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Clarke, Modet & C^o COLOMBIA	ESCOBAR - URIBE ASOCIADOS Intellectual Property
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As. 2996/P

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES
E. S. D.

Ref.: Expediente No. 06-083.758
Solicitud de Patente a nombre de
ETHICON, INC.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 06-083758-00004-0000

Fecha: 2008-04-07 15:33:35 Dep: 2020 NUECREACIONE
Tra: 2 PATENTES Evt: 1 REGDEPOSITO
Act: 538 PETICION Folios: 2

Yo, **JIMENA ESCOBAR URIBE**, identificada como aparece al pie de mi firma, domiciliada en Bogotá, en la Carrera 11 No. 86-53, piso 6, obrando como apoderada de la sociedad **ETHICON, INC.**, con domicilio en Somerville, New Jersey, Estados Unidos de América, solicitante de la patente de la referencia, pido a usted que se proceda a examinar si la invención, cuya patente se tramita en el expediente de la referencia, es patentable.

Adjunto al presente memorial el recibo No. 08 – 26,866 de 3 de abril de 2008, por la suma de \$420.000.00, con lo cual queda cubierta la tasa oficial correspondiente a dicho estudio.

Señor Superintendente,


JIMENA ESCOBAR URIBE
C.C.39.779.452 de Usaquén
T.P. 68.228

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 06-083758-00004-0000

Fecha: 2008-04-07 15 33 35 Dep 2020 NUECREACIONE
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Act 538 PETICION Folios. 2

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 08 - 26,866
FECHA : ABRIL 3 DE 2008

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO DE BOGOTA	062754387	686700	03/04/2008	35,124,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	85 EXAMEN DE PATENTABILIDAD DE INVEN	420,000.00
		TOTAL :	\$ 420,000.00

SON: CUATROCIENTOS VEINTE MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

29961P

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DIVISIÓN DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 06-83758

EL EXTRACTO DE LA PRESENTE SOLICITUD DE **PATENTE DE INVENCION**

FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No **581** DE

FECHA **31 DE OCTUBRE DE 2007** EL TÉRMINO HÁBIL SEÑALADO POR LA

LEY EXPIRA EL **31 DE ENERO DE 2008**

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO X



US005858305A

United States Patent [19]

Malchesky

[11] **Patent Number:** 5,858,305[45] **Date of Patent:** Jan. 12, 1999[54] **APPARATUS AND METHOD FOR STERILIZING MEDICAL DEVICES**[75] **Inventor:** Paul S. Malchesky, Painesville Twp., Ohio 44077[73] **Assignee:** Steris Corporation, Mentor, Ohio[21] **Appl. No.:** 882,466[22] **Filed:** Jun. 25, 1997[51] **Int. Cl.⁶** A61L 2/00[52] **U.S. Cl.** 422/28; 134/93; 134/95.1; 137/268; 422/33; 422/292; 422/300[58] **Field of Search** 422/28, 33, 292, 422/300; 134/166 R, 168 C, 170, 102.2, 93, 95.1; 137/268[56] **References Cited****U.S. PATENT DOCUMENTS**

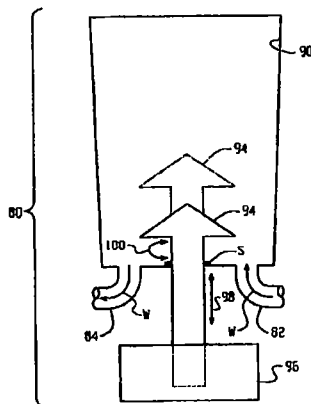
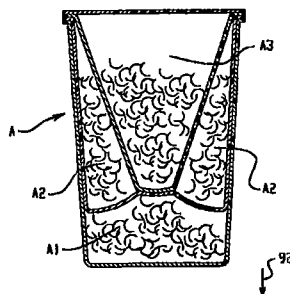
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Primary Examiner—Krisanne Thornton*Attorney, Agent, or Firm*—Fay, Sharpe, Beall, Fagan, Minnich & McKee[57] **ABSTRACT**

A decontamination apparatus for medical devices includes a decontamination basin (14a, 14b) with a selectively opened and closed cover member (16a, 16b) to provide selective access to the basin (14a, 14b). A mixing chamber assembly (80) selectively dispenses detergent concentrate and decontaminant concentrate into a liquid to form a liquid cleaning solution or a liquid decontaminant solution, respectively. A source of decontaminated rinse liquid, such as a microbe removal filter (54), is in selective fluid communication with the basin (14a, 14b). A source of anti-microbial liquid is in selective fluid communication with the microbe removal filter (54) and rinse liquid flow paths (58) between the microbe removal filter and the basin for decontaminating the filter (54) and the rinse lines (58). Each channel of a medical device (E) being decontaminated is connected to a channel flush line (30) and a channel pump (32) for flushing the channels of the device (E). A pressure sensor (42) is in communication with each flush line (30) to sense a blockage in the channels of the medical device (E). The channel pumps (32) pump liquid or decontaminated air through the device channels. A leak test system is also provided for testing the integrity of an outer sheath of a medical device (E) such as an endoscope.

20 Claims, 3 Drawing Sheets

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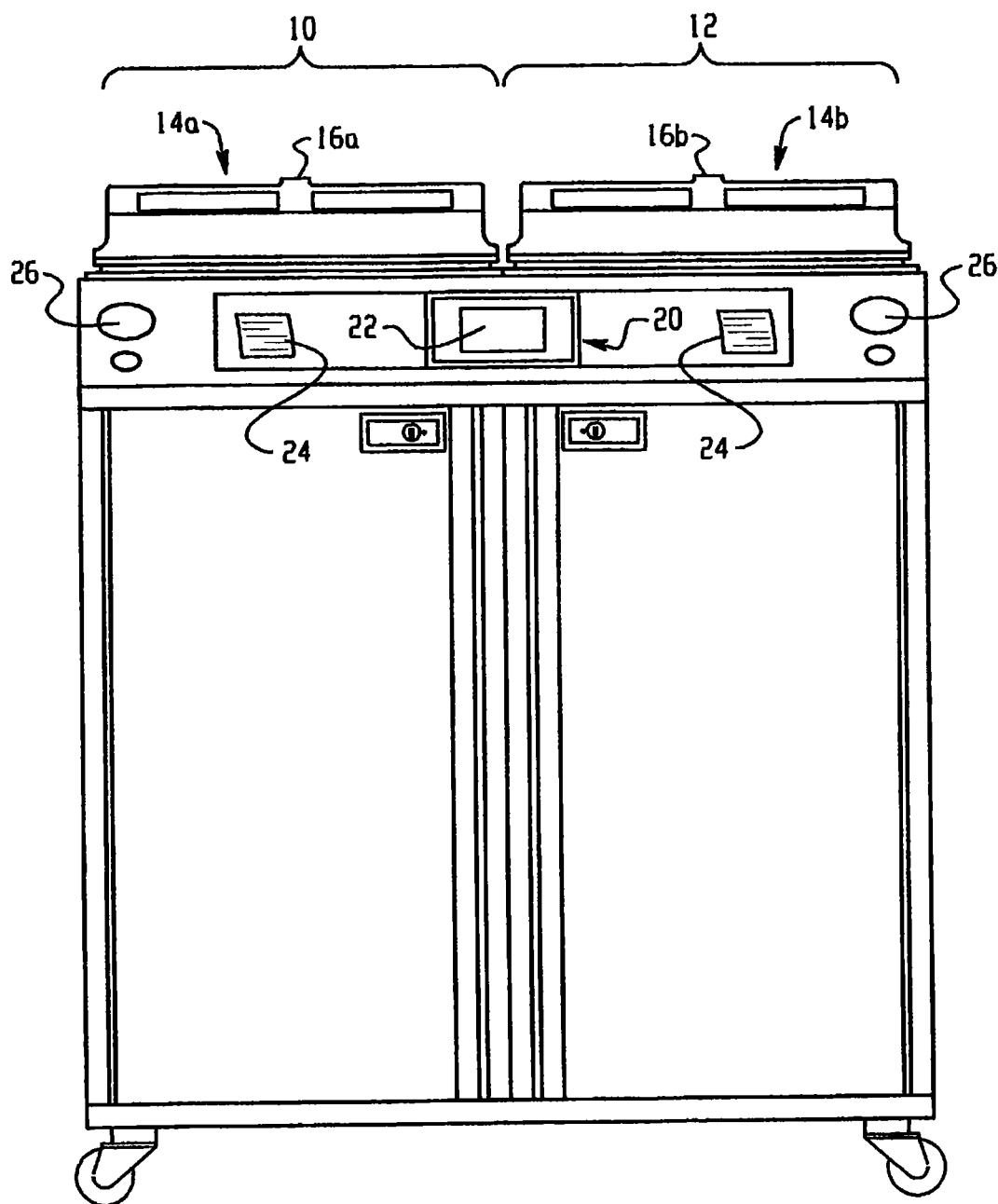


Fig. 1

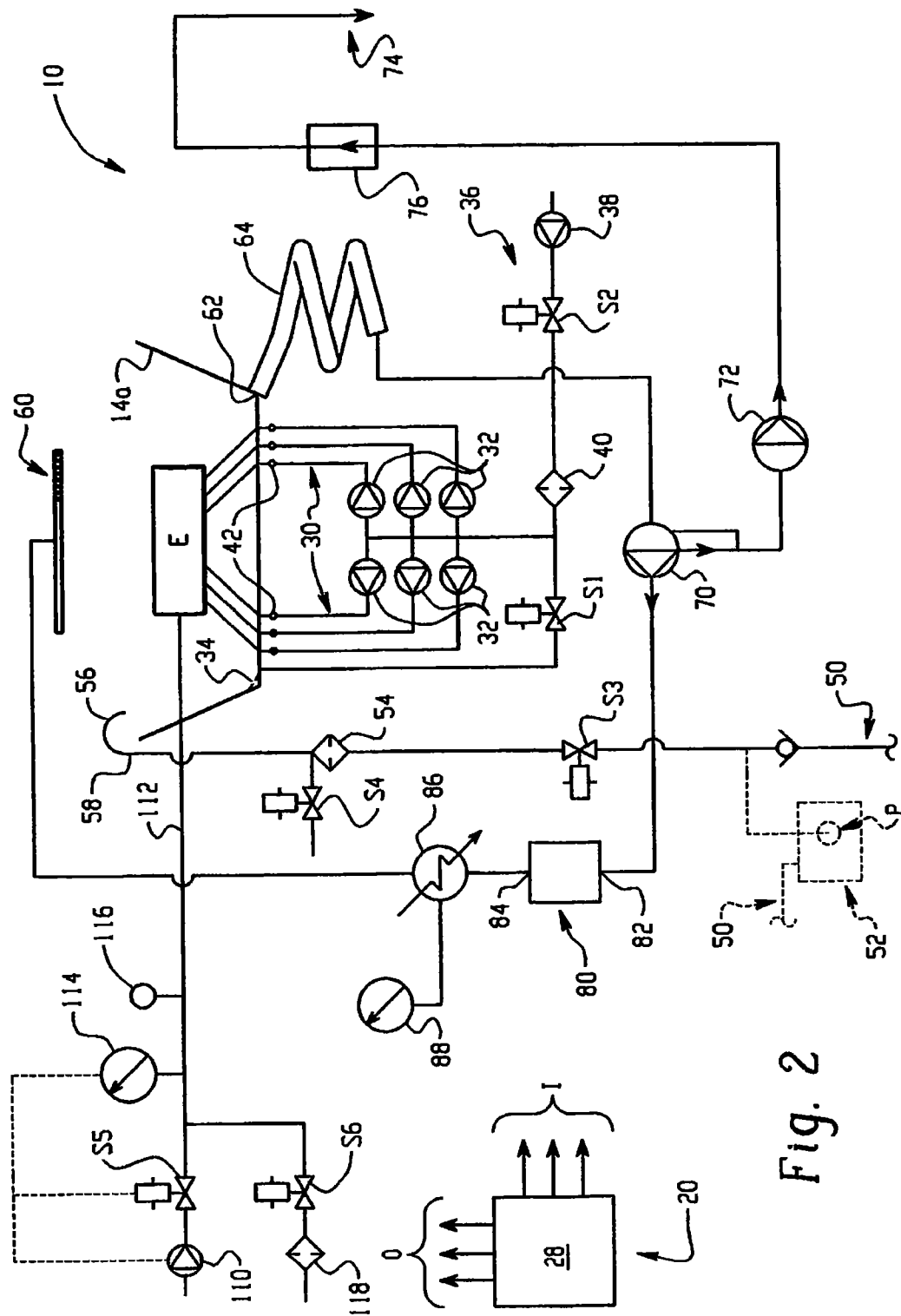


Fig. 2

APPARATUS AND METHOD FOR STERILIZING MEDICAL DEVICES

BACKGROUND OF THE INVENTION

The present invention relates to the decontamination arts including the sterilization arts. It finds particular application in conjunction with the decontamination of medical devices, especially medical devices such as endoscopes and other devices having channels or lumens that must be decontaminated after use.

Sterilization is typically defined as the absence of all life forms including bacterial endospores which are the living organisms most resistant to known sterilants. Disinfection, by distinction, only connotes the absence of pathogenic life forms. Herein, the general term, decontamination, will be used to describe both disinfection and sterilization.

Endoscopes and similar medical devices having channels or lumens formed therethrough are being used on an ever increasing basis in the performance of medical procedures. The popularity of these devices has led to calls for improvements in the decontamination of these devices between use, both in terms of the speed of the decontamination and the effectiveness of the decontamination. One drawback associated with many known endoscope decontamination devices is their reliance on reusable glutaraldehyde or the like as a liquid decontaminant solution. While glutaraldehyde is generally effective for disinfection, sterilization with glutaraldehyde can take 10 to 12 hours which is too long in today's healthcare facilities. Another drawback to glutaraldehyde systems is that they sterilize without cleaning, i.e., they leave sterile biological waste matter on the medical instruments.

Another drawback associated with many known decontamination devices is their lack of a decontaminated rinse liquid. Many known decontamination devices are concerned only with cleaning and disinfecting the devices and consequently rely on unfiltered "tap" water for rinsing. Even those that filter or otherwise decontaminate the rinse liquid often do not decontaminate the rinse liquid flow paths between the source of rinse liquid and the decontamination basin under the incorrect assumption that these apparently closed rinse liquid flow paths cannot become contaminated. Thus, with these devices, it is possible for microorganisms to be reintroduced onto the medical device from the rinse liquid. One known endoscope sterilizer does provide a sterile rinse and rinse liquid flow path (STERIS SYSTEM 1®, STERIS Corporation, Mentor, Ohio). However, it would be desirable to include additional features in conjunction with the sterile rinse and sterile rinse flow paths of this unit.

Prior medical instrument decontamination devices do not include a simple and effective means for accurately delivering a select charge of both detergent concentrate and decontaminant concentrate as needed to form a cleaning solution and a decontamination solution, respectively. Instead, many prior devices rely upon a large tank to hold a reusable decontaminant such as glutaraldehyde and rely upon tank of detergent that must be refilled. The need to refill these tanks periodically decreases efficiency and also puts an operator in contact with decontaminant and detergent liquid and vapors. Further, glutaraldehyde is an environmentally hazardous material that needs to be chemically deactivated. Disposal or reprocessing of diluted or contaminated glutaraldehyde is inconvenient and costly.

Furthermore, with these systems, it is possible for the detergent tank or the decontaminant tank to run dry without the knowledge of the machine operator. Also, it is not always

possible to verify that the detergent or decontaminant has actually been properly and accurately dispensed into the decontamination basin. It would be desirable to provide a decontamination apparatus that simply and accurately dispenses a select dose of detergent concentrate and decontaminant concentrate as needed, without requiring tanks to be refilled and without exposing an operator to detergents and decontaminants. It would also be desirable to provide such a system which reduces the possibility that an incorrect amount of detergent or decontaminant will be dispensed.

The present application is therefore directed to a method and apparatus which overcomes these problems and others while providing better overall decontamination results and efficiency.

SUMMARY OF THE INVENTION

In accordance with one aspect of the present invention, a decontamination apparatus for medical devices is provided. The apparatus includes a decontamination basin with a selectively opened and closed cover member to provide access to the basin. A mixing chamber selectively dispenses detergent concentrate and decontaminant concentrate into a liquid to form a liquid cleaning solution or a liquid decontaminant solution, respectively. A source of decontaminated rinse liquid, such as produced by membrane filtration of microbes, is also provided. Rinse liquid flow paths are located between the microbe removal filter and the basin for supplying decontaminated rinse liquid to the basin. A pump is in fluid communication with the basin such that the liquid decontaminant solution is selectively circulated to the microbe removal filter and rinse liquid flow paths between the microbe removal filter and the basin for decontaminating the filter and the rinse liquid flow paths.

In accordance with another aspect of the present invention, a method of decontaminating a medical device includes positioning the medical device in a basin and circulating a liquid cleaning solution onto the medical device and through channels in the medical device for a select duration to remove residue from the device. An anti-microbial liquid is circulated onto the medical device and through channels in the medical device for a select duration to decontaminate the exterior surfaces and the channels of the device. The anti-microbial liquid is also circulated through rinse liquid pathways to decontaminate the pathways. A decontaminated rinse liquid is supplied onto the medical device and through channels in the medical device. The decontaminated rinse liquid contacts only previously decontaminated pathways.

In accordance with a further aspect of the present invention, an apparatus for sterilizing medical devices includes a decontamination basin for receiving a non-sterile medical device and a plurality of pumps each having an inlet in selective fluid communication with the basin and an outlet for connection with a channel of the medical device such that the liquid from the basin is pumped through the channels of the medical device. A source of sterile air is in selective fluid communication with each pump inlet for pumping sterile air through the medical device channels. At least one spray nozzle is positioned in the basin to spray liquid onto the medical device in the basin and a recirculation pump has an inlet in fluid communication with the basin and an outlet in fluid communication with the at least one spray nozzle for circulating liquid through the basin. A mixing chamber sequentially dispenses (i) a detergent concentrate and, thereafter (ii) a sterilant concentrate into liquid passing through the mixing chamber. A source of sterile

rinse liquid includes a microbe removal filter and rinse liquid pathways. The microbe removal filter and rinse liquid pathways are in selective fluid communication with the recirculation pump for communicating liquid sterilant from the basin into the microbe removal filter and through the rinse liquid pathways to sterilize the filter and the pathways.

In accordance with another aspect of the invention, a method of sterilizing the exterior surfaces and interior channels of a medical device includes placing a non-sterile medical device into a basin and mixing detergent concentrate with water to form a cleaning solution. The cleaning solution is circulated over the exterior surfaces and through the internal channels of the medical device in the basin and then drained from the basin. Rinse liquid is circulated over the exterior surfaces and through the internal channels of the medical device in the basin and then drained from the basin. The internal channels of the medical device are flushed with air to remove residual liquid from the channels. Sterilant concentrate is mixed with water to form a liquid sterilant which is circulated over the exterior surfaces and through the internal channels of the medical device in the basin. The liquid sterilant is also circulated into a rinse water microbe removal filter and through rinse liquid pathways between the microbe removal filter and the basin. The liquid sterilant is drained from the basin. Rinse water is passed through the microbe removal filter to sterilize the rinse water. The sterile rinse water is communicated through only previously sterilized rinse liquid pathways onto the medical device in the basin and is circulated over the exterior surfaces and through the internal channels of the medical device in the basin. The sterile rinse water is then drained from the basin.

One advantage of the present invention is that it provides an improved decontamination apparatus and method.

Another advantage of the present invention is that it provides for accurately and conveniently dispensing detergent and decontaminant concentrate ingredients into a liquid to form a cleaning solution or a decontamination solution.

Still another advantage of the present invention resides in the use of a single-use decontaminant.

A further advantage of the present invention is that it provides a decontaminated rinse liquid and decontaminated rinse liquid flow paths for communicating the decontaminated rinse liquid onto and through the channels of the decontaminated medical device.

A further advantage of the present invention resides in its provision of a leak test system for testing the integrity of a sheath or housing forming a part of an endoscope or other device being decontaminated.

A further advantage of the present invention is that it allows each interior flow channel of a medical device to be individually flushed with liquid or decontaminated air and that each interior channel of the medical device can be monitored for blockage.

Yet another advantage of the present invention is the provision of a "break tank" water supply system for isolating the apparatus from a utility or "tap" water supply system.

Still further advantages of the present invention will become apparent to those of ordinary skill in the art upon their reading and understanding of the following specification of the preferred embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention may take form in various components and arrangements of components and in various steps and arrangements of steps. The drawings are for purposes of

illustrating preferred embodiments only, and are not to be construed as limiting the invention.

FIG. 1 is a front elevational view of a decontamination apparatus in accordance with the present invention;

FIG. 2 is a diagrammatic illustration of the decontamination apparatus shown in FIG. 1, with only a single decontamination basin shown for clarity; and,

FIG. 3 is an exploded view of a detergent and decontaminant concentrate delivery system in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a decontamination apparatus for decontaminating endoscopes and other medical devices which include channels or lumens formed therethrough. The decontamination apparatus generally includes a first station 10 and a second station 12 which are at least substantially similar in all respects to provide for the decontamination of two different medical devices simultaneously or in series. First and second decontamination basins 14a, 14b receive the contaminated devices. Each basin 14a, 14b is selectively sealed by a lid 16a, 16b, respectively, preferably in a microbe-blocking relationship to prevent the entrance of environmental microbes into the basins 14a, 14b during decontamination operations. The lids can include a microbe removal or HEPA air filter formed therein for venting.

A control system 20 includes one or more microcontrollers, such as a programmable logic controller (PLC), for controlling decontamination and user interface operations. Although one control system is shown herein as controlling both decontamination stations 10, 12, those skilled in the art will recognize that each station 10, 12 can include a dedicated control system. A visual display 22 displays decontamination parameters and machine conditions for an operator and at least one printer 24 prints a hard copy output of the decontamination parameters for a record to be filed or attached to the decontaminated device or its storage packaging. The visual display 22 is preferably combined with a touch screen input device. Alternatively, a keypad or the like is provided for input of decontamination process parameters and for machine control. Other visual gauges 26 such as pressure meters and the like provide digital or analog output of decontamination or medical device leak testing data.

FIG. 2 diagrammatically illustrates one station 10 of the decontamination apparatus. Those skilled in the art will recognize that the decontamination station 12 is preferably similar in all respects to the station 10 illustrated in FIG. 2. However, the station 12 has not been shown in FIG. 2 for clarity. Further, the decontamination apparatus can be provided with a single decontamination station or multiple stations.

The decontamination basin 14a receives an endoscope E or other medical device therein for decontamination. Any internal channels of the medical device E are connected with flush lines 30. Each flush line 30 is connected to an outlet of a pump 32. The pumps 32 are preferably peristaltic pumps or the like that pump fluid, such as liquid and air, through the flush lines 30 and any internal channels of the medical device E. Specifically, the pumps 32 can either draw liquid from the basin 14a through a drain 34 and a first valve S1, or can draw decontaminated air from an air supply system 36 through a valve S2. The air supply system 36 includes a pump 38 and a microbe removal air filter 40 that filters microbes from an incoming air stream. It is preferable that

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each flush line 30 be provided with a dedicated pump 32 to ensure adequate fluid pressure and to facilitate the individual monitoring of the fluid pressure in each flush line 30. A pressure switch or sensor 42 is in fluid communication with each flush line 30 for sensing excessive pressure in the flush line. Any excessive pressure sensed is indicative of a partial or complete blockage, e.g., by bodily tissue or dried bodily fluids, in a device channel to which the relevant flush line 30 is connected. The isolation of each flush line 30 relative to the others allows the particular blocked channel to be easily identified and isolated, depending upon which sensor 42 senses excessive pressure.

The basin 14a is in fluid communication with a water source 50 such as a utility or "tap" water connection. A pump is optionally provided to boost the pressure of the water from the utility water connection 50. Alternatively, a "break tank" 52 and an associated pump P provide a source a water which is isolated from the utility connection 50 as is required in certain applications. A valve S3 selectively blocks the flow of utility water into the basin 14a from the source 50. A microbe removal filter 54, such as a 0.2 μ m or smaller absolute pore size filter, decontaminates the incoming water which is delivered into the basin through a faucet fixture 56 or the like. A valve S4 selectively allows the decontaminated water to flow through a rotating spray nozzle assembly 60 to spray decontaminated rinse water into the basin 14a and onto the medical device E. The condition of the filter 54 can be monitored by directly monitoring the flow rate of water therethrough or indirectly by monitoring the basin fill time using a float switch or the like. When the flow rate drops below a select threshold, this indicates a partially clogged filter element that requires replacement.

A basin drain 62 drains liquid from the basin 14a. The drain 62 can include an enlarged helical tube 64 into which elongated portions of the medical device E can be inserted if needed to ensure that the device can be accommodated, in the basin 14a. The drain 62 is in fluid communication with a recirculation pump 70 and a drain pump 72. The recirculation pump 70 recirculates liquid from the basin drain 62 to the spray nozzle assembly 60 or otherwise back to the basin to contact the medical device E. The drain pump 72 pumps liquid from the basin drain 62 to a utility drain 74. A flow switch 76 monitors the flow of liquid from the pump 72 to the utility drain 74. The pumps 70,72 can be simultaneously operated such that liquid is sprayed into the basin 14a while it is being drained to encourage the flow of residue out of the basin and off of the device. Likewise, the valves S3 and S4 can be opened while the pump 72 operates to spray decontaminated rinse water into the basin 14a and onto the medical device E during draining operations to provide a better draining of decontaminant or cleaning fluid residue. Of course, a single pump and a valve assembly could replace the dual pumps 70,72.

A mixing chamber assembly 80 includes an inlet 82 in fluid communication with an outlet of the recirculation pump 70. An outlet 84 of the mixing chamber assembly 80 communicates with the spray nozzle assembly 60 through a heating element 86 which selectively heats liquid passing therethrough. A pressure switch or sensor 88 monitors the fluid pressure between the mixing chamber assembly 80 and the spray nozzle assembly 60.

With reference now also to FIG. 3, the mixing chamber assembly 80 includes an ampule receiving chamber 90 that receives an ampule A or an equivalent container. The chamber 90 is preferably positioned for easy operator access in the top surface of the basin 14a and a means is provided for securing an ampule A in the chamber 90. For example, if the

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chamber 90 is formed in the top surface of the basin 14a, an inner surface of the lid 16a can be utilized to secure an ampule in the chamber 90 when the lid 16a is closed.

The ampule A includes a first interior compartment A1 which contains a detergent concentrate in liquid or dry form. The ampule A also includes second and third interior compartments A2, A3 which contain liquid or dry decontaminant concentrate ingredients. The ampule A is made from a frangible material such as plastic and includes a vented foil, paper, or plastic lid to seal its contents while permitting outgassing. Analogously, releasable panels or other closures can separate and provide selective access to the compartments.

As is indicated by the arrow 92, the ampule A is inserted into the chamber 90. A lance 94 or the like protrudes into the chamber 90 and opens, e.g., pierces, a wall of the first ampule compartment A1 when the ampule is inserted into the chamber 90. In this manner, any water or other liquid flowing through the chamber 90 (indicated by the arrows W) mixes with the detergent concentrate in the compartment A1 to form a liquid cleaning solution. The cleaning solution is optionally heated by the element 86 and is communicated into the decontamination basin 14a through the spray nozzle assembly 60. The liquid cleaning solution is recirculated with the pump 70 through the spray nozzle assembly 60 to clean the exterior of the device E and is recirculated with the pumps 32 to clean any internal channels of the device E. After cleaning, the pump 72 removes the detergent and water mixture. Sterile rinse water sterilized by the filter 54 flushes the detergent and any contaminants resulting from washing operations out of the system. At this point, the pumps 32 are optionally activated along with the opening of the valve S2 and the operation of the air pump 38 to flush sterile air through all channels of the medical device E. This "air rinse" is useful for removing residual sterile water from the channels of the medical device which could undesirably dilute any sterilant subsequently passed through the channels.

In a like manner, the mixing chamber assembly 80 subsequently accesses the second and third interior compartments A2, A3 to introduce decontaminant concentrate ingredients into water, received through the filter 54, in the chamber 90 where the ingredients mix with each other and the water to form liquid decontaminant. A preferred decontamination concentrate is a peracetic acid sterilant concentrate described in U.S. Pat. No. 5,077,008, which is expressly incorporated by reference herein. However, any other suitable decontaminant concentrate can be utilized. The mixing chamber assembly 80 selectively accesses the compartments A2, A3 by advancing the lance 94 further into the chamber 90 (as shown in phantom) to pierce a wall of the compartments A2, A3. An actuator 96, such as one or more solenoids, fluid cylinders, or the like, selectively advances and retracts the lance 94 as indicated by the arrow 98 and optionally rotates the lance 94 as indicated by the arrow 100 to pierce or otherwise access the compartments A2, A3. The decontaminant concentrate in the compartments A2, A3 mixes with clear rinse water or other liquid in the chamber 90 to form a decontaminant solution such as liquid peracetic acid. A seal S prevents liquid flow between the outer surface of the lance and the chamber 90.

Each time decontaminant concentrate is mixed with water or other liquid in the chamber 90 to form the liquid decontaminant, the valve S4 is preferably opened (while the valve S3 remains closed), at least for a select duration, so that liquid decontaminant flows into the microbe removal water filter 54 and the conduit 58 decontaminating the rinse



US006297505B1

(12) **United States Patent**
Frandsen et al.

(10) **Patent No.:** **US 6,297,505 B1**
(45) **Date of Patent:** **Oct. 2, 2001**

(54) **METHOD AND FLOW SYSTEM FOR SPECTROMETRY AND A CUVETTE FOR THE FLOW SYSTEM**

4070/83 9/1982 (DK) .
0012492B1 6/1980 (EP) .

(List continued on next page.)

(75) **Inventors:** **Andreas Skærlund Frandsen,**
Slangerup; Søren Christian Pedersen,
Hillerød; Carsten Ridder, Brønshøj;
Henrik Thomsen, Hillerød, all of (DK)

(73) **Assignee:** **Foss Electric A/S, Hillerød (DK)**

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **09/297,331**

(22) **PCT Filed:** **Oct. 31, 1997**

(86) **PCT No.:** **PCT/DK97/00492**

§ 371 Date: **Apr. 30, 1999**

§ 102(e) Date: **Apr. 30, 1999**

(87) **PCT Pub. No.:** **WO98/20338**

PCT Pub. Date: May 14, 1998

(30) **Foreign Application Priority Data**

Nov. 1, 1996 (DK) 1221196

(51) **Int. Cl.⁷** **G01N 21/01**

(52) **U.S. Cl.** **250/339.12; 250/436**

(58) **Field of Search** **250/339.12, 436**

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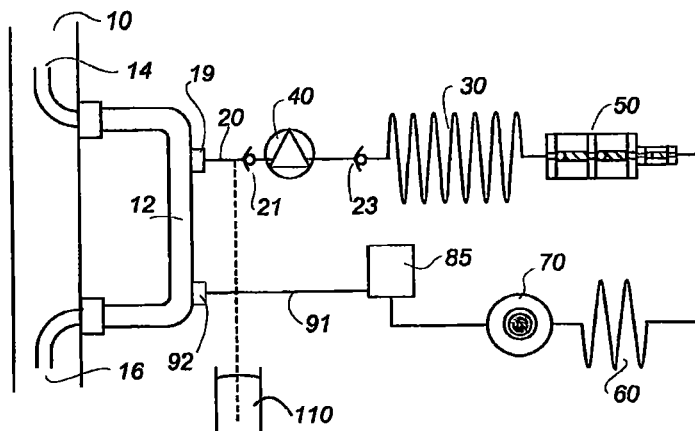
Primary Examiner—Constantine Hannaher

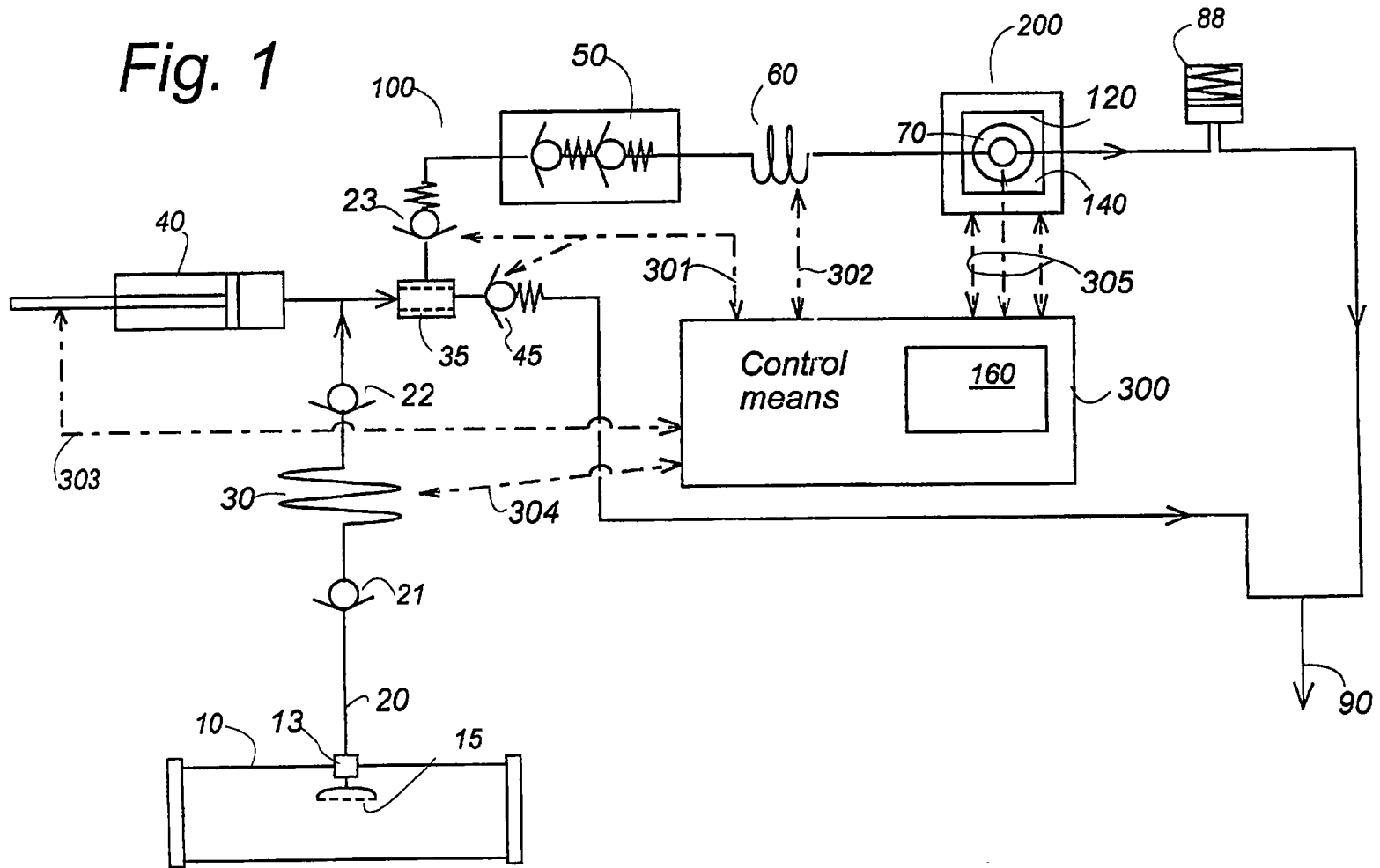
Assistant Examiner—Andrew Israel

(57) **ABSTRACT**

The present invention relates to an on-line method and a flow system as well as a cuvette for carrying out IR spectrometry for analysis of liquid food products, possibly containing dissolved gases, in a process line in a liquid food product processing plant, especially a dairy processing milk and milk products. A liquid sample is extracted from the process line to a measuring branch, the sample is thermostated and passed to a measurement cuvette. The IR-absorbance spectrum is measured, e.g. in the MID-IR or NIR-range. In order to obtain an on-line monitoring of the process line the liquid food sample is extracted directly from the process line into the measurement branch, in which the pressure is maintaining at least as high as in the adjacent process line. The high pressure ensures that dissolved air will stay dissolved in the liquid food. Before each new sample the measurement branch and cuvette are flushed by high flow rates with a part of the new sample to clean the cuvette. The measurement cuvette has strong windows, preferably diamond windows to stand a high pressure and high flow rates. The on-line system is arranged to carry out eg. 120 measurements per hour.

33 Claims, 7 Drawing Sheets





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Fig. 2

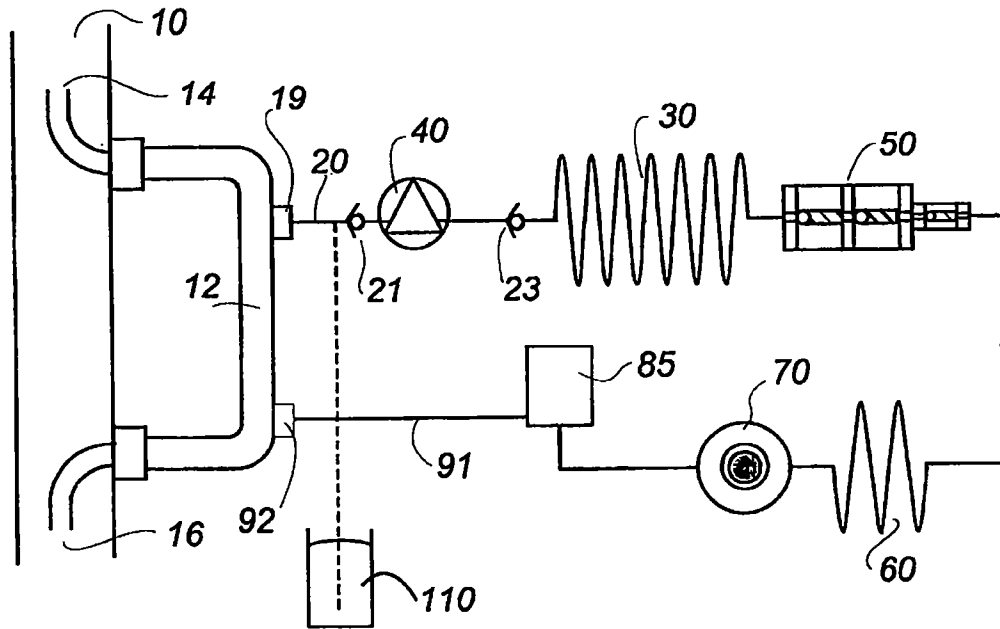
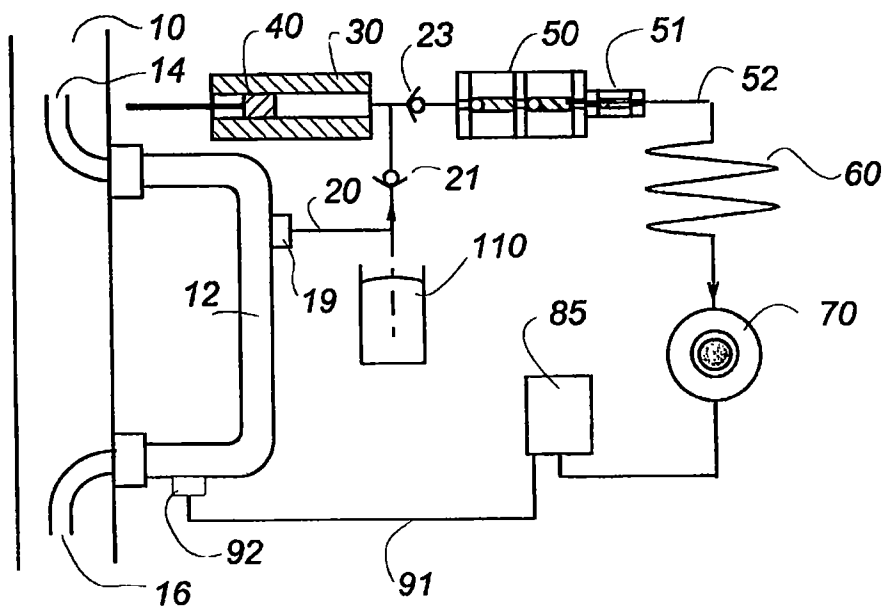


Fig. 3



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METHOD AND FLOW SYSTEM FOR SPECTROMETRY AND A CUVETTE FOR THE FLOW SYSTEM

This application is the national phase under 35 U.S.C. §371 of PCT International Application No. PCT/DK97/00492 which has an International filing date of Oct. 31, 1997 which designated the United States of America.

TECHNICAL FIELD

The present invention relates to a method and a flow system for carrying out spectrometry for analysis of a liquid food product, possibly containing dissolved gases, in a process line in a liquid food product processing plant, especially milk and milk products in a dairy, and comprising the following steps: 1) providing a liquid food sample from the process line to a measuring branch, 2) thermostating the liquid food sample, 3) passing the thermostated liquid food sample to a sample cuvette, 4) measuring at least part of the absorbance spectrum of the liquid food sample in the sample cuvette. The invention also relates to a measurement cuvette for the flow system. The present invention is specifically intended for IR-measurements, e.g. MID-IR and/or NIR-measurements for a determination of the quantities of specified components in the liquid food product.

BACKGROUND ART

A presently used method includes providing a milk sample from the process plant in an open sample container or cup from which dissolved gases may escape, passing part of the degassed milk sample from the container through a measurement branch into a measurement cuvette, performing the test and passing the tested milk sample to a waste outlet.

The presently used test instrument includes generally a flow system, an IR spectrophotometer, and a computer comprising a PC with hard-disc, floppy disc drive, monitor and keyboard.

Instead of the above mentioned method it would be preferable to perform the test on-line and in-line in the process plant, and preferably in such a way that it also would be possible to let the tested milk sample be returned into the process line, to avoid the waste.

U.S. Pat. No. 5,137,738 discloses a system and a method for controlling the butterfat content of milk. The entire product stream is monitored continuously by the use of optical density sensors. The preferred sensors have stainless steel bodies and housings with Pyrex windows and mount directly on the product output lines and operate at full flow and pressure. U.S. Pat. No. 4,144,804 discloses a photoelectric monitoring system for continuously measuring the butterfat content of a sample of homogenized milk as the latter flows continuously through the processing system under the pressure of the homogenizer in the system. The known on-line sensors for milk products do not apply spectrometric analysis of the content. On-line spectrum measurement for determining a property of a product is known, e.g. as described in U.S. Pat. No. 5,452,232 for a hydrocarbon product. GB-A-2 104 681 describes an apparatus for the continuous investigation of chemical reactions by infrared absorption by use of an IR spectrophotometer having a through flow cell through which flows a continuous sample stream branched off from the reaction container. U.S. Pat. No. 4,910,403 describes a flow cell utilized on-line in the analysis of molten polymer. The flow cell includes diamond windows for passing mid to far infrared radiation through the molten polymer flowing through the flow cell.

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Testing milk in-line in a process plant in a dairy presents several problems. One problem is due to dissolved air, which is normally present in the raw milk. If air bubbles are released and enter the measuring cuvette, the measurement result will obviously not show a correct analysis of the milk product itself. A further problem is that milk includes several components and specifically the fat globules can give reason to failures. According to the known art the temperature of the milk sample should be raised to about 35–42° C., and preferably homogenized to make reliable, reproducible measurements possible in an IR cuvette. Obviously, the milk in the process plant is generally kept at a low temperature to avoid the milk to be spoiled by some unwanted reactions, such as growing bacteria's.

A further problem is that thin layers of milk tend to adhere to the IR-windows of the cuvette. The measurements may be seriously deteriorated due to such milk coatings. Therefore, an IR cuvette needs regular thorough cleaning.

An in-line and on-line system must be able to measure reliably and normally without needing any regular calibrations and adjusting. Spectrometric measurements require the utmost stability of the components of the optical system. It is very important that the cuvette is extremely stable and not liable to suffer from wear. In fact the cuvette is highly exposed to wear as the liquid product and rinsing and cleaning solutions pass through the cuvette under high pressure and flow rates.

It has therefore until now not been possible to perform the desired testing procedures on milk in an in-line system. To the applicants best knowledge there does not on the market exist any reliable apparatus able to perform accurate and reliable in-line determinations of the quantities of the components in raw milk or in a milk product, e.g. fat, protein, lactose, urea and casein.

SUMMARY OF THE INVENTION

According to the invention the method as defined in the preamble comprises extracting the liquid food sample directly from the process line into the measuring branch, providing and maintaining a pressure that is at least as high as the pressure in the said process line, and before each measurement flushing the cuvette with part of the recently (latest) extracted liquid food sample, further having provided that the cuvette having windows of a pressure and wear resistant material, being especially resistant to mechanical and chemical influences of the kind appearing in dairies. The flushing is performed under a pressure of from 100–200 bars, preferably from 110–150 bars across the cuvette, so the flushing rate will be high enough to ensure a thorough removal of the old sample including a cleaning of the cuvette.

The high pressure ensures that dissolved air will stay dissolved in the liquid food. The pressure and wear resistant materials, preferably diamond windows, allow the cuvette to stand high pressures and high flow rates. Other window materials might break or move causing the cuvette to widen and to thereby causing the IR transmission loss through the cuvette to raise, thereby influencing the measurement result. Accordingly the pressure in the measurement branch should preferably be kept high, at least as high as the pressure in the process line at the location on which the sample is extracted, and during measurements the pressure shall be kept constant in the cuvette. Preferably, the pressure in the measuring branch exceeds the pressure in the process plant to ensure that dissolved air stays dissolved in the liquid food.

The method is specifically fitted for liquid food products such as raw milk or processed milk and other dairy products.

In one embodiment the measuring branch forms a closed system together with the process line. This means that the measuring branch only receives liquids flowing in the process conduit to which the measuring branch is connected.

Preferably, a regular (e.g. daily) cleaning of the measuring branch including the cuvette is performed when the dairy plant is subjected to the regular cleaning process and/or by flushing the branch with the same cleaning solutions used for cleaning the dairy plant. In an advantageous embodiment of the present invention at least one of the cleaning or rinsing liquids of the dairy may be used in the measuring branch for an adjustment, such as a standardization based on characteristics in the measured spectrum or spectra of the cleaning or rinsing liquids, especially characteristics originating from the appearance of ions belonging to the group comprising NO_3^- ions and PO_4^{3-} . (By "standardization" is meant an adjustment of the instrument, (e.g. performed in the instrument software) made in order to make a plurality of spectrum measuring instruments performing in the same way so that copies of the same calibration software can be used on all the instruments and whereby all instruments will provide the same result when measuring the same sample.)

Preferably, the spectrometry is performed in the IR spectral range, e.g. in the MID-IR and/or the NIR spectral range, these ranges being specifically favourable for the analysis of milk.

In an advantageous method the liquid food sample is thermostated while it is maintained inside the cylinder of a single stroke pump whereby a separate preheater possibly can be dispensed with. A homogenizer may be included in the measuring branch. A thorough homogenization is preferred in order to obtain a representative sample inside the very thin cuvette. If the measurement system is located at a position in a dairy where the milk product passing the sample intake always is adequately homogenized, a further homogenizing can be deleted, and the measurement branch may be set up without homogenizer. As it will appear clearly from the detailed description the method according to the invention allow about 120 on-line IR spectrometry measurements per hour.

The present invention further provides a flow system for extraction of a sample stream from a liquid food processing plant such as a dairy processing milk and milk products, and for carrying out the method according to claim 1. According to the invention the flow system is directly connected to the liquid food processing plant, the flow system including a measurement cuvette for spectrometric measurements for determination of the quantities of the known components in a liquid food product in a liquid food processing plant, and the flow system comprises pump means and back pressure valve means to maintain a predetermined pressure inside the cuvette, said pressure being at least as high as the pressure in the process plant, and the cuvette having windows of a material, which is resistant to pressure and wear and especially to mechanical and chemical influences of the kind appearing in a dairy. Preferably, the measurement cuvette has diamond windows, as diamond is an extremely wear and pressure resistant material.

Preferably the liquid food sample is extracted from the process line by a pump providing a high flow rate in the measuring branch, said flow rate inside the cuvette at least for a short period exceeding 5 m/s, preferably exceeding 20 m/s and more preferably reaching about 25-30 m/s, to flush the measuring branch and specifically the cuvette to avoid the building up of a coating of liquid food on the IR-windows. In a preferred embodiment the pump means is

a single stroke pump. The single stroke pump is specifically advantageous in that the suction stroke can be slow in order to avoid cavitation when sucking in a new sample, still allowing a fast pump stroke in order to provide the high flow rate of the sample when the cuvette is flushed with a new sample in order to remove all rests or remnants from the former sample.

The present invention further provides a measurement cuvette for a flow system according to claim 7, the cuvette comprising: a first and a second steel member enclosing an IR measurement chamber between two IR windows, the first steel member having boreholes for inlet and outlet of a liquid flow to and from the IR measurement chamber, one of the steel members having an opening for arrangement of an optical detector, the other member having an opening provided for an IR-light beam coming from an IR-source, each opening being sealingly dosed by a diamond disc, forming one of the windows, and the two steel members with diamond windows being tightly secured to each other by fastening means. Thereby a stable, wear resistant cuvette is provided. This cuvette is well fitted for a flow system and measurement system wherein regular calibrations and adjustments can be dispensed with. spacer being tightly secured to each other by fastening means. Thereby a stable, wear resistant cuvette is provided. This cuvette is well fitted for a flow system and measurement system wherein regular calibrations and adjustments can be dispensed with. The spacer defines the correct distance (path length) between the windows. The spacer supports and stabilizes the windows, when the chamber is flushed and filled with the liquid food. Preferably the opening in the spacer defining the light penetrating part of the windows has a diameter of less than 2.5 mm and preferably about 2 mm. It is preferred to have small windows because this will reduce the deflection when the chamber is exposed to high pressures. In an advantageous embodiment the spacer has a wedge form providing a change in width/height of spacer (equal to light path in chamber) of about 3-10 μm , e.g. about 6 μm across the 2 mm opening. Such wedge form will reduce or eliminate the tendency to the occurrence of internal reflections of the light beam inside the chamber.

Utility of the Invention

The improved method and the measurement cell therefore are intended for use in liquid food processing plants and more specifically dairies. In the following description the term milk includes raw milk and food products derived from that, and may include other kinds of liquid food products. Advantages Obtained by the Invention:

The measurement takes place at normal process line pressure or even higher. Therefore, dissolved gases will not be released and accordingly, no air bubbles are produced. The measuring system is chemical resistant to all substances which stainless steel is resistant to. (This feature is an advantage during a regular cleaning of the food product processing system). The diamond windows ensure that the mechanical dimensions of the optical system are not subject to changes due to mechanical wear. The measuring system can operate in a process environment for a long time without any need for attended operators to perform zero adjustment, re-calibration, separate cleaning or other kind of maintenance operation on the flow system and IR measurement equipment. The measurement is an on-line measurement, always available to maintain an optimal production. Regularly, during normal operation, the flow system is "cleaned" by the samples themselves. Preferably, in a preferred embodiment, the normal process line cleaning procedure includes the measuring branch, i.e. the above men-

tioned flow system. Further, in the preferred embodiments, no "foreign" substances are introduced, i.e. no special cleaning or calibration agents are needed besides the cleaning and rinsing agents generally used in dairies. Therefore, a possible option comprises the return of the sample to the process line after the measurement.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of an example of a measurement system and flow system according to the present invention.

FIG. 2 is a schematic diagram of an example of a modified flow system according to the present invention.

FIG. 3 is a schematic diagram of a third example of a flow system according to the present invention.

FIG. 4 is a schematic diagram of an optical system in a measurement system according to the present invention.

FIG. 5A is a schematic sectional view along line A—A in FIG. 8 of an example of an embodiment of an IR cuvette according to the invention and in an enlarged scale.

FIG. 5B same along line EBB in FIG. 8.

FIG. 6A is an oblique sectional view of a preferred embodiment of an IR cuvette according to the present invention, seen from above and in an enlarged scale.

FIG. 6B same as FIG. 6A, also showing the front half of the lower part.

FIG. 7 is a sectional view along line C—C in FIG. 8 of the embodiment shown in FIG. 6A and B in an enlarged scale.

FIG. 8 a schematic top view of an IR cuvette in an enlarged scale.

FIG. 9 a sectional elevation of a centre portion of the cuvette including the inner cuvette space in a further enlarged scale,

FIG. 10 a vertical projection of the centre portion of FIG. 9, and FIG.

FIG. 11 is a schematic diagram of a further example of a flow system according to the present invention.

DETAILED DESCRIPTION OF THE BEST MODE FOR CARRYING OUT THE INVENTION

A preferred embodiment of a system for carrying out the method according to the invention comprises the following major components: A flow system 100, an optical MID-IR spectrometry system 200 and a control system 300 as indicated in FIG. 1.

The flow system may comprise the following components as shown in the three examples FIG. 1-3.

Sample intake means, comprising a tube 20 and a pump and valve means, e.g. a piston pump 40 having at least one one-way valve 21, 22 at the pump inlet and at least one one-way valve 23, 45 at the pump outlet. The sample intake means 20 is connected to a section of a process conduit 10 from which the samples are taken through a filter 15 and through a detachable connection e.g. mini clamps 13 comprising two flange parts and a gasket. Preferably all such connections are made according to the hygienic standards for food processing plants. The process conduit 10 is part of a food processing plant such as a dairy, which is not shown.

Thermostatizing means 30, preferably comprising: a preheater or cooler, e.g., a coiled steel tube embedded in or wound around an electrically heated copper cylinder, providing e.g. from 1 to 5 ml, preferably 1.5 ml of heated milk or a heated copper cylinder having an inner volume of about

15 ml and assigned temperature sensing means (not shown) connected to control means 300 for controlling the preheater or cooler. The heating means 30 are designed to heat e.g. 1.5 ml milk from 1° C. to a temperature about 40° C. in about 25 seconds.

A high pressure pump 40, (e.g. a LPA/MS50h-pump as used in a FOSS ELECTRIC MILKOSCAN 50 or a single stroke pump providing a whole sample volume—e.g. 1.5 ml in one single stroke) provides the high pressure (e.g. about 400–500 bar). Typically at least a pressure of 200 bars is needed for homogenizing. Further the pump yield 40 will ensure a high flow rate through the IR-cuvette during a flushing period, so that the cuvette is cleaned by means of the flow rate of the milk, making further cleaning unnecessary for a number of hours. During the flushing period the pressure across the cuvette may reach 100–200 bars. To avoid degassing in the measurement period, the pressure of the measuring branch is maintained at at least the same pressure as the pressure at the location on which the sample is extracted from the process plant. Preferably the pressure in the measuring branch exceeds the pressure in the process plant. During a measurement the pressure is maintained at a substantially constant level by the use of a back pressure valve 88 as explained later.

In the embodiment shown in FIG. 1 an in-line filter 35 provides a filtered milk passing through the measurement branch comprising the cuvette 70. Optionally a valve 45 (FIG. 1) allows the milk to bypass the filter, the milk running directly towards waste 90. The high flow rate of milk along the inside of the filter 35 will provide a cleaning of the filter 35 when the valve 45 is open. To this end the valve 45 can be controlled by the control means 300. Preferably, the valve 45 also act as a safety valve which is set to open if the pressure exceeds e.g. 400 bars.

A homogenizer 50 (e.g. a S4000 as used in FOSS ELECTRIC MILKOSCAN 4000). A thorough homogenization of the liquid food product is needed in order to obtain a representative sample (a sample containing all components in the liquid food product) inside the very thin cuvette (typically having a width of 37–50 μm). A further reason for including homogenization is that the scattering of the infra red light passing through the cuvette depends on the particle size of the liquid sample. Accordingly a uniform homogenization is essential in order to have reproducible measurement conditions. The pressure drop across the homogenizer is about 200 bars. In the embodiments shown in FIG. 2 and 3 a safety valve also functioning as a contra valve 51 follows immediately after the homogenizer.

A further preheater or cooler 60, e.g. a coiled tube preferably wound on the periphery of a temperature stabilised IR cuvette, having an electrical resistor soldered to a copper body thermostatizing the milk sample to a predetermined temperature, e.g. to about 40° C. and preferably to 50° C. before entering the cuvette, and preferably comprising assigned temperature sensing means connected to the control means 300 for controlling the temperature of the preheater or cooler. These controls and assignments are illustrated by phantom lines in FIG. 1.

An IR cuvette 70, comprising a milk flow path and an IR light path crossing the milk flow path. The IR cuvette is part of an IR spectro-photo-meter allowing the analysis and/or quantitative determination of specific components of the milk in the IR cuvette. Preferably the IR cuvette structure includes a bypass milk flow path 83 (FIG. 9) for the auxiliary milk, which is unable to pass through the very thin measurement chamber in the IR cuvette; A presently preferred

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIRECCIÓN DE NUEVAS CREACIONES

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2020
Bogotá, D.C.,

Abogado (a)
JIMENA ESCOBAR URIBE

ASUNTO	Radicación	06-83758
	Trámite	001
	Evento	003
	Actuación	430
	Oficio	035
	Folios	017

Patente de Invención ☒ Patente de Modelo de Utilidad ☐

Vía Nacional ☒

Vía PCT (fase nacional) ☐ Cap. I ☐ Cap. II ☐

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

Descripción: Folios: 7 a 38 como se radicó inicialmente

Reivindicaciones: Folios: 39 a 42 como se radicó inicialmente

Dibujos: Folios: 43 a 47 como se radicó inicialmente

Prioridad: Folio 1 (2005-08-26, US, N° 11/212955).

2. Objeto de la invención

La presente solicitud se titula "PRUEBA DE SOLUCIONES CON REPROCESADOR DE ENDOSCOPIO AUTOMATIZADO", (folio N° 1).

El objeto de la presente solicitud de patente se refiere a un procesador de endoscopio que incorpora un sistema de medición de soluciones, el cual comprende una cubeta para contener una muestra de la solución, una fuente de luz para hacerla pasar a través de la cubeta y la muestra y, un mecanismo detector de luz.

De otra parte, el pliego reclama un procesador de endoscopio que tiene un sistema de medición de soluciones, relacionado en las reivindicaciones 1 a 9 y, un método para medir una propiedad de una solución que se aplicara al endoscopio, relacionado en las reivindicaciones 10 a 18.

El objeto de la solicitud definido anteriormente se clasificó en la IPC A61B 1/00.

3. De la solicitud de patente

3.1. Título

El título de la solicitud no es adecuado a la materia descrita ni reclamada, por cuanto se refiere a una prueba de soluciones, mientras que la materia de la solicitud se refiere a un aparato de descontaminación para un endoscopio, y a un método de medición, objetos que al no tratarse de pruebas, no se ajustan al título establecido.

3.2. Reivindicaciones (artículo 30 D 486)

El pliego reivindicatorio calificado no es claro por cuanto no define de manera correcta la materia que se desea proteger.

En primer lugar, no es claro porque la reivindicación 1 reclama un procesador de endoscopio, mientras que en toda la descripción se habló de un aparato de descontaminación. Esto hace que la materia reclamada no este sustentada en la descripción.

En segundo lugar, la reivindicación no establece claramente que materia hace parte del estado del arte (preámbulo de la reivindicación) y, cual es la materia **característica** que aporta la solicitud al estado del arte. La claridad en este aspecto es muy importante dado que son las características esenciales de la reivindicación con las que se puede establecer el alcance de la protección solicitada y el aporte de la solicitud al estado del arte.

En tercer lugar, la solicitud se limita a enumerar los componentes de un sistema de medición sin establecer claramente las relaciones funcionales o estructurales existentes entre tales componentes. Con se aprecia, la reivindicación simplemente menciona el componente y el uso de éste: *“un mecanismo detector para detectar luz”, “una bomba asociada con el depósito para el bombeo”, etc.* En mecánica, electricidad, hidráulica y demás áreas, las definiciones de uso NO son aceptables ni equiparables a características funcionales. La definición de un aparato esta dada por medio de sus componentes y la forma de asociación entre estos (acoples, conexiones, ensamble, etc.).

Debe aclararse en las reivindicaciones 2 y 3 porque la muestra de solución hace parte de las características esenciales del aparato de descontaminación. Según se aprecia en la solicitud, el aparato de descontaminación es independiente de la muestra que se mida, lo cual implica que la muestra no es una característica del aparato reclamado.

La reivindicación 7 no es clara dado que no se entiende que tienen que ver la primera y segunda trayectoria con la remoción de burbujas a través de la cubeta.

La reivindicación 8 no aclara ni delimita ninguna característica del aparato de descontaminación, por cuanto el uso del procesador no es una característica técnica valida para definir un producto patentable. Igual situación ocurre con la materia especificada en la reivindicación 9.

La reivindicación 10 no es clara por cuanto no define cual es la materia característica del procedimiento reclamado y adicionalmente no es claro que procedimiento se reclama: un procedimiento de procesamiento o un método para medir una propiedad.

Por otro lado, las reivindicaciones 10 a 18, no define un método patentable por cuanto las instrucciones de operación de un dispositivo corresponden al uso de este, no a características técnicas validas.

Por último, las reivindicaciones deben establecer claramente cual es el objeto que se pretende reclamar, dado que en el presente caso, no es claro si se pretende reclamar un aparato de descontaminación o un sistema de medición de soluciones. Teniendo en cuenta lo anterior, la definición del objeto debe ser clara en indicar cual es la materia característica que la solicitud aporta al estado de la técnica. Finalmente, se recomienda por claridad incluir en las reivindicaciones los numerales de referencia de los componentes del objeto reclamado.

Por los motivos anteriores, el pliego reivindicatorio calificado NO cumple con los requisitos establecidos en el artículo 30 de la Decisión 486.

4. Reivindicaciones relativas a un uso o a un uso distinto

El método reclamado en las reivindicaciones 10 a 18 no cumple con lo establecido en el artículo 14 de la Decisión por cuanto la materia allí relacionada no corresponde ni a un procedimiento ni a un producto que se ajuste a los lineamientos legales vigentes. Los pasos relacionados en tales reivindicaciones, así como los pasos relacionados en la descripción (folios 24 a 38), se refieren a la forma de operación de un aparato de descontaminación lo cual no es otra cosa que el uso de tal dispositivo.

Así las cosas, la materia relacionada en el pliego corresponde a aspectos no técnicos tal como la operación rutinaria de un aparato, lo cual es simplemente la aplicación (uso) que se da al aparato, no a nuevas soluciones técnicas que permitan mejorar la descontaminación de aparatos tales como endoscopios.

5. Determinación del Estado de la Técnica

Considerando que la solicitud reclama prioridad a la fecha de 26 de Agosto de 2005, se buscaron documentos del estado de la técnica relacionados, con fecha de publicación anterior a esta. Se realizo búsqueda de documentos relevantes dentro del estado de la técnica, entendiendo como estado de la técnica la definición provista en el Art. 16 D 486, y las excepciones fijadas en el Art. 17 de la misma.

No obstante, la solicitud presenta problemas de claridad, uso y patentabilidad, se realizó una búsqueda parcial la cual se complementara una vez se realicen los ajustes a la solicitud.

Se encontró como anterioridades los documentos relacionados a continuación que pueden afectar la patentabilidad del objeto de la presente solicitud

Nº	Documento*	Título	Fecha de publicación
D1	US5858305	APPARATUS AND METHOD FOR STERILIZING MEDICAL DEVICES	1999-01-12
D2	US6297505	METHOD AND FLOW SYSTEM FOR SPECTROMETRY AND A CUVETTE FOR THE FLOW SYSTEM	2001-10-02

*los documentos mencionados se anexan al expediente

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6. Análisis de patentabilidad (artículo 14 D486)

En cumplimiento del Art. 14 D486 se procedió a evaluar los requisitos de novedad, nivel inventivo y aplicabilidad industrial, con el fin de establecer la patentabilidad de la invención reivindicada de la solicitud en estudio.

6.1. Nivel Inventivo (artículo 18 D486)

De acuerdo al estado de la técnica establecido en el numeral 5, los documentos más cercanos a la solicitud son los siguientes: **US5858305 (D1)** y **US6297505 (D2)**.

La solicitud plantea el problema de medir la concentración de fluidos usados para el lavado y la esterilización, en particular asegura que se alcance la concentración adecuada en el fluido circulante. Para tal fin las reivindicaciones 1 a 9 presentan un procesador de endoscopio que tiene un sistema de medición de soluciones que comprende:

- Una cubeta
- Una fuente de luz
- Un mecanismo detector de luz
- Un depósito
- Una bomba asociada con el depósito
- Un sistema de control asociado con la bomba

La anterioridad D1 se refiere a un aparato para descontaminar dispositivos médicos que incluye vasijas de descontaminación (14a, 14b) y una disposición de cámaras de mezclado que dispensan selectivamente concentraciones de detergente y descontaminante en un líquido para formar una solución de líquido descontaminante (resumen).

Por otra parte, el documento D2 se refiere a un sistema de medición para muestras líquidas extraídas desde una línea de proceso que comprende: una cubeta de medición **70** donde se ubica la muestra de solución, una fuente de luz **120** que pasa a través de la cubeta y la muestra (Fig. 4), un mecanismo detector de luz **140** (Fig. 4), una válvula de presión **88** que mantiene una determinada presión en la cubeta **70** durante la medida. Esta presión asegura que los gases se mantengan disueltos en la solución con el fin de evitar burbujas en la cubeta (col. 7 líneas 3 a 12), y un sistema de control **300** asociado con las bombas del sistema (Fig. 1).

Como se puede ver, el problema planteado en la solicitud, se puede resolver colocando un sistema de medición de muestras de solución tal como el que se describe en el documento D2, al aparato para descontaminar dispositivos médicos, presentado en D1.

De acuerdo a lo expuesto arriba, una persona del oficio normalmente versada en la materia podría derivar de manera obvia el objeto la solicitud del estado de la técnica, por lo cual el objeto de la presente solicitud carece de nivel inventivo.

7. Conclusión:

Los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

Nº	Documento Nº	Reivindicaciones afectadas	Requisito que afecta
D1	US5858305	1 a 9	Nivel Inventivo

D2	US6297505	1 a 9	Nivel Inventivo
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Se recomienda, que tenga en cuenta que el replanteamiento de esos apartes NO podrá implicar una ampliación de la protección que correspondería a la divulgación contenida en la solicitud inicial, de acuerdo a lo que establece el artículo 34 de la Decisión 486.

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2 Literal e) del capítulo quinto del título primero de la Circular Única No. 10 de 2001.


JESÚS FERNEL GARCÍA GARCÍA
Director Nuevas Creaciones (E)

El anterior requerimiento fue notificado por fijación en lista, de fecha
10 7 ENE. 2010

CONCEPTO TECNICO No. 4419	EXAMINADOR TECNICO Código No. 202082
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REPUBLICA DE COLOMBIA

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

RESOLUCION Nº 21028

Por la cual se niega una patente de invención

Rad. Nº 06-83758

LA SUPERINTENDENTE DE INDUSTRIA Y COMERCIO (E)

en ejercicio de sus facultades legales, en especial de las que se confirieron en el artículo 3, numeral 30 del decreto 3523 de 2009, y

CONSIDERANDO:

PRIMERO: Que mediante escrito radicado en esta Superintendencia el 24 de agosto del 2006 bajo el número 06-083758-000000-0000 se presentó la solicitud de patente para la invención denominada: "PRUEBA DE SOLUCIONES CON REPROCESADOR DE ENDOSCOPIO AUTOMATIZADO", contenida en el expediente de la referencia.

SEGUNDO: Que efectuado el examen de forma en cuanto a los requisitos que debe llenar la solicitud y cumplidas las exigencias legales, se ordenó publicar el extracto sin que se hubieran presentado oposiciones por parte de terceros.

TERCERO: Que el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina establece que: *"Si la oficina nacional competente encontrara que la invención no es patentable o que no cumple con alguno de los requisitos establecidos en esta Decisión para la concesión de la patente, lo notificará al solicitante. Este deberá responder a la notificación dentro del plazo de sesenta días contados a partir de la fecha de la notificación. Este plazo podrá ser prorrogado por una sola vez por un período de treinta días adicionales.(...) Si el solicitante no respondiera a la notificación dentro del plazo señalado, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, la oficina nacional competente denegará la patente".*

CUARTO: Que realizado el examen de fondo, se requirió al solicitante en los términos del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, para que presentara respuesta a las observaciones de carácter técnico visibles a folios 107 a 123 del cuaderno administrativo, relacionadas con la patentabilidad o cumplimiento de los requisitos establecidos por esta Decisión para la concesión de la patente. Frente a dicho requerimiento no hubo pronunciamiento alguno por parte del mismo, por lo cual es procedente negar el privilegio de patente solicitado con fundamento en lo dispuesto en el artículo 45 de la Decisión 486.

REPUBLICA DE COLOMBIA

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

RESOLUCION Nº 21028

Por la cual se niega una patente de invención

Rad. Nº 06-83758

RESUELVE:

ARTICULO PRIMERO: Negar el privilegio de patente de invención para la solicitud correspondiente a "PRUEBA DE SOLUCIONES CON REPROCESADOR DE ENDOSCOPIO AUTOMATIZADO".

ARTICULO SEGUNDO: Notificar personalmente el contenido de la presente resolución a la doctora Jimena Escobar Uribe, en su calidad de apoderada de Ethicon, Inc., o a quien haga sus veces, entregándole copia de la misma, advirtiéndole que contra ella procede el recurso de reposición interpuesto ante el Superintendente de Industria y Comercio, al momento de la notificación o dentro de los 5 días hábiles siguientes a ella.

NOTIFÍQUESE Y CUMPLASE

Dada en Bogotá, D.C., a los

23 ABR. 2010.

LA SUPERINTENDENTE DE INDUSTRIA Y COMERCIO (E),


ROSANA PEDRAZA SANCHEZ

Doctora
JIMENA ESCOBAR URIBE
Carrera 11 Nº 86 – 53, Piso 6.
Bogotá D.C.