950815 B1	20040804	EP19990302850	19990413
JP2000514525 T2	20001031	JP19980506260T	19970715
JP11343979 A2	19991214	JP19990108732	19990416
US6079959 A	20000627	US19980061499	19980416
WO9802659 A1	19980122	WO1997US12338	19970715

Priority:

US19960683528 19960715 WO1997US12338 19970715 US19980061499 19980416

Probable Assignee: SAINT GOBAIN SA

Assignee(s): (std): CHAN ANTHONY KAI TAI ; FURON CO ; HENDERSON DAVID L ; KINGSFORD KENJI A ; SAINT GOBAIN PERFORMANCE PLAST ; TRAN VAN TRONG

Assignee(s): FURON CO LAGUNA NIGUEL ; FURON COMPANY ; SAINT GOBAIN PERFORMANCE PLASTICS CORP ; SAINT GOBAIN SA

Inventor(s): (std): CHAN ANTHONY ; CHAN ANTHONY K T ; CHAN ANTHONY KAI TAI ; CHAN KAI ; HENDERSON DAVID L ; HENDERSON L ; KINGSFORD A ; KINGSFORD KENJI A ; MARTINEZ DAVID R ; TRAN TRONG ; TRAN TRONG VAN ; TRAN VAN TRONG

Inventor(s): ANTHONY KAI TAI CHAN ; DAVID L HENDERSON ; KENJI A KINGSFORD ; VAN TRONG TRAN

Agent(s): HIGUCHI SOTOJI ; ISHIDA TAKASHI ; NISHIYAMA MASAYA ; TSURUTA JUNICHI

Designated states: AL AM AT AU AZ BA BB BE BG BR BY CA CH CN CU CY CZ DE DK EE ES FI FR GB GE GH GR HU IE IL IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MC MD MG MK MN MW MX NL NO NZ PL PT RO RU SD SE SG SI SK SL SZ TJ TM TR TT UA UG US UZ VN YU ZW

8) Family number: 2579590 (US4781535 A)

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Title: Apparatus and method for sensing diaphragm failures in reciprocating pumps

Abstract: Apparatus for monitoring the diaphragm integrity in a diaphragm pump. A single continuous circuit trace is supported on a pump diaphragm. An electrical circuit is connected to the continuous circuit trace for measuring both the continuity and a potential ground fault condition between the circuit trace and pumping liquid. The circuit trace is formed in a configuration which resists the effects of strain induced by continuous flexing of the diaphragm.

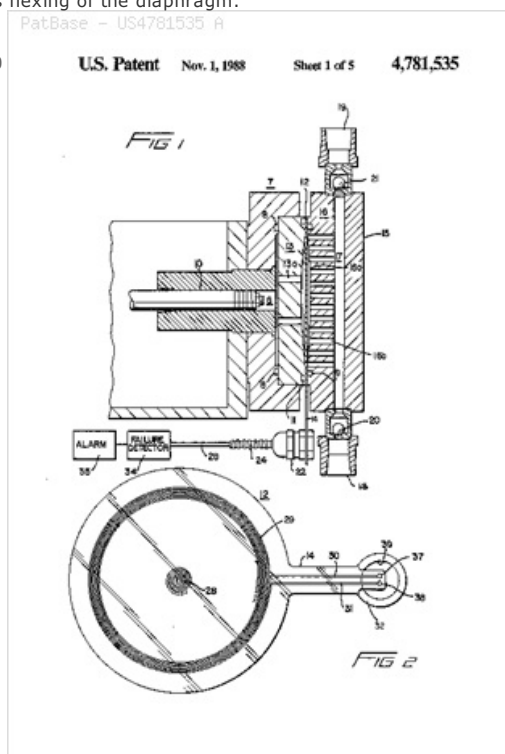
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International (IPC 8-9): F04B43/00 F04B43/02

International (IPC 1-7): F04B21/00 F04B43/02 F04B43/06 F04B49/10 G08B21/00

CPC: F04B43/009

US: 340/605 417/383 417/53 417/63 417/9 92/103.0SD 92/103SD 92/5.00R 92/5R



Family:

Publication number	Publication date	Application number	Application date
DE3871097 D1	19920617	DE19883871097T	19880913
EP0320091 A1	19890614	EP19880308440	19880913
EP0320091 B1	19920513	EP19880308440	19880913
JP1142284 A2	19890605	JP19880238681	19880921
US4781535 A	19881101	US19870119934	19871113

Priority:

US19870119934 19871113

Probable Assignee: PLF ACQUISITION CORP

Assignee(s): (std): PARUSAFUIIDAA INC ; PULSAFEEDER INC

Assignee(s): PAC INC ; PAC INC DELAWARE A CORP OF DELAWARE ; PLF ACQUISITION CORP ; PLF ACQUISITION

Title: Mechanical drive system for a medication infusion system

Abstract: A mechanical drive system for use in driving a disposable cassette containing a reciprocating fluid pump and active valves from a main pump unit. The system uses a single power module cam (580) to drive both the reciprocating pump and the valves to eliminate the possibility of a timing error between the operation of the reciprocating pump and the valves. The power module cam (580) has a cam groove (590) which drives a pump actuator (540) and a bottom can surface (592) which drives two valve actuators (620).

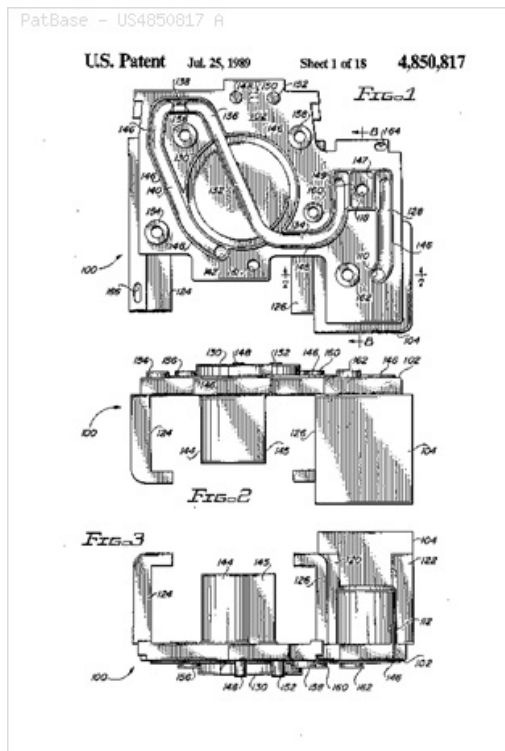
Classifications:

International (IPC 8-9): A61M1/00 A61M5/00 A61M5/14 A61M5/142 A61M5/168 A61M5/175 F04B7/00 F04B9/02 F04B9/04 F16H25/12

International (IPC 1-7): A61M1/00 A61M5/00 A61M5/14 A61M5/142 F04B7/00 F04B9/04 F16H25/12

CPC: A61M2205/12 A61M5/14216 F04B7/00 F04B7/0053 F04B9/042

US: 417/362 417/479 417/510



Family:

Publication number	Publication date	Application number	Application date
CA1319069 A1	19930615	CA19880584389	19881129
DE3877163 D1	19930211	DE19883877163T	19881130
DE3877163 T2	19930805	DE19883877163T	19881130
EP0319274 A1	19890607	EP19880311349	19881130
EP0319274 B1	19921230	EP19880311349	19881130
JP1308567 A2	19891213	JP19880305088	19881201
JP2695879 B2	19980114	JP19880305088	19881201
US4850817 A	19890725	US19870127133	19871201

Priority:

US19870127133 19871201 CA19880584389 19881129

Probable Assignee: CARDINAL HEALTH 303 INC

Assignee(s): (std): PACESETTER INFUSION DO LTD ; PACESETTER INFUSION LTD ; PACESETTER INFUSION LTD A CALIFORNIA LIMITED PART

Assignee(s): ALARIS MEDICAL INC ; ALARIS MEDICAL SYSTEMS INC ; BANKERS TRUST CO ; CARDINAL HEALTH 303 INC ; CITICORP NORTH AMERICA INC ; IISBC BANK USA ; IVAC CORP ; IVAC HOLDINGS INC ; IVAC MEDICAL SYSTEMS INC ; NASON CLYDE K ; P SUSETSUTAA INFUYUJOHN LTD ; PACESETTER INFUSION LIMITED DOING BUSINESS AS MINI ; PACESETTER INFUSION LIMITED DOING BUSINESS AS MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD A CALIFORNIA LIMITED PARTN ; PACESETTER INFUSION LTD A CALIFORNIA LIMITED PARTNERSHIP DOING BUSINESS AS MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD A CALIFORNIA PARTNERSHIP DOING BUSINESS MINIMED TECHNOLOGIES AS LTD ; PACESETTER INFUSION LTD A CALIFORNIA PARTNERSHIP DOING BUSINESS MINIMED TECHNOLOGIES LTD AS ; PACESETTER INFUSION LTD D B A MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD SYLMAR CALIF US ; PELMULDER JOHN P ; SIEMENS CORP ; SIEMENS INFUSION SYSTEMS LEGAL DEPARTMENT ; SIEMENS INFUSION SYSTEMS LTD

Inventor(s): (std): JIYON PII PERUMARUDAA ; KURAIIDO KEI NEISON ; NASON CLYDE K ; PELMULDER JOHN P

Agent(s): GOWLING LAFLEUR HENDERSON LLP

Designated states: DE FR GB IT NL SE

11) Family number: 3755292 (US5000663 A)

© PatBase

Title: Automatic tubing lock for ultrasonic sensor interface

Abstract: An ultrasonic air-in-line detection system for use in detecting air bubbles in the fluid line of a disposable cassette mounted on a main pump unit is disclosed which automatically loads the outlet tubing at the bottom of the cassette into a slot in an ultrasonic sensor housing when the cassette is installed on the main pump unit. The system uses a tubing adapter mounted on the outlet tube below the cassette, with the tubing adapter having a tapered top end. The tubing adapter interacts with a pair of ramps located on the bottom and front of the ultrasonic sensor housing around the slot to draw the tubing adapter into a recess located on the bottom of the ultrasonic sensor housing, thereby drawing the outlet tubing fully into the slot between an ultrasonic transmitter and an ultrasonic receiver in the ultrasonic sensor housing when the cassette is installed.

Classifications:

International (IPC 8-9): A61M37/00 A61M5/00 A61M5/168 A61M5/36

G01N29/02

International (IPC 1-7): A61M37/00 A61M5/00 A61M5/168 A61M5/36

F04B49/00 G01N29/02

CPC: A61M5/365

US: 417/360 417/63 417/9 604/123

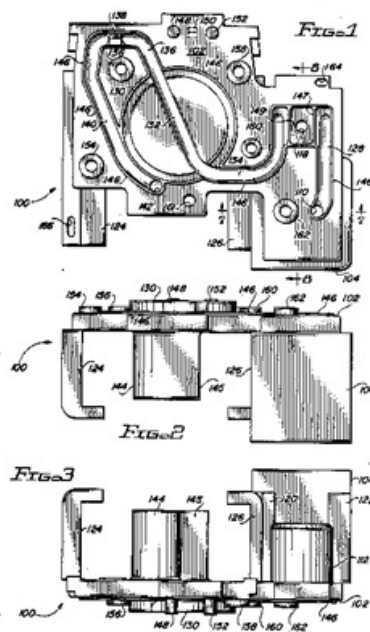
PatBase - US5000663 A

U.S. Patent

Mar. 19, 1991

Sheet 1 of 19

5,000,663



Family:

Publication number	Publication date	Application number	Application date
CA2024425 AA	19910306	CA19902024425	19900831
CA2024425 C	19970107	CA19902024425	19900831
DE69023995 D1	19960118	DE19906023995T	19900905
DE69023995 T2	19960328	DE19906023995T	19900905
EP0416912 A1	19910313	EP19900309745	19900905
EP0416912 B1	19951206	EP19900309745	19900905
JP3170170 A2	19910723	JP19900235507	19900905
JP3296555 B2	20020702	JP19900235507	19900905
US5000663 A	19910319	US19890404027	19890905

Priority:

US19890404027 19890905 CA19902024425 19900831

Probable Assignee: CARDINAL HEALTH 303 INC

Assignee(s): (std): IVAC CORP ; PACESETTER INFUSION LTD ; PACESETTER INFUSION LTD DOING

Assignee(s): ALARIS MEDICAL INC ; ALARIS MEDICAL SYSTEMS INC ; BANKERS TRUST CO ; CARDINAL HEALTH 303 INC ; CAREFUSION 303 INC ; CITICORP NORTH AMERICA INC ; GORTON LANNY A ; IISBC BANK USA ; IVAC HOLDINGS INC ; IVAC MEDICAL SYSTEMS INC ; IVAC SAN DIEGO CALIF CORP ; IVAC SAN DIEGO CALIF US CORP ; P SUSETSUTAA INFUYUJOHN LTD ; PACESETTER INFUSION LTD A CALIFORNIA LIMITED PARTNERSHIP DOING BUSINESS AS MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD A CALIFORNIA PARTNERSHIP D B A MINIMED TECHNOLOGIES LTD ; PACESETTER INFUSION LTD A CALIFORNIA PARTNERSHIP DOING BUSINESS MINIMED TECHNOLOGIES AS LTD ; PACESETTER INFUSION LTD DOING BUSINESS AS MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD DOING BUSINESS MINIMED AS ; PACESETTER INFUSION LTD DOING BUSINESS MINIMED TECHNOLOGIES AS ; SIEMENS CORP ; SIEMENS INFUSION SYSTEMS LEGAL DEPARTMENT ; SIEMENS INFUSION SYSTEMS LTD

Inventor(s): (std): GORTON LANNY A ; RANII EI GOOTON

Agent(s): SMART AND BIGGAR; SMART AND BIGGAR LLP

Designated states: DE FR GB IT NL SE

12) Family number: 31595686 (US4913196 A)

© PatBase

Title: FLUID INJECTION SYSTEM PUMPING METHODS

Abstract: A cassette containing a group of sealed cells is used for delivering doses of fluid to be injected into a sterilizing chamber. After the cassette is automatically positioned over a piercing mechanism, the cassette is moved downwardly so that a cell is pierced. Fluid is then forced out of the cell by pneumatic pressure into an injector valve, which opens in a manner which does not adversely affect a vacuum within the chamber.

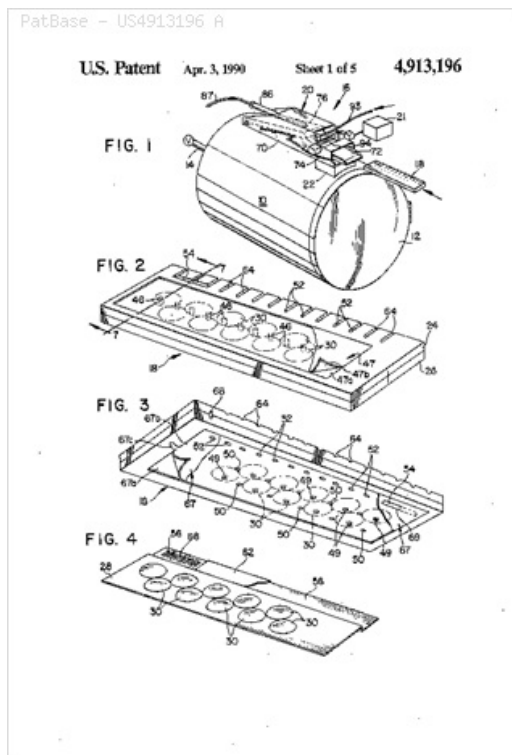
Classifications:

International (IPC 8-9): A61L2/00 A61L2/24 A61L2/26 A61M1/00 B01J4/02 B65B3/04 F02M39/00 F04B23/00 G01F11/02 G01F11/08

International (IPC 1-7): A61L2/00 A61L2/16 A61L2/20 A61L2/24 A61L2/26 A61M1/00 B01J4/02 B05B1/00 B65B3/04 B65D83/00 B67D5/30 B67D5/54 F02M39/00 F04B23/00 G01F11/08 G01F11/8

CPC: A61L2/24 G01F11/086

US: 141/1 141/329 222/386.5 222/82

**Family:**

Publication number	Publication date	Application number	Application date
AT125038 E	19950715	AT19880108063T	19880519
AU198816429 A1	19881124	AU19880016429	19880519
AU614964 B2	19910919	AU19880016429	19880519
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AU199172078 A1	19910530	AU19910072078	19910304
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BRPI8802481 A	19881220	BR1988PI02481	19880520
CA1324735 A1	19931130	CA19880567140	19880518
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CA1336246 A2	19950711	CA19880616501	19880518
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EP0291990 A3	19911002	EP19880108063	19880519
EP0291990 B1	19950712	EP19880108063	19880519
ES2074987 T3	19951001	ES19880108063T	19880519
IN172161 A	19930424	IN1988CA00355	19880502
IN173897 A	19940806	IN1992CA00391	19920602
JP1076859 A2	19890322	JP19880120779	19880519
JP1773942 C3	19930714	JP19880120779	19880519
JP4059908 B4	19920924	JP19880120779	19880519
JP64076859 A2	19890322	JP19880120779	19880519
KR19880013615 A	19881221	KR19880005858	19880519
KR960015182 B1	19961101	KR19880005858	19880519
NZ224542 A	19900926	NZ19880224542	19880506
US4913196 A	19900403	US19870052620	19870520
ZA8803568 A	19900131	ZA19880003568	19880519

Priority:

US19870052620 19870520	IN1988CA00355 19880502	CA19880616500 19880518
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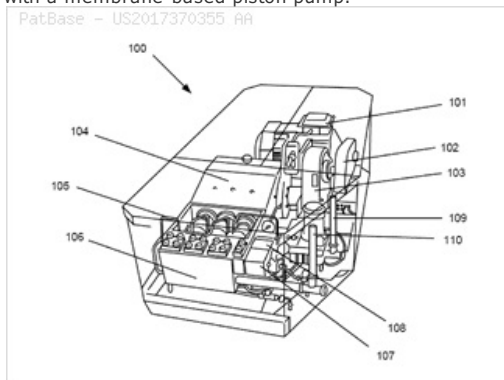
Probable Assignee: JOHNSON AND JOHNSON MEDICAL INC**Assignee(s):** (std): JOHNSON AND JOHNSON ; JOHNSON AND JOHNSON MEDICAL ; JOHNSON AND JOHNSON MEDICAL INC ; M S JOHNSON AND JOHNSON MEDICAL ; SURGIKOS INC**Assignee(s):** JOHNSON AND JOHNSON MEDICAL INC NEW BRUNSWICK N J ; JOHNSON AND JOHNSON MEDICAL INC NEW BRUNSWICK N J US ; M S JOHNSON AND JOHNSON MEDICAL INC ; SPENCER ROBERT M ; WILLIAMS HAROLD R**Inventor(s):** (std): HAROLD R WILLIAMS ; HARORUDO AAMU URIAMUSU ; ROBAATO EMU SUPENSAA ; ROBERT M SPENCER ; SPENCER ROBERT M ; SPENCER ROBERT MCCOY ; SPENCER ROBERT MCLOY ; WILLIAMS HAROLD R ; WILLIAMS HAROLD ROBERT**Agent(s):** GRIFFITH HACK; OGILVY RENAULT LLP SENCRL SRL**Designated states:** AT BE CH DE ES FR GB IT LI NL

Title: A PUMP, A HOMOGENIZER COMPRISING SAID PUMP AND A METHOD FOR PUMPING A LIQUID PRODUCT

Abstract: The present invention relates to a membrane-based piston pump (**400**) for pumping a liquid product. The pump is provided with a device (**426**) for maintaining a pre-defined hydraulic fluid volume in the pump. The device comprises an axle element (**440**) and a bushing element (**432**). The invention further relates to a method for pumping a liquid product in a pump. Furthermore, the invention relates to a homogenizer provided with a membrane-based piston pump.

Classifications:

International (IPC 8-9): F04B1/18 F04B39/04 F04B43/00 F04B43/02 F04B43/067 F04B43/073 F04B53/14
CPC: F04B1/182 F04B43/0054 F04B43/0081 F04B43/009 F04B43/067 F04B43/0733 F04B53/141 F04B53/142
US: 1/1 417/395



Family:

Publication number	Publication date	Application number	Application date
■ CN107002656 A	20170801	CN201580062565	20151117
■ CN107002656 B	20190628	CN201580062565	20151117
■ DE602015024653 D1	20190307	DE201560024653T	20151117
■ EP3221586 A1	20170927	EP20150797071	20151117
■ EP3221586 B1	20190213	EP20150797071	20151117
■ US10100830 BB	20181016	US20150525840	20151117
■ US2017370355 AA	20171228	US20150525840	20151117
■ WO16079127 A1	20160526	WO2015EP76839	20151117

Priority:

SE20140051382 20141118 WO2015EP76839 20151117 EP20150797071 20151117

Probable Assignee: TETRA LAVAL HOLDINGS AND FINANCE

Assignee(s): (std): TETRA LAVAL HOLDINGS AND FINANCE ; TETRA PAK LAVAL HOLDINGS AND FINANCES SA

Assignee(s): TETRA LAVAL HOLDINGS AND FINANCE S A

Inventor(s): (std): SALMAN ISAC ; STENBECK JOHAN

Agent(s): ASSOCIATION TETRA PAK ATTORNEYS SE NO 417; RENNER OTTO BOISSELLE AND SKLAR LLP; TETRA PAK PATENT ATTORNEYS SE

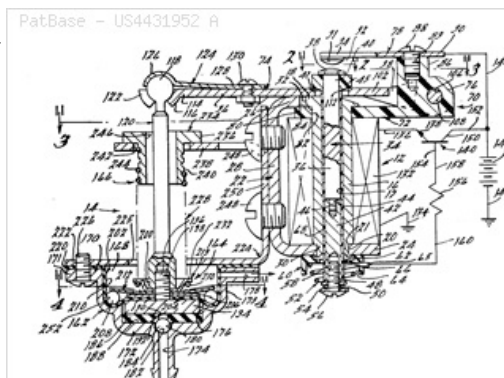
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Title: ELECTRIC POWERED APPARATUS

Abstract: An improved vacuum pump driven by a unique electrically powered servo motor. The vacuum pump comprises an extremely simple and inexpensive pump arrangement utilizing a reciprocating piston and a rolling lobe diaphragm to eliminate the need for close tolerances while still providing high efficiency. The servo motor includes a pair of relatively movable sequentially operating armatures which eliminate the need for any external timing mechanism or for any complex delay mechanism. The servo motor of the present invention is inherently capable of operating the pump as a self-actuating demand pump.

Classifications:

International (IPC 8-9): F04B17/03 F04B17/04 F04B45/00 F04B45/04 F04B45/047 H02K33/00 H02K33/10
International (IPC 1-7): F04B43/04 F04B45/04 H02K33/00 H02K33/02
CPC: F04B45/047 H02K33/10
US: 318/135 335/265 335/277 361/190



Family:

Publication number	Publication date	Application number	Application date
■ CA1123401 A1	19820511	CA19790331397	19790709

DE2927829 A1	19800131	DE19792927829	19790710
FR2431044 A1	19800208	FR19790017785	19790709
GB2024952 A1	19800116	GB19790024001	19790710
GB2024952 B2	19830615	GB19790024001	19790710
JP55098680 A2	19800726	JP19790087371	19790709
US4431952 A	19840214	US19820383348	19820528

Priority:

US19780923213 19780710 CA19790331397 19790709 US19800109898 19800107
US19820383348 19820528

Probable Assignee: AVM CORP

Assignee(s): (std): AVM CORP ; SHEPPARD WILLIAM L

Inventor(s): (std): SHEPPARD WILLIAM L ; SHEPPARD WILLIAM LEWIS ; UIRIAMU REUISU SEPAATO

Inventor(s): LEWIS SHEPPARD WILLIAM

Agent(s): MACRAE AND CO

15) Family number: 8735082 (WO9635876 A1)

© PatBase

Title: PUMP DEVICE

Abstract: The pump device (1) can be used as a metering pump and as a feed pump with only minor pressure fluctuations. It is proposed that a pump diaphragm (2) should be actuated by pulsating working fluid via a coupling device (11). The coupling device (11) comprises at least one reduction line (12) through which the pressure shocks are damped, thereby ensuring that excursions of the pump diaphragm occur at low speeds and accelerations. The backflow line (13) parallel to the reduction line (12) comprises a flap valve (14) which is open during the suction phase and allows rapid return motion of the pump diaphragm (2).

Classifications:

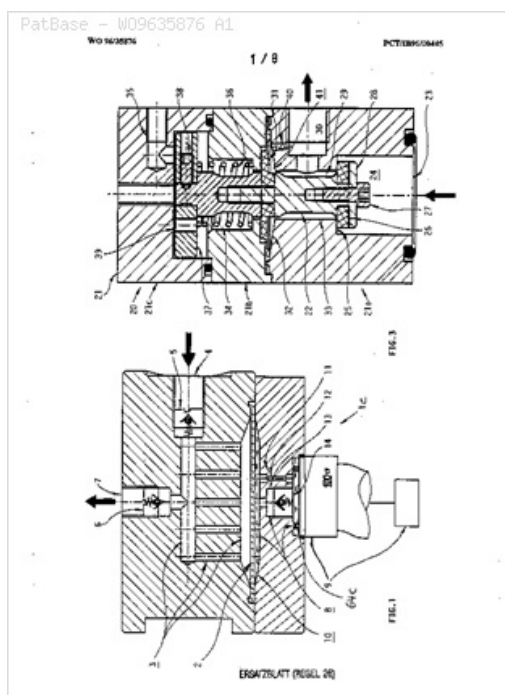
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F04B43/067 F04B53/00 F04B53/20 F04B7/00 F04B7/02

International (IPC 1-7): F04B11/00 F04B43/00 F04B43/06

F04B43/067 F04B53/20 F04B7/02

CPC: F04B11/00 F04B43/009 F04B43/067 F04B53/20 F04B7/0275



Family:

Publication number	Publication date	Application number	Application date
AU199654078 A1	19961129	AU19960054078	19960513
WO9635876 A1	19961114	WO1996IB00445	19960513

Priority:

CH19950001370 19950511 WO1996IB00445 19960513

Probable Assignee: SAWATZKI HARRY L

Assignee(s): (std): HARRY L SAWATZKI ; SAWATZKI HARRY L

Inventor(s): (std): SAWATZKI HARRY L

Inventor(s): HARRY L SAWATZKI

Designated states: AL AM AT AU AZ BB BE BF BG BR BY CA CH CN CZ DE DK EE ES FI FR GB GE GR HU IE IS IT JP KE KG KP KR KZ LK LR LS LT LU LV MC MD MG MK MN MW MX NL NO NZ PL PT RO RU SD SE SG SI SK SZ TJ TM TR TT UA UG US UZ VN

16) Family number: 73841751 (US2019100008 AA)

© PatBase

Title: DISPLACEMENT AMPLIFYING MECHANISM AND LIQUID EJECTING APPARATUS USING THE SAME

Abstract: An displacement amplifying mechanism that enlarges an amount of displacement of an actuator includes an accommodation chamber in which a liquid is sealed, a first wall portion that forms a wall surface of the accommodation chamber and applies a pressure to the liquid in accordance with displacement of the actuator, and a second wall portion that forms the wall surface of the accommodation chamber and is displaced in a first direction which is a direction away from the accommodation chamber in a state where an elastic force acting in a second direction approaching the accommodation

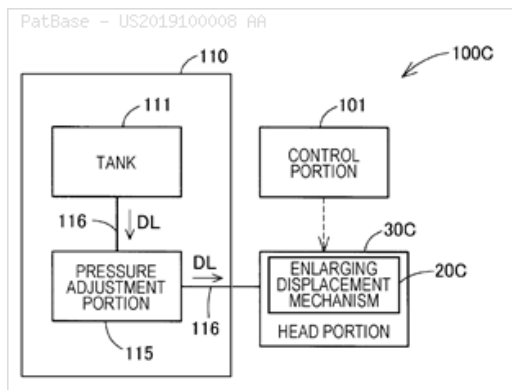
chamber is generated by a pressure of the liquid when the first wall portion applies the pressure to the liquid, in which an area of the second wall portion in contact with the liquid is smaller than an area of the first wall portion in contact with the liquid.

Classifications:

International (IPC 8-9): B05B12/08 B05C11/10 B05C5/00 B05C5/02 B41J2/045 B41J2/14 B41J2/18 B81B3/00 F04B17/00 F04B43/04 F04B43/06 F04B9/107 H02N2/04

CPC: B05B12/085 B05C11/1013 B05C5/02 B41J2/14201 B41J2002/14483 B41J2202/05 B41J2202/12 F04B17/003 F04B43/046 F04B43/06 H02N2/043

US: 1/1



Family:

Publication number	Publication date	Application number	Application date
CN109569955 A	20190405	CN201811122667	20180926
EP3512089 A1	20190717	EP20180197523	20180928
JP2019063704 A2	20190425	JP20170189285	20170929
JP2019098570 A2	20190624	JP20170229812	20171130
US2019100008 AA	20190404	US20180146810	20180928

Priority:

JP20170189285 20170929 JP20170229812 20171130

Probable Assignee: SEIKO EPSON CORP

Assignee(s): (std): SEIKO EPSON CORP

Inventor(s): (std): SUGAI KEIGO ; SUKAI KEIGO

Agent(s): MILLER STURT KENYON; TOKKYO GYOMUHOJIN MEISEI INT PATENT FIRM

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

17) Family number: 80911148 (WO20180724 A1)

© PatBase

Title: PUMP CARTRIDGE AND CONSOLE

Abstract: A pump cartridge comprises a retention structure to retain a piston for shipping and storage, in which the piston can be decoupled from the retention structure to pump fluid. In the shipping and storage configuration, the piston can be positioned with the retention structure to allow sterilization gas to travel within a housing and into a cylinder distal to the piston. When placed in the console for use in a pumping configuration, the piston can be decoupled from the retention structure to form a seal within the housing. When the procedure has been completed, the pump cartridge can be decoupled from the console in a manner that disables the cartridge for subsequent use to prevent a non-sterile cartridge from being reused.

Classifications:

International (IPC 8-9): A61M1/00 A61M5/145 F04B1/16 F04B23/06 F04B39/14 F04B53/14 F04B9/109

CPC: A61B17/3203 A61B2017/00017 A61B2017/00199 A61B2017/00539 A61B2090/038 A61B2090/0814 A61B90/96 A61B90/98 A61M2205/3331 A61M2205/6072 A61M5/1422 F04B1/02 F04B1/0408 F04B1/0439 F04B1/0538 F04B53/14 F04B53/144 F04B53/147 F04B53/22

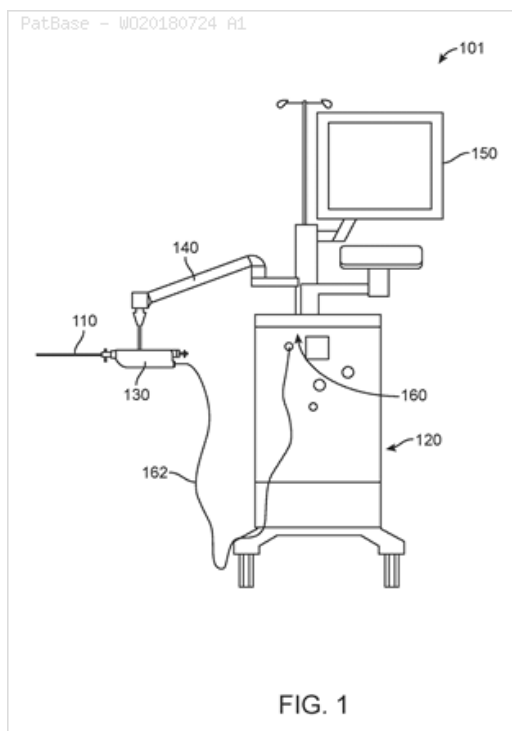


FIG. 1

Family:

Publication number	Publication date	Application number	Application date
WO20180724 A1	20200910	WO2020US20479	20200228

Priority:

US20190812879P 20190301

Probable Assignee: PROCEPT BIOROBOTICS CORP

Assignee(s): (std): BEEBY RUTH ; PROCEPT BIOROBOTICS CORP

Inventor(s): (std): ALVORD LINCOLN ; BEEBY RUTH ; STAUD KEVIN

Agent(s): SHIMMICK JOHN K

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN WS ZA ZM ZW

18) Family number: 22834645 (US3306042 A)

© PatBase

Title: FLUID TRANSMISSION FOR DRIVE AND DRIVEN MEMBERS

Abstract: (Claim 1) 1. A hydraulic power transmission for connecting a lineally reciprocating driving member to a reciprocable driven member, said transmission comprising: a hollow casing, a lineally reciprocable power input plunger in said casing, a lineally reciprocable power output piston in said casing and hydraulically opposed to said power input plunger, said output piston having a projecting annulus extending toward said input plunger, means directly connecting said power input plunger to said driving member and reciprocable therewith through a driving stroke of fixed length, means directly connecting said power output piston to said reciprocable driven member, said input plunger and said output piston each having a pressure face spaced from the other and of different areas to produce a different stroke length, velocity, and power output of said output piston relative to the stroke length, velocity, and power input of said input plunger, and means forming an annular recess in said casing near the end of the stroke of said output piston toward said input plunger, said recess cooperating with said annulus to function as a dashpot to cushion the stroke of said output piston if it exceeds its intended position toward said input plunger.

Classifications:

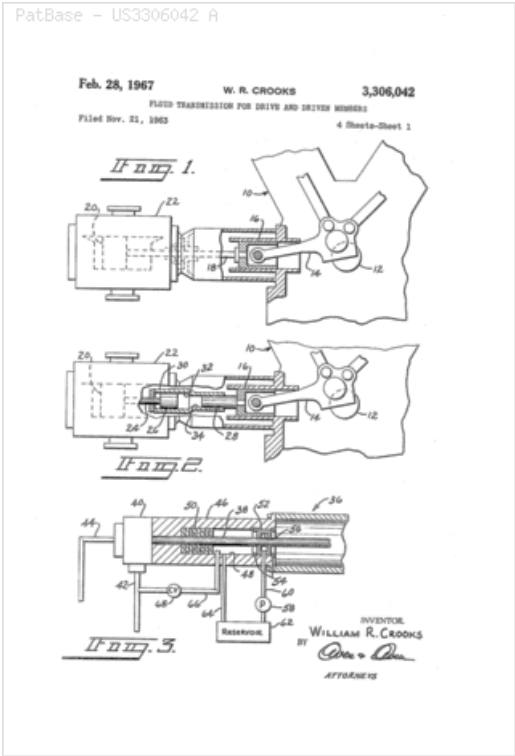
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International (IPC 1-7): F04B9/10

CPC: F04B53/142 F16H43/00 Y10T137/1714 Y10T137/1782

Y10T137/2496 Y10T137/2514

US: 137/68.23 137/70 137/87.01 137/98 277/350 277/432 277/500 417/387 60/537



Family:

Publication number	Publication date	Application number	Application date
US3306042 A	19670228	US19630326326	19631121

Priority:

US19630326326 19631121

Probable Assignee: COOPER BESSEMER CORP

Assignee(s): (std): COOPER BESSEMER CORP

Inventor(s): (std): CROOKS WILLIAM R

19) Family number: 3332114 (US4940399 A)

© PatBase

Title: PISTON CAP AND BOOT SEAL FOR A MEDICATION INFUSION SYSTEM

Abstract: A unitary piston cap and boot seal for use in a medication infusion system is disclosed which is mounted on a rigid piston contained in a cylinder disposed in a cassette. The piston cap and boot seal, which are made of a flexible, elastomeric material, effectively both form the pumping element disposed in the cylinder, and prevent contamination of the pump through use of a rolling seal. The device may be sterilized by gas, since a tortuous path affording passage to gas is included in the retaining skirt mounted around the outer diameter of the pump cylinder.

Classifications:

International (IPC 8-9): A61M5/14 A61M5/145 F04B43/02 F04B7/00

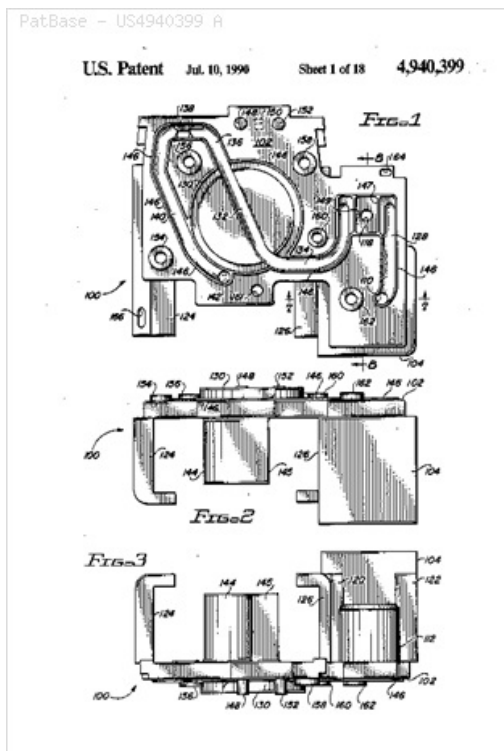
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CPC: A61M5/14216 F04B43/02 F04B7/0053 F16J3/06

US: 417/415 604/152 92/99

PatBase - US4940399 A



Family:

Publication number	Publication date	Application number	Application date
CA1319067 A1	19930615	CA19880584386	19881129
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EP0319276 A1	19890607	EP19880311351	19881130
EP0319276 B1	19921230	EP19880311351	19881130
JP2004383 A2	19900109	JP19880305089	19881201
JP2801615 B2	19980921	JP19880305089	19881201
US4940399 A	19900710	US19870127350	19871201

Priority:

US19870127350 19871201 CA19880584386 19881129

Probable Assignee: CARDINAL HEALTH 303 INC

Assignee(s): (std): PACESETTER INFUSION LTD

Assignee(s): ALARIS MEDICAL INC ; ALARIS MEDICAL SYSTEMS INC ; BANKERS TRUST CO ; BLOOM WILLIAM G ; CARDINAL HEALTH 303 INC ; CITICORP NORTH AMERICA INC ; GORTON LANNY A ; IISBC BANK USA ; IVAC CORP ; IVAC HOLDINGS INC ; IVAC MEDICAL SYSTEMS INC ; KONOPKA APRIL A ; P SUSETSUTAA INFUYUJOHN LTD ; PACESETTER INFUSION LTD A CALIFORNIA LIMITED PARTNERSHIP DOING BUSINESS AS MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD A CALIFORNIA PARTNERSHIP DOING BUSINESS MINIMED TECHNOLOGIES AS LTD ; PACESETTER INFUSION LTD A CALIFORNIA PARTNERSHIP DOING BUSINESS MINIMED TECHNOLOGIES LTD AS ; PACESETTER INFUSION LTD D B A MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD SYLMAR CALIF US ; PELMULDER JOHN P ; SIEMENS CORP ; SIEMENS INFUSION SYSTEMS LEGAL DEPARTMENT ; SIEMENS INFUSION SYSTEMS LTD

Inventor(s): (std): BLOOM WILLIAM G ; EIPURIRU EI KONOPUKA ; GORTON LANNY A ; JIYON PII PERUMARUDAA ; KONOPKA APRIL A ; PELMULDER JOHN P ; RANII EI GOOTON ; UIRIAMU JII BURUUMU

Agent(s): GOWLING LAFLEUR HENDERSON LLP

Designated states: DE FR GB IT NL SE

20) Family number: 15168947 (US4950235 A)

© PatBase

Title: CONTAINER-SIDE OCCLUSION DETECTION SYSTEM FOR A MEDICATION INFUSION SYSTEM

Abstract: A system for detecting an occlusion in a fluid line is disclosed which can detect occlusions in the upstream or container side of a disposable cassette containing a fluid pump therein. The cassette includes a piston-type pump with inlet and outlet valves, and is for installation onto and use with a main pump unit including motors for driving the pump and valves contained in each cassette. The system utilizes control circuitry to monitor the intake stroke of the pump in the cassette, to detect an upstream occlusion in the fluid line leading to the pump, and to provide an alarm in the event of a container-side occlusion.

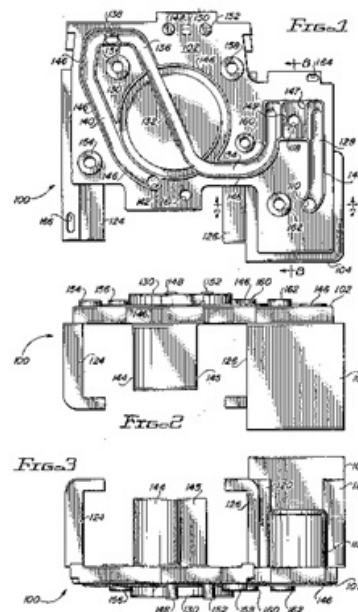
Classifications:

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International (IPC 1-7): A61M31/00 A61M5/00 A61M5/14 F04B49/10

CPC: A61M2205/12 A61M5/16831 A61M5/365 Y10S128/13

US: 128/DIG.13 417/45 604/65 604/67 128/DIG.013

**Family:**

Publication number	Publication date	Application number	Application date
CA1319066 A1	19930615	CA19880584383	19881129
DE3882362 D1	19930819	DE19883882362T	19881130
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EP0341364 B1	19930714	EP19880311352	19881130
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JP2732534 B2	19980330	JP19880313640	19881212
US4950235 A	19900821	US19880192280	19880510

Priority:

US19880192280 19880510 CA19880584383 19881129

Probable Assignee: CARDINAL HEALTH 303 INC**Assignee(s):** (std): PACESETTER INFUSION LTD ; PACESETTER INFUSION LTD A CALIFORNIA LIMITED PART

Assignee(s): AIBATSUKU CORP ; ALARIS MEDICAL INC ; ALARIS MEDICAL SYSTEMS INC ; BANKERS TRUST CO ; CARDINAL HEALTH 303 INC ; CITICORP NORTH AMERICA INC ; HENKE JAMES L ; HONG SON HOANG ; IISBC BANK USA ; IVAC CORP ; IVAC HOLDINGS INC ; IVAC MEDICAL SYSTEMS INC ; P SUSETSUTAA INFUYUJOHN LTD ; PACESETTER INFUSION LTD A CA PARTNERSHIP (DBA MINIMED TECHNOLOGIES) LTD ; PACESETTER INFUSION LTD A CA PARTNERSHIP DBA MINI ; PACESETTER INFUSION LTD A CA PARTNERSHIP DBA MINIMED TECHNOLOGIES LTD ; PACESETTER INFUSION LTD A CALIFORNIA LIMITED PARTN ; PACESETTER INFUSION LTD A CALIFORNIA LIMITED PARTNERSHIP DOING BUSINESS AS MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD A CALIFORNIA PARTNERSHIP DOING BUSINESS MINIMED TECHNOLOGIES AS LTD ; PACESETTER INFUSION LTD A CALIFORNIA PARTNERSHIP DOING BUSINESS MINIMED TECHNOLOGIES LTD AS ; PACESETTER INFUSION LTD DBA MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD SYLMAR CALIF US ; PACESETTER INFUSION LTD TRADING AS MINIMED TECHNOL ; PACESETTER INFUSION LTD TRADING AS MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD TRADING MINIMED TECHNOLOGIES AS ; SIEMENS CORP ; SIEMENS INFUSION SYSTEMS LEGAL DEPARTMENT ; SIEMENS INFUSION SYSTEMS LTD ; SLATE JOHN B

Inventor(s): (std): HENKE JAMES L ; HONG SON H ; HONG SON HOANG ; JIEEMUSU ERU HENKU ; JIYON BII SUREETO ; SLATE JOHN B ; SON HOAN HON

Inventor(s): HONG SON HOANG EL MONTE CALIFORNIA 91733 US ; JEEMUSU ERU HENKU ; JON BII SUREETO

Agent(s): GOWLING LAFLEUR HENDERSON LLP

Designated states: DE FR GB IT NL SE

21) Family number: 16703429 (DE8504155 U1)

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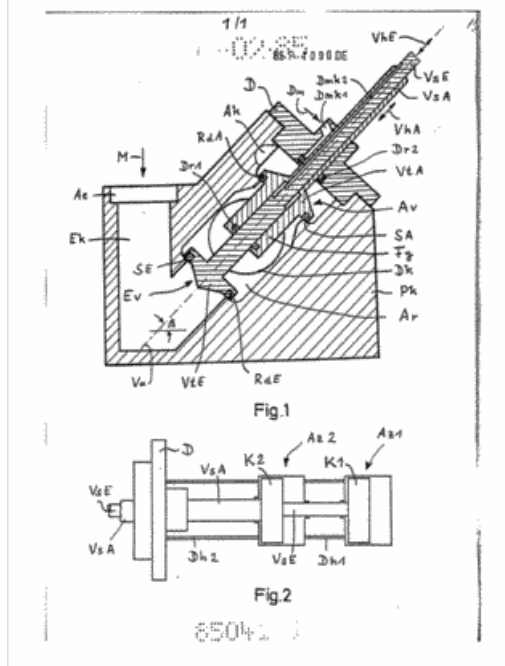
Abstract: Source: DE8504155 U1 **Machine translation:** (Claim 1) 1 Dosing, especially for dispensing liquid components of reaction resin compounds - with a reciprocating displacer, - one as a poppet valve trained intake valve and - a form of a poppet valve outlet, wherein the inlet valve (Ev) and the outlet valve (Av) as of externally controllable necessarily coaxial with poppet valves in the pump head (Ph) are mounted valve stems (VSE, VSA) is formed.

Classifications:

International (IPC 8-9): B01F15/04 B29C31/04 B29C31/06 F04B13/00 F04B53/10 F04B7/00 F04B7/02 F16K11/10 F16K11/20

International (IPC 1-7): F04B7/00

CPC: B01F15/0454 B29C31/063 F04B13/00 F04B53/1025 F04B53/109 F04B7/0266 F16K11/202

**Family:**

Publication number	Publication date	Application number	Application date
DE8504155 U1	19860821	DE19850004155U	19850214

Priority:

DE19850004155U 19850214

Probable Assignee:

SIEMENS AG

Assignee(s):

SIEMENS AG

22) Family number: 15073250 (US4818190 A)

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Title: Cassette loading and latching apparatus for a medication infusion system

Abstract: A medication infusion system having a disposable cassette including a piston pump and active valves for installation on a main pump unit including a mechanical drive system for operating the cassette is disclosed which has a unique system for loading the cassette onto the main pump unit and latching the cassette in place on the main pump unit. The cassette includes a slide latch which closes the fluid path when the cassette is to be installed, the slide latch only being opened when the cassette is properly installed on the main pump unit with the valve actuators of the main pump unit preventing fluid freeflow. Latching the cassette in place causes a latch head on the main pump unit to grasp the piston on the cassette in a driving relationship.

Classifications:

International (IPC 8-9): A61M1/00 A61M39/00 A61M39/28 A61M5/00 A61M5/14 A61M5/142

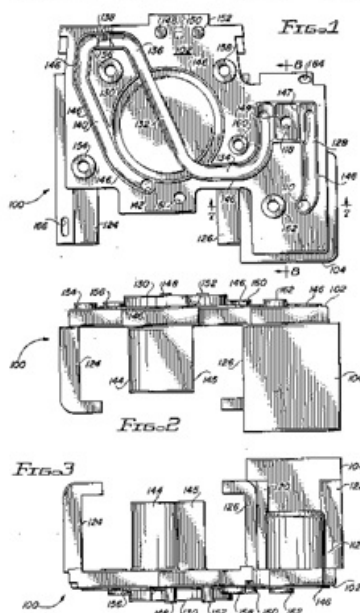
International (IPC 1-7): A61M1/00 A61M5/00 A61M5/14 A61M5/142 F04B39/14

CPC: A61M2205/12 A61M2205/3306 A61M39/281 A61M5/365

US: 417/360 417/415

PatBase - US4818190 A

U.S. Patent Apr. 4, 1989 Sheet 1 of 18 4,818,190



Publication number	Publication date	Application number	Application date
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EP0319279 A1	19890607	EP19880311356	19881130
EP0319279 B1	19920304	EP19880311356	19881130
JP2004379 A2	19900109	JP19880305085	19881201
JP2695876 B2	19980114	JP19880305085	19881201
US4818190 A	19890404	US19870127359	19871201

Priority:

US19870127359 19871201 CA19880584373 19881129

Probable Assignee: CARDINAL HEALTH 303 INC

Assignee(s): (std): PACESETTER INFUSION LTD

Assignee(s): ALARIS MEDICAL INC ; ALARIS MEDICAL SYSTEMS INC ; BANKERS TRUST CO ; CARDINAL HEALTH 303 INC ; CITICORP NORTH AMERICA INC ; GORTON LANNY A ; IISBC BANK USA ; IVAC CORP ; IVAC HOLDINGS INC ; IVAC MEDICAL SYSTEMS INC ; P SUSETSUTAA INFUYUJOHN LTD ; PACESETTER INFUSION LTD A CALIFORNIA LIMITED PARTN ; PACESETTER INFUSION LTD A CALIFORNIA LIMITED PARTNERSHIP DOING BUSINESS AS MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD A CALIFORNIA PARTNERSHIP DOING BUSINESS MINIMED TECHNOLOGIES AS LTD ; PACESETTER INFUSION LTD A CALIFORNIA PARTNERSHIP DOING BUSINESS MINIMED TECHNOLOGIES LTD AS ; PACESETTER INFUSION LTD D B A MINIMED TECHNOLOGIES ; PACESETTER INFUSION LTD SYLMAR CALIF US ; PACESETTER INFUSION LTD TRADING AS MINIMED TECHNOL ; PACESETTER INFUSION LTD TRADING AS MINIMED TECHNOLOGIES ; PELMULDER JOHN P ; SIEMENS CORP ; SIEMENS INFUSION SYSTEMS LEGAL DEPARTMENT ; SIEMENS INFUSION SYSTEMS LTD

Inventor(s): (std): GORTON LANNY A ; JIYON PII PERUMARUDAA ; PELMULDER JOHN P ; RANII EI GOOTON

Agent(s): GOWLING LAFLEUR HENDERSON LLP

Designated states: DE FR GB IT NL SE

23) Family number: 28438440 (US2003050624 AA)

© PatBase

Title: INFUSION DEVICE AND DRIVING MECHANISM FOR SAME

Abstract: A drive mechanism for delivery of infusion medium a coil capable of being electrically activated to provide an electromagnetic field. The coil surrounds a piston channel extending in an axial direction. The piston channel provides a passage for communication of infusion medium to an outlet chamber located at one end of the piston channel. An armature is located adjacent the coil, on one side of the axial channel. The armature is moveable toward a forward position, in response to the electromagnetic field produced by activation of the coil. A piston is located within the piston channel and is moveable axially within the channel to a forward position, in response to movement of the armature to its forward position. The armature and piston are moved toward a retracted position, when the coil is not energized. In the retracted position of the piston, a piston chamber is formed between the piston and a valve member and is filled with infusion medium. As the piston is moved to its forward position, the piston chamber volume is reduced and pressure within the piston chamber increases to a point where the pressure moves the valve member into an open position. When the valve member is in the open position, medium from the piston chamber is discharged into an outlet chamber located on the opposite side of the coil relative to the armature. An outlet is provided in flow communication with the outlet chamber, for discharging infusion medium from the outlet chamber.

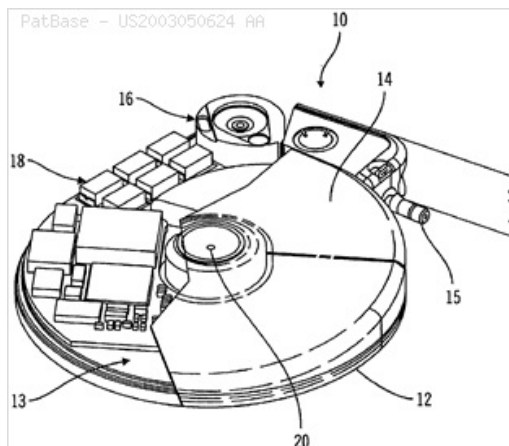
Classifications:

International (IPC 8-9): A61K9/22 A61M1/00 A61M31/00 A61M5/14 A61M5/142 A61M5/165 A61M5/36 F04B17/03 F04B17/04 F04B19/00 F04B35/04 F04B49/06 F04B53/00 F04B53/10

International (IPC 1-7): A61K9/22 A61M1/00 A61M37/00 A61M5/14

CPC: A61M5/14216 A61M5/14276 F04B17/042 F04B53/1032 F04B35/045 A61M2205/7518 A61M5/165 A61M5/36 F04B19/006 F04B53/008

US: 1/1 417/417 417/44.1 604/131 604/151 604/152 604/153 604/891.1 604/891.100P



Family:

Publication number	Publication date	Application number	Application date
AU2002324869 AA	20030324	AU20020324869	20020904
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US6997921 BB	20060214	US20010033722	20011227
US2003135160 AA	20030717	US20030369242	20030219
US7131967 BB	20061107	US20030369242	20030219
US2003130647 AA	20030710	US20030371130	20030220
US6805693 BB	20041019	US20030371130	20030220
US2005240167 AA	20051027	US20050170826	20050629
US7785293 BB	20100831	US20050170826	20050629
US2005245907 AA	20051103	US20050171587	20050629
US2005245908 AA	20051103	US20050173833	20050630
US8696631 BB	20140415	US20050173833	20050630
US2009118711 AA	20090507	US20080334985	20081215
US2010152714 AA	20100617	US20100684436	20100108
US9968733 BB	20180515	US20100684436	20100108

US2018264190 AA	20180920	US20180962644	20180425
WO03022328 A2	20030320	WO2002US28081	20020904
WO03022328 A3	20040805	WO2002US28081	20020904
WO11084230 A1	20110714	WO2010US55781	20101108

Priority:

US20010317886P	20010907	US20010033722	20011227	WO2002US28081	20020904
US20030369242	20030219	US20030371130	20030220	US20050170826	20050629
US20050171587	20050629	US20050173833	20050630	US20080334985	20081215
US20100684436	20100108	US20180962644	20180425		

Probable Assignee: MEDTRONIC INC

Assignee(s): (std): BOSLEY ROBERT W ; GRAY JOHN ; GRAY JOHN F ; HAASE JAMES M ; MEDTRONIC INC ; MEDTRONIC MINIMED INC ; MEZERA RONALD L ; WHITEHEAD NICHOLAS R

Inventor(s): (std): BOSLEY ROBERT W ; GRAY FREDERICK JOHN ; GRAY JOHN ; GRAY JOHN F ; HAASE JAMES M ; MEZERA RONALD L ; STRUZKA ZBYNEK ; WHITEHEAD NICHOLAS R

Inventor(s): BOSLEY ROBERT ; JOHN F GRAY ; ROBERT W BOSLEY

Agent(s): CAMPBELL NELSON WHIPPS LLC ; FOLEY AND LARDNER ; FOLEY AND LARDNER LLP ; MARKS SCOTT A ET AL ; MEDTRONIC MINIMED INC ; MUCTING RAASCH AND GEBHARDT PA ; OYEN WIGGS GREEN AND MUTALA LLP

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

24) Family number: 49800806 (US2011257572 AA)

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Title: DRESSINGS AND METHODS FOR TREATING A TISSUE SITE ON A PATIENT

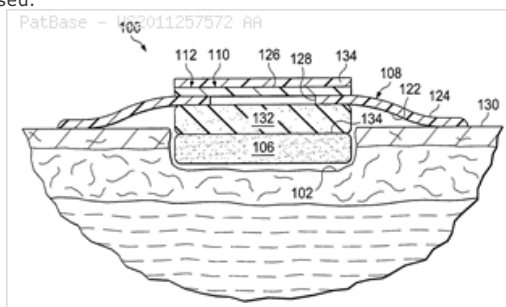
Abstract: Dressings, systems, and methods for treating a tissue site on a patient involve allowing liquids from the tissue site or a priming fluid to evaporate and exit the dressing through a liquid-impermeable, vapor-permeable membrane. The dressing is able to process more liquids than would otherwise be possible without evaporation and potentially to create reduced pressure. Other dressings, systems, and methods are disclosed.

Classifications:

International (IPC 8-9): A61B17/00 A61B19/00 A61F13/00 A61F13/02 A61J1/05 A61L15/22 A61M1/00 A61M27/00 A61M35/00 A61M5/00 A61M5/178 A61M5/32 B01D15/00 B01D53/22 B01D53/26 B01D61/36 B01D63/00 B01D63/02 B23P11/00 B23P17/04 B65D79/02 F04B45/047

CPC: A61F13/00063 A61F13/02 A61F13/0206 A61F13/0216 A61F13/0223 A61F13/0226 A61F13/0266 A61F2013/00119 A61F2013/00246 A61F2013/00536 A61F2013/0074 A61M1/0001 A61M1/0023 A61M1/0031 A61M1/0052 A61M1/0058 A61M1/0066 A61M1/0084 A61M1/0088 A61M1/009 A61M1/0092 A61M2205/7527 A61M2205/7536 A61M1/0072 A61M2205/11 B01D2053/221 B01D2257/80 B01D2258/06 B01D2259/4533 B01D53/265 B01D53/268 B01D61/362 Y10T137/3109 Y10T29/49826 A61M1/0005 A61M1/0027 A61M2205/273 A61M2205/3306 A61M2205/3317 A61M2205/3331 A61M2205/3344 A61M2205/8206 A61M2205/84 A61M2209/06 A61M2209/086 Y10T137/0402 A61M2205/8262 A61F13/00055 A61F13/00068 A61M27/00 A61M1/0086 A61M2205/50 A61F13/00 A61F13/00046 A61F13/00051 A61F13/022 A61F13/0259

US: 1/1 137/15.01 137/15.010S 137/205 206/438 206/541 206/592 210/321.72 210/640 29/428 29/428S 433/91 493/394 602/41 602/42 602/43 602/43S 602/46 602/46P 604/319 604/319P 604/319S 604/321 604/358 604/408 604/538 604/543 604/543P



Family:

Publication number	Publication date	Application number	Application date
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Probable Assignee: KCI LICENSING INC

Assignee(s): (std): COULTHARD RICHARD DANIEL JOHN ; JAEB JONATHAN PAUL ; KCI LICENSING INC ; LOCKE CHRISTOPHER BRIAN ; PRATT BENJAMIN A ; RIDER ELLIOTT ; ROBINSON TIMOTHY MARK ; RYDER ELLIOTT JAMES ; TOUT AIDAN MARCUS

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Agent(s): BIGGS PHILIP JAMES; BORDEN LADNER GERVAIS LLP; CMS CAMERON MCKENNA NABARRO OLSWANG LLP; Cordina Kevin John; FISCHER MICHAEL MARIA; FOX NICHOLAS RUSSELL PHILIP; JOHNSON ROBERT H ET AL; JOHNSTON ROBERT H ET AL; KITA AOYAMA INT PATENT BUREAU; OLSWANG GERMANY LLP; SHELSTON IP; SHELSTON IP PTY LTD; SIMMONS AND SIMMONS; SIMMONS AND SIMMONS LLP; WELCH GERALD T; WELCH GERALD T ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

25) Family number: 55187507 (US2013331823 AA)

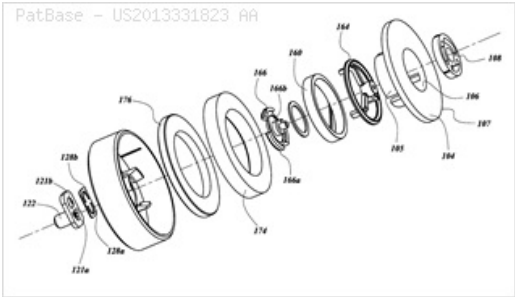
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Title: NEGATIVE PRESSURE WOUND THERAPY APPARATUS

Abstract: Some embodiments disclosed herein are directed to a pump assembly comprising a voice coil, a magnet and a diaphragm, wherein the voice coil is configured to move the diaphragm to pump a fluid through the pump assembly in response to a drive signal applied to the voice coil. Some embodiments disclosed herein are directed to an apparatus for applying negative pressure to a wound comprising a source of negative pressure configured to be coupled to a dressing, the source of negative pressure comprising a voice coil actuator and a diaphragm, and a controller configured to produce a drive signal for the voice coil actuator.

Classifications:

International (IPC 8-9): A61F13/00 A61M A61M1/00 A61M27/00 F04B43/00 F04B43/04 F04B45/047 F04B49/06 F04B53/10
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Family:

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Priority:

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Probable Assignee: SMITH AND NEPHEW PLC

Assignee(s): (std): SMITH AND NEPHEW ; SMITH AND NEWPHEW PLC

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Inventor(s): ALLEN JULIEGB ; ASKEM BEN ALANGB ; BECKETT TREVOR JOHNGB ; BINDER IANGB ; COLLINSON SARAH JENNYGB ; COWAN HUGHES JOHNGB ; FERRARI IACOPO CLAUDIOMU ; FRYER CHRISTOPHER JOHNGB ; GOWANS PHILIPGB ; HERD MATTHEW JAMESGB ; MARSHALL KEITHGB ; MEHTA STEVEN CARLGB ; MOY TOMGB ; MULLEN PAULGB ; NICOLINI DEREKGB ; NORMAN ALEX DAVIDGB ; PRYOR NEILGB ; RIVA CHRISTIANMU ; STACEY GARYGB ; WALSH PHILPGB

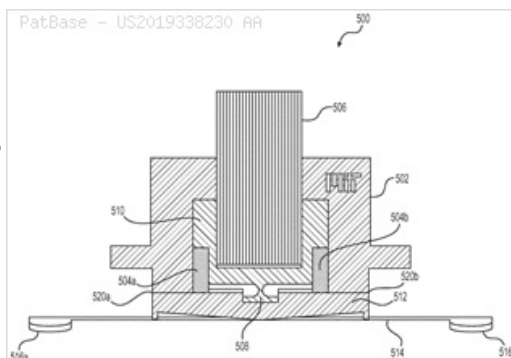
Agent(s): BORDEN LADNER GERVAIS LLP; ELZABURU SLP ELZABURU SLP; GRIFFITH HACK; KNOBBE MARTENS OLSON AND BEAR LLP; SMITH AND NEPHEW

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Abstract: On-platform pumps provide greater flexibility and design freedom and are a key feature of organs-on-chip platforms. On-platform electromagnetic (EM) pumps have been developed for use with the organ-on-chip platforms. The EM pump uses electrical energy, which may be supplied by a battery, making the pump portable. The EM pump uses an EM actuator having a low energy consumption. The actuator's low energy consumption is achieved by a latching design which requires only a short pulse of energy to switch its state and where springs store some of the actuator kinetic energy, which is then recovered in the reverse stroke. This further reduces the energy consumption of the actuator. Also provided are injection-molded, single-use platforms with onboard diaphragm micro-pumps and various valve and pump geometries. The EM actuators easily integrate with these platforms, demonstrating pumping at a constant flowrate, no measurable temperature rise, and valve sealing against varying back-pressure.

Classifications:

International (IPC 8-9): B01L3/00 B01L9/00 C12M1/00 C12M3/00 C12M3/06 F04B43/04 H01F7/12 H01F7/14 H01F7/16
CPC: B01L2200/025 B01L2200/027 B01L2200/10 B01L2300/123 B01L2400/0415 B01L2400/043 B01L3/502707 B01L3/502715 B01L3/50273 B01L3/502753 B01L9/527 C12M21/08 C12M23/16 C12M29/00 F04B43/043 F04B43/14 H01F7/122 H01F7/14 H01F7/1646



Family:

Publication number	Publication date	Application number	Application date
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WO19213271 A1	20191107	WO2019US30216	20190501

Priority:

US20180665348P 20180501 US20190400840 20190501

Probable Assignee: MASSACHUSETTS INST TECHNOLOGY

Assignee(s): (std): MASSACHUSETTS INST TECHNOLOGY

Assignee(s): MASSACHUSETTS INST OF TECHNOLOGY

Inventor(s): (std): BHUSHAN BRIJ MOHAN ; NOH MINKYUN ; RATHBONE DANIEL R ; TRUMPER DAVID L ; YOON JUN YOUNG

Agent(s): PABST PATREA L ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

27) Family number: 60160905 (US2015327717 AA)

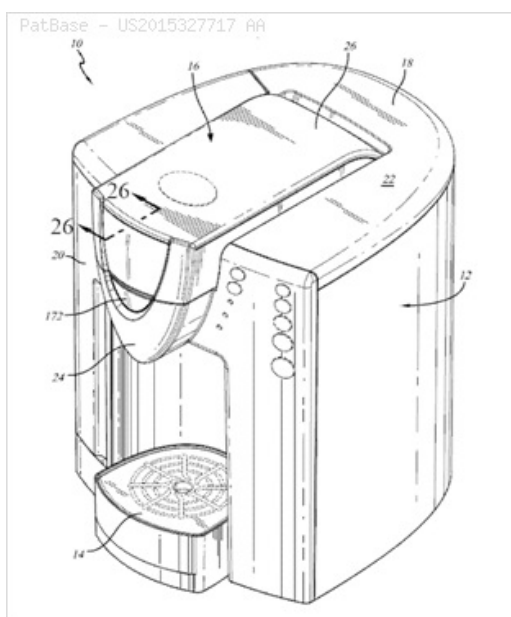
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Title: MOVING INLET NOZZLES IN BEVERAGE SYSTEMS

Abstract: The brewing system disclosed herein includes a moving inlet nozzle for use in intermixing hot water and coffee in a coffee cartridge. The inlet nozzle may include one or more flow ports that inject hot water into an inner chamber of the coffee cartridge at select angles, locations and pressures to create the desired fluidized mixture of hot water and beverage medium.

Classifications:

International (IPC 8-9): A23F3/18 A23F5/26 A47J31/00 A47J31/02 A47J31/057 A47J31/06 A47J31/10 A47J31/22 A47J31/24 A47J31/34 A47J31/36 A47J31/40 A47J31/44 A47J31/46 A47J31/52 A47J31/54 A47J31/56 A47J31/60 B65D85/804 F04B49/06 G05B11/42
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US: 1/1 426/115 426/231 426/425 426/431 426/433 99/279 99/280 99/283 99/287 99/295



Family:

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Priority:

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US20160549106	20160205	US20160056131	20160229	US20160076144	20160321
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Probable Assignee: COFFEE SOLUTIONS LLC

Assignee(s): (std): BURROWS BRUCE ; BURROWS BRUCE D ; COFFEE SOLUTIONS LLC ; REMINGTON DESIGNS LLC

Assignee(s): HAGEN DAVID ; MALETIS CHRIS ; MALETIS ED

Inventor(s): (std): BURROWS BRUCE ; BURROWS BRUCE D

Agent(s): BUCHALTER; DESHIMARU TAKESHI; DONALDSON COREY A ET AL; GEVERS PATENTS; GOWLING WLG CANADA LLP; GRIFFITH HACK; KOHLER SCHMID MOEBUS PATENTANWALTE; KOPPEL PATRICK HEYBL AND PHILPOTT; KURASAWA ICHIRO; LOWRY STUART O ET AL; MATSUSHITA MITSURU; MILLER NASH GRAHAM AND DUNN LLP; MURRAY TRENTO AND ASSOCIATES PTY LTD; ORLER ANTHONY J ET AL; OYEN WIGGS GREEN AND MUTALA LLP; WATANABE TORU

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION OR SUPERCRITICAL FLUID CHROMATOGRAPHY

Abstract: A variable-orifice fluid restrictor for use with a supercritical extractor or chromatograph includes an inlet line for fluid at a pressure above its critical pressure, an extended tubular probe having an inner and an outer surface and a proximal and a distal end. The proximal end of the probe is disposed toward the inlet line. The distal end of the probe includes an adjustable orifice means adapted for metering the fluid and having first and second orifice members and an adjusting stem having first and second ends. The adjustable orifice means is adjacent to the outer surface of the probe and the orifice means is adjustable with the adjusting stem. The end of the adjusting stem is located at the distal end of the probe and is adapted for moving the first orifice member with respect to the second orifice member to control the adjustable orifice for varying the restriction of fluid passing through the adjustable orifice.

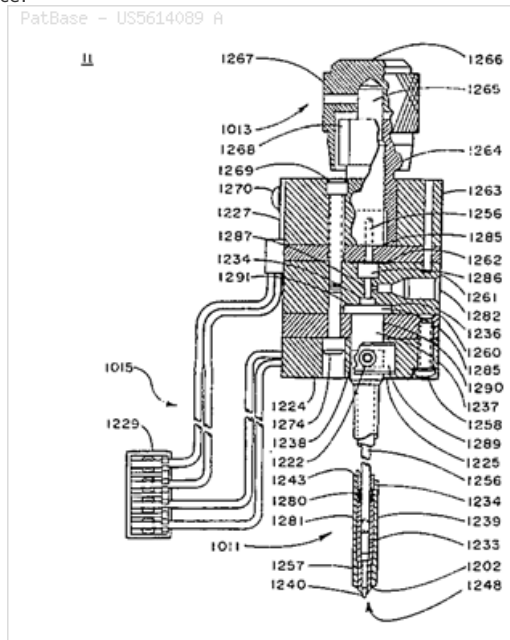
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International (IPC 1-7): B01D15/08

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US: 210/198.2 210/511 210/634 210/656 210/659 422/256 422/261 422/285



Family:

Publication number	Publication date	Application number	Application date
US5614089 A	19970325	US19950542683	19951013

Priority:

US19900553119 19900713 US19910795987 19911122 US19920908458 19920706
US19930027257 19930305 US19930096919 19930723 US19950542683 19951013

Probable Assignee: TELEDYNE ISCO INC

Assignee(s): (std): ISCO INC

Assignee(s): TELEDYNE ISCO INC

Inventor(s): (std): ALLINGTON ROBERT W ; JAMESON DANIEL G ; TEHRANI YOUSSEF ; WALTERS HENRY L

Title: APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION OR SUPERCRITICAL FLUID CHROMATOGRAPHY

Abstract: A variable-orifice fluid restrictor for use with a supercritical extractor or chromatograph includes an inlet line for fluid at a pressure above its critical pressure, an extended tubular probe having an inner and an outer surface and a proximal and a distal end. The proximal end of the probe is disposed toward the inlet line. The distal end of the probe includes an adjustable orifice means adapted for metering the fluid and having first and second orifice members and an adjusting stem having first and second ends. The adjustable orifice means is adjacent to the outer surface of the probe and the orifice means is adjustable with the adjusting stem. The end of the adjusting stem is located at the distal end of the probe and is adapted for moving the first orifice member with respect to the second orifice member to control the adjustable orifice for varying the restriction of fluid passing through the adjustable orifice. The distal end of the probe is inside the collector and the adjusting stem extends outside of the collector.

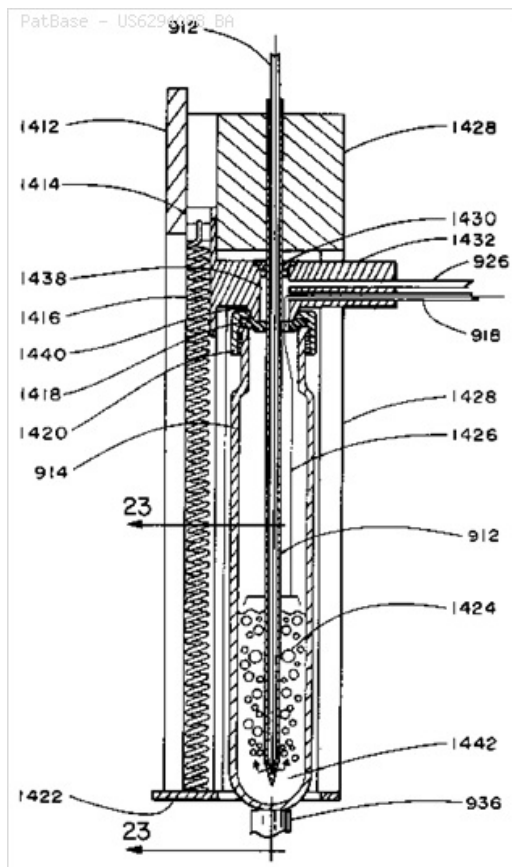
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International (IPC 1-7): B01D15/08

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US: 210/198.2 210/511 210/541 210/542 210/634 210/656 422/256 422/261 422/285



Family:

Publication number	Publication date	Application number	Application date
US6294088 BA	20010925	US20000713895	20001116

Priority:

US19900553119 19900713	US19910795987 19911122	US19920908458 19920706
US19930027257 19930305	US19930096919 19930723	US19950542683 19951013
US19970804682 19970225	US19980074254 19980507	US20000713895 20001116

Probable Assignee: TELEDYNE ISCO INC

Assignee(s): (std) ISCO INC

Assignee(s): TELEDYNE ISCO INC

Inventor(s): (std) ALLINGTON ROBERT W ; JAMESON DANIEL GENE ; TEHRANI YOOSSEF ; WALTERS HENRY LEROY

30) Family number: 40840347 (US2007269322 AA)

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Title: LOW POWER ELECTROMAGNETIC PUMP

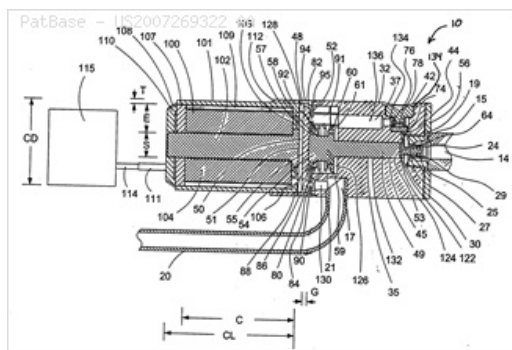
Abstract: An electromagnetic pump comprising an armature comprising a pole portion and plunger portion, the plunger portion sized to be received in a cylindrical passage formed in the housing and which guides the armature. The pump further comprises an electromagnet operatively associated with the armature, and the pump is driven during a forward pumping stroke by the partial discharge of a capacitor into the electromagnet. The case of the electromagnet is sized such that a ratio of the case diameter to the core diameter and a ratio of the case length to the case diameter provide for improved electromagnetic efficiency.

Classifications:

International (IPC 8-9): A61M5/14 A61M5/142 A61M5/145 F04B17/03 F04B17/04 F04B35/00 F04B35/04

CPC: A61M2205/8212 A61M5/14216 A61M5/14276 F04B17/042

US: 417/417



Family:

Publication number	Publication date	Application number	Application date
US2007269322 AA	20071122	US20060437571	20060519
WO07137194 A2	20071129	WO2007US69295	20070518
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Priority:

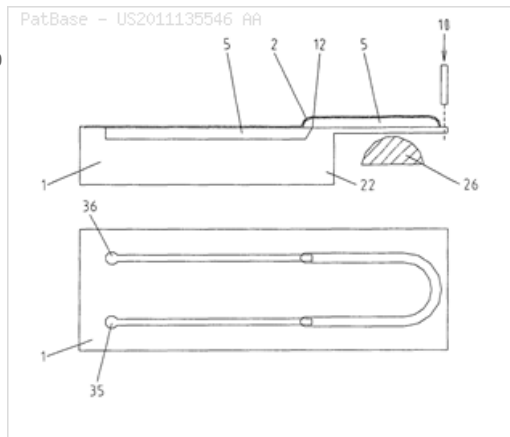
US20060437571 20060519

Probable Assignee: INFUSION SYSTEMS LLC**Assignee(s):** (std): ADVANCED BIONICS CORP ; FALK THEODORE J ; FRENZ NORBERT W ; FRENZ NORBERT W JR ; INFUSION SYSTEM LLC ; LORD PETER ; LORD PETER C**Assignee(s):** BOSTON SCIENTIFIC NEUROMODULATION CORP ; INFUSION SYSTEMS LLC ; WILSON GREATBATCH LTD ; WILSON GREATBATCH TECHNOLOGIES INC**Inventor(s):** (std): FALK THEODORE J ; FRENZ NORBERT W ; FRENZ NORBERT W JR ; LORD PETER ; LORD PETER C**Agent(s):** HENRICKS SLAVIN AND HOLMES LLP ADVANCED BIONICS CORP**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**31) Family number: 44155792** (US2011135546 AA)

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Title: MICROFLUIDIC FOIL STRUCTURE FOR METERING OF FLUIDS

Abstract: The invention relates to a microfluidic device for metering liquids into a microfluidic network. The microfluidic channels or chambers are at least partly formed by the introduction of suitable structures into a film above the substrate carrier, so that at least some of the flow of fluid through the network takes place above the plane of the substrate. In order to form a stable channel structure or chamber structure in the film, it is envisaged that in the edge zone between the unattached and attached portions a wedge of material is formed by the viscous flow of the film material as the film is bonded to the substrate, this wedge forming a transition between the chamber wall and the substrate and raising the chamber wall above the plane of the substrate. In one method of producing a finished microfluidic structure a flat planar film is laminated onto a flat sheet-like substrate. During the lamination a mask having at least one recess or opening is pressed onto the film and onto the substrate under pressure and/or under the effect of heat. The film is thereby brought to a temperature at which there is a viscous flow of film and/or substrate medium into the region of the recess or opening, so that a wedge of material is formed and the film bulges up in the region of the recess to form a chamber. The invention further relates to methods of metering at least one liquid in a microfluidic network, in which a capillary stop is overcome by actuating the film, the film being wetted as the capillary stop is removed.

Classifications:**International (ipc 8-9):** B01L B01L3/00 B32B37/00 B32B7/02 B81B3/00 B81C3/00 F04B F04B43/02 F04B43/04 F15C1/04 F15C3/00 F16K F16K31/145 F16K7/12 F16K99/00 G01F11/02 G01N35/08 G01N37/00 H01L3/00**International (ipc 1-7):** B01L3/00 F04B43/04**CPC:** B01L2200/0689 B01L2300/0887 B01L2400/0406 B01L2400/0442 B01L2400/0638 B01L2400/0688 B01L2400/082 B01L3/502707 B01L3/50273 B01L3/502738 B01L3/502746 B29C65/18 B29C66/1122 B29C66/328 B29C66/53461 B29C66/71 B29C66/723 B29C66/81419 B29C66/81422 B29C66/8181 B29C66/8322 B29L2031/756 F04B43/043 F16K99/0001**US:** 156/309.6 156/309.600S 422/502 422/502P 422/503**Family:**

Publication number	Publication date	Application number	Application date
AT485101 E	20101115	AT20080010082T	20080602
AU2009262555 AA	20091230	AU20090262555	20090602
AU2009262555 BB	20150507	AU20090262555	20090602
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BRPI0913340 B1	20190625	BR2009PI13340	20090602
CA2726219 AA	20091230	CA20092726219	20090602
CA2726219 C	20160315	CA20092726219	20090602
CL2010001328 A1	20110610	CL20100001328	20101201
CL52916 B	20160822	CL20100001328	20101201
CN102112229 A	20110629	CN200980130360	20090602
CN102112229 B	20140806	CN200980130360	20090602
DE502008001596 D1	20101202	DE200850001596T	20080602
DK2138233 T3	20110131	DK20080010082T	20080602
EP2138233 A1	20091230	EP20080010082	20080602
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ES2352581 T3	20110221	ES20080010082T	20080602
IL209405 A0	20110131	IL20090209405	20090602
IL209405 A1	20160731	IL20090209405	20090602
IN340344 B	20200710	IN2010DN08672	20101206
JP2011524815 T2	20110908	JP20110510902T	20090602
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MX2010013204 A1	20110225	MX20100013204	20090602
NZ589466 A	20130830	NZ20090589466	20090602
RU2010154517 A	20120720	RU20100154517	20090602
RU2515287 C2	20140510	RU20100154517	20090602
US2011135546 AA	20110609	US20090995550	20090602
US580209 BB	20131112	US20090995550	20090602

WO09156045 A2	20091230	WO2009EP03908	20090602
WO09156045 A3	20100318	WO2009EP03908	20090602
WO09156045 A4	20100520	WO2009EP03908	20090602
ZA201008267 A	20110727	ZA20100008267	20101118

Priority:

EP20080010082 20080602 WO2009EP03908 20090602

Probable Assignee: BOEHRINGER INGELHEIM MICROPARTS GMBH

Assignee(s): (std): BERINGER INGEL KHAJM MAJKROPARTS GMBKH ; BLANKENSTEIN GERT ; BOEHRINGER INGELHEIM MICROPART ; BOEHRINGER INGELHEIM MICROPARTS GMBH ; HEMPEL MARIO ; KUROWSKI DIRK ; RODENFELS TOBIAS

Inventor(s): (std): BLANKENSTEIN GERT ; BLANKENSTEIN GERT DR ; DIRK KUROWSKI ; DIRK KUROWSKI ; GERT BLANKENSHTAJN ; GERT BLANKENSTEIN ; HEMPEL MARIO ; HEMPEL MARIO BLANKENSTEIN GERT RODENFELS TOBIAS KUROWSKI DIRK ; KUROWSKI DIRK ; KUROWSKI DIRK DR ; MARIO HEMPEL ; MARIO KHEMPEL ; RODENFELS TOBIAS ; TOBIAS RODENFEL S

Inventor(s): BLANKENSTEIN ; DIRK ; GERT ; HEMPEL ; KUROWSKI ; MARIO ; RODENFELS ; TOBIAS

Agent(s): ESTUDIO CAREY LTDA; FETHERSTONHAUGH AND CO; HARNECKER; MARY ELLEN M; MICHAEL P; REINHOLD COHN AND PARTNERS; SPRUSON AND FERGUSON

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

32) Family number: 43791135 (US6149814 A)

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Title: APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION OR SUPERCRITICAL FLUID CHROMATOGRAPHY

Abstract: A variable-orifice fluid restrictor for use with a supercritical extractor or chromatograph includes an inlet line for fluid at a pressure above its critical pressure, an extended tubular probe having an inner and an outer surface and a proximal and a distal end. The proximal end of the probe is disposed toward the inlet line. The distal end of the probe includes an adjustable orifice means adapted for metering the fluid and having first and second orifice members and an adjusting stem having first and second ends. The adjustable orifice means is adjacent to the outer surface of the probe and the orifice means is adjustable with the adjusting stem. The end of the adjusting stem is located at the distal end of the probe and is adapted for moving the first orifice member with respect to the second orifice member to control the adjustable orifice for varying the restriction of fluid passing through the adjustable orifice.

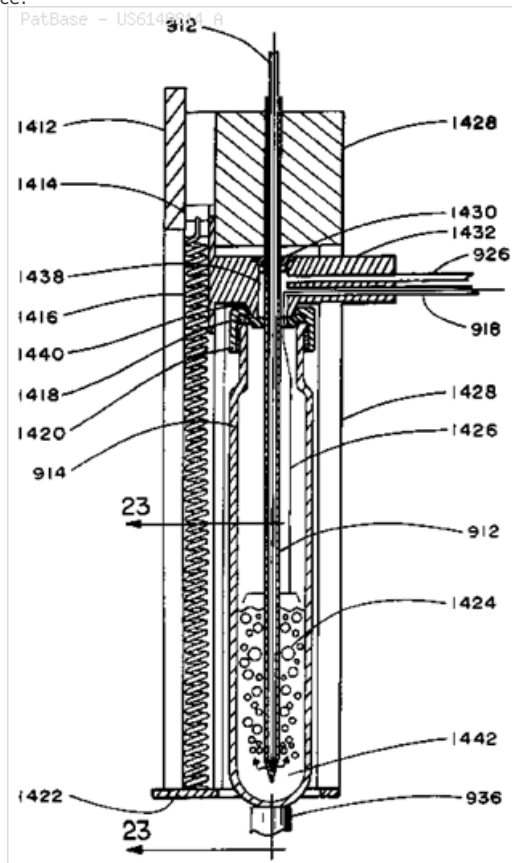
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International (IPC 1-7): B01D11/00

CPC: B01D11/0203 B01D11/0403 B01D11/0407 F04B15/08 F04B2205/03 F04B2205/05 F04B2205/09 F04B49/065 F04B9/042 F05B2230/41 F05C2201/0493 F05C2253/12 F16K15/183 G01F1/34 G01N1/34 G01N1/40 G01N2001/4033 G01N2001/4061 G01N2030/6008 G01N2030/6013 G01N2035/0441 G01N30/02 G01N30/28 G01N30/32 G01N30/60 G01N30/82 G21F5/015

US: 210/634 210/656



Family:

Publication number	Publication date	Application number	Application date
US6149814 A	20001121	US19980074254	19980507

Priority:

US19900553119 19900713 US19910795987 19911122 US19920908458 19920706
US19930027257 19930305 US19930096919 19930723 US19950542683 19951013
US19970804682 19970225 US19980074254 19980507

Probable Assignee: TELEDYNE ISCO INC

Assignee(s): (std): ISCO INC

Assignee(s): TELEDYNE ISCO INC

Inventor(s): (std): ALLINGTON ROBERT W ; JAMESON DANIEL GENE ; TEHRANI YOOSSEF ; WALTERS HENRY LEROY

33) Family number: 43791133 (US6083399 A)

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Title: APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION

Abstract: To avoid deposits on the restrictor that channels extractant into a collector, a heated capillary tube pressure release restrictor, has a thermally insulated outlet end in a collecting trap substantially colder than the capillary tube. The restrictor is heated between the insulation and the capillary tube by Joulean heating. The solvent in the trap is at a pressure of 5 to 200 psi above atmospheric pressure. The thermal resistance of the insulation is selected to reduce the heat added to the extractant to a minimum and yet cause the temperature of the extractant to be in a range within which it is sufficiently hot so it does not freeze when added to the collection solvent but not so hot as to reduce partitioning of the extract and extractant before the extractant leaves the collection solvent. It has a thermal conductivity no greater than 60 BTU's per hour, per square foot, per inch for a one degree Fahrenheit difference.

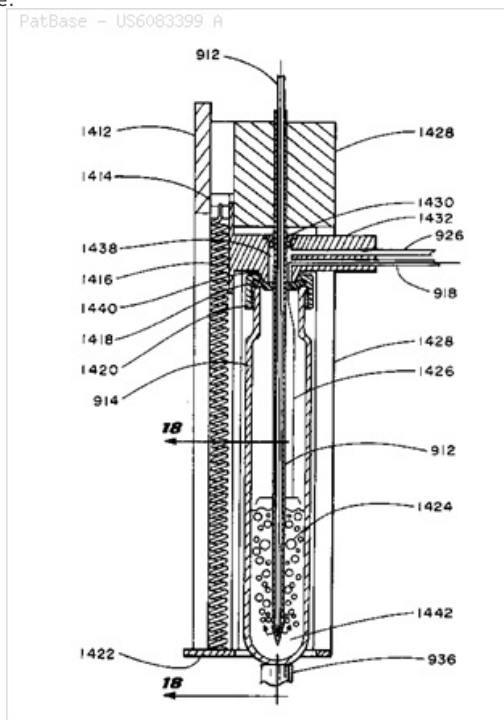
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G01N1/34 G01N1/40 G01N30/02 G01N30/28 G01N30/60 G01N35/04
G21F5/015

International (IPC 1-7): B01D11/00

CPC: B01D11/0203 B01D11/0403 B01D11/0407 F04B15/08
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G01N2035/0441 G01N30/02 G01N30/28 G21F5/015

US: 210/511 210/634 422/69



Family:

Publication number	Publication date	Application number	Application date
US6083399 A	20000704	US19970905845	19970804

Priority:

US19900553119 19900713	US19910795987 19911122	US19920908458 19920706
US19930027257 19930305	US19930134033 19931002	US19950579644 19951227
US19970905845 19970804		

Probable Assignee: TELEDYNE ISCO INC

Assignee(s): (std): ISCO INC

Assignee(s): TELEDYNE ISCO INC

Inventor(s): (std): ALLINGTON ROBERT W ; JAMESON DANIEL GENE ; MACOMBER ROBERT JOSEPH

34) Family number: 43791128 (US5750027 A)

© PatBase

Title: APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION OR SUPERCRITICAL FLUID CHROMATOGRAPHY

Abstract: A variable-orifice fluid restrictor for use with a supercritical extractor or chromatograph includes an inlet line for fluid at a pressure above its critical pressure, an extended tubular probe having an inner and an outer surface and a proximal and a distal end. The proximal end of the probe is disposed toward the inlet line. The distal end of the probe includes an adjustable orifice means adapted for metering the fluid and having first and second orifice members and an adjusting stem having first and second ends. The adjustable orifice means is adjacent to the outer surface of the probe and the orifice means is adjustable with the adjusting stem. The end of the adjusting stem is located at the distal end of the probe and is adapted for moving the first orifice member with respect to the second orifice member to control the adjustable orifice for varying the restriction of fluid passing through the adjustable orifice.

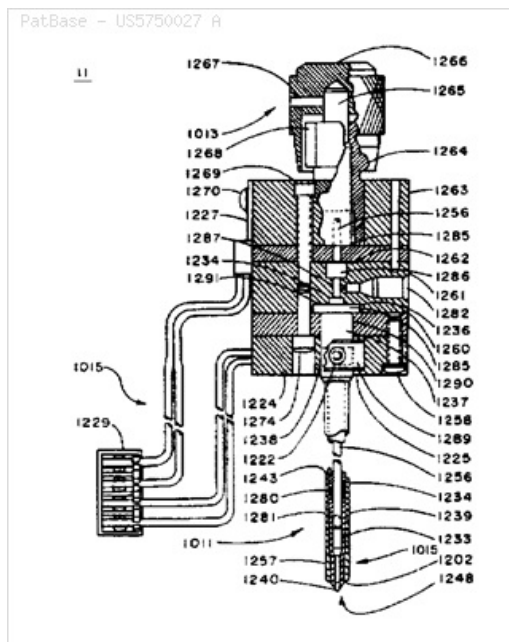
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G01N35/04 G21F5/015

International (IPC 1-7): B01D11/04

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G01N30/28 G01N30/32 G01N30/60 G01N30/82 G21F5/015

US: 210/511 210/634 422/256 422/261 422/285



Family:

Publication number	Publication date	Application number	Application date
US5750027 A	19980512	US19970804682	19970225

Priority:

US19900553119 19900713	US19910795987 19911122	US19920908458 19920706
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US19970804682 19970225		

Probable Assignee: TELEDYNE ISCO INC

Assignee(s): (std): ISCO INC

Assignee(s): TELEDYNE ISCO INC

Inventor(s): (std): ALLINGTON ROBERT W ; JAMESON DANIEL GENE ; TEHRANI YOOSSEF ; WALTERS HENRY LEROY

35) Family number: 43791101 (WO9420189 A1)

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Title: APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION

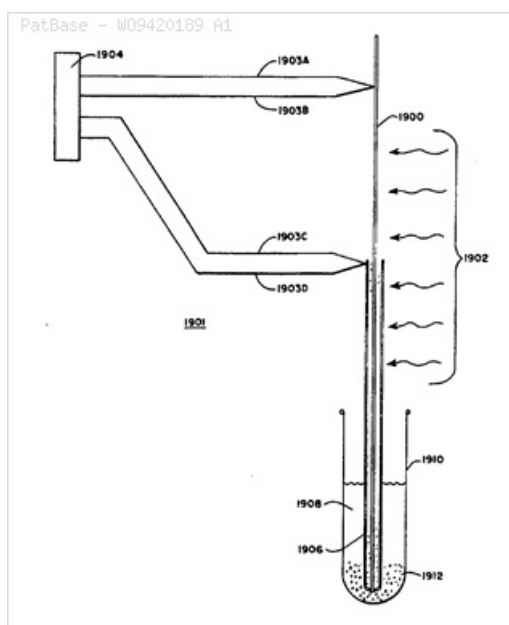
Abstract: To avoid deposits on the restrictor that channels extractant into a collector (1901), a heated capillary tube (1900) pressure release restrictor has a thermally insulated outlet end in a collecting trap (1908) substantially colder than the capillary tube (1900). The restrictor is heated between the insulation (1906) and the capillary tube (1908) by Joulean heating. The solvent in the trap (1908) is at a pressure of 5 to 200 psi above atmospheric pressure. The thermal resistance of the insulation (1906) is selected to reduce the heat added to the extractant to a minimum, to keep the extractant from freezing, and to reduce partitioning of the extract and extractant. It has a thermal conductivity no greater than 60 BTU's per hour, per square foot, per inch for a one degree Fahrenheit difference.

Classifications:

International (ipc 8-9): B01D11/00 B01D11/02 B01D11/04 F04B15/08 F04B49/06 F04B9/04 F16K15/18 G01F1/34 G01N1/34 G01N1/40 G01N30/02 G01N30/28 G01N30/60 G01N35/04 G21F5/015

International (ipc 1-7): B01D11/00

CPC: B01D11/0203 B01D11/0403 B01D11/0407 F04B15/08 F04B2205/03 F04B2205/05 F04B2205/09 F04B49/065 F04B9/042 F05B2230/41 F05C2201/0493 F05C2253/12 F16K15/183 G01F1/34 G01N1/34 G01N1/40 G01N2001/4033 G01N2001/4061 G01N2030/6013 G01N2035/0441 G01N30/02 G01N30/28 G21F5/015



Family:

Publication number	Publication date	Application number	Application date
DE69412392 D1	19980917	DE19946012392T	19940302
DE69412392 T2	19981224	DE19946012392T	19940302

EP0639098 A1	19950222	EP19940911445	19940302
EP0639098 A4	19961106	EP19940911445	19940302
EP0639098 B1	19980812	EP19940911445	19940302
JP3432513 B2	20030804	JP19940520129T	19940302
JP7506536 T2	19950720	JP19940520129T	19940302
WO9420189 A1	19940915	WO1994US02260	19940302

Priority:

US19930027257 19930305 WO1994US02260 19940302

Probable Assignee: ISCO INC

Assignee(s): (std): ISCO INC

Assignee(s): ISCO INC LINCOLN NEBR US

Inventor(s): (std): ALLINGTON ROBERT ; ALLINGTON ROBERT WILLIAM ; JAMESON DANIEL ; JAMESON DANIEL GENE ; MACOMBER ROBERT ; MACOMBER ROBERT JOSEPH

Inventor(s): ALLINGTON ROBERT WILLIAM LINCOLN NE 68502 US ; JAMESON DANIEL GENE LINCOLN NE 68507 US ; MACOMBER ROBERT JOSEPH LINCOLN NB 68502 US

Designated states: AT BE CH DE DK ES FR GB GR IE IT JP LU MC NL PT SE

36) Family number: 43791115 (US5268103 A)

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Title: APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION

Abstract: To avoid deposits on the restrictor that channels extractant into a collector, a heated capillary tube pressure release restrictor, has a thermally insulated outlet end in a collecting trap substantially colder than the capillary tube. The restrictor is heated between the insulation and the capillary tube by Joulean heating. The solvent in the trap is at a pressure of 5 to 200 psi above atmospheric pressure. The thermal resistance of the insulation is selected to reduce the heat added to the extractant to a minimum and yet cause the temperature of the extractant to be in a range within which it is sufficiently hot so it does not freeze when added to the collection solvent but not so hot as to reduce partitioning of the extract and extractant before the extractant leaves the collection solvent. It has a thermal conductivity no greater than 60 BTU's per hour, per square foot, per inch for a one degree Fahrenheit difference.

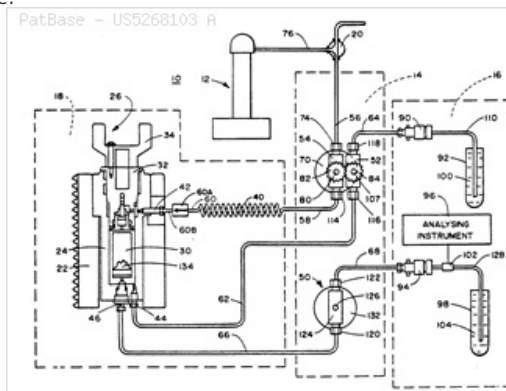
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International (ipc 1-7): B01D11/00

CPC: B01D11/0203 B01D11/0403 B01D11/0407 F04B15/08 F04B2205/03 F04B2205/05 F04B2205/09 F04B49/065 F04B9/042 F05B2230/41 F05C2201/0493 F05C2253/12 F16K15/183 G01F1/34 G01N1/34 G01N1/40 G01N2001/4033 G01N2001/4061 G01N2030/6013 G01N2035/0441 G01N30/02 G01N30/28 G21F5/015

US: 210/634 422/256



Family:

Publication number	Publication date	Application number	Application date
US5268103 A	19931207	US19930027257	19930305

Priority:

US19900553119 19900713 US19910795987 19911122 US19920908458 19920706
US19930027257 19930305

Probable Assignee: TELEDYNE ISCO INC

Assignee(s): (std): ISCO INC

Assignee(s): TELEDYNE ISCO INC

Inventor(s): (std): ALLINGTON ROBERT W ; JAMESON DANIEL G ; MACOMBER ROBERT J

37) Family number: 43791123 (US5653885 A)

© PatBase

Title: APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION

Abstract: To avoid deposits on the restrictor that channels extractant into a collector, a heated capillary tube pressure release restrictor, has a thermally insulated outlet end in a collecting trap substantially colder than the capillary tube. The restrictor is heated between the insulation and the capillary tube by Joulean heating. The solvent in the trap is at a pressure of 5 to 200 psi above atmospheric pressure. The thermal resistance of the insulation is selected to reduce the heat added to the extractant to a minimum and yet cause the temperature of the extractant to be in a range within which it is sufficiently hot so it does not freeze when added to the collection solvent but not so hot as to reduce partitioning of the extract and extractant before the extractant leaves the collection solvent. It has a thermal conductivity no greater than 60 BTU's per hour, per square foot, per inch for a one degree Fahrenheit difference.

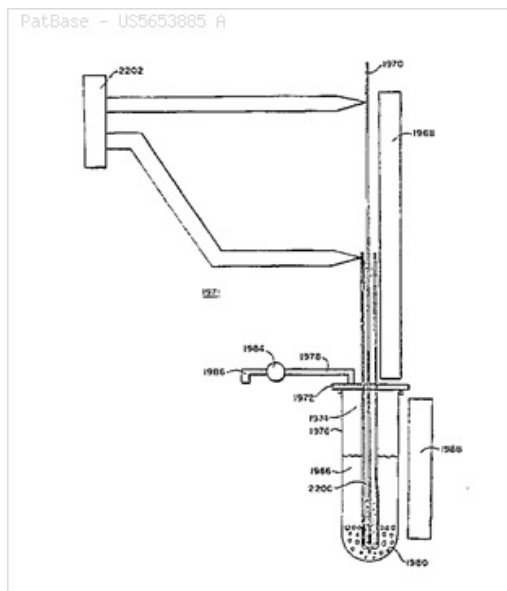
Classifications:

International (ipc 8-9): B01D11/02 B01D11/04 F04B15/08 F04B49/06 F04B53/08 F04B53/14 F04B9/04 F16K15/18 G01F1/34 G01N1/40 G01N30/02 G01N30/28 G01N30/60 G01N35/04 G21F5/015

International (ipc 1-7): B01D11/00 B01D15/08

CPC: B01D11/0203 B01D11/0403 B01D11/0407 F04B15/08 F04B2201/0209 F04B2205/03 F04B2205/05 F04B2205/09 F04B49/065 F04B53/08 F04B53/143 F04B9/042 F05B2230/41 F05C2201/0493 F05C2253/12 F16K15/183 G01F1/34 G01N1/34 G01N1/40 G01N2001/4033 G01N2001/4061 G01N2030/6013

G01N2035/0441 G01N30/02 G01N30/28 G21F5/015
US: 210/149 210/198.2 210/511 210/634 210/656 210/742 422/69
 95/87 96/105



Family:

Publication number	Publication date	Application number	Application date
US5653885 A	19970805	US19950579644	19951227

Priority:

US19900553119 19900713 US19910795987 19911122 US19920908458 19920706
 US19930027257 19930305 US19930134033 19931002 US19950579644 19951227

Probable Assignee: TELEDYNE ISCO INC

Assignee(s): (std): ISCO INC

Assignee(s): TELEDYNE ISCO INC

Inventor(s): (std): ALLINGTON ROBERT WILLIAM ; JAMESON DANIEL GENE ; MACOMBER ROBERT JOSEPH

38) Family number: 45555939 (US2011223581 AA)

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Title: ELECTRONICALLY CONTROLLED DIAPHRAGM PUMP

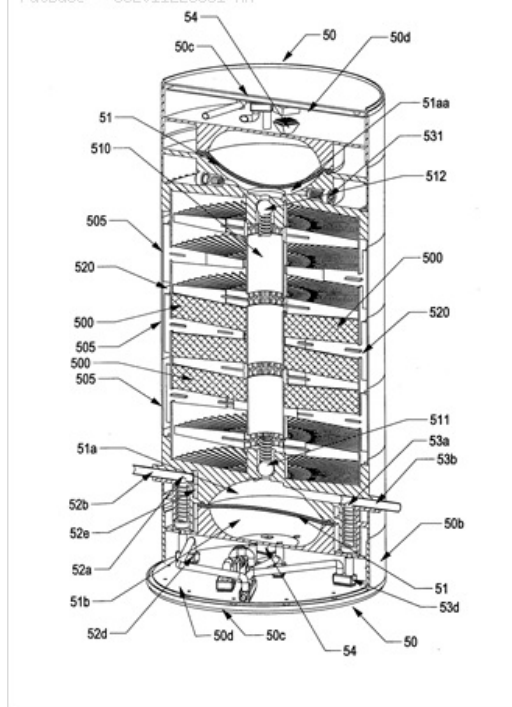
Abstract: An electronically controlled diaphragm pump system is provided. The pump systems comprises a pump housing with a drive gas chamber and a fluid chamber separated by a diaphragm. The drive gas chamber is connected to one or more gas ports for injecting and/or sucking a gas into and out of the gas chamber. The fluid chamber is connected to a least one port for fluid inlet and at least one port for fluid outlet, where the inlet port has a valve adapted to open for fluid inlet when gas is sucked out of the gas chamber and the outlet port has a valve adapted to open for fluid outlet when gas is injected into the gas chamber. The pump system further has gas pressure means connected to a gas inlet port for providing a drive gas pressure in response to a control signal, and gas under-pressure means connected to a gas outlet port for providing a gas under-pressure or sucking of gas in response to a control signal. Furthermore, the pump system has a displacement sensor for detecting displacement or position of the diaphragm, and control circuitry connected to the displacement sensor for determining the displacement or position of the diaphragm and adapted for supplying the control signals to the gas pressure means and the gas under-pressure means. It is preferred that the means for providing a drive gas pressure comprises a gas-pressure proportional control valve being connected to the gas port and the control circuitry, whereby the drive gas pressure is varied as a function of the control signal supplied by the control circuitry. Also the means for providing a gas under-pressure may comprise a gas-under proportional control valve for controlling the gas under-pressure as a function of the control signal supplied by the control circuitry.

Classifications:

International (IPC 8-9): C12M1/00 C12M1/12 C12M1/34 C12M1/36
 C12M1/38 C12M3/00 C12M3/04 C12N1/00 C12N5/04 C12N5/07
 C12P21/04 C12Q3/00 F04B43/00 F04B43/06 F04B43/067
 F04B43/073 F04B45/053 F04B49/06 F04B49/08 F04B53/16

CPC: C12M23/34 C12M23/42 C12M25/14 C12M29/00 F04B43/0081
 F04B43/073 F04B43/0733 F04B43/0736 F04B45/053 F04B45/0536
 F04B49/06 F04B49/08

US: 1/1 417/44.9 417/44.900S 417/46 435/243 435/243S 435/286.1
 435/286.100S 435/287.1 435/287.100S 435/289.1 435/289.100S
 435/298.1 435/298.100S 435/3 435/398 435/398P 435/3P 435/420
 435/420S 435/71.1 435/71.100P

**Family:**

Publication number	Publication date	Application number	Application date
DE602009011810 D1	20130131	DE200960011810T	20091222
DE602009033969 D1	20151112	DE200960033969T	20091218
EP2379692 A2	20111026	EP20090795686	20091222
EP2379692 B1	20121205	EP20090795686	20091222
EP2379699 A2	20111026	EP20090803723	20091218
EP2379699 B1	20171213	EP20090803723	20091218
EP2379889 A2	20111026	EP20090805912	20091218
EP2379889 B1	20150930	EP20090805912	20091218
US2011263021 AA	20111027	US20090125399	20091218
US9228579 BB	20160105	US20090125399	20091218
US2011236932 AA	20110929	US20090125430	20091218
US2011223581 AA	20110915	US20090125900	20091218
US10288060 BB	20190514	US20150945219	20151118
US2016195081 AA	20160707	US20150945219	20151118
US10508647 BB	20191217	US20180171720	20181026
US2019063420 AA	20190228	US20180171720	20181026
WO10069319 A2	20100624	WO2009DK00259	20091218
WO10069319 A3	20100819	WO2009DK00259	20091218
WO10069320 A2	20100624	WO2009DK00260	20091218
WO10069320 A3	20100812	WO2009DK00260	20091218
WO10069321 A2	20100624	WO2009DK00261	20091218
WO10069321 A3	20100910	WO2009DK00261	20091218

Priority:

DK20080001815	20081219	DK20090001131	20091019	DK20090001142	20091021
DK20090001165	20091029	EP20090805912	20091218	WO2009DK00261	20091218
WO2009DK00260	20091218	WO2009DK00259	20091218	EP20090795686	20091222
WO2009DK00260	20091222	US20110125900	20110425	US20150945219	20151118
US20180171720	20181026				

Probable Assignee: STOBBE PHARMA TECH GMBH**Assignee(s):** (std): STOBBE PER ; STOBBE PHARMA TECH GMBH ; STOBBE TECH AS**Inventor(s):** (std): STOBBE PER**Agent(s):** FISH AND RICHARDSON PC; MAIER AND MAIER PLLC; STOBBE PER; WITTMANN HERNANDEZ PATENTANWAELTE PARTNERSCHAFT MBB; ZBM PATENTS; ZBM PATENTS APS**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**39) Family number: 44232767** (US2010260623 AA)

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Title: FLUID TRANSPORTING DEVICE USING CONDUCTIVE POLYMER

Abstract: A fluid transporting device is provided with a pump chamber that has a pump function for sucking and discharging a fluid, and is filled therein with the fluid, a casing unit which forms one portion of a wall surface of the pump chamber, a diaphragm which is formed by a conductive polymer film that is subjected to electrochemomechanical expansion and contraction, and forms one portion of the wall surface of the pump chamber, an electrolyte chamber that contains an electrolyte therein, with one portion of the electrolyte being made in contact with the diaphragm, a power supply that applies

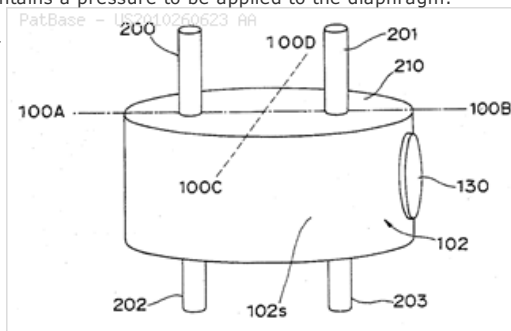
a voltage to the diaphragm, and a pressure maintaining unit that maintains a pressure to be applied to the diaphragm.

Classifications:

International (IPC 8-9): F04B17/00 F04B35/04 F04B43/02 F04B43/04 F04B43/06 H01M8/04

CPC: F04B35/04 F04B43/04 F04B43/06 F05C2251/08

US: 417/395 417/410.1 417/410.100P 417/413.1 417/44.2



Family:

Publication number	Publication date	Application number	Application date
CN101960144 A	20110126	CN200980106949	20090706
JP2010004721 A1	20111222	JP20090543296T	20090706
JP4482617 B1	20100616	JP20090543296T	20090706
JP4482617 B2	20100616	JP20090543296T	20090706
JP2010138911 A2	20100624	JP20100017644	20100129
JP4898928 B2	20120321	JP20100017644	20100129
US2010260623 AA	20101014	US20090675843	20090706
US8062007 BB	20111122	US20090675843	20090706
WO10004721 A1	20100114	WO2009JP03128	20090706

Priority:

JP20080177992 20080708

WO2009JP03128 20090706

JP20090543296 20090706

JP20100017644 20100129

Probable Assignee: PANASONIC CORP

Assignee(s): (std): IKUSHIMA KIMIYA ; MATSUSHITA ELECTRIC INDUSTRIAL CO LTD ; PANASONIC CORP ; YOKOYAMA KAZUO

Inventor(s): (std): IKUSHIMA KIMIYA ; KAZUO YOKOYAMA ; KIMIYA IKUSHIMA ; YOKOYAMA KAZUO

Agent(s): SAMEJIMA MUTSUMI; TANAKA MITSUO; TANAKA MITSUO ET AL; WADA MITSUO; WENDEROTH LIND AND PONACK LLP

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

40) Family number: 43159944 (US2009100863 AA)

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Title: SYSTEM TO COLD COMPRESS AN AIR STREAM USING NATURAL GAS REFRIGERATION

Abstract: An air stream is compressed in multiple stages using refrigeration derived from a refrigerant comprising natural gas for inter-stage cooling. The possibility of natural gas leaking into the air stream is reduced by use of an intermediate cooling medium ("ICM") to transfer the refrigeration from the refrigerant to the inter-stage air stream. The compressed air stream can be fed to a cryogenic air separation unit that includes an LNG-based liquefier unit from which a cold natural gas stream is withdrawn for use as said refrigerant.

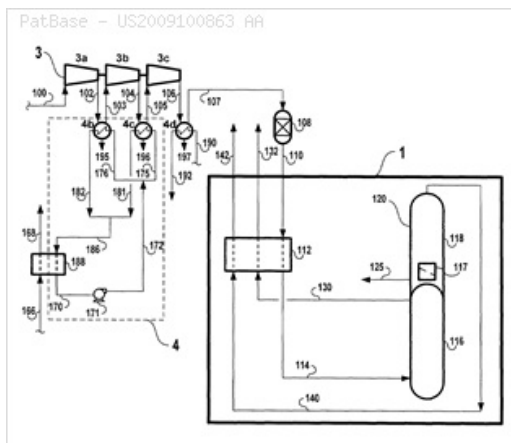
Classifications:

International (IPC 8-9): F04B25/00 F04B37/00 F04B37/12 F04D17/00 F04D17/12 F17C9/04 F25J1/00 F25J1/02 F25J3/00 F25J3/04 F25J5/00 F28D15/00

International (IPC 1-7): F25J1/00 F25J3/00

CPC: F25J1/0015 F25J1/0221 F25J1/0234 F25J2205/04 F25J2210/62 F25J2230/02 F25J2230/04 F25J2270/904 F25J3/04018 F25J3/04157 F25J3/04224 F25J3/04266 F25J3/04351 F25J3/04412

US: 62/615 62/616 62/640 62/640P 62/643 62/648 62/650



ES2358164 T3	20110506	ES20080166447T	20081013
IN02545CH2008 A	20090821	IN2008CH02545	20081016
JP2009174844 A2	20090806	JP20080268894	20081017
JP5226457 B2	20130703	JP20080268894	20081017
KR100972215 B1	20100726	KR20080101977	20081017
KR20090040231 A	20090423	KR20080101977	20081017
MX2008013399 A1	20090512	MX20080013399	20081017
SG152168 A1	20090529	SG20080076333	20081013
TH111650 A	20111228	TH20081005232	20081013
TW200923300 A	20090601	TW20080139268	20081013
TWI379986 B	20121221	TW20080139268	20081013
US2009100863 AA	20090423	US20070875052	20071019
US8601833 BB	20131210	US20070875052	20071019

Priority:

US20070875052 20071019 CA20082641012 20081014

Probable Assignee: AIR PRODUCTS AND CHEMICALS INC

Assignee(s): (std): AIR PROD AND CHEM ; CHOE JUNG SOO ; DEE DOUGLAS PAUL ; HERRON DONN MICHAEL

Assignee(s): AIR PRODUCTS AND CHEMICALS INC ; AIR PRODUCTS AND CHEMICALS INCORPORATED

Inventor(s): (std): CHOE JUNG SOO ; DEE DOUGLAS PAUL ; HERRON DONN MICHAEL ; MICHAEL HERRON DONN ; PAUL DEE DOUGLAS ; SOO CHOE JUNG

Inventor(s): CHOE JUNG ; DEE DOUGLAS ; DONN MICHAEL HERRON ; DOUGLAS PAUL DEE ; HERRON DONN ; JUNG SOO CHOE

Agent(s): AIR PRODUCTS AND CHEMICALS INC PATENT DEPARTMENT; AOKI ATSUSHI; BURFORD ANTHONY FREDERICK; ERIC J; ISHIDA TAKASHI; KOGA TETSUJI; MCFADDEN FINCHAM; OSLER HOSKIN AND HARCOURT LLP

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK TR

41) Family number: 47930612 (US2010326062 AA)

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Title: COMPRESSED AIR ENERGY STORAGE SYSTEM UTILIZING TWO-PHASE FLOW TO FACILITATE HEAT EXCHANGE

Abstract: A compressed-air energy storage system according to embodiments of the present invention comprises a reversible mechanism to compress and expand air, one or more compressed air storage tanks, a control system, one or more heat exchangers, and, in certain embodiments of the invention, a motor-generator. The reversible air compressor-expander uses mechanical power to compress air (when it is acting as a compressor) and converts the energy stored in compressed air to mechanical power (when it is acting as an expander). In certain embodiments, the compressor-expander comprises one or more stages, each stage consisting of pressure vessel (the "pressure cell") partially filled with water or other liquid. In some embodiments, the pressure vessel communicates with one or more cylinder devices to exchange air and liquid with the cylinder chamber(s) thereof. Suitable valving allows air to enter and leave the pressure cell and cylinder device, if present, under electronic control.

Classifications:

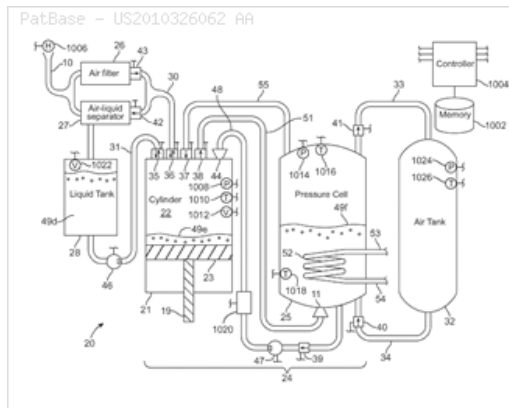
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CPC: F01B17/022 F01B23/10 F01B9/02 F01C13/00 F01D15/10 F01K25/06 F01K25/10 F01K27/00 F02C1/02 F02C6/16 F02G1/05 F03D9/17 F03D9/28 F03G7/00 F04B39/06 F15B1/00 F15B1/26 F15B13/00 F15B15/02 F15B15/20 F15B2015/208 F16H3/72 H02J15/006 Y02B10/30 Y02B10/70 Y02E10/72 Y02E10/728 Y02E50/10 Y02E60/16 Y02E70/30 Y02T50/678 Y10T137/0318 Y10T137/0379 Y10T137/6579 F01B15/02 F01B17/02 F01B29/10 F01K13/00 F01K13/02 F01K25/04 F01K7/00 F04B49/22 F28D20/00 G05B15/02 H02K7/1815 H02P9/04 Y02T50/60 Y10T137/8593 F04B39/0005 F04B39/12 F04B41/02 F15B1/02 F15B1/024 F15B1/08 F15B11/08 F15B13/042 F15B13/044 F15B2211/20538 F15B2211/50554 F17C13/026 F17C13/04 F17C5/002 F17D1/02 Y02E60/00 Y10T137/6416 F03G2007/00 F03D15/00 F03D15/10 F03D9/25 F04B17/02 F05B2260/40311 Y10T137/6851 F03D9/001 F03D9/002 F03D13/20 F05B2260/406

US: 1/1 137/1 137/12 137/12S 137/334 137/340 137/343 137/343S 137/561R 165/45 165/48.1 239/518 239/589 239/589S 290/1.00RP 290/1R 290/43 290/44 290/4D 290/52 290/52P 290/55 290/55S 290/7 290/7P 307/151 307/43 307/87 415/124.1 417/228 417/237 417/26 417/266 417/280 417/280P 417/321 417/321S 417/330 417/330S 417/334 417/334S 417/398 417/398P 417/438 417/438P 417/438S 417/53 417/53P 417/53S 60/325 60/325P 60/327 60/327P 60/329 60/329P 60/370 60/371 60/375 60/375S 60/398 60/398P 60/407 60/408 60/408P 60/408S 60/412 60/413 60/413P 60/413S 60/415 60/415P 60/415S 60/416 60/416S 60/417 60/418 60/418S 60/456 60/509 60/517 60/517P 60/517S 60/522 60/525 60/525P 60/650 60/650P 60/659 60/659P 60/659S 62/121 62/121S 700/282 91/418 91/418S 91/462 91/462P 91/5 91/5P 92/144 92/144P

Family:

Publication number	Publication date	Application number	Application date
CA2749975 AA	20110120	CA20102749975	20100628
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Probable Assignee: LIGHTSAIL ENERGY INC

Assignee(s): (std): ABKENAR AMIRHOSSEIN POURMOUSA ; BERLIN EDWIN P JR ; BERLIN JR EDWIN P ; BOWERS TODD ; CRANE STEPHEN E ; FONG DANIELLE A ; HOU YONGXI ; LIGHSAIL ENERGY INC ; LIGHTSAIL ENERGY INC ; LIGHTSALE ENERGY INC ; MAHALATKAR KARTIKEYA ; POURMOUSA ABKENAR AMIRHOSSEIN ; STAHLKOPF KARL E

Assignee(s): BERLIN EDWIN P ; GIBALTAR BUSINESS CAPITAL LLC ; LIGHTSAIL ENERGY INC OAKLAND ; SILICON VALLEY BANK

Inventor(s): (std): ABKENAR AMIRHOSSEIN POURMOUSA ; AMIRHOSSEIN POURMOUSA ABKENAR ; BERLIN EDWIN P ; BERLIN EDWIN P JR ; BERLIN JR EDWIN P ; BOWERS TEDD ; BOWERS TODD ; CRANE STEPHEN E ; DANIELLE A FONG ; EDWIN P BERLIN JR ; FONG DANIELLE ; FONG DANIELLE A ; HOU YONGXI ; KARTIKEYA MAHALATKAR ; MAHALATKAR KARTIKEYA ; POURMOUSA ABKENAR AMIR HOSSEIN ; POURMOUSA ABKENAR AMIRHOSSEIN ; STAHLKOFF KARL E ; STAHLKOPF KARL E ; STEPHEN E CRANE ; TODD BOWERS ; YONGXI HOU

Agent(s): AMPACC LAW GROUP PLLC; CHO STEVE; CHO STEVE Y; MBM INTELLECTUAL PROPERTY LAW LLP; NOBLE NICHOLAS; ZENZ PATENTANWALTE PARTNERSCHAFT MBB

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

42) Family number: 54627983 (US2013224816 AA) © PatBase

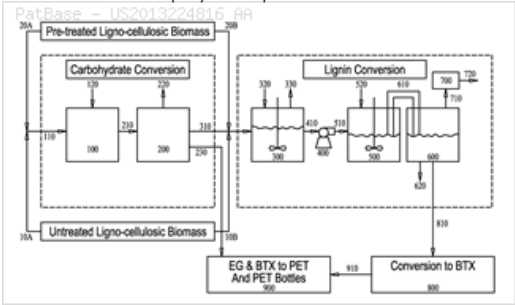
Title: CONTINUOUS PROCESS FOR CONVERSION OF LIGNIN TO USEFUL COMPOUNDS

Abstract: This specification discloses an operational continuous process to convert lignin as found in ligno-cellulosic biomass before or after converting at least some of the carbohydrates. The continuous process has been demonstrated to create a slurry comprised of lignin, raise the slurry comprised of lignin to ultra-high pressure, deoxygenate the lignin in a lignin conversion reactor over a catalyst which is not a fixed bed without producing char. The conversion products of the carbohydrates or lignin can be further processed into polyester intermediates for use in polyester preforms and bottles.

Classifications:

International (IPC 8-9): A42B3/08 B01D21/00 B01J3/00 B01J3/04 B01J8/00 B01J8/18 C01B31/20 C01B32/50 C07B31/00 C07B41/02 C07C C07C1/00 C07C1/20 C07C1/22 C07C11/00 C07C13/00 C07C15/02 C07C15/04 C07C15/06 C07C15/073 C07C15/08 C07C27/04 C07C29/00 C07C29/09 C07C29/17 C07C31/20 C07C31/22 C07C35/08 C07C37/00 C07C37/01 C07C37/50 C07C37/52 C07C37/54 C07C37/56 C07C39/04 C07C39/06 C07C41/12 C07C41/01 C07C41/18 C07C41/20 C07C43/23 C07C45/42 C07C45/55 C07C45/59 C07C45/60 C07C45/62 C07C49/395 C07C49/597 C07C49/84 C07C67/00 C07C67/02 C07C69/00 C07C9/00 C07G1/00 C08G C08G63/00 C08G63/123 C08H C08H7/00 C08H8/00 C08K5/04 C08L97/02 C10G C10G1/00 C10G1/06 C10G3/00 C10G45/02 C10G45/04 C10G45/06 C10G45/08 C10L1/04 C7C37/56 F04B F04B15/02 F15D1/00

International (IPC 1-7): C07C37/50 C07C37/54 C08G63/123 C08H7/00 C10G1/06 C10G3/00
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Family:

Publication number	Publication date	Application number	Application date
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Priority:

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US20130765611P 20130214	US20130754611P 20130214	US20130765402P 20130215

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US20130775238 20130224	US20130775239 20130224	US20130775229 20130224
US20130775240 20130224	US20130775242 20130224	US20130775241 20130224
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EP20130759462 20130827	US20130438050 20130827	US20130892617P 20131018
WO2013EP74411 20131121	EP20130794913 20131121	US20130758581 20131121
US20140181662 20140215	CL20150001027 20150422	US20150825810 20150813

Probable Assignee: VERSALIS SPA

Assignee(s): (std): BIOCHEMTEX S P A ; BIOKEMTEKS S P A ; CHEMTEX ITALIA S P A ; DILWORTH DAVID ; ELLIOTT GULIZ ARF ; GASTALDO DAN ; MURRAY AARON ; RYBA STEVEN

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Inventor(s): (std): AARON MURRAY ; DAN GASTALDO ; DILWORTH DAVID ; ELLIOTT GULIZ ARF ; ELLIOTT DZHULIZ ; ELLIOTT GULIZ ; ELLIOTT GULIZ ARF ; GASTALDO DAN ; GASTALDO DEN ; GULIZ ARF ELLIOTT ; KRISHNA SHARMA ; MOHARRERI EHSAN ; MURRAY AARON ; MYURREJ AARON ; RAJBA STIVEN ; RYBA STEVEN ; SHARMA KRISHNA ; SISSON EDWIN A ; STEVEN RYBA

Inventor(s): AARON ; ARF ; ARF GULIZ ELLIOTT ; DAN ; EDWIN A ; EHSAN ; ELLIOTT ; ELLIOTT GULIZ ARFUS ; ELLIOTT GULIZUS ; GASTALDO ; GASTALDO DANUS ; GULIZ ; GULIZ ELLIOTT ; KRISHNA ; MOHARRERI ; MURRAY ; MURRAY AARONUS ; RYBA ; RYBA STEVENUS ; SHARMA ; SISSON ; STEVEN

Agent(s): EDWIN A SISSON ATTORNEY AT LAW LLC ; GERBINO ANGELO ET AL ; IR MIGNI MYRIASANDRA MIP MSEL ; JEFFREY J ; JESUS MARIA MENDEZ BERMUDEZ ; JOHANSSON AND LANGLOIS LTDA ; LUDYANTO SH MH MM ; LUDYANTO SH ; MACRAE AND CO ; SISSON EDWIN A ; SMOORENBURG PATENT AND TRADE MARK ATTORNEYS ; SOGA MICHIHARU ; ZAMBARDINO UMBERTO ; ZAMBARDINO UMBERTO ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

43) Family number: 72874268 (WO15188154 A1)

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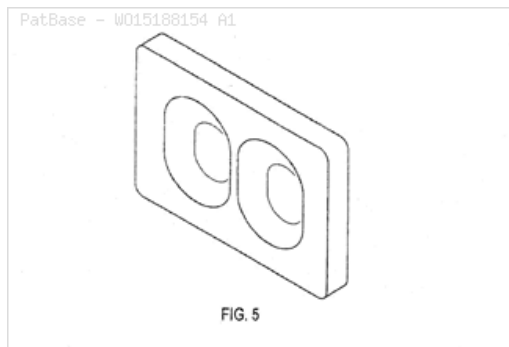
Title: SYSTEM FOR CALCULATING A CHANGE IN FLUID VOLUME IN A PUMPING CHAMBER

Abstract: Improvements in fluid volume measurement systems are disclosed for a pneumatically actuated diaphragm pump in general, and a peritoneal dialysis cyclor using a pump cassette in particular. Pump fluid volume measurements are based on pressure measurements in a pump control chamber and a reference chamber in a two-chamber model, with different sections of the apparatus being modeled using a combination of adiabatic, isothermal and polytropic processes. Real time or instantaneous fluid flow measurements in a pump chamber of a diaphragm pump are also disclosed, in this case using a one-chamber ideal gas model and using a high speed processor to obtain and process pump control chamber pressures during fluid flow into or out of the pump chamber. Improved heater control circuitry is also disclosed, to provide added or redundant safety measures, or to reduce current leakage from a heater element during pulse width modulation control of the heater. Improvements are also disclosed in the application of negative pressure during a drain phase in peritoneal dialysis therapy, and to control the amount of intraperitoneal fluid accumulation during a therapy. Improvements in efficiency are also disclosed in the movement of fluid into and out of a two-pump cassette and heater bag of a peritoneal dialysis cyclor, and in the synchronization of the operation of two or more pumps in a peritoneal dialysis cyclor or other fluid handling devices using a multi-pump arrangement.

Classifications:

International (IPC 8-9): A61M1/10 A61M1/28 A61M1/30 F04B43/02

CPC: A61M1/166 A61M1/28 A61M1/282 A61M1/288 A61M2205/12 A61M2205/3331 A61M2205/3334 A61M2205/3379 A61M2205/3396 A61M2205/6063 A61M39/22 A61M60/113 A61M60/205 A61M60/268 A61M60/40 A61M60/43 A61M60/50 A61M60/892 A61M60/894



Family:

Publication number	Publication date	Application number	Application date
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EP3151877 B1	20200415	EP20150731438	20150605
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WO15188154 A8	20170119	WO2015US34570	20150605
WO15188154 A9	20160421	WO2015US34570	20150605

Priority:

US20140008342P 20140605	US20150155937P 20150501	US20150159737P 20150511
WO2015US34570 20150605		

Probable Assignee: DEKA PRODUCTS LP

Assignee(s): (std): DEKA PRODUCTS LP

Assignee(s): DEKA PRODUCTS PARTNERSHIP LTD

Inventor(s): (std): BEAVERS DAVID A ; BOLTON EDGAR J ; BRYANT ROBERT J ; COLL ANDREW S ; DALE JAMES D ; DANIEL B SINGER ; DANIEL S KAROL ; DAVID B DOHERTY ; DOHERTY DAVID A ; DOHERTY DAVID B ;

EDGAR J BOLTON ; GIROUARD PAUL G ; HELMORE SIMON C ; HIBBARD DAVID J ; JINSUN YOO ; JOSEPH P RUSHLOW ; KAROL DANIEL S ; KERWIN JOHN M ; MANDRO MARC A ; MCGILL DAVID W ; NORRIS MICHAEL G ; PAUL G GIROUARD ; RUSHLOW JOSEPH P ; SCARPACI JACOB W ; SINGER DANIEL B ; SPENCER GEOFFREY P ; YOO JINSUN

Agent(s): HOFFMANN EITLE; ONDA HIRONORI; ONDA MAKOTO; PIZZEYS PTE LTD; POMIANEK MICHAEL J

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

44) Family number: 72874514 (US2013165847 AA)

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Title: MEDICAL TREATMENT SYSTEM AND METHODS USING A PLURALITY OF FLUID LINES

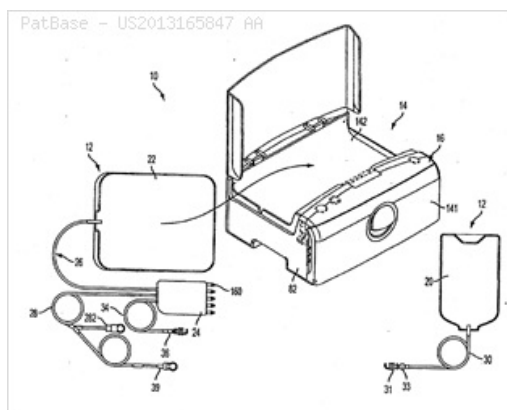
Abstract: A medical treatment system, such as peritoneal dialysis system, may include control and other features to enhance patient comfort and ease of use. For example, a peritoneal dialysis system may include a control system that can adjust the volume of fluid infused into the peritoneal cavity to prevent the intraperitoneal fluid volume from exceeding a pre-determined amount. The control system can adjust by adding one or more therapy cycles, allowing for fill volumes during each cycle to be reduced. The control system may continue to allow the fluid to drain from the peritoneal cavity as completely as possible before starting the next therapy cycle. The control system may also adjust the dwell time of fluid within the peritoneal cavity during therapy cycles in order to complete a therapy within a scheduled time period. The cycler may also be configured to have a heater control system that monitors both the temperature of a heating tray and the temperature of a bag of dialysis fluid in order to bring the temperature of the dialysis fluid rapidly to a specified temperature, with minimal temperature overshoot.

Classifications:

International (IPC 8-9): A61M1/16 A61M1/28 F04B43/02 F16L53/00 F17D1/00 H02J7/00 H05B1/02

CPC: A61M1/1664 A61M1/28 A61M1/282 A61M1/288 A61M2205/122 A61M2205/128 A61M2205/15 A61M2205/3368 A61M2205/36 A61M2205/50 A61M2205/8206 A61M2205/8212 A61M60/113 F04B43/02 F16L53/00 F17D1/00 H02J7/007 H05B1/025 Y10T137/6416 Y10T137/85978

US: 1/1 137/334 137/565.01 320/136 417/478 604/28 604/29



Family:

Publication number	Publication date	Application number	Application date
US2013165847 AA	20130627	US20120667679	20121102
US9861732 BB	20180109	US20120667679	20121102

Priority:

US20110555926P 20111104 US20120667679 20121102

Probable Assignee: DEKA PRODUCTS PARTNERSHIP LTD

Assignee(s): (std): DEKA PRODUCTS LP

Assignee(s): DEKA PRODUCTS PARTNERSHIP LTD

Inventor(s): (std): BEAVERS DAVID A ; BRYANT JR ROBERT J ; COLL ANDREW S ; DALE JAMES D ; HELMORE SIMON C ; HIBBARD DAVID J ; KERWIN JOHN M ; MCGILL DAVID W ; SCARPACI JACOB W ; SPENCER GEOFFREY P

Agent(s): WOLF GREENFIELD AND SACKS PC

45) Family number: 72874629 (US2018361048 AA)

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Title: MEDICAL TREATMENT SYSTEM AND METHODS USING A PLURALITY OF FLUID LINES

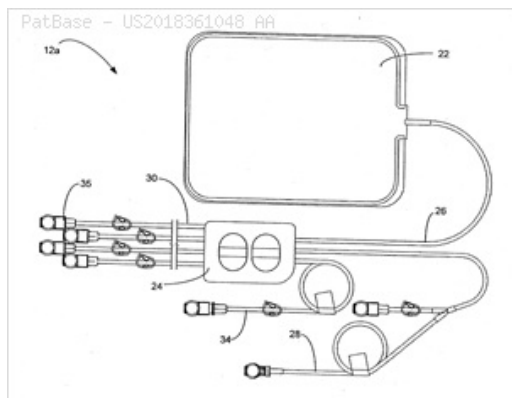
Abstract: A medical treatment system, such as peritoneal dialysis system, may include control and other features to enhance patient comfort and ease of use. For example, a peritoneal dialysis system may include a control system that can adjust the volume of fluid infused into the peritoneal cavity to prevent the intraperitoneal fluid volume from exceeding a pre-determined amount. The control system can adjust by adding one or more therapy cycles, allowing for fill volumes during each cycle to be reduced. The control system may continue to allow the fluid to drain from the peritoneal cavity as completely as possible before starting the next therapy cycle. The control system may also adjust the dwell time of fluid within the peritoneal cavity during therapy cycles in order to complete a therapy within a scheduled time period. The cycler may also be configured to have a heater control system that monitors both the temperature of a heating tray and the temperature of a bag of dialysis fluid in order to bring the temperature of the dialysis fluid rapidly to a specified temperature, with minimal temperature overshoot.

Classifications:

International (IPC 8-9): A61M1/10 A61M1/16 A61M1/28 F04B43/02 F16L53/00 F17D1/00 H02J7/00 H05B1/02

CPC: A61M1/1006 A61M1/1664 A61M1/28 A61M1/282 A61M1/288 A61M2205/122 A61M2205/128 A61M2205/15 A61M2205/3368 A61M2205/36 A61M2205/50 A61M2205/8206 A61M2205/8212 A61M60/113 F04B43/02 F16L53/00 F17D1/00 H02J7/007 H05B1/025 Y10T137/6416 Y10T137/85978

US: 1/1 604/29



Family:

Publication number	Publication date	Application number	Application date
US10881778 BB	20210105	US20180992037	20180529
US2018361048 AA	20181220	US20180992037	20180529

Priority:

US20110555926P 20111104 US20120667679 20121102 US20170432265 20170214
US20180992037 20180529

Probable Assignee: DEKA PRODUCTS PARTNERSHIP LTD

Assignee(s): (std): DEKA PRODUCTS LP

Assignee(s): DEKA PRODUCTS PARTNERSHIP LTD

Inventor(s): (std): BEAVERS DAVID A ; BRYANT JR ROBERT J ; COLL ANDREW S ; DALE JAMES D ; HELMORE SIMON C ; HIBBARD DAVID J ; KERWIN JOHN M ; MCGILL DAVID W ; SCARPACI JACOB W ; SPENCER GEOFFREY P

Inventor(s): BRYANT JR

Agent(s): WOLF GREENFIELD AND SACKS PC

46) Family number: 72874547 (US2017157310 AA)

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Title: MEDICAL TREATMENT SYSTEM AND METHODS USING A PLURALITY OF FLUID LINES

Abstract: A medical treatment system, such as peritoneal dialysis system, may include control and other features to enhance patient comfort and ease of use. For example, a peritoneal dialysis system may include a control system that can adjust the volume of fluid infused into the peritoneal cavity to prevent the intraperitoneal fluid volume from exceeding a pre-determined amount. The control system can adjust by adding one or more therapy cycles, allowing for fill volumes during each cycle to be reduced. The control system may continue to allow the fluid to drain from the peritoneal cavity as completely as possible before starting the next therapy cycle. The control system may also adjust the dwell time of fluid within the peritoneal cavity during therapy cycles in order to complete a therapy within a scheduled time period. The cyclor may also be configured to have a heater control system that monitors both the temperature of a heating tray and the temperature of a bag of dialysis fluid in order to bring the temperature of the dialysis fluid rapidly to a specified temperature, with minimal temperature overshoot.

Classifications:

International (IPC 8-9): A61M1/10 A61M1/16 A61M1/28 F04B43/02 F16L53/00 F17D1/00 H02J7/00 H05B1/02

CPC: A61M1/1664 A61M1/28 A61M1/282 A61M1/288 A61M2205/122

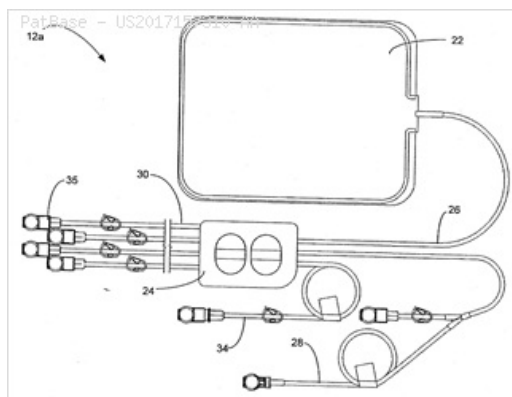
A61M2205/128 A61M2205/15 A61M2205/3368 A61M2205/36

A61M2205/50 A61M2205/8206 A61M2205/8212 A61M60/113

F04B43/02 F16L53/00 F17D1/00 H02J7/007 H05B1/025

Y10T137/6416 Y10T137/85978

US: 1/1 604/29



Family:

Publication number	Publication date	Application number	Application date
US2017157310 AA	20170608	US20170432265	20170214
US9981079 BB	20180529	US20170432265	20170214

Priority:

US20110555926P 20111104 US20120667679 20121102 US20170432265 20170214

Probable Assignee: DEKA PRODUCTS PARTNERSHIP LTD

Assignee(s): (std): DEKA PRODUCTS LP

Assignee(s): DEKA PRODUCTS PARTNERSHIP LTD

Inventor(s): (std): BEAVERS DAVID A ; BRYANT JR ROBERT J ; COLL ANDREW S ; DALE JAMES D ; HELMORE SIMON C ; HIBBARD DAVID J ; KERWIN JOHN M ; MCGILL DAVID W ; SCARPACI JACOB W ; SPENCER GEOFFREY P

Inventor(s): BRYANT JR

Agent(s): WOLF GREENFIELD AND SACKS PC