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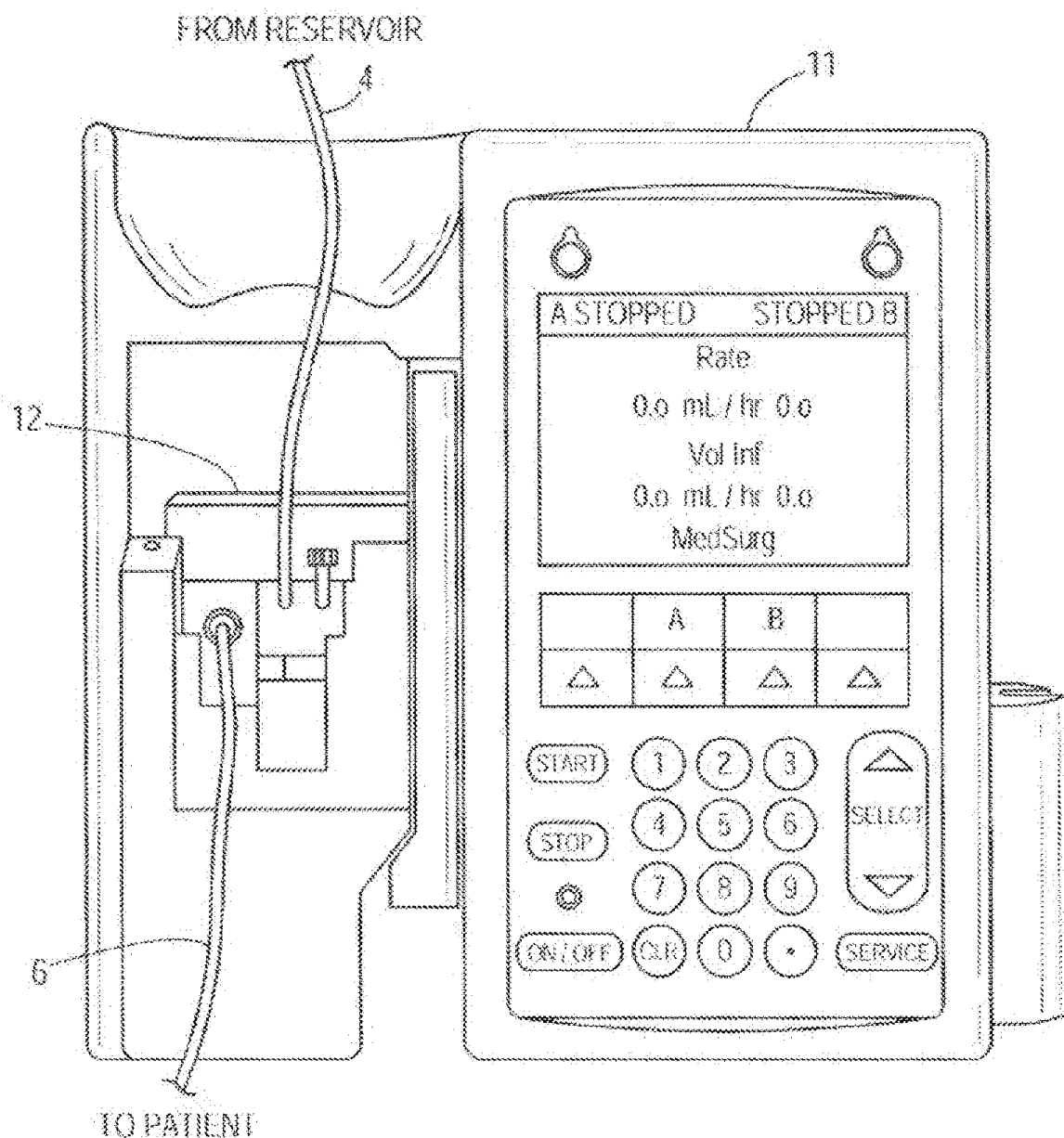
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20 Documents

Publication numbers	Title	Current assignees
EP3468635 A1	Acoustic flow sensor for continuous medication flow measurements and feedback control of infusion	ICU MEDICAL
EP3302625 A1	Air in-line sensing system for iv infusion lines	CAREFUSION
EP3165247 A1	Pumping fluid delivery systems and methods using force application assembly	DEKA PRODUCTS
EP-519765 A1	Implantable medication infusion pump including self-contained acoustic fault detection apparatus	MEDTRONIC MINIMED
EP2531232 A2	Infusion pump apparatus and heated fill adapter system	DEKA PRODUCTS
EP2793976 A2	Pump system and method for acoustically estimating liquid delivery	DEKA PRODUCTS
WO2015150280 A1	Infusion system and method for integrity monitoring of an infusion system	GROSSE WENTRUP DAVID, ...
EP2373359 A1	Infusion pump and method of in situ measuring the diameter of an infusion tube	BAXTER INTERNATIONAL, ...
EP3218029 A1	Flow rate measurement and control of infusion devices	MASSACHUSETTS GENERAL HOSPITAL
EP-759540 A2	Fluid flow meter	G KROMSCHROEDER
WO2015138659 A1	Nonintrusive mass flow measurement of a gas turbine engine in real time	SIEMENS ENERGY
EP1633415 A1	Device and method for examining a medical device	TECHNICOLOR
EP2244765 A2	Infusion pump assembly	DEKA PRODUCTS
EP-985134 A1	Method and apparatus for measuring density and mass flux	EVONIK INDUSTRIES
EP-809802 A1	Air-in-line sensing apparatus	CAREFUSION
WO2014208895 A1	Intravenous fluid supply device	JANG KWAN SOON, ...
EP3366334 A1	Acoustic line tracing system and method for fluid transfer system	BAXTER INTERNATIONAL, ...
EP2938371 A1	Occlusion detection in delivery of fluids	GAMBRO LUNDIA
US4373527 A	Implantable programmable medication infusion system	JOHNS HOPKINS UNIVERSITY
EP--48423 A2	Apparatus for the infusion of liquids into the human or animal body	SIEMENS

Family 1/20 - FAMPAT - ©Questel

Title
(EP3468635)
Acoustic flow sensor for continuous medication flow measurements and feedback control of infusion
Images

**Publication numbers with kind code & date**

EP3468635	A4	2019-11-20	EP3468635
US20190262535	A1	2019-08-29	US20190262535
EP3468635	A1	2019-04-17	EP3468635
CO2018014101	A2	2019-01-18	CO2018014101
AU2017277804	A1	2019-01-17	AU2017277804
CA3027176	A1	2017-12-14	CA3027176
WO2017/214441	A1	2017-12-14	WO2017214441

**Abstract**

(EP3468635)

An infusion system determines a volumetric flow rate of infusion fluid delivered by an infusion pump along a flow path based on: an upstream acoustic signal emitted by at least one upstream acoustic sensor and detected by at least one downstream acoustic sensor; a downstream acoustic signal emitted by the downstream acoustic signal and detected by the

upstream acoustic sensor; and a phase delay between the upstream acoustic signal and the downstream acoustic signal either upstream or downstream. The infusion system automatically adjusts the infusion pump based on the determined volumetric flow rate to achieve a desired volumetric flow rate of the infusion fluid along the flow path.

Inventors

SHUBINSKY GARY DAVID

MERWIN JEFFREY DONALD

BAN TAMAS R

NICOLAESCU ION VERGIL

Latest standardized assignees - inventors removed

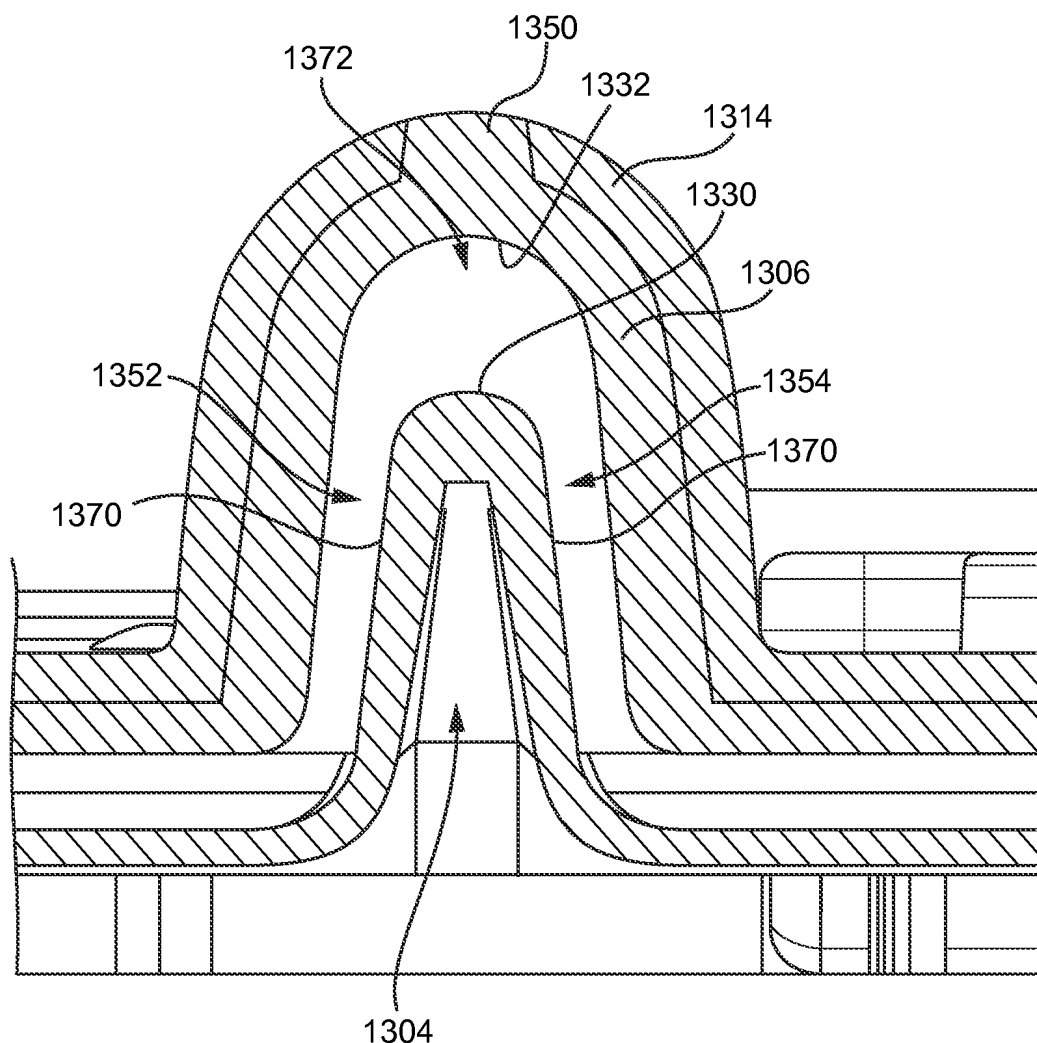
ICU MEDICAL

Family 2/20 - FAMPAT - ©Questel

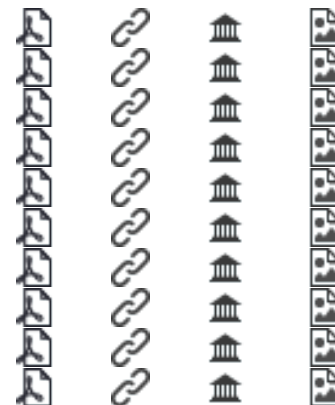
Title

(EP3302625)

Air in-line sensing system for iv infusion lines

Images**Publication numbers with kind code & date**

US20190262550	A1	2019-08-29	US20190262550
US10300219	B2	2019-05-28	US10300219
EP3302625	A4	2019-01-16	EP3302625
EP3302625	A1	2018-04-11	EP3302625
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US20160346484	A1	2016-12-01	US20160346484
WO2016/190904	A1	2016-12-01	WO2016190904

**Abstract**

(EP3302625)

A pump cassette body for detecting air bubbles in a fluid pathway, comprises an upstanding flow director vane, a fitment integrally molded into the pump cassette body, wherein the fitment comprises a base integrally molded into the pump cassette body, an elastomeric member attached to the base, and a housing at least partially surrounding the elastomeric

member, wherein the elastomeric member is co-molded to the housing.

Inventors

ABAL DANIEL

Latest standardized assignees - inventors removed

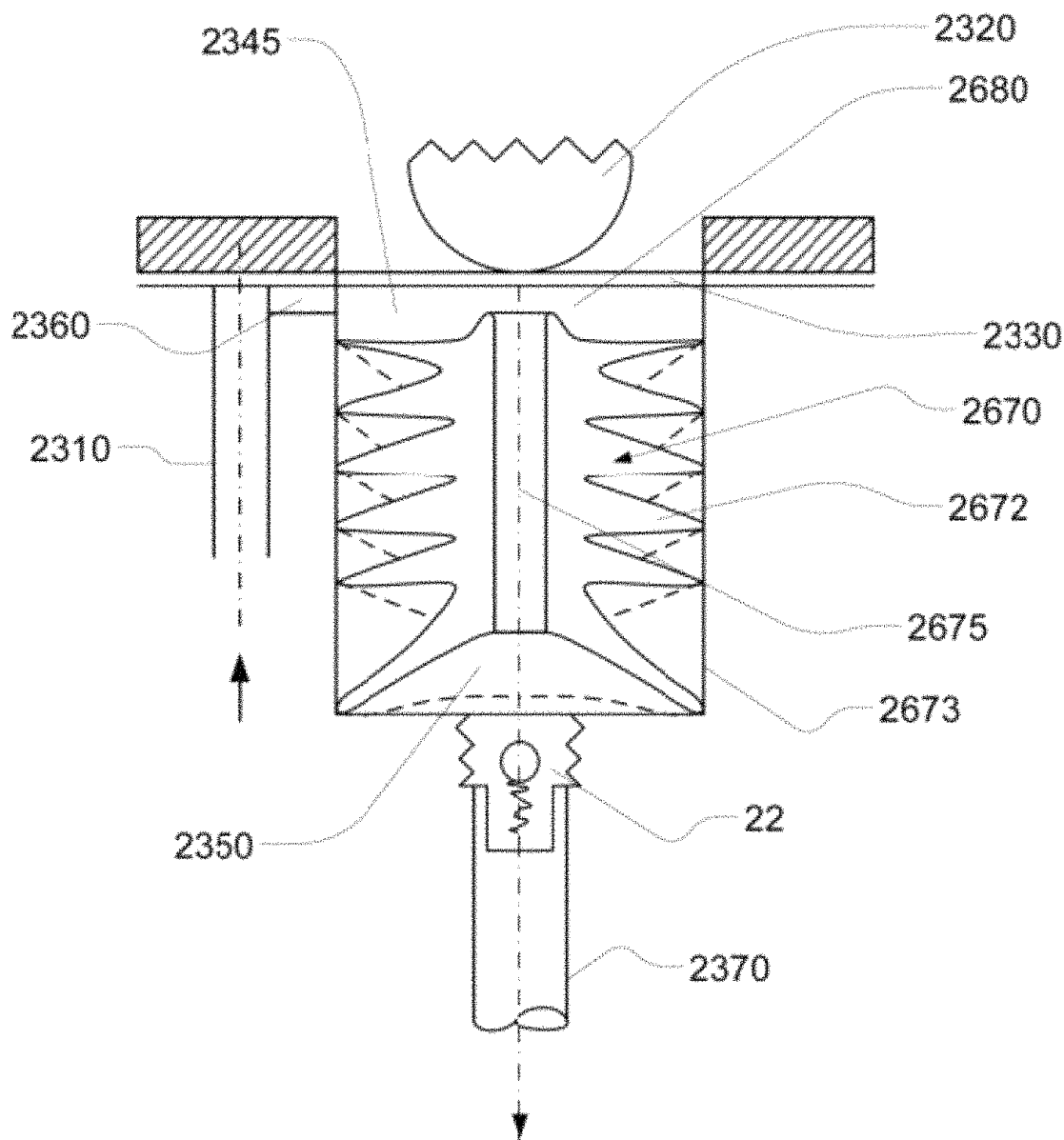
CAREFUSION

Family 3/20 - FAMPAT - ©Questel

Title

(EP3165247)

Pumping fluid delivery systems and methods using force application assembly

Images**Publication numbers with kind code & date**

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Abstract

(EP3165247)

A method of dispensing a therapeutic fluid from a line includes providing an inlet line connectable to an upstream fluid source. The inlet line is in downstream fluid communication with a pumping chamber. The pumping chamber has a pump outlet. The method also includes actuating a force application assembly so as to restrict retrograde flow of fluid through the

inlet while pressurizing the pumping chamber to urge flow through the pump outlet. A corresponding system employs the method.

Inventors

KAMEN DEAN

GRAY LARRY B

YEATON ERIC

Latest standardized assignees - inventors removed

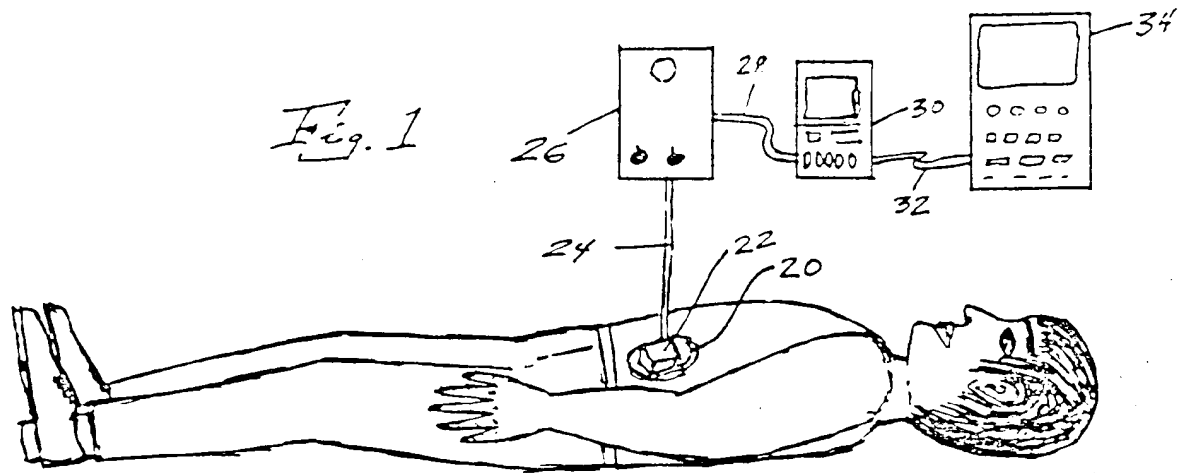
DEKA PRODUCTS

Family 4/20 - FAMPAT - ©Questel

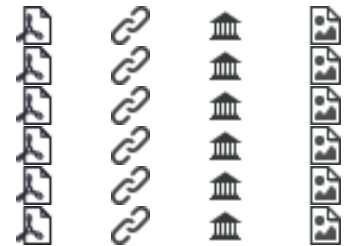
Title

(EP-519765)

Implantable medication infusion pump including self-contained acoustic fault detection apparatus

Images**Publication numbers with kind code & date**

CA2071790	C	2003-10-14	CA2071790
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EP0519765	B1	1997-10-08	EP-519765
EP0519765	A1	1992-12-23	EP-519765
CA2071790	A1	1992-12-22	CA2071790

**Abstract**

(EP0519765)

Apparatus located in an implantable medication infusion pump (126) for quickly and easily detecting a condition adversely affecting medication delivery in the infusion pump. The system uses the amplitude of an acoustic signal (piezo sensor (150)) generated by operation of the pumping mechanism as compared with a baseline signal to detect an encapsulated or occluded catheter (132) or air in the fluid line. The system can detect occurrences including an occluded catheter (132), the presence of air in the pumping mechanism (126), and the failure of the pumping mechanism (126). In addition, the system can detect a partially encapsulated or occluded catheter by detecting repeated downward slope patterns during repetitive, closely spaced pumping cycles. <IMAGE>

Inventors

LORD PETER C
 SCHULTZ JOHN R
 POWELL DAVID G
 SPELL JUDITH D

Latest standardized assignees - inventors removed

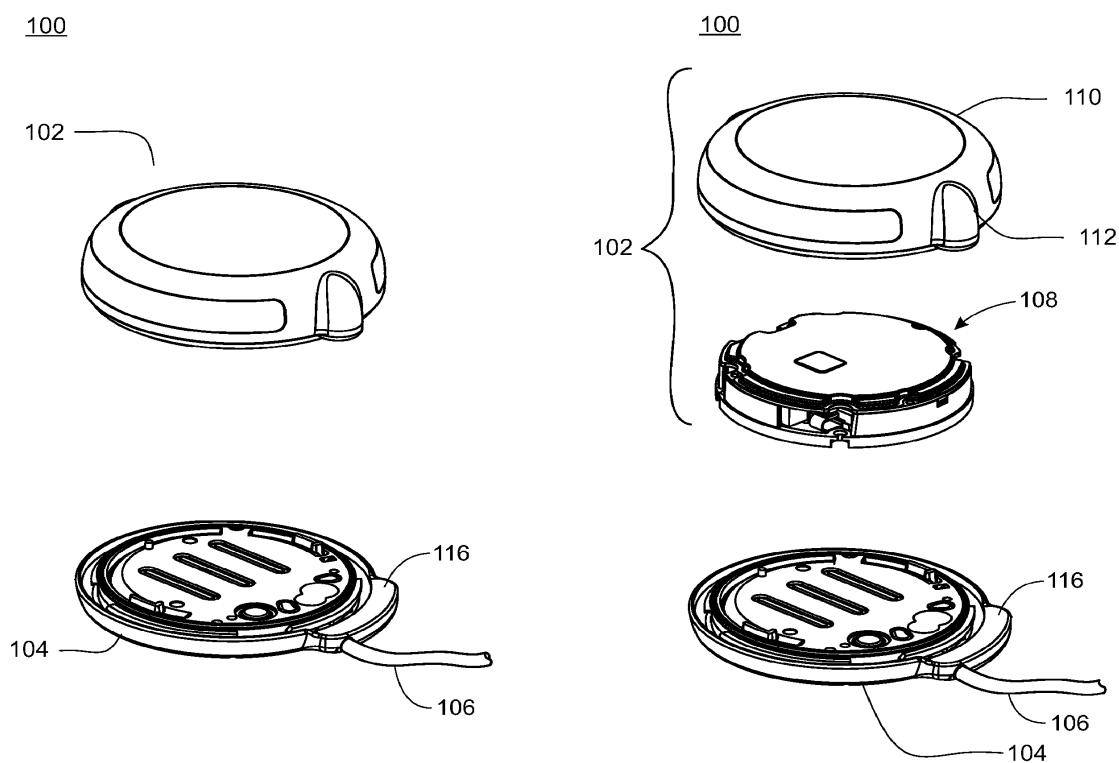
MEDTRONIC MINIMED

Family 5/20 - FAMPAT - ©Questel

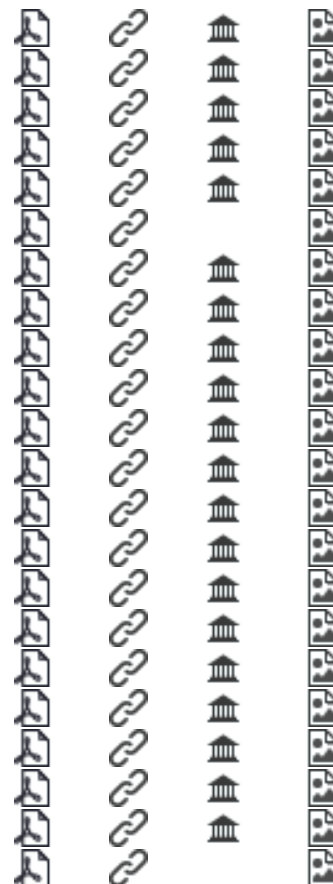
Title

(EP2531232)

Infusion pump apparatus and heated fill adapter system

Images**Publication numbers with kind code & date**

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Abstract

(EP2531232)

A system is disclosed. The system includes a fill adapter device (700) including a heat exchanger which includes a heating element (706) and a fluid pathway (712), the fluid pathway fluidly connected to a filling needle input (714), whereby fluid enters the heat exchanger through the filling needle input and flows through the fluid pathway and whereby the fluid is heated by the heating element. The system also includes a reservoir (704) including a plunger (708) and a plunger rod and a filling needle (710) configured to be removably attached to the reservoir, wherein the fill adapter is configured to be attached to a vial (702) of fluid and wherein fluid from the vial flows through the fluid pathway and is heated and loaded into the reservoir through the filling needle.

Inventors

KAMEN DEAN

MANDRO MARC A

KERWIN JOHN M

GRAY LARRY B

LANIER JR GREGORY R

MURPHY COLLIN H

DURAND KEVIN A

Latest standardized assignees - inventors removed

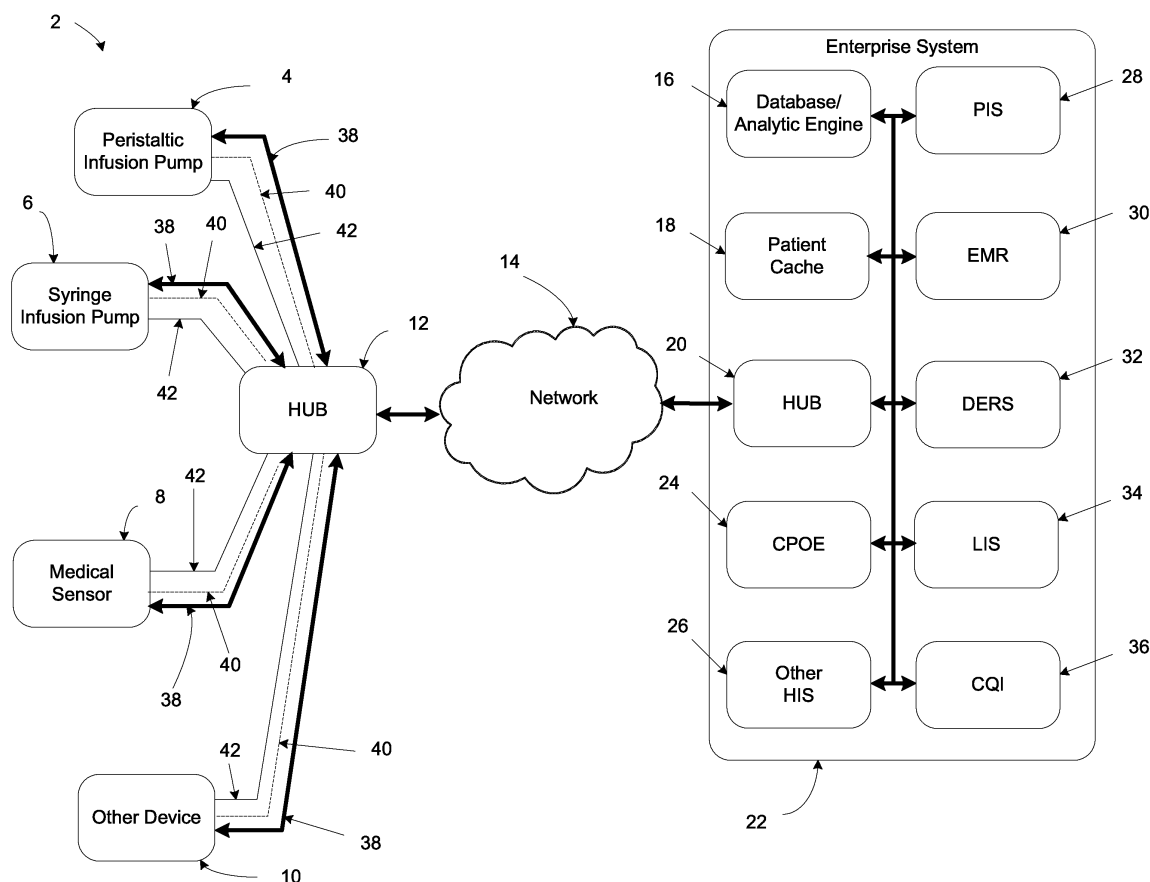
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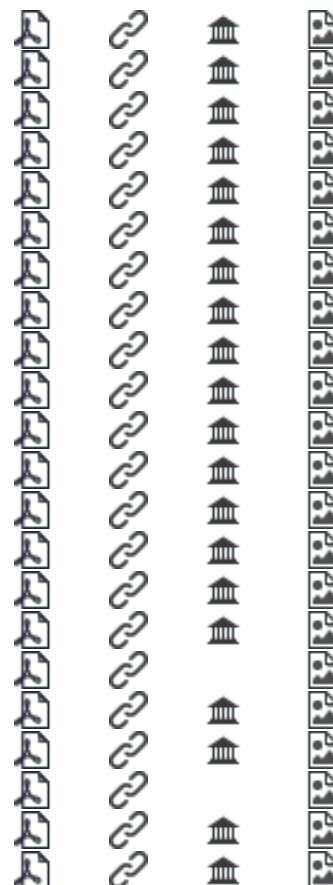
Title

(EP2793976)

Pump system and method for acoustically estimating liquid delivery

Images**Publication numbers with kind code & date**

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**Abstract**

(EP2793976)

A pump, related system, and related method are provided. The pump includes a reservoir, a port, and a plunger. The reservoir delivers a liquid by discharging the liquid through the port coupled to the reservoir. The plunger has a piston coupled to a shaft and is disposed within the reservoir in sliding engagement with an inner surface of the reservoir. The piston defines a liquid side of the reservoir and a non-liquid side of the reservoir whereby movement of the plunger towards the liquid side of the reservoir discharges liquid through the port. The pump also includes a reference-volume assembly and/or a linear position sensor. The reference-volume assembly is coupled to the reservoir at an opposite end of the reservoir relative to the port and includes a reference-volume chamber in acoustic communication with the non-liquid side of the reservoir, a speaker disposed within the reference-volume chamber, and a reference microphone disposed within the reference-volume chamber. The reference-volume assembly and/or linear position sensor may be used to estimate the amount of liquid discharged from the reservoir.

Inventors

KAMEN DEAN

KERWIN JOHN M

MURPHY COLIN H

Latest standardized assignees - inventors removed

DEKA PRODUCTS

Family 7/20 - FAMPAT - ©Questel

Title

(WO2015150280)

Infusion system and method for integrity monitoring of an infusion system

Images

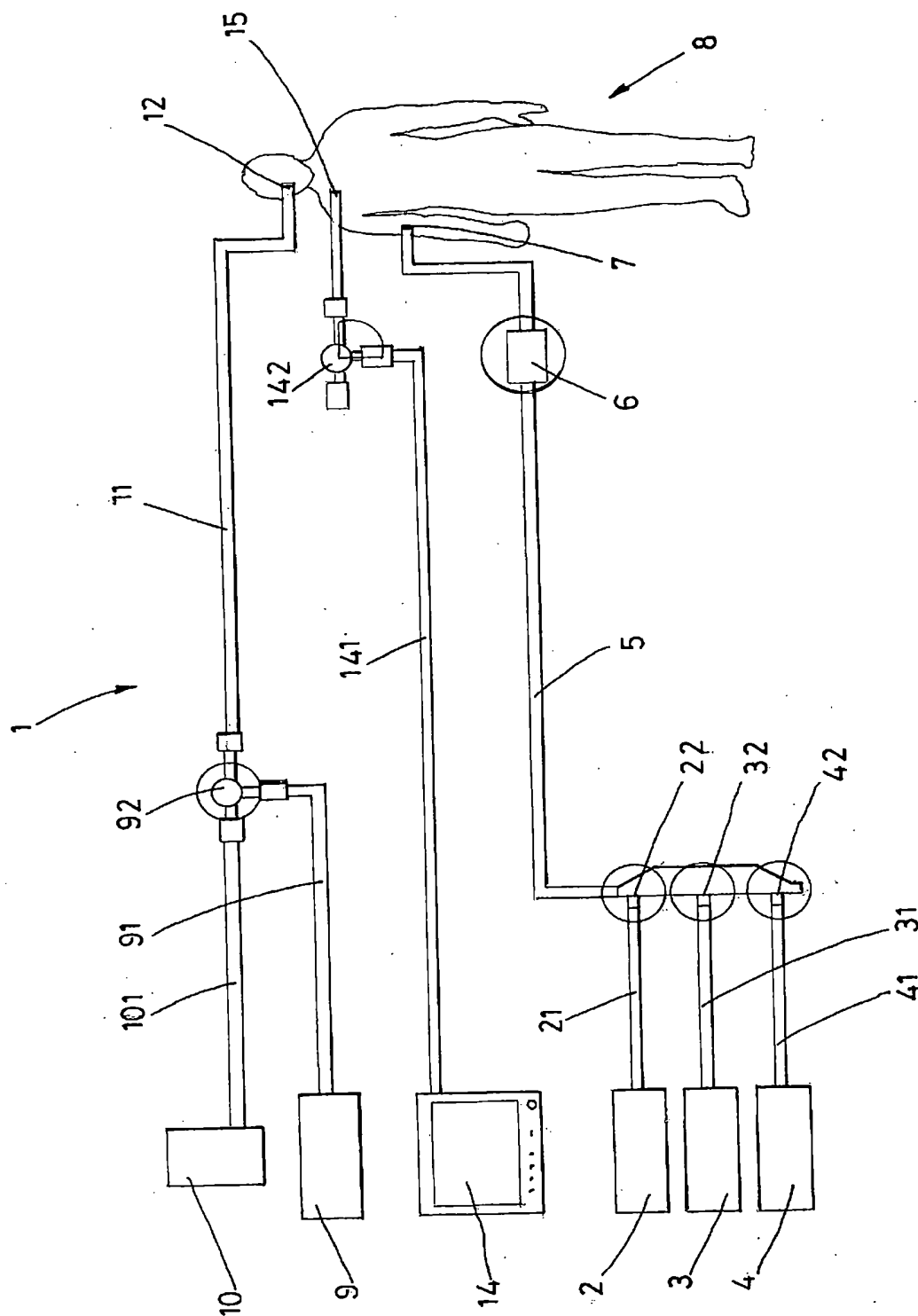


FIG.1

US20170143898	A1	2017-05-25	US20170143898
DE112015003315	A5	2017-05-04	DE112015003315
DE202015009275	U1	2017-02-23	DE202015009275
WO2015/150280	A1	2015-10-08	WO2015150280

**Abstract**

(WO2015/150280)

An infusion system (1) comprising one or more infusion sources (e.g. pumps and/or reservoirs (2, 3, 4, 9, 10)) and hose lines (5, 11) leading to a patient access (7, 12) for the infusion of a liquid, has a signal generator (A/S), which introduces a pressure signal or an acoustic signal into the liquid, and a sensor (S), which is arranged spaced apart from the signal generator in the infusion system, and an evaluation circuit, which is operatively connected to the sensor in such a way that a sensor signal output by the sensor produces an input signal of the evaluation circuit, said evaluation circuit being operatively connected to a display in such a way that information based on the sensor signals, about the infusion system, such as the flow rate of the liquid, can be displayed. The invention further discloses a method for integrity monitoring of such an infusion system.

Inventors

GROSSE WENTRUP DAVID

HÖLSCHER UVO

Latest standardized assignees - inventors removed

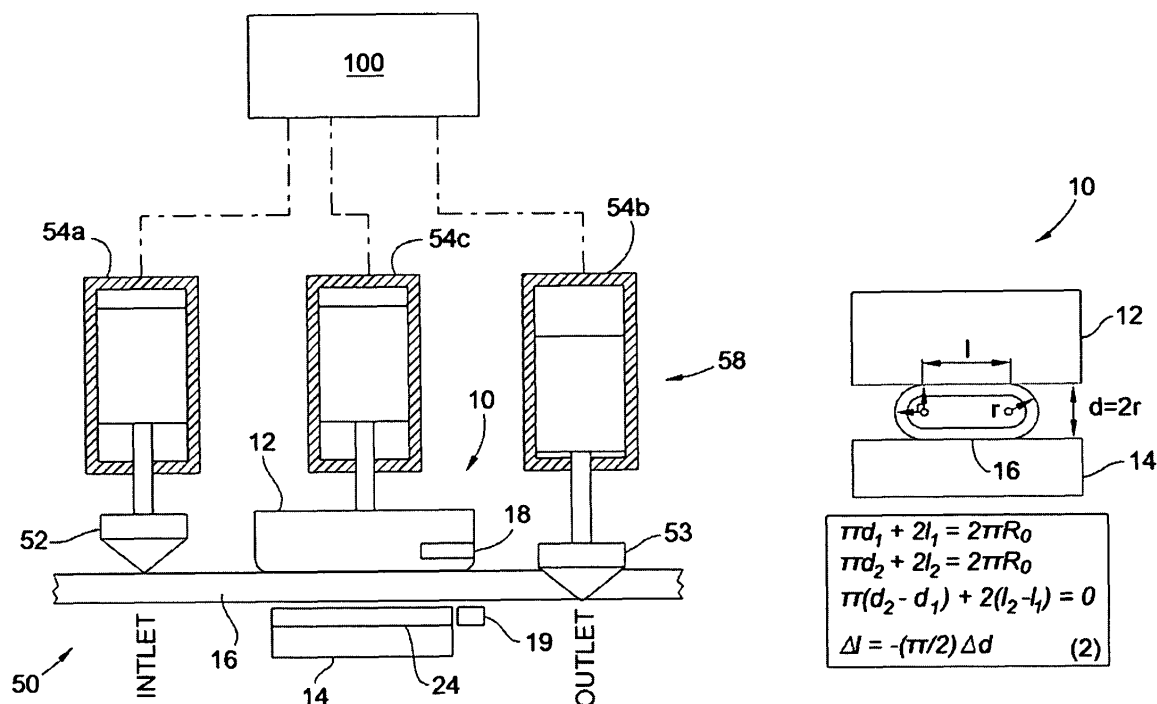
GROSSE WENTRUP DAVID

HÖLSCHER UVO

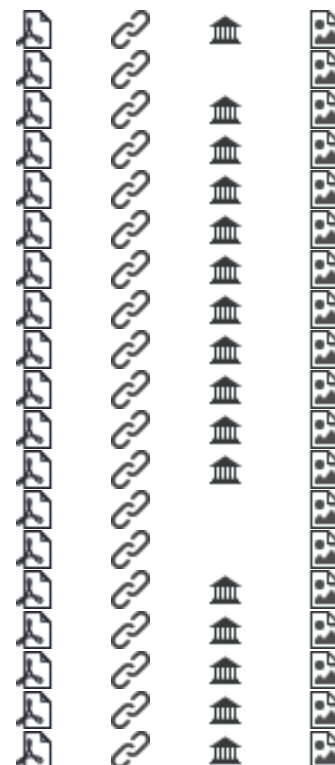
Title

(EP2373359)

Infusion pump and method of in situ measuring the diameter of an infusion tube

Images**Publication numbers with kind code & date**

TWI543785	B	2016-08-01	TWI543785
HK1161155	A1	2015-06-05	HK1161155
JP5654997	B2	2014-11-28	JP5654997
CN102196832	B	2014-07-09	CN102196832B
ES2452879	T3	2014-04-03	ES2452879
EP2373359	B1	2013-12-18	EP2373359
US8496613	B2	2013-07-30	US8496613
US20120130676	A1	2012-05-24	US20120130676
JP2012506730	A	2012-03-22	JP2012506730
US8105269	B2	2012-01-31	US8105269
EP2373359	A1	2011-10-12	EP2373359
CN102196832	A	2011-09-21	CN102196832
MX2011004243	A	2011-05-25	MX2011004243
AR073968	A1	2010-12-15	AR--73968
TW201032850	A	2010-09-16	TW201032850
WO2010/048088	A4	2010-06-24	WO201048088
CA2739453	A1	2010-04-29	CA2739453
US20100106082	A1	2010-04-29	US20100106082
WO2010/048088	A1	2010-04-29	WO201048088

**Abstract**

(EP2373359)

An infusion pump (50) uses sensors (18,19,24) and a computer program to detect tubing (16) in a tube-loading section of the pump. The pump and the computer program also measures one or more of the tubing outer diameter, outer circumference, inner diameter, inner circumference, and tubing wall thickness. The infusion pump utilizes proximity sensors

(18,19), such as an ultrasonic sensor, a capacitive sensor, or even an air-in-line sensor to detect proximity between two infusion pump surfaces, such as the surfaces that clamp the tubing in the pump, to determine thickness. At least one of the clamping surfaces is equipped with sensors (29) to indicate contact length of the tubing with the surface. Using these measurements, the tubing wall thickness and inner diameter can be determined. Knowing the actual tubing inner diameter, increased volumetric accuracy is possible, up to a three or four percent improvement over present measurements.

Inventors

ZHOU YU

Latest standardized assignees - inventors removed

BAXTER INTERNATIONAL

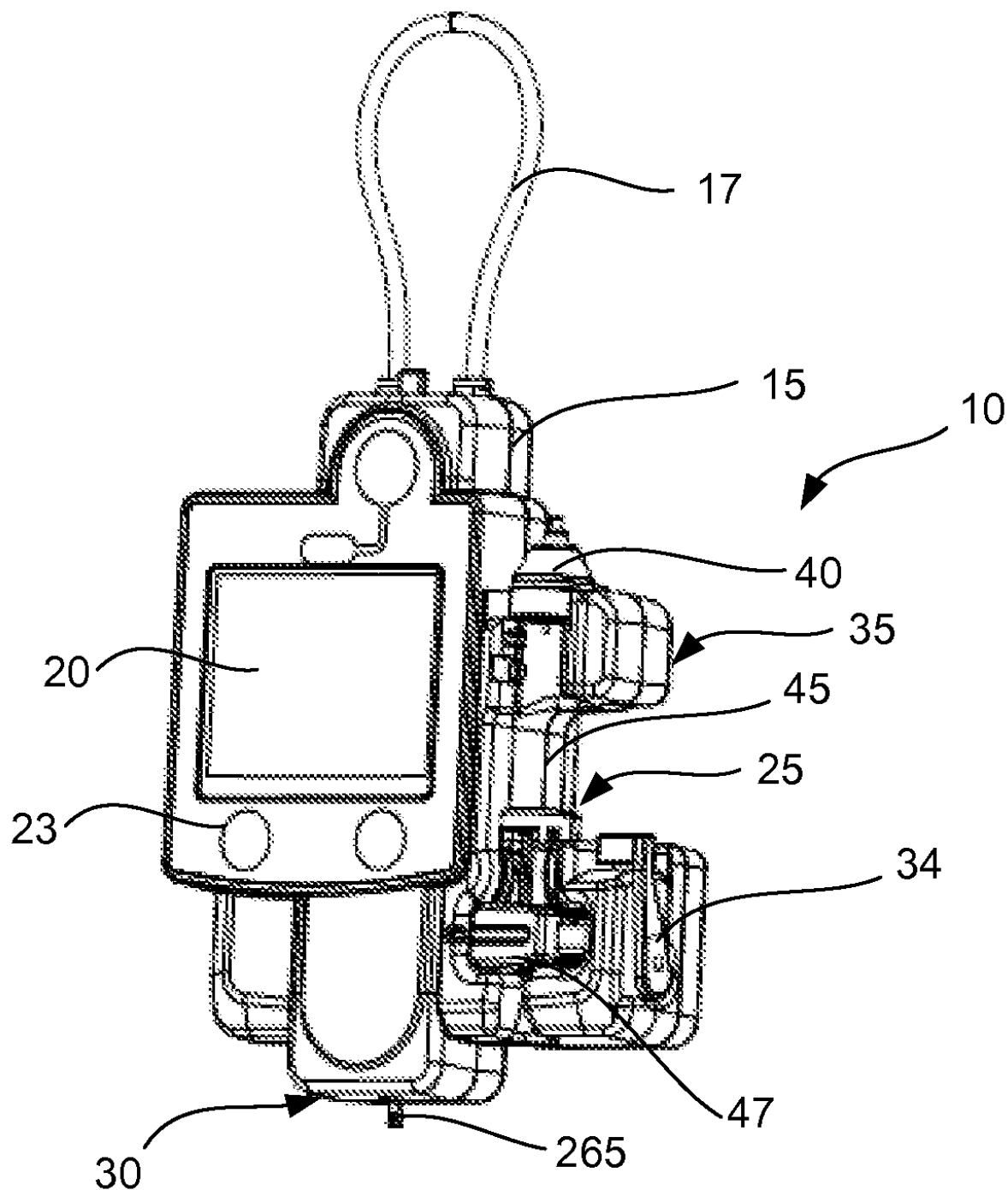
BAXTER HEALTHCARE

Family 9/20 - FAMPAT - ©Questel

Title

(EP3218029)

Flow rate measurement and control of infusion devices

Images**Publication numbers with kind code & date**

US10576202	B2	2020-03-03	US10576202
EP3218029	A4	2018-08-08	EP3218029
US20180177945	A1	2018-06-28	US20180177945
EP3218029	A1	2017-09-20	EP3218029
WO2016/077534	A1	2016-05-19	WO201677534

**Abstract**

(EP3218029)

An infusion apparatus includes a housing and a chamber configured to be connected to the housing. The apparatus further includes a weight sensor coupled to a load connector connected to the housing and an optical sensor disposed in the

housing. The weight sensor is configured to generate a first signal based on a measured weight of the fluid container attached to the housing in a weight-bearing configuration. The optical sensor is configured to generate a second signal based on detecting drops of the fluid traversing the chamber. The apparatus also includes a flow control mechanism to control a flow rate of the fluid into an outlet channel. The apparatus includes one or more processing devices configured to perform operations including transmitting a control signal to the flow control mechanism to adjust the flow rate.

Inventors

SIMS NATHANIEL M

FLACHBART ERIC JOHN

ALLEN DUANE EDWARD

CHOMYN BENJAMIN JAMES

HENNINGE PAUL C

PASQUENCE JOSEPH MATTHEW

ASACK ANDREW W

WOLLOWITZ MICHAEL H

ZUK ROLF E

Latest standardized assignees - inventors removed

MASSACHUSETTS GENERAL HOSPITAL

Family 10/20 - FAMPAT - ©Questel

Title

(EP-759540)

Fluid flow meter

Images

Fig.1.

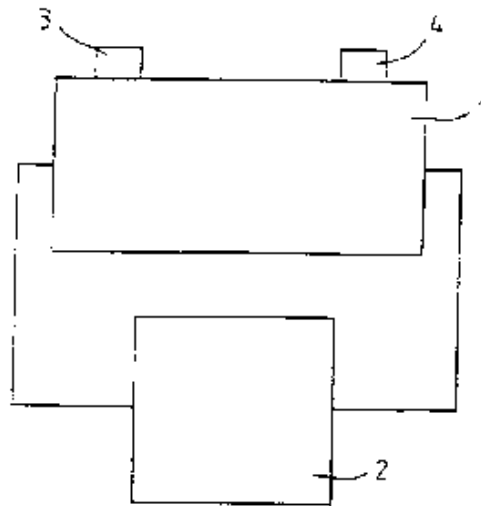
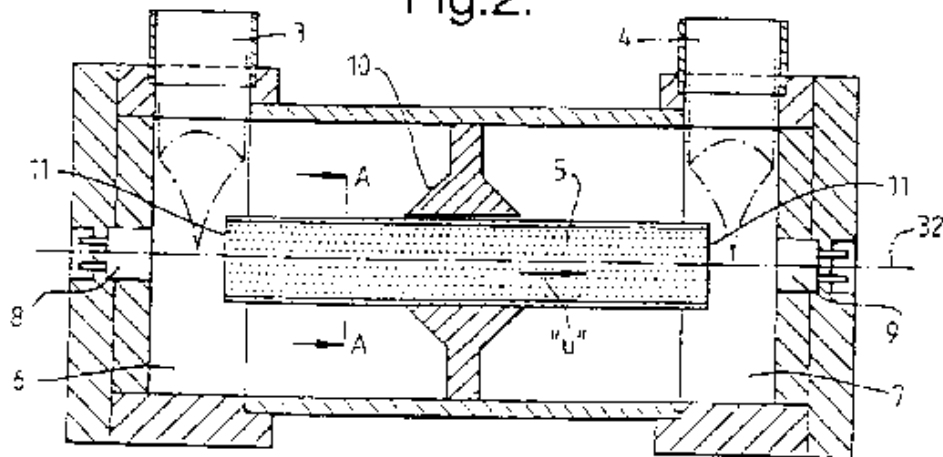


Fig.2.

**Publication numbers with kind code & date**

JP3283519	B2	2002-05-20	JP3283519
KR100311855	B1	2002-04-24	KR100311855
ES2131672	T3	1999-08-01	ES2131672
DE69417543	T2	1999-07-15	DE69417543
DE69417543	D1	1999-05-06	DE69417543



EP0681685	B1	1999-03-31	EP-681685				
US5811689	A	1998-09-22	US5811689				
US5777237	A	1998-07-07	US5777237				
FR2713761	B1	1998-05-07	FR2713761				
PL173732	B1	1998-04-30	PL-173732				
DE69402534	T2	1998-04-23	DE69402534				
EP0759540	A3	1997-10-15	EP-759540				
AU678807	B2	1997-06-12	AU-678807				
DE69402534	D1	1997-05-15	DE69402534				
EP0681684	B1	1997-04-09	EP-681684				
EP0759540	A2	1997-02-26	EP-759540				
JPH08512126	A	1996-12-17	JP08512126				
HUT73364	A	1996-07-29	HU-T73364				
CZ188195	A3	1996-04-17	CZ9501881				
CN1116877	A	1996-02-14	CN1116877				
KR19967000441	A	1996-01-20	KR19967000441				
SK95995	A3	1995-12-06	SK9500959				
EP0681684	A1	1995-11-15	EP-681684				
EP0681685	A1	1995-11-15	EP-681685				
PL310051	A1	1995-11-13	PL94310051				
HU9502264	D0	1995-09-28	HU9502264				
FR2713761	A1	1995-06-16	FR2713761				
FR2713762	A1	1995-06-16	FR2713762				
FR2713763	A1	1995-06-16	FR2713763				
GB2275108	A	1994-08-17	GB2275108				
AU5864994	A	1994-08-15	AU9458649				
AU5865094	A	1994-08-15	AU9458650				
FR2701111	A1	1994-08-05	FR2701111				
WO94/17371	A1	1994-08-04	WO9417371				
WO94/17372	A1	1994-08-04	WO9417372				
GB9316001	D0	1993-09-15	GB9316001				
GB9301873	D0	1993-03-17	GB9301873				

Abstract

(EP0759540)

A fluid flow meter comprises a pair of transducers (8,9) spaced apart in the direction of fluid flow. Acoustic signals are transmitted in both directions through the fluid by the transducers. A processor (22) determines information relating to the fluid flow by monitoring the time of flight of acoustic signals received by the transducers. Part of the space between the transducers defines a flow path consisting of a substantially annular flow passage (82), wherein the radial dimension (d) of the annular flow passage is such as to permit propagation of substantially only plane wave acoustic signals. <IMAGE>

Inventors

COLLIER JAMES DIGBY YARLET

DAVIES CHRISTOPHER

FRYER CHRISTOPHER JAMES NEWTON

WAHA ALAIN HENRI

Latest standardized assignees - inventors removed

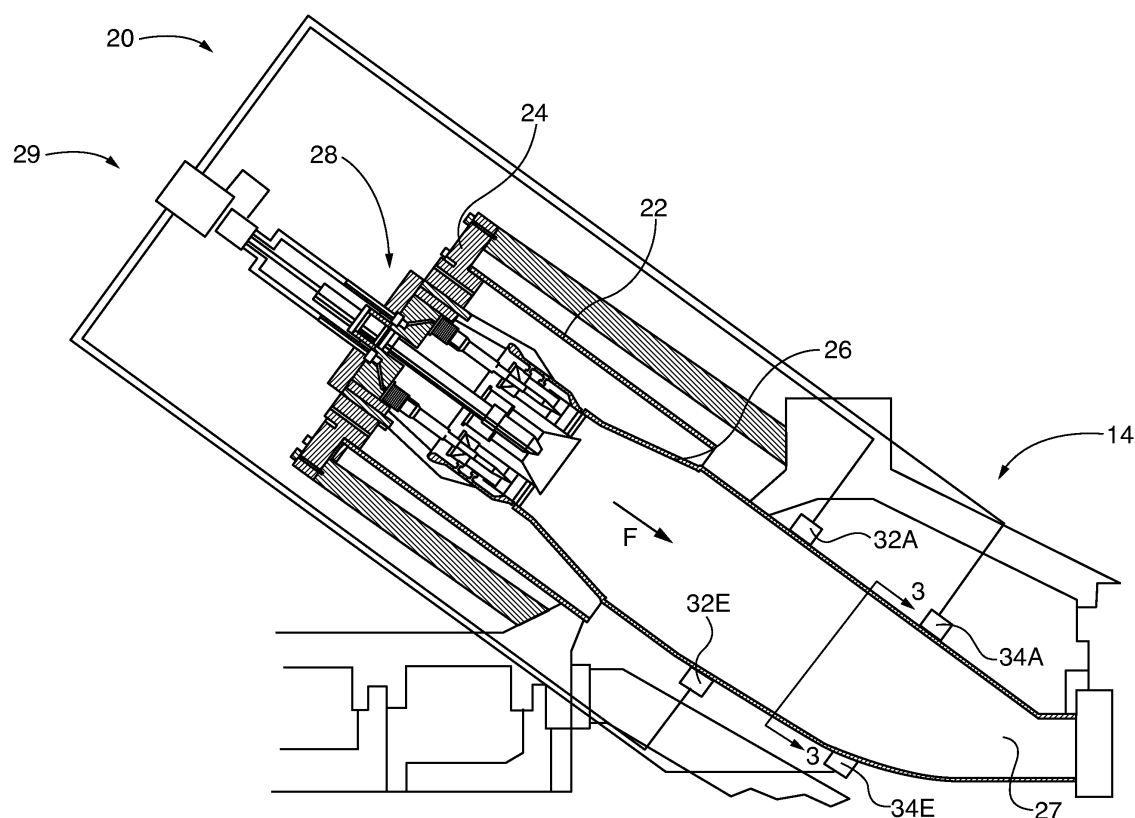
G KROMSCHROEDER

Family 11/20 - FAMPAT - ©Questel

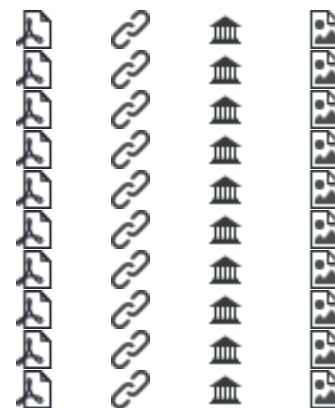
Title

(WO2015138659)

Nonintrusive mass flow measurement of a gas turbine engine in real time

Images**Publication numbers with kind code & date**

US10041859	B2	2018-08-07	US10041859
US9927325	B2	2018-03-27	US9927325
US9752959	B2	2017-09-05	US9752959
US9746360	B2	2017-08-29	US9746360
US20150377669	A1	2015-12-31	US20150377669
US20150260557	A1	2015-09-17	US20150260557
US20150260611	A1	2015-09-17	US20150260611
US20150260612	A1	2015-09-17	US20150260612
WO2015/138659	A1	2015-09-17	WO2015138659
WO2015/138661	A1	2015-09-17	WO2015138661

**Abstract**

(WO2015/138659)

Performance of a gas turbine engine is monitored by computing a mass flow rate through the engine. Acoustic time-of-flight measurements are taken between acoustic transmitters and receivers in the flow path of the engine. The measurements are processed to determine average speeds of sound and gas flow velocities along those lines-of-sound. A volumetric flow rate in the flow path is computed using the gas flow velocities together with a representation of the flow path geometry. A gas density in the flow path is computed using the speeds of sound and a measured static pressure. The mass flow rate is calculated from the gas density and the volumetric flow rate.

Inventors

DESILVA UPUL P

CLAUSSEN HEIKO

Latest standardized assignees - inventors removed

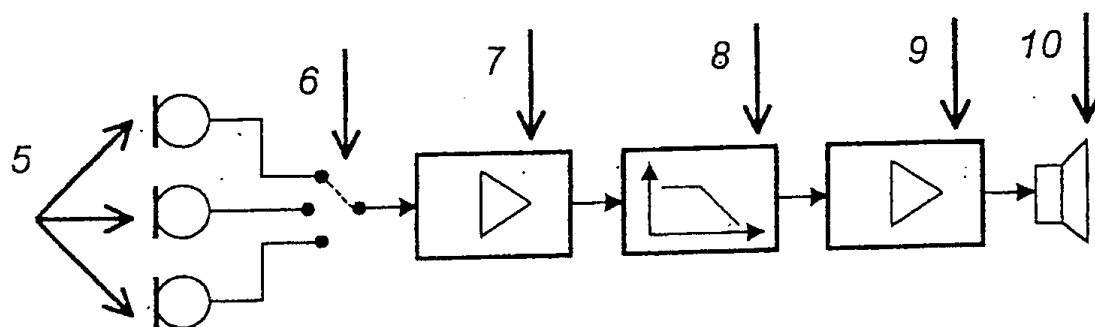
SIEMENS ENERGY

Family 12/20 - FAMPAT - ©Questel

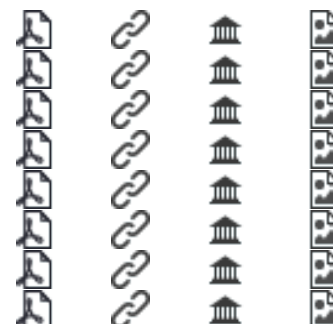
Title

(EP1633415)

Device and method for examining a medical device

Images**Publication numbers with kind code & date**

US20070273792	A1	2007-11-29	US20070273792
JP2006527608	A	2006-12-07	JP2006527608
US20060135907	A1	2006-06-22	US20060135907
EP1633415	A1	2006-03-15	EP1633415
DE10327261	B4	2006-03-02	DE10327261
DE10327261	A1	2005-01-13	DE10327261
CA2525815	A1	2004-12-23	CA2525815
WO2004/110528	A1	2004-12-23	WO2004110528

**Abstract**

(EP1633415)

The invention relates to a device for the examination of a medical device comprising an acoustic receiver (5) which can detect a sound emitted by a device (1), in order to examine the medical device for errors. The invention also relates to a method for examining a medical device whereby the sound emitted by the device is detected and analysed.

Inventors

REMDE AXEL

SCHILTGES GILBERT

Latest standardized assignees - inventors removed

TECHNICOLOR

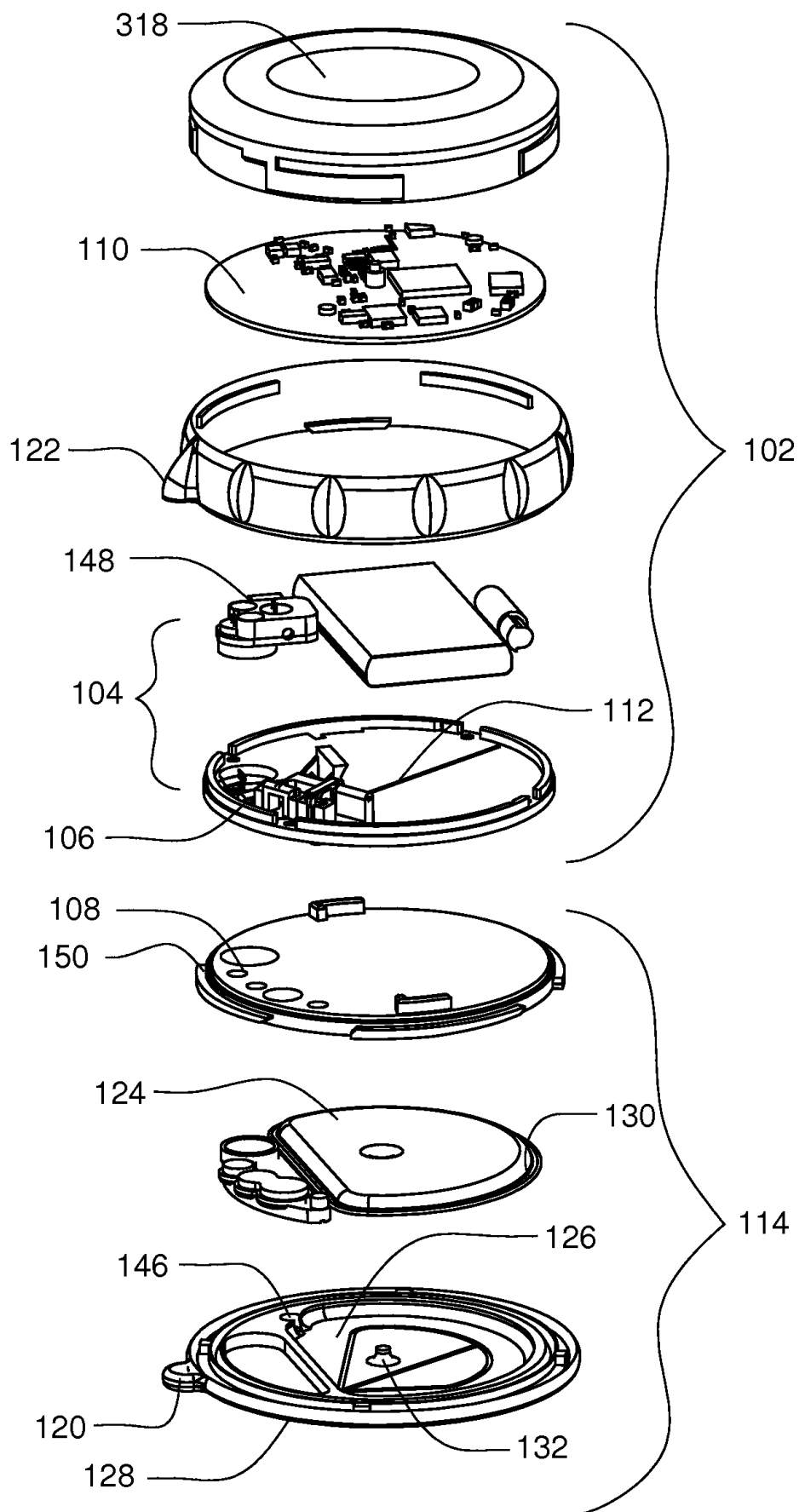
Family 13/20 - FAMPAT - ©Questel

Title

(EP2244765)

Infusion pump assembly

Images

100**Publication numbers with kind code & date**

CA2919786
CN110251769

C 2019-10-22
A 2019-09-20

CA2919786
CN110251769



EP2244765	B1	2019-08-14	EP2244765				
JP2019107516	A	2019-07-04	JP2019107516				
IN314321	B	2019-06-19	IN-314321				
CN104874047	B	2019-05-28	CN104874047B				
IN201848043142	A	2018-12-21	IN201848043142				
MX361885	B	2018-12-18	MX-361885				
US9931461	B2	2018-04-03	US9931461				
JP6301287	B2	2018-03-28	JP6301287				
JP2017221755	A	2017-12-21	JP2017221755				
US20170136178	A1	2017-05-18	US20170136178				
US9526830	B2	2016-12-27	US9526830				
MX338464	B	2016-04-15	MX-338464				
CA2711244	C	2016-02-16	CA2711244				
JP2015180318	A	2015-10-15	JP2015180318				
JP2015180319	A	2015-10-15	JP2015180319				
CN104874047	A	2015-09-02	CN104874047				
BRPI0821466	A2	2015-06-16	BR200821466				
CN101959547	B	2014-11-26	CN101959547B				
JP5634269	B2	2014-10-24	JP5634269				
AU2008347241	B2	2014-09-18	AU2008347241				
RU2510758	C2	2014-04-10	RU2510758				
US20140031743	A1	2014-01-30	US20140031743				
JP2014000432	A	2014-01-09	JP2014000432				
US20130281974	A1	2013-10-24	US20130281974				
US8491570	B2	2013-07-23	US8491570				
US8414563	B2	2013-04-09	US8414563				
RU2010132226	A	2012-02-10	RU2010132226				
JP2011508637	A	2011-03-17	JP2011508637				
CN101959547	A	2011-01-26	CN101959547				
IN4035/CHENP/2010	A	2010-12-31	IN2010CN04035				
EP2244765	A2	2010-11-03	EP2244765				
MX2010007324	A	2010-09-30	MX2010007324				
WO2009/088956	A8	2010-08-12	WO200988956				
US20090299277	A1	2009-12-03	US20090299277				
US20090299289	A1	2009-12-03	US20090299289				
US20090281497	A1	2009-11-12	US20090281497				
WO2009/088956	A3	2009-09-03	WO200988956				
AU2008347241	A1	2009-07-16	AU2008347241				
CA2711244	A1	2009-07-16	CA2711244				
CA2919786	A1	2009-07-16	CA2919786				
CA3059311	A1	2009-07-16	CA3059311				
WO2009/088956	A2	2009-07-16	WO200988956				

Abstract

(EP2244765)

A wearable infusion pump assembly including a reusable housing assembly including a mechanical control assembly, the mechanical control assembly including a pump assembly, at least one shape-memory actuator configured to actuate the pump assembly, and at least one valve assembly. The wearable infusion pump assembly further includes a disposable housing assembly including a reservoir for receiving an infusible fluid. A releasable engagement assembly is configured to allow the reusable housing assembly to releasably engage the disposable housing assembly. A switch assembly is configured to effectuate a pairing functionality of the infusion pump assembly.

Inventors

KAMEN DEAN

KERWIN JOHN MATTHEW

MURPHY COLIN HOLMES

GRAY LARRY BRIAN

FICHERA STEPHEN LEWIS

GUAY GERALD MICHAEL

LANIGAN RICHARD J

Latest standardized assignees - inventors removed

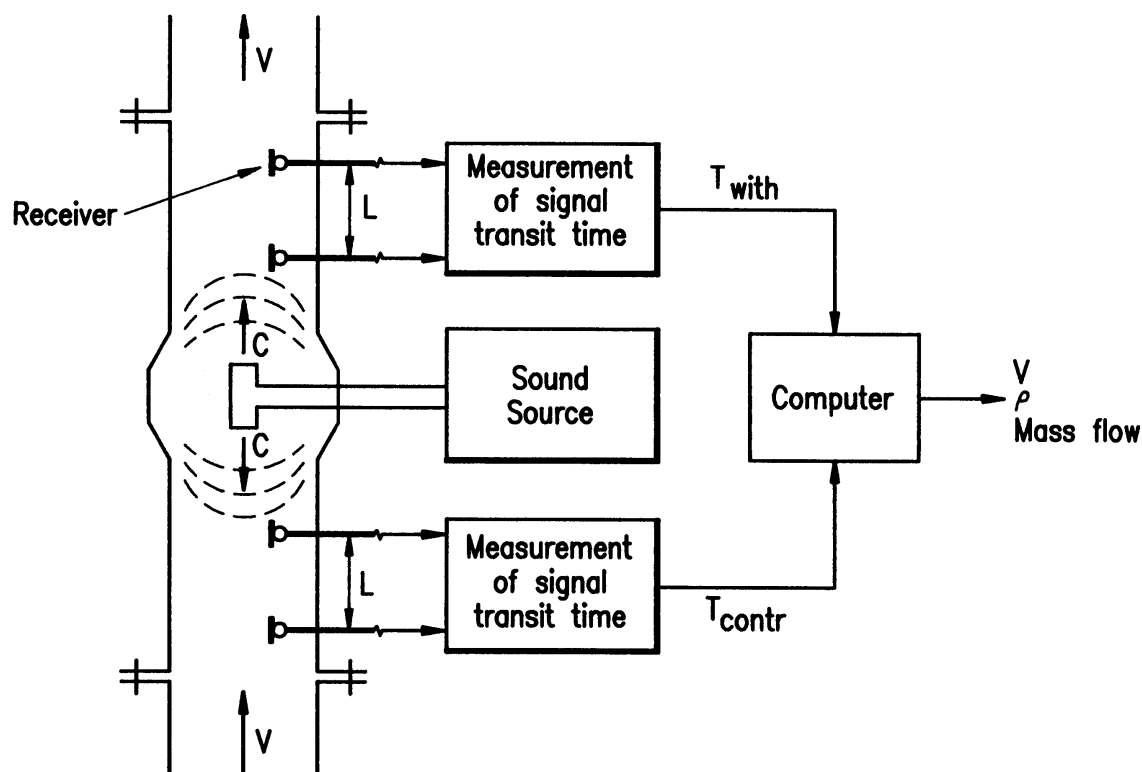
DEKA PRODUCTS

Family 14/20 - FAMPAT - ©Questel

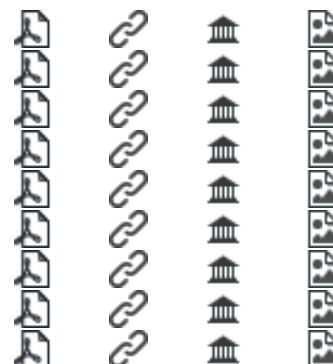
Title

(EP-985134)

Method and apparatus for measuring density and mass flux

Images**Measuring arrangement with a sound source****Publication numbers with kind code & date**

DE59804595	D1	2002-08-01	DE59804595
EP0985134	B1	2002-06-26	EP-985134
JP2001526787	A	2001-12-18	JP2001526787
US6202494	B1	2001-03-20	US6202494
TW397922	B	2000-07-11	TW-397922
CN1257576	A	2000-06-21	CN1257576
EP0985134	A1	2000-03-15	EP-985134
DE19722274	A1	1998-12-03	DE19722274
WO98/54550	A1	1998-12-03	WO9854550

**Abstract**

(EP0985134)

The invention concerns a method for measuring density and mass flux in dispersed systems with a gas as a liquid phase. To this end, sound velocity in the system is measured both in the direction of flow and against the direction of flow.

Inventors

RIEBEL ULRICH

KHATCHIKIAN PETER

Latest standardized assignees - inventors removed

EVONIK INDUSTRIES

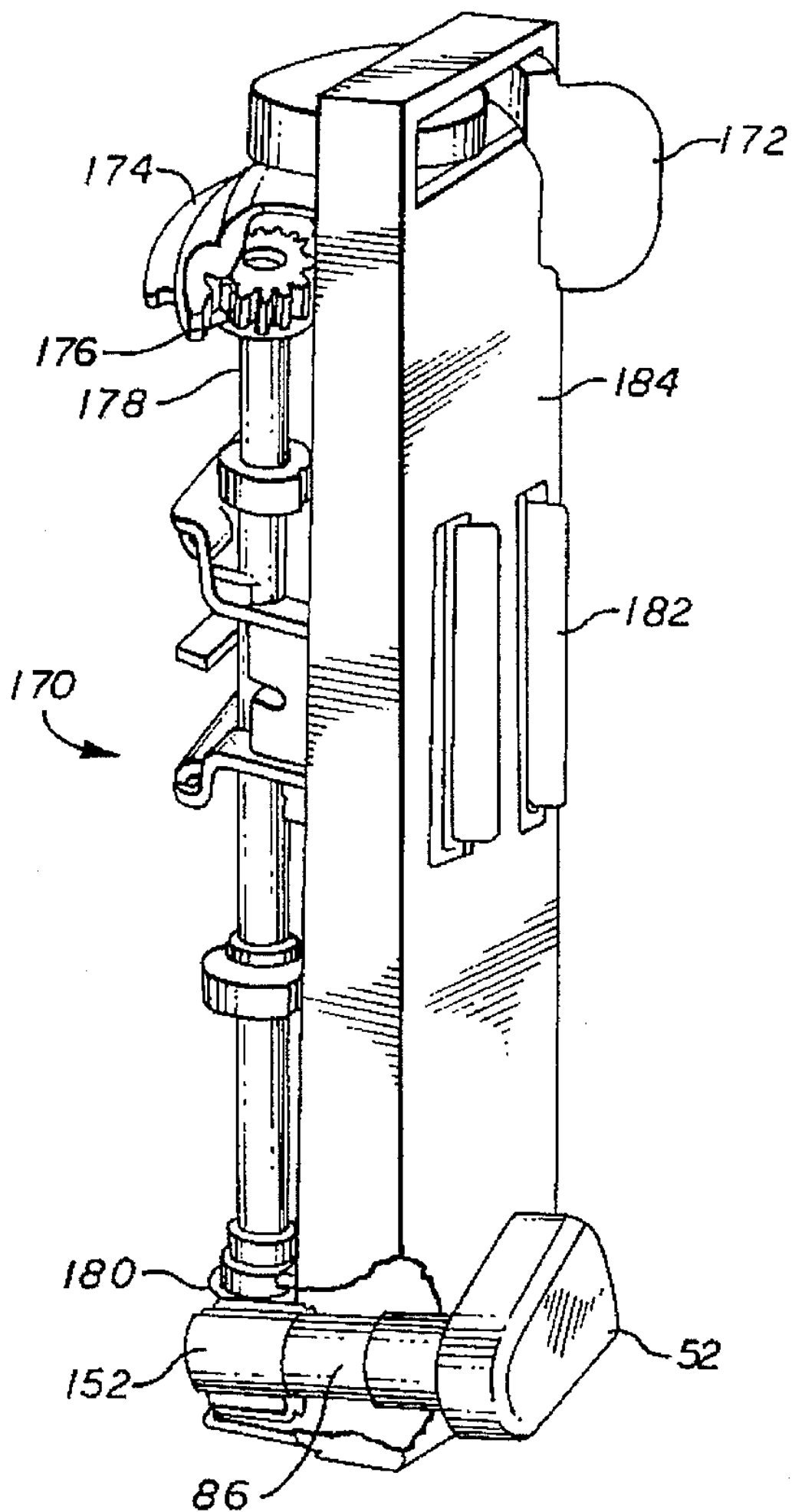
Family 15/20 - FAMPAT - ©Questel

Title

(EP-809802)

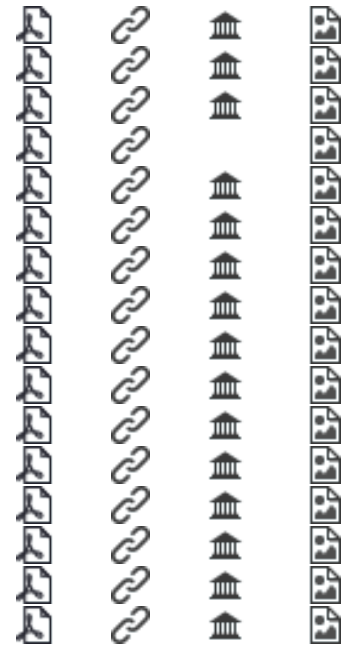
Air-in-line sensing apparatus

Images



Publication numbers with kind code & date

DE69532301	T2	2004-09-16	DE69532301
ES2135357	T3	2004-08-16	ES2135357
DE69532301	D1	2004-01-22	DE69532301
AT256285	T	2003-12-15	ATE256285
EP0809802	B1	2003-12-10	EP-809802
JP3401259	B2	2003-04-28	JP3401259
CA2199157	C	2001-02-20	CA2199157
DE809802	T1	1999-11-04	DE-809802T
ES2135357	T1	1999-11-01	ES2135357
GR990300030	T1	1999-08-31	GR990300030
EP0809802	A4	1998-11-18	EP-809802
JPH10504992	A	1998-05-19	JP10504992
EP0809802	A1	1997-12-03	EP-809802
US5537853	A	1996-07-23	US5537853
CA2199157	A1	1996-03-21	CA2199157
WO96/08717	A1	1996-03-21	WO9608717

**Abstract**

(EP0809802)

An air-in-line sensing apparatus (10) for use with a parenteral fluid administration set (34) to detect the passage of air through a fluid conduit (12). The apparatus comprises a first housing having a first arcuate section mounting a first transducer adjacent the first arcuate section and a second housing having a second arcuate section mounting a second transducer adjacent the second arcuate section. The first and second housings are independently movable relative to each other so that when the housings are moved towards one another, the first and second arcuate sections capture a length of administration set tubing therebetween (44) providing secure intimate contact therewith. A signal may be generated from one of such transducers, passed through the fluid conduit and received by the other transducer to detect whether the conduit is carrying air.

Inventors

FINBURGH SIMON E

MORRIS MATTHEW G

WARNER ERIC A

Latest standardized assignees - inventors removed

CAREFUSION

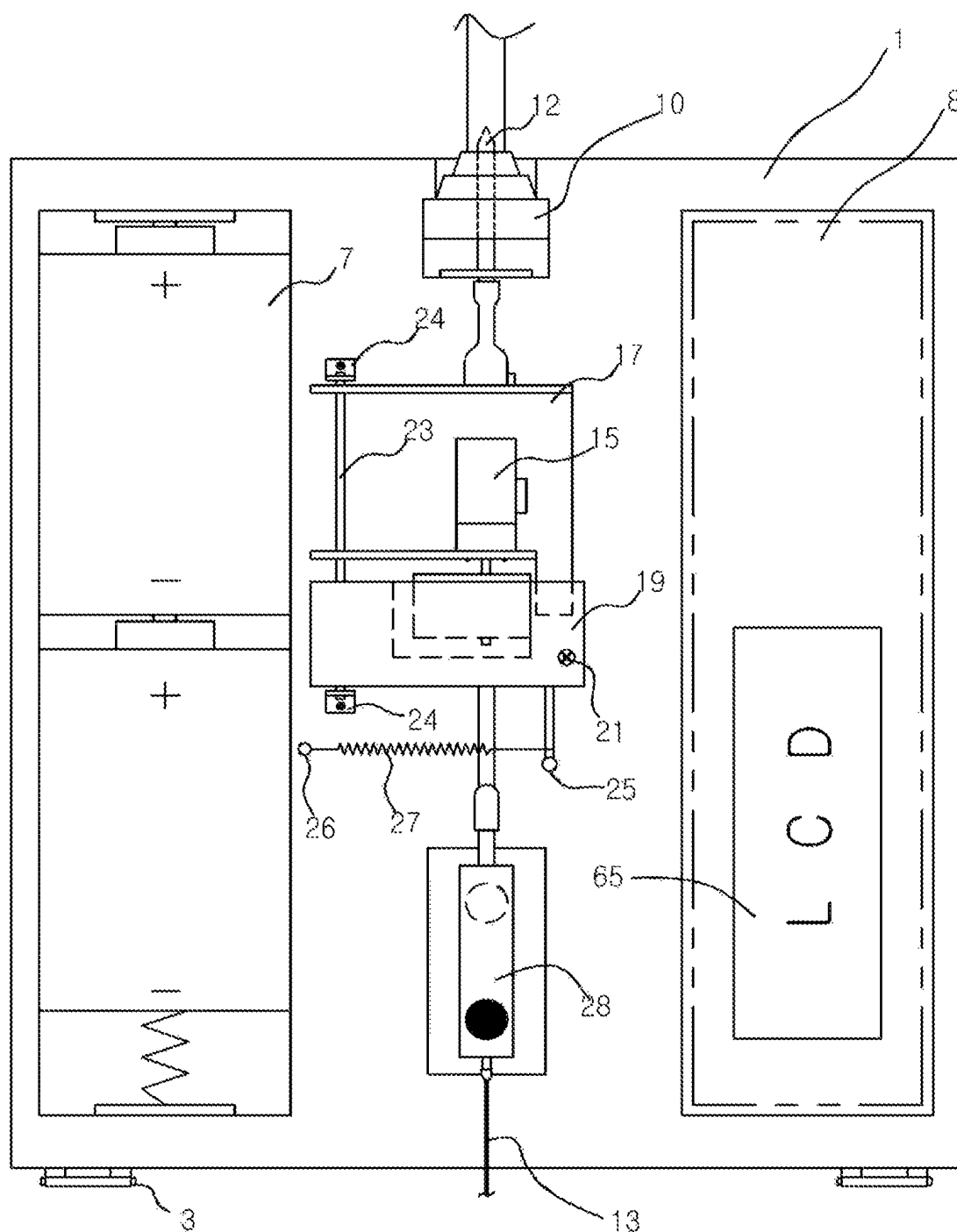
Family 16/20 - FAMPAT - ©Questel

Title

(WO2014208895)

Intravenous fluid supply device

Images



Publication numbers with kind code & date

US10286147

B2 2019-05-14

US10286147

US20160243303

A1 2016-08-25

US20160243303

KR101504012

B1 2015-03-18

KR101504012

KR20150001543

A 2015-01-06

KR20150001543

WO2014/208895

A1 2014-12-31

WO2014208895



Abstract

(WO2014/208895)

The present invention relates to an intravenous fluid supply device for automatically extruding and injecting a predetermined amount of infusion fluid at a predetermined time interval in an artificial manner, regardless of the position of the infusion bag, through grafting microprocessor technology. The device provides the convenience of usability even when the infusion fluid storage container (infusion fluid bag) is positioned lower or higher than the part to which the fluid is injected (human body); the geared motor, which is the main source of driving of the extrusion means, is not activated continuously, but is instantly activated at an inputted repetition cycle, thereby reducing the amount of power consumption substantially and enabling application of a small power storage scheme; the extrusion means, the control means, and the battery are contained integrally, thereby minimizing the number of components, and the resulting simplification of structure, compactness of product, and improved portability provide the economic merit of low cost; it is possible to recognize whether the infusion fluid is normally supplied or not, no matter what position the intravenous fluid supply device is placed, i.e., horizontal, vertical, high, or low, without resorting to a conventional drop pipette, either day or night; and the alarm is raised when air is included in the infusion fluid, when the fluid is injected excessively or insufficiently, when the preset total amount of injection is reached, or when the battery voltage is below a preset value, thereby guaranteeing safety.

Inventors

JANG KWAN SOON

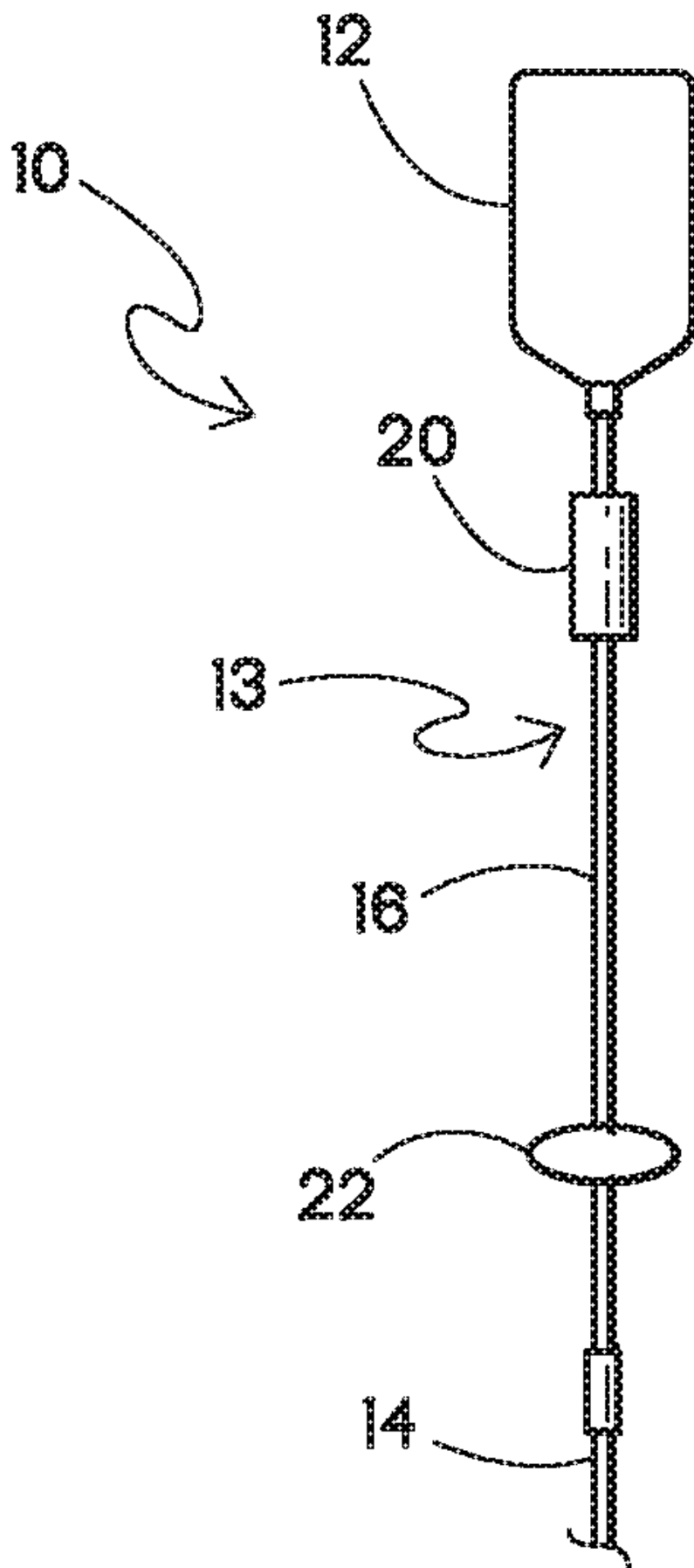
Family 17/20 - FAMPAT - ©Questel

Title

(EP3366334)

Acoustic line tracing system and method for fluid transfer system

Images



KR10-1990180	B1	2019-06-17	KR101990180				
CN105120923	B	2019-02-22	CN105120923B				
JP6401775	B2	2018-10-10	JP6401775				
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EP3366334	A1	2018-08-29	EP3366334				
EP2968741	B1	2018-05-09	EP2968741				
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US20170216522	A1	2017-08-03	US20170216522				
US9656052	B2	2017-05-23	US9656052				
US20160228688	A1	2016-08-11	US20160228688				
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US9359885	B2	2016-06-07	US9359885				
MX2015013068	A	2016-05-31	MX2015013068				
EP2968741	A2	2016-01-20	EP2968741				
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KR20150132397	A	2015-11-25	KR20150132397				
AU2014234996	A1	2015-10-15	AU2014234996				
WO2014/151415	A3	2014-11-13	WO2014151415				
CA2905938	A1	2014-09-25	CA2905938				
WO2014/151415	A2	2014-09-25	WO2014151415				
US20140262252	A1	2014-09-18	US20140262252				

Abstract

(EP3366334)

An acoustic line tracing system for tracing a fluid transfer system tubing line is described. The tracing system comprises: an infusion pump; a first acoustic receiver operably connectable to the tubing line and configured to receive a vibratory signal, the first acoustic receiver including: a first vibration sensor disposed to contact the tubing line, said first vibration sensor being configured for detecting vibration of the surface of the tubing line caused by the vibratory signal; and a signal transmitter operatively contacting the tubing set and electrically coupled with said first acoustic receiver, said signal transmitter configured for generating acoustic vibrations in the tubing line when said first vibration sensor detects the vibratory signal. The first acoustic receiver is upstream from the infusion pump and the signal transmitter is downstream from the infusion pump for reducing dampening of the vibratory signal by the infusion pump. Also described is a method for determining continuity of a tubing set.

Inventors

SLEPICKA JAMES SCOTT

DUDAR THOMAS EDWARD

Latest standardized assignees - inventors removed

BAXTER INTERNATIONAL

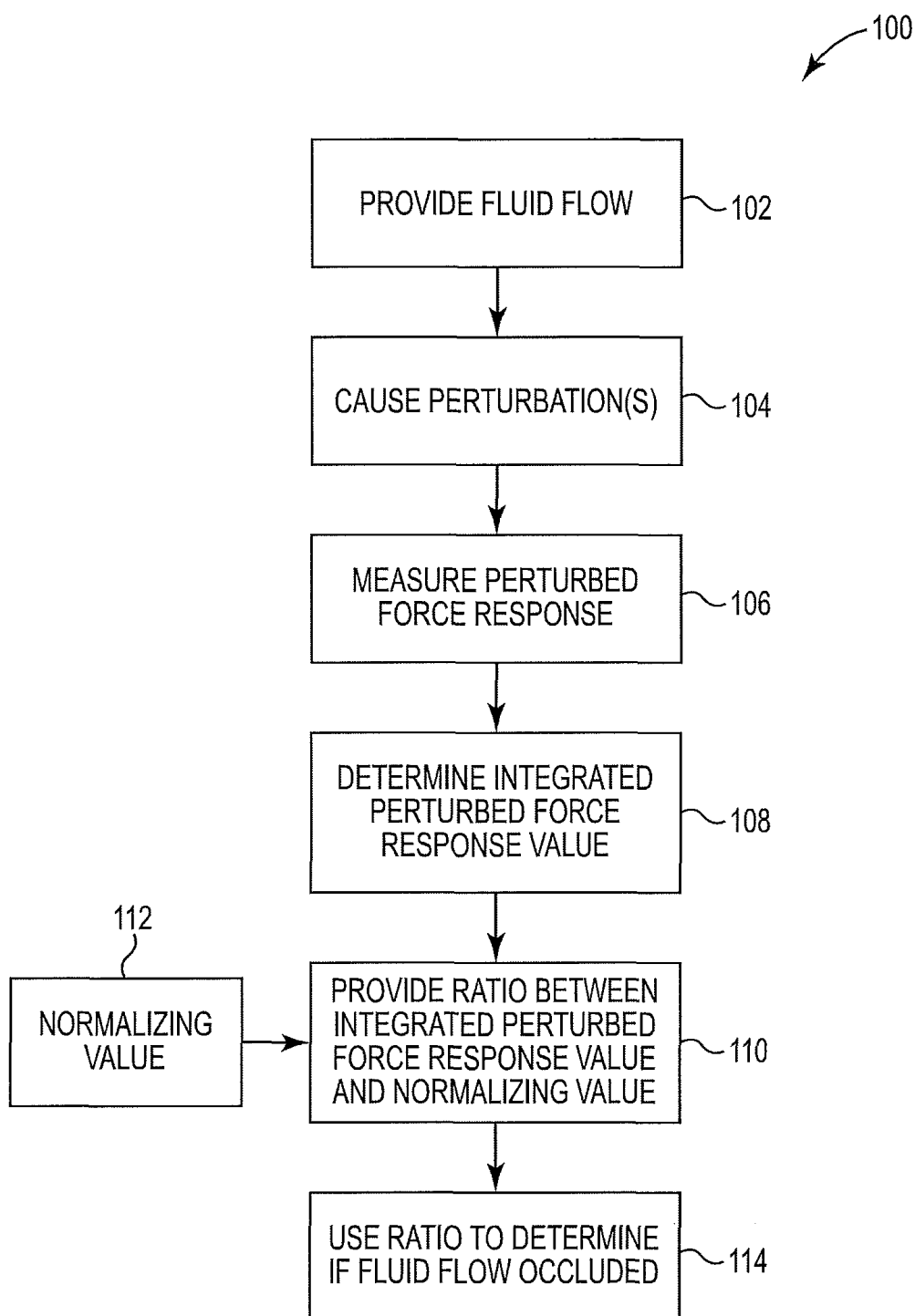
BAXTER HEALTHCARE

Family 18/20 - FAMPAT - ©Questel

Title

(EP2938371)

Occlusion detection in delivery of fluids

Images**Publication numbers with kind code & date**

ES2749187	T3	2020-03-19	ES2749187
EP2938371	B1	2019-08-28	EP2938371
US9833561	B2	2017-12-05	US9833561
CN104363938	B	2017-04-26	CN104363938B
US20150374902	A1	2015-12-31	US20150374902
EP2938371	A1	2015-11-04	EP2938371



EP2938371	A1	2015-11-04	EP2938371
CN104363938	A	2015-02-18	CN104363938
WO2014/105606	A1	2014-07-03	WO2014105606

**Abstract**

(EP2938371)

A system, method or apparatus to detect abnormalities in delivery of a fluid may include an infusion apparatus that is controllable to cause one or more perturbations in a fluid flow (e.g., each of the one or more perturbations in the fluid flow may result in a measurable perturbed force response). A force signal representative of the perturbed force response may be used to determine an integrated perturbed force response value (e.g., using integration of the force signal over a perturbation time period; the integrated perturbed force response value being representative of an additional force caused by the at least one perturbation over an equilibrium force). A ratio between the integrated perturbed force response value and a normalizing value (e.g., based at least on a maximum perturbation force of the perturbed force response) may be used to determine if fluid flow is occluded.

Inventors

CHAMBERS JOSHUA

O'MAHONY JOHN

Latest standardized assignees - inventors removed

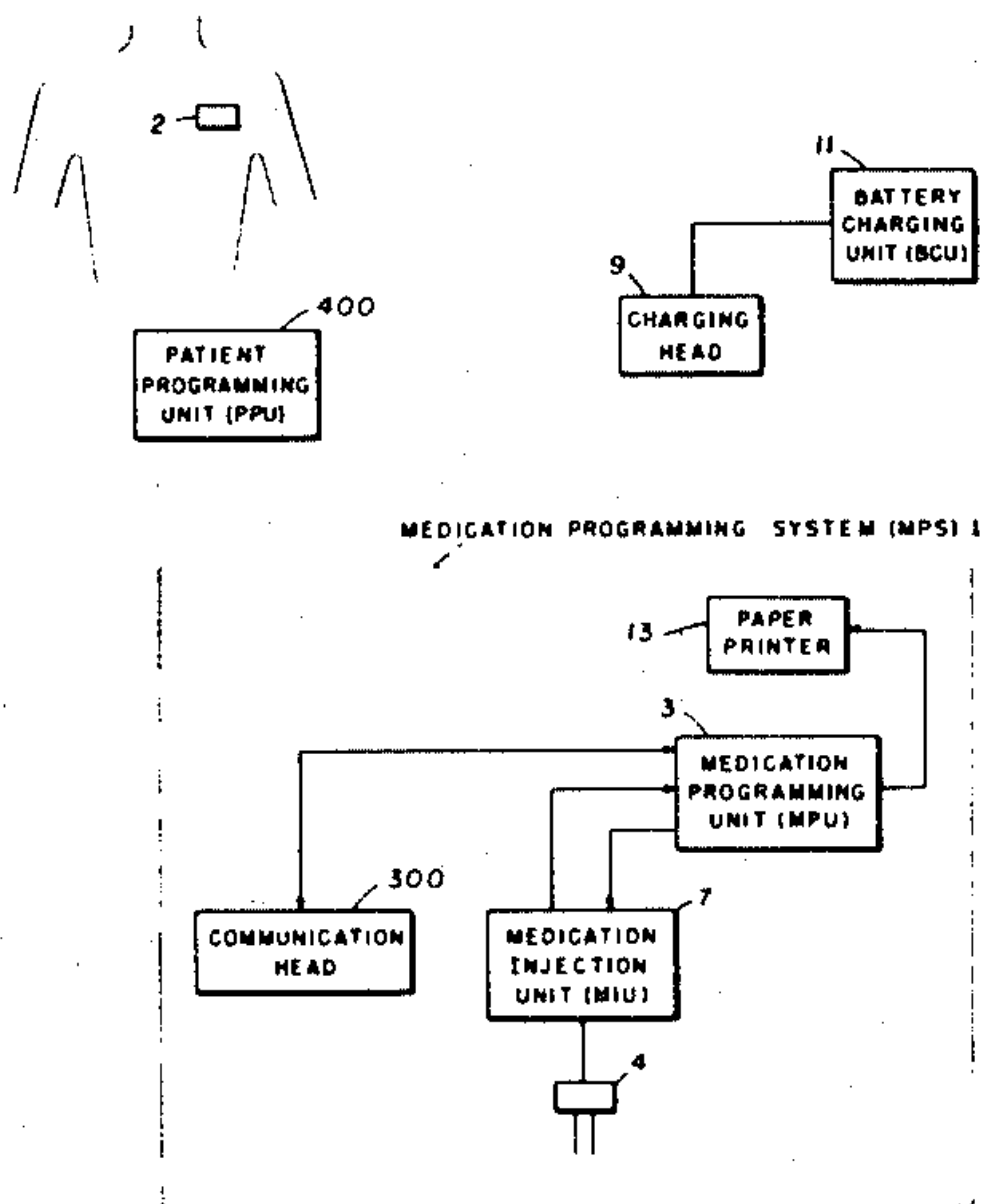
GAMBRO LUNDIA

Family 19/20 - FAMPAT - ©Questel

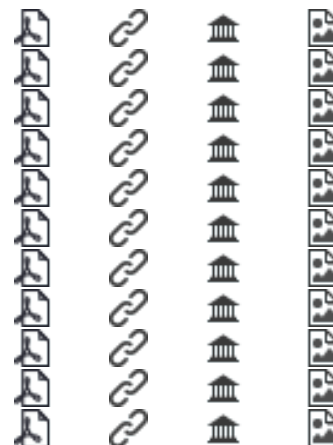
Title

(US4373527)

Implantable programmable medication infusion system

Images**Publication numbers with kind code & date**

US4373527	B1	1995-06-27	US4373527
US4731051	A	1988-03-15	US4731051
GB2132090	B	1987-08-26	GB2132090
US4619653	A	1986-10-28	US4619653
FR2537873	B1	1986-04-25	FR2537873
US4573994	A	1986-03-04	US4573994
US4525165	A	1985-06-25	US4525165
DE3247232	A1	1984-07-05	DE3247232
GB2132090	A	1984-07-04	GB2132090
FR2537873	A1	1984-06-22	FR2537873
US4373527	A	1983-02-15	US4373527



Abstract

(US4373527)

An implantable programmable medication infusion system comprises an implantable portion (2) having a medication reservoir (10) at below body pressure and isolated at its input from the body in which it is implanted by an antechamber (8) the pressure integrity of which is checked before filling the medication reservoir (10). Safety features include a leak detector (35), inlet and outlet valves (14 and 212) used with flow impeding filters (12 and 218), and a maximum allowable pressure in a pulsatile bellows pump (202) all of which prevent undesired infusion of medication. Medication flow from the pulsatile bellows pump (202) is in response to programming commands from a drug programming system (1) and processed in an electronics section (30) which uses the commands to program memory units (320 and 322) and to request pulses of medication. Hardwired limit controls (324 and 326) prevent excessive dosage requests from reaching the pulsatile bellows pump (202). For patient convenience and safety, the memory units (320 and 322) are programmed with running integral limits. A record of medication dispensing can be communicated to a physician by means of a telemetry transmitter (336) which sends signals by telemetry to the communications head (300) which information is displayed on the drug programming unit (3).

Inventors

FISCHELL ROBERT E

Latest standardized assignees - inventors removed

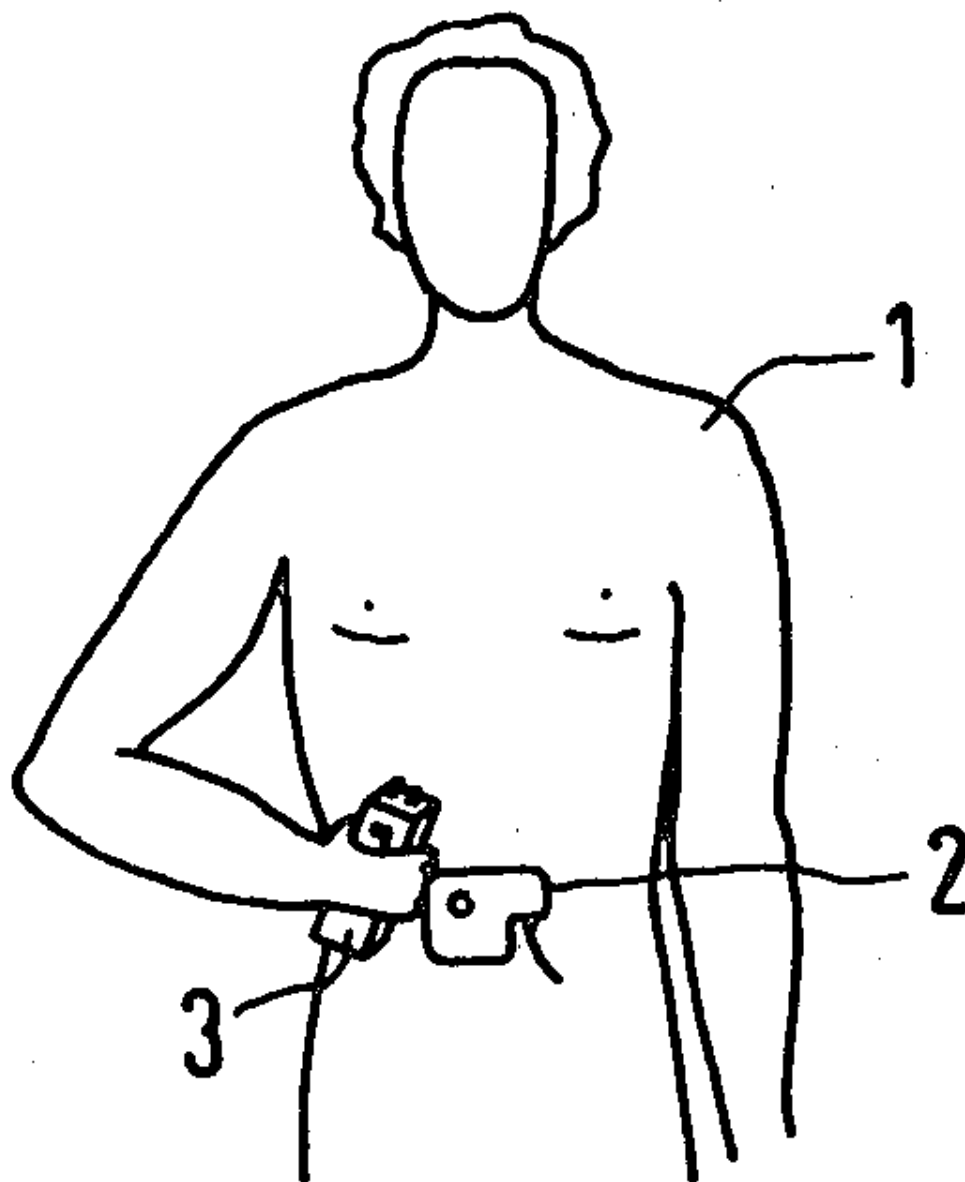
JOHNS HOPKINS UNIVERSITY

Family 20/20 - FAMPAT - ©Questel

Title

(EP--48423)

Apparatus for the infusion of liquids into the human or animal body

Images**Publication numbers with kind code & date**

JP1383678	C	1987-06-09	JP1383678
JPS6150460	B2	1986-11-04	JP86050460
US4395259	A	1983-07-26	US4395259
EP0048423	A3	1982-09-15	EP--48423
JPS5784062	A	1982-05-26	JP57084062
DE3035670	A1	1982-04-29	DE3035670
EP0048423	A2	1982-03-31	EP--48423

**Abstract**

(EP0048423)

An exemplary embodiment comprises a metering device which can be worn on the body or which is preferably implantable in the body, the metering device exhibiting a delivery unit for the dosed delivery of the fluid from a supply container to a

discharge aperture of a catheter and also exhibiting an appartaining operating circuit, and an external control and programming device. The operating circuit in the metering device and the control circuit in the control device can be inductively coupled for operational signal transmission, to which end at least one transmission coil is present in the control device and at least one reception coil is present in the metering device. Given implanted devices, it is the object of the disclosure to guarantee the highest degree of patient security. For function monitoring of operating parameters of the metering device the metering device exhibits a transmitter whose signals can be received in a receiver outside of the patient's body and, under certain conditions, can be evaluated. In addition to pure function monitoring, an acknowledgement of signals as well as an answerback of the value of one or more operating parameters is possible.

(From US4395259 A)

Inventors

PRESTELE, KARL, DIPL.-PHYS

FRANETZKI, MANFRED, DR.-ING, DIPL.-PHYS

REIF, ERICH, DIPL.-ING

Latest standardized assignees - inventors removed

SIEMENS