IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager	**Confirmation No.:**
Application No.:	**Group Art Unit:**
Filed:	**Examiner:**
For: Computer Implemented Animal Management System	
Attorney Docket No.: bellaCONT1bolus (280-11)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Before examining the above-referenced application and calculating the fee due, please amend the application as follows:

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SPECIFICATION AMENDMENT

It is respectfully requested that the specification be amended without prejudice, without admission, without surrender of subject matter, and without intention of creating any estoppel as to equivalents, as follows.

1. Please replace in the entirety the first paragraph following the Title with:

--This United States Patent Application is a continuation of United States Patent Application No. 13/391,614, filed February 21, 2012, which is the United States National Stage of International Patent Corporation Treaty Patent Application No. PCT/US2010/002509, filed September 14, 2010, which claims the benefit of United States Provisional Patent Application No. 61/276,723, filed September 15, 2009, each hereby incorporated by reference herein.--

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CLAIM AMENDMENT

It is respectfully requested that the claims be amended without prejudice, without admission, without surrender of subject matter, and without intention of creating any estoppel as to equivalents, as follows. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1 (original). A computer implemented animal tracking system, comprising:

a) a server connected to a computer network;

b) a storage means providing a database connected to said server;

c) a computer capable of communicating with said server said computer configured with executable program instructions, wherein:

d) a first portion of said executable program instructions when executed retrieves an amount of animal identification information from a first bit segment of an RFID device implanted in an animal;

e) a second portion of said executable program instructions when executed retrieves an amount of sensed animal information from a second bit segment of said RFID device implanted in said animal;

f) a third portion of said executable program instructions when executed links said amount information retrieved from each said bit segment of said RFID device implanted in said animal to an amount of animal information of said animal stored in said database of said computer;

g) a fourth portion of said executable program instructions when executed functions to enter said amount of information retrieved from each said bit segment of said RFID device implanted in said animal linked to said amount of animal information of said animal stored in said database of said computer as logical variables into at least one logical expression;

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h) a fifth portion of said executable program instructions when executed solves said at least one logical expression to obtain a corresponding at least one logical value related to said animal;

i) a sixth portion of said executable program instructions when executed stores said at least one logical value in said database; and

j) a seventh portion of said executable program instructions when executed serves said logical value to said computer network.

2 (original). The computer implemented animal tracking system as described in clam 1, wherein said amount of animal identification information comprises animal identification information from said first bit segment of a plurality of RFID devices implanted in a plurality of animals.

3 (original). The computer implemented animal tracking system as described in clam 2, wherein said amount of sensed animal information comprises sensed animal information from said fourth bit segment of said plurality of RFID devices implanted in said plurality of animals.

4 (original). The computer implemented animal tracking system as described in clam 3, wherein said amount of animal information of said animal stored in said database of said computer comprises an amount of health information for each of said plurality of animals said amount of health information including an occurrence of an illness.

5 (original). The computer implemented animal tracking system as described in clam 4, wherein said amount of animal information of said animal stored in said database of said computer comprises an amount of animal location information.

6 (original). The computer implemented animal tracking system as described in clam 5, wherein said amount of animal information of said animal stored in said database of said computer comprises an amount of date-time information from a second bit segment of said RFID device implanted in said animal.

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7 (original). The computer implemented animal tracking system as described in clam 6, wherein said at least one logical expression solves for a selected period of time for said plurality of animals for each of a plurality of animal locations whether a greater than selected number of said occurrence of said illness has occurred at each of said plurality of animal locations.

8 (original). The computer implemented animal tracking system as described in clam 5, wherein said plurality of animal locations comprises a plurality of pen locations.

9 (original). The computer implemented animal tracking system as described in clam 8, wherein said plurality of animal locations comprises a plurality of GPS locations.

10 (original). The computer implemented animal tracking system as described in clam 9, wherein said amount of animal information of said animal stored in said database of said computer comprises each of an amount of desired pen count information, an amount of milk production information, an amount of days milked information, and an amount of reproductive information.

11 (original). The computer implemented animal tracking system as described in clam 10, wherein said at least one logical expression solves for a selected period of time for each of said plurality of animals which of a plurality of pens in which to locate each of said plurality of animals.

12 (original). The computer implemented animal tracking system as described in clam 5, wherein said amount of animal information of said animal stored in said database of said computer comprises an amount of date-time information as to administration of a first compound to each of said plurality of animals, an amount of date-time information as to administration of a second compound to each of said plurality of animals, an amount of date-time information as to occurrence of first compound effects on each of said plurality of animals, an amount of date-time information as to occurrence of second compound effects on each of said plurality of animals.

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13 (original). The computer implemented animal tracking system as described in clam 1, further comprising an RFID device reader.

14 (original). The computer implemented animal tracking system as described in clam 13, wherein said server provides a browser-based user interface which enables an animal tracker to track each animal based on said amount of information retrieved from each said bit segment of said RFID device implanted in said animal.

15 (original). The computer implemented animal tracking system as described in clam 14, wherein said computer network comprises a wide area network.

16 (original). The computer implemented animal tracking system as described in clam 15, further comprising at least one client computer capable of configuration with said executable program instructions connected to said computer network.

17 (original). The computer implemented animal tracking system as described in clam 16, wherein said at least one client computer comprises a wireless palm device.

18 (original). The computer implemented animal tracking system as described in clam 16, wherein said client computer comprises a cellular telephone.

19 (original). The computer implemented animal tracking system as described in clam 17, wherein said RFID device reader comprises a portable RFID device reader connected to said wireless palm device.

20 (original). The computer implemented animal tracking system as described in clam 19, wherein said at least one client computer comprises a portable RFID device reader connected to said cellular telephone.

21-46 (canceled).

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REMARKS

This United States Patent Application is a continuation of United States Patent Application No. 13/391,614, filed February 21, 2012, which is the United States National Stage of International Patent Corporation Treaty Patent Application No. PCT/US2010/002509, filed September 14, 2010, which claims the benefit of United States Provisional Patent Application No. 61/276,723, filed September 15, 2009, each hereby incorporated by reference herein.

1. Cancellation of Claims. Applicant without prejudice cancels claims 21-46. Applicant does not waive any right to have the canceled claims 21-46 examined in a subsequent continuation, divisional, continuation-in-part, or other type of continuing application, without reduction of the scope or breadth of the claims, or to present other claims supported by the description which may have greater breadth than the claims originally filed, or to rejoin certain claims as allowed under the rules.

2. Specification Amendment. Applicant requests insertion of the priority statement set out above.

Applicant respectfully requests entry of this Preliminary Amendment to the file and examination of claims 1-20.

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CONCLUSION

Applicant submits this Preliminary Amendment to without prejudice provide a priority statement and to cancel claims 21-46. Applicant respectfully requests examination of claims 1-20.

Dated this 29 day of August, 2014

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000 telephone
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

POWER OF ATTORNEY - INVENTOR

I, Nicholas P. Rettedal, residing 1701 E 15th Street, Loveland, Colorado 80538 USA, being the Applicant/Inventor hereby appoint CR Miles P.C., having its principal office at 405 Mason Court, Suite 119, Fort Collins, Colorado 80524 USA having Customer Number 39208 including Craig R. Miles, whose registration number before the United States Patent and Trademark Office is 45,954 as my attorney to prosecute this application entitled "Computer Implemented Animal Management System" and to transact all business in the United States Patent and Trademark Office therewith.

Dated this 28th day August, 2014

Nicholas P. Rettedal, Inventor

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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P.O. Box 1450
Alexandria, VA 22313-1450

STATEMENT ESTABLISHING SMALL ENTITY STATUS
INVENTOR

I, Nicholas P. Rettedal, as inventor of the subject matter of the above-identified application entitled "Computer Implemented Animal Management System" for which a patent is sought, and pursuant to 37 C.F.R. §1.27(a)(1) and (c) state that the following facts are true:

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the subject matter of the above-identified patent application to another entity not a non-profit organization whose number of employees, including those of its affiliates, exceeds 500 persons. As such, it appears that I qualify for small entity status with regard to payment of official fees to the United States Patent and Trademark Office.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements so made are punishable by fine or imprisonment, or both under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the patent application or any patent issued thereon.

Dated this 28 day of August, 2014

Nicholas P. Rettedal, Inventor

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Alexandria, VA 22313-1450

DECLARATION FOR PATENT APPLICATION

Declaration of Stephen M. Weilnau:

I, Stephen M. Weilnau, hereby declare:

I am a citizen of United States of America and my residence and mailing address is 5006 West 27th Street, Greeley, Colorado 80634 USA.

Stephen M. Weilnau declares:

The above-identified application was made or authorized to be made by me.

I believe that I am the original joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled "Computer Implemented Animal Management System" the specification and any preliminary amendment of which are attached hereto.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

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I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. §1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim priority under 35 U.S.C. §120 or the benefit under 35 U.S.C. 119(e) of any application for patent filed in the United States or under 35 U.S.C. §363 and §365(c) of any international application designating the United States of America, listed below:

- United States Patent Application No. 13/391,614, filed February 21, 2012;
- International PCT Patent Application No. PCT/US2010/002509, filed September 14, 2010;
- United States Provisional Patent Application No. 61/276,723, filed September 15, 2009.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURES ON THE FOLLOWING PAGE:

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Stephen M. Weilnau

Date: Aug. 28 2014

UNITED STATES OF AMERICA)
STATE OF COLORADO)
COUNTY OF Larimer)

SUBSCRIBED AND AFFIRMED OR SWORN to before me in the County of Larimer, State of Colorado, United States of America, by Stephen M. Weilnau, this 28 day of August, 2014. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

Notary Public
My Commission Expires: Nov. 9, 2016

MELANIE CARTER
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20084037911
MY COMMISSION EXPIRES NOV. 9. 2016

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Alexandria, VA 22313-1450

POWER OF ATTORNEY - INVENTOR

I, Stephen M. Weilnau, residing at 5006 West 27th Street, Greeley, Colorado 80634 USA, being the Applicant/Inventor hereby appoint CR Miles P.C., having its principal office at 405 Mason Court, Suite 119, Fort Collins, Colorado 80524 USA having Customer Number 39208 including Craig R. Miles, whose registration number before the United States Patent and Trademark Office is 45,954 as my attorney to prosecute this application entitled "Computer Implemented Animal Management System" and to transact all business in the United States Patent and Trademark Office therewith.

Dated this 28 day August, 2014

Stephen M. Weilnau, Inventor

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Alexandria, VA 22313-1450

STATEMENT ESTABLISHING SMALL ENTITY STATUS
INVENTOR

I, Stephen M. Weilnau, as inventor of the subject matter of the above-identified application entitled "Computer Implemented Animal Management System" for which a patent is sought, and pursuant to 37 C.F.R. §1.27(a)(1) and (c) state that the following facts are true:

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the subject matter of the above-identified patent application to another entity not a non-profit organization whose number of employees, including those of its affiliates, exceeds 500 persons. As such, it appears that I qualify for small entity status with regard to payment of official fees to the United States Patent and Trademark Office.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements so made are punishable by fine or imprisonment, or both under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the patent application or any patent issued thereon.

Dated this 20 day of August, 2014

Stephen M. Weilnau, Inventor

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION FOR PATENT APPLICATION

Declaration of Scott R. Cockroft:

I, Scott R. Cockroft, hereby declare:

I am a citizen of United States of America and my residence and mailing address is 27712 County Road 62, Greeley, CO 80631 USA.

Scott R. Cockroft declares:

The above-identified application was made or authorized to be made by me.

I believe that I am the original joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled "Computer Implemented Animal Management System" the specification and any preliminary amendment of which are attached hereto.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

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I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. §1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim priority under 35 U.S.C. §120 or the benefit under 35 U.S.C. 119(e) of any application for patent filed in the United States or under 35 U.S.C. §363 and §365(c) of any international application designating the United States of America, listed below:

- United States Patent Application No. 13/391,614, filed February 21, 2012;
- International PCT Patent Application No. PCT/US2010/002509, filed September 14, 2010;
- United States Provisional Patent Application No. 61/276,723, filed September 15, 2009.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURES ON THE FOLLOWING PAGE:

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Scott R. Cockroft

Date: 8-27-2014

UNITED STATES OF AMERICA)
STATE OF COLORADO)
COUNTY OF Weld)

SUBSCRIBED AND AFFIRMED OR SWORN to before me in the County of Weld, State of Colorado, United States of America, by Scott R. Cockroft, this 27th day of August, 2014. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

CYNTHIA J. KENNEDY
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20004019995
MY COMMISSION EXPIRES MARCH 21, 2017

Cynthia J Kennedy
Notary Public
My Commission Expires: 3/21/17

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Alexandria, VA 22313-1450

STATEMENT ESTABLISHING SMALL ENTITY STATUS
INVENTOR

I, Billy J. Yeager, as inventor of the subject matter of the above-identified application entitled "Computer Implemented Animal Management System" for which a patent is sought, and pursuant to 37 C.F.R. §1.27(a)(1) and (c) state that the following facts are true:

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the subject matter of the above-identified patent application to another entity not a non-profit organization whose number of employees, including those of its affiliates, exceeds 500 persons. As such, it appears that I qualify for small entity status with regard to payment of official fees to the United States Patent and Trademark Office.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements so made are punishable by fine or imprisonment, or both under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the patent application or any patent issued thereon.

Dated this 29 day of August, 2014

Billy J. Yeager, Inventor

COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM

This United States Patent Application is a continuation of United States Patent Application No. 13/391,614, filed February 21, 2012, which is the United States National Stage of International Patent Corporation Treaty Patent Application No. PCT/US2010/002509, filed September 14, 2010, which claims the benefit of United States Provisional Patent Application No. 61/276,723, filed September 15, 2009, each hereby incorporated by reference herein.

I. TECHNICAL FIELD

Generally, a computer implemented animal management system. Specifically, a computer implemented animal management method which matches animal information retrieved from a radiofrequency identification device implanted in an animal with animal information retrieved from a database of at least one computer.

II. BACKGROUND

A conventional radiofrequency identification device ("RFID" or "RFID device") is an object that can be attached to or incorporated into a product, animal, or person typically for the purpose of locating and identification of that object using radio waves. Certain RFID devices can be written to and read from a distance away and do not have to be in the line of sight of a RFID device writer or reader. The current thrust in RFID device use is in supply chain management for large enterprises. RFID devices increase the speed and accuracy with which inventory can be tracked and managed thereby saving money for the business.

Conventional RFID devices (such as tags, labels, dots or the like) contain at least two parts. One is an integrated circuit for storing and processing information, modulating and demodulating a radio frequency (RF) signal and perhaps other specialized functions. The second is an antenna for receiving and transmitting the radio signal. A technology called chipless RFID allows for discrete identification of RFID devices without an integrated circuit, thereby allowing tags to be printed directly onto assets at lower cost than traditional RFID. For example, in 2006, Hitachi, Ltd. developed a passive device called the μ-Chip measuring 0.15×0.15 mm (not including the antenna), and thinner than a sheet of paper (about 7.5 micrometers) silicon-on-

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Insulator (SOI) technology is used to achieve this level of integration. The Hitachi μ-Chip can wirelessly transmit a 128-bit unique identification number which is hard coded into the chip as part of the manufacturing process. The unique ID in the chip cannot be altered, providing a high level of authenticity to the chip and ultimately to the items the chip may be permanently attached or embedded into. The Hitachi μ-Chip has a typical maximum read range of 30 cm (1 foot). In February 2007, Hitachi unveiled an even smaller RFID device measuring 0.05×0.05 mm, and thin enough to be embedded in a sheet of paper.

An RFID device interrogator, also referred to as a RFID reader, is an electronic device that receives the radio signal from the RFID device. In many cases, the interrogator also generates the interrogation signal. Interrogators or readers require a power supply, network connection, and antenna in order to function. Depending on application, these components may be separate or integrated. Interrogators come in various constructional forms and methods of operation.

A significant problem with RFID devices can be that the memory in which data can be stored is limited. As a non-limiting example, the 128 bit ROM above-described can only store one unique 38 digit identification number. Understandably, as the number of bits which can be encoded on a RFID increases so does the cost and the size of the RFID. Accordingly, the ROM of RFID devices utilized for tracking, locating and identification of goods remains between 100 and 200 bits and certain ROM of RFID devices include even fewer bits such as 50-100 bits ROM, or even fewer bits.

Another significant problem with RFID devices may be that there is no computer implemented animal management system available for encoding and updating RFID information of an RFID implanted in an animal and integrating the RFID information with relational and storage databases in a server or remote computer for the purpose of remotely monitoring, tracking, sorting, diagnosing, or treating each RFID implanted animal.

The inventive computer implemented animal management system described herein addresses each of these problems by providing computer implemented functions which provide a method which matches animal information retrieved from a radiofrequency identification

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device implanted in an animal to animal information retrieved from a database of at least one computer.

III. DISCLOSURE OF INVENTION

Accordingly, a broad object of the invention is to provide an inventive RFID implantable in an RFID object such as an animal or other asset and a RFID reader which can retrieve RFID information from the implanted RFID and computer implemented animal management program (also referred to as an animal management application) which provides executable program instructions in the form of various program modules each of which function to integrate retrieved RFID data with data in relational database tables and storage database tables or analyze the RFID data and data from relational databases for each RFID implanted in an animal.

A second broad object of the invention can be to provide computer implemented instructions of an animal management program which in part automatically enters retrieved RFID information into relational database tables and storage database tables for each RFID implanted in an animal and further provides a manual data entry module which upon activation allows animal information to be manually entered into relational database tables and storage database tables for each RFID implanted in an animal.

A third broad object of the invention can be to provide computer implemented instructions of an animal management program which in part provides an alert module which generates lists of animals implanted with RFID having sensor which provides sensed animal information which falls outside of pre-established threshold values for a particular sensed animal characteristic or sensed incorrect animal location.

A fourth broad object of the invention can be to provide computer implemented instructions for entry and monitoring diagnosis and treatment plans for animal having sensed animal information which falls outside of pre-established threshold values for a particular sensed animal characteristic.

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A fifth broad object of the invention can be to provide computer implemented instructions for automatically sorting animals implanted with RFID based on sensed animal information and animal information in relational database tables and storage database tables into groups that can be optimally located together.

Naturally, further objects of the invention are disclosed throughout other areas of the specification, drawings, photographs, and claims.

IV. BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of particular computer means and radiofrequency identification means of a particular embodiment of the invention.

Figure 2 is a block diagram of a RFID reader having hardware and firmware of a particular embodiment of the invention.

Figure 3 is a block diagram which shows a particular embodiment of the invention which includes a bolus containing at least one sensor which provides sensed RFID object information and an RFID to which sensed RFID object information can be encoded and subsequently collected by an RFID reader.

Figure 4 is block diagram of a particular embodiment graphic user interface which can be generated by a particular embodiment of the animal management application of the invention.

Figure 5 is block diagram which shows the functionalities of a particular embodiment of a manual data entry module of the animal management application of the invention in regard to entry of RFID identification information into RFID object relational databases.

Figure 6 is block diagram which shows further functionalities of a particular embodiment of a manual data entry module of the animal management application of the invention in regard to entry of diagnosis information into RFID storage database tables.

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Figure 7 is block diagram which shows further functionalities of a particular embodiment of a manual data entry module of the animal management application of the invention in regard to entry of treatment information RFID storage database tables.

Figure 8 is block diagram which shows further functionalities of a particular embodiment of a manual data entry module of the animal management application of the invention in regard to entry of pen definitions RFID storage database tables.

Figure 9 is block diagram which shows the functionalities of a particular embodiment of an alert module of the animal management application of the invention in regard to generating an alert list relating to RFID objects having sensed RFID object characteristics which exceed threshold limits for a particular RFID object characteristic.

Figure 10 is block diagram which shows the functionalities of a particular embodiment of an alert module of the animal management application of the invention in regard to generating an alert list relating to RFID objects having sensed RFID object characteristics which exceed threshold limits for a particular RFID object characteristic.

Figure 11 is block diagram which shows the functionalities of a particular embodiment of a hospital module of the animal management application of the invention in regard to generating an hospital list of RFID objects which are receiving treatment in accordance with a treatment plan.

Figure 12 is block diagram which shows the functionalities of a particular embodiment of a pen module of the animal management application of the invention relating to a watch module which functions to generate a list of RFID objects which are located in the incorrect location or pen number.

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Figure 13 is block diagram which shows the functionalities of a particular embodiment of a pen module of the animal management application of the invention relating to an autosort module which automatically sorts RFID objects into groups based on RFID object information and pen definitions such that animals of similar status can be grouped together.

V. MODE(S) FOR CARRYING OUT THE INVENTION

Generally, a computer implemented animal management system. Specifically, a computer implemented animal management program having modules which function to match animal information retrieved from a radiofrequency identification device(s) implanted in an animal(s) with animal information retrieved from a database of at least one computer to assess animal condition and time treatment events.

The inventive computer implemented animal management system may be described herein in terms of functional block components, screen shots, and various process steps. It should be appreciated that such functional blocks may be realized by any number of hardware or software components configured to perform the specified functions. For example, the inventive computer implemented animal management system may employ various integrated circuit components which function without limitation as memory elements, to modulate and demodulate radio frequency signal, processing elements, logic elements, look-up tables, or the like, which may carry out a variety of functions under the control of one or more microprocessors or other control devices.

Similarly, the software elements of the present invention may be implemented with any programming or scripting language such as C, C++, Java, COBOL, assembler, PERL, Labview or any graphical user interface programming language, extensible markup language (XML), Microsoft's Visual Studio .NET, Visual Basic, or the like, with the various algorithms or Boolean Logic being implemented with any combination of data structures, objects, processes, routines or other programming elements. Further, it should be noted that the present invention might employ any number of conventional wired or wireless techniques for data transmission, signaling, data processing, network control, and the like.

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It should be appreciated that the particular implementations shown and described herein are illustrative of the invention and its best mode and are not intended to otherwise limit the scope of the present invention in any way. Indeed, for the sake of brevity, conventional data networking, application development and other functional aspects of the systems (and components of the individual operating components of the systems) may not be described in detail herein. Furthermore, the connecting lines shown in the various figures contained herein are intended to represent exemplary functional relationships and/or physical couplings between the various elements. It should be noted that many alternative or additional functional relationships or physical connections may be present in a practical data encoding-decoding system.

As will be appreciated by one of ordinary skill in the art, the present invention may be embodied as a method, a data processing system, a device for data processing, a computer program product, or the like. Accordingly, the present invention may take the form of an entirely software embodiment, an entirely hardware embodiment, or an embodiment combining aspects of both software and hardware. Furthermore, the present invention may take the form of a computer program product on a computer-readable storage medium having computer-readable program code means embodied in the storage medium. Any suitable computer-readable storage medium may be utilized, including, but not limited to hard disks, CD-ROM, optical storage devices, magnetic storage devices, ROM, flash RAM, or the like.

The present invention may be described herein with reference to screen shots, block diagrams and flowchart illustrations of the animal management system to describe computer programs, applications, or modules which can be utilized separately or in combination in accordance with various embodiments or functions of the invention. It will be understood that each functional block of the block diagrams and the flowchart illustrations, and combinations of functional blocks in the block diagrams and flowchart illustrations, respectively, can be implemented by computer program instructions. These computer program instructions may be loaded onto a general purpose computer, special purpose computer or other programmable data processing apparatus to produce a machine, such that the instructions which execute on the computer or other programmable data processing apparatus for implementing the functions

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specified in the flowchart block or blocks.

These computer program instructions may also be stored in a computer-readable memory that can direct a computer or other programmable data processing apparatus to function in a particular manner, such that the instructions stored in the computer-readable memory produce an article of manufacture including instruction means which implement the function specified in the flowchart block or blocks. The computer program instructions may also be loaded onto a computer or other programmable data processing apparatus to cause a series of operational steps to be performed on the computer or other programmable apparatus to produce a computer-implemented process such that the instructions which execute on the computer or other programmable apparatus provide steps for implementing the functions specified in the flowchart block or blocks.

Accordingly, functional blocks of the block diagrams and flowchart illustrations support combinations of components for performing the specified functions, combinations of steps for performing the specified functions, and program instruction means for performing the specified functions. It will also be understood that each functional block of the block diagrams and flowchart illustrations, and combinations of functional blocks in the block diagrams and flowchart illustrations, can be implemented by either special purpose hardware based computer systems which perform the specified functions or steps, or suitable combinations of special purpose hardware and computer instructions.

Now referring primarily to Figure 1, which shows a block diagram of a non-limiting embodiment of a computer and related elements which can be utilized to implement embodiments of a computer implemented animal management system including, without limitation, a server computer (1) having at least one processing unit (2), a memory element (3), and a bus (4) which operably couples components of the server computer (1), including, without limitation the memory element (3) to the processing unit (2). The server computer (1) may be a conventional computer, a distributed computer, or any other type of computer which may contain all or a part of the elements described or shown to accomplish the functions described herein; the invention is not so limited. The processing unit (2) can comprise without limitation one central-

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processing unit (CPU), or a plurality of processing units which operate in parallel to process digital information, or a digital signal processor (DSP) plus a host processor, or the like. The bus (4) can be without limitation any of several types of bus configurations such as a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. The memory element (3) can without limitation be a read only memory (ROM) (5) or a random access memory (RAM)(6), or both. A basic input/output system (BIOS)(7), containing routines that assist transfer of data between the components of the server computer (1), for example during start-up, can be stored in ROM (5). The computer (1) can further include a hard disk drive (8) for reading from and writing to a hard disk (not shown) a magnetic disk drive (9) for reading from or writing to a removable magnetic disk (10), and an optical disk drive (11) for reading from or writing to a removable optical disk (12) such as a CD ROM or other optical media.

The hard disk drive (8), magnetic disk drive (9), and optical disk drive (10) can be connected to the bus (4) by a hard disk drive interface (13), a magnetic disk drive interface (14), and an optical disk drive interface (15), respectively. The drives and their associated computer-readable media provide nonvolatile storage of computer-readable instructions, data structures, program modules and other data for the server computer (1). It can be appreciated by those skilled in the art that any type of computer-readable media that can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, random access memories (RAMs), read only memories (ROMs), RFID devices or the like, may be used in the exemplary operating environment.

The server computer (1) can further include an operating system (16) and an inventive animal management application (17) which as to certain embodiments of the invention can include a radiofrequency identification ("RFID") encoder-decoder application (18) which functions to encode and decode RFID data (38) to and from a RFID device (19)(the RFID device typically comprising a programmable microcircuit and an antenna which can be affixed to a wide variety of materials in numerous and varied constructional forms) using a RFID programmer (20) connected to the bus (4) by a RFID interface (21) may be stored on or in the hard disk, magnetic disk (10), optical disk (12), ROM (5), in RAM (6) as shown by the particular embodiment of a server computer (1) shown in Figure 1, or alternately the functionalities of the data encoder-

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decoder application (18) may be implemented as an application specific integrated chip (ASIC) or file programmable gate array (FPGA), or the like.

A computer user (22) can enter commands and information into the server computer (1) through input devices such as a keyboard (23) and a pointing device (24) such as a mouse. Other input devices (not shown) may include a microphone, joystick, game pad, satellite dish, scanner, magnetic strip of a card, or the like. These and other input devices are often connected to the processing unit (2) through a serial port interface (25) that can be coupled to the bus (4), but may be connected by other interfaces, such as a parallel port, game port, or a universal serial bus (USB). A monitor (26) or other type of display device can also be connected to the bus (4) via interfaces such as a video adapter (27), or the like. In addition to the monitor (26), the server computer (1) can further include a peripheral output device(s) (28), such as speakers and printers.

A "click event" occurs when the computer user (22) operates at least one function of the animal management application (17) or the RFID device encoder-decoder application (18), or other program or other application function, through an action or the use of a command which for example can include pressing or releasing a left mouse button (29) while a pointer element (30) is located over a control icon (31) displayed on the monitor (26). However, it is not intended that a "click event" be limited to the press and release of the left button (29) on a mouse (24) while a pointer element (30) is located over a control icon (31). Rather, the term "click event" is intend to broadly encompass any action or command by the computer user (22) through which a function of the operating system (16) or the animal management application (17), or the RFID device encoder-decoder application (18), or other program or application is activated or performed, whether through clickable selection of one or a plurality of control icon(s) (31) or by computer user (22) voice command, keyboard stroke(s), mouse button, touch screen, touch pad, or otherwise. It is further intended that control icons (31) can be configured without limitation as a point, a circle, a triangle, a square (or other geometric configurations or combinations or permutations thereof), or as a check box, a drop down list, a menu, or other index containing a plurality of selectable options, an information field which can contain or which allows input of a string of alphanumeric characters such as a street address, zip code, county code, or natural area

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code, animal identification number or by inputting a latitude/longitude or projected coordinate X and Y, animal pen number, or other notation, script, character, or the like.

The server computer (1) may operate in a networked environment using logical connections (32)(33) to one or a plurality of remote computers (34). These logical connections (32)(33) are achieved by a communication device (35)(36) coupled to or a part of the server computer (1). Each of the plurality of remote computers (34) can include a part or all of the elements above-described as included in the server computer (1) although only a single box has been illustrated in Figure 1 for the remote server computer (34). The logical connections (32)(33) depicted in Figure 1 can establish a local-area network (LAN) or a wide-area network (WAN). Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet (37)

When used in a LAN-networking environment, the server computer (1) can be connected to the local network through a network interface (36) type of communications device. When used in a WAN-networking environment, the server computer (1) typically includes a modem (35), a type of communications device, or any other type of communications device for establishing communications over the WAN, such as the Internet (64). The modem (35), which may be internal or external, is connected to the bus (4) via the serial port interface (25). In a networked environment, the data encoder-decoder application (17), or portions thereof, may be stored in any one or more of the plurality of remote computers (34). It is appreciated that the logical connections (32)(33) shown are exemplary and other hardware means and communications means can be utilized for establishing a communications link between the server computer (1) and one or more of the a plurality of remote computers (35).

While the computer means and the network means shown in Figure 1 can be utilized to practice the invention including the best mode, it is not intended that the description of the best mode of the invention or any preferred embodiment of the invention be limiting with respect to the utilization of a wide variety of similar, different, or equivalent computer means or network means to practice embodiments of the invention which include without limitation hand-held devices, such as personal digital assistants or camera/cell phone, multiprocessor systems,

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microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, PLCs, or the like.

With respect to those embodiments of the invention which provide the RFID encoder-decoder application (18), the animal tracking system can further include a RFID interface (21) and a RFID programmer (20) for programming RFID data (38) to a RFID (19). The term RFID (19) for the purposes of this invention can be any type of radiofrequency identification device as above-above described or otherwise which can be attached, incorporated, implanted, imprinted, or held (individually and collectively referred to herein as "implanted") on or within an RFID object (39). For the purposes of this invention, an RFID object (39) can include any manner of object to which an RFID (19) can be implanted and while examples of particular embodiments of the invention are described in the context of an animal tracking system, an animal management system, or attaching, applying, implanting or otherwise coupling an RFID (19) to an animal (40)(or a plurality of animals) such as cattle, deer, sheep, pigs, or the like, the invention is not so limited and the functionalities described herein can be applied in general to asset tracking systems, asset management system in which an RFID can be attached, applied, implanted or otherwise coupled to an asset (41) such as goods whether being transported or in inventory, packages, component parts whether in a manufacturing process or during transit, or the like.

Now referring primarily to Figures 1 and 2, the computer implemented animal management system (or RFID object management system) can further include an RFID reader (42)(or plurality of RFID readers). The RFID reader(s) (42) may transmit a radio-frequency carrier signal (43) to the RFID (19). The RFID (19) may respond to the radio-frequency carrier signal (43) with a RFID data signal (44) to send and receive an amount of RFID information (45) from the RFID (19), or the like.

One non-limiting embodiment of the RFID reader (42) shown in Figures 1 and 2, can provide hardware in the form of an electromagnetic field generator (46) which manages the power level and induction of an electromagnetic drive antenna (47) having inductance between about 3.5 H and about 4.5 H with a 1 to 4 twist, a radio frequency signal receiver (48) which manages a receiving antenna (49) which collects the amount of RFID information (45) sent by

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the RFID (19)(as one example Digikey Part No. TH71111ENE-ND). In another non-limiting embodiment, a radiofrequency module (46a) (as one non-limiting example a RF Monolithics, Inc., Part No. TR7000) which manages a single antenna (47a) (as a non-limiting example a Linx Technologies Part No. ANT-433-MHW-SMA-S) for both sending and receiving of RFID information (45).

The RFID reader (42) hardware, can further include a RFID reader processor (55) which can perform computations based on sensed RFID object information (56)(which can be sensed animal information where the RFID object is an animal (40))(see for example Figure 3) and calibration data (57)(see for example Figure 3)(as non-limiting examples Intel Part No. T80960SA16; Digikey Part No. 803846-ND). A first RFID reader memory (52) can store the amount of RFID information (45) transmitted with the radio-frequency carrier signal (43)(as non-limiting examples Intel Part No. GT28F160B3BA9DSB93, Digikey Part No. CAT28F512LI-12-ND). In an alternative the RFID reader processor (55) can integrally include the first RFID reader memory (52)(as non-limiting examples, Intel Part No. TN80960SA16; Digikey Part No. 8093846-ND; or Microchip Technology Part No. 2411256-I/SM EEPROM). A second RFID reader memory (58) used by the RFID reader processor (55) can perform read-write functions (as one non-limiting example Digikey Part No. CAT1640WI-42-T3cT-ND).

The hardware can further include a communication controller (50) which provides communication with the server computer (1) or remote computer (34) via LAN or WAN (as non-limiting examples Intel Part No. DA82562EM; Digikey Part No. 829707-ND); a LAN port or a WAN port (51) for wired or wireless connection to the server computer (1) or remote computer (34)(as non-limiting examples of wired port connection Amphenol Part No. RJHSE-5381; Digikey Part No. 829707-ND or wireless port connection specification 802.11 revs. a, b, g, or n or bluetooth rev. 1 or bluetooth rev. 2). In alternate embodiment the RFID reader processor (55) can be programmed to further provide the functionalities of the communication controller (50) in the form of Intel Part No. TN80960SA16; Digikey Part No. 8093846-ND; or Microchip Technology Part No. 2411256-I/SM EEPROM.

A clock (53)(as non-limiting examples Digikey Part No. CAT24C256WI-G-ND; Digikey

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Part No. MC88LV926DWR2T-ND; or NPX Semiconductor Part No. PCF8583TD-T) can function to govern timing of events controlled by the RFID reader processor (55) and couples a date-time stamp (54)(see Figure 3) to the amount of RFID information (45).

A RFID reader power source (59)(typically 12 volt direct current in the range of 3.5-4.5 amperes) which can include a voltage regulator (as a non-limiting example a Digikey Part No. LM317D2TR4GSCT-ND).

Again referring primarily to Figures 1 and 2, the particular embodiment of the RFID reader (42) shown can further include a RFID reader application (60)(see "firmware" in Figure 2) in the form of RFID reader modules (61) which can be stored in the first RFID memory (52) of the RFID reader (42) (or could be located in the computer server (1) or in the remote computer (34), as shown in Figure 1). The RFID reader modules (61) stored and implemented by the hardware above-described can include an electromagnetic induction monitor module (62) which functions to monitor current inductance levels (65) in the electromagnetic drive antenna (47), an electromagnetic inductance calculator module (64) which functions to compare current electromagnetic inductance levels (65) to a target electromagnetic inductance level (66), and an electromagnetic inductance controller (67) which functions to adjust current electromagnetic inductance level (65) toward the target electromagnetic inductance level (66).

Again referring primarily to Figures 2 and 3, the particular embodiment of the RFID reader (42) shown can further include RFID reader modules (61) located in the first RFID memory (52) of the RFID reader (42) including a receiver module (68) which functions to create a execution handle to receive the RFID data signal (44) transmitted with the radio-frequency carrier signal (43) from the RFID (19). The receiver module (68) can be activated by detection of movement of an RFID object (39) in the electromagnetic field (69) generated by the electromagnetic field generator (46). The receiver module (68) transfers the RFID data signal (44) which can be decoded by a decoder module (70). The decoder module (70) can be activated by the receiver module (68) and can further function to separate RFID information (45) from a plurality of bit segments (71)(72)(73) of the RFID (19)(see for example Figure 3 and as further described below). The decoder module (70) can as to certain RFID information (45) activate a

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RFID reader calculator module (74) (see Figure 3) to perform calculation functions and generate RFID object characteristic values (75) from sensed RFID object information (56)(see Figure 3). A data management module (76) which can function in part to activate an RFID data encoder module (77) which functions to assemble transmitted RFID information (45) of the bit segments (71)(72)(73) of the RFID (19) (see Figure 3) into a form which can be used by the data management module (76). A serial packet manager (77a) handles data packets output from the RFID reader data encoder module (77) to the communication port (51) for LAN or WAN transmission. A communication port enumerator module (78) functions to assign communication port information for a port controller module (63) which functions to control communications between the data management module (76) and server computer (1) or the remote computer (34).

While the above example describes the components of a RFID reader (42)(including hardware implements the functionalities of the firmware) which can be used with the inventive computer implemented animal management system; the invention is not so limited and a numerous and wide variety of RFID readers (42) known to those of ordinary skill in the art can be made compatible with the functionalities of the animal tracking application (17) further described herein, as one non-limiting example, hand held scanners available from Symbol Technologies, Inc., One Symbol Plaza, Holtsville, New York 11742 and RFID tags from Alien Technology, 1830 NDSU Research Circle North, Forgo, North Dakota 58103.

Now referring primarily to Figures 1 and 3, as to certain embodiments of the computer implemented animal management system, the RFID (19) can be located in the hollow inside of a bolus (79). Certain configurations of the bolus (79) can be ingested by certain RFID objects (39), such as cattle and be retained in a part of the stomach; although the invention is not so limited. A first bit segment (71) of the RFID device (19) implanted in an animal (40) can be encoded or re-encoded with an amount of RFID object identification information (80)(which can be a bolus identification number (81), animal identification number (82), or the like). A second bit segment (72) of the RFID (19) can be encoded or re-encoded from time to time with sensed RFID object characteristics (84) received from a sensor (83) which can be located within the bolus (79) or otherwise implanted within the RFID object (39) whether an animal (40) or an asset (41). For the purposes of this invention, sensed RFID object characteristics (84) can include without limitation

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a sensed characteristic of the RFID object (39), animal (40) or asset (41), for example, any one or more of location, temperature, pH, or the like, or any one or more of physiological characteristics of an animal (40) such as temperature, pH, heart rate, blood pressure, partial pressures of dissolved gases, or the like. The sensor (83) can as non-limiting examples be an omnidirectional tilt and vibration Sensor (PN SQ-SEN-200) distributed by Signal Quest Precision Microsensors; a Betachip Thermistor (PN 1K2OG3) distributed by BetaTHERM Sensors; a humidity sensor (PN HCZ-D5) distributed by Ghitron Technology CO., Ltd; an ultra miniature pressure transducer (PN COQ-062) distributed by Kulite, a proximity sensor (PN PY3-AN-3) distributed by Automation Direct.com. Variation of the sensed RFID object characteristic(s)(84) can be continuously or intermittently updated by encoding or re-encoding the second bit segment (72) of the RFID (19). A third bit segment (73) of the RFID (19) can be encoded or re-encoded from time to time with an amount of calibration data (57) which allows a RFID object characteristic value (75) to be calculated from the sensed RFID object characteristic (84) of the RFID object (39), animal (40) or asset (41).

The RFID object identification information (80), the sensed RFID object characteristics (84), and the amount of calibration data (57) can be collected from the corresponding first bit segment (71), second bit segment (72), and third bit segment (73) of the RFID (19) by the RFID reader (42), as above described, when the RFID object (39) passes within sufficiently close proximity of the RFID reader (42). As to certain embodiments of the RFID reader (42) the RFID object identification information (80) and the sensed RFID object characteristics (84) and the calibration data (57) can be received by the RFID reader (42) and coupled to a time-date stamp (54)(which for example can take the form of HH:MM:SS and MM/DD/YY). The RFID object characteristic value (75) can be calculated by operation of a RFID reader calculator module (74) having a location in the RFID reader (42) or in the server computer (2) or the remote computer (34)(as to certain embodiments) using the sensed RFID object characteristic (74) and the calibration data (57). A parity segment (73a) can be located at the beginning and the end of the RFID information (45) from a plurality of bit segments (71)(72)(73) to identify the start and the stop of the RFID information (45).

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The RFID object identification information (80) and the sensed RFID object characteristics value (75) can be separated, sorted and loaded into a current reads database table (86) stored in the first RFID memory (52) or in the server computer (1) or in the remote computer (34) memory (as to certain embodiments). The current reads database table (86) matches the calculated RFID object characteristic value (75) and time-date stamp (54). The calculated RFID object characteristic value (75) and time-date stamp (54) matched to the RFID object identification information (80) in the current reads database table (86) can in a further step be separated or sorted by RFID object identification information (80)(or a bolus identification number (81) animal identification number (82) for animal (40) embodiments) and the current reads for each of a plurality of individual RFID objects (39) can be stored in a corresponding plurality of RFID database tables (87) stored in a memory element (3) of the server computer (1) or remote computer (34) for retrieval by RFID object identification information (80) (animal identification number (82) or bolus identification number (81) depending upon the application of the invention.

Again referring primarily to Figure 3, which provides a non-limiting example of a RFID object database table (87) ("Storage Database #1234 in the example) which includes the current reads for the RFID object (39) (#1234) in which the sensed RFID object characteristic (84) of the RFID object (39) is temperature calculated by operation of the a RFID reader calculator module (74) utilizing sensed RFID object characteristic (84)(temperature) and calibration data (57) to produce a RFID object characteristic value (75) representing the temperature of the RFID object (39) which can be for example the temperature of a bovine animal which can be encoded by or assembled or matched with the animal identification number (82)(or bolus identification number (82)) and the date-time stamp (54) into the RFID object database table (87) by the a data encoder module (77) or encoder-decoder application (18) at the level of the server computer (1) or remote computer (34).

RFID object characteristic values (75), the date-time stamp (54), and the animal identification number (82) encoded or assembled can be automatically entered into the current reads database table (86) and automatically separated by animal identification number (82) and automatically entered into the RFID object database table (87) data can be transmitted from the

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RFID reader (42) in a LAN or WAN or BLUETOOTH environment or collected from a USB peripheral such as a barcode scanner, or collected from a external database (see Figure 4 "Automatic Data Entry" (89a)) to the server computer (1) or the remote computer (34).

Again referring primarily to Figures 4 and 5, the animal management application (17) of the server computer (1) can further function to generate a graphic user interface (88) which can be viewed on the monitor (26) of the server computer (1) the remote computer (34) and provides control icons (31) (or fields or other interactive indicia) which by click event activate certain modules of the animal management application (17). In one non-limiting embodiment of the animal management application (17), the generated graphic user interface (88) provides a data entry icon (89) which upon click event generates data entry tables (90)(see for example Figure 5) into which data can be automatically entered (89a) or manually entered (89b)(see Figure 4 "Manual Data Entry") for transfer to RFID relational database tables (91) and RFID object database tables (87) by click event such as mouse click of drop down menus, key board, touch screen, PDA stylus, voice recognition, or the like, as further described below.

Now referring primarily to Figure 5, click event on the data entry icon (89) activates a manual data entry module (92) which can function to generate a RFID object relational data base table (91) which provides a list of relational tables (93) having linked relation to each other. While the particular examples provided by this description and the corresponding Figures may utilize particular terms to readily identify particular tables; however, these terms are not intended to be limiting with respect to the breadth of the functionality encompassed by that particular table. By click event, for example, on the Table: Bolus ID (94), a bolus identification table (95) or bolus identification field can be generated into which a bolus identification number (81) can be entered. Entry of the a bolus identification number (81)(for example 1234) into the bolus identification table (95) operates to change the bolus identification number (81) in the RFID object relational database table (91) assigned to the particular animal (40). Similarly, by click event on the Table: Ear tag ID (96) in the list of relational tables (93), an ear tag identification table (96a) can be generated into which an ear tag identifier (97) can be entered. Entry of the ear tag identifier (97) into the ear tag identification table (96a) operates to change the ear tag

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identifier (97) in the RFID object relational database table (91) assigned to the particular RFID object (39) (in this example an animal (40)).

Now referring primarily to Figure 6, click event on the data entry icon (89) can activate the manual data entry module (92) which can function to display a RFID object relational data base table (91) which provides a list of relational tables (93) which have linked relation to each other. Click event in any one of the list of relational tables (93)(for example, on "Table: Diagnosis" (98))(see for example Figure 5) can generate a RFID object database table (91)(in this example the "Storage Database Diagnosis Table" (99))(see Figure 6) which can be configured to include any number of diagnosis identifiers (100) (for example row "Mastitis" (101)). Each diagnosis identifier (100) can be matched with a diagnosis identifier number (102) (Mastitis matched with diagnosis identifier number 1 (103)) and matched with a storage database identifier (104) (Mastitis matched with storage database 01). Upon entry of the diagnosis identifier (101) matched with the diagnosis identifier number (103) and storage database number (104) the animal management application (17) can function to update the RFID object relational database table (91) of the RFID object (39) (animal (40)) to include the diagnosis status (99a) in the correspondingly linked field (refer to Figure 5 in which the linked field Table: Diagnosis has been updated to include 01,1 for the RFID object relational database table (91) of the animal (40) associated with ear tag identifier (97) ("456").

Now referring primarily to Figure 7, as one additional non-limiting example, click event on the data entry icon (89) can further activate the data entry module (92) to provide the RFID object storage database table (91) of a particular RFID object (39) (animal (40)). By click event on Table: Diagnosis (98), a Treatment Storage Database Table (105) can be graphically displayed which allows a treatment plan (106) to be entered for a particular animal (40) including a treatment identifier (107) (typically a numeric value), the treatment material (108)(drug or other therapeutic material), the number of days of use (109), the number of clearance days (110), the number of units of treatment material (111), the units (112), and the storage database identifier (113). Upon entry of the treatment plan (106), the RFID object relational database table (91) of the particular RFID object (39)(animal (40))(see Figure 5) would be updated for example in the Table: Treatment (114) to include treatment status 02, 1 (114a) (see Figure 5) identifying the

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treatment plan (106) for the RFID object (39)(animal (40)) having the related ear tag identifier (97)(bolus number (81)).

Now referring primarily to Figure 8, as one additional non-limiting example, click event on the data entry icon (89) can further activate the data entry module (92) to retrieve the RFID object relational database table (91) of a particular RFID object (39)(animal (40). By click event in the RFID object relational database table (91) of "Pen Number" (115), a Pen Definition Storage Database Table (116) can be graphically displayed which allows a pen definition (117) to be created whether for a pen in general or for a pen in which to locate a particular the RFID object (39) (animal (40)). By creating a pen definition (117) for a RFID object(s) (39) (animal (40)), those RFID objects (39)(animals (40)) having a similar status such as days in milk (118), milk production (119), reproductive status (120), or the like can be grouped together in the same pen number(s)(115). Accordingly, the pen definition (117) can be created by selection or entry of pen definition elements (121) sufficient to define the pen for a category of RFID objects (39)(animal (40)) such as a pen description (121)(such as high production, low production, or the like), pen number (122), RFID object database table identifier (123), maximum count (124), minimum count (125), maximum milking days (126), minimum milking days (127), milking schedule (128), maximum days pregnant (129), minimum days pregnant (130), breeding status (131), milk production (132), or the like. Upon entry of the pen definition elements (121) the pen number (122) and the RFID object database table identifier (123) can be updated into the RFID object relational database tables (91)(see Figure 5 showing pen status identifier (115a) as 03-050).

Again referring primarily to Figure 4, the animal management application (17) of the server computer (1) can further function as above described to generate the graphic user interface (88) which further provides control icons (31) which by click event activate provides a list display icon (133) which upon click event displays a plurality of list icons (134) such as an Alert List (135), a Hospital List (136), a Pens List (137), or Malfunction List (138) each of which upon click event activates the functionalities of a corresponding alert module (135a), hospital module (139), pen module (140), or malfunction module (141), or the like, as further described below.

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Now referring primarily to Figure 9, which provides a block diagram which illustrates how the alert module (135a) populates an alert list (135). While the example provided by Figure 9, illustrates how the alert module (135a) operates for the sensed RFID object characteristic (84) of sensing temperature of an animal (40); the invention is not so limited and any sensed RFID object characteristic (84) for which a RFID object characteristic value (85) can be generated and compared to a corresponding threshold range (143) can the basis for populating an alert list (135) for the sensed RFID object characteristics (84) such as location, temperature, pH, heart rate, blood pressure, partial pressures of dissolved gases, or the like, in accordance with the invention.

Now referring primarily to Figures 3 and 9, which provides a non-limiting example of a sensed RFID object characteristic (84) which can be updated from time to time as an RFID object characteristic value (75) for temperature in the current reads database table (86) and the RFID object database table (87) and stored in the memory element (3) of the server computer (1) or remote computer (34), as above described. The alert module (135a) can further function to compare the updated RFID object characteristic value (75) for a particular RFID object (39)(animal (40) in this non-limiting example the sensed temperature of bolus identification number (81) 1234 (BID#1234)) with the prior established threshold values (144)(for example a high threshold value and a low threshold value for BID#1234) for the sensed RFID object characteristic value (75) for temperature of the same animal (40)(see for example Figure 9). As to certain embodiments, the alert module (135a) can function to average all the prior sensed RFID object characteristic values (75) for a particular sensed RFID object characteristic (84)(in the instant example temperature values for BID#1234) of a particular RFID object (39)(animal (40)) to generate a mean value (145) for the prior sensed RFID object characteristic values (75) for temperature (for example as shown in Figure 9 a mean temperature of 102.6°F fpr BID#1234). The alert module (135a) can further operate on all of the prior sensed RFID object characteristic values (75) for temperature of that particular RFID object (39)(animal (40) BID#1234) to establish a mean deviation value (146). The alert module can utilize the mean deviation value (146) to generate a RFID object characteristic value range (147) for the sensed RFID object characteristic values (75) (temperature) for that particular RFID object (39)(animal (40) BID#1234 as shown Figure 9 a range (147) of about 103°F to about 101.0°F). The numeric value at the either end of the RFID object characteristic value range (147) provides the threshold

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values (144) against which sensed RFID object characteristic values (temperature values for BID#1234 in the instant example) can be compared by function of the alert module (135a). The alert module (135a) can then compare each new sensed RFID object characteristic value (75) to the threshold values (144). The alert module (138) can then function to populate the alert list (135)(viewable by click event on the list display icon (133)) with RFID object identification information (80)(such as BID#1234) coupled to RFID object characteristic values (75)(in the instant example temperature values) which are outside of the value range (147) established by the threshold values (144).

Now referring primarily to Figure 10, which shows an alert list (135) populated with RFID object identification information (80) having a sensed RFID object characteristic value (75) (in the instant example, temperature values of animal (40)) that fall outside of the RFID object characteristic value range (147) thresholds (144)). The alert list module (135a) can further function upon click event of a listed RFID object (39)(or the object identification information (80) and in this example again referring to BID#1234) to retrieve the corresponding RFID object relational data base table (91) for the listed RFID object (39)(animal (40)), as above described. The RFID object relational data base table (91) allows the RFID object (39)(animal (40)) to be located by pen number (115)(in the example BID#1234 located in Pen Number 3). As further shown in Figure 10, and as prior described, by click event in the list of relational tables (93) the manual data entry module (92) can function to allow entry of diagnosis identifiers (100) and a treatment plan (106), as described above, into the Diagnosis Table (99) and Treatment Table (105). The RFID object relational database table (91) of the particular RFID object (39)(animal (40))(see Figure 5) can be updated to include the new Pen Number (115a)(Hospital Pen 150) and treatment status 02, 1 (114a) (see for example Figure 5) identifying the treatment plan (106) for the RFID object (39)(animal (40)) having the related ear tag identifier (97)(bolus number (81)).

Now referring primarily to Figure 11, which provides a block diagram which illustrates how the hospital module (139) populates a hospital list (136). The hospital module (139) includes a hospital days counter (149) which functions to count the number days (151) a particular RFID object (39)(animal (40)) has been located in a hospital pen (115b). The hospital days counter (149) retrieves from the corresponding RFID object relational data base table (91) and

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corresponding RFID object data base tables (87) the date time stamp (54) for the first day the RFID object (39)(animal (40)) was located in a hospital pen (150) and adds one day to a hospital day count (151) for each 24 hour interval the RFID object (39) remains in the hospital pen (150). The hospital module (139) further includes a treatment days counter (152) which retrieves the date time stamp (54) for the first day of treatment (153) of the RFID object (39) and adds one day to a treatment day count (154) for each treatment day of the RFID object (39). The hospital module (136) further includes a clearance date counter (155) which retrieves the treatment day count (154) from the treatment days counter (152) and the clearance out days (110) from the treatment storage database table (105) to calculate the treatment clearance date (156). The hospital module (136) can further function to draw upon the various RFID object data base tables (87) to generate a hospital list (136) and populate the hospital list (136) with animal identification number (82) in the hospital pen (150), diagnosis (102), hospital day count (157), treatment material (108), treatment day count (154), and clearance date (156).

Now referring primarily to Figure 12, which provides a block diagram that illustrates a functionality of a pen module (140) which populates a pen list (137) to show RFID objects (39)(animal (40)) which are not located in the correct pen number (122). In a first mode, the pen module (140) includes a pen watch module (158) which compares for each RFID object (39)(animal (40)) the pen definition (117) in the pen definition storage database (116) against the actual pen number (122) entered in the corresponding RFID object relational database table (91) for the RFID object (39)(40). The pen module (140) can further function to generate a pen list (137) of the RFID objects (39) having an actual pen number (122) which differs from the corresponding pen definition (117) in the pen definition storage database (116).

Now referring primarily to Figure 13, which provides a block diagram that illustrates another functionality of the pen module (140) which sorts RFID objects (39) based on comparison of the RFID information entered, as above described, into the data entry tables (90) of corresponding RFID object relational data base tables (91) of each RFID object (39)(40). As one non-limiting example, the pen description (121) (for example "high production") can correspond to an RFID object (39)(40) having milk production greater than a pre-selected milk production value (132)(for example ">55") . The sort module (159) can operate to compare the

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milk production value (132) listed for each of a plurality of RFID objects (39)(40) in the corresponding plurality of RFID object relational data base tables (91) to the pen description (121) for "high production". The sort module (159) can then operate to generate a pen list (137) of RFID objects (39)(40) with pen numbers (122) in which "high production" RFID objects can be optimally located. By click event in the graphic user interface (88) of the list display icon (133) and subsequent click event on pens list (133) and click event to activate the sort module (159) all the RFID objects (39) can be included in an sort list (160) with a corresponding optimal pen number (122).

Again referring to Figure 4, the animal tracking system can further include a graph display module (161) which can function upon click event of a corresponding graph display icon (162) in the graphic user interface (88) to generate graphs (163) from data drawn from the RFID object relational data base tables (91) or the RFID object data base tables (87) of individual RFID objects (39)(40) or any particular grouping of RFID objects(39). Alternately, a data display module (163) can function upon click event of a corresponding data display icon (164) in the graphic user interface (88) to generate data display fields (165) which provide a line by line display of data drawn from one or more RFID object relational data base tables (91) or RFID object database tables (87).

For the purposes of the present invention, ranges may be expressed herein as from "about" one particular value to "about" another particular value. When such a range is expressed, another embodiment includes from the one particular value to the other particular value. Similarly, when values are expressed as approximations, by use of the antecedent "about," it will be understood that the particular value forms another embodiment. It will be further understood that the endpoints of each of the ranges are significant both in relation to the other endpoint, and independently of the other endpoint. As to any particular value or any particular range the term "about" means within ten percent of the numerical value or numerical value of the end points of a range.

Moreover, for the purposes of the present invention, the term "a" or "an" entity refers to one or more of that entity; for example, "a relational data base table" refers to one or more of

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those relational data base tables. As such, the terms "a" or "an", "one or more" and "at least one" can be used interchangeably herein.

As can be easily understood from the foregoing, the basic concepts of the present invention may be embodied in a variety of ways which includes as one embodiment described the best mode of the invention. The invention involves numerous and varied embodiments of an animal tracking system. As such, the particular embodiments or elements of the invention disclosed by the description or shown in the figures or tables accompanying this application are not intended to be limiting, but rather exemplary of the numerous and varied embodiments generically encompassed by the invention or equivalents encompassed with respect to any particular element thereof. In addition, the specific description of a single embodiment or element of the invention may not explicitly describe all embodiments or elements possible; many alternatives are implicitly disclosed by the description and figures.

It should be understood that each element of an apparatus or each step of a method may be described by an apparatus term or method term. Such terms can be substituted where desired to make explicit the implicitly broad coverage to which this invention is entitled. As but one example, it should be understood that all steps of a method may be disclosed as an action, a means for taking that action, or as an element which causes that action. Similarly, each element of an apparatus may be disclosed as the physical element or the action which that physical element facilitates. As but one example, the disclosure of a "server" should be understood to encompass disclosure of the act of "serving" -- whether explicitly discussed or not -- and, conversely, were there effectively disclosure of the act of "serving", such a disclosure should be understood to encompass disclosure of a "server" and even a "means for serving." Such alternative terms for each element or step are to be understood to be explicitly included in the description.

In addition, as to each term used it should be understood that unless its utilization in this application is inconsistent with such interpretation, common dictionary definitions should be understood to included in the description for each term as contained in the Random House

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Webster's Unabridged Dictionary, second edition, each definition hereby incorporated by reference.

Thus, the applicant(s) should be understood to claim at least: i) each of the computer implemented animal management systems herein disclosed and described, ii) the related methods disclosed and described, iii) similar, equivalent, and even implicit variations of each of these devices and methods, iv) those alternative embodiments which accomplish each of the functions shown, disclosed, or described, v) those alternative designs and methods which accomplish each of the functions shown as are implicit to accomplish that which is disclosed and described, vi) each feature, component, and step shown as separate and independent inventions, vii) the applications enhanced by the various systems or components disclosed, viii) the resulting products produced by such systems or components, ix) methods and apparatuses substantially as described hereinbefore and with reference to any of the accompanying examples, x) the various combinations and permutations of each of the previous elements disclosed.

The background section of this patent application provides a statement of the field of endeavor to which the invention pertains. This section may also incorporate or contain paraphrasing of certain United States patents, patent applications, publications, or subject matter of the claimed invention useful in relating information, problems, or concerns about the state of technology to which the invention is drawn toward. It is not intended that any United States patent, patent application, publication, statement or other information cited or incorporated herein be interpreted, construed or deemed to be admitted as prior art with respect to the invention.

The claims set forth in this specification, if any, are hereby incorporated by reference as part of this description of the invention, and the applicant expressly reserves the right to use all of or a portion of such incorporated content of such claims as additional description to support any of or all of the claims or any element or component thereof, and the applicant further expressly reserves the right to move any portion of or all of the incorporated content of such claims or any element or component thereof from the description into the claims or vice-versa as necessary to define the matter for which protection is sought by this application or by any

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subsequent application or continuation, division, or continuation-in-part application thereof, or to obtain any benefit of, reduction in fees pursuant to, or to comply with the patent laws, rules, or regulations of any country or treaty, and such content incorporated by reference shall survive during the entire pendency of this application including any subsequent continuation, division, or continuation-in-part application thereof or any reissue or extension thereon.

The claims set forth below are intended to describe the metes and bounds of a limited number of the preferred embodiments of the invention and are not to be construed as the broadest embodiment of the invention or a complete listing of embodiments of the invention that may be claimed. The applicant does not waive any right to develop further claims based upon the description set forth above as a part of any continuation, division, or continuation-in-part, or similar application.

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VI. CLAIMS

1. A computer implemented animal tracking system, comprising:

a) a server connected to a computer network;

b) a storage means providing a database connected to said server;

c) a computer capable of communicating with said server said computer configured with executable program instructions, wherein:

d) a first portion of said executable program instructions when executed retrieves an amount of animal identification information from a first bit segment of an RFID device implanted in an animal;

e) a second portion of said executable program instructions when executed retrieves an amount of sensed animal information from a second bit segment of said RFID device implanted in said animal;

f) a third portion of said executable program instructions when executed links said amount information retrieved from each said bit segment of said RFID device implanted in said animal to an amount of animal information of said animal stored in said database of said computer;

g) a fourth portion of said executable program instructions when executed functions to enter said amount of information retrieved from each said bit segment of said RFID device implanted in said animal linked to said amount of animal information of said animal stored in said database of said computer as logical variables into at least one logical expression;

h) a fifth portion of said executable program instructions when executed solves said at least one logical expression to obtain a corresponding at least one logical value related to said animal;

i) a sixth portion of said executable program instructions when executed stores said at least one logical value in said database; and

j) a seventh portion of said executable program instructions when executed serves said logical value to said computer network.

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2. The computer implemented animal tracking system as described in clam 1, wherein said amount of animal identification information comprises animal identification information from said first bit segment of a plurality of RFID devices implanted in a plurality of animals.

3. The computer implemented animal tracking system as described in clam 2, wherein said amount of sensed animal information comprises sensed animal information from said fourth bit segment of said plurality of RFID devices implanted in said plurality of animals.

4. The computer implemented animal tracking system as described in clam 3, wherein said amount of animal information of said animal stored in said database of said computer comprises an amount of health information for each of said plurality of animals said amount of health information including an occurrence of an illness.

5. The computer implemented animal tracking system as described in clam 4, wherein said amount of animal information of said animal stored in said database of said computer comprises an amount of animal location information.

6. The computer implemented animal tracking system as described in clam 5, wherein said amount of animal information of said animal stored in said database of said computer comprises an amount of date-time information from a second bit segment of said RFID device implanted in said animal.

7. The computer implemented animal tracking system as described in clam 6, wherein said at least one logical expression solves for a selected period of time for said plurality of animals for each of a plurality of animal locations whether a greater than selected number of said occurrence of said illness has occurred at each of said plurality of animal locations.

8. The computer implemented animal tracking system as described in clam 5, wherein said plurality of animal locations comprises a plurality of pen locations.

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9. The computer implemented animal tracking system as described in clam 8, wherein said plurality of animal locations comprises a plurality of GPS locations.

10. The computer implemented animal tracking system as described in clam 9, wherein said amount of animal information of said animal stored in said database of said computer comprises each of an amount of desired pen count information, an amount of milk production information, an amount of days milked information, and an amount of reproductive information.

11. The computer implemented animal tracking system as described in clam 10, wherein said at least one logical expression solves for a selected period of time for each of said plurality of animals which of a plurality of pens in which to locate each of said plurality of animals.

12. The computer implemented animal tracking system as described in clam 5, wherein said amount of animal information of said animal stored in said database of said computer comprises an amount of date-time information as to administration of a first compound to each of said plurality of animals, an amount of date-time information as to administration of a second compound to each of said plurality of animals, an amount of date-time information as to occurrence of first compound effects on each of said plurality of animals, an amount of date-time information as to occurrence of second compound effects on each of said plurality of animals.

13. The computer implemented animal tracking system as described in clam 1, further comprising an RFID device reader.

14. The computer implemented animal tracking system as described in clam 13, wherein said server provides a browser-based user interface which enables an animal tracker to track each animal based on said amount of information retrieved from each said bit segment of said RFID device implanted in said animal.

15. The computer implemented animal tracking system as described in clam 14, wherein said computer network comprises a wide area network.

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16. The computer implemented animal tracking system as described in clam 15, further comprising at least one client computer capable of configuration with said executable program instructions connected to said computer network.

17. The computer implemented animal tracking system as described in clam 16, wherein said at least one client computer comprises a wireless palm device.

18. The computer implemented animal tracking system as described in clam 16, wherein said client computer comprises a cellular telephone.

19. The computer implemented animal tracking system as described in clam 17, wherein said RFID device reader comprises a portable RFID device reader connected to said wireless palm device.

20. The computer implemented animal tracking system as described in clam 19, wherein said at least one client computer comprises a portable RFID device reader connected to said cellular telephone.

21. A computer implemented method of animal tracking, comprising the steps of:

a) connecting a computer to an RFID device reader;

b) reading an RFID device implanted in an animal with said RFID device reader;

c) retrieving an amount of animal identification information from a first bit segment of said RFID device implanted in an animal;

d) retrieving an amount of date-time information from a second bit segment of said RFID device implanted in said animal;

e) retrieving an amount of sensed animal information from a third bit segment of said RFID device implanted in said animal;

f) retrieving an amount of animal location information from a fourth bit segment of said RFID device implanted in said animal;

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g) linking to said amount of information retrieved from each said bit segment of said RFID device implanted in said animal an amount of animal information of said animal stored in a data base of said computer;

h) converting said amount of information retrieved from each bit segment of said RFID device implanted in said animal linked to said amount of animal information of said animal stored in said database of said computer into a plurality of logical variables;

i) inserting at least one of said plurality of logical variables into at least one logical expression;

j) obtaining a logical value relating to said animal.

22. The computer implemented method of animal tracking as described in claim 21, wherein said step of retrieving an amount of animal identification information from a first bit segment of an RFID device implanted in an animal comprises the step of retrieving an amount of animal identification information from a first bit segment of a plurality of RFID devices implanted in a plurality of animals.

23. The computer implemented method of animal tracking as described in claim 22, wherein said step of retrieving an amount of date-time information from a second bit segment of said RFID device implanted in said animal comprises the step of retrieving an amount of date-time information from a second bit segment of said plurality of RFID devices implanted in said plurality of animals.

24. The computer implemented method of animal tracking as described in claim 23, wherein said step of retrieving an amount of sensed animal information from a third bit segment of said RFID device implanted in said animal comprises the step of retrieving an amount of sensed animal information from a third bit segment of said plurality of RFID devices implanted in said plurality of animals.

25. The computer implemented method of animal tracking as described in claim 24, wherein said step of retrieving an amount of animal location information from a fourth bit segment of said RFID device implanted in said animal comprises the step of retrieving an amount of animal

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location information from a fourth bit segment of said plurality of RFID devices implanted in said plurality of animals.

26. The computer implemented method of animal tracking as described in claim 25, wherein said step of linking to said amount of information retrieved from each said bit segment of said RFID device implanted in said animal an amount of animal information of said animal stored in a data base of said computer comprises the step of linking to said amount of information retrieved from each said bit segment of said plurality of RFID devices implanted in said plurality of animals an amount of animal information of each of said plurality of animals stored in said database of said computer.

27. The computer implemented method of animal tracking as described in claim 26, wherein said step of retrieving an amount of sensed animal information from a third bit segment of said plurality of RFID devices implanted in said plurality of animals comprises the step of retrieving an amount of sensed temperature information from said third bit segment of said plurality of RFID devices implanted in said plurality of animals.

28. The computer implemented method of animal tracking as described in claim 27, wherein the step of linking to said amount of information retrieved from each said bit segment of said plurality of RFID devices implanted in said plurality of animals an amount of animal information of each of said plurality of animals stored in said database of said computer comprises the step of linking to said amount of information retrieved from each said bit segment of said plurality of RFID devices implanted in said plurality of animals an amount of health information corresponding to each of said plurality of animals.

29. The computer implemented method of animal tracking as described in claim 28, wherein the step of retrieving an amount of animal location information from a fourth bit segment of said plurality of RFID devices implanted in said plurality of animals comprises retrieving an amount of animal pen location information from a fourth bit segment of said plurality of RFID devices implanted in said plurality of animals.

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30. The computer implemented method of animal tracking as described in claim 29, wherein said step of inserting at least one of said plurality of logical variables into at least one logical expression comprises the step of inserting an occurrence of illness for each of said plurality of animals in a selected pen during a selected period of time to determine whether there is a greater than selected number of said occurrence of illness.

31. The computer implemented method of animal tracking as described in claim 27, wherein the step of linking to said amount of information retrieved from each said bit segment of said plurality of RFID devices implanted in said plurality of animals an amount of animal information of each of said plurality of animals stored in said database of said computer comprises the step of linking to said amount of information retrieved from each said bit segment of said plurality of RFID devices implanted in said plurality of animals an amount of desired pen count information, an amount of milk production information, an amount of days milked information, and an amount of reproductive information.

32. The computer implemented method of animal tracking as described in claim 31, wherein said step of inserting at least one of said plurality of logical variables into at least one logical expression comprises the step of comprises the step of inserting an amount of desired pen count information, an amount of milk production information, an amount of days milked information, and an amount of reproductive information.

33. The computer implemented method of animal tracking as described in claim 32, wherein said step of obtaining a logical value relating to said animal comprises the step of obtaining for a selected period of time for each of said plurality of animals which of a plurality of pens in which to locate each of said plurality of animals.

34. The computer implemented method of animal tracking as described in claim 27, wherein the step of linking to said amount of information retrieved from each said bit segment of said plurality of RFID devices implanted in said plurality of animals an amount of animal information of each of said plurality of animals stored in said database of said computer comprises the step of linking to said amount of information retrieved from each said bit segment of said plurality of

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RFID devices implanted in said plurality of animals an amount of date-time information as to administration of a first compound to each of said plurality of animals, an amount of date-time information as to administration of a second compound to each of said plurality of animals, an amount of date-time information as to occurrence of first compound effects on each of said plurality of animals, an amount of date-time information as to occurrence of second compound effects on each of said plurality of animals.

35. The computer implemented method of animal tracking as described in claim 34, wherein said step of inserting at least one of said plurality of logical variables into at least one logical expression comprises the step of inserting an amount of date-time information as to administration of a first compound to each of said plurality of animals, an amount of date-time information as to administration of a second compound to each of said plurality of animals, an amount of date-time information as to occurrence of first compound effects on each of said plurality of animals, an amount of date-time information as to occurrence of second compound effects on each of said plurality of animals.

36. The computer implemented method of animal tracking as described in claim 21, further comprising the step of providing a server connected to said computer which provides a browser-based user interface which enables an animal tracker to track each of said plurality of animals based on said amount of information retrieved from each said bit segment of said plurality of RFID devices implanted in said plurality of animals.

37. The computer implemented method of animal tracking as described in claim 36, further comprising the step of providing a computer network connected to said computer.

38. The computer implemented method of animal tracking as described in claim 37, further comprising the step of providing a wide area network to which said computer connects.

39. The computer implemented method of animal tracking as described in claim 38, further comprising the step of providing at least one client computer capable of configuration with said executable program instructions connected to said wide area network.

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40. The computer implemented method of animal tracking as described in claim 39, wherein said step of providing at least one client computer capable of configuration with said executable program instructions connected to said wide area network comprises the step of providing a palm device capable of configuration with said executable program instructions connected to said wide area network.

41. The computer implemented method of animal tracking as described in claim 40, wherein said step of providing at least one client computer capable of configuration with said executable program instructions connected to said wide area network comprises the step of providing a cellular telephone capable of configuration with said executable program instructions connected to said wide area network.

42. The computer implemented method of animal tracking as described in any one of claims 39, 40, or 41, further comprising the step of providing a portable RFID device reader.

43. The computer implemented method of animal tracking as described in claim 42, further comprising the step of connecting said portable RFID device reader to said client computer.

44. The computer implemented animal tracking system as described in clam 42, further comprising the step of connecting said portable RFID device reader to said wireless palm device.

45. The computer implemented animal tracking system as described in clam 42, further comprising the step of connecting said portable RFID device reader to said cellular telephone.

46. The computer implemented animal tracking system as described in clam 42, wherein said step of reading an RFID device implanted in an animal with said RFID device reader comprises the step of reading an RFID device said RFID device part of a bolus ingested by a bovine animal.

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VII. ABSTRACT.

Specifically, a computer implemented animal management program having modules which function to match animal information retrieved from a radiofrequency identification device(s) implanted in an animal(s) with animal information retrieved from a database of at least one computer to assess animal condition and time treatment events.

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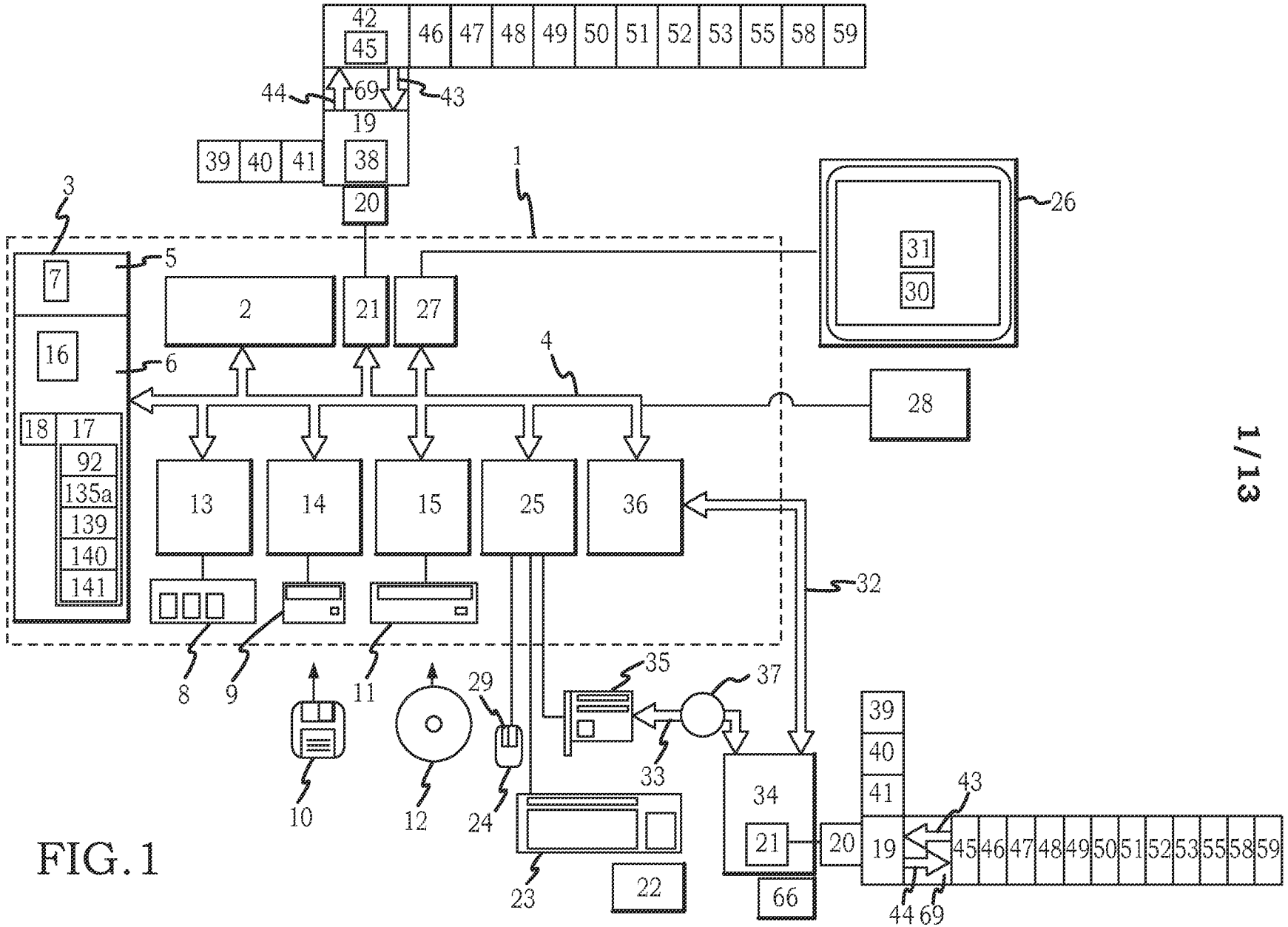

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17
92
135a
139
140
141
13
14
15
25
36
32
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9
11
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35
37
33
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41
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59
23
22
66
44
69

FIG. 1

1/13

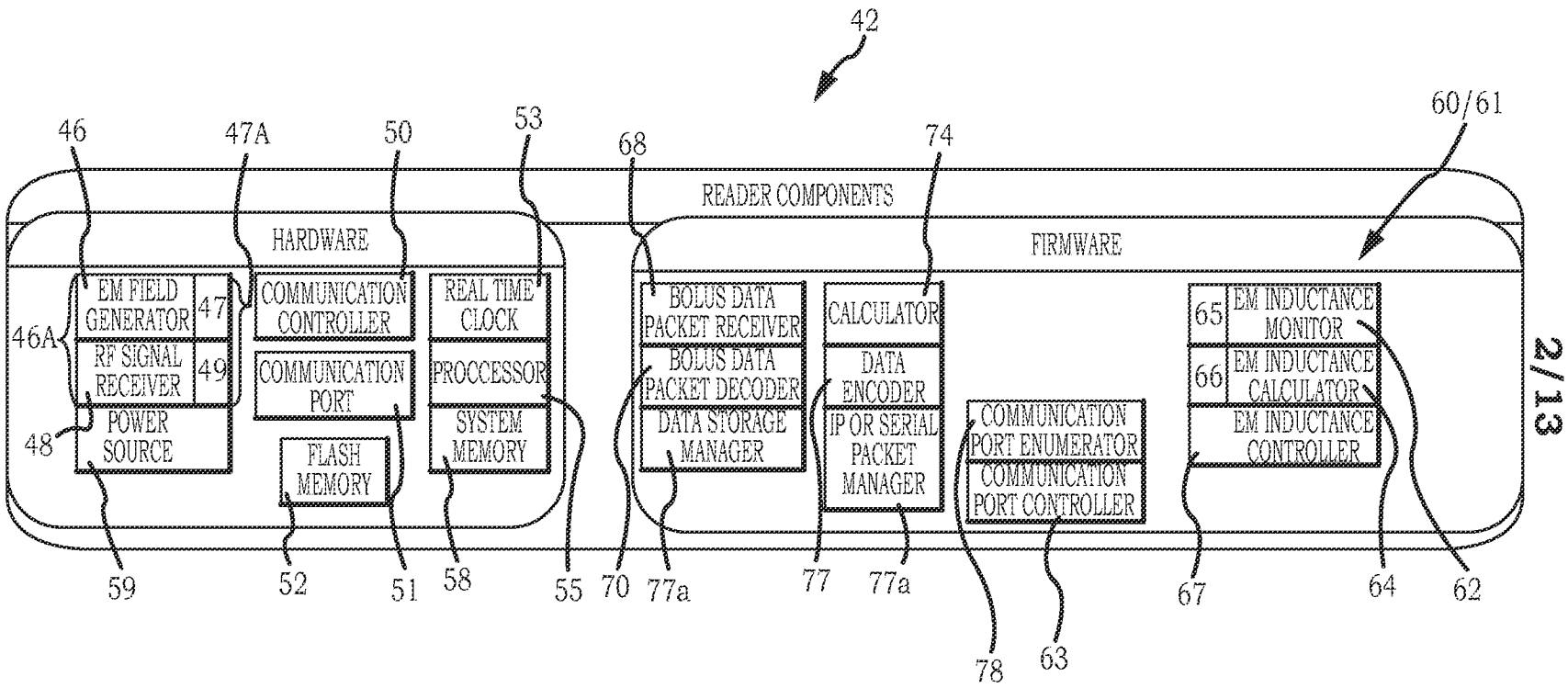

42
46
47A
50
53
68
74
60/61
READER COMPONENTS
HARDWARE
FIRMWARE
EM FIELD GENERATOR
47
RF SIGNAL RECEIVER
49
46A
POWER SOURCE
48
COMMUNICATION CONTROLLER
COMMUNICATION PORT
FLASH MEMORY
REAL TIME CLOCK
PROCCESSOR
SYSTEM MEMORY
BOLUS DATA PACKET RECEIVER
BOLUS DATA PACKET DECODER
DATA STORAGE MANAGER
CALCULATOR
DATA ENCODER
IP OR SERIAL PACKET MANAGER
COMMUNICATION PORT ENUMERATOR
COMMUNICATION PORT CONTROLLER
65
EM INDUCTANCE MONITOR
66
EM INDUCTANCE CALCULATOR
EM INDUCTANCE CONTROLLER
59
52
51
58
55
70
77a
77
77a
78
63
67
64
62
2/13

FIG.2

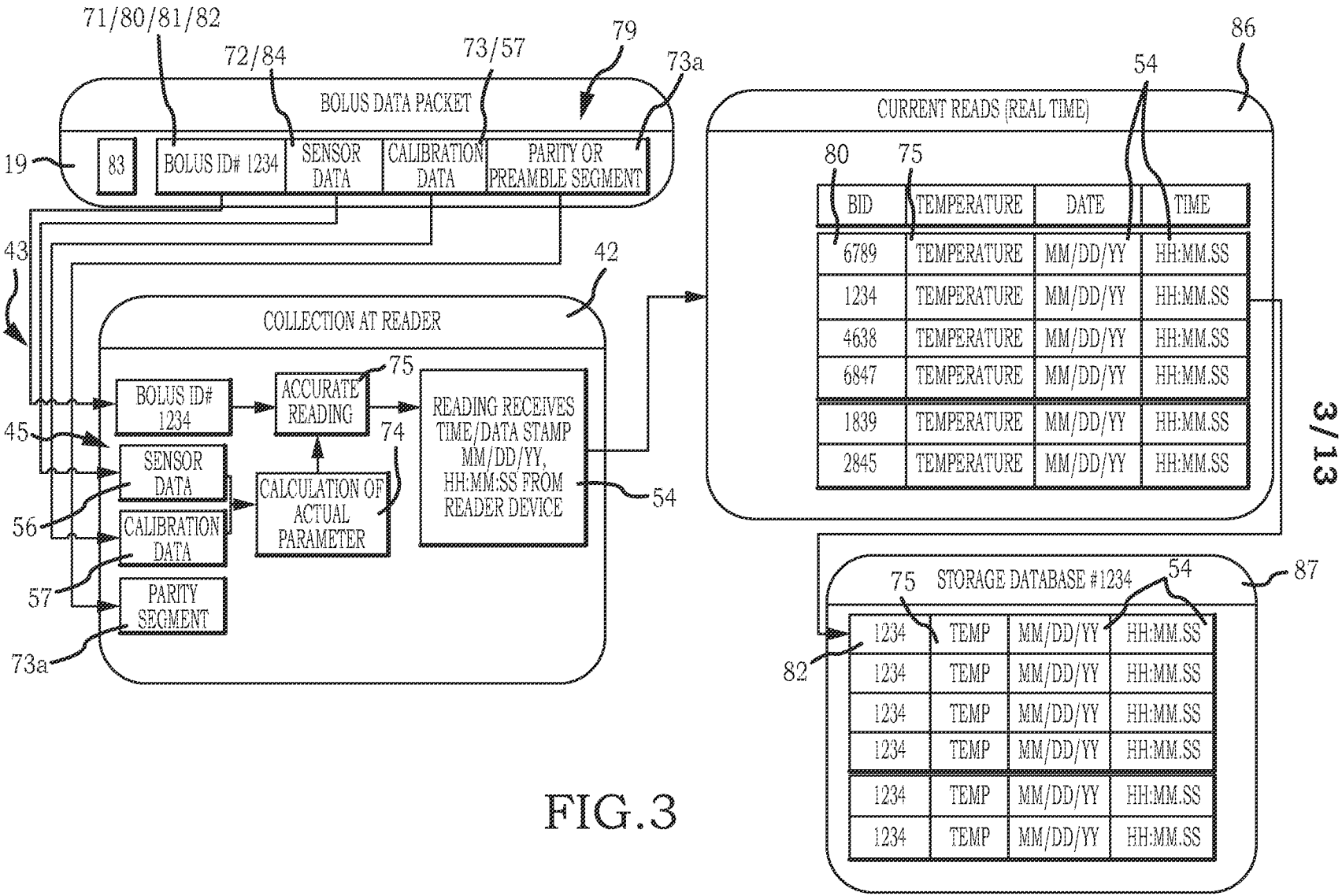

71/80/81/82
72/84
73/57
79
73a
BOLUS DATA PACKET
19
83
BOLUS ID# 1234
SENSOR DATA
CALIBRATION DATA
PARITY OR PREAMBLE SEGMENT
43
42
COLLECTION AT READER
BOLUS ID# 1234
ACCURATE READING
75
READING RECEIVES TIME/DATA STAMP MM/DD/YY, HH:MM:SS FROM READER DEVICE
45
SENSOR DATA
74
CALCULATION OF ACTUAL PARAMETER
56
CALIBRATION DATA
57
PARITY SEGMENT
73a
54
86
CURRENT READS (REAL TIME)
80
75
54
BID
TEMPERATURE
DATE
TIME
6789 TEMPERATURE MM/DD/YY HH:MM.SS
1234 TEMPERATURE MM/DD/YY HH:MM.SS
4638 TEMPERATURE MM/DD/YY HH:MM.SS
6847 TEMPERATURE MM/DD/YY HH:MM.SS
1839 TEMPERATURE MM/DD/YY HH:MM.SS
2845 TEMPERATURE MM/DD/YY HH:MM.SS
87
75
STORAGE DATABASE #1234
54
82
1234 TEMP MM/DD/YY HH:MM.SS
1234 TEMP MM/DD/YY HH:MM.SS
1234 TEMP MM/DD/YY HH:MM.SS
1234 TEMP MM/DD/YY HH:MM.SS
1234 TEMP MM/DD/YY HH:MM.SS
1234 TEMP MM/DD/YY HH:MM.SS

FIG.3

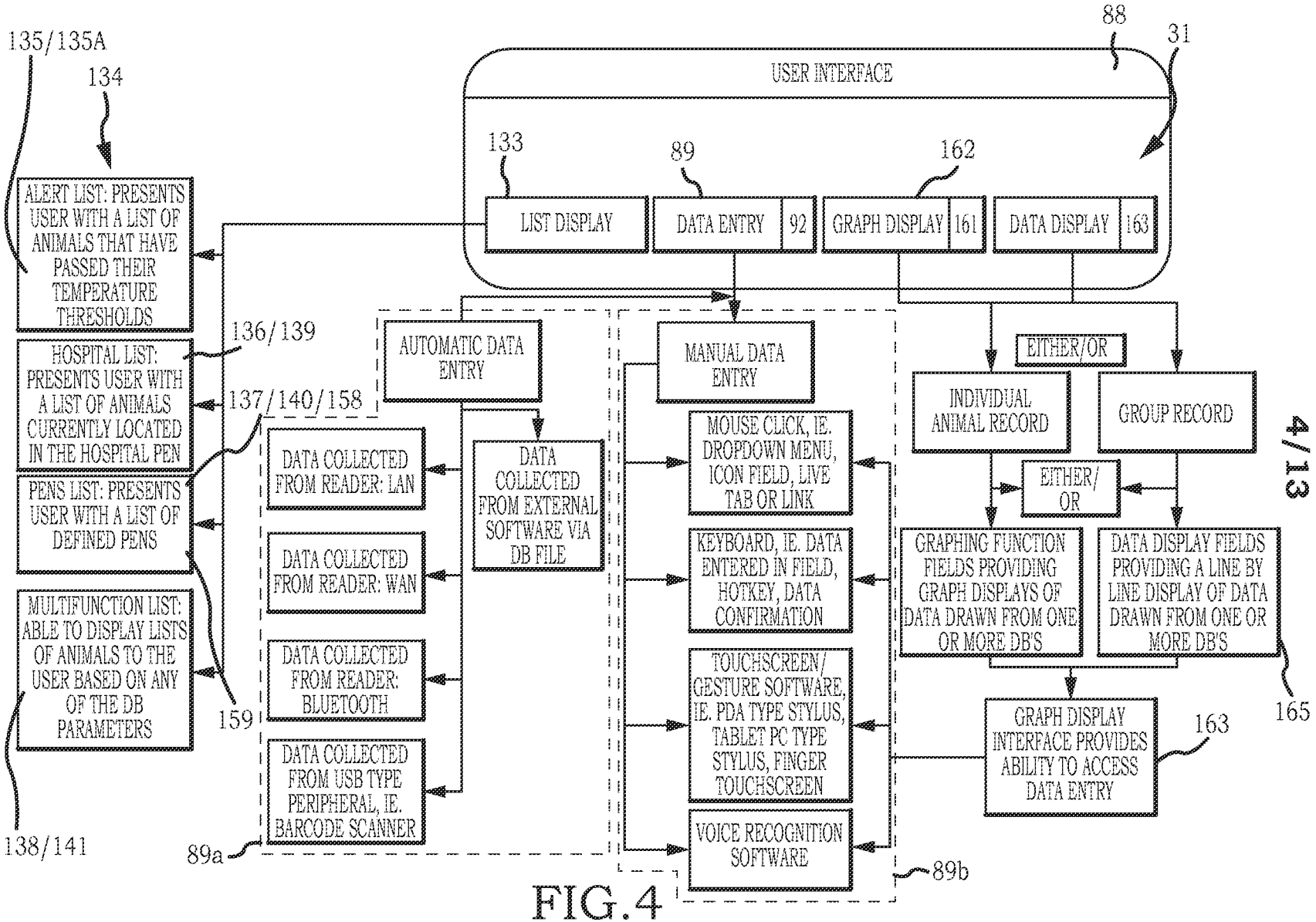

135/135A
134
88
31
USER INTERFACE
133
89
162
LIST DISPLAY
DATA ENTRY
92
GRAPH DISPLAY
161
DATA DISPLAY
163
ALERT LIST: PRESENTS USER WITH A LIST OF ANIMALS THAT HAVE PASSED THEIR TEMPERATURE THRESHOLDS
136/139
HOSPITAL LIST: PRESENTS USER WITH A LIST OF ANIMALS CURRENTLY LOCATED IN THE HOSPITAL PEN
137/140/158
PENS LIST: PRESENTS USER WITH A LIST OF DEFINED PENS
MULTIFUNCTION LIST: ABLE TO DISPLAY LISTS OF ANIMALS TO THE USER BASED ON ANY OF THE DB PARAMETERS
159
138/141
AUTOMATIC DATA ENTRY
DATA COLLECTED FROM READER: LAN
DATA COLLECTED FROM READER: WAN
DATA COLLECTED FROM READER: BLUETOOTH
DATA COLLECTED FROM USB TYPE PERIPHERAL, IE. BARCODE SCANNER
DATA COLLECTED FROM EXTERNAL SOFTWARE VIA DB FILE
89a
MANUAL DATA ENTRY
MOUSE CLICK, IE. DROPDOWN MENU, ICON FIELD, LIVE TAB OR LINK
KEYBOARD, IE. DATA ENTERED IN FIELD, HOTKEY, DATA CONFIRMATION
TOUCHSCREEN/ GESTURE SOFTWARE, IE. PDA TYPE STYLUS, TABLET PC TYPE STYLUS, FINGER TOUCHSCREEN
VOICE RECOGNITION SOFTWARE
89b
EITHER/OR
INDIVIDUAL ANIMAL RECORD
GROUP RECORD
EITHER/ OR
GRAPHING FUNCTION FIELDS PROVIDING GRAPH DISPLAYS OF DATA DRAWN FROM ONE OR MORE DB'S
DATA DISPLAY FIELDS PROVIDING A LINE BY LINE DISPLAY OF DATA DRAWN FROM ONE OR MORE DB'S
165
GRAPH DISPLAY INTERFACE PROVIDES ABILITY TO ACCESS DATA ENTRY
163
4/13

FIG.4

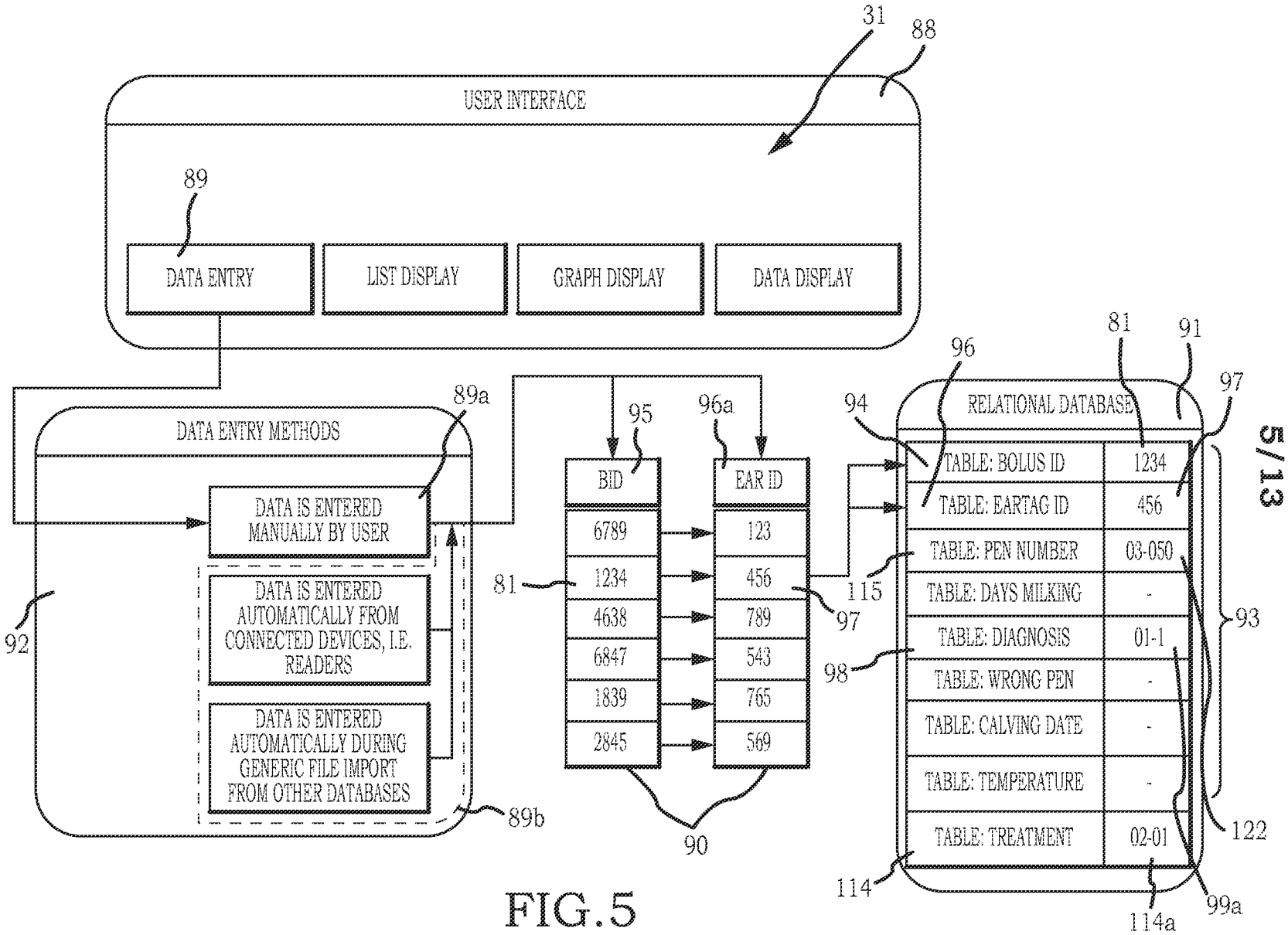

31
88
USER INTERFACE
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
89a
DATA ENTRY METHODS
DATA IS ENTERED MANUALLY BY USER
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS
DATA IS ENTERED AUTOMATICALLY DURING GENERIC FILE IMPORT FROM OTHER DATABASES
92
89b
95
96a
BID
EAR ID
6789
123
1234
456
4638
789
6847
543
1839
765
2845
569
81
97
90
96
81
91
97
94
RELATIONAL DATABASE
TABLE: BOLUS ID
1234
TABLE: EARTAG ID
456
TABLE: PEN NUMBER
03-050
TABLE: DAYS MILKING
-
TABLE: DIAGNOSIS
01-1
TABLE: WRONG PEN
-
TABLE: CALVING DATE
-
TABLE: TEMPERATURE
-
TABLE: TREATMENT
02-01
115
98
93
122
114
114a
99a

FIG.5

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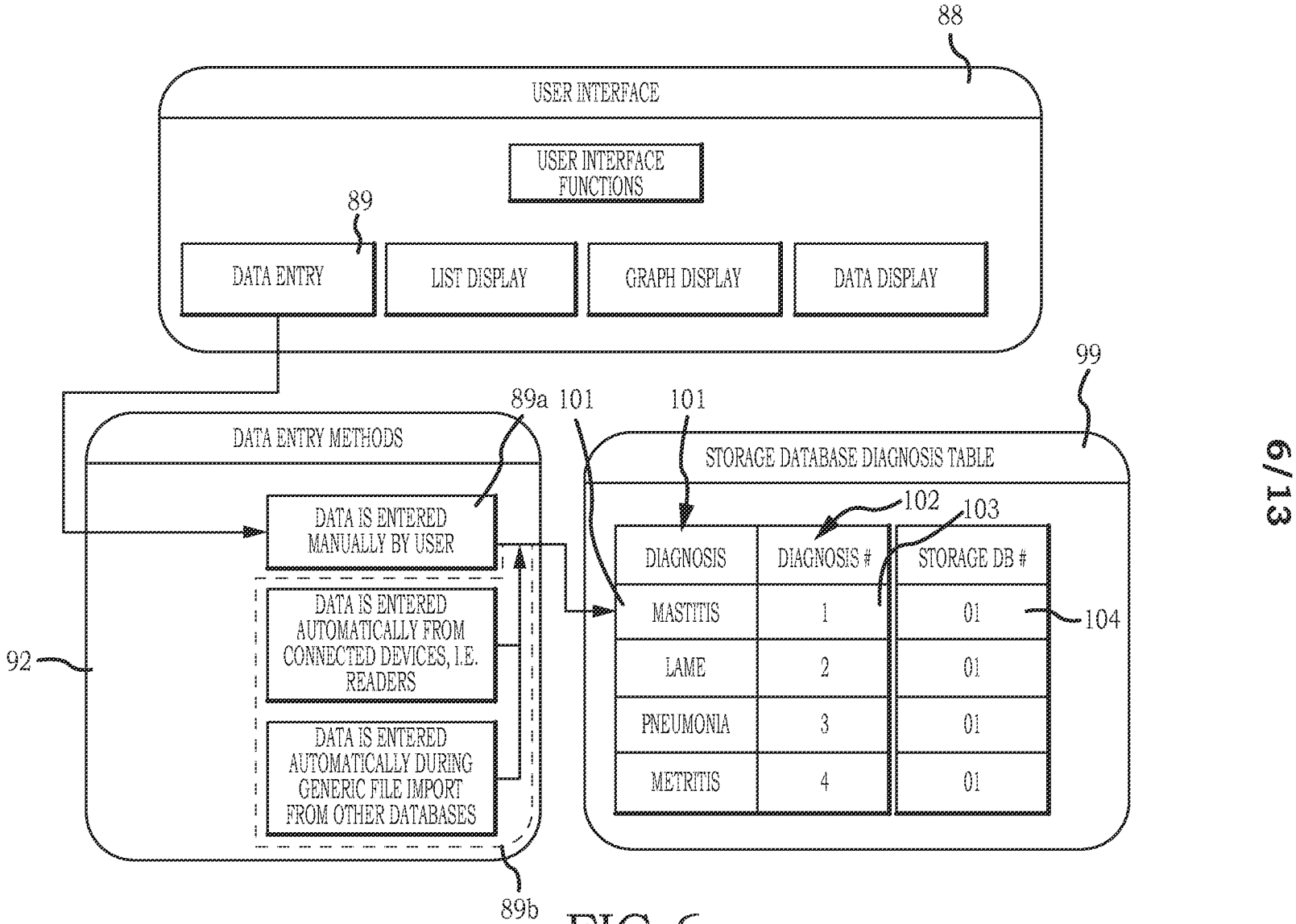

88
USER INTERFACE
USER INTERFACE FUNCTIONS
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
99
89a
101
101
DATA ENTRY METHODS
STORAGE DATABASE DIAGNOSIS TABLE
102
103
DATA IS ENTERED MANUALLY BY USER
DIAGNOSIS
DIAGNOSIS #
STORAGE DB #
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS
MASTITIS
1
01
104
LAME
2
01
92
DATA IS ENTERED AUTOMATICALLY DURING GENERIC FILE IMPORT FROM OTHER DATABASES
PNEUMONIA
3
01
METRITIS
4
01
89b

FIG.6

6/13

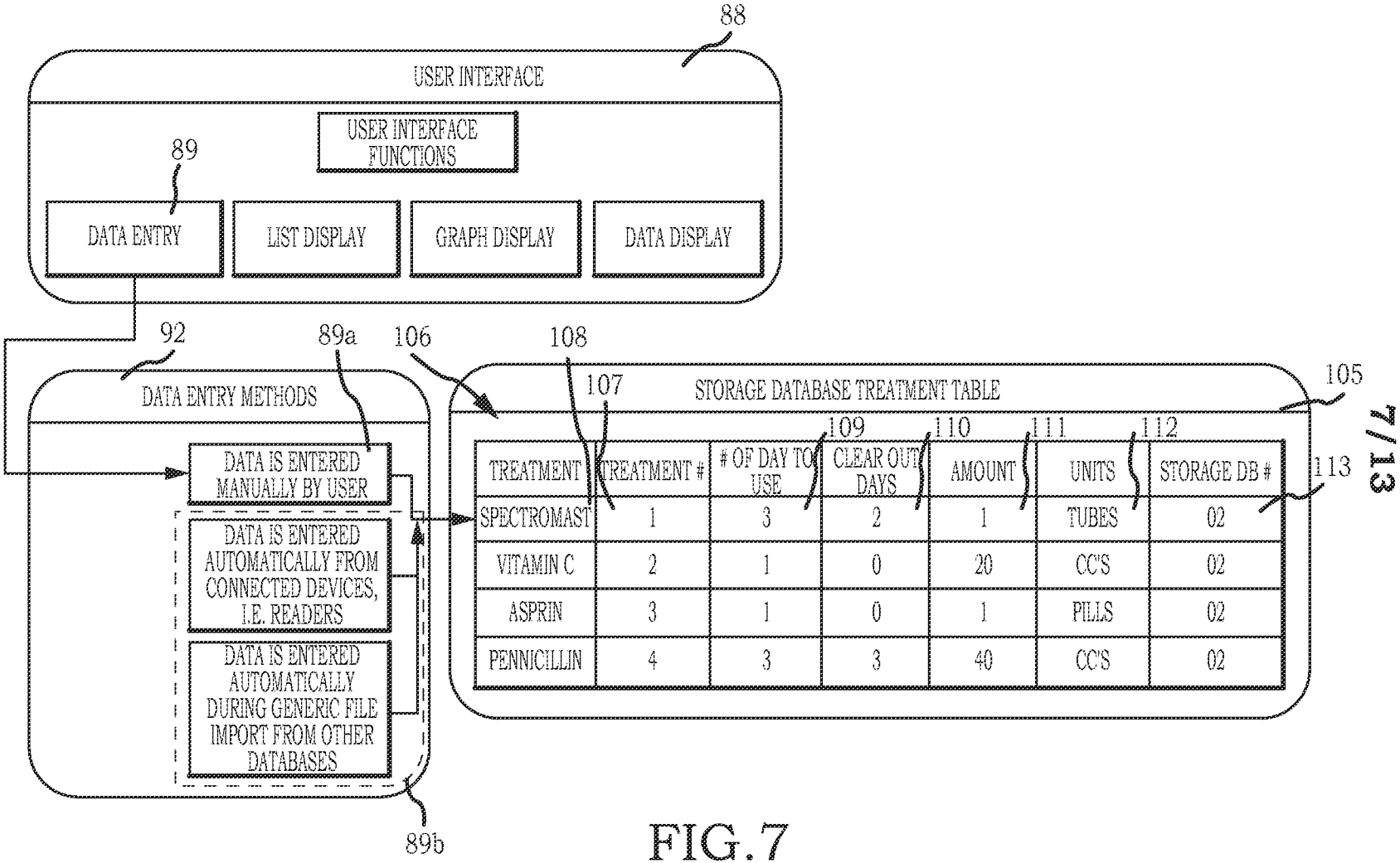

88
USER INTERFACE
USER INTERFACE FUNCTIONS
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
92
89a
106
108
DATA ENTRY METHODS
DATA IS ENTERED MANUALLY BY USER
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS
DATA IS ENTERED AUTOMATICALLY DURING GENERIC FILE IMPORT FROM OTHER DATABASES
89b
107
STORAGE DATABASE TREATMENT TABLE
105
109
110
111
112
113
TREATMENT
TREATMENT #
OF DAY TO USE
CLEAR OUT DAYS
AMOUNT
UNITS
STORAGE DB #
SPECTROMAST 1 3 2 1 TUBES 02
VITAMIN C 2 1 0 20 CC'S 02
ASPRIN 3 1 0 1 PILLS 02
PENNICILLIN 4 3 3 40 CC'S 02

FIG. 7

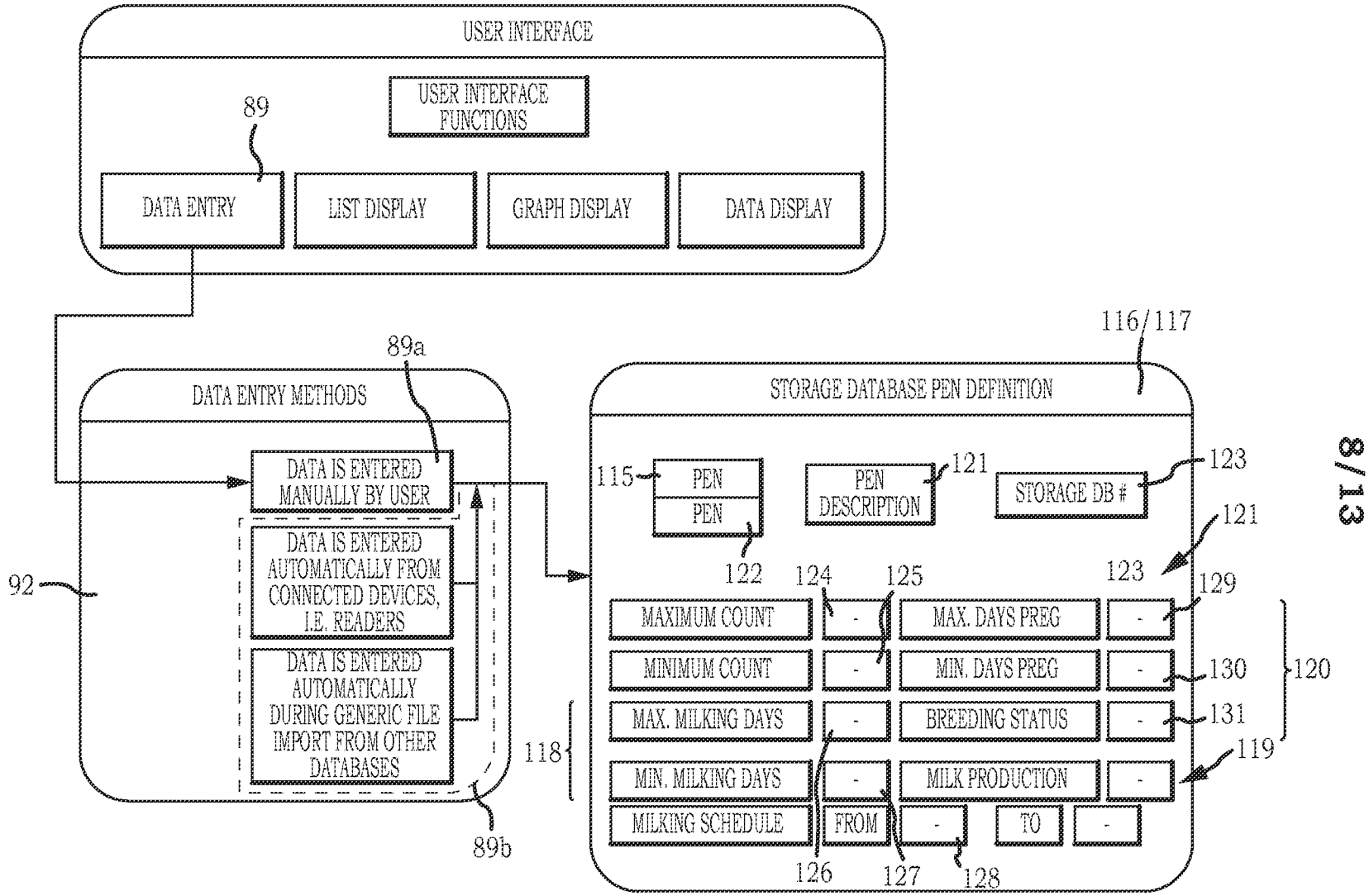

USER INTERFACE
USER INTERFACE FUNCTIONS
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
89a
DATA ENTRY METHODS
DATA IS ENTERED MANUALLY BY USER
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS
DATA IS ENTERED AUTOMATICALLY DURING GENERIC FILE IMPORT FROM OTHER DATABASES
92
89b
116/117
STORAGE DATABASE PEN DEFINITION
115
PEN
PEN
122
PEN DESCRIPTION
121
STORAGE DB #
123
121
123
124
125
129
MAXIMUM COUNT
MAX. DAYS PREG
MINIMUM COUNT
MIN. DAYS PREG
130
120
MAX. MILKING DAYS
BREEDING STATUS
131
118
MIN. MILKING DAYS
MILK PRODUCTION
119
MILKING SCHEDULE
FROM
TO
126
127
128
8/13

FIG.8

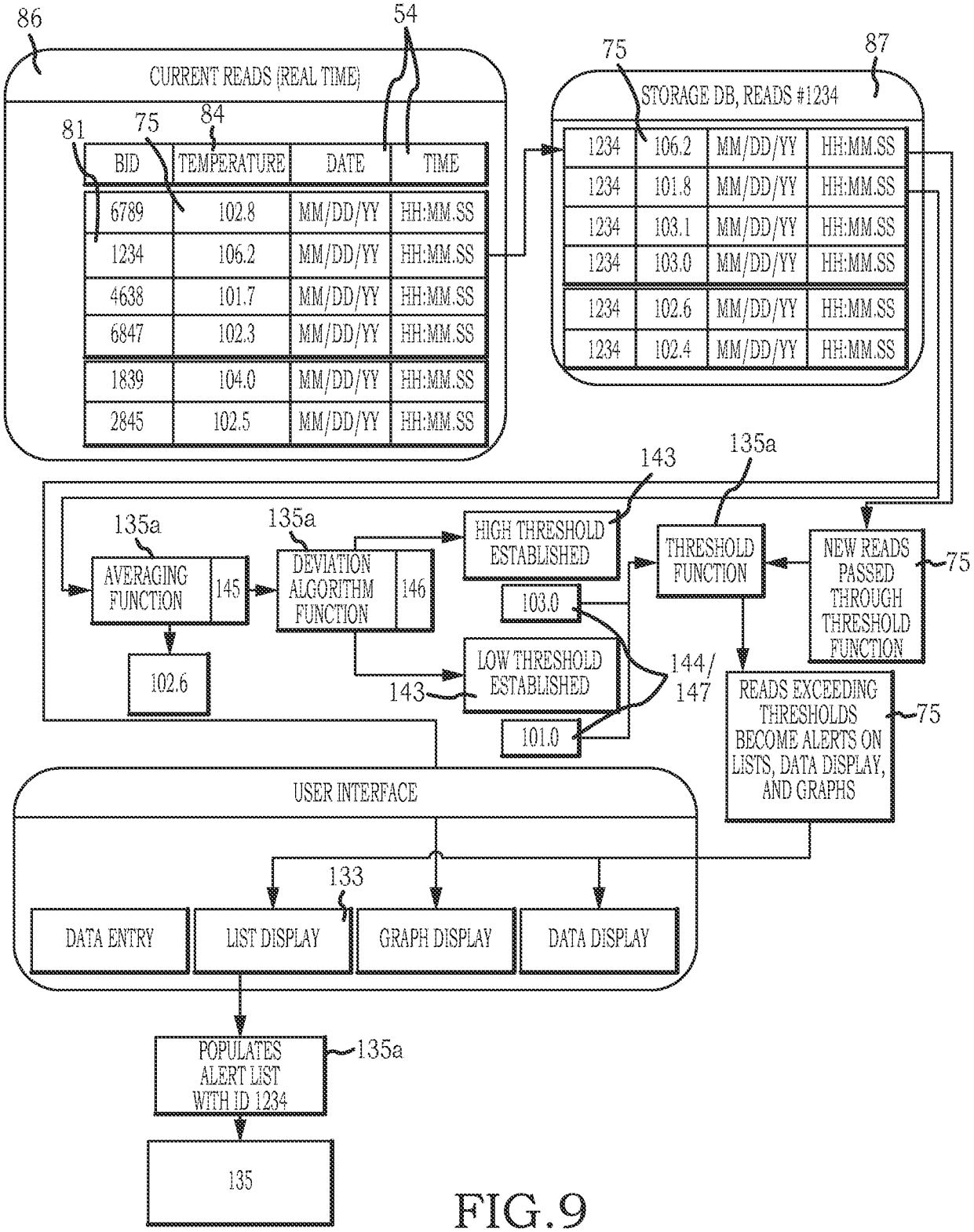

86
54
CURRENT READS (REAL TIME)
81
75
84
BID
TEMPERATURE
DATE
TIME
6789 102.8 MM/DD/YY HH:MM.SS
1234 106.2 MM/DD/YY HH:MM.SS
4638 101.7 MM/DD/YY HH:MM.SS
6847 102.3 MM/DD/YY HH:MM.SS
1839 104.0 MM/DD/YY HH:MM.SS
2845 102.5 MM/DD/YY HH:MM.SS
75
87
STORAGE DB, READS #1234
1234 106.2 MM/DD/YY HH:MM.SS
1234 101.8 MM/DD/YY HH:MM.SS
1234 103.1 MM/DD/YY HH:MM.SS
1234 103.0 MM/DD/YY HH:MM.SS
1234 102.6 MM/DD/YY HH:MM.SS
1234 102.4 MM/DD/YY HH:MM.SS
143
135a
135a
AVERAGING FUNCTION
145
135a
DEVIATION ALGORITHM FUNCTION
146
HIGH THRESHOLD ESTABLISHED
THRESHOLD FUNCTION
NEW READS PASSED THROUGH THRESHOLD FUNCTION
75
102.6
103.0
LOW THRESHOLD ESTABLISHED
143
144/147
READS EXCEEDING THRESHOLDS BECOME ALERTS ON LISTS, DATA DISPLAY, AND GRAPHS
75
101.0
USER INTERFACE
133
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
POPULATES ALERT LIST WITH ID 1234
135a
135

FIG.9

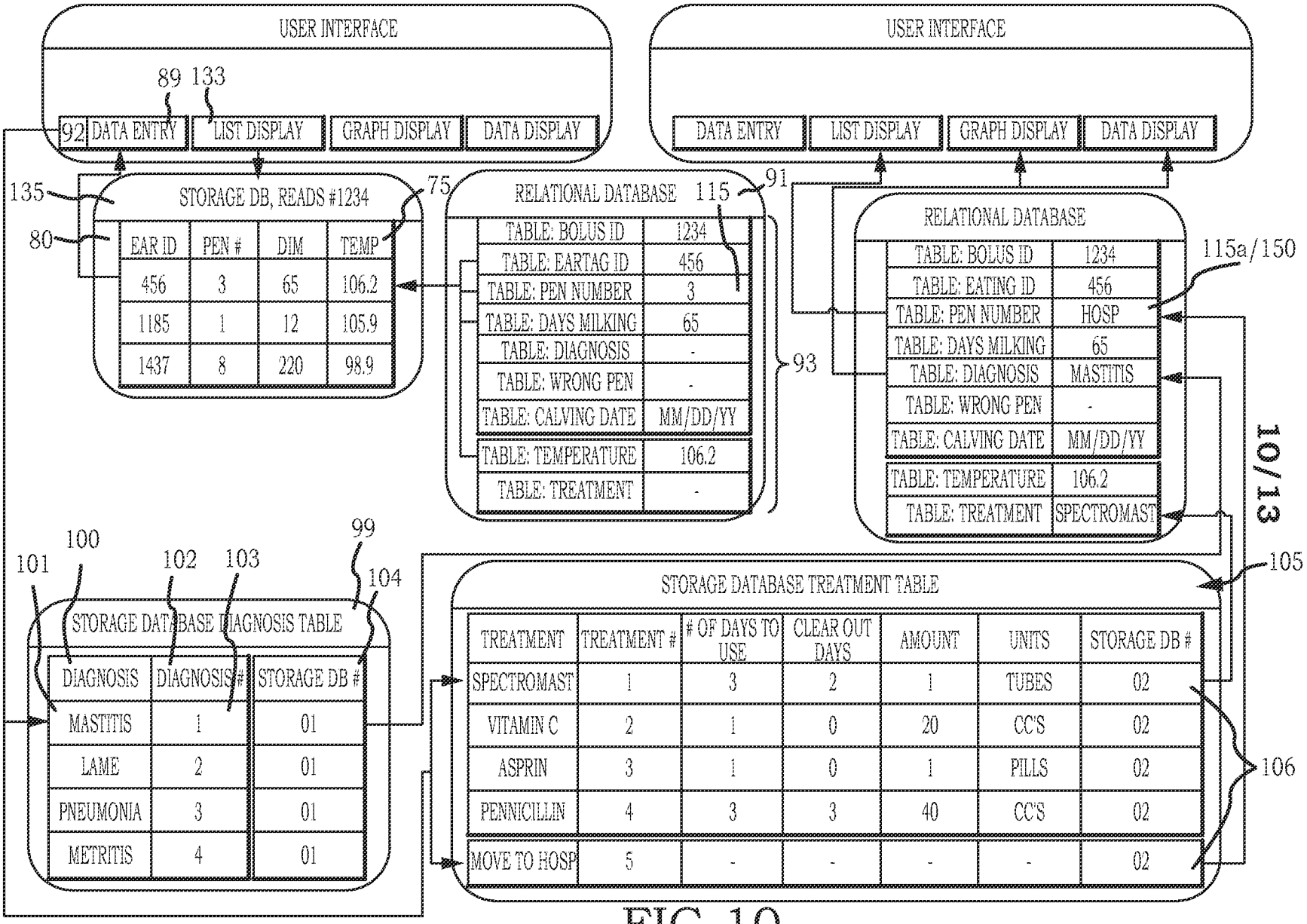

USER INTERFACE
89
133
92
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
USER INTERFACE
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
135
80
STORAGE DB, READS #1234
75
EAR ID
PEN #
DIM
TEMP
456
3
65
106.2
1185
1
12
105.9
1437
8
220
98.9
RELATIONAL DATABASE
115
91
TABLE: BOLUS ID
1234
TABLE: EARTAG ID
456
TABLE: PEN NUMBER
3
TABLE: DAYS MILKING
65
TABLE: DIAGNOSIS
-
TABLE: WRONG PEN
-
TABLE: CALVING DATE
MM/DD/YY
TABLE: TEMPERATURE
106.2
TABLE: TREATMENT
-
93
RELATIONAL DATABASE
115a/150
TABLE: BOLUS ID
1234
TABLE: EATING ID
456
TABLE: PEN NUMBER
HOSP
TABLE: DAYS MILKING
65
TABLE: DIAGNOSIS
MASTITIS
TABLE: WRONG PEN
-
TABLE: CALVING DATE
MM/DD/YY
TABLE: TEMPERATURE
106.2
TABLE: TREATMENT
SPECTROMAST
10/13
101
100
102
103
99
104
STORAGE DATABASE DIAGNOSIS TABLE
DIAGNOSIS
DIAGNOSIS#
STORAGE DB #
MASTITIS
1
01
LAME
2
01
PNEUMONIA
3
01
METRITIS
4
01
105
STORAGE DATABASE TREATMENT TABLE
TREATMENT
TREATMENT #
OF DAYS TO USE
CLEAR OUT DAYS
AMOUNT
UNITS
STORAGE DB #
SPECTROMAST
1
3
2
1
TUBES
02
VITAMIN C
2
1
0
20
CC'S
02
ASPRIN
3
1
0
1
PILLS
02
PENNICILLIN
4
3
3
40
CC'S
02
MOVE TO HOSP
5
-
-
-
-
02
106

FIG. 10

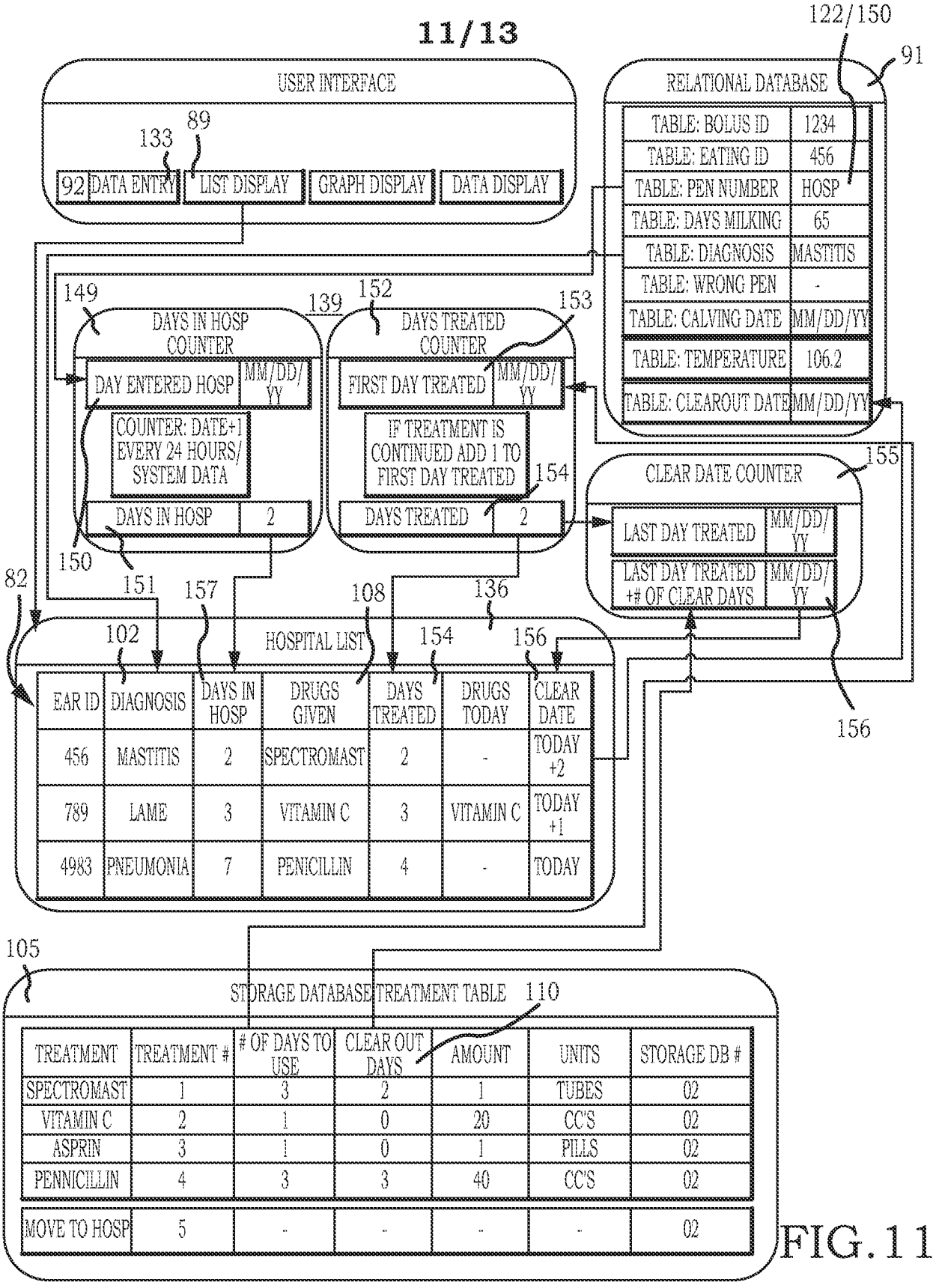

USER INTERFACE
89
133
92 DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
122/150
91
RELATIONAL DATABASE
TABLE: BOLUS ID 1234
TABLE: EATING ID 456
TABLE: PEN NUMBER HOSP
TABLE: DAYS MILKING 65
TABLE: DIAGNOSIS MASTITIS
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 106.2
TABLE: CLEAROUT DATE MM/DD/YY
149
139
152
153
DAYS IN HOSP COUNTER
DAY ENTERED HOSP MM/DD/YY
COUNTER: DATE+1 EVERY 24 HOURS/ SYSTEM DATA
DAYS IN HOSP 2
DAYS TREATED COUNTER
FIRST DAY TREATED MM/DD/YY
IF TREATMENT IS CONTINUED ADD 1 TO FIRST DAY TREATED
DAYS TREATED 2
154
155
CLEAR DATE COUNTER
LAST DAY TREATED MM/DD/YY
LAST DAY TREATED +# OF CLEAR DAYS MM/DD/YY
150
151
157
108
136
82
102
HOSPITAL LIST
154
156
EAR ID | DIAGNOSIS | DAYS IN HOSP | DRUGS GIVEN | DAYS TREATED | DRUGS TODAY | CLEAR DATE
456 | MASTITIS | 2 | SPECTROMAST | 2 | - | TODAY +2
789 | LAME | 3 | VITAMIN C | 3 | VITAMIN C | TODAY +1
4983 | PNEUMONIA | 7 | PENICILLIN | 4 | - | TODAY
156
105
STORAGE DATABASE TREATMENT TABLE
110
TREATMENT | TREATMENT # | # OF DAYS TO USE | CLEAR OUT DAYS | AMOUNT | UNITS | STORAGE DB #
SPECTROMAST | 1 | 3 | 2 | 1 | TUBES | 02
VITAMIN C | 2 | 1 | 0 | 20 | CC'S | 02
ASPRIN | 3 | 1 | 0 | 1 | PILLS | 02
PENNICILLIN | 4 | 3 | 3 | 40 | CC'S | 02
MOVE TO HOSP | 5 | - | - | - | - | 02

FIG. 11

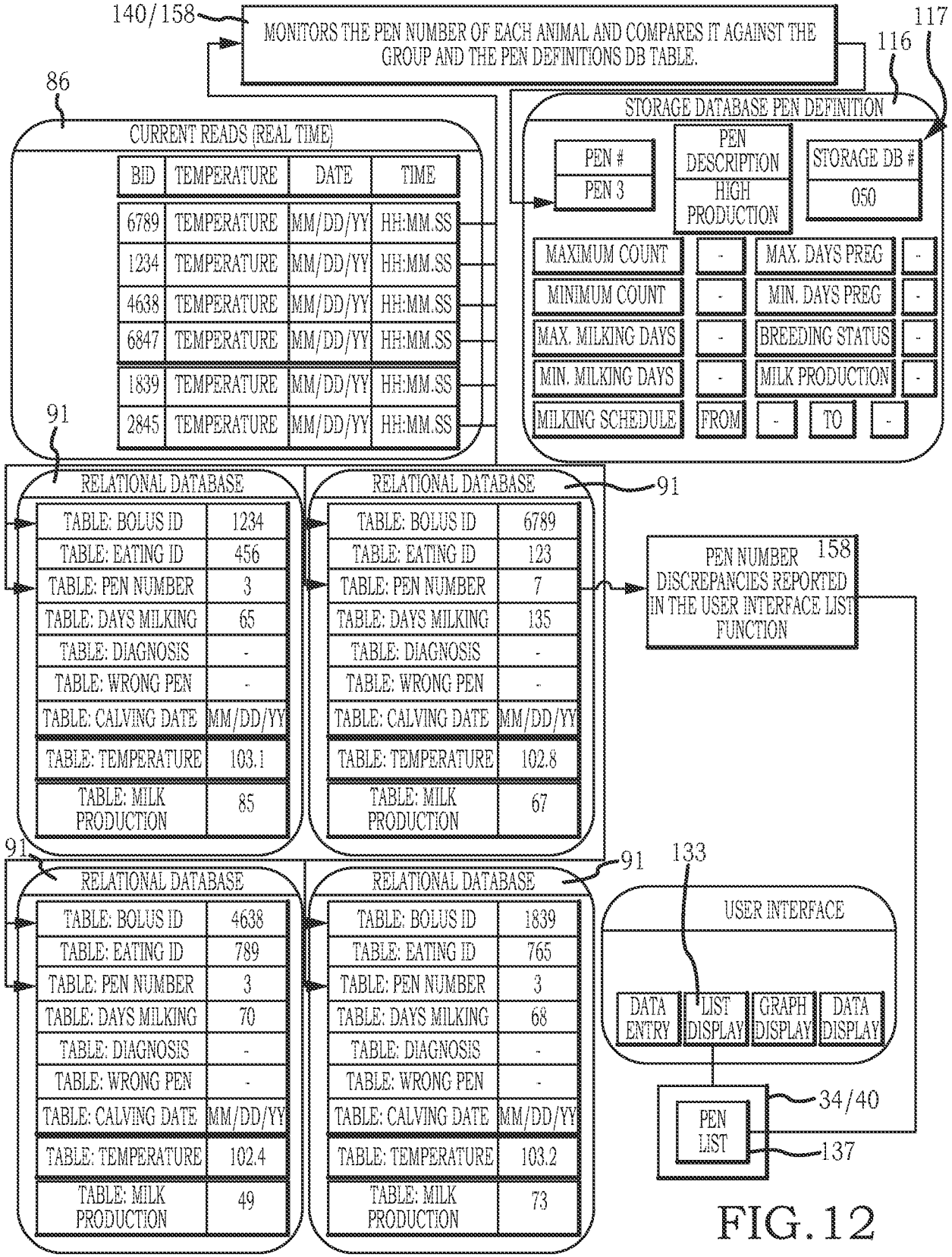

140/158
MONITORS THE PEN NUMBER OF EACH ANIMAL AND COMPARES IT AGAINST THE GROUP AND THE PEN DEFINITIONS DB TABLE.
117
116
86
CURRENT READS (REAL TIME)
BID | TEMPERATURE | DATE | TIME
6789 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1234 | TEMPERATURE | MM/DD/YY | HH:MM.SS
4638 | TEMPERATURE | MM/DD/YY | HH:MM.SS
6847 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1839 | TEMPERATURE | MM/DD/YY | HH:MM.SS
2845 | TEMPERATURE | MM/DD/YY | HH:MM.SS
STORAGE DATABASE PEN DEFINITION
PEN #
PEN 3
PEN DESCRIPTION
HIGH PRODUCTION
STORAGE DB #
050
MAXIMUM COUNT
MINIMUM COUNT
MAX. MILKING DAYS
MIN. MILKING DAYS
MILKING SCHEDULE
FROM
TO
MAX. DAYS PREG
MIN. DAYS PREG
BREEDING STATUS
MILK PRODUCTION
91
RELATIONAL DATABASE
TABLE: BOLUS ID 1234
TABLE: EATING ID 456
TABLE: PEN NUMBER 3
TABLE: DAYS MILKING 65
TABLE: DIAGNOSIS -
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 103.1
TABLE: MILK PRODUCTION 85
RELATIONAL DATABASE
TABLE: BOLUS ID 6789
TABLE: EATING ID 123
TABLE: PEN NUMBER 7
TABLE: DAYS MILKING 135
TABLE: DIAGNOSIS -
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 102.8
TABLE: MILK PRODUCTION 67
PEN NUMBER DISCREPANCIES REPORTED IN THE USER INTERFACE LIST FUNCTION
158
RELATIONAL DATABASE
TABLE: BOLUS ID 4638
TABLE: EATING ID 789
TABLE: PEN NUMBER 3
TABLE: DAYS MILKING 70
TABLE: DIAGNOSIS -
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 102.4
TABLE: MILK PRODUCTION 49
RELATIONAL DATABASE
TABLE: BOLUS ID 1839
TABLE: EATING ID 765
TABLE: PEN NUMBER 3
TABLE: DAYS MILKING 68
TABLE: DIAGNOSIS -
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 103.2
TABLE: MILK PRODUCTION 73
133
USER INTERFACE
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
PEN LIST
34/40
137

FIG. 12

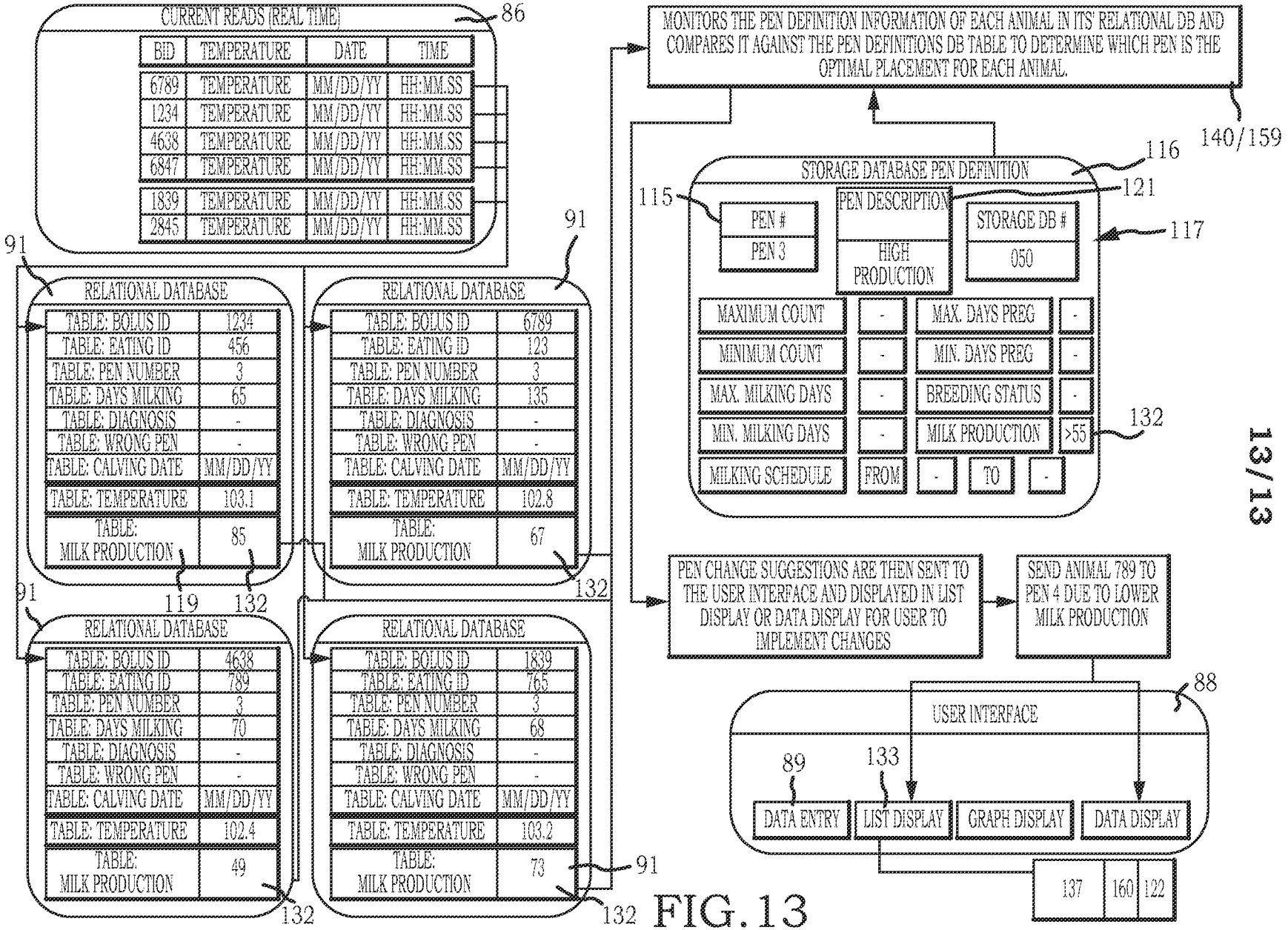

CURRENT READS (REAL TIME)
86
BID | TEMPERATURE | DATE | TIME
6789 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1234 | TEMPERATURE | MM/DD/YY | HH:MM.SS
4638 | TEMPERATURE | MM/DD/YY | HH:MM.SS
6847 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1839 | TEMPERATURE | MM/DD/YY | HH:MM.SS
2845 | TEMPERATURE | MM/DD/YY | HH:MM.SS
91
RELATIONAL DATABASE
TABLE: BOLUS ID 1234
TABLE: EATING ID 456
TABLE: PEN NUMBER 3
TABLE: DAYS MILKING 65
TABLE: DIAGNOSIS -
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 103.1
TABLE: MILK PRODUCTION 85
119
132
RELATIONAL DATABASE
TABLE: BOLUS ID 6789
TABLE: EATING ID 123
TABLE: PEN NUMBER 3
TABLE: DAYS MILKING 135
TABLE: DIAGNOSIS -
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 102.8
TABLE: MILK PRODUCTION 67
132
RELATIONAL DATABASE
TABLE: BOLUS ID 4638
TABLE: EATING ID 789
TABLE: PEN NUMBER 3
TABLE: DAYS MILKING 70
TABLE: DIAGNOSIS -
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 102.4
TABLE: MILK PRODUCTION 49
132
RELATIONAL DATABASE
TABLE: BOLUS ID 1839
TABLE: EATING ID 765
TABLE: PEN NUMBER 3
TABLE: DAYS MILKING 68
TABLE: DIAGNOSIS -
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 103.2
TABLE: MILK PRODUCTION 73
132
MONITORS THE PEN DEFINITION INFORMATION OF EACH ANIMAL IN ITS' RELATIONAL DB AND COMPARES IT AGAINST THE PEN DEFINITIONS DB TABLE TO DETERMINE WHICH PEN IS THE OPTIMAL PLACEMENT FOR EACH ANIMAL.
140/159
STORAGE DATABASE PEN DEFINITION
116
115
PEN #
PEN 3
PEN DESCRIPTION
HIGH PRODUCTION
121
STORAGE DB #
050
117
MAXIMUM COUNT - MAX. DAYS PREG -
MINIMUM COUNT - MIN. DAYS PREG -
MAX. MILKING DAYS - BREEDING STATUS -
MIN. MILKING DAYS - MILK PRODUCTION >55
132
MILKING SCHEDULE FROM - TO -
PEN CHANGE SUGGESTIONS ARE THEN SENT TO THE USER INTERFACE AND DISPLAYED IN LIST DISPLAY OR DATA DISPLAY FOR USER TO IMPLEMENT CHANGES
SEND ANIMAL 789 TO PEN 4 DUE TO LOWER MILK PRODUCTION
88
USER INTERFACE
89
133
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
137
160
122
13/13

FIG. 13

PTO/SB/08a (07-09)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 4

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Nicholas P. Rettedal
Art Unit	
Examiner Name	
Attorney Docket Number	bellaCONT1bolus (280-11)

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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		US- 2012/0068848	03-22-2012	Campbell, et al.	
		US- 2013/0231188	09-05-2013	Berberich et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 4

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Nicholas P. Rettedal
Art Unit	
Examiner Name	
Attorney Docket Number	bellaCONT1bolus (280-11)

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US- 2012/0161964	06-28-2012	Rettedal et al.	
		US- 2013/0197323	08-01-2013	Rettedal et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 3 of 4

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Nicholas P. Rettedal
Art Unit	
Examiner Name	
Attorney Docket Number	bellaCONT1bolus (280-11)

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		International PCT Patent Application No. PCT/US2010/002509, filed September 14, 2010	
		US Provisional Patent Application No. 61/276,723, filed September 15, 2009	
		United States Provisional Patent Application No. 61/455,419, filed October 19, 2010.	
		International Patent Cooperation Treaty Patent Application No. PCT/US2011/001788, filed October 19, 2011.	
		BOEHMER, et al. Effects of Temperature of Consumed Water on Rumen Temperature of Beef Cows. Oklahoma Agricultural Experiment Station, 2009, 4 total pages.	
		CAJA et al.Development of a ceramic bolus for the permanent electronic identification of sheep, goat and cattle.Computers and Electronics in Agriculture,1999, vol.24,pp.45-63.	
		COOPER-PRADO, et al. Relationship of Ruminal Temperature with Parturition and Estrus of Beef Cows. J Anim Sci, April 2011, 89:1020-1027; published ahead of print 12/17/2011.	
		FALLON et al. Electronic Animal Identification. Grange Research Center, Beef Production Series No. 46, pp. 1-54.	
		GHIRARDI et al. Evaluation of the retention of electronic identification boluses in the forestomachs of cattle. Journal of Animal Science (2006), Vol. 84, pp. 2260-2268.	
		GHIRARDI et al. Retention of different sizes of electronic identification boluses in the forestomachs of sheep. Journal of Animal Science (2006), Vol. 84, pp. 2865-2872.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

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PTO/SB/08b (07-09)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 4 of 4

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Nicholas P. Rettedal
Art Unit	
Examiner Name	
Attorney Docket Number	bellaCONT1bolus (280-11)

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		HACH. Digital Inductive Conductivity Sensor, Convertible Body Style. Website, http:/www.hach.com, product page downloaded 3/5/2014, 2 total pages.	
		SCANGA et al. Development of computational models for the purpose of conducting individual livestock and premises traceback investigations utilizing National Animal	
		Identification System-compliant data. Journal of Animal Science (2007), Vol. 85, pp. 503-511.	
		SMARTSTOCK USA. Website, http://www.smartstock-usa.com, originally downloaded 12/30/2011, 12 total pages.	
		Corresponding New Zealand patent application No.: 599357; Letters Patent dated September 3, 2012, 1 page.	
		Corresponding New Zealand patent application No.: 599357; OA dated October 19, 2012, 1 page.	
		Corresponding New Zealand patent application No.: 599357; OA dated February 8, 2013, 1 page.	
		New Zealand patent application No.: 610343; OA dated November 11, 2013, 3 total pages.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] Applicant's unique citation designation number (optional). [2] Applicant is to place a check mark here if English language Translation is attached.

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If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Lioudmila Townsend
Attorney Docket Number:	bellaCONT1bolus (280-11)

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**730**

Electronic Acknowledgement Receipt

EFS ID:	20012434
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	29-AUG-2014
Filing Date:	
Time Stamp:	21:24:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$730
RAM confirmation Number	6540
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /zip	Pages (if appl.)

Smartec Exhibit 1002
Smartec, Inc. v. ST Reproductive Tech., LLC

1	Transmittal Letter	Transmittal_Letter.pdf	39277 650fec551eb881a9918f75a69d785bf3de670fed	no	3
Warnings:					
Information:					
2	Application Data Sheet	ADS.pdf	180852 0e2d3745e357b9656763a2dff9c5bc88d8572395	no	7
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
3	Oath or Declaration filed	Declaration_NR.pdf	48241 1ed7b82b2e6bb1cbf284b0db9780c59d06529f85	no	3
Warnings:					
Information:					
4	Power of Attorney	POA_Inventor_NR.pdf	23233 5bd43a99e3a94b19659c640b20b1bd5191852876	no	1
Warnings:					
Information:					
5	Assertion of entitlement to small entity status	Small_Entity_Statement_Inventor_NR.pdf	29304 6d97f7d26bee698d42d29729d9d9ae9f143e00dd	no	1
Warnings:					
Information:					
6	Oath or Declaration filed	Declaration_SW.pdf	49037 6c9716dee591d51846e80cb89dda789a3b0421cf	no	3
Warnings:					
Information:					
7	Power of Attorney	POA_Inventor_SW.pdf	22872 7ce406ff3b5a40c6a882c8af4c59379cbe3e4ab9	no	1
Warnings:					
Information:					
8	Assertion of entitlement to small entity status	Small_Entity_Statement_Inventor_SW.pdf	30063 3b95cbe4fa766433fe7a048722635a8f25722d5c	no	1
Warnings:					
Information:					
9	Oath or Declaration filed	Declaration_SC.pdf	42580 8183ca821c61d934ee1ee432d55c21f7ab6a46a6	no	3

Warnings:					
Information:					
10	Power of Attorney	POA_Inventor_SC.pdf	21420 be1c15bd43cdbc989269d5667c0dc428d61467a1	no	1
Warnings:					
Information:					
11	Assertion of entitlement to small entity status	Small_Entity_Statement_Inventor_SC.pdf	27138 b318827d7d3caf0df856df7fdf580710b824fa0b	no	1
Warnings:					
Information:					
12	Oath or Declaration filed	Declaration_BY.pdf	60745 623a426f4e8eddf74b6bc7dfce4510de71e44381	no	3
Warnings:					
Information:					
13	Power of Attorney	POA_Inventor_BY.pdf	177350 376213c02aededab2cbb1df3bba23e374a84b984	no	1
Warnings:					
Information:					
14	Assertion of entitlement to small entity status	Small_Entity_Statement_Inventor_BY.pdf	217588 6ce51463b4c4d215d713b7f219a64c6650d83684	no	1
Warnings:					
Information:					
15	Specification	Specification.pdf	444060 e264b3b3ac5850826ff598c55f932294f2b9f2f0	no	37
Warnings:					
Information:					
16	Drawings-only black and white line drawings	Drawings.pdf	492732 32c115badef5f2c16e2fbe45e9046a5f8a2045b0	no	13
Warnings:					
Information:					
17	Preliminary Amendment	Prelim_Amendment.pdf	68919 19d091a908c37ca8c5664bc0cfdb227c8c2b06ee	no	8
Warnings:					
Information:					
18	Information Disclosure Statement (IDS) Form (SB08)	IDS.pdf	194888 381c8c3ce6d45152cb99b26da486e5beaca61477	no	4

Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
19	Fee Worksheet (SB06)	fee-info.pdf	32857 73ed2132557dfe473e9e0097bb16e29d386737e0	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	2203156	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager	**Confirmation No.:**
Application No.:	**Group Art Unit:**
Filed:	**Examiner:**
For: Computer Implemented Animal Management System	
Attorney Docket No.: bellaCONT1bolus (280-11)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Dear Sir/Madam:

Please find attached for filing a United States Continuation utility patent application entitled "Computer Implemented Animal Management System", including the following documents:

1. an Application Data Sheet (7 page(s));
2. a Declaration For Patent Application of Nicholas P. Rettedal (3 page(s));
3. a Power of Attorney -- Inventor of Nicholas P. Rettedal (1 page(s));
4. a Statement Establishing Small Entity Status -- Inventor of Nicholas P. Rettedal (1 page(s)), hereby claimed;
5. a Declaration For Patent Application of Stephen M. Weilnau (3 page(s));
6. a Power of Attorney -- Inventor of Stephen M. Weilnau (1 page(s));
7. a Statement Establishing Small Entity Status -- Inventor of Stephen M. Weilnau (1 page(s)), hereby claimed;
8. a Declaration For Patent Application of Scott R. Cockroft (3 page(s));

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 80 of 424

9. a Power of Attorney -- Inventor of Scott R. Cockroft (1 page(s));

10. a Statement Establishing Small Entity Status -- Inventor of Scott R. Cockroft (1 page(s)), hereby claimed;

11. a Declaration For Patent Application of Billy J. Yeager (3 page(s));

12. a Power of Attorney -- Inventor of Billy J. Yeager (1 page(s));

13. a Statement Establishing Small Entity Status -- Inventor of Billy J. Yeager (1 page(s)), hereby claimed;

14. a Specification entitled "Computer Implemented Animal Management System" (37 page(s)), hereby claimed;

15. a set of Formal Drawings (13 sheet(s));

16. an Information Disclosure Statement By Applicant (4 page(s)) (copies of each cited reference not already available at the PTO were provided for the parent application; this statement is submitted solely for the purpose of the references being printed on the patent);

17. a Preliminary Amendment (8 page(s)); and

18. this firm Letter of Transmittal (3 page(s)).

Note:

All right, title, and interest in this United States patent application entitled "Computer Implemented Animal Management System" filed August 29, 2014 is owned by Bella Technologies, LLC.

This United States Patent Application is a continuation of United States Patent Application No. 13/391,614, filed February 21, 2012, which is the United States National Stage of International Patent Corporation Treaty Patent Application No. PCT/US2010/002509, filed September 14, 2010, which claims the benefit of United States Provisional Patent Application No. 61/276,723, filed September 15, 2009, each hereby incorporated by reference herein.

I have this 29 day of August, 2014, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please process the submitted United States Continuation utility patent application.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 81 of 424

Direct all correspondence to:

CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

Customer Number: 39208

Dated this 29 day of August, 2014

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 82 of 424

PTO/AIA/14 (12-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	bellaCONT1bolus (280-11)
	Application Number	
Title of Invention	Computer Implemented Animal Management System	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Nicholas	P.	Rettedal	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Loveland	State/Province	CO	Country of Residence	US

Mailing Address of Inventor:

Address 1	1701 E 15th Street		
Address 2			
City	Loveland	State/Province	CO
Postal Code	80538	Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Stephen	M.	Weilnau	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Greeley	State/Province	CO	Country of Residence	US

Mailing Address of Inventor:

Address 1	5006 West 27th Street		
Address 2			
City	Greeley	State/Province	CO
Postal Code	80634	Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Scott	R.	Cockroft	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

PTO/AIA/14 (12-13)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	bellaCONT1bolus (280-11)
	Application Number	
Title of Invention	Computer Implemented Animal Management System	

City	Greeley	State/Province	CO	Country of Residence	US

Mailing Address of Inventor:

Address 1	27712 County Road 62		
Address 2			
City	Greeley	State/Province	CO
Postal Code	80631	Country	US

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Billy	J.	Yeager	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	Gilbert	State/Province	AZ	Country of Residence	US

Mailing Address of Inventor:

Address 1	351 E. Civic Center Drive #204		
Address 2			
City	Gilbert	State/Province	AZ
Postal Code	85233	Country	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	39208		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	Computer Implemented Animal Management System		
Attorney Docket Number	bellaCONT1bolus (280-11)	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	13	Suggested Figure for Publication (if any)	1

Filing By Reference :

PTO/AIA/14 (12-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	bellaCONT1bolus (280-11)
	Application Number	
Title of Invention	Computer Implemented Animal Management System	

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	39208		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	13/391614	2012-02-21
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13/391614	a 371 of international	PCT/US2010/002509	2010-09-14
Prior Application Status	Expired		Remove

PTO/AIA/14 (12-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	bellaCONT1bolus (280-11)
	Application Number	
Title of Invention	Computer Implemented Animal Management System	

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
PCT/US2010/002509	Claims benefit of provisional	61/276723	2009-09-15

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☐ Authorization to Permit Access to the Instant Application by the Participating Offices

PTO/AIA/14 (12-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	bellaCONT1bolus (280-11)
	Application Number	
Title of Invention	Computer Implemented Animal Management System	

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date o f filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☒

Organization Name	Bella Technologies, LLC

Mailing Address Information For Applicant:

Address 1	27906 Weld County Road 388		
Address 2			
City	Kersey	**State/Province**	CO
Country	US	Postal Code	80644
Phone Number		Fax Number	

PTO/AIA/14 (12-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	bellaCONT1bolus (280-11)
	Application Number	
Title of Invention	Computer Implemented Animal Management System	

Email Address	

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not subsitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	Bella Technologies, LLC

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	27906 Weld County Road 388		
Address 2			
City	Kersey	**State/Province**	CO
Country i	US	Postal Code	80644
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Signature				Date (YYYY-MM-DD)	2014-08-29
First Name	Craig	Last Name	Miles	Registration Number	45954

Additional Signature may be generated within this form by selecting the Add button.

PTO/AIA/14 (12-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	bellaCONT1bolus (280-11)
	Application Number	
Title of Invention	Computer Implemented Animal Management System	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager	**Confirmation No.:**
Application No.:	**Group Art Unit:**
Filed:	**Examiner:**
For: Computer Implemented Animal Management System	
Attorney Docket No.: bellaCONT1bolus (280-11)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION FOR PATENT APPLICATION

Declaration of Nicholas P. Rettedal:

I, Nicholas P. Rettedal, hereby declare:

I am a citizen of the United States of America and that my residence and mailing address is 1701 E 15th Street, Loveland, Colorado 80538 USA.

Nicholas P. Rettedal declares:

The above-identified application was made or authorized to be made by me.

I believe that I am the original joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled "Computer Implemented Animal Management System" the specification and any preliminary amendment of which are attached hereto.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 90 of 424

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. §1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim priority under 35 U.S.C. §120 or the benefit under 35 U.S.C. 119(e) of any application for patent filed in the United States or under 35 U.S.C. §363 and §365(c) of any international application designating the United States of America, listed below:

- United States Patent Application No. 13/391,614, filed February 21, 2012;
- International PCT Patent Application No. PCT/US2010/002509, filed September 14, 2010;
- United States Provisional Patent Application No. 61/276,723, filed September 15, 2009.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURES ON THE FOLLOWING PAGE:

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 91 of 424

Nicholas P. Rettedal

Date: 8/28/2014

UNITED STATES OF AMERICA)
STATE OF COLORADO)
COUNTY OF Larimer)

SUBSCRIBED AND AFFIRMED OR SWORN to before me in the County of Larimer, State of Colorado, United States of America, by Nicholas P. Rettedal, this 28 day of August, 2014. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

Notary Public
My Commission Expires: Nov. 9, 2016

MELANIE CARTER
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20084037911
MY COMMISSION EXPIRES NOV. 9, 2016

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager	**Confirmation No.:**
Application No.:	**Group Art Unit:**
Filed:	**Examiner:**
For: Computer Implemented Animal Management System	
Attorney Docket No.: bellaCONT1bolus (280-11)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

POWER OF ATTORNEY - INVENTOR

I, Scott R. Cockroft, residing at 27712 County Road 62, Greeley, CO 80631 USA, being the Applicant/Inventor hereby appoint CR Miles P.C., having its principal office at 405 Mason Court, Suite 119, Fort Collins, Colorado 80524 USA having Customer Number 39208 including Craig R. Miles, whose registration number before the United States Patent and Trademark Office is 45,954 as my attorney to prosecute this application entitled "Computer Implemented Animal Management System" and to transact all business in the United States Patent and Trademark Office therewith.

Dated this 27 day August, 2014

Scott R. Cockroft, Inventor

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager	**Confirmation No.:**
Application No.:	**Group Art Unit:**
Filed:	**Examiner:**
For: Computer Implemented Animal Management System	
Attorney Docket No.: bellaCONT1bolus (280-11)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

STATEMENT ESTABLISHING SMALL ENTITY STATUS
INVENTOR

I, Scott R. Cockroft, as inventor of the subject matter of the above-identified application entitled "Computer Implemented Animal Management System" for which a patent is sought, and pursuant to 37 C.F.R. §1.27(a)(1) and (c) state that the following facts are true:

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the subject matter of the above-identified patent application to another entity not a non-profit organization whose number of employees, including those of its affiliates, exceeds 500 persons. As such, it appears that I qualify for small entity status with regard to payment of official fees to the United States Patent and Trademark Office.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements so made are punishable by fine or imprisonment, or both under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the patent application or any patent issued thereon.

Dated this 27 day of August, 2014

Scott R. Cockroft, Inventor

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager **Application No.:** **Filed:** **For:** Computer Implemented Animal Management System **Attorney Docket No.:** bellaCONT1bolus (280-11)	**Confirmation No.:** **Group Art Unit:** **Examiner:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION FOR PATENT APPLICATION

Declaration of Billy J. Yeager:

I, Billy J. Yeager, hereby declare:

I am a citizen of United States of America and my residence and mailing address is 351 E. Civic Center Drive #204, Gilbert, Arizona 85233 USA.

Billy J. Yeager declares:

The above-identified application was made or authorized to be made by me.

I believe that I am the original joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled "Computer Implemented Animal Management System" the specification and any preliminary amendment of which are attached hereto.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 95 of 424

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. §1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim priority under 35 U.S.C. §120 or the benefit under 35 U.S.C. 119(e) of any application for patent filed in the United States or under 35 U.S.C. §363 and §365(c) of any international application designating the United States of America, listed below:

- United States Patent Application No. 13/391,614, filed February 21, 2012;
- International PCT Patent Application No. PCT/US2010/002509, filed September 14, 2010;
- United States Provisional Patent Application No. 61/276,723, filed September 15, 2009.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURES ON THE FOLLOWING PAGE:

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 96 of 424

Billy J. Yeager

Date: 8/29/2014

UNITED STATES OF AMERICA)
STATE OF Arizona)
COUNTY OF Maricopa)

SUBSCRIBED AND AFFIRMED OR SWORN to before me in the County of Maricopa, State of Arizona, United States of America, by Billy J. Yeager, this 29th day of August, 2014. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Arizona.

OFFICIAL SEAL
ERIC DEBOER
NOTARY PUBLIC – STATE OF ARIZONA
COCONINO COUNTY
My commission expires Dec. 29, 2014.

Notary Public
My Commission Expires: 12/29/2014

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 97 of 424

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager	**Confirmation No.:**
Application No.:	**Group Art Unit:**
Filed:	**Examiner:**
For: Computer Implemented Animal Management System	
Attorney Docket No.: bellaCONT1bolus (280-11)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

POWER OF ATTORNEY - INVENTOR

I, Billy J. Yeager, residing at 351 E. Civic Center Drive #204, Gilbert, Arizona 85233 USA, being the Applicant/Inventor hereby appoint CR Miles P.C., having its principal office at 405 Mason Court, Suite 119, Fort Collins, Colorado 80524 USA having Customer Number 39208 including Craig R. Miles, whose registration number before the United States Patent and Trademark Office is 45,954 as my attorney to prosecute this application entitled "Computer Implemented Animal Management System" and to transact all business in the United States Patent and Trademark Office therewith.

Dated this 29 day August, 2014

Billy J. Yeager, Inventor

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/474,013	08/29/2014	2684	730	bellaCONT1bolus (280-11)	20	1

CONFIRMATION NO. 4228

39208
CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

FILING RECEIPT

OC000000070628205

Date Mailed: 09/09/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Nicholas P. Rettedal, Loveland, CO;
Stephen M. Weilnau, Greeley, CO;
Scott R. Cockroft, Greeley, CO;
Billy J. Yeager, Gilbert, AZ;

Applicant(s)

Bella Technologies, LLC, Kersey, CO

Assignment For Published Patent Application

Bella Technologies, LLC, Kersey, CO

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/391,614 02/21/2012 PAT 8823515
which is a 371 of PCT/US2010/002509 09/14/2010
which claims benefit of 61/276,723 09/15/2009

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 09/08/2014
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/474,013**
Projected Publication Date: 12/18/2014

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

Computer Implemented Animal Management System

Preliminary Class

340

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/474,013

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	730		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)

CONFIRMATION NO. 4228

IMPROPER CPOA LETTER

39208
CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

OC000000070628302

Date Mailed: 09/09/2014

NOTICE REGARDING POWER OF ATTORNEY

This is in response to the power of attorney filed 08/29/2014. The power of attorney in this application is not accepted for the reason(s) listed below:

- The power of attorney from the inventors has not been accepted because the power of attorney must be signed by the applicant for patent. See 37 CFR 1.32(b)(4).

/lnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/474,013	Filing Date 08/29/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **08/29/2014**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/TINA M. BELL/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

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39208 e 2014-09-29

CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

Paper No.

Application No.:	**14/474,013**	**Date Mailed:**	**2014-09-29**
First Named Inventor:	Rettedal, Nicholas, P.	Examiner:	,
Attorney Docket No.:	bellaCONT1bolus (280-11)	Art Unit:	2684
Confirmation No.:	4228	Filing Date:	2014-08-29

Please find attached an Office communication concerning this application or proceeding.

Commissioner for Patents

PTO-90c (Rev.08-06)

Notice of Non-Compliant Amendment (37 CFR 1.121)	Application No. 14/474,013	Applicant(s) RETTEDAL ET AL.
		Art Unit 2800

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

The amendment document filed on *29 August, 2014* is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121 or 1.4. In order for the amendment document to be compliant, correction of the following item(s) is required.

THE FOLLOWING MARKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

- ☒ 1. Amendments to the specification:
  - ☒ A. Amended paragraph(s) do not include markings.
  - ☐ B. New paragraph(s) should not be underlined.
  - ☐ C. Other _____.
- ☐ 2. Abstract:
  - ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
  - ☐ B. Other _____.
- ☐ 3. Amendments to the drawings:
  - ☐ A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
  - ☐ B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
  - ☐ C. Other _____.
- ☐ 4. Amendments to the claims:
  - ☐ A. A complete listing of all of the claims is not present.
  - ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
  - ☐ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
  - ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
  - ☐ E. Other: _____.
- ☐ 5. Other (e.g., the amendment is unsigned or not signed in accordance with 37 CFR 1.4): For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714.

TIME PERIODS FOR FILING A REPLY TO THIS NOTICE:

1. Applicant is given **no new time period if the non-compliant amendment is an** after-final amendment or an amendment filed after allowance, or a drawing submission (only) If applicant wishes to resubmit the non-compliant after-final amendment with corrections, the **entire corrected amendment** must be resubmitted.

2. Applicant is given **two months** from the mail date of this notice to supply the correction, if the non-compliant amendment is one of the following: a preliminary amendment, a non-final amendment (including a submission for a request for continued examination (RCE) under 37 CFR 1.114), a supplemental amendment filed within a suspension period under 37 CFR 1.103(a) or (c), and an amendment filed in response to a Quayle action. If any of above boxes 1 to 4 are checked, the correction required is only the corrected section of the non-compliant amendment in compliance with 37 CFR 1.121.

Extensions of time are available under 37 CFR 1.136(a) only if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action.

Failure to timely respond to this notice will result in:

Abandonment of the application if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action; or

Non-entry of the amendment if the non-compliant amendment is a preliminary amendment or supplemental amendment.

Legal Instruments Examiner (LIE), if applicable /TINA M. BELL/ Telephone No: (571)272-1553

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager **Application No.:** 14/474,013 **Filed:** August 29, 2014 **For:** Computer Implemented Animal Management System **Attorney Docket No.:** bellaCONT1bolus (280-11)	**Confirmation No.:** 4228 **Group Art Unit:** 2684 **Examiner:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

POWER OF ATTORNEY

I, Scott R. Cockroft, President of Bella Technologies, LLC being the assignee of record under §37 C.F.R. 3.71 of the entire interest in the above-identified application, am empowered to act on behalf of the Assignee/Applicant and hereby appoint CR MILES, P.C., having its principal office at 405 Mason Court, Suite 119, Fort Collins, Colorado 80524 USA assigned USPTO Customer Number 39208 including Craig R. Miles, whose registration number before the United States Patent and Trademark Office is 45,954 as my attorney to prosecute this application entitled "Computer Implemented Animal Management System" and to transact all business in the United States Patent and Trademark Office therewith.

Dated this 31st day of August, 2014

By: _____
Scott R. Cockroft, President
Bella Technologies, LLC,
Assignee/Applicant

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager	**Confirmation No.:** 4228
Application No.: 14/474,013	**Group Art Unit:** 2684
Filed: August 29, 2014	**Examiner:**
For: Computer Implemented Animal Management System	
Attorney Docket No.: bellaCONT1bolus (280-11)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

STATEMENT ESTABLISHING SMALL ENTITY STATUS
SMALL BUSINESS CONCERN

I, Scott R. Cockroft as President of Bella Technologies, LLC, pursuant to 37 C.F.R. §1.27(c) state that the following facts are true:

Bella Technologies, LLC is the assignee of record under 37 C.F.R. §3.71 of the entire interest in the above-identified application. As President of Bella Technologies, LLC, I am empowered to act on behalf of the Assignee.

As set forth in 13 C.F.R. §121.801 through §121.805, Bella Technologies, LLC is an entity whose number of employees, including those of its affiliates, does not exceed 500 persons and which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the subject matter of the enclosed patent application to another entity that does not qualify for small entity status. Bella Technologies, LLC appears to qualify as a small business concern as defined in 37 C.F.R. §1.27(a)(2).

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 108 of 424

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements so made are punishable by fine or imprisonment, or both under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the patent application or any patent issued thereon.

Dated this 27th day of August, 2014

By: _____
Scott R. Cookroft, President
Bella Technologies, LLC

PTO/AIA/96 (08-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Bella Technologies, LLC

Application No./Patent No.: 14/474,013 Filed/Issue Date: August 29, 2014

Titled: Computer Implemented Animal Management System

Bella Technologies, LLC, a limited liability company

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

   2. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Signature	10/22/2014 Date
Craig Miles Printed or Typed Name	Attorney of Record; Registration Number 45,954 Title or Registration Number

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager **Application No.:** 14/474,013 **Filed:** August 29, 2014 **For:** Computer Implemented Animal Management System **Attorney Docket No.:** bellaCONT1bolus (280-11)	**Confirmation No.:** 4228 **Group Art Unit:** 2684 **Examiner:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ASSIGNMENT OF PATENT RIGHTS

THIS ASSIGNMENT is between and among Nicholas P. Rettedal, whose address is 1701 E 15th Street, Loveland, Colorado 80538 USA, Stephen M. Weilnau, whose address is 5006 West 27th Street, Greeley, Colorado 80634 USA, Scott R. Cockroft, whose address is 27712 County Road 62, Greeley, CO 80631 USA, and Billy J. Yeager, whose address is 351 E. Civic Center Drive #204, Gilbert, Arizona 85233 USA (individually and collectively "Assignors") and Bella Technologies, LLC, a Colorado corporation, having its principal offices at 27906 Weld County Road 388, Kersey, Colorado 80644 USA ("Assignee").

WHEREAS, Each Assignor has conceived or developed technology relating to a computer implemented animal management system including the technology described or indicated in the above-identified application, along with any improvements of such technology to the extent conceived or developed during the time serving as a consultant or employee of Assignee or utilizing the trade secrets or confidential information of Assignee, or which are likely to cause disclosure of such trade secrets or confidential information (the "Invention");

WHEREAS, Each Assignor, either by his/her individuality or in conjunction with other individuals, may be an inventor of the Invention;

WHEREAS, Each Assignor desires to assign all right, title and interest to the Invention to Assignee to the extent he has any such rights worldwide; and

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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NOW, THEREFORE, for US $10.00 or other good and valuable consideration, receipt of which is hereby acknowledged, each of the undersigned hereby agrees as follows:

1. Each Assignor warrants that:

a. he/she has the authority to assign all right, title, and interest in an to the Invention;

b. he/she has conveyed no right, title, or interest in the Invention to any party other than the Assignee;

c. to the extent he conducted any efforts relevant to the ownership of all rights to the Invention under, on behalf of, or through any entity or assumed name, he has the authority to act as agent for such an entity and to fully transfer such rights; and

d. at the time of signing of this Assignment, he neither knows nor has reason to know of any outstanding right, title, or interest in the Invention inconsistent with a full assignment of rights to the Assignee other than any right, title, or interest which may exist as a result of any coinventorship.

2. Each Assignor, for good and valuable consideration, hereby sells, grants, transfers, authorizes application for, agrees to support, and assigns to the Assignee the entire right, title, and interest in and to the Invention, including, but not limited to:

a. all such worldwide rights to make, use, and sell the Invention;

b. any applications for United States or foreign patents relating to the Invention, and specifically to the above-identified application, and to make a claim for any priority to which such applications are entitled, and to any division, substitution, continuation, or continuation-in-part, of such applications, all patents which may be granted thereon, and all reissues, and extensions thereof;

c. the right to file applications for United States or foreign patents based upon the Invention, and to make a claim for any priority to which such applications are entitled, and to any division, substitution, continuation, or continuation-in-part, of such applications, all patents which may be granted thereon, and all reissues and extensions thereof;

d. all related rights involving the Invention in any country such as utility-model registrations, inventor's certificates, and the like, and all rights, titles, and interests involving the Invention under any foreign government;

e. all rights to any documents, notes, and evidence regarding any aspect of the Invention; and

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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f. all rights to seek protection covering such aspects or claims as the Assignee deems appropriate, specifically, including, but not limited to: claims which seek protection for device, apparatus, method, process, business method, or other coverage; claims which seek protection for as broad a level of coverage as might be desired by the Assignee; claims which address any aspect conceived, developed, or disclosed as separate inventions; claims which address any permutations or combinations of any aspects; claims which address any aspects independent of any initial context considered as preferred embodiments; and claims which seek broad protection in general.

3. Each Assignor further covenants and agrees that he will communicate to the Assignee any facts known to him respecting any improvements involving or in any way related to the Invention, and will testify in any legal proceeding, sign all lawful papers, execute all division, continuation, continuation-in-part, substitute, foreign, or reissue applications, make all rightful oaths, and generally do everything possible to aid the Assignee to obtain and enforce full protection and title in and to said Invention and to such improvements in all countries without further consideration but at the expense of the Assignee.

4. Each Assignor acknowledges that pursuant to the sale, grant, transfer, and assignment to the Assignee of the entire right, title, and interest in and to the Invention, as provided in the above paragraphs, this assignment shall be complete as to all rights owned. As such, Assignor consents to a waiver of any and all access rights to any applications for United States or foreign patents relating to the Invention, and including but not limited to the above-identified application, and to any division, substitution, continuation, or continuation-in-part, of such applications, all related access rights involving the Invention in any country such as utility-model registrations, inventor's certificates and the like, and all access rights, titles, and interests involving the Invention under any foreign government, to the extent permissible. Access rights may particularly include: any and all rights to any files, documents, notes, or evidence regarding any aspect of the prosecution of the Invention in the United States or foreign countries; any right to obtain, view or copy in any form the files, documents, notes, or evidence related to prosecution history or status of any application for United States or foreign patents relating to the Invention; any other right to obtain information relating to prosecution history, or status of any application for United States, or foreign patents relating to the Invention.

5. Each Assignor further covenants and agrees that he will sign all lawful papers and consents, as well as aid the Assignee in petitioning waiver of access of Assignor to the United States or foreign patent offices of any and all applications for United States or foreign patents relating to the Invention, as provided above.

6. Each Assignor grants the firm of CR MILES P.C., or other designated agent, the power to insert on this Assignment any further identification which may be necessary or desirable in order to comply with the rules of the Patent Cooperation Treaty or the United States Patent Office or any foreign patent office for recordation of this document, including, but not limited to, inserting the application number, the execution date, or the filing date of the above-identified United States Patent Application based upon the Invention.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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7. This assignment shall be binding on all parties, their heirs, executors, administrators, successors, or assigns, and may be recorded in the United States Patent and Trademark Office or elsewhere. In the event any provision of this Agreement is found to be unenforceable or to be unreasonable in scope, such provision shall be modified only to the extent necessary to make it enforceable, and as so modified, this Agreement shall remain in full force and effect.

SIGNATURES ON THE FOLLOWING PAGES:

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 115 of 424

Nicholas P. Rettedal

Date: 8/28/2014

UNITED STATES OF AMERICA)
STATE OF COLORADO)
COUNTY OF Larimer)

SUBSCRIBED AND AFFIRMED OR SWORN to before me in the County of Larimer, State of Colorado, United States of America, by Nicholas P. Rettedal, this 28 day of August, 2014. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

Melanie Carter
Notary Public
My Commission Expires: Nov 9, 2016

MELANIE CARTER
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20084037911
MY COMMISSION EXPIRES NOV. 9, 2016

Stephen M. Weilnau

Date: Aug 28 2014

UNITED STATES OF AMERICA)
STATE OF COLORADO)
COUNTY OF Larimer)

SUBSCRIBED AND AFFIRMED OR SWORN to before me in the County of Larimer, State of Colorado, United States of America, by Stephen M. Weilnau, this 28 day of August, 2014. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

Melanie Carter
Notary Public
My Commission Expires: Nov. 9, 2016

MELANIE CARTER
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20084037911
MY COMMISSION EXPIRES NOV. 9, 2016

Scott R. Cockroft

Date: 8-27-2014

UNITED STATES OF AMERICA)
STATE OF COLORADO)
COUNTY OF Weld)

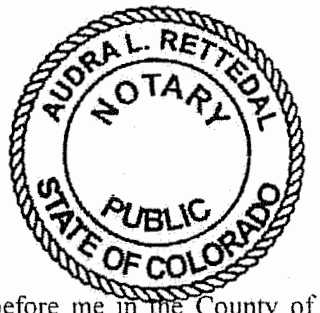
SUBSCRIBED AND AFFIRMED OR SWORN to before me in the County of Weld, State of Colorado, United States of America, by Scott R. Cockroft, this 27th day of August, 2014. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

Cynthia J Kennedy
Notary Public
My Commission Expires: 3/21/17

CYNTHIA J. KENNEDY
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 2000401995
MY COMMISSION EXPIRES MARCH 21, 2017

Billy J. Yeager

Date: 10/21/14



UNITED STATES OF AMERICA)
STATE OF Colorado)
COUNTY OF Larimer)

SUBSCRIBED AND AFFIRMED OR SWORN to before me in the County of Larimer, State of Colorado, United States of America, by Billy J. Yeager, this 21st day of October, 2014. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

Audra L. Rettedal
Notary Public
My Commission Expires: 3/1/2015

Electronic Acknowledgement Receipt

EFS ID:	20489807
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	22-OCT-2014
Filing Date:	29-AUG-2014
Time Stamp:	16:50:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	28094 bf27c19ea6c7997f6e6ec6016a974481c8960505	no	2

Warnings:	
Information:	

2	Power of Attorney	POA_Assignee.pdf	56831 6c38ce548d793de5c78da46909eafaa72ff738dc	no	1
Warnings:					
Information:					
3	Assertion of entitlement to small entity status	Small_Entity_Statement_Business.pdf	66960 1231280945cf21b8709544f255e6569053b803cc	no	2
Warnings:					
Information:					
4	Assignee showing of ownership per 37 CFR 3.73.	Statement.pdf	180774 1a85890315e9129e00c2889fabbaa89c81bab844	no	10
Warnings:					
Information:					
		Total Files Size (in bytes):	332659		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2684

Examiner:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Sir/Madam:

Please find attached the following documents for the above-identified patent application:

1. a Power of Attorney -- Bella Technologies, LLC (1 page(s));

2. a Statement under 37 CFR 3.73 (b) (2 page(s)) along with the copy of an Assignment of Patent Rights from Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager to Bella Technologies, LLC (3 page(s));

3. a Statement Establishing Small Entity Status -- Small Business (2 page(s)), hereby claimed;

4. this firm Letter of Transmittal (2 page(s)).

Please Note:

I have this 22 day of October, 2014, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents in the above-identified patent application.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 122 of 424

Direct all correspondence to:

CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

Customer No.: 39208

Dated this 22 day of October, 2014

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000 telephone
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 123 of 424

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)

CONFIRMATION NO. 4228

POA ACCEPTANCE LETTER

39208
CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

OC00000071525763

Date Mailed: 10/24/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/22/2014.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/dtdinh/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager **Application No.:** 14/474,013 **Filed:** August 29, 2014 **For:** Computer Implemented Animal Management System **Attorney Docket No.:** bellaCONT1bolus (280-11)	**Confirmation No.:** 4228 **Group Art Unit:** 2684 **Examiner:**

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97(b)(3)

The applicant respectfully requests entry of the attached Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(b)(3) made in compliance with Section 1.98 during the pendency of the above-identified United States patent application. No fee is required because submission of the supplemental information disclosure statement is made prior to the mailing date of the first official action on the merits.

Dated this 24 day of October, 2014

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2684
	Examiner Name	-
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
	6,059,733	05-09-2000	Brune et al.
	8,640,712	02-04-2014	Ardrey, Jr.
	8,771,201	07-08-2014	Gabriel et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Acknowledgement Receipt

EFS ID:	20509605
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	24-OCT-2014
Filing Date:	29-AUG-2014
Time Stamp:	13:49:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	25615 8a02fbb06cd8c3826cecc5d96ba7424c66e6d5fd	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	21755 84be36334b7f96ff809433a308f9bf3084d4a97b	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	19030 048d27b0459ffb0f4c51bd54c3840f8b09bc89a1	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	66400	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2684

Examiner:

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Sir/Madam:

Please find attached for entry into the above-identified patent application, documents as follow:

1. a Supplemental Information Disclosure Statement under 37 C.F.R. § 1.97 (b)(3) (1 page(s));

2. a Supplemental Information Disclosure Statement (1 page(s)) along with copies of each cited reference not already available at the PTO; and

3. this firm Letter of Transmittal (2 page(s)).

I have this 24 day of October, 2014, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents into the above-identified patent application.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 129 of 424

Direct all correspondence to:

CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

Customer No.: 39208

Dated this 24 day of October, 2014

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 130 of 424

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2684

Examiner:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO NOTICE OF NON-COMPLIANT AMENDMENT UNDER 37 C.F.R.§ 1.121

Applicant, in response to the Notice of Non-Compliant Amendment mailed on September 29, 2014, requests to disregard the part of the Preliminary Amendment concerning the Specification Amendment that reads:

"1. Please replace in the entirety the first paragraph following the Title with:

--This United States Patent Application is a continuation of United States Patent Application No. 13/391,614, filed February 21, 2012, which is the United States National Stage of International Patent Corporation Treaty Patent Application No. PCT/US2010/002509, filed September 14, 2010, which claims the benefit of United States Provisional Patent Application No. 61/276,723, filed September 15, 2009, each hereby incorporated by reference herein.--"

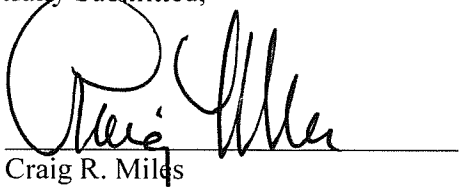
This part of the Preliminary Amendment was filed erroneously since the changes to the priority statement had been incorporated into the Specification.

Applicant respectfully requests entry of the remainder of the Preliminary Amendment to the file and examination of claims 1-20.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 131 of 424

Dated this 12 day of November, 2014

Respectfully Submitted,

By: 

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 132 of 424

Electronic Acknowledgement Receipt

EFS ID:	20681195
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	12-NOV-2014
Filing Date:	29-AUG-2014
Time Stamp:	18:44:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	20701 1f8bca3d4b29fc3474596c2a18cc19907cd7801b	no	2

Warnings:	
Information:	

2	Applicant Response to Pre-Exam Formalities Notice	Reply.pdf	22632 23258d2298e29478ee580302a9e721a1c3b0c3a7	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	43333

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

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New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2684

Examiner:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Dear Sir/Madam:

Please find enclosed for entry into the above-identified patent application, documents as follow:

1. a Reply to Notice of Non-Compliant Amendment (2 page(s)); and

2. this firm Letter of Transmittal (2 page(s)).

I have this 12 day of November, 2014, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents in the above-identified patent application.

Direct all correspondence to:

CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

Customer No.: 39208

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 135 of 424

Dated this 12 day of November, 2014

Respectfully Submitted,

By: 

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 136 of 424

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97(b)(3)

The applicant respectfully requests entry of the attached Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(b)(3) made in compliance with Section 1.98 during the pendency of the above-identified United States patent application. No fee is required because submission of the supplemental information disclosure statement is made prior to the mailing date of the first official action on the merits.

Dated this 19 day of November, 2014

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

NON-PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	CITE NO.	AUTHOR, title of article, title of item, date, page(s), volume-issue number(s), publisher, city and /or country where published	T2
		Corresponding NZ Patent Application No. 610343; OA mailed May 12, 2013, 3 total pages.	

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Acknowledgement Receipt

EFS ID:	20743878
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	19-NOV-2014
Filing Date:	29-AUG-2014
Time Stamp:	16:05:46
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	25789 86e38cb451ab1cd23fb4a230b1aca0b16a814e7f	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	21576 9772dc1f5f702e240158cbebe618298d72f8e15c	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	19334 90c2e174ea50ec7d73171405af41c5dd6df2e47b	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Non Patent Literature	NZ_OA.pdf	31891 2b5d47cf89a36e78542380910 4f4ab4c74958824	no	3
Warnings:					
Information:					
		Total Files Size (in bytes):	98590		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Sir/Madam:

Please find attached for entry into the above-identified patent application, documents as follow:

1. a Supplemental Information Disclosure Statement under 37 C.F.R. § 1.97 (b)(3) (1 page(s));

2. a Supplemental Information Disclosure Statement (1 page(s)) along with copies of each cited reference not already available at the PTO; and

3. this firm Letter of Transmittal (2 page(s)).

I have this 19 day of November, 2014, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents into the above-identified patent application.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 141 of 424

Direct all correspondence to:

CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

Customer No.: 39208

Dated this 19 day of November, 2014

Respectfully Submitted,

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Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 142 of 424

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

NON-PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	CITE NO.	AUTHOR, title of article, title of item, date, page(s), volume-issue number(s), publisher, city and /or country where published	T2
		Corresponding AU Patent Application No. 2010296053; Patent Examination Report No. 1, mailed July 16, 2014, 3 total pages.	

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Electronic Acknowledgement Receipt

EFS ID:	20995809
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International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	17-DEC-2014
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	25985 3d2a7ad82116e1d912a5afe7f526504c5e21b200	no	2

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2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	20313 1942c5d7a32e271787d54023402579a93cb84cde	no	1
Warnings:					
Information:					
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3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	19418 3050e6470ba88a547aca9a589d27f1e244ba06fc	no	1
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4	Non Patent Literature	AU_OA.pdf	46437 fe05fb03c27425fa0f0955ab86d7e506bc9e5642	no	3
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Sir/Madam:

Please find attached for entry into the above-identified patent application, documents as follow:

1. a Supplemental Information Disclosure Statement under 37 C.F.R. § 1.97 (b)(3) (1 page(s));

2. a Supplemental Information Disclosure Statement (1 page(s)) along with copies of each cited reference not already available at the PTO; and

3. this firm Letter of Transmittal (2 page(s)).

I have this 17 day of December, 2014, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents into the above-identified patent application.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 146 of 424

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Dated this 17 day of December, 2014

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Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97(b)(3)

The applicant respectfully requests entry of the attached Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(b)(3) made in compliance with Section 1.98 during the pendency of the above-identified United States patent application. No fee is required because submission of the supplemental information disclosure statement is made prior to the mailing date of the first official action on the merits.

Dated this 17 day of December, 2014

Respectfully Submitted,

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UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)

CONFIRMATION NO. 4228

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PUBLICATION NOTICE

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Title: Computer Implemented Animal Management System

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NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
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UNITED STATES PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
	5,482,008	01-09-1996	Stafford et al.
	8,694,091	04-08-2014	Birk et al.
	2004/0133131	07-08-2004	Kuhn et al.
	2009/0182207	07-16-2009	Riskey et al.
	2011/0301437	12-08-2011	Gabriel et al.
	2014/0368338	12/18/2014	Rettedal et al.

FOREIGN PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	DATE	COUNTRY	NAME OF PATENTEE OR APPLICANT OF CITED DOCUMENT
	2314154 A1	04-27-2011	EP	Sewalt et al.
	2011/079338 A2	07-07-2011	WO	Rozenkranz et al.
	2012/173502 A1	12-20-2012	WO	Mallinson et al.

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(54) **Title**: DEVICE FOR THE MEASUREMENT OF INDIVIDUAL FARM ANIMAL DATA

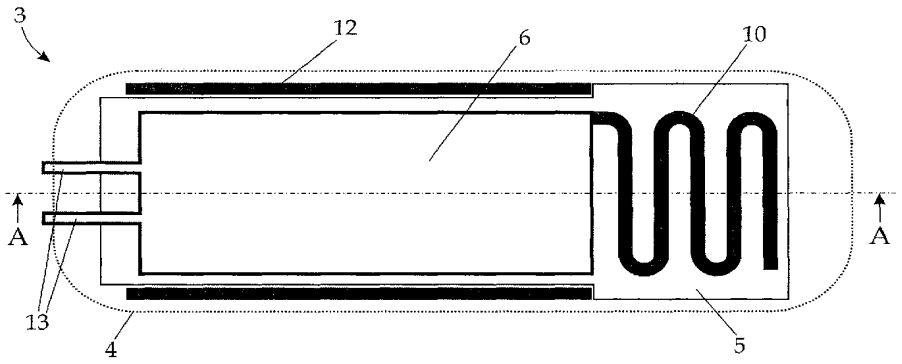


Fig. 2

(57) **Abstract**: The invention relates to a measuring device (3) for the measurement of at least one physiological parameter of a farm animal's organism, whereby the measuring device (3) is placeable in the gastro-intestinal tract of livestock and comprises the following components arranged in a casing (4): at least one sensor (8, 8') for the measurement of at least one physiological parameter of a farm animal, at least one transmitter (9) with antenna (10) for the wireless transmission of information, at least one control unit (7) for controlling the measuring device (3), and at least one power supply device (11) for the measuring device (3), whereby a hollow protective guard (12, 12') is provided inside the casing (4) which covers at least the power supply unit in order to protect it from mechanical impact.

WO 2011/079338 A2

DEVICE FOR THE MEASUREMENT OF INDIVIDUAL FARM ANIMAL DATA

The invention concerns a device for measuring at least one physiological parameter of a farm animal's organism, whereby such device can be placed in the gastro-intestinal tract of the farm animal and contains at least one sensor for measuring at least one physiological parameter of the farm animal's organism, at least one transmitter with antenna for the wireless transmission of information, at least one control unit for controlling the device, and at least one power supply device for supplying the device with power.

The invention further relates to a system, comprising at least one of the aforementioned devices and a base station, the base station and the device communicating with each other via a wireless procedure. A base station may for example be a data processing unit which communicates with one or several devices by means of antennas and processes and stores the transmitted information.

Livestock farming, in particular of dairy cattle, is currently subject to structural changes, especially in Europe with a tendency to large-scale farming. In this context, herd management turns out to be increasingly difficult, e.g. when it comes to controlling the health of individual animals or to allocating feeds. With increasingly large herds, symptoms of illness in individual animals are frequently not detected in time, and customized feeding is hardly possible. In order to ensure both appropriate feed and care for the animals and to make farming economically viable, it is enormously important for farmers to keep themselves precisely informed about their animals' state of health.

Let us take the example of cattle farming: especially in high-yield dairy cattle herds, e.g. Subacute Ruminal Acidosis (SARA) is a widespread problem, and mostly cumulative in a herd. The negative effects of SARA on the livestock's health are multifarious and represent a central factor that reduces production figures in cattle farming. For various reasons, SARA is a pathological and disease-causing state that is not always diagnosed accurately. The lack of simple and specific diagnostic methods, and/or the proneness of applicable diagnostic methods to mistakes have led to a situation where the diagnosis so far is usually made indirectly and retrospectively (e.g. via the fat content of the milk, fat protein ratio) and/or based on secondary clinical symptoms (e.g. thin, mushy excrement containing an increased percentage of undigested elements).

In order to solve these problems, devices were developed that can be placed directly in the gastro-intestinal tract of livestock in order to measure physiological data. For example DE 199 01 124 A1 describes such a device, consisting of a probe in bolus form, which is

inserted into the gastro-intestinal tract of cattle, and of a controllable monitoring device, which communicates with the probe via a wireless procedure. A bolus form is commonly understood to be a pill form, thus essentially an object with an oval cross-section along its longitudinal axis. The probe contains sensors for the measurement of one or several different physiological parameters, such as pressure, temperature, conductivity, pH value, or ammonia content in the gastro-intestinal tract.

Similar solutions are described in US 2004/0133131 A1, WO 01/13712 A1, US 5,984,875, WO 2006/046057, and GB 2455700. US 6,694,161 B1 additionally shows an illustrative embodiment, in which the pH sensor and a transmitter located outside the animal are connected via a cannula needle.

The said devices are mostly fragile devices that are only insufficiently protected from heavy mechanical influence. Damage during their utilization caused by sharp-edged individual parts or harmful substances may thus jeopardize the health of the farm animal in question.

It is thus an aim of the invention to come up with a device that overcomes the said disadvantages of prior art.

According to the invention this problem is solved by a device of the initially-mentioned kind, wherein a hollow protective guard, covering at least the power supply device to protect it from mechanical impact, is arranged inside the casing.

Thanks to the invention it is possible to ensure real time livestock monitoring. Due to the wireless transmission of the information registered by the device cost-effective integration into similar or existing feeding systems which are also based on wireless procedures is possible. In such a case transmission is ensured by the transmitter, however, a transceiver device may also be provided for, which has the advantage of both transmitting and receiving data.

On the one hand, the protective guard protects the sensitive parts of the device from mechanical impact, for example from bites in case the device lands in the mouth or between the teeth of livestock. At least the power supply device, which frequently contains harmful substances, should be covered by the protective guard, in order to protect the animal from injury, e.g. from poisoning, in case of excessive mechanical strain to the device.

On the other hand, the protective guard allows for increase and/or customization of the weight – i.e. the specific weight – of the device, in order to ensure optimal positioning of the

device in the gastro-intestinal tract of the farm animal. This enables proper data acquisition by the at least one sensor.

In addition, if the protective guard is manufactured from a conductive material, it is possible to improve the electromagnetic conditions for the device (or the antenna of the transmitter, respectively), in order to positively influence the radiation pattern of the antenna.

Advantageously, the protective guard does not entirely cover the elements to be protected, but is executed in such a way that they may be inserted into the protective guard and removed if necessary. The protective guard thus ideally has cylinder form, with a circular or polygonal cross-section. Ideally, the bottom and cover surfaces are left open. In the following description, the term polygonal cross-section is intended to mean a polygonal cross-section which may be triangular, quadrangle, hexagonal, octagonal or designed to have more angles. Due to the regular design, an improved reception and distribution of mechanical impacts is achieved and damage to the elements covered by the protective guard is avoided.

In one variant of the invention, the protective guard is made of metal. Possible materials are for example steel or brass, which are easy to process and available at low price, thus permitting a time- and cost-saving production of the device according to the invention. A condition for its utilization is the aforementioned requirement of resistance against mechanical impact. For the above-mentioned reasons, the choice of the material also depends upon the specific weight of the material used and upon its effect on the total weight of the device.

In another variant of the invention, the protective guard covers not only the power supply device, but also the transmitter and the control unit, and thus protects further sensitive parts of the device from damage. At the same time, the enlarged surface of the protective guard may lead to an increased weight of the device. As mentioned above, the protective guard is preferably designed in such a way as to enable easy insertion and, if necessary, removal of the parts to be protected. If the protective guard is executed in cylinder form, this may be achieved by leaving open the bottom and cover surfaces.

Basically different antenna types may be used – for example the antenna may be executed as dipole or directional antenna. Also the dimensioning is more or less left to discretion and may be $\lambda/2$, for instance. However, it is important to consider the limited space in the casing of the device. The length of the transmitter antenna should preferably be dimensioned to $\lambda/4$ of the used frequency.

The transmitter transmits information via frequencies in the range of 20 MHz to 1 GHz. In a variant of the invention the transmitter transmits information via frequencies ranging from 300 MHz to 450 MHz. In Europe a frequency of 433 MHz is used, for instance. For applications in the USA a frequency of 315 MHz may be used. Furthermore the use of ISM-radio bands (Industrial-, Scientific- and Medical band) in the range of 868 MHz or 915 MHz is possible.

Good results are achieved with antennas in meander form with at least one loop. Meander form is intended to mean a form consisting of one or more interconnected loops in serial arrangement. The term meander derives from the bends in a sinuous watercourse. The loops of the meandered antenna may in this case be angular or circular. The antenna is dimensioned according to the frequency used. The meander form enables the use of long antennas in a small space. The meandered antenna has the omnidirectional radiation pattern that is required for the proper functioning of the device and is easy to tune, a property which is for example necessary for protective guards made of metal which, together with the power supply unit, influence the radiation pattern.

In one variant of the invention, the device is equipped with at least one switch which is connected to the control unit and may be actuated from outside the device. The switch serves for example for activating and/or deactivating the device. Basically the switch may be of any kind, as long as it withstands the conditions under which the device is used. In the present case, this would be the acid environment of the gastro-intestinal tract of a farm animal, such as a cow.

The switch may be configured as a magnetic switch (eg. a Reed-switch) which is located inside the measuring device 3. Here, the term magnetic switch denotes a switch that can be switched by a magnetic field. In the present case the measuring device 3 may be activated (or deactivated) by applying a magnetic field at a certain position of the measuring device. A Reed-switch basically consists of two contacts which are arranged in vacuum or inert gas; when a magnetic field (permanent magnet or electromagnet) is applied the contacts are brought into contact and, hence, close a circuit.

In another variant of the invention, the switch is executed in form of at least two contacts connected to the control unit, which protrude from the device through openings in the casing, whereby the control unit activates the device by short-circuiting the contacts. This means that the control unit activates the measuring device when the contacts are short-circuited. This may be achieved by providing a start-up circuit with two MOSFETS. The first MOSFET is connected to the contacts, and by short-circuiting the contacts the second MOSFET is actuated so that the battery load is switched over to the control unit and from

there to the areas necessary for the functioning of the measuring device. The short-circuiting of contacts can be achieved, for example, by providing a support for inserting the device, whereby its insertion would cause the short-circuiting of the contacts.

In addition, the device comprises at least one storage unit for data storage. This storage unit advantageously is a conventional storage chip (EEPROM – electrically erasable programmable read-only memory); however other storage devices such as SD cards, flash memories or the like are also possible. When the device is provided with a RFID transponder, a storage unit of the RFID transponder may be used for data storage.

The goal of the invention is furthermore achieved by using a system as initially mentioned, which comprises at least one of the above-cited devices and at least one base station.

In the following, the present invention is described in more detail with reference to the drawings, which show:

Fig. 1 a cow with a device according to the invention placed in its gastro-intestinal tract,

Fig. 2 a plan view of a sectional view of the device according to the invention,

Fig. 3 a side view of a sectional view along the line A-A in Fig. 2,

Fig. 4 a front view of a sectional view along the line B-B in Fig. 3,

Fig. 5 an exploded view showing the individual parts of the device according to the invention, and

Fig. 6 a schematic drawing of the components of the device.

It should be appreciated that the invention is not restricted to the following embodiments which merely represent one of the possible implementations of the invention. Furthermore, it is noted that the representations in the figures are only schematic for the sake of simplicity.

Fig. 1 shows the sectional view of a cow 1, whereby the cow 1 in this case only serves as an example of a farm animal in whose gastro-intestinal tract the device can be inserted. Examples for other suitable livestock are e.g. sheep, goats, and wild ruminants, such as red deer.

The feed ingested and masticated by the cow 1 ends up in the stomach of the cow 1, e.g. in the rumen or reticulum 2. The reticulum 2 is part of the cow's 1 stomach, located before the rumen. From the reticulum 2, the ingested feeds either move forward into the rumen, or backward into the mouth of the cow 1 for rumination.

The feeds in the stomach of the cow 1 roughly can be divided into three phases: at the top is the gaseous phase containing CO_2 and methane (CH_4). In between is a solid phase, the so-called "fiber mat", containing pre-digested hay, silage grass etc. In the lower portion is the rumen fluid, consisting of liquids, such as acids, microbes, saliva, water, and masticated material. Measuring the physiological parameters of the stomach contents allows one to draw conclusions about possible effects and/or conclusions as to the animal's state of health – whenever the pH is low, e.g. rumen acidosis may occur. The measuring device 3 according to the invention is thus placed within the gastro-intestinal tract of the animal – i.e. in the present example in the area of the reticulum 2 of the cow 1 in order to capture physiological data of the stomach.

Figs. 2, 3 and 4 show the measuring device 3 according to the invention in different sectional views. The measuring device 3 is inserted into the gastro-intestinal tract of a ruminating farm animal by appropriate means and remains there. To introduce the measuring device 3, e.g. a balling gun common in livestock farming is used.

Fig. 2 shows a plan view of a section along the longitudinal axis of the inventive measuring device 3, hereinafter also referred to as bolus, whereby the same reference sign is used as for the measuring device 3.

The casing 4 of the bolus 3 has a cylinder form with rounded edges of large radiuses, whereby external burrs should be avoided in order to minimize the risk of injury for the animal. The materials for the casing 4 are preferably acid-proof, impact-strong plastics, which ideally comply with the rules of the American Food and Drug Administration (FDA). The casing 4 should not break irregularly below a certain load threshold. When choosing the plastic to be used the acid environment of the animal's gastro-intestinal tract should be taken into account.

The casing 4 is lockable and can, for this purpose, be composed of several parts, for example of two or three interlockable parts (see Fig. 5). The casing 4 contains the devices necessary for the measuring of physiological parameters. These devices are arranged on a printed circuit board 5 (PCB). The exact arrangement is not illustrated in Fig. 2, since a number of arrangements are possible which are well known to the person skilled in the art. Reference is

made to only one area 6 of the printed circuit board 5 in which the individual components are located.

Fig. 6 shows a schematic drawing with the components of the inventive device 3 and their connections. The components are located in a casing 4. The casing comprises a control unit 7 for controlling the measuring device 3. This may for example be achieved using an adequately programmed micro-processor. The control unit 7 controls and processes data from the sensors 8, 8'. A storage unit 16, for example a storage chip or an SD card, may be provided for data storage. At least one sensor 8, 8' is to be provided, however, more than two sensors may also be used. The sensors 8, 8' measure parameters of their surroundings such as pH and temperature. However, also sensors for measuring glucose, volatile fatty acids (especially mixed fatty acids), acetate, propionate, butyrate, and lactate may be suitably provided for. The sensors 8, 8' are mounted in such a way as to be able to get in contact with the environment of the measuring device 3, for example through openings (not illustrated in the figures).

The data are processed by the control unit 7. Via a transmitter device 9, equipped with an antenna 10, the data are transmitted wirelessly, for example to a base station located outside the animal. Preferably, the transmitter 9 is designed as transceiver device 9 which is able to both transmit and receive data. Hence, the term transceiver 9 will be used in the following.

Via the antenna 10 and the transceiver 9 it is possible to influence the control unit 7 from the outside, for example in order to modify the internal programming. The antenna 10 may be executed in various ways, for example as helical antenna or corkscrew antenna, or as ceramic and/or patch antenna.

The transceiver 9 operates in the frequency range 20 MHz to 1 GHz. Frequency bands that are frequently used in similar applications range from 300 MHz to 450 MHz. The frequency 433 MHz is used in Europe, for instance. For an application in the USA the frequency 315 MHz may be used. However, other useable ISM-radio bands (Industrial, Scientific and Medical band) lie in the range of 868 MHz or 915 MHz. Also the frequency 27 MHz may be used.

The transceiver 9 may be realized as RFID transponder is also possible. In this case, depending on its design variant the RFID transponder, may be contain an antenna, a switching circuit for the transmitting (and receiving) of data, a circuit for controlling the transponder as well as a memory, for example in form of a tag. The switching circuit for transponder control writes data into the memory (e.g. the tag). In a special design, this switching circuit may be located outside the RFID transponder, in the present case for

example as part of the control unit 7 on the printed board 5. The RFID transponder is then read out via a stimulation by means of a high-frequency alternating field. In such a case the RFID transponder is to be adequately arranged on the printed circuit board 5.

When using an RFID transponder, data are transmitted within a frequency range of 128 kHz (long-wave range) up to 13,56 MHz (short-wave range), or within a range of 865-869 MHz (European range) up to 950 MHz (US American and Asian frequency ranges). Frequency may vary from one region to the other.

As far as construction size and other specifications are concerned it is possible to choose from a number of well-known solutions.

The power supply device may be a battery 11 or an accumulator.

The antenna 10 in Fig. 2 is executed as meandered antenna. It consists of several loops of an appropriate carrier material, which are arranged on the level of the printed circuit board 5. Antenna 10 in the mentioned design enables an optimal compromise between the radiation pattern in the vertical and horizontal planes of polarization, the necessary adaptation and cost-effective production. The meandered antenna can be optimized for a direct connection of the antenna base to the printed circuit board 5 so that no additional adaptation is necessary, which further reduces production costs.

Fig. 3 shows a lateral cross-section of the measuring device 3 along the line A-A in Fig. 2. It shows that the battery 11 is arranged below the printed circuit board 5 within the casing 4. The illustration of battery 11 and its arrangement is, however, only given as example; it may also be arranged in any other form according to the commonly available battery or accumulator forms.

The power supply units used, for example lithium batteries, generally contain substances that are potentially harmful for livestock. Therefore the inventive device 3 is designed to contain a hollow protective guard 12 covering at least the battery 11 in order to protect it from mechanical impact. Such impact may for example occur when the cow 1 regurgitates the measuring device 3 back up into its mouth together with the feed to be ruminated and then bites into the measuring device 3.

Preferably, the guard 12 is executed in cylindrical form. In the pictured embodiment the cylinder has a circular cross-section (see fig. 4), however the cross-section may also have a polygonal form. Ideally, both the top and bottom planes are open so that the appliances to be protected are easily inserted into the device. The protective guard 12 may be made from any

material that resists high mechanical impact, for example from plastics such as Kevlar™, or metals, such as brass or similar metals.

In the illustrated embodiment, the protective guard 12 surrounds not only the power supply unit 11 but also most of the printed circuit board 5 with the aforementioned components (for example also the aforementioned RFID transponder). Preferably, the antenna 10 is arranged outside the protective guard 12 – in order to minimize the impairing of the radiation pattern, which is considerable, especially where a metallic material is used for the protective guard 12. Fig. 4 shows a variant of the invention in a dotted outline, in which a protective guard 12' surrounds only the battery 11. In such a case, the protective guard 12 of a higher diameter may be omitted – it is however possible to provide for a combination of a protective guard 12' for the battery and another bigger protective guard 12 surrounding it.

The protective guard 12 serves both as protection from mechanical influence ("bite protection") and as additional weight, providing the device 3 with sufficient density to ensure that it remains in a location within the gastro-intestinal tract which is favorable for data reception by the sensors 8, 8'. If the protective guard 12 is made of metal, it may improve the radiation pattern of antenna 10 by altering the electromagnetic near field of the antenna 10.

In addition to its "bite protection" function, the protective guard 12 contributes to the weight of device 3. The weight, i.e. the specific gravity (density) of the measuring device 3 is highly important for the proper positioning of device 3 within the gastro-intestinal tract of the farm animal in question. Thus the weight of the entire measuring device 3 may be influenced by the material selected for and the thickness of the protective guard 12. For example it is also possible to vary the thickness of the protective guard 12 lengthwise.

In order to further increase the weight of the measuring device 3, it is possible to fill the inside of the casing 4 with a thermosetting material, such as synthetic resin. When filling in the material, the antenna 10 is ideally left out in order to ensure proper data transmission.

In the depicted embodiment of the invention the device 3 is equipped with a switch. The switch may basically be executed in any form – here the switch consists of two metal contacts 13, for example in stainless steel, which are connected to the control unit 7. These contacts protrude from device 3 through openings 14 in the casing 4 (see Figs. 2 and 5). The measuring device 3 is activated by short-circuiting the contacts 13 for a certain period of time, ranging from a few milliseconds to several seconds.

The circuiting of the contacts 13 within the control unit 7 which is necessary for this is state of prior art. For example, the contacts 13 may be connected to a start-up circuit in the control unit 7 which comprises two MOSFETs (metal oxide semiconductor field-effect transistors), whereby one of the MOSFETs is connected to the contacts 13. By short-circuiting the contacts 13, the second MOSFET switches the battery voltage onto the circuitry within the control unit 7, which thereby activates the measuring device 3.

In order to facilitate the short-circuiting process for the user, a rack may be provided into which the measuring device 3 can be placed, thus activating the measuring device 3 by short-circuiting the contacts.

The switch of the above-described design only ensures activation of the measuring device 3, which continues to function until the end of the battery run time, and/or until a pre-definable switch-off time point. Basically any other kind of switches may be provided for, in order to activate and deactivate the measuring device 3. A wide range of switches for this purpose are prior art.

In a variant of the invention a magnetic switch 13' is used which is arranged inside the measuring device 3 (see dashed object in Fig. 6). A magnetic switch 13' here denotes a switch that can be switched by a magnetic field. An example of such a magnetic switch 13' is a Reed-switch. Basically, a magnetic switch 13' has two contacts which are arranged in a protective atmosphere and do not touch each other. However, if a magnetic field is applied the two contact tongues attract and touch each other, consequently closing a circuit.

The magnetic switch 13' may be combined with a second MOSFET as described above so that a switching of the magnetic switch 13' puts the battery voltage through to the rest of the circuit in the control unit 7, thereby activating the measuring device 3.

The switching of the magnetic switch 13' may be effected by applying a magnetic filed to a specific position of the measuring device 3, by attaching a permanent magnet or an electromagnet, for instance.

Fig. 5 shows the individual components of the inventive measuring device 3 in an exploded view. In this case the casing consists of three parts, a casing front part 41 (which may for example be designed to contain openings for the sensors 8, 8'), a casing central part 42 housing the printed circuit board 5, and a casing rear part 43, the parts being interconnectable. The three-part structure of the casing with parts 41, 42, 43 in this case only serves as example - the design may provide for more or less casing parts. In order to facilitate the insertion of the measuring device 3 into the animal, the rear part of the casing 43

may have a flat end, which cooperates with the movable end of the balling gun that is used for inserting the device so that the measuring device 3 is properly moved into the rumen and does not get stuck.

In addition to the above-described components (which are not shown in the figures), the printed circuit board 5 includes the meandered antenna 10 and the contacts 13. The printed circuit board 5 is held in place by means of a rack 15 and supplied with power by means of a battery 11. The protective guard 12 may be placed around these components.

The rear part of the casing 43 comprises openings for the contacts 13.

Upon activation and insertion into the gastro-intestinal tract of the animal, the measuring device 3 performs measurements in certain time intervals. These intervals may range from 1 sec to several hours or even days. The measured data are stored on a storage unit 16, for example an EEPROM storage chip, an SD memory, or a flash memory. If the device 3 contains an RFID transponder, the data may be stored in the memory of the transponder. It is also possible to directly transmit the data wirelessly to the exterior.

If the measuring device 3 is used as part of a system together with at least one base station, such base station regularly searches for measuring devices within its reach with an inventory command. The distance between the measuring device and the base station in this case is for example 5 to 6 m or less. As soon as a measuring device 3 is within reach, it identifies itself by means of an identifier (serial number, bolus number or similar). Thereafter the base station checks whether the measuring device 3 contains any newly measured data. In this the case, the measured data are read out, stored in the base station (e.g. in a database), and then deleted from the measuring device 3. The base station then processes the measured data by means of appropriate routines so as to enable quick assessment of the data. Such an assessment may for example lead to a change in the feed ration administered.

CLAIMS

1. Measuring device (3) for the measurement of at least one physiological parameter of a farm animal's organism, wherein the measuring device (3) is placeable in the gastro-intestinal tract of the farm animal and comprises the following components arranged within a casing (4):

- at least one sensor (8, 8') for the measurement of at least one physiological parameter of the farm animal's organism;

- at least one transmitter (9) with antenna (10) for the wireless transmission of information,

- at least one control unit (7) for the control of the measuring device (3), and

- at least one power supply device (11) for the measuring device (3),

characterized in that the casing comprises a hollow protective guard (12, 12') covering at least the power supply device (11) in order to ensure protection from mechanical impact.

2. Measuring device according to Claim 1, **characterized in that** the protective guard (12, 12') has a cylinder form with circular or polygonal cross-section.

3. Measuring device according to Claims 1 or 2, **characterized in that** the protective guard (12, 12') is made of metal.

4. Measuring device according to one of the Claims 1 to 3, **characterized in that** the protective guard (12, 12') covers the transmitter (9) and the control unit (7) in addition to the power supply device (11).

5. Measuring device according to one of the Claims 1 to 4, **characterized in that** the length of the antenna (10) of the transmitter is dimensioned to $\lambda/4$ of the frequency used.

6. Measuring device according to one of the Claims 1 to 5, **characterized in that** the transmitter (9) uses frequencies ranging from 20 MHz to 1 GHz for the wireless transmission of information.

7. Measuring device according to one of the Claims 1 to 6, **characterized in that** the transmitter (9) uses frequencies ranging from 300 MHz to 450 MHz for the wireless transmission of information.

8. Measuring device according to one of the Claims 1 to 6, **characterized in that** the antenna (10) is designed in meander form with at least one loop.

9. Measuring device according to one of the Claims 1 to 8, **characterized in that** the measuring device (3) additionally has at least one switch connected to the control unit (7), which is actuable from outside the device.

10. Measuring device according to claim 9, **characterized in that** the switch is a magnetic switch like a Reed-switch, the magnetic switch being located inside the measuring device (3).

11. Measuring device according to Claim 9, **characterized in that** the switch is executed in form of at least two contacts (13) that are connected to the control unit (7) and stand out from the measuring device (3) through openings (14) in the casing (4), whereby the control unit (7) activates the measuring device (3) when the contacts (13) are short-circuited.

12. Measuring device according to one of the Claims 1 to 11, **characterized in that** at least one storage unit (16) is provided for the purpose of data storage.

13. System for the measuring of physiological parameters of a farm animal's organism, comprising at least one measuring device (3) according to one of the Claims 1 to 12, as well as at least one base station, whereby the base station and the measuring device (3) communicate with each other via a wireless procedure.

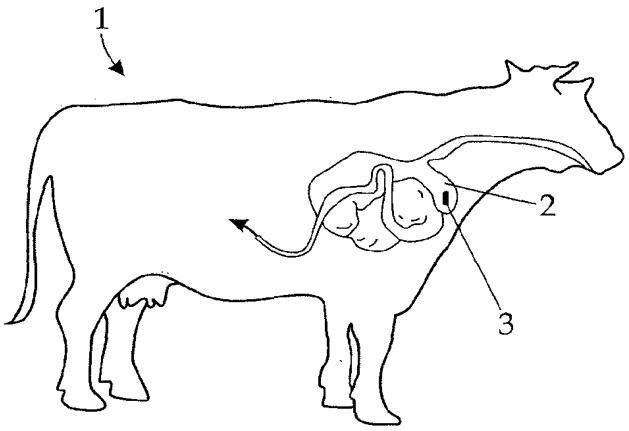


Fig. 1

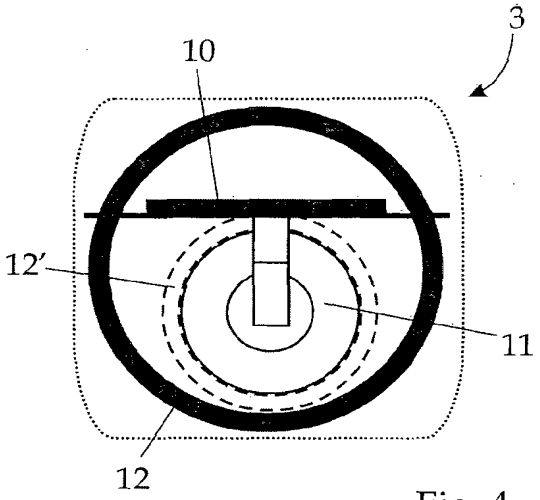


Fig. 4

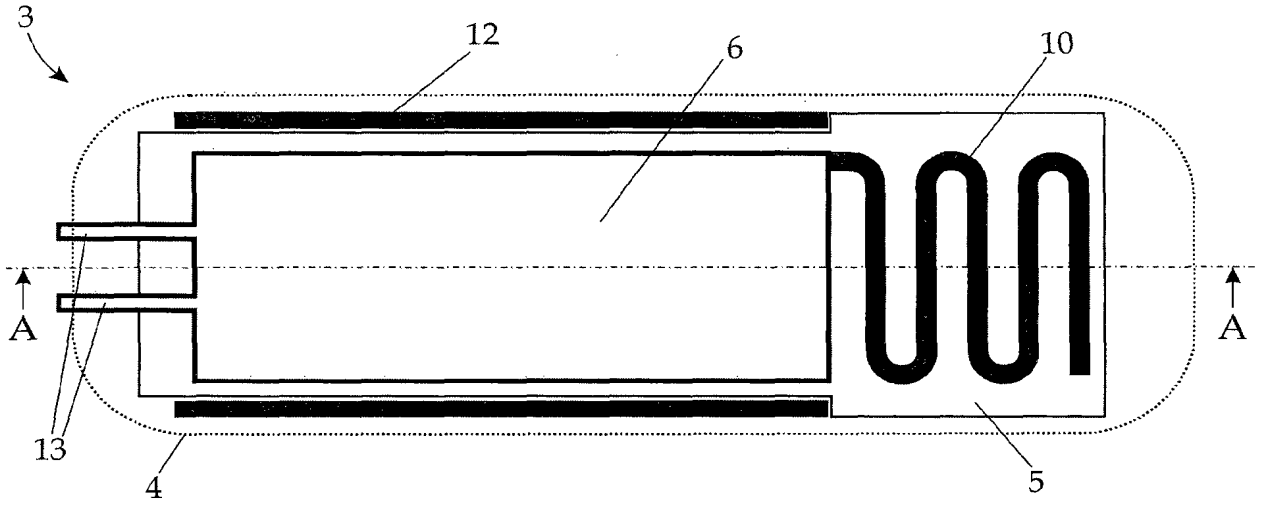


Fig. 2

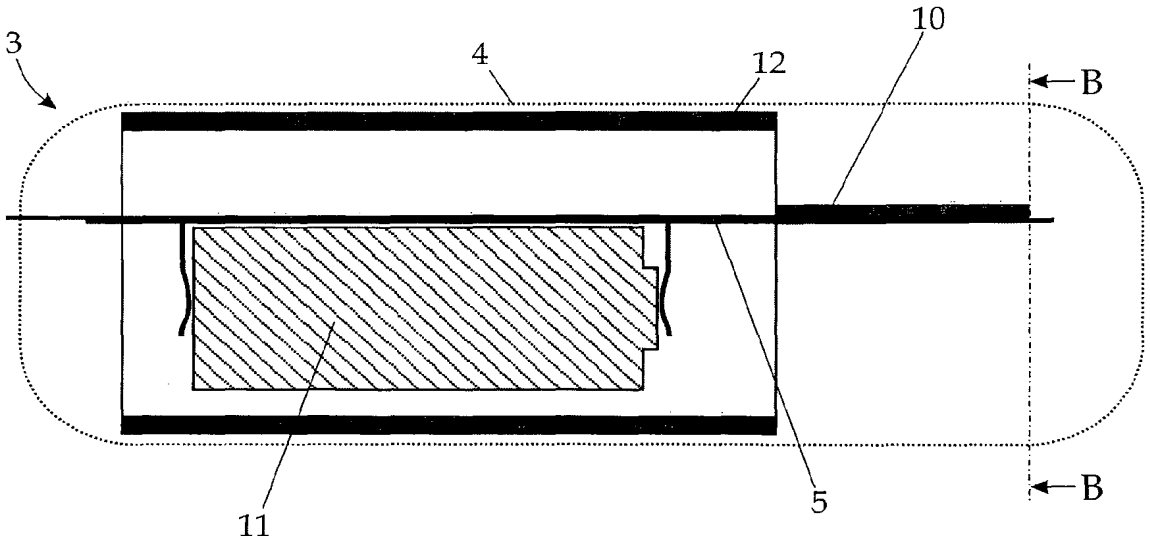


Fig. 3

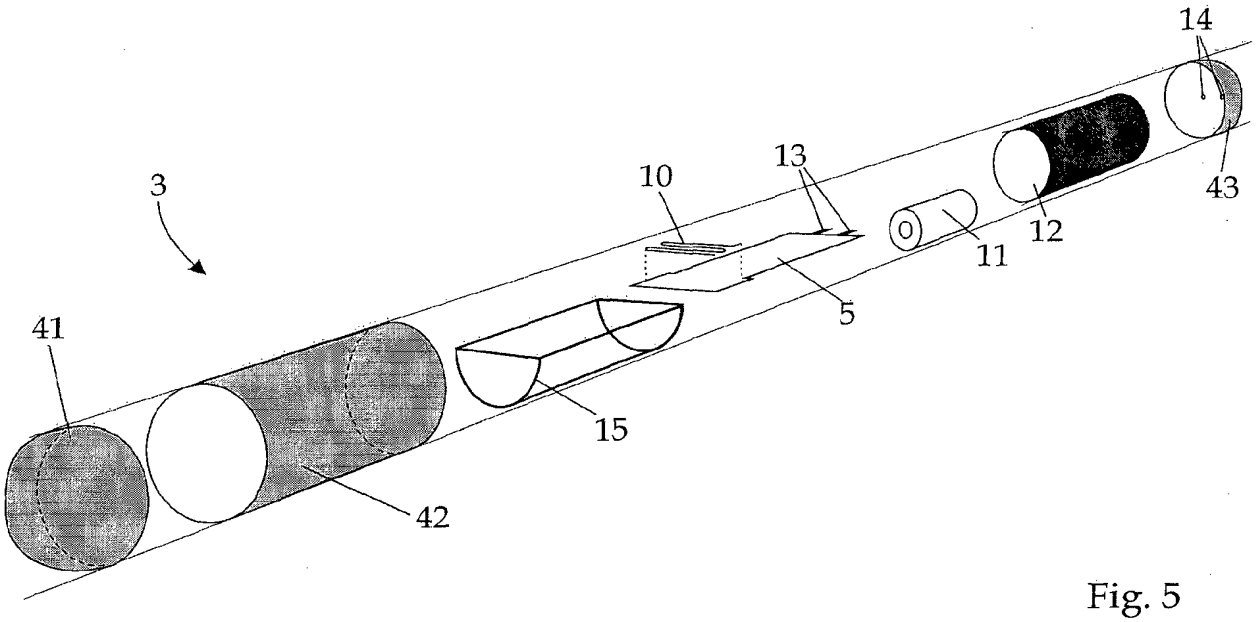


Fig. 5

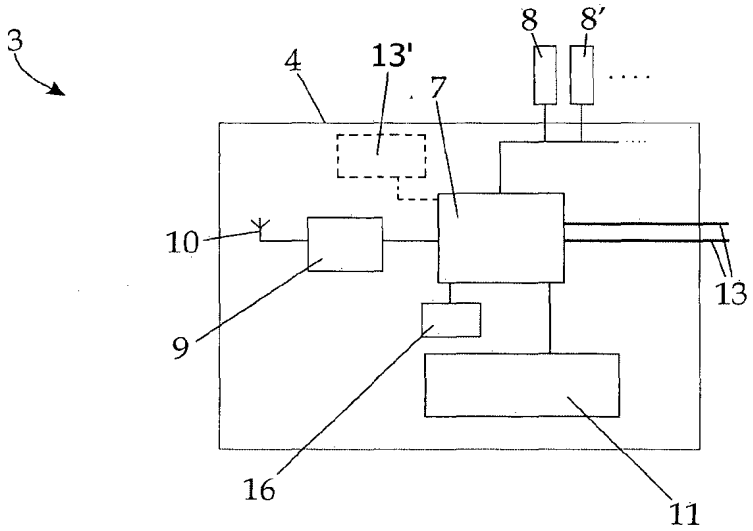


Fig. 6

Electronic Acknowledgement Receipt

EFS ID:	21644547
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	02-MAR-2015
Filing Date:	29-AUG-2014
Time Stamp:	17:49:58
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	39746 66c1c2e2c456dddd252382148180858c74e69eb	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	31133 98e691fe644325fb3cd6f36dd92a34e0090e63b6	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	34958 5a61d8e1918497566 47f75fda3ef5ee9c8180dff	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Foreign Reference	EP2314154.pdf	200172 d70b84710c45cbcd3087d7e4ace687a6a78f844b	no	8
Warnings:					
Information:					
5	Foreign Reference	WO2011079338.pdf	846645 30560e2fc736c82f16ce508423d34c58b13b34d5	no	16
Warnings:					
Information:					
6	Foreign Reference	WO2012173502.pdf	1510289 810fd13e1e93270b783e6e5375c63dc09dea275f	no	39
Warnings:					
Information:					
		Total Files Size (in bytes):	2662943		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Sir/Madam:

Please find attached for entry into the above-identified patent application, documents as follow:

1. a Supplemental Information Disclosure Statement under 37 C.F.R. § 1.97 (b)(3) (1 page(s));

2. a Supplemental Information Disclosure Statement (1 page(s)) along with copies of each cited reference not already available at the PTO; and

3. this firm Letter of Transmittal (2 page(s)).

I have this 2 day of March, 2015, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents into the above-identified patent application.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 169 of 424

Direct all correspondence to:

CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

Customer No.: 39208

Dated this 2 day of March, 2015

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
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Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 170 of 424

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97(b)(3)

The applicant respectfully requests entry of the attached Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(b)(3) made in compliance with Section 1.98 during the pendency of the above-identified United States patent application. No fee is required because submission of the supplemental information disclosure statement is made prior to the mailing date of the first official action on the merits.

Dated this 2 day of March, 2015

Respectfully Submitted,

CR MILES, P.C.

By: _____

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)	4228

39208 7590 09/15/2015

CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

EXAMINER	
TWEEL JR, JOHN ALEXANDER	

ART UNIT	PAPER NUMBER
2687	

MAIL DATE	DELIVERY MODE
09/15/2015	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 14/474,013	Applicant(s) RETTEDAL ET AL.	
	Examiner John A. Tweel Jr.	Art Unit 2687	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *8/29/14*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-20* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☒ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *See Continuation Sheet*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC

Continuation of Attachment(s) 2). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :8/29/14;10/24/14;11/19/14;12/17/14;3/2/15.

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

- Page 11, Line 12: There is no period at the end of this sentence.
- Page 17, Line 12: There is no closing parenthesis to match the opening one in this line.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-7 and 12-16 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **Renz et al** [US 2006/0185605] (supplied by applicant) in view of **Tsuyuzaki** [US 2007/0271320] (supplied by applicant).

For claim 1, the computer implemented animal tracking system taught by Renz includes the following claimed subject matter, as noted, 1) the claimed server is met by the servers (Paragraph 169) connected to respective networks (Paragraph 172), 2) the claimed storage means providing a database is met by the databases (Paragraph 169) connected to their respective servers, 3) the claimed computer capable of communicating with the server is met by the user-defined logic and computer source code (Paragraph 190), 4) the claimed first portion that retrieves an amount of animal identification from an RFID device is met by the data systems (No. 88) containing unique animal identification numbers (Paragraph 178), the system using RFID devices, 5) the claimed second portion that retrieves an amount of sensed animal information from the RFID device is shown in Figure 59 wherein a box (No. 276) displays the temperature of the animal (Paragraph 253), 6) the claimed fifth portion that solves a logical expression to obtain at least one logical value is read on the specification that states (Paragraph 195) a pen location is determined based on the location of an animal, 7) the claimed database being met by said databases that store the needed information, and 8) the claimed computer network being met through the computer network (Paragraph 177) that is used for the data transfer. However, there is no mention of a third portion that links the animal identification information to the sensed animal information in a database, and enter the information retrieved from the bit segments in a database of the computer as logical variables into at least one logical expression.

Aside from the very obvious fact that data read from an RFID reader is usually automatically loaded into a computer database, the Tsuyuzaki reference presents a

semiconductor device that not only includes a processing circuit (No. 42) that converts a pulse signal into a purposed signal, it also includes a storage circuit (No. 43) that allows the data to be stored after the signal processing. Also, the IC chip of the Tsuyuzaki reference generates an authentication signal for every authentication (Paragraph 10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include an authentication system in the primary reference for the purpose of more efficiently authenticating ID information found in the Renz reference.

For claim 2, the Renz reference gathers identification information for a plurality of animals, in this case cattle.

For claim 3, the Renz reference use RFID devices that have been implanted (Paragraph 265) into a plurality of animals.

For claim 4, the servers of Renz in conjunction with the central databases can be fully integrated with an animal health module (Paragraph 341) and all other modules of the processing system. This will provide the user with a complete history of the feeding habits of each animal.

For claim 5, the claimed amount of animal location information is read on the specification of Renz (Paragraph 204) that allows a user to record movement from location to location.

For claim 6, the claimed amount of date-time information is read on the specification of Renz (Paragraph 232) wherein treatment dates can be tracked in addition to feeding times (Paragraph 462).

For claim 7, the Renz reference also measures the number of days for a particular treatment (Paragraphs 192-194).

For claim 12, the Renz reference also tracks and manages medicated rations and other special rations that have withdrawal days based on one or more ingredients used in said rations. The reference notifies users and details each managed ingredient and corresponding withdrawal days.

For claim 13, the Renz reference (Paragraph 183) uses an RFID transponder that interrogates an animal's tag and also communicates with the system for data input.

For claim 14, the Rena reference uses a web server (No. 70) to act as a central repository of information.

For claim 15, the Renz reference may use different network configurations such as wide area (Paragraph 172) for data transfer and management.

For claim 16, Figure 2 of Renz depicts a plurality of client computers capable of configuration connected to a network.

4. Claims 17-20 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **Renz et al** in view of **Tsuyuzaki** as applied to claim 16 above, and further in view of **Gray** [US 2005/0145187].

For claim 17, there is no mention of a wireless palm device as the client computer used in Renz or Tsuyuzaki.

Wireless palm devices have been used in RFID transponder systems for some time. The system taught by Gray includes a livestock management system that tracks

information regarding an individual animal through an RFID device (No. 14). The information is then relayed through a satellite system (No. 12) where it can then be loaded onto a public network for access by the user or owner having personal computers (No. 18), cell phones (No. 22), and PDAs (No. 20). This allows many different users such as owners, farmers, and veterinarians easy access to information regarding a particular animal without having to go into the field for inspection.

The Renz reference would greatly benefit from easier access across all forms of communication. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include cellular telephone communication in the combination of references above for the purpose of providing easy access to a network for many different users to access important information.

For claim 18, the Gray reference allows access using a cell phone (No. 22).

For claims 19 and 20, the Renz reference mentions the use of hand-held tag readers (Paragraph 253).

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(l)(1) - 706.02(l)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/forms/. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

6. Claims 1-20 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-25 of U.S. Patent No. 8,823,515. Although the claims at issue are not identical, they are not patentably distinct from each other because the claims of the instant application are merely the apparatus equivalent of the method claims presented in the parent application.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Tweel Jr. whose telephone number is (571)272-2969. The examiner can normally be reached on M-F 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on 571 272 6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAT
9/10/2015

/John A Tweel Jr./
Primary Examiner, Art Unit 2687

Notice of References Cited	Application/Control No. 14/474,013	Applicant(s)/Patent Under Reexamination RETTEDAL ET AL.	
	Examiner John A. Tweel Jr.	Art Unit 2687	Page 1 of 1

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-8,823,515 B2	09-2014	Rettedal; Nicholas P.	A01K11/006	340/539.13
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
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NON-PATENT DOCUMENTS

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	**Art Unit**
	JOHN A TWEEL JR	2687

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2015								
	1	✓								
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	**Art Unit**
	JOHN A TWEEL JR	2687

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☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2015								
	37	-								
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	45	-								
	46	-								

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

NON-PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	CITE NO.	AUTHOR, title of article, title of item, date, page(s), volume-issue number(s), publisher, city and /or country where published	T2
/JT/		Corresponding AU Patent Application No. 2010296053; Patent Examination Report No. 1, mailed July 16, 2014, 3 total pages.	

EXAMINER SIGNATURE:	DATE CONSIDERED:
/John Tweel Jr/	09/10/2015

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
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	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
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EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
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First Named Inventor	Nicholas P. Rettedal
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Attorney Docket Number	bellaCONT1bolus (280-11)

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Examiner Initials*	Cite No.[1]	Document Number / Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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Sheet 2 of 4

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First Named Inventor	Nicholas P. Rettedal
Art Unit	
Examiner Name	
Attorney Docket Number	bellaCONT1bolus (280-11)

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Art Unit	
Examiner Name	
Attorney Docket Number	bellaCONT1bolus (280-11)

NON PATENT LITERATURE DOCUMENTS

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/JT/		International PCT Patent Application No. PCT/US2010/002509, filed September 14, 2010	
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Sheet 4 of 4

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Application Number	
Filing Date	
First Named Inventor	Nicholas P. Rettedal
Art Unit	
Examiner Name	
Attorney Docket Number	bellaCONT1bolus (280-11)

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/JT/		Identification System-compliant data. Journal of Animal Science (2007), Vol. 85, pp. 503-511. *Continuation of previous entry /JT/	
/JT/		SMARTSTOCK USA. Website, http://www.smartstock-usa.com, originally downloaded 12/30/2011, 12 total pages.	
/JT/		Corresponding New Zealand patent application No.: 599357; Letters Patent dated September 3, 2012, 1 page.	
/JT/		Corresponding New Zealand patent application No.: 599357; OA dated October 19, 2012, 1 page.	
/JT/		Corresponding New Zealand patent application No.: 599357; OA dated February 8, 2013, 1 page.	
/JT/		New Zealand patent application No.: 610343; OA dated November 11, 2013, 3 total pages.	

Examiner Signature	/John Tweel Jr/	Date Considered	09/10/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] Applicant's unique citation designation number (optional). [2] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2684
	Examiner Name	-
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
/JT/	6,059,733	05-09-2000	Brune et al.
/JT/	8,640,712	02-04-2014	Ardrey, Jr.
/JT/	8,771,201	07-08-2014	Gabriel et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:
/John Tweel Jr/	09/10/2015

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

NON-PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	CITE NO.	AUTHOR, title of article, title of item, date, page(s), volume-issue number(s), publisher, city and /or country where published	T2
/JT/		Corresponding NZ Patent Application No. 610343; OA mailed May 12, ~~2013~~ 2014, 3 total pages.	

EXAMINER SIGNATURE:	DATE CONSIDERED:
/John Tweel Jr/	09/10/2015

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	Art Unit
	JOHN A TWEEL JR	2687

CPC- SEARCHED		
Symbol	Date	Examiner
A61B 5/0002	9/10/15	JAT
G06F 19/3418	9/10/15	JAT
A01K 11/006	9/10/15	JAT
A01K 11/007	9/10/15	JAT
A01K 11/008	9/10/15	JAT
A01K 5/02	9/10/15	JAT
A01K 29/00	9/10/15	JAT
A01K 29/005	9/10/15	JAT
A01K 1/0209	9/10/15	JAT

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
340	539.13	9/10/15	JAT
	539.12	9/10/15	JAT
	572.1	9/10/15	JAT
	10.1	9/10/15	JAT
119	51.02	9/10/15	JAT

SEARCH NOTES		
Search Notes	Date	Examiner

INTERFERENCE SEARCH

	/J.A.T./ Primary Examiner.Art Unit 2687

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/J.A.T./ Primary Examiner.Art Unit 2687

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97(c) AND STATEMENT UNDER 37 C.F.R. 1.97(e)(2)

The applicant respectfully requests entry of the attached Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(c) made in compliance with Section 1.98 during the pendency of the above-identified United States patent application. No fee is required because submission of the supplemental information disclosure statement is accompanied by the statement under 37 C.F.R. §1.97(e)(2) that no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart application, and to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.

Dated this 23 day of September, 2015

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
	5,532,692	07-02-1996	Tatsuya
	6,702,185	03-09-2004	Zercher
	2004/0155782	08-12-2004	Letkomiller et al.
	2007/0156016	07-05-2007	Betesh et al.
	2009/0187392	07-23-2009	Riskey et al.
	2010/0030025	02-04-2010	Segawa et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Acknowledgement Receipt

EFS ID:	23586489
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	23-SEP-2015
Filing Date:	29-AUG-2014
Time Stamp:	20:14:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	40283 9c40ef981876f23deaff58cf997d32b00775309f	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	42517 2529eef3438181c2e31eeb318b831258650811be	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	27225 59f9cfbc48460726b1c134fa83def3db0fe1d01b	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
		Total Files Size (in bytes):	110025		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Sir/Madam:

Please find attached for entry into the above-identified patent application, documents as follow:

1. a Supplemental Information Disclosure Statement under 37 C.F.R. § 1.97 (c) and Statement under 37 C.F.R. §1.97(e)(2) (1 page(s));

2. a Supplemental Information Disclosure Statement (1 page(s)) along with copies of each cited reference not already available at the PTO; and

3. this firm Letter of Transmittal (2 page(s)).

I have this 23 day of September, 2015, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents into the above-identified patent application.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 199 of 424

Direct all correspondence to:

CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

Customer No.: 39208

Dated this 23 day of September, 2015

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 200 of 424

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TERMINAL DISCLAIMER UNDER 1.321(c)

The owner, Bella Technologies, LLC, of the entire interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number 8,823,515 as the term is defined in 35 U.S.C. §154 and §173, and as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patents are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. §154 and §173 of the prior patent as the term of said prior patent is presently shortened by any terminal disclaimer in the event that said prior patent later expires for failure to pay a maintenance fee, is held to be unenforceable, is found

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 201 of 424

invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 C.F.R. §1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated this 11 day of March, 2016

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000 telephone
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 202 of 424

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

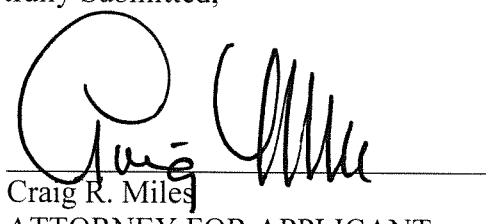
Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. §1.136

This is a request to extend the period for filing a reply in the above-identified application under the provisions of 37 C.F.R. §1.136(a) and 37 C.F.R. §1.17(a)(3). The three month extension of time extends until March 15, 2016 period in which the applicant can timely file a reply in the above-referenced application which would otherwise be due within three months of the mailing date of the official communication mailed September 15, 2015. Applicant claims small entity status under 37 C.F.R. § 1.27, therefore Applicant submits the fee amount under 37 C.F.R. §1.17(a)(3) of $700.00.

Dated this 11 day of March, 2016

Respectfully Submitted,

By: 

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000 telephone
(970) 492-0003 facsimile

Electronic Patent Application Fee Transmittal

Application Number:	14474013
Filing Date:	29-Aug-2014
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Lioudmila Townsend
Attorney Docket Number:	bellaCONT1bolus (280-11)

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	2253	1	700	700
Miscellaneous:				
Statutory or Terminal Disclaimer	2814	1	160	160
		Total in USD ($)		**860**

Electronic Acknowledgement Receipt

EFS ID:	25178720
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	11-MAR-2016
Filing Date:	29-AUG-2014
Time Stamp:	19:04:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$860
RAM confirmation Number	5286
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	40133 f1d1bc141cd14dff322a9eb807dc8977916077dc	no	2
Warnings:					
Information:					
2	Amendment/Req. Reconsideration-After Non-Final Reject	Response.pdf	511886 fc4d3c1f0f2791808bff20c0f946f96c72daae22	no	14
Warnings:					
Information:					
3	Terminal Disclaimer Filed	Terminal_Disclaimer.pdf	66246 81f2aa66f375afe6d87a3ef69888a30b77e6ee63	no	2
Warnings:					
Information:					
4	Extension of Time	Ext_of_Time.pdf	34732 881f995765e2bf9507925236be8d4276fd73e7c8	no	1
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	32516 5006536af0d4cc7af13b4ee8f0976bde80227bd5	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	685513		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Dear Sir/Madam:

In response to the Office Action mailed September 15, 2015, please find the following documents:

1. a Response and Request For Reconsideration Under 37 C.F.R. § 1.111 (14 page(s));
2. a Terminal Disclaimer under 37 C.F.R. 1.321(c) (2 page(s));
3. a Petition for Extension of Time Under 37 C.F.R. §1.136 (1 page(s)); and
4. this firm Letter of Transmittal (2 page(s)).

I have this 11 day of March, 2016, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents in the above-identified patent application.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 209 of 424

Direct all correspondence to:

CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

USPTO Customer No.: 39208

Dated this 11 day of March, 2016

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
PTO No. 45,954
CR MILES, P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 210 of 424

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE AND REQUEST FOR RECONSIDERATION UNDER 37 C.F.R.§ 1.111

This paper is submitted in response to the non-final Office Action mailed on September 15, 2015. Applicant believes that this response addresses each concern raised by the Examiner in the Office Action and each of the claims is now in condition for allowance. A three (3) month extension of time from December 15, 2015 to and including March 15, 2016, is submitted herewith. Please amend the above-identified United States patent application as follows.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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SPECIFICATION AMENDMENT

It is respectfully requested that the specification be amended without prejudice, without admission, without surrender of subject matter, and without intention of creating any estoppel as to equivalents, as follows.

1. Please replace the paragraph beginning on page 11, line 4, with:

--The server computer (1) may operate in a networked environment using logical connections (32)(33) to one or a plurality of remote computers (34). These logical connections (32)(33) are achieved by a communication device (35)(36) coupled to or a part of the server computer (1). Each of the plurality of remote computers (34) can include a part or all of the elements above-described as included in the server computer (1) although only a single box has been illustrated in Figure 1 for the remote server computer (34). The logical connections (32)(33) depicted in Figure 1 can establish a local-area network (LAN) or a wide-area network (WAN). Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet (37).--

2. Please replace the paragraph beginning on page 17, line 1, with:

--The RFID object identification information (80) and the sensed RFID object characteristics value (75) can be separated, sorted and loaded into a current reads database table (86) stored in the first RFID memory (52) or in the server computer (1) or in the remote computer (34) memory (as to certain embodiments). The current reads database table (86) matches the calculated RFID object characteristic value (75) and time-date stamp (54). The calculated RFID object characteristic value (75) and time-date stamp (54) matched to the RFID object identification information (80) in the current reads database table (86) can in a further step be separated or sorted by RFID object identification information (80)(or a bolus identification number (81) animal identification number (82) for animal (40) embodiments) and the current reads for each of a plurality of individual RFID objects (39) can be stored in a corresponding plurality of RFID database tables (87) stored in a memory element (3) of the server computer (1) or remote computer (34) for retrieval by RFID object identification information (80)

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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(animal identification number (82) or bolus identification number (81) depending upon the application of the invention).--

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 213 of 424

CLAIM AMENDMENTS

It is respectfully requested that the claims be amended without prejudice, without admission, without surrender of subject matter, and without intention of creating any estoppel as to equivalents, as follows. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1 (currently amended). A computer implemented animal ~~tracking~~ management system, comprising: 15:21

~~a) a server connected to a computer network;~~

~~b) a storage means providing a database connected to said server;~~

c) a ~~computer capable of communicating with said server said computer configured with executable program instructions, wherein:~~ processor communicatively coupled to a memory element containing program instructions, including:

d) a first portion of said ~~executable~~ program instructions ~~when executed~~ ~~retrieves~~ executable to retrieve an amount of animal identification information from ~~a first bit segment of~~ an RFID device ~~implanted in an animal~~;

e) a second portion of said ~~executable~~ program instructions ~~when executed retrieves~~ executable to retrieve an amount of sensed animal information from ~~a second bit segment of~~ said RFID device ~~implanted in said animal~~, said sensed animal information received by said RFID device from a sensor coupled to said RFID device;

f) a third portion of said ~~executable~~ program instructions ~~when executed links~~ executable to link said amount sensed animal information retrieved from ~~each said bit segment of~~ said RFID device ~~implanted in said animal~~ to an amount of animal information ~~of said animal~~ stored in ~~said~~ a database ~~of said computer~~;

g) a fourth portion of said ~~executable~~ program instructions ~~when executed functions~~ executable to enter said amount of sensed animal information retrieved from ~~each said bit segment of~~ said RFID device ~~implanted in said animal~~ linked to said amount of animal

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information ~~of said animal~~ stored in said database ~~of said computer~~ as logical variables into at least one logical expression;

h) a fifth portion of said ~~executable~~ program instructions ~~when executed~~ executable to solve ~~solves~~ said at least one logical expression to obtain a corresponding at least one logical value ~~related to said animal~~;

~~i) a sixth portion of said executable program instructions when executed stores said at least one logical value in said database; and~~

~~j) a seventh portion of said executable program instructions when executed serves said logical value to said computer network~~.

2 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 1, wherein said amount of animal identification information comprises animal identification information from ~~said first bit segment of~~ a plurality of RFID devices ~~implanted~~ implantable in a plurality of animals.

3 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 2, wherein said amount of sensed animal information comprises sensed animal information from ~~said fourth bit segment of~~ said plurality of RFID devices ~~implanted~~ implantable in said plurality of animals.

4 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 3, wherein said amount of animal information of said animal stored in said database ~~of said computer~~ comprises an amount of health information for each of said plurality of animals said amount of health information including an occurrence of an illness.

5 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 4, wherein said amount of animal information of said animal stored in said database ~~of said computer~~ comprises an amount of animal location information.

6 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 5, wherein said amount of animal information of said animal stored in said

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database ~~of said computer~~ further comprises an amount of date-time information received from ~~a second bit segment of~~ said RFID device ~~implanted in said animal~~.

7 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 6, wherein said at least one logical expression solves ~~for~~ as to a selected period of time ~~for~~ as to said plurality of animals ~~for~~ in each of a plurality of animal locations as to whether a greater than selected number of ~~said occurrence of~~ said illness ~~has~~ have occurred ~~at each of said plurality of animal locations~~.

8 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 5, wherein said plurality of animal locations comprises a plurality of pen locations.

9 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 8, wherein said plurality of animal locations comprises a plurality of GPS locations.

10 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 9, wherein said amount of animal information of said animal stored in said database of said computer comprises each of an amount of desired pen count information, an amount of milk production information, an amount of days milked information, and an amount of reproductive information.

11 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 10, wherein said at least one logical expression solves ~~for~~ as to a selected period of time ~~for each of said plurality of animals as to~~ in which of [[a]] said plurality of pens each of said plurality of animals should be located ~~in which to locate each of said plurality of animals~~.

12 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 5, wherein said amount of animal information of said animal stored in said

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database of said computer comprises an amount of date-time information as to administration of a first compound to each of said plurality of animals, an amount of date-time information as to administration of a second compound to each of said plurality of animals, an amount of date-time information as to occurrence of first compound effects on each of said plurality of animals, an amount of date-time information as to occurrence of second compound effects on each of said plurality of animals.

13 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 1, further comprising an RFID device reader.

14 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 13, wherein said server provides a browser-based user interface which enables an animal tracker to track each animal based on said amount of information retrieved from each said bit segment of said RFID device implanted in said animal.

15 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 14, wherein said computer network comprises a wide area network.

16 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 15, further comprising at least one client computer capable of configuration with said executable program instructions connected to said computer network.

17 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 16, wherein said at least one client computer comprises a wireless palm device.

18 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 16, wherein said client computer comprises a cellular telephone.

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19 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 17, wherein said RFID device reader comprises a portable RFID device reader connected to said wireless palm device.

20 (currently amended). The ~~computer implemented animal tracking~~ system of claim ~~as described in clam~~ 19, wherein said at least one client computer comprises a portable RFID device reader connected to said cellular telephone.

21-46 (canceled).

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REMARKS

Applicant provides the following remarks to the non-final action mailed September 15, 2015.

1. **Status Of The Claims.** Claims 1-20 are pending in the subject application. Claims 1-7 and 12-16 are rejected under 35 U.S.C.A. Section 103(a) as being unpatentable over United States Patent Publication No. 2006/0185605 of Renz et al. ("*Renz*") in view of Tsuyuzaki in United States Patent Publication No. 2007/02771320 ("*Tsuyuzaki*"). Claims 17-20 are rejected under 35 U.S.C.A. Section 103(a) as being unpatentable over *Renz* in view of *Tsuyuzaki* as applied to Claim 16 above, and further in view of United States Patent Publication No. 2005/0145187 of *Gray* ("*Gray*"). Claims 1-20 are rejected on the ground of non-statutory obviousness-type double patenting as being obvious over claims 1-25 of United States Patent No. 8,823,515 to Rettedal et al. ("*Rettedal*").

Claims 1-20 have been amended without the addition of any new matter. Claims 21-46 have been without prejudice canceled. Applicant respectfully reserves the right to pursue any non-elected claims, canceled or otherwise unclaimed subject matter in one or more continuation, continuation-in-part, or divisional applications.

2. **Specification.** The disclosure is objected to due to the following informalities:

In regard to Page 11, Line 12, Applicant has amended the paragraph to insert a period at the end of the sentence.

In regard to Page 17, Line 12, Applicant has amended the paragraph to insert a closing parenthesis.

Applicant believe this fully addresses the objections to the disclosure. Applicant respectfully requests that the Examiner withdraw the objections to the disclosure.

3. **The Rejections Under 35 U.S.C.A. Section 103 Are Overcome.**

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To reject a claim based on combining prior art elements according to known methods, the office must resolve the Graham factual inquires and provide a finding that the prior art included each element claimed. *MPEP §2143 A (1).* Basic knowledge or common sense cannot replace documentary evidence to provide a finding that the prior art included each element. *K/S HIMPP v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1366 (Fed. Cir. 2014). One skilled in the art could have combined the elements as claimed by known methods, and that in combination, each element performs the same function as it does separately. *MPEP §2143 A (2).* The combination yielded nothing more than predictable results to one of ordinary skill in the art. *MPEP §2143 A (3).* If any these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art. *MPEP §2143 A (1).*

Applicant does not believe that Claims 1-20 are made unpatentable by *Renz* in view of *Tsuyuzaki* or made unpatentable by *Renz* in view of *Tsuyuzaki* in view of *Gray* for reasons as follows:

A. ***Renz In View Of Tsuyuzaki Does Not Make Claims 1-7 and 12-16 Obvious.***

Claim 1. Applicant claims "e) a second portion of said program instructions executable to retrieve an amount of sensed animal information from said RFID device, said sensed animal information received by said RFID device from a sensor coupled to said RFID device." *Claim 1, element e).*

Applicant believes that the Examiner has inadvertently misconstrued the meaning of the claim language. Referring the Examiner to Applicant's Figure 3, The "bolus 79" contains the "RFID 19" and "a sensor 83". Applicant describes the structural and functional relationship of the RFID and sensor in the Specification at least at page 15, line 27 thorough page 16, line 10, as follows:

> A second bit segment (72) of the RFID (19) can be encoded or re-encoded from time to time with sensed RFID object characteristics (84) received from a sensor (83) which can be located within the bolus (79) or otherwise implanted within

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> the RFID object (39). . .sensed RFID object characteristics (84) can include without limitation a sensed characteristic of the . . . animal (40) . . .for example, any one or more of location, temperature, pH, or the like, or any one or more of physiological characteristics of an animal (40) such as temperature, pH, heart rate, blood pressure, partial pressures of dissolved gases, or the like. . .[v]ariation of the sensed RFID object characteristic(s)(84) can be continuously or intermittently updated by encoding or re-encoding the second bit segment (72) of the RFID (19)."

Renz in view of *Tsuyuzaki* does not teach or suggest a sensor coupled to the RFID 19 which senses a characteristic of animal. Rather, *Renz* in view of *Tsuyuzaki* teaches that "an RFID tag may be attached externally or internally to an animal. *Renz* at ¶ [0007]. *Renz* in view of *Tsuyuzaki* also teaches that "field devices such as scales, tag readers, temperature measuring devices, and retinal scanning devices. These devices can be connected to the present data processing system via cables, radio frequency connections, or other connections. The data being recorded by these devices can be passed from a particular terminal location or work station directly into the database(s) of the present invention. *Renz* at ¶ [0182]. *Renz* in view of *Tsuyuzaki* that "an individual animal processing screen that allows the user to enter data about the animal as it is being processed. More specifically, . . illustrates that the user could enter a weight and temperature, as well as information about the owner of the animal. *Renz* at ¶ [0223].

Accordingly, *Renz* in view of *Tsuyuzaki* does not teach an RFID combined with a sensor implantable in an animal to sense a characteristic of an animal such as temperature. Applicant has amended Claim 1 to make clear the difference between the elements of Claim 1 and *Renz* in view of *Tsuyuzaki.* The amendment is supported by the *Specification* at page 15, line 27 thorough page 16, line 10 and Figure 3.

Claims 2-5. Claims 2-5 are made ultimately dependent on Claim 1 which includes elements which are not taught or suggested by *Renz* in view of *Tsuyuzaki.* Therefore, Claims 2-5 include elements not taught or suggested by *Renz* in view of *Tsuyuzaki.*

Claim 6. Applicant claims an "further comprises an amount of date-time information received from said RFID device". The Examiner maps these elements to *Renz* at ¶ 462 stating that date-time-information is read on "wherein treatment dates can be tracked in addition to feeding

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times." However, the treatment dates and feeding times are not received from the RFID device. Accordingly, *Renz* in view of *Tsuyuzaki* does not teach all the elements of Claim 6.

Claim 7. Applicant claims "at least one logical expression solves as to a selected period of time as to said plurality of animals in each of a plurality of animal locations as to whether a greater than selected number of said illness have occurred."

The Examiner maps these elements to "the number of days for a particular treatment (Paragraphs 19-194). However, *Renz* in view of *Tsuyuzaki* teaches "[t]he recommended treatment. . .is based upon two criteria, namely, the number of days since the last treatment, shown at entry 204, and the number of days on a particular feed ration." *Renz* at ¶ [0192]. However, the days from the last treatment and the number of days on a particular feed ration does not teach or suggest determination of a greater number of illness than a selected number for each of a plurality of animal locations.

Accordingly, all the elements of Claim 7 are not taught by *Renz* in view of *Tsuyuzaki.*

Claims 8 through 11. It does not appear that the Examiner has mapped the elements of Claim 8 through 11 to *Renz* in view of *Tsuyuzaki* or by *Renz* in view of *Tsuyuzaki* in view of *Gray* and only rejects these claims based on the grounds of nonstatutory double patenting. Accordingly, the elements of each of these claims is not taught or suggested by the combinations of references.

Claims 8 and 9. Additionally, Claims 8 and 9 are made ultimately dependent on Claim 1 which includes elements which are not taught or suggested by *Renz* in view of *Tsuyuzaki.* Therefore, Claims 8 and 9 include elements not taught or suggested by *Renz* in view of *Tsuyuzaki.*

Claim 10. Additionally, Claim 10 includes the elements of "an amount of milk production information, an amount of days milked information." *Renz* only teaches a system in regard to

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"a cow/calf operation 10." *Renz* at ¶ [0168]. Accordingly, there is no teach or suggestion of an amount of milk production information, an amount of days milked information.

Claims 11-16. Claims 11-16 are made ultimately dependent on Claims 1, 6, 7, and 10 each of which includes elements which are not taught or suggested by *Renz* in view of *Tsuyuzaki.* Therefore, Claims 11-16 each include elements not taught or suggested by *Renz* in view of *Tsuyuzaki.*

B. Renz In View Of Tsuyuzaki In View of Gray Does Not Make Claims 17-20 Obvious.

Claims 17-20 are made ultimately dependent on Claims 1, 6, 7, and 10 at least each of which includes elements which are not taught or suggested by *Renz* in view of *Tsuyuzaki* in view of *Gray.* Therefore, Claims 11-16 each include elements not taught or suggested by *Renz* in view of *Tsuyuzaki.*

Based on the foregoing remarks neither *Renz* in view of *Tsuyuzaki* or *Renz* in view of *Tsuyuzaki* in view of *Gray* teaches all the elements of Claims 1-20. Accordingly, Applicant respectfully requests that the Examiner withdraw the Section 103 rejection of Claims 1-20.

4. The Nonstatutory Obviousness-type Double Patenting Rejections Are Overcome.

Applicant timely files a Terminal Disclaimer in compliance with 37 CFR 1.321(c) to overcome the nonstatutory obviousness-type double patenting rejection. Applicant respectfully requests withdrawal of the nonstatutory obviousness-type double patenting rejection and allowance of Claims 1-20.

5. *Applicant Requests Second Non-Final Action.* The Examiner has not considered Claims 8-11 in view of the references applied. Applicant requests a second non-final action in which these Claims have been considered.

6. Request For Telephonic Interview. Applicant respectfully requests a telephonic interview to address any remaining concerns of the Examiner.

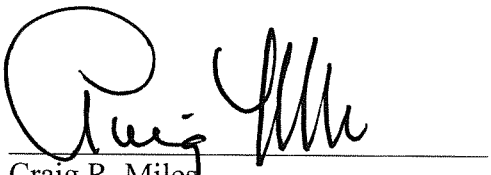
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CONCLUSION

Claims 21-46 have been without prejudice canceled. Claims 1-20 have been amended without the addition of any new matter. Applicant believes that the amendment to Claims 1-20 places Claims 1-20 in condition for allowance and Applicant respectfully requests allowance of same.

Dated this 11 day of March, 2016

Respectfully Submitted,

By: 

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/474,013	Filing Date 08/29/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **03/11/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/MARCIA GORDON/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Application Number	Application/Control No.	Applicant(s)/Patent under Reexamination	
	14/474,013	RETTEDAL ET AL.	

Document Code - DISQ	Internal Document – DO NOT MAIL

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Date Filed : 3/11/16	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:
JEAN PROCTOR

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)	4228

39208 7590 04/15/2016

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EXAMINER
TWEEL JR, JOHN ALEXANDER

ART UNIT	PAPER NUMBER
2687	

MAIL DATE	DELIVERY MODE
04/15/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/474,013	RETTEDAL ET AL.	
	Examiner	Art Unit	
	John A. Tweel Jr.	2687	

All participants (applicant, applicant's representative, PTO personnel):

(1) *John A. Tweel Jr.*. (3)_____.

(2) *Craig R. Miles*. (4)_____.

Date of Interview: *13 April 2016*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1 and 7*.

Identification of prior art discussed: *Renz et al, Tsuyuzaki*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The Applicant and Examiner discussed amended claim language that appeared to obivate over the prior art, namely the addition of a sensor in conjunction with the RFID device in which both are contained within the aminal itself. The prior art, particularly the Renz reference, appears to receive information from devices outside the animal. The present application is concerned with a bolus that contains both the RFID device and sensing device connected thereto. As this is a new consideration, a new search would still have to be performed pending any further Office action.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/John A Tweel Jr./ Primary Examiner, Art Unit 2687	

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Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/474,013	RETTEDAL ET AL.	
	Examiner	Art Unit	
	John A. Tweel Jr.	2687	

All participants (applicant, applicant's representative, PTO personnel):

(1) *John A. Tweel Jr.*. (3)_____.

(2) *Craig R. Miles*. (4)_____.

Date of Interview: *13 April 2016*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1 and 7*.

Identification of prior art discussed: *Renz et al, Tsuyuzaki*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The Applicant and Examiner discussed amended claim language that appeared to obivate over the prior art, namely the addition of a sensor in conjunction with the RFID device in which both are contained within the aminal itself. The prior art, particularly the Renz reference, appears to receive information from devices outside the animal. The present application is concerned with a bolus that contains both the RFID device and sensing device connected thereto. As this is a new consideration, a new search would still have to be performed pending any further Office action.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/John A Tweel Jr./ Primary Examiner, Art Unit 2687	

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 230 of 424

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)	4228

39208 7590 05/31/2016

CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

EXAMINER
TWEEL JR, JOHN ALEXANDER

ART UNIT	PAPER NUMBER
2687	

MAIL DATE	DELIVERY MODE
05/31/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 14/474,013	Applicant(s) RETTEDAL ET AL.	
	Examiner John A. Tweel Jr.	Art Unit 2687	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3/11/16*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-9 and 12-20* is/are rejected.

8)☒ Claim(s) *10 and 11* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *9/23/15*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC

The present application is being examined under the pre-AIA first to invent provisions.

1. This Office action is in response to the amendment filed 3/11/16. Claims 1-20 have been amended.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-9 and 12-20 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **Renz et al** [US 2006/0185605] in view of **Tsuyuzaki** [US 2007/0271320] and **Gray** [US 2005/0145187].

For claim 1, the computer implemented animal tracking system taught by Renz includes the following claimed subject matter, as noted, 1) the claimed processor communicatively coupled to a memory is met by the user-defined logic and computer source code (Paragraph 190) connected to a database (Paragraph 169), 2) the claimed first portion that retrieves an amount of animal identification from an RFID device is met by the data systems (No. 88) containing unique animal identification numbers (Paragraph 178), the system using RFID devices, 2) the claimed second portion that retrieves an amount of sensed animal information from the RFID device is shown in Figure 59 wherein a box (No. 276) displays the temperature of the animal (Paragraph 253), and 3) the claimed fifth portion that solves a logical expression to obtain at least

one logical value is read on the specification that states (Paragraph 195) a pen location is determined based on the location of an animal. However, there is no mention of a third portion that links the sensed animal identification information to the sensed animal information in a database, and enter the information retrieved from the bit segments in a database of the computer as logical variables into at least one logical expression.

Aside from the very obvious fact that data read from an RFID reader is usually automatically loaded into a computer database, the Tsuyuzaki reference presents a semiconductor device that not only includes a processing circuit (No. 42) that converts a pulse signal into a purposed signal, it also includes a storage circuit (No. 43) that allows the data to be stored after the signal processing. Also, the IC chip of the Tsuyuzaki reference generates an authentication signal for every authentication (Paragraph 10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include an authentication system in the primary reference for the purpose of more efficiently authenticating ID information found in the Renz reference.

Another claimed element not found in either reference above is a sensor coupled to the RFID device. However, this is not new in animal management. The system taught by Gray includes an ear tag (No. 14) that contains both an RFID device (No. 24) in conjunction with a biometric sensor (No. 40). This sensor collects data such as heart rate, temperature, and blood pressure and stores this information in memory to be polled by an RFID reader (No. 38). Furthermore, the passive electronic identification system taught by the Gray reference can be installed on a collar, implanted into the animal, or in a bolus (Paragraph 14). The knowledge presented by this reference was

in existence at the time of the primary references and presents an advantage in housing both the sensor and transmitter into the same apparatus. This is plain evidence that sensors and RFID transmitters have been used in conjunction with each other and is judged to be an obvious variation on the prior art for the purpose of providing a single unit that can perform multiple functions, thereby making the above combination more efficient.

For claim 2, the Renz reference gathers identification information for a plurality of animals, in this case cattle. The RFID devices of Gray may be implanted into the animal.

For claim 3, the Renz reference use RFID devices that have been implanted (Paragraph 265) into a plurality of animals.

For claim 4, the servers of Renz in conjunction with the central databases can be fully integrated with an animal health module (Paragraph 341) and all other modules of the processing system. This will provide the user with a complete history of the feeding habits of each animal.

For claim 5, the claimed amount of animal location information is read on the specification of Renz (Paragraph 204) that allows a user to record movement from location to location.

For claim 6, the claimed amount of date-time information is read on the specification of Renz (Paragraph 232) wherein treatment dates can be tracked in addition to feeding times (Paragraph 462).

For claim 7, the Renz reference also measures the number of days for a particular treatment (Paragraphs 192-194).

For claim 8, the Renz reference makes data entries based on the pen location (Paragraph 183) of the animal.

For claim 9, both the Renz and Gray references include GPS receivers to track the locations of the cattle.

For claim 12, the Renz reference also tracks and manages medicated rations and other special rations that have withdrawal days based on one or more ingredients used in said rations. The reference notifies users and details each managed ingredient and corresponding withdrawal days.

For claim 13, the Renz reference (Paragraph 183) uses an RFID transponder that interrogates an animal's tag and also communicates with the system for data input. The Gray reference also uses RFID devices and associated readers.

For claim 14, the Rena reference uses a web server (No. 70) to act as a central repository of information.

For claim 15, the Renz reference may use different network configurations such as wide area (Paragraph 172) for data transfer and management.

For claim 16, Figure 2 of Renz depicts a plurality of client computers capable of configuration connected to a network.

For claim 17, the system taught by Gray includes a livestock management system that tracks information regarding an individual animal through an RFID device (No. 14). The information is then relayed through a satellite system (No. 12) where it

can then be loaded onto a public network for access by the user or owner having personal computers (No. 18), cell phones (No. 22), and PDAs (No. 20).

For claim 18, the Gray reference allows access using a cell phone (No. 22).

For claims 19 and 20, the Renz reference mentions the use of hand-held tag readers (Paragraph 253).

4. Claims 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

The Renz reference records an amount of desired pen count information and an amount of reproductive information as seen in the specification (Paragraphs 19-21) that pertain to birthing and pregnancy checks. However, there is no mention of the amount of milk production information and amount of days milked information. This, in conjunction with the other claimed subject matter, is considered unobvious subject matter.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Tweel Jr. whose telephone number is (571)272-2969. The examiner can normally be reached on M-F 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on 571 272 6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAT
5/26/2016

/John A Tweel Jr./
Primary Examiner, Art Unit 2687

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	**Art Unit**
	JOHN A TWEEL JR	2687

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2015	05/26/2016							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	✓							
	6	✓	✓							
	7	✓	✓							
	8	✓	✓							
	9	✓	✓							
	10	✓	O							
	11	✓	O							
	12	✓	✓							
	13	✓	✓							
	14	✓	✓							
	15	✓	✓							
	16	✓	✓							
	17	✓	✓							
	18	✓	✓							
	19	✓	✓							
	20	✓	✓							
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	34	-	-							
	35	-	-							
	36	-	-							

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 240 of 424

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	**Art Unit**
	JOHN A TWEEL JR	2687

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2015	05/26/2016							
	37	-	-							
	38	-	-							
	39	-	-							
	40	-	-							
	41	-	-							
	42	-	-							
	43	-	-							
	44	-	-							
	45	-	-							
	46	-	-							

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
/JT/	5,532,692	07-02-1996	Tatsuya
/JT/	6,702,185	03-09-2004	Zercher
/JT/	2004/0155782	08-12-2004	Letkomiller et al.
/JT/	2007/0156016	07-05-2007	Betesh et al.
/JT/	2009/0187392	07-23-2009	Riskey et al.
/JT/	2010/0030025	02-04-2010	Segawa et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:
/John Tweel Jr/	05/26/2016

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97(c) AND STATEMENT UNDER 37 C.F.R. 1.97(e)(1)

Applicant respectfully requests entry of the attached Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(c) made in compliance with Section 1.98 during the pendency of the above-identified United States patent application. No fee is required because submission of the supplemental information disclosure statement is accompanied by the statement under 37 C.F.R. §1.97(e)(1) that each item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.

Dated this 3 day of June, 2016

Respectfully Submitted,

CR MILES P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
	6,085,751	07-11-2000	Taparia

NON-PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	CITE NO.	AUTHOR, title of article, title of item, date, page(s), volume-issue number(s), publisher, city and /or country where published	T2
		European Patent Application No. 11834759.0; Office Action mailed May 24, 2016, 8 pages total.	

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Acknowledgement Receipt

EFS ID:	25970594
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	03-JUN-2016
Filing Date:	29-AUG-2014
Time Stamp:	20:33:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	40655 236fbdf02f7e91e7008480058f3220f6f1bb4a17	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	42601 a8546d122c9d00a5d1bfd0395e31e1de9774ebf4	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	28147 f26fffa7b8bf454c13639786b2a77311e3644327	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Non Patent Literature	EP_OA.pdf	266121 9cb956aa30711c6d6a50ba2159ece1af7e9a22ec	no	8
Warnings:					
Information:					
		Total Files Size (in bytes):	377524		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Sir/Madam:

Please find attached for entry into the above-identified patent application, documents as follow:

1. a Supplemental Information Disclosure Statement under 37 C.F.R. § 1.97 (c) and Statement under 37 C.F.R. §1.97(e)(1) (1 page(s));

2. a Supplemental Information Disclosure Statement (1 page(s)) along with copies of each cited reference not already available at the PTO; and

3. this firm Letter of Transmittal (2 page(s)).

I have this 3 day of June, 2016, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents into the above-identified patent application.

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Direct all correspondence to:

CR MILES P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

Customer No.: 39208

Dated this 3 day of June, 2016

Respectfully Submitted,

CR MILES P.C.

By: _____

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Smaxtec, Inc. v. ST Reproductive Tech, LLC
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE AND REQUEST FOR RECONSIDERATION UNDER 37 C.F.R.§ 1.111

This paper is submitted in response to the non-final Office Action mailed on May 31, 2016. Applicant believes that this response addresses each concern raised by the Examiner in the Office Action and each of the claims without amendment is now in condition for allowance. A three (3) month extension of time from September 1, 2016 to and including November 30, 2016 is submitted herewith. Please amend the above-identified United States patent application as follows.

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CLAIM AMENDMENTS

It is respectfully requested that the claims be amended without prejudice, without admission, without surrender of subject matter, and without intention of creating any estoppel as to equivalents, as follows. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1 (currently amended). A computer implemented animal ~~tracking~~ management system, comprising:

[[c)]] a processor communicatively coupled to a memory element containing program instructions~~, including~~ executable to:

[[d)]] ~~a first portion of said program instructions executable to~~ retrieve an amount of animal identification information from an RFID device;

[[e)]] ~~a second portion of said program instructions executable to~~ retrieve an amount of sensed physiological animal information from said RFID device, said sensed physiological animal information received by said RFID device from a sensor coupled to said RFID device;

[[f)]] ~~a third portion of said program instructions executable to~~ link said amount sensed animal information retrieved from said RFID device to an amount of animal information stored in a database;

[[g)]] ~~a fourth portion of said program instructions executable to~~ enter said amount of sensed animal information retrieved from said RFID device linked to said amount of animal information stored in said database as logical variables into at least one logical expression; and

[[h)]] ~~a fifth portion of said program instructions executable to~~ solve said at least one logical expression to obtain a corresponding at least one logical valuebell.

2 (previously presented). The system of claim 1, wherein said amount of animal identification information comprises animal identification information from a plurality of RFID devices implantable in a plurality of animals.

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3 (previously presented). The system of claim 2, wherein said amount of sensed animal information comprises sensed animal information from said plurality of RFID devices implantable in said plurality of animals.

4 (previously presented). The system of claim 3, wherein said amount of animal information of said animal stored in said database comprises an amount of health information for each of said plurality of animals said amount of health information including an occurrence of an illness.

5 (previously presented). The system of claim 4, wherein said amount of animal information of said animal stored in said database comprises an amount of animal location information.

6 (previously presented). The system of claim 5, wherein said amount of animal information of said animal stored in said database further comprises an amount of date-time information received from said RFID device.

7 (previously presented). The system of claim 6, wherein said at least one logical expression solves as to a selected period of time as to said plurality of animals in each of a plurality of animal locations as to whether a greater than selected number of said illness have occurred.

8 (previously presented). The system of claim 5, wherein said plurality of animal locations comprises a plurality of pen locations.

9 (previously presented). The system of claim 8, wherein said plurality of animal locations comprises a plurality of GPS locations.

10 (previously presented). The system of claim 9, wherein said amount of animal information of said animal stored in said database of said computer comprises each of an

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amount of desired pen count information, an amount of milk production information, an amount of days milked information, and an amount of reproductive information.

11 (previously presented). The system of claim 10, wherein said at least one logical expression solves as to a selected period of time in which of said plurality of pens each of said plurality of animals should be located.

12 (previously presented). The system of claim 5, wherein said amount of animal information of said animal stored in said database of said computer comprises an amount of date-time information as to administration of a first compound to each of said plurality of animals, an amount of date-time information as to administration of a second compound to each of said plurality of animals, an amount of date-time information as to occurrence of first compound effects on each of said plurality of animals, an amount of date-time information as to occurrence of second compound effects on each of said plurality of animals.

13 (previously presented). The system of claim 1, further comprising an RFID device reader.

14 (previously presented). The system of claim 13, wherein said server provides a browser-based user interface which enables an animal tracker to track each animal based on said amount of information retrieved from each said bit segment of said RFID device implanted in said animal.

15 (previously presented). The system of claim 14, wherein said computer network comprises a wide area network.

16 (previously presented). The system of claim 15, further comprising at least one client computer capable of configuration with said executable program instructions connected to said computer network.

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17 (previously presented). The system of claim 16, wherein said at least one client computer comprises a wireless palm device.

18 (previously presented). The system of claim 16, wherein said client computer comprises a cellular telephone.

19 (previously presented). The system of claim 17, wherein said RFID device reader comprises a portable RFID device reader connected to said wireless palm device.

20 (previously presented). The system of claim 19, wherein said at least one client computer comprises a portable RFID device reader connected to said cellular telephone.

21-46 (canceled).

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REMARKS

Applicant provides the following remarks to the non-final action mailed May 31, 2016.

1. **Status Of The Claims.** Claims 1-20 are pending in the subject application. Claims 1-9 and 12-20 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over United States Patent Publication No. 2006/0185605 of Renz et al. ("*Renz*") in view of United States Patent Publication No. 2007/02771320 of Tsuyuzaki ("*Tsuyuzaki*") and US 2005/0145187 of Gray ("Gray"). Claims 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

Claim 1 has been amended without the addition of any new matter. Claims 21-46 have been without prejudice canceled. Applicant respectfully reserves the right to pursue any non-elected claims, canceled or otherwise unclaimed subject matter in one or more continuation, continuation-in-part, or divisional applications.

2. ***The Rejection Under 35 U.S.C. Section 103 of Claims 1-9 and 12-20 Over Renz In View of Tsuyuzaki And Gray Are Overcome.***

The Examiner has rejected Claims 1-9 and 12-20 as being unpatentable over *Renz* in view of *Tsuyuzaki* and *Gray*.

To reject a claim based on combining prior art elements according to known methods, the office must resolve the Graham factual inquires and provide a finding that the prior art included each element claimed. *MPEP §2143 A (1).* Basic knowledge or common sense cannot replace documentary evidence to provide a finding that the prior art included each element. *K/S HIMPP v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1366 (Fed. Cir. 2014). One skilled in the art could have combined the elements as claimed by known methods, and that in combination, each element performs the same function as it does separately. *MPEP §2143 A (2).* The combination yielded nothing more than predictable results to one of ordinary skill in the art. *MPEP §2143 A (3).* If any these findings cannot be made, then this rationale cannot

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be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art. *MPEP §2143 A (1).*

Claim 1. Applicant does not believe that Claim 1 is made obvious over *Renz* in view of *Tsuyuzaki* and *Gray* for reasons as follows:

Firstly, Applicant claims "retrieve an amount of sensed physiological animal information from said RFID device." *Claim 1.* The term "physiological" is supported by the specification at Page 15, lines 2-4.

The Examiner states that *Renz* teaches "an amount of sensed animal information from the RFID device is shown in Figure 59 wherein a box (No.276) displays the temperature of the animal (Paragraph 253)." Office Action at Page 2. Applicant does not believe that the information shown in Figure 59 is "retrieved . . .from said RFID" as claimed.

Renz teaches that information outside of the animal ID additional animal data such as weight and temperature of the animal are manually entered into the animal management database and such information is not retrieved from the RFID. *Renz* teaches as follows:

> "[0252] Referring now to FIG. 58 . . .first the individual animal ID is entered in a treatment screen via manual entry or through automated entry for example, an EID tag reader. Once this information is entered, the system then locates all animal data associated with the individual animal ID from the animal management database. This historical animal data is shown at Block 113. The user may then enter additional animal data, shown at block 115, to further describe the present state of the animal. For example, the animal could be weighed at that time."
>
> *Renz* at ¶ 252.
>
> "[0175] A hand held treatment device 86 is a remote device that is designed to record certain transactions associated with the animal health module of the present invention without a direct connection to the database of the system while recording the transaction. . . The preferred method of data transfer between the invention and the handheld computer would be through a network protocol utilizing a radio frequency connection, a Blue Tooth protocol or a cable connection. The cable connection could be a number of

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known connections such as RS232/USB connections. A secondary method of transfer could include use of recording media.. . .[0182] The various RS232 devices 98 refer to field devices such as scales, tag readers, temperature measuring devices, and retinal scanning devices. These devices can be connected to the present data processing system via cables, radio frequency connections, or other connections. The data being recorded by these devices can be passed from a particular terminal location or work station directly into the database(s) of the present invention."

Renz at ¶¶ 0175 and 0182 (emphasis added).

[0223] FIG. 32 is another example of an individual animal processing screen that allows the user to enter data about the animal as it is being processed. More specifically, FIG. 32 illustrates that the user could enter a weight and temperature, as well as information about the owner of the animal.

Renz at ¶ 0223.

Accordingly, a person of ordinary skill having read *Renz* in whole would understand that the reference in ¶ 0253 to the "weight and temperature of the animal is displayed in box 276" is not retrieved from the RFID, nor does the RFID operate to sense the weight or temperature of the animal, but rather this is entered into the animal management database by use of an discrete RS232 devices 98.

[0253] Referring to FIG. 59, . .In the example of FIG. 59, the tag ID, alternate tag ID, ranch tag, weight and temperature of the animal is displayed in box 276. . ..

Renz at ¶ 0253.

Accordingly, *Renz* does not teach an RFID that senses or from which temperature or other biometric information can be retrieved.

Secondly, Applicant claims "said sensed physiological animal information received by said RFID device from a sensor coupled to said RFID device."

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The Examiner admits that "another claimed element not found in either reference above [*Renz* in view of *Tsuyuzaki*] is a sensor coupled to the RFID device." *Office Action* at Page 3. Accordingly, the Examiner combines *Renz* in view of *Tsuyuzaki* with *Gray*.

The Examiner then states that "[t]he system taught by Gray includes an ear tag (No. 14) that contains an RFID device (No. 24) in conjunction with a biometric sensor (No. 40). This sensor collects data such as heart rate, temperature, and blood pressure and stores this information in memory to be polled by an RFID reader (No. 38)." *Office Action* at Page 3.

Applicant does not believe that *Renz* in view of *Tsuyuzaki* with *Gray* makes Claim 1 obvious for reasons as follows:

Firstly, a prior art reference must provide an enabling disclosure that describes the claimed invention in sufficient detail to enable a person of ordinary skill in the art to carry out the claimed invention. *MPEP ¶ 2122.*

In the instant case, *Gray* claims "means for obtaining specific information on the livestock animal includes a biometric detector for detecting a biometric reading of the livestock animal." *Gray*, Claim 23.

It is well understood that if a claim term fails to recite sufficiently definitive structure or recites function without reciting sufficient structure for performing that function, then the claim should be construed as a means plus function claim. *Massachusetts Institute of Technology v. Abacus Software*, No. 05-1142 (Fed. Cir. 2006). In this regard, the Federal Circuit interprets means plus function claims to cover literally only the structures described in the patent specification.

Accordingly, *Gray* teaches only the structures literally described in the patent specification.

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Applicant believes that the only reference to biometric detectors is included in *Gray* at Paragraph 0073 which for the convenience of the Examiner is set out as follows:

> "[0073] According to this invention a set of biometric sensors 40 are integrated into the RFID 24. The biometric detectors collect data such as heart rate, temperature, and blood pressure periodically and that information is stored in the memory location 36 when the RFID 24 device is polled by the RFID reader 38. . .The RFID device is available from several sources and device functions and capabilities are expected to change in the future. The CPU 36 will easily be re-programmed for features as they are added by the RFID 24 manufactures."

Gray at Paragraph 0073 does not provide any detailed guidance or detailed information relating to any biometric detectors. Rather, *Gray* simply relies on the statement that, "[t]he RFID device is available from several sources." That *Gray* is relying on prior art structures is further evidenced in Figure 2 referring to the RFID device sensors 40 as Prior Art."

However, *Gray* does not provide any source information from where the RFID can be obtained and does not incorporate any patents by reference to provide any person of ordinary skill in the art any detailed guidance on how to obtain, make or use any RFID which includes biometric detectors to measure any physiological parameter at all.

Accordingly, Applicant respectfully disagrees with the Examiner's statement that "[t]he knowledge presented by this reference was in existence at the time of the primary references." *Office Action* at Page 4. It is clear that the reference presents a raw idea without any disclosure of how to make or use a RFID with a biometric detector.

In comparison, Applicant provides detailed guidance on how to make and use an RFID which includes sensors which sense physiological characteristics of an animal, as set forth in the example which follows:

> "Now referring primarily to Figures 1 and 3, as to certain embodiments of the computer implemented animal management system, the RFID (19) can be located in the hollow inside of a bolus (79). Certain configurations of

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the bolus (79) can be ingested by certain RFID objects (39), such as cattle and be retained in a part of the stomach; although the invention is not so limited. A first bit segment (71) of the RFID device (19) implanted in an animal (40) can be encoded or re-encoded with an amount of RFID object identification information (80)(which can be a bolus identification number (81), animal identification number (82), or the like). A second bit segment (72) of the RFID (19) can be encoded or re-encoded from time to time with sensed RFID object characteristics (84) received from a sensor (83) which can be located within the bolus (79) or otherwise implanted within the RFID object (39) whether an animal (40) or an asset (41). For the purposes of this invention, sensed RFID object characteristics (84) can include without limitation a sensed characteristic of the RFID object (39), animal (40) or asset (41), for example, any one or more of location, temperature, pH, or the like, or any one or more of physiological characteristics of an animal (40) such as temperature, pH, heart rate, blood pressure, partial pressures of dissolved gases, or the like. The sensor (83) can as non-limiting examples be an omnidirectional tilt and vibration Sensor (PN SQ-SEN-200) distributed by Signal Quest Precision Microsensors; a Betachip Thermistor (PN 1K2OG3) distributed by BetaTHERM Sensors; a humidity sensor (PN HCZ-D5) distributed by Ghitron Technology CO., Ltd; an ultra miniature pressure transducer (PN COQ-062) distributed by Kulite, a proximity sensor (PN PY3-AN-3) distributed by Automation Direct.com. Variation of the sensed RFID object characteristic(s)(84) can be continuously or intermittently updated by encoding or re-encoding the second bit segment (72) of the RFID (19). A third bit segment (73) of the RFID (19) can be encoded or re-encoded from time to time with an amount of calibration data (57) which allows a RFID object characteristic value (75) to be calculated from the sensed RFID object characteristic (84) of the RFID object (39), animal (40) or asset (41)."

Specification at Page 15, lines 21-31 and Page 16, lines 1-14.

Based on the foregoing, Applicant believes that *Gray* cannot be used as a prior art reference as applied because it is not enabling in regard to an RFID inclusive of a biometric detector, and therefore base on the foregoing does not believe that *Renz* in view of *Tsuyuzaki* and *Gray*:

1) teaches each element of Claim 1 as required by *MPEP §2143 A (1); or that*

2) one skilled in the art could have combined the elements as claimed by known methods, and that in combination, each element performs the same function as it does separately as required by *MPEP §2143 A (2); or that*

3) the combination yields predictable results to one of ordinary skill in the art *MPEP §2143 A (3).*

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Claims 2 through 20. Claims 2-20 are made ultimately dependent on Claim 1. Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. MPEP 608.01 (n). Accordingly, based on the foregoing remarks in rebuttal of the Examiner's rejection of Claim 1, Claims 2-20 are not made obvious based on *Renz* in view of *Tsuyuzaki* and *Gray*.

Applicant provides further remarks, as follows:

Claim 6. Applicant claims "an amount of date-time information received from said RFID device." The Examiner applies *Renz* stating that the "claimed amount of date-time information is read on the specification of Renz (Paragraph 232) wherein treatment dates can be tracked (Paragraph 462).

Applicant does not believe that *Renz* teaches "date-time information received from said RFID." Claim 6 (emphasis added). Applicant set out ¶¶ 0232 and 0462, neither of which teaches or suggest that "date-time information received from said RFID."

> "[0232] FIG. 41 illustrates another user screen where a user has selected from the treatment history listing a particular treatment date. Once selecting a particular treatment date, another window opens listing the drugs that were administered during that treatment. A user can review a summary of a treatment-by-treatment code, and can also review a specific listing of each of the drugs that were administered during the treatment."
>
> "[0462] FIG. 223 is an example feed delivery accuracy report 812. This report assists management in analyzing the timing of the physical deliveries to each pen in the yard over a selected date range. As shown, this report lists a pen number, date and physical feeding by lot number, a reading change in pounds per head, the reading made by the bunk reader in pounds per head, ration called amount, ration fed amount, and delivery time for each physical feeding. Management can use this report to verify if physical feedings are delivered at approximately the same time each day of the report period. One theory in cattle management is that cattle gain weight faster if they are fed at approximately the same times each day."

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Applicant refers the Examiner to ¶¶ 0072, 0073, 0209, 0225, 0244 each of which evidence that the user enters the date-time information and it is not received for the RFID device.

Accordingly, the combination of *Renz* in view of *Tsuyuzaki* and *Gray* does not teach all the elements as required by *MPEP §2143 A (1).*

Claim 7. Applicant claims "at least one logical expression solves as to a selected period of time as to said plurality of animals in each of a plurality of animal locations as to whether a greater than selected number of said illness have occurred."

The Examiner maps these elements to "the number of days for a particular treatment (Paragraphs 192-194). However, *Renz* in view of *Tsuyuzaki* and *Gray* teaches "[t]he recommended treatment. . .is based upon two criteria, namely, the number of days since the last treatment, shown at entry 204, and the number of days on a particular feed ration." *Renz* at ¶ [0192]. However, the days from the last treatment and the number of days on a particular feed ration does not teach or suggest determination of a greater number of illness than a selected number for each of a plurality of animal locations, as claimed.

Accordingly, all the elements of Claim 7 are not taught by *Renz* in view of *Tsuyuzaki* and *Gray.*

3. Allowable Subject Matter. The Examiner found Claims 10 and 11 to be allowable.

4. Request For Telephonic Interview. Applicant respectfully requests a telephonic interview to address any remaining concerns of the Examiner.

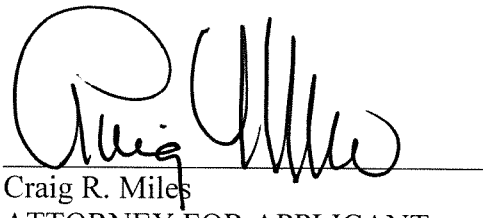
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CONCLUSION

Claims 21-46 have been without prejudice canceled. Claim 1 has been amended without the addition of any new matter. Applicant believes that the amendment to Claim 1 places Claims 1-20 in condition for allowance and Applicant respectfully requests allowance of Claims 1-20.

Dated this 28 day of November, 2016

Respectfully Submitted,

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Smaxtec Exhibit 1002
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

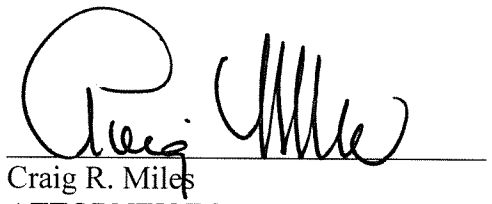
Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. §1.136

This is a request to extend the period for filing a reply in the above-identified application under the provisions of 37 C.F.R. §1.136(a) and 37 C.F.R. §1.17(a)(3). The three month extension of time extends until November 30, 2016, the period in which the applicant can timely file a reply in the above-referenced application which would otherwise be due within three months of the mailing date of the official communication mailed May 31, 2016. Applicant claims small entity status under 37 C.F.R. § 1.27, therefore Applicant submits the fee amount under 37 C.F.R. §1.17(a)(3) of $700.00.

Dated this 29 day of November, 2016

Respectfully Submitted,

By: 

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Electronic Patent Application Fee Transmittal

Application Number:	14474013
Filing Date:	29-Aug-2014
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Jill Smith Buck
Attorney Docket Number:	bellaCONT1bolus (280-11)

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	2253	1	700	700
Miscellaneous:				
			Total in USD ($)	**700**

Electronic Acknowledgement Receipt

EFS ID:	27628392
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Jill Smith Buck
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	28-NOV-2016
Filing Date:	29-AUG-2014
Time Stamp:	19:11:34
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$700
RAM confirmation Number	112916INTEFSW19130600
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_ltr.pdf	39205 da02d689535357accfffc50fb4e0634fbf557de7	no	2
Warnings:					
Information:					
2	Amendment/Req. Reconsideration-After Non-Final Reject	Response.pdf	538378 4761ef4bedd063012cf1b5c6374986257355131f	no	14
Warnings:					
Information:					
3	Extension of Time	Extension_time.pdf	35092 36c8c417c192607e97d4c15b8a64b595cf2acd02	no	1
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30752 c3cbaf36c2604a12dd6bc1cb48b727d9e3e5fa4c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	643427		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Dear Sir/Madam:

In response to the Office Action mailed May 31, 2016, please find the following documents:

1. a Response and Request For Reconsideration Under 37 C.F.R. § 1.111 (14 page(s));
2. a Petition for Extension of Time Under 37 C.F.R. §1.136 (1 page(s)); and
3. this firm Letter of Transmittal (2 page(s)).

I have this 28 day of November, 2016, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents in the above-identified patent application.

Direct all correspondence to:

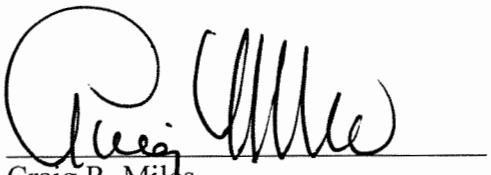
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USPTO Customer No.: 39208

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 269 of 424

Dated this 28 day of November, 2016

Respectfully Submitted,

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Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 270 of 424

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
14/474,013	08/29/2014	

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **11/28/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

HSLIE
TRACIE HARGROVE

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

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Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

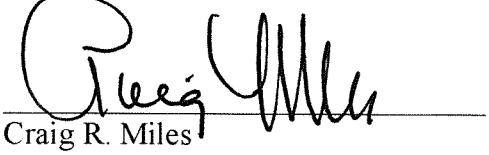
SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97(c) AND STATEMENT UNDER 37 C.F.R. 1.97(e)(1)

Applicant respectfully requests entry of the attached Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(c) made in compliance with Section 1.98 during the pendency of the above-identified United States patent application. No fee is required because submission of the supplemental information disclosure statement is accompanied by the statement under 37 C.F.R. §1.97(e)(1) that each item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.

Dated this 24 day of January, 2017

Respectfully Submitted,

CR MILES P.C.

By: 

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SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
	6,416,782	07-09-2002	Maas

UNITED STATES PATENT PUBLICATION DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
	2001/0001176	05-17-2001	Caja Lopez et al.
	2002/0128542	09-12-2002	Van Over
	2010/0302039	12-02-2010	Goto et al.

FOREIGN PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	DATE	COUNTRY	NAME OF PATENTEE OR APPLICANT OF CITED DOCUMENT
	2016/201242	12-15-2016	WO	Rettedal et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:

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(74) Agent: **MILES, Craig, R.**; CR Miles P.C., 405 Mason Court, Suite 119, Fort Collins, CO 80524 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(54) **Title**: CALF BOLUS

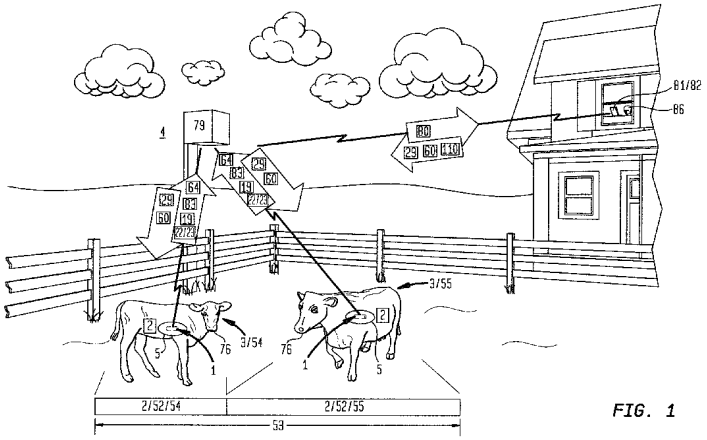


FIG. 1

(57) **Abstract**: Generally, an animal monitoring device configured as a bolus for oral administration to reside in the reticulorumen of a ruminant animal having a memory element, a processor in communication with the memory element and a computer code contained in the memory element including a power management module executable by the processor to regulate power use by the bolus based on determination of remaining energy stored in an energy source and the determined power requirements over a pre-determined life cycle of the bolus.

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CALF BOLUS

This International Patent Cooperation Treaty Patent Application is a continuation of United States Non-Provisional Patent Application No. 14/738,789, filed June 12, 2015, hereby incorporated by reference herein.

I. TECHNICAL FIELD

Generally, an animal monitoring device configured as a bolus for oral administration to reside in the reticulorumen of a ruminant animal having a memory element, a processor in communication with the memory element and a computer code contained in the memory element including a power management module executable by the processor to regulate power use by the bolus based on determination of remaining energy stored in an energy source and the determined power requirements over a pre-determined life cycle of the bolus.

II. BACKGROUND

Conventional bolus orally administered to reside in the reticulorumen for monitoring of physiological parameters of ruminant animals may not have a configuration capable of oral administration at birth. Additionally, bolus, even when orally administered to adult ruminant animals, may not have an operational lifespan long enough to monitor useful physiological parameters over the remaining productive lifespan of the ruminant animal. Moreover, uncontrollable changes in the orientation of the bolus and correspondingly uncontrolled orientation of the bolus antenna in the reticulorumen of the ruminant animal may cause variable quality in radio signal transmission from the ruminant animal resulting in the loss of encoded physiological data.

III. DISCLOSURE OF THE INVENTION

Accordingly, a broad object of the invention can be to provide a bolus having an outer most surface configuration and a density which allows oral administration to a ruminant animal immediately after birth and prevents or substantially reduces the likelihood of being regurgitated or ejected from the reticulorumen of a ruminant animal over the entire lifespan or productive lifespan of the ruminant animal.

Another broad object of the invention can be to provide a bolus which can reside in the reticulorumen of a ruminant animal having an operational lifespan corresponding to the entire

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lifespan or the productive lifespan of the ruminant animal. One aspect of this broad object of the invention involves a power management module including an activation element which maintains the bolus in a sleep mode in which one or more encoded sensor signals are compared to a pre-selected activation code and upon achieving a pre-selected activation match threshold between the encoded sensor signals and the pre-selected activation code causes the bolus to be activated for normal monitoring of one or more physiological parameters of the ruminant animal. As to particular embodiments, a first and second pre-selected activation match threshold can be met by comparison of a corresponding first and second encoded sensor signals and a first and second pre-selected activation code to provide assurance that environmental events to not inadvertently activate the bolus for normal monitoring. Another aspect of this broad object involves a power management module pre-programmed or re-programmable to reconfigure the operating parameters of the bolus during residence in the reticulorumen of a ruminant animal to collect only useful physiological data and encode and transmit such physiological data at intervals based upon the life stage of the ruminant animal. Another aspect of this broad object of the invention involves a power management module which functions to evaluate the remaining amount of energy stored in the power source of the bolus and compare the remaining amount of energy to the energy requirements of the bolus during a pre-determined period of time based on the existing programmed operational parameters of the bolus and further functions to employ power regulation events to offset the difference between the energy requirement of the bolus over the pre-determined period of time and the amount of energy remaining in the power source.

Another broad object of the invention can be to provide an antenna having a structure that alters the magnetic field and electrical field generation in a manner that reduces the impact of uncontrollable changes in the orientation of the bolus and correspondingly the orientation of the antenna during residence of the bolus in the reticulorumen of the ruminant animal.

Naturally, further objects of the invention are disclosed throughout other areas of the specification, drawings, photographs, and claims.

IV. BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a diagram which shows a particular method of using an embodiment of the animal monitoring system to monitor one or more physiological parameters of a ruminant animal.

Figure 2 is a block diagram of a particular embodiment of a bolus capable of being orally administered to a ruminant animal.

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Figure 3 is a block diagram which shows a particular embodiment of an animal monitoring system including a specialized computer, a radio frequency reader and a bolus.

Figure 4 is an exploded view of a particular embodiment of a bolus capable of being orally administered to a ruminant animal.

Figure 5 is a diagram of a particular embodiment of the animal monitoring assembly of the bolus.

Figure 6 is an exploded view of a particular embodiment of an antenna included in the particular embodiment of the bolus shown in Figures 4 and 5.

Figure 7 is a top perspective view of the particular embodiment of the antenna shown in Figure 6 having first and second electrically conductive loops disposed on the opposed surfaces of a non-electrically conductive sheet material.

Figure 8 is top plan view of the particular embodiment of the antenna shown in Figure 6 with vias (shown in broken line) interconnecting a first and second electrically conductive loops without being disposed on opposed surfaces of a non-electrically conductive sheet material.

Figure 9 is a top plan view of the particular embodiment of the antenna shown in Figure 8.

Figure 10 is a first side elevation view of the particular embodiment of the antenna shown in Figure 8.

Figure 11 is a second side elevation view of the particular embodiment of the antenna shown in Figure 8.

Figure 12 is a first end elevation view of the particular embodiment of the antenna shown in Figure 8.

Figure 13 is a second end elevation view of the particular embodiment of the antenna shown in Figure 8.

V. MODE(S) FOR CARRYING OUT THE INVENTION

Now generally referring to Figures 1 through 13, which provide illustrative examples of an inventive bolus (1) and a method of using a bolus (1) to monitor one or more physiological parameters (2) of a ruminant animal (3) and a computer implemented animal monitoring system (4). The bolus (1) can be orally administered to reside in the reticulorumen (5) of the ruminant

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animal (3). As to certain embodiments, the bolus (1) can include a bolus body (6) having an outer most external surface (7) configured to allow oral administration to a ruminant animal (3), with certain embodiments capable of being orally administered immediately after birth. As to certain embodiments, the bolus (1) can include a microcontroller (8) including a processor (9) in communication with a memory element (10) containing a program code (11) including a power management module (12) which allows the bolus (1) to operate in the reticulorumen (5) of the ruminant animal (3) during the entire life span of the ruminant animal from birth to death or from birth to the end of the productive lifespan of the ruminant animal (3).

For the purposes of this invention the term "ruminant animal (3)" means any mammal of the suborder Ruminantia (both wild and domestic) and, without limiting the breadth of the foregoing definition, includes as illustrative examples: cattle, buffalo, goats, sheep, deer, antelope, giraffes, yaks, okapi, chevotain or the like.

For the purposes of this invention the term "birth" means the emergence of the ruminant animal (3) from the body of its mother to begin life as a physically separate ruminant animal (3).

For the purposes of this invention the term "death" means the permanent cessation of vital bodily functions to end life of a ruminant animal (3).

For the purposes of this invention the term "life span" means the period of time between birth and death of a ruminant animal (3).

For the purposes of this invention the term "productive lifespan" means the period of time between birth and the age reached before being culled from production."

For the purposes of this invention the term "reticulorumen (5)" means the first chamber in the alimentary canal of a ruminant animal (3) composed of the rumen and reticulum. The reticulum differs from the rumen with regard to the texture of its lining. The rumen wall is covered in small, finger-like projections called papillae, whereas the reticulum is lined with ridges that form a hexagonal honeycomb pattern. Despite the differences in the texture of the lining of the two parts of the reticulorumen (5), it represents one functional space.

The bolus (1) and the animal monitoring system (4) are described herein in terms of functional block components and various process steps. It should be appreciated that such functional blocks may be realized by any number of hardware or software components configured to perform the specified functions. For example, the bolus (1) and the animal monitoring system (4) may employ various integrated circuit components which function as: memory elements,

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processing elements, logic elements, look-up tables, or the like, which may carry out a variety of functions under the control of one or more processors or other control devices.

Now referring generally to Figure 2, the bolus (1) can include one or more sensors (13) each capable of generating a sensor signal (14)(whether analog or digital) which varies based on a corresponding change the one or more physiological parameters (2) of a ruminant animal (3). For the purposes of this invention the term "physiological parameter" means a measurable condition of a ruminant animal (3), and without limitation to the breadth of the foregoing, includes one or more of: movement (including one or more of the pitch, yaw, roll, tilt, vibration, jolt, impact or the like), temperature, sound (including one or more of reticulorumen digestive sounds, heartbeat sound, or the like), heart rate, or the like. Each of the one or more sensors (13) can generate a sensor signal (14) (whether analog or digital) which varies based upon occurrence or change in the sensed physiological parameter (2).

As illustrative examples, sensors (13) suitable for use in particular embodiments include: an omnidirectional tilt and vibration sensor (16)(also referred to as an "accelerometer")(PN SQ-SEN-200) distributed by Signal Quest Precision Microsensors; a temperature sensor (17) such as a Betachip Thermistor (PN 1K2OG3) distributed by BetaTHERM Sensors; a microphone (18) distributed by ST Microelectronics (PN MP34DT01); a humidity sensor (PN HCZ-D5) distributed by Ghitron Technology CO., Ltd; an ultra-miniature pressure transducer (PN COQ-062) distributed by Kulite, a proximity sensor (PN PY3-AN-3) distributed by Automation Direct.com., or similar or equivalent sensors. The illustrative examples and description of these sensors (13) are intended to provide a person of ordinary skill in the art sufficient information to make and use embodiments of the bolus including a numerous and wide variety of sensors whether or not specifically enumerated.

The microcontroller (8) includes a processor (9) in communication with the memory element (10) which contains a computer code (11). In part, the computer code (11) can be executed to continuously or intermittently transform the analog or digital sensor signal (14) from the one or more sensors (13) as encoded physiological data (19)(also referred to as "encoded sensor signals"). The encoded physiological data (19) varies based upon change in the sensor signal (14) which correspondingly varies based upon change in the sensed physiological parameter (2). As to particular embodiments, the computer code (11) can be executed to encode or recode from time to time an amount of sensor calibration data (19A) which allows calculation and output of a physiological parameter value (20) of the ruminant animal (3)(whether by the

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bolus (1) or by operation of a remote computer (82)). The computer code (11) can be further executed to couple animal identification data (83) to the encoded physiological data (19).

The computer code (11) can be further executed to control a radio signal generator (21), for example, an oscillator to generate a stable radio signal (22). An oscillator suitable for use with the invention is available from Freescale Semiconductor, Part No. MC1319x, MC1320x, MC1321x, and MC1322x, and similar or equivalent components. In regard to the particular embodiment of the invention, the radio signal generator (21) can generate a radio signal (22) having a radio signal frequency (23) between about 410MHz and about 1Gz. As one particular embodiment of the invention, the radio signal generator (21) can generate a radio signal frequency (23) of about 433MHz. As to other particular embodiments, the radio signal generator (21) can generate a radio signal (22) having a radio signal frequency (23) of about between about 700 MHz to about 1GHz. The radio signal frequency (23) can be selected from the group including or consisting of: between about 700 MHz to about 800MHz, 750 MHz to about 850MHz, about 800 MHz to about 900MHz, 850 MHz to about 950MHz, 900 MHz to about 1GHz.

The computer code (11) can further function to control a radio frequency stabilizer (24)(shown in the example of Figure 2 as a low pass filter (24A) and a surface acoustic wave filter (24B)) which functions to offset changes in radio signal wave flux caused by changes in temperature or power to the radio signal generator (21). A radio frequency stabilizer (24) suitable for use with embodiments is available from Hope Microelectronics Co., Ltd, Part No. HF433E, RF Monolithics, Inc., Part No. RF1172C, and similar or equivalent parts.

Embodiments of the bolus (1) can further include matching elements (25) which function to match the input impedance of the electrical load or the output impedance of the loads corresponding signal source to maximize the power transfer or minimize signal reflection from the load. In an ideal situation, source impedance and load impedance should be equal to maximize power transfer.

Three elements influence the balance of impedance in radio design: the antenna (28) or "load", the radio signal generator (21) or "source", and the device's ground plane. Since each of these elements have different physical characteristics, their corresponding impedances are inherently different. The passive capacitors (26) and inductors (27) that make up the matching elements (25) of embodiments of the bolus (1) are used to mitigate these differences and rebalance the impedance for a given radio signal frequency (23).

Impedance for an inductor (27) is given by,

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$Z = iwL$

where L is the inductance and w is angular frequency.

Impedance for a capacitor (26) is given by,

$$Z = \frac{1}{iwC}$$

where C is capacitance.

The reactance is,

$$X = -\frac{1}{wC}$$

The matching elements (25) (also referred to as the "resonant circuit") include an array of inductors (27) and capacitors (26) used in series or in parallel to balance the circuit impedance once the impedance of the antenna (28), the radio signal generator (21), and the ground plane (not shown) are known.

A series resonant circuit (25) has an impedance that is the sum of the impedances of the inductor(s)(27) and capacitor(s)(26),

$$Z = i\omega L + \frac{1}{i\omega C} = i\left(\omega L - \frac{1}{\omega C}\right)$$

The impedance of a Parallel Resonant Circuit is found as follows,

$$Z = i\left(\frac{\omega L}{1 - \omega^2 LC}\right)$$

Resonance in the resonant circuit (25) occurs when the resonant circuit (25) is driven at a frequency $w0$ at which the inductive and capacitive reactances are equal in magnitude. The frequency at which this equality holds for the resonant circuit is called the resonant frequency, and can be determined, as follows,

$$\omega_0 = \frac{1}{\sqrt{LC}}$$

This value can then be converted to hertz,

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$$f_0 = \frac{\omega_0}{2\pi} = \frac{1}{2\pi\sqrt{LC}}$$

The calculations above can be used to identify the inductors (27) and capacitors (26) used as matching elements (25) in association with the radio signal generator (21) that operates at a specific radio signal frequency (23) to balance the impedance between the radio signal generator (21) and the antenna (28) and limiting the bandwidth to eliminate interference. After the signal passes through the matching elements (25) the resistance of the circuit can be altered to ensure an industry standard 50 ohm resistance in the transmission line to the antenna (28). The resistance of the circuit can be altered by inclusion of resistor (25A) to establish the standard 50 ohm resistance in the circuit.

These calculations, however, apply to a radio frequency generator (21) used in normal atmospheric air (also known as "free air"). Because the radio signal generator (23) included in embodiments of the bolus (1) operate within the mass of a ruminant animal (3), it has been discovered that the center frequency (the arithmetic mean of the lower cutoff frequency and the upper cutoff frequency) is shifted lower and may not have the maximum gain.

Accordingly, there can be a substantial advantage, by selection of the inductors (27) and capacitors (26) as well as their position in the resonant circuit (25) to increase the inductance and capacitance values to purposefully shift the center frequency upward and allowing the radio signal frequency (23) to be re-tuned to a desired radio signal frequency (23) by passing through the mass of the ruminant animal (3).

Embodiments of the bolus (1) further include an antenna (28) which converts electric power into radio signal (22). In transmission, the radio signal generator (21) supplies an electric current oscillating at one of the above described radio signal frequencies (23). In reception, the antenna (28) intercepts some of the power of an electromagnetic wave (29) in order to produce a tiny voltage at its terminals that is applied to a receiver (30). As to particular embodiments, the antenna (28) can, but need not necessarily, be a laid down electrically conductive path on a printed circuit board (31). An advantage of this configuration of antenna (28) can be that it does not require winding upon or interaction with a magnetic field of a magnet to transmit the radio signal (22). Accordingly, this configuration of antenna (28) can produce a lesser amount of interference from a magnetic field of a magnet (69) contained in the bolus (1) resulting a lower incidence of loss of the radio signal (22) or less modulation of the radio signal (22) which results in a greater

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consistency (or lesser amount of lost data) in transmission of encoded physiological data (19) associated with the ruminant animal (3).

Now referring primarily to Figures 4 through 13, particular embodiments can, but need not necessarily, include an antenna (28) including a first electrically conductive loop (32) electrically interconnected to a second electrically conductive loop (33)(as shown in the example of Figures 6 through 13) electrically connected to the radio signal generator (21) or radio signal receiver (30)(or combined as a radio signal transceiver (21/30)). As to particular embodiments, the first or the second or the pair of electrically conductive loops (32)(33) can each include a conductive sheet material (or a laid down conductive path or conductive layer) having an inner annular edge (34) and an outer annular edge (35) which join opposed loop faces (36)(37). Typically, the conductive sheet material will be a copper sheet material or a copper layer. As to particular embodiments, the antenna (28) can further include a non-electrically conductive substrate (38) such as a circuit board (31) (as shown in the example of Figure 6) disposed between the pair of electrically conductive loops (32)(33) with one or more vias (39) electrically interconnecting the first and second electrically conductive loops (32)(33) by one or more holes (40) through the non-electrically conductive substrate (38). The one or more holes (40) can be made electrically conductive by electroplating, or by lining the hole with a tube or a rivet thereby electrically interconnecting the pair of electrically conductive loops (32)(33). There can be substantial advantages in structuring the antenna (28) as above described and as shown in Figures 4 through 13. First, the structure increases the cross-section width of the antenna (28) which increases the stability of the radiated electrical field (41) of the antenna (28). Second, the structure increases the bandwidth of the antenna (28) allowing shift in radio signal frequency (23) or attenuation resulting from passing through the mass of the ruminant animal (3) to be more readily counteracted. Third, the structure alters the magnetic field and electrical field generation which reduces the impact of uncontrollable changes in the orientation of the bolus (1) and correspondingly the orientation of the antenna (28) in the reticulorumen (5) of the ruminant animal (3).

Again referring primarily to Figures 2, 4 and 5, embodiments of the bolus (3) further include a power source (46)(and associated power regulator (46A)) which supplies and adjusts energy (42)(electrical power) to the bolus (1). The power source (46) shown in Figures 2, 4 and 5 can take the form of a battery such as a AA battery, a AAA battery, or the like. The power source (42) provides power to the electronic components supported on the printed circuit board (31) including for example: the microcontroller (8), radio frequency generator (21) and one or more sensors (13). Because the power source (46) of a bolus (1) disposed in the reticulorumen

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(5) of the ruminant animal (3) cannot be recharged, the operational lifespan of bolus (1) will depend upon capacity of the power source (46) in ampere-hours (Ah) and the load current of the circuit. Power source (46) life will be longer as the load current is reduced and vice versa. The calculation to find out the capacity of power source (46) in the form of a battery can be mathematically derived from the following formula:

Battery Life = Battery Capacity in amps per hour / load current in amps x 0.70

As to particular embodiments of the bolus (1), the computer code (11) can include a power management module (12) which functions to regulate energy use by the bolus (1) to extend the operational life of the bolus (1) disposed in the reticulorumen (5) of the ruminant animal (3). Embodiments of the bolus (1), including particular embodiments the power management module (12), can be operational within the reticulorumen (5) of the ruminant animal (3) for greater than three years and up to about ten years, a period of time substantially greater than that of conventional bolus.

As one illustrative example, embodiments of the inventive bolus (1) can be orally administered to a calf at, or immediately after birth, and remain operational over the entire productive lifespan (53) of the dairy cow, on average about 2.4 lactations, or about five to six years.

As another illustrative example, a ewe typically has a productive lifespan (53) of between about five years to about seven years of age. A ewe's productivity usually peaks between 3 and 6 years of age and begins to decline after the age of seven. As a result, most ewes are removed from a flock before they would reach their natural life expectancy. Accordingly, embodiments of the bolus (1) disposed in the reticulorumen (5) of the ewe at birth can be operational throughout the entire productive lifetime (53) of the ewe.

As to particular embodiments of the bolus (1), the power management module (12), can but need not necessarily include, an activation element (43) which functions to enable and encode the sensor signal(s)(14) from one or more sensors (13) and can further function to compare the one or more encoded sensor signals (19) against one or more preselected activation code(s)(44). If by comparison of the encoded sensor signal(s)(19) against the preselected activation code(s)(44), a pre-selected activation match threshold (45) is met, the activation element (43) can further function to cause activation of the bolus (1) for normal operation. This provides the advantage of avoiding inadvertent or premature activation of the bolus (1) and the corresponding unnecessary expenditure of energy (42) from the power source (46).

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As one illustrative example of the function of the activation element (43), the bolus (1) can include a first sensor (13A) which can be an accelerometer (16). Accelerometers (16) in accordance with embodiments of the invention can sense the movement of the bolus (1)(whether within or without the ruminant animal), in a manner similar to accelerometers (16) used in tablet computers and digital cameras, such that images on display screens are always displayed upright, or as used in drones for flight stabilization. The accelerometer (16) can be enabled by the function of the activation element (43), and the activation element (43) can further function to encode the first sensor signal (14A) from the accelerometer (16) and compare the first encoded sensor signal (19A) against a first preselected activation code (44A). The first preselected activation code (44A), in the context of this illustrative embodiment, can correspond to a particular pre-activation movement (47) of the bolus (1) which can, but need not necessarily be, three serial reciprocal linear movements of the bolus (1) each terminating in an impact of the bolus (1) within a period of time of between about five seconds and ten seconds (also referred as "three bumps"). If the pre-activation movement (47) of the bolus (1) including "three bumps" meets the first pre-selected activation match threshold (45A) relating to the first preselected activation code (44A) corresponding to "three bumps" the activation element (43) can cause the bolus (1) to be activated for normal monitoring of the ruminant animal (3). As to particular embodiments, the bolus (1) can, but need not necessarily, include an illumination element (48), such as a light emitting diode (49). The illumination element (48) can be switched on by operation of the activation element (43) to provide an amount of light (50) as an indicator that the bolus (1) has been activated and can be orally administered to a ruminant animal (3).

As to particular embodiments, the bolus (1) can, but need not necessarily, include a second sensor (13B) which can be a temperature sensor (17)(also referred to as a "thermistor"). Thermistors (17) in accordance with embodiments of the invention can sense the temperature (57) of the bolus (1)(whether within or without of the ruminant animal) in a useful range of temperature and accuracy depending upon the ruminant animal (3) into which the bolus (1) is to be orally administered and the determinations to be made from the sensed temperature (57). For example, the useful temperature range in dairy cow will be between about 95°F (about 35°C) to about 115°F (about 46°C) with an accuracy of between about 0.1°C and about 0.3°C. The normal temperature of an adult cow will typically be about 101.5°F (about 38.5°C), but can vary throughout the estrous cycle with the lowest temperature being just before heat and highest temperature on the day of heat or due to being in milk, and a temperature of about 103.0°F (about 39.4°C) to about 104.0°F (about 40°C) and upward to about 108°F (about 42.2°C), typically indicative of a sick cow. However, this illustrative example is not intended to preclude the use

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of thermistors (17) which may sense a wider temperature range, as one illustrative example, about -40°C to about +125°C, as long as the accuracy is not less than about 0.1°C to about 0.2°C of the actual temperature about the bolus (1) and the time constant to change from one temperature value to another temperature value is sufficiently short to support the sampling rate of the sensor signal (14) effected by the computer code (11) in regard to the thermistor (17). For example, thermistors (17) utilized with embodiments of the bolus (1) may have a time constant of about one minute or less and while the sampling rate may be once every 10 minutes to 20 minutes or longer depending upon the application.

As to particular embodiments, the activation element (43) having activated the bolus (1)(and as to particular embodiments, switched on the light illumination element (48)) can, but need not necessarily, further enable and encode a second sensor signal (14B) from a second sensor (13B) which can be a thermistor (17). The activation element (43) can further function to encode the second sensor signal (14B) from the second sensor (13B) such as thermistor (17) and compare the second encoded sensor signal (19B) against the second preselected activation code (44B). The second preselected activation code (44B), in the context of this illustrative embodiment, can correspond to a pre-activation temperature (51) of the bolus (3) which can, but need not necessarily be, three serial temperature reads of the bolus (1) each about 15 minutes apart within a period of time of about 45 minutes (also referred to as "three temperature reads"). If the pre-activation temperature (51) of the bolus (1) including "three temperature reads" meets the second pre-selected activation match threshold (45B) for the second preselected activation code (44B) corresponding to "three temperature reads" the activation element (43) can cause the bolus (1) to be activated for normal monitoring of a ruminant animal (3). In the illustrative example of a bolus (1) used in calves or cows, if the three temperature reads are between about 100°F (about 37.8°C) and about 105°F (about 40.6°C), this would be indicative that the bolus (1) resides in the reticulorumen (5) of a calf or cow, and the activation element (43) can then function to cause the bolus (1) to be activated for normal monitoring of the ruminant animal (3). This provides the advantage of avoiding inadvertent or premature activation of the bolus (1) and the corresponding unnecessary expenditure of energy (42).

As to particular embodiments, the power management module (12) can, but need not necessarily, further function to reconfigure the mode of operation of the bolus (1) or allow the mode of operation of the bolus (1) to be reconfigured while residing in the reticulorumen (5) of the ruminant animal (3) to regulate energy (42) use by the bolus (1) which can have the advantage of extending the operational life of the bolus (1).

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As to particular embodiments, the power management module (12) can regulate energy (42) use by the bolus (1) by enabling or disabling one or more sensors (13) based upon a pre-determined set of physiological parameters (2) to be sensed during one or more stages (52) in a lifespan (53) of the ruminant animal (3). The encoded physiological data (19) useful in make determinations relating to a ruminant animal (3) may be different in a first stage (54) in the lifespan (53)(for example, the time period between birth and puberty) as compared to a second stage (55)(for example, the time period commencing with puberty until the end of reproductive age (or useful reproductive age))(as shown in the example of Figure 1). As one illustrative example in dairy cows, from the birth until puberty in dairy cows at about eight months to about seventeen months age depending upon the breed, the useful encoded physiological data (19) may only include encoded physiological data (19) relating to temperature (57). Accordingly, in a first stage (54) of the ruminant animal (3) lifespan (53) the power management module (12) can function upon activation of the bolus (1), as above described, to only enable and periodically read the sensor signal (14A) and generate encoded physiological data (19) for temperature (57) of the ruminant animal (3). Additionally, because the encoded physiological data (19) for temperature (57) may only be used to determine whether the ruminant animal (3) is sick, there may be a substantial period of time between reads of the temperature sensor signal (14), such as, once in a twenty four hour period. Similarly, there may be a substantial period of time between operational periods of the radio signal generator (22), such as twenty four hours, and the operational period of the radio signal generator (22) may be very short, such as, a few milliseconds (also referred to as a "transmission burst (56)"). Because the majority of energy (42) used by the bolus (1) is in operation of the radio signal generator (21), increasing the time period between transmission bursts (56) and limiting the duration of the transmission burst (56) only to that period of time necessary to transmit the limited amount of encoded physiological data (19) can substantially increase the operating lifespan of the bolus (1).

By comparison, in second stage (55) of the lifespan (53) of a ruminant animal (3) from puberty to the end of reproductive age of the ruminant animal (3), the useful encoded physiological data (19) may include both encoded physiological data (19) for temperature (57) and encoded physiological data (19) for movement (58). As above explained, the temperature (57) of ruminant animal (3) may vary throughout the estrous cycle with the lowest temperature being just before heat and highest temperature on the day of heat. Additionally, the activity of the cow can measurably change prior to or concurrent with heat.

Accordingly, as to particular embodiments, the power management module (12) can further include a timer element (59) which functions to assess elapsed time from activation of the

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bolus (1) allowing regulation of energy use by the bolus (1) based on elapsed time which can be coordinated to one or more of the stages (52) in the lifespan (53) of the ruminant animal (3). As one illustrative example, if the bolus (1) is orally administered at birth the timer element (59) and the power management module (12) can function to enable a first sensor (13A)(or first set of sensors (13) providing useful encoded physiological data (19) during the first stage (54)) and encode physiological data (19) for temperature (57)(or first set of physiological parameters) for a period of time corresponding the first stage (54) of the lifespan (53) of the ruminant animal (3)(for example, between birth and puberty) and then function to further enable a second sensor (13B)(or second set of sensors (13) providing useful encoded physiological data (19) during a second stage (55) of the ruminant animal (3)) and encode physiological data (19) for both temperature (57) and movement (58).

Additionally, because the encoded physiological data (19) for movement (58) and temperature (57) may be used to determine whether the ruminant animal (3) is in estrus, the power management module (12) can function to reduce the period of time between reads of the sensor signal (14) temperature (57) and the sensor signal (14) for movement (58), such as, four times in a twenty four hour period. Similarly, there may be a lesser period of time between operational periods of the radio signal generator (21), such as every six hours, and the operational period of the radio signal generator (14) may be adjusted to a period of time to transmit the additional encoded physiological data (19).

As to particular embodiments, once the ruminant animal (3) becomes pregnant and during the pregnancy, the power management module (12) can further function to reconfigure the operation of the bolus (1) to disable the sensor (13) for movement (58) and read only the sensor (13) for temperature (57) and transmit encoded physiological data (19) at less frequent intervals.

As to particular embodiments, the program code (11) can be reprogrammed while the bolus (1) resides in the reticulorumen (5) of the ruminant animal (3) by receiving programming data (60) to reconfigure the power management module (12) to regulate energy (42) use by the bolus (1), as above described.

As to particular embodiments, the power management module (12) can, but need not necessarily, include a power sensor element (61) executable to determine the remaining amount of energy (42) in the power source (46). The power management module (12) can be further executed to determine the amount of energy (42) required to power the bolus (1) through a pre-determined period of time (62) based on the then existing program code (11) contained in the memory element (10) of the bolus (1). The power management module (12) can be further

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executed to compare the remaining amount of energy (42) in the power source (46) with the amount of energy (42) required to power the bolus (1) through the pre-determined period of time (62) based on the then existing program code (11) to determine the difference in the amount of energy (42) remaining in the power source (46) and the amount of energy (42) required to power the bolus (1) through the pre-determined period of time (62). The power management module (12) can be further executed to perform one or more power regulation events (63) to make up the difference in the amount of energy (42) to allow operation of the bolus (1) through the pre-determined period of time (62). The power regulation events (63) can include or consist of one or more of: switching off the light illumination element (48), increasing the interval of time between operation of the radio signal generator (21), decreasing the operational time period of the radio signal generator (21), disabling one or more of the plurality of sensors (13), interrupt encoding of the sensor signal (14) from one or more of said plurality of sensors (13), or other re-programming that reduces energy (42) use.

As to particular embodiments, the power management module (12) can be pre-programmed to perform one or more of the power regulation events (63) in one or more pre-programmed priority orders based upon the magnitude of the difference in the amount of energy (42) remaining in the energy source (46) and the required amount of energy (42) to power the bolus through the remaining portion of a pre-programmed or re-programmed life cycle. Alternately, the power management module (12) can function to encode and transmit as part of a transmission burst (56) encoded power source data (64) from which the remaining amount of energy (42) in the energy source (46) can be calculated using a remote specialized computer (82) and the power management module (12) can be re-programmed to execute one more power regulation events (63) based on a priority order encoded in the programming data (60) received by the bolus (1).

Now referring primarily to Figures 4 and 5, embodiments of the bolus (1) which are orally administered to a ruminant animal (3) can, but need not necessarily, include an inert bolus body (6) having external dimensional relations adapted to allow oral administration and retention of the bolus (1) in the reticulorumen (5) of a ruminant animal (3). As one non-limiting example, the inert bolus body (6) can include an amount of plastic resin (65) cast about the animal monitoring assembly (66) ("AMA"), including one or more of the components above-described. The amount of plastic resin (65) can be, as an example, a plastic resin such as urethane resin, epoxy resin, polyester resin, or the like used in accordance with the manufacturer's instructions. As to other embodiments, the inert bolus body (6) can comprise a sealable housing (67) defining a hollow inside space (68) which receives the AMA (66). As to other embodiments, the sealable housing

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(67) including the AMA (66) received in the hollow space (68)(and as to particular embodiments further including one or more magnets (69) received in the hollow space (68)) can have the amount of plastic resin (65) cast about the AMA (66) (and one or more magnets (69)) located inside said sealable housing (67).

Again referring primarily to Figure 4, configurations of the inventive bolus (1) suitable for oral administration to a ruminant animal (3) can have a generally cylindrical configuration with a diameter (77) in orthogonal cross section in the range of about one-half inch (about 13 millimeters ("mm")) to about one and one quarter inch (about 32 mm) and having a bolus length (70) disposed between a first bolus end (71) and a second bolus end (72) in the range of about two inches (about 50 mm) and about five inches (about 127 mm). Particular embodiments of the bolus (1) can have a length of about four inches (about 102 mm) and a diameter (77) in orthogonal cross section of about one inch (about 25 mm). While the example of Figure 4 shows the bolus (1) including a housing (67) having matable halves (73)(74) with an outer most external surface (7) configured as a cylinder; the bolus (1) can have numerous and varied outer most external surface (7) configurations capable of oral administration and retention within the reticulorumen (5) of a ruminant animal (3). The inert bolus body (6) can be molded, cast, or machined from biocompatible (or biologically inert) non-magnetic materials which allow transmission of the radio signal (22) from within the bolus (1) to outside of the ruminant animal (3). As examples, the inert bolus body (6) can be made from plastics such as nylon, fluorocarbon, polypropylene, polycarbonate, urethane, epoxy, polyethylene, or the like; or metals such as stainless steel; or other materials such as glass can be utilized. The bolus (1) having a hollow inside space (68) can be generated by a wide variety of procedures such as molding, casting, fabrication or the like. As one non-limiting example, a cylindrical tube having an external diameter and an internal diameter, as above described, can be divided into sections of suitable length to which end caps can be fitted. Alternately, a bore can be made in a cylindrical solid rod having an external diameter, as above described, to provide a closed end tube with the bore having sufficient dimension to provide the hollow inside space (68).

As to particular embodiments, the inert bolus body (1) can, but need not necessarily, include a translucent or transparent element (75) to allow viewing of the amount of light (50) generated by the illumination element (48) as a viewable indicator that the bolus is activated as above described. The translucent or transparent element (75) can include a portion or the entirety of the housing (67) of the inert bolus body (6).

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As to particular embodiments of the bolus (1), the inert bolus body (1) can be configured for oral administration to ruminant animals (3) at birth. The digestive track between the mouth (76) and the reticulorumen (5) of a ruminant animal (3) at birth can have comparatively restrictive dimensions as compared to adult ruminant animals (3). Therefore, conventionally configured bolus (1) may not be orally administered to ruminant animals (3) at birth or when orally administered may cause injury or be regurgitated as the digestive track between the mouth (76) and the reticulorumen (5) enlarges due to growth of the ruminant animal (3).

The configuration of outer most external surface (7) of the housing (67) of the inert bolus body (6) or the bolus density (78), or combinations thereof, can be critical when a bolus (1) is orally administered to a ruminant animal (3) at birth. It has been discovered that while the bolus length (70) between the first and second bolus ends (71)(72) can be more variable bolus (1), it can be critical that the greatest bolus diameter (77) (or width) of the outer most external surface (7) along the length (70) between the pair of bolus ends (71)(72) should be between one half inch (about 13 mm) and not exceed three quarters of an inch (about 19 millimeters). The configuration of the outer most external surface (7) of the bolus (1) can have a bolus width (77) selected from the group including or consisting of: about 13 mm to about 15 mm, about 14 mm to about 16 mm, about 15 mm to about 17 mm, about 16 mm to about 18 mm, and about 17 mm to about 19mm.

As one illustrative example, a bolus (1) configured for oral administration to ruminant animals (3) at birth can have an outer most external surface (7) of the bolus body (6) having cylindrical configuration as shown in the example of Figure 4. The bolus length (70) can vary between about three inches (about 76 mm) and about six inches (about 152 mm) between the a pair of bolus ends (71)(72); however, the outer most external surface (7) at any cross section orthogonal to the bolus length (70) should not exceed about 19 millimeters. As a second illustrative example, the bolus body can be substantially spherical having an external diameter not exceeding about three quarters of an inch (about 19 mm).

Embodiments of the inventive bolus (1) can, but need not necessarily, have a bolus density (78) of between about 2.1 grams per cubic centimeter ("g/cm^3") to about 3.3 g/cm^3. However, there can be substantial advantages in configuring the bolus (1) to achieve a bolus density (78) in the range of between about 2.1 g/cm^3 to about 3.3 g/cm^3 in that the bolus (1) is substantially less likely to be regurgitated or ejected from reticulorumen (5) of a ruminant animal (1) as compared to conventional bolus. It can be critical to achieve a bolus density (78) of between about 2.1 g/cm^3 to about 3.3 g/cm^3 when dimensions of the outer most external surface (7) are reduced for

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oral administration to ruminant animals (3) at birth or the bolus (1) resides in the reticulorumen (5) of the ruminant animal (1) for the entire lifespan (53) of the ruminant animal (3). Within the range of bolus density (78), the bolus density can be selected from the group including or consisting of: about 2.3 g/cm^3 to about 2.5 g/cm^3, about 2.4 g/cm^3 to about 2.6 g/cm^3, about 2. g/cm^3 to about 2.7 g/cm^3, about 2.6 g/cm^3 to about 2.8 g/cm^3, about 2.7 grams g/cm^3 to about 2.9 g/cm^3; about 2.8 g/cm^3 to about 3.0 g/cm^3, about 2.9 g/cm^3 to about 3. g/cm^3; about 3.0 g/cm^3 to about 3.2 g/cm^3, and about 3.1 g/cm^3 to about 3.3 g/cm^3.

Now referring primarily to Figure 3, the animal monitoring system (4) can, but need not necessarily, include one or more radio signal reader(s)(79) can be located to receive the radio signal (22) carrying the encoded physiological data (19) from one or more bolus (1). As to particular embodiments, the one or more radio signal readers (79)("RSR") can further operate to assemble the encoded physiological data (19) into one or more data packets (80) which can be transmitted and received by a wired or wireless reception device (81)(which can be integrated into a specialized computer (82)). The reception device (81) can transfer the data packets (80) to a specialized computer (82). The specialized computer (82) can operate to transform the encoded animal identification data (83) and encoded physiological data (19) to output an animal identification value (84)(an alpha or numeric or other animal identifier) and to output physiological parameter values (85)(an alpha or numeric or other symbols). A computer user (86) can access the animal identification value (84) and the physiological parameter values (85) by use of the specialized computer (82).

Now referring generally to Figure 3, the specialized computer (82) is described herein in terms of functional block components, screen shots, and various process steps. It should be appreciated that such functional blocks may be realized by any number of hardware or software components configured to perform the specified functions.

Similarly, the software elements of the present invention may be implemented with any programming or scripting language such as C, C++, Java, COBOL, assembler, PERL, Labview or any graphical user interface programming language, extensible markup language (XML), Microsoft's Visual Studio .NET, Visual Basic, or the like, with the various algorithms or Boolean Logic being implemented with any combination of data structures, objects, processes, routines or other programming elements. Further, it should be noted that the present invention might employ any number of conventional wired or wireless techniques for data transmission, signaling, data processing, network control, and the like

It should be appreciated that the particular computer implementations shown and

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described herein are illustrative of the invention and its best mode and are not intended to otherwise limit the scope of the present invention in any way. Indeed, for the sake of brevity, conventional data networking, application development and other functional aspects of the systems (and components of the individual operating components of the systems) may not be described in detail herein. Furthermore, the connecting lines shown in the various figures contained herein are intended to represent exemplary functional relationships and/or physical couplings between the various elements. It should be noted that many alternative or additional functional relationships or physical connections may be present in a computer implemented animal monitoring system (4).

As will be appreciated by one of ordinary skill in the art, the present invention may be embodied in the alternative as a method, a data processing system, a device for data processing, a computer program product, or the like. Accordingly, the present invention may take the form of an entirely software embodiment, an entirely hardware embodiment, or an embodiment combining aspects of both software and hardware. Furthermore, the present invention may take the form of a computer program product on a computer-readable storage medium having computer-readable program code means embodied in the storage medium. Any suitable computer-readable storage medium may be utilized, including hard disks, CD-ROM, optical storage devices, magnetic storage devices, ROM, flash RAM, or the like.

It will be understood that each functional block of the block diagrams and the flowchart illustrations, and combinations of functional blocks in the block diagrams and flowchart illustrations, respectively, can be implemented by computer program instructions. These computer program instructions may be loaded onto a general purpose computer, special purpose computer or other programmable data processing apparatus to produce a machine, such that the instructions which execute on the computer or other programmable data processing apparatus for implementing the functions specified in the flowchart block or blocks.

These computer program instructions may also be stored in a computer-readable memory that can direct a computer or other programmable data processing apparatus to function in a particular manner, such that the instructions stored in the computer-readable memory produce an article of manufacture including instruction means which implement the function specified in the flowchart block or blocks. The computer program instructions may also be loaded onto a computer or other programmable data processing apparatus to cause a series of operational steps to be performed on the computer or other programmable apparatus to produce a computer-implemented process such that the instructions which execute on the computer or other

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programmable apparatus provide steps for implementing the functions specified in the flowchart block or blocks.

Accordingly, functional blocks of the block diagrams and flowchart illustrations support combinations of elements for performing the specified functions, combinations of steps for performing the specified functions, and program instruction means for performing the specified functions. It will also be understood that each functional block of the block diagrams and flowchart illustrations, and combinations of functional blocks in the block diagrams and flowchart illustrations, can be implemented by either special purpose hardware based computer systems which perform the specified functions or steps, or suitable combinations of special purpose hardware and computer instructions.

Again referring to Figure 3, the computer implemented animal monitoring system (4) can include a specialized computer (82) for receiving, processing and transforming a radio signal (22) from a reception device (81) carrying animal identification data (83) and animal physiological parameter data (19) to generate animal identification values (84) and physiological parameter values (85) accessible by the computer user (86). The specialized computer (82) can include at least one processing unit (87), a memory unit (88), and a bus (89) which operably couples components of the computer (82), including, without limitation the memory unit (88) to the processing unit (87). The computer (82) may be a conventional computer, a distributed computer, or any other type of computer which may contain all or a part of the elements described or shown to accomplish the functions described herein; the invention is not so limited. The processing unit (87) can comprise without limitation one central-processing unit (CPU), or a plurality of processing units which operate in parallel to process digital information, or a digital signal processor (DSP) plus a host processor, or the like. The bus (89) can be without limitation any of several types of bus configurations such as a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. The memory element (88) can without limitation be a read only memory (ROM)(90) or a random access memory (RAM)(91), or both. A basic input/output system (BIOS)(92) containing routines that assist transfer of data between the components of the specialized computer (82), for example during start-up, can be stored in ROM (90). The computer (82) can further include a hard disk drive (93) for reading from and writing to a hard disk (94), a magnetic disk drive (95) for reading from or writing to a removable magnetic disk (96), and an optical disk drive (97) for reading from or writing to a removable optical disk (98) such as a CD ROM or other optical media.

The hard disk drive (93), magnetic disk drive (95), and optical disk drive (97) and the

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reception device (81) can be connected to the bus (89) by a hard disk drive interface (99), a magnetic disk drive interface (100), and an optical disk drive interface (101), and a radio signal reception device interface (102), respectively. The drives and their associated computer-readable media provide nonvolatile storage of computer-readable instructions, data structures, program modules and other data for the computer (82). It can be appreciated by those skilled in the art that any type of computer-readable media that can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, random access memories (RAMs), read only memories (ROMs), RFID devices or the like, may be used in the exemplary operating environment.

The computer (82) can further include an operating system (103) and an animal monitoring program (104)("AMP") which as to particular embodiments of the invention can include an animal monitoring assembly encoder-decoder module (105) ("AMA encoder-decoder") for programming the animal monitoring assembly (AMA)(66) with animal identification data (83). As to particular embodiments, programming of the AMA (66) can be accomplished using an animal monitoring assembly programmer (106) connected to the bus (89) by an AMA interface (107). The AMA encoder-decoder module (105) can be stored on or in the hard disk (94), magnetic disk (96), optical disk (98), ROM (90), in RAM (91) of the specialized computer (82) or alternately the functionalities of the AMA encoder-decoder module (105) may be implemented as an application specific integrated chip (ASIC) or file programmable gate array (FPGA), or the like.

As to particular embodiments, the specialized computer (82) can be further configured to generate programming data (60) based on computer user (86) interaction the AMP (104) which can be received by the RSR (79) over a local area network (108) over a wide area network (109). The RSR (79) can generate a second radio signal (110) to carry the programming data (60) to the radio signal receiver (30) contained in the AMA (66). The second radio signal (110) can be processed by the microcontroller (8) to reprogram the program code (11) and particularly the power management module (12) to correspondingly alter the operation of the AMA (66), regardless as to whether the bolus (1) containing the AMA (66) has a location outside of the ruminant animal (3) or has a location inside of the ruminant animal (3).

The computer user (86) can enter commands and information into the computer (82) through input devices such as a keyboard (111) and a pointing device (112) such as a mouse. Other input devices (not shown) may include for example: touch on a touch screen, a microphone, joystick, game pad, satellite dish, scanner, magnetic strip of a card, or the like. These and other

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input devices are often connected to the processing unit (87) through a serial port interface (113) that can be coupled to the bus (89), but may be connected by other interfaces, such as a parallel port, game port, or a universal serial bus (USB). A monitor (114) or other type of display device can also be connected to the bus (89) via interfaces such as a video adapter (115), or the like. In addition to the monitor (114), the computer (82) can further include peripheral output devices (116), such as speakers and printers.

The computer (82) may operate in a networked environment using logical connections to one or a plurality of remote second computers (117). These logical connections can be achieved by a communication device (118) coupled to or a part of the computer (82). Each of the plurality of remote second computers (117) can include a part or all of the elements as included in the specialized computer (82) although only a single box has been illustrated in Figure 3 for the remote second computer (117).

When used in a LAN (108) networking environment, the computer (82) can be connected to the LAN (108) through a network interface (119). When used in a WAN (109)-networking environment, the computer (92) typically includes a modem (120), or other type of communications device, for establishing communications over the WAN (109), such as the Internet. The modem (120), which may be internal or external to the specialized computer (82), can be connected to the bus (89) via the serial port interface (113). In a networked environment, the AMP (104), or portions thereof, may be stored in any one or more of the plurality of remote second computers (117). It is appreciated that the logical connections shown are exemplary and other hardware elements and communications elements can be utilized for establishing a communications link between the specialized computer (82) and one or more of the a plurality of remote second computers (117).

While the computer elements and the network elements shown in Figure 3 can be utilized to practice the invention including the best mode, it is not intended that the description of the best mode of the invention or any preferred embodiment of the invention be limiting with respect to the utilization of a wide variety of similar, different, or equivalent computer elements or network elements to practice embodiments of the invention which include without limitation hand-held devices, such as personal digital assistants or camera/cell phone, tablet or slate computers, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, PLCs, or the like.

Now referring primarily to Figures 1 and 3, the RSR (79) can receive the first radio signal (22) from the AMA (66) inside the bolus (1) whether inside or outside of the reticulorumen (5)

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of the ruminant animal (3). The AMA (66) within the bolus (1) can send encoded animal identification data (83) and the encoded physiological data (19) using the first radio signal (22), as above described.

One illustrative embodiment of the RSR (79) as shown in Figures 1 and 3, provides a reader microcontroller (121) which includes a reader processor (122) which controls the functions of a variety of reader processor elements (123) stored in a reader memory element (124) each of which provides a response to events related to receiving the first radio signal (22) from the AMA (66) within the bolus (1) carrying encoded animal identification data (83) and encoded physiological data (19), or receiving reader sensor signals (125) from reader sensors (126) which monitor environmental parameters proximate the RSR (79) such as ambient temperature (127); or generating data packets (80) which include all or parts of such information, or sending data packets (80) to the computer (82) or a remote second computer (117) for access by a computer user (86). A reader microcontroller (121) suitable for use with embodiments of the RSR (79) can be obtained from Microchip Technology. Inc., 2355 West Chandler Blvd., Chandler, Arizona, Part No. PIC18F4620-I/PT, or similar or equivalent components can be suitable as a reader microcontroller (121) programmable to perform the above-described functions of the RSR (79).

Again referring primarily to Figure 3, a reader antenna (128) can receive encoded animal identification data (83) and encoded physiological data (19) and other information generated by operation of the AMA (66) within the bolus (1) within or without of the ruminant animal (3). The reader antenna (128) can be tuned to the first radio signal (22) generated by the AMA (66).

Again referring primarily to Figure 3, the reader sensor (126) can be located to sense the ambient temperature (127) surrounding the RSR (79). The reader sensor (126) can take the form of a thermistor. A suitable thermistor for use in embodiments of the RSR (79) is available from Microchip Technology, Inc., 2355 West Chandler Blvd., Chandler, Arizona, Part No. MCP98242, and similar and equivalent parts.

The reader sensor (126) can be operated under the control of a second reader processor (129) which functions to regulate power to the reader sensor (126) and converts the reader sensor signal (125) into a digital representation of the ambient temperature (127). The second reader processor (129) can further function to encode or re-encode from time to time an amount of reader temperature calibration data (130) which allows calculation and output of an ambient temperature value (131).

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Again referring primarily to Figure 3, a reader clock element (132) can operate under the control of a third reader processor element (133) to generate a date and time signal (134) that represents a date and time value (135).

Again referring primarily to Figure 3, a fourth reader processor element (136) can function to assemble data packets (80) which as an example can include a representation of the ambient temperature value (141) and the date and time value (135) at which the information from the AMA (66) was received by the RSR (79). The assembled data packet (80) can be stored and retrieved from the reader memory element (124) under the control of the fourth reader processor element (136).

Again referring primarily to Figure 3, a fifth reader processor element (137) can function to provide an ether net interface (138) for an ether net controller (139) to receive instructions or requests from the computer (82)(or remote computer (117). The fifth reader processor (137) can further function to operate a second radio signal generator (140) and transmit the second radio signal (110) to reprogram the computer code (11) or the power management module (12) of the AMA (66) within the bolus (1). The fifth reader processor element (137) can further function to send the data packets (80) to the ether net controller (139) for transmission to the computer (82).

As can be easily understood from the foregoing, the basic concepts of the present invention may be embodied in a variety of ways. The invention involves numerous and varied embodiments of a reciprocally telescoping door stop and methods for making and using such door stops including the best mode.

As such, the particular embodiments or elements of the invention disclosed by the description or shown in the figures or tables accompanying this application are not intended to be limiting, but rather exemplary of the numerous and varied embodiments generically encompassed by the invention or equivalents encompassed with respect to any particular element thereof. In addition, the specific description of a single embodiment or element of the invention may not explicitly describe all embodiments or elements possible; many alternatives are implicitly disclosed by the description and figures.

It should be understood that each element of an apparatus or each step of a method may be described by an apparatus term or method term. Such terms can be substituted where desired to make explicit the implicitly broad coverage to which this invention is entitled. As but one example, it should be understood that all steps of a method may be disclosed as an action, a means for taking that action, or as an element which causes that action. Similarly, each element of an

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apparatus may be disclosed as the physical element or the action which that physical element facilitates. As but one example, the disclosure of a "generator" should be understood to encompass disclosure of the act of "generating" -- whether explicitly discussed or not -- and, conversely, were there effectively disclosure of the act of "generating", such a disclosure should be understood to encompass disclosure of a "generator" and even a "means for generating." Such alternative terms for each element or step are to be understood to be explicitly included in the description.

In addition, as to each term used it should be understood that unless its utilization in this application is inconsistent with such interpretation, common dictionary definitions should be understood to be included in the description for each term as contained in the Random House Webster's Unabridged Dictionary, second edition, each definition hereby incorporated by reference.

All numeric values herein are assumed to be modified by the term "about", whether or not explicitly indicated. For the purposes of the present invention, ranges may be expressed as from "about" one particular value to "about" another particular value. When such a range is expressed, another embodiment includes from the one particular value to the other particular value. The recitation of numerical ranges by endpoints includes all the numeric values subsumed within that range. A numerical range of one to five includes for example the numeric values 1, 1.5, 2, 2.75, 3, 3.80, 4, 5, and so forth. It will be further understood that the endpoints of each of the ranges are significant both in relation to the other endpoint, and independently of the other endpoint. When a value is expressed as an approximation by use of the antecedent "about," it will be understood that the particular value forms another embodiment. The term "about" generally refers to a range of numeric values that one of skill in the art would consider equivalent to the recited numeric value or having the same function or result. Similarly, the antecedent "substantially" means largely, but not wholly, the same form, manner or degree and the particular element will have a range of configurations as a person of ordinary skill in the art would consider as having the same function or result. When a particular element is expressed as an approximation by use of the antecedent "substantially," it will be understood that the particular element forms another embodiment.

Moreover, for the purposes of the present invention, the term "a" or "an" entity refers to one or more of that entity unless otherwise limited. As such, the terms "a" or "an", "one or more" and "at least one" can be used interchangeably herein.

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Thus, the applicant(s) should be understood to claim at least: i) each of the bolus or animal monitoring systems herein disclosed and described, ii) the related methods disclosed and described, iii) similar, equivalent, and even implicit variations of each of these devices and methods, iv) those alternative embodiments which accomplish each of the functions shown, disclosed, or described, v) those alternative designs and methods which accomplish each of the functions shown as are implicit to accomplish that which is disclosed and described, vi) each feature, component, and step shown as separate and independent inventions, vii) the applications enhanced by the various systems or components disclosed, viii) the resulting products produced by such systems or components, ix) methods and apparatuses substantially as described hereinbefore and with reference to any of the accompanying examples, x) the various combinations and permutations of each of the previous elements disclosed.

The background section of this patent application provides a statement of the field of endeavor to which the invention pertains. This section may also incorporate or contain paraphrasing of certain United States patents, patent applications, publications, or subject matter of the claimed invention useful in relating information, problems, or concerns about the state of technology to which the invention is drawn toward. It is not intended that any United States patent, patent application, publication, statement or other information cited or incorporated herein be interpreted, construed or deemed to be admitted as prior art with respect to the invention.

The claims set forth in this specification, if any, are hereby incorporated by reference as part of this description of the invention, and the applicant expressly reserves the right to use all of or a portion of such incorporated content of such claims as additional description to support any of or all of the claims or any element or component thereof, and the applicant further expressly reserves the right to move any portion of or all of the incorporated content of such claims or any element or component thereof from the description into the claims or vice-versa as necessary to define the matter for which protection is sought by this application or by any subsequent application or continuation, division, or continuation-in-part application thereof, or to obtain any benefit of, reduction in fees pursuant to, or to comply with the patent laws, rules, or regulations of any country or treaty, and such content incorporated by reference shall survive during the entire pendency of this application including any subsequent continuation, division, or continuation-in-part application thereof or any reissue or extension thereon.

Additionally, the claims set forth in this specification, if any, are further intended to describe the metes and bounds of a limited number of the preferred embodiments of the invention and are not to be construed as the broadest embodiment of the invention or a complete listing of

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embodiments of the invention that may be claimed. The applicant does not waive any right to develop further claims based upon the description set forth above as a part of any continuation, division, or continuation-in-part, or similar application.

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VI. CLAIMS

1. A bolus, comprising:

one or more sensors each capable of generating a sensor signal which varies based on a corresponding change in one or more physiological parameters of a ruminant animal;

a memory element;

a processor in communication with said memory element; and

a computer code contained in said memory element, said computer code containing a power management module executable by said processor to enable and disable one or more of said plurality of sensors.

2. The bolus of claim 1, wherein said power management module is further executable to enable or disable said one or more sensors based upon elapsed duration of time from activation of said bolus.

3. The bolus of claim 2, wherein said power management module is further executable to enable or disable said one or more sensors based upon a pre-determined set of said one or more physiological parameters to be sensed during a stage in a life cycle of said ruminant animal.

4. The bolus of claim 3, wherein said one or more sensors is selected from the group consisting of: a temperature sensor, an accelerometer, a microphone, an inductance sensor, or combinations thereof.

5. The bolus of claim 1, where said power management module further includes a bolus activation element executable to:

monitor said sensor signal from said one or more sensors;

compare said sensor signal from said one or more sensors to a first pre-selected activation code; and

activate said bolus upon generation of said sensor signal from said one or more sensors which by comparison to said first pre-selected activation code exceeds a first pre-selected activation match threshold.

6. The bolus of claim 5, where said bolus activation element is further executable to:

compare said sensor signal from said one or more sensors to a second pre-selected activation code; and

activate said bolus upon generation of said sensor signal from said one or more sensors which by comparison to said first and said second pre-selected activation codes exceeds said first and a second pre-selected activation match threshold.

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7. The bolus of claim 5, wherein said computer code is further executable upon activation of said bolus to:

encode said sensor signal from said one or more sensors as encoded physiological data corresponding to said one or more physiological parameters of said ruminant animal; and

store said encoded physiological data in said memory element.

8. The bolus of claim 6, further comprising a radio signal generator capable of generating a radio signal to carry said encoded physiological data, and wherein said power management module is further executable to:

enable said radio signal generator; and

activate said radio signal generator at pre-determined intervals to generate said radio signal to carry said encoded physiological data.

9. The bolus of claim 1, further comprising an energy source which supplies energy to operate said bolus, and wherein said power management module is further executable to periodically determine a remaining amount of energy stored in said energy source.

10. The bolus of claim 9, wherein said power management module further comprises a power sensor element executable to:

determine an amount of energy required by said bolus to operate through a pre-determined period of time based on current programming of said computer code;

compare said amount of energy required by said bolus to operate through said pre-determined period of time to said remaining amount of energy stored in said energy source; and

calculate a difference in said amount of energy remaining in the power source and said amount of energy required by said bolus to operate through said pre-determined period of time.

11. The bolus of claim 10, wherein said power management module is further executable to:

perform one or more power regulation events to offset said difference in said amount of energy remaining in the power source and said amount of energy required by said bolus to operate through said pre-determined period of time.

12. The bolus of claim 11, wherein said one or more power regulation events is selected from the group consisting of: disable one or more of said sensors; interrupt encoding of said sensor signal from said one or more sensors; deactivate said radio signal generator, adjust intervals of time between operational time periods of said radio signal generator, adjust operational time periods of said radio signal generator.

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13. The bolus of claim 8, wherein said radio signal generator generates a radio signal having a frequency of between about 700MHz to about 1GHz.

14. The bolus of claim 13, wherein said frequency is selected from the group consisting of: between about 700 MHz to about 800MHz, 750 MHz to about 850MHz, about 800 MHz to about 900MHz, 850 MHz to about 950MHz, 900 MHz to about 1GHz.

15. The bolus of claim 13, further comprising a matching elements configured to adjust said frequency of said radio signal to compensate for change in said frequency upon passing through a mass of said animal.

16. The bolus of claim 13, wherein said radio signal generator generates said radio signal having only one frequency.

17. The bolus of claim 8, further comprising an antenna capable of transmitting said radio signal, wherein said antenna comprises a pair of electrically conductive loops disposed a distance apart.

18. The bolus of claim 17, wherein said pair of electrically conductive loops comprise a loop of conductive sheet material having an inner annular edge and an outer annular edge which join opposed loop faces.

19. The bolus of claim 18, further comprising one or more vias which interconnect said pair of electrically conductive loops.

20. The bolus of claim 19, further comprising a non-conductive sheet material disposed between said pair of loops.

21. The bolus of claim 1, further comprising an illumination element responsive to said power management module, said illumination element upon activation of said bolus generates an amount of light indicating activation of said bolus.

22. The bolus of claim 21, further comprising a housing providing an outer most external surface of said bolus, said housing sufficiently translucent or transparent to transmit said amount of light generated by said illumination element to said outer most external surface indicating activation of said bolus.

23. The bolus of claim 22, wherein said outermost external surface of said housing has a length disposed between a pair of ends and a width along said length of not greater than about 20 millimeters.

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24. The bolus of claim 23, wherein said outermost external surface of said housing comprises a substantially spherical external surface having a diameter of not greater than about 20 millimeters.

25. The bolus of claim 23, wherein said outermost external surface of said housing comprises a substantially cylindrical external surface, said width along said length having a substantially circular cross section of not greater than about 20 millimeters.

26. The bolus of claim 25, further comprising an amount of thermoset resin disposed inside of said housing.

27. The bolus of claim 23, further comprising a bolus density of between about 2.3 grams per centimeter cubed to about 3.3 grams per centimeter cubed ("g/cm^3").

28. The bolus of claim 27, wherein said bolus density is selected from the group consisting of: about 2.3 g/cm^3 to about 2.5 g/cm^3, about 2.4 g/cm^3 to about 2.6 g/cm^3, about 2. g/cm^3 to about 2.7 g/cm^3, about 2.6 g/cm^3 to about 2.8 g/cm^3, about 2.7 grams g/cm^3 to about 2.9 g/cm^3; about 2.8 g/cm^3 to about 3.0 g/cm^3, about 2.9 g/cm^3 to about 3. g/cm^3; about 3.0 g/cm^3 to about 3.2 g/cm^3, and about 3.1 g/cm^3 to about 3.3 g/cm^3.

29. A bolus, comprising:

a radio signal generator capable of generating a radio signal;

an antenna electrically connected to said radio signal generator, said antenna having a pair of electrically conductive loops disposed a distance apart; and

one or more vias which interconnect said pair of loops.

30. The bolus of claim 29, wherein each of said pair of electrically conductive loops comprise a loop of conductive sheet material having an inner annular edge and an outer annular edge which join opposed loop faces.

31. The bolus of claim 30, wherein said loop of conductive sheet material comprises a laid down electrically conductive path on a printed circuit board.

32. A bolus, comprising:

one or more sensors each capable of generating a sensor signal which varies based on a corresponding change in a corresponding one or more physiological parameters of a ruminant animal;

a memory element;

a processor in communication with said memory element;

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a computer code contained in said memory element, said computer code executable by said processor to:

encode said sensor signal from said one or more sensors as encoded physiological data corresponding to said one or more physiological parameters of said ruminant animal;

activate a radio signal generator to generate a radio signal to carry said encoded physiological data; and

a housing providing an outer most external surface of said bolus, wherein said outermost external surface of said housing has a length disposed between a pair of ends and a width along said length of not greater than about 20 millimeters.

33. The bolus of claim 32, wherein said outermost external surface of said housing comprises a substantially spherical external surface having a diameter of not greater than about 20 millimeters.

34. The bolus of claim 32, wherein said outermost external surface of said housing comprises a substantially cylindrical external surface, said width along said length having a substantially circular cross section of not greater than about 20 millimeters.

35. The bolus of claim 34, further comprising a bolus density of between about 2.3 grams per centimeter cubed to about 3.3 grams per centimeter cubed ("g/cm^3").

36. The bolus of claim 35, wherein said bolus density is selected from the group consisting of: about 2.3 g/cm^3 to about 2.5 g/cm^3, about 2.4 g/cm^3 to about 2.6 g/cm^3, about 2. g/cm^3 to about 2.7 g/cm^3, about 2.6 g/cm^3 to about 2.8 g/cm^3, about 2.7 grams g/cm^3 to about 2.9 g/cm^3; about 2.8 g/cm^3 to about 3.0 g/cm^3, about 2.9 g/cm^3 to about 3. g/cm^3; about 3.0 g/cm^3 to about 3.2 g/cm^3, and about 3.1 g/cm^3 to about 3.3 g/cm^3.

37. A method of monitoring the physiological parameters of an animal, comprising:

obtaining a bolus configured for oral administration to a ruminant animal, said bolus including:

one or more sensors each capable of generating a sensor signal which varies based on a corresponding change in one or more physiological parameters of a ruminant animal;

a memory element;

a processor in communication with said memory element;

a computer code contained in said memory element, said computer code containing a power management module executable by said processor to enable and disable one or more of said plurality of sensors; and

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a housing providing an outer most external surface of said bolus; and

orally administering said bolus to said ruminant animal to dispose said bolus in a reticulorumen of said ruminant animal.

38. The method of claim 37, further comprising enabling or disabling said one or more sensors based upon elapsed duration of time from activation of said bolus.

39. The method of claim 37, further comprising enabling or disabling said one or more sensors based upon a pre-determined set of said one or more physiological parameters to be sensed during a stage in a life cycle of said ruminant animal.

40. The method of claim 39, wherein said one or more sensors is selected from the group consisting of: a temperature sensor, an accelerometer, a microphone, an inductance sensor, or combinations thereof.

41. The method of claim 40, further comprising:

monitoring said sensor signal from said one or more sensors;

comparing said sensor signal from said one or more sensors to a first pre-selected activation code; and

activating said bolus upon generation of said sensor signal from said one or more sensors which by comparison to said first pre-selected activation code exceeds a first pre-selected activation match threshold.

42. The method of claim 41, further comprising:

comparing said sensor signal from said one or more sensors to a second pre-selected activation code; and

activating said bolus upon generation of said sensor signal from said one or more sensors which by comparison to said first and said second pre-selected activation codes exceeds said first and a second pre-selected activation match threshold.

43. The method of claim 42, further comprising:

encoding said sensor signal from said one or more sensors as encoded physiological data corresponding to said one or more physiological parameters of said ruminant animal; and

storing said encoded physiological data in said memory element.

44. The method of claim 43, wherein said bolus further comprises a radio signal generator capable of generating a radio signal to carry said encoded physiological data, and further comprising:

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enabling said radio signal generator; and

activating said radio signal generator at pre-determined intervals to generate said radio signal to carry said encoded physiological data.

45. The method of claim 44, wherein said bolus further comprises an energy source which supplies energy to operate said bolus, and further comprising:

determining a remaining amount of energy stored in said energy source;

determining an amount of energy required by said bolus to operate through a pre-determined period of time based on current programming of said computer code;

comparing said amount of energy required by said bolus to operate through said pre-determined period of time to said remaining amount of energy stored in said energy source; and

calculating a difference in said amount of energy remaining in the power source and said amount of energy required by said bolus to operate through said pre-determined period of time.

46. The method of claim 45, further comprising performing one or more power regulation events to offset said difference in said amount of energy remaining in the power source and said amount of energy required by said bolus to operate through said pre-determined period of time.

47. The method of claim 46, wherein said one or more power regulation events is selected from the group consisting of: disabling one or more of said sensors; interrupting encoding of said sensor signal from said one or more sensors; deactivating said radio signal generator, adjusting intervals of time between operational time periods of said radio signal generator, adjusting operational time periods of said radio signal generator.

48. The method of claim 47, further comprising generating a radio signal having a frequency of between about 700MHz to about 1GHz.

49. The method of claim 48, wherein said frequency is selected from the group consisting of: between about 700 MHz to about 800MHz, 750 MHz to about 850MHz, about 800 MHz to about 900MHz, 850 MHz to about 950MHz, 900 MHz to about 1GHz.

50. The method of claim 49, wherein said bolus further comprises matching elements configured to adjust said frequency of said radio signal, and further comprising adjusting said frequency to compensate for change in said frequency upon passing through a mass of said ruminant animal.

51. The method of claim 50, wherein said radio signal generator generates said radio signal having only one frequency.

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52. The method of claim 51, wherein said bolus further comprises an antenna having a pair of electrically conductive loops disposed a distance apart and further comprising transmitting said radio signal through said antenna.

53. The method of claim 52, wherein said pair of electrically conductive loops each comprise a loop of conductive sheet material having an inner annular edge and an outer annular edge which join opposed loop faces.

54. The method of claim 53, wherein said antenna further comprises one or more vias interconnecting said pair of electrically conductive loops.

55. The method of claim 54, wherein said antenna further comprises a non-conductive sheet material disposed between said pair of electrically conductive loops.

56. The method of claim 55, wherein said bolus further comprises an illumination element capable of generating an amount of light, and further comprising generating said amount of light upon activation of said bolus.

57. The method of claim 56, wherein said housing is translucent or transparent, and further comprising transmitting said amount of light generated by said illumination element to said outer most external surface indicating activation of said bolus.

58. The method of claim 57, wherein said outermost external surface of said housing has a length disposed between a pair of ends and a width along said length of not greater than about 20 millimeters.

59. The method of claim 58, wherein said outermost external surface of said housing comprises a substantially spherical external surface having a diameter of not greater than about 20 millimeters.

60. The method of claim 58, wherein said outermost external surface of said housing comprises a substantially cylindrical external surface, said width along said length having a substantially circular cross section of not greater than about 20 millimeters.

61. The method of claim 58, wherein said bolus further comprises an amount of thermoset resin disposed inside of said housing.

62. The method of claim 61, wherein said bolus further comprises a bolus density of between about 2.3 grams per centimeter cubed to about 3.3 grams per centimeter cubed ("g/cm^3").

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63. The method of claim 62, wherein said bolus density is selected from the group consisting of: about 2.3 g/cm^3 to about 2.5 g/cm^3, about 2.4 g/cm^3 to about 2.6 g/cm^3, about 2. g/cm^3 to about 2.7 g/cm^3, about 2.6 g/cm^3 to about 2.8 g/cm^3, about 2.7 grams g/cm^3 to about 2.9 g/cm^3; about 2.8 g/cm^3 to about 3.0 g/cm^3, about 2.9 g/cm^3 to about 3. g/cm^3; about 3.0 g/cm^3 to about 3.2 g/cm^3, and about 3.1 g/cm^3 to about 3.3 g/cm^3.

64. The method of claim 46, wherein said bolus further comprises a radio signal receiver and further comprising:

receiving radio signal containing programming data; and

re-programming said computer code contained within said memory element.

65. The method of claim 64, further comprising re-programming said computer code based upon based upon said pre-determined set of said plurality of physiological parameters to be sensed during said stage in said life cycle of said ruminant animal.

66. The method of claim 65, further comprising re-programming said computer code to offset said difference in said amount of energy remaining in the power source and said amount of energy required by said bolus to operate through said pre-determined period of time.

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FIG. 1

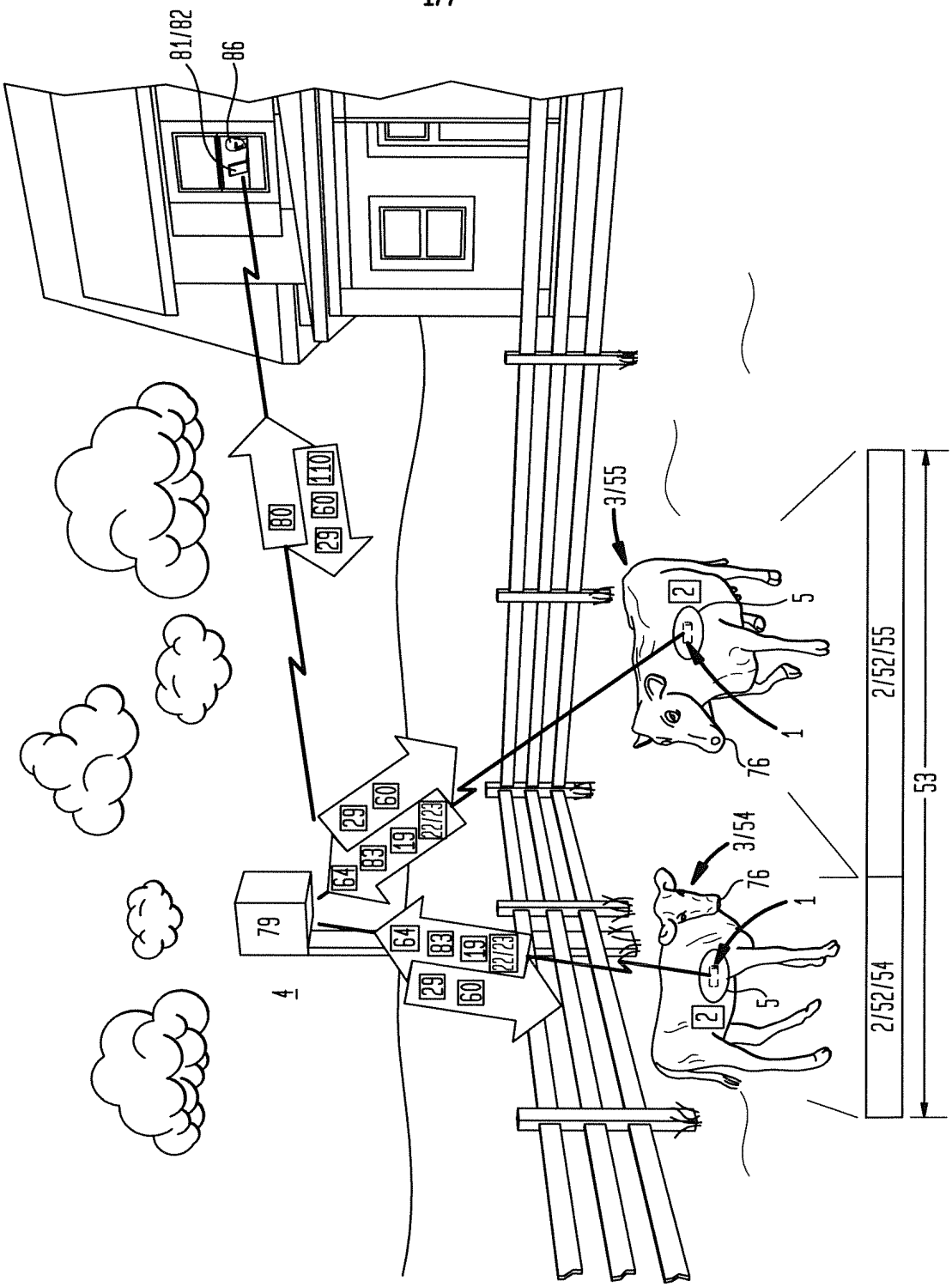
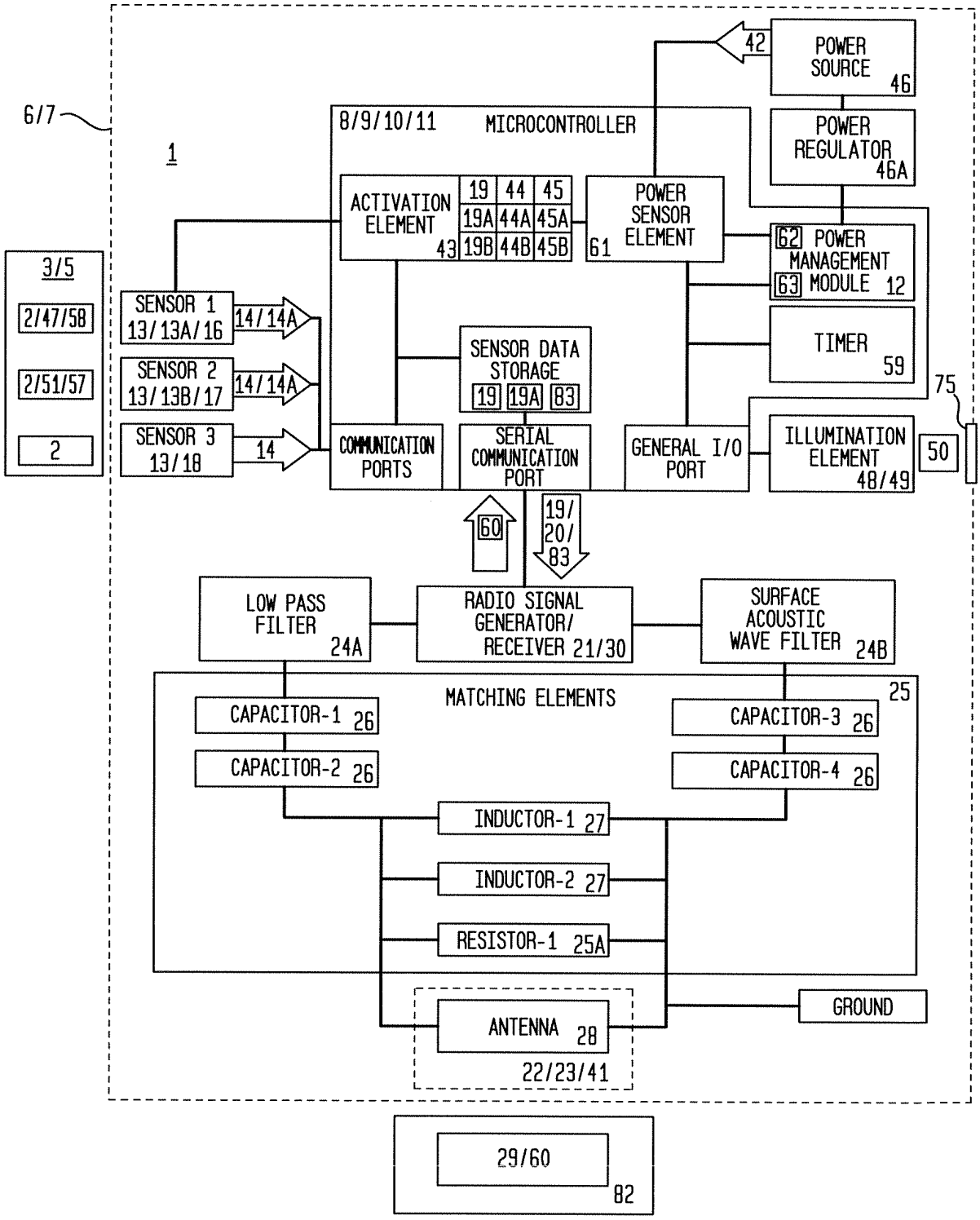


FIG. 2


6/7
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8/9/10/11 MICROCONTROLLER
42
POWER SOURCE 46
POWER REGULATOR 46A
ACTIVATION ELEMENT 43
19 44 45
19A 44A 45A
19B 44B 45B
POWER SENSOR ELEMENT 61
62 POWER MANAGEMENT
63 MODULE 12
TIMER 59
3/5
2/47/58
2/51/57
2
SENSOR 1 13/13A/16
SENSOR 2 13/13B/17
SENSOR 3 13/18
14/14A
14/14A
14
SENSOR DATA STORAGE 19 19A 83
COMMUNICATION PORTS
SERIAL COMMUNICATION PORT
GENERAL I/O PORT
ILLUMINATION ELEMENT 48/49
50
75
60
19/20/83
LOW PASS FILTER 24A
RADIO SIGNAL GENERATOR/ RECEIVER 21/30
SURFACE ACOUSTIC WAVE FILTER 24B
MATCHING ELEMENTS
25
CAPACITOR-1 26
CAPACITOR-2 26
CAPACITOR-3 26
CAPACITOR-4 26
INDUCTOR-1 27
INDUCTOR-2 27
RESISTOR-1 25A
ANTENNA 28
22/23/41
GROUND
29/60
82

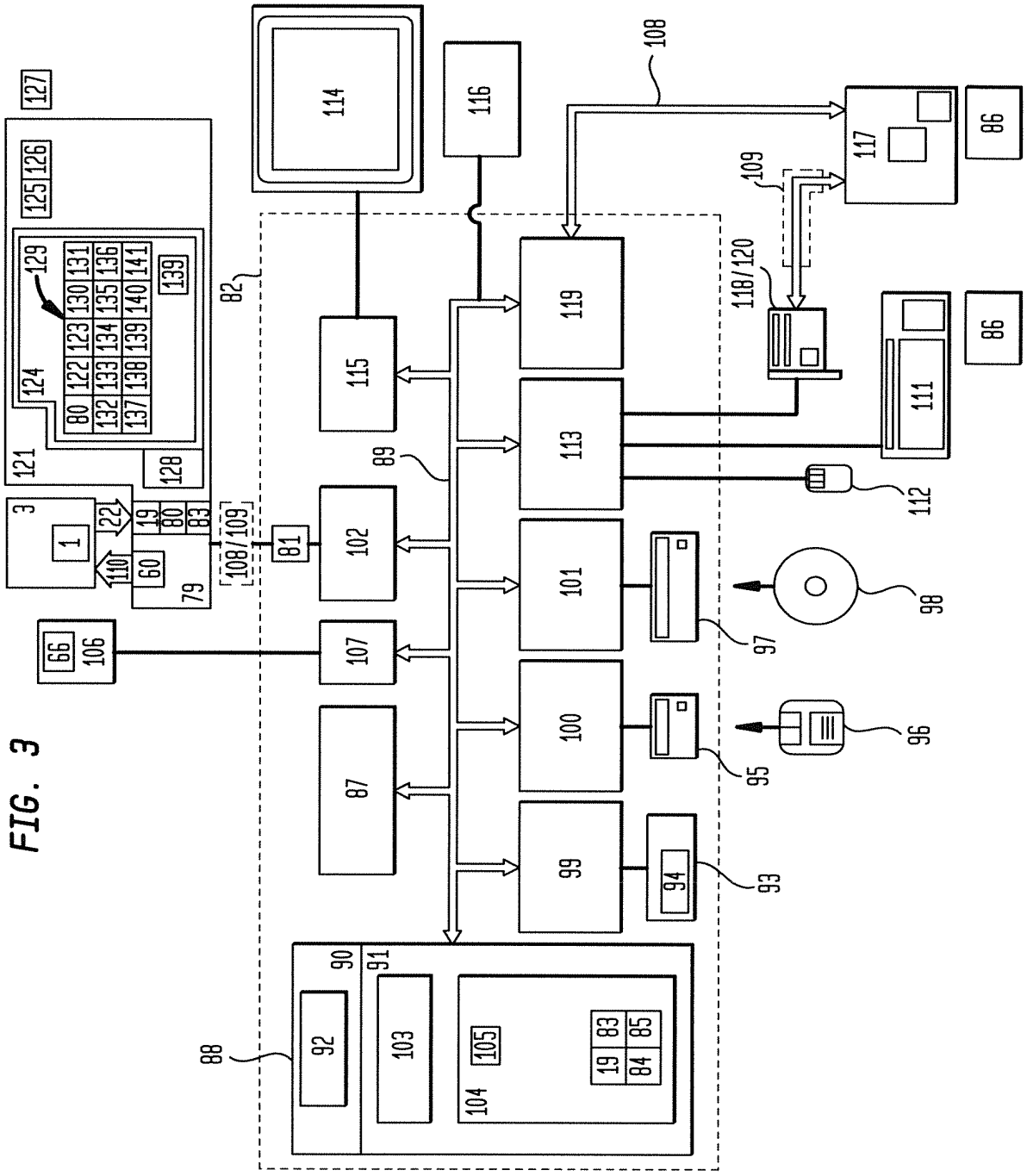

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FIG. 3

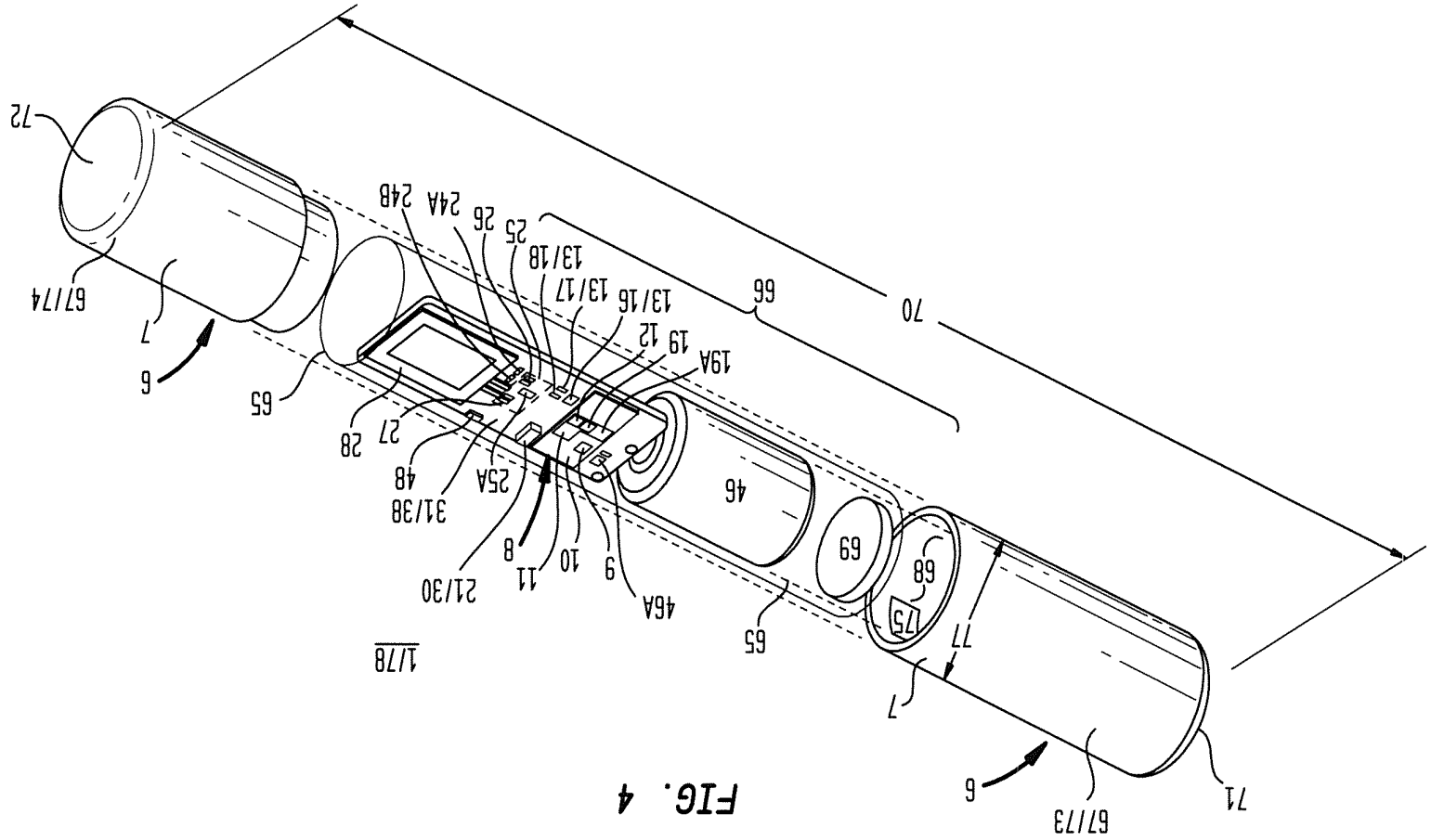

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25A
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46A
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65
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68
73
77
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67/73
71
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13/17
13/16
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19A
24B
24A
26
25

FIG. 4

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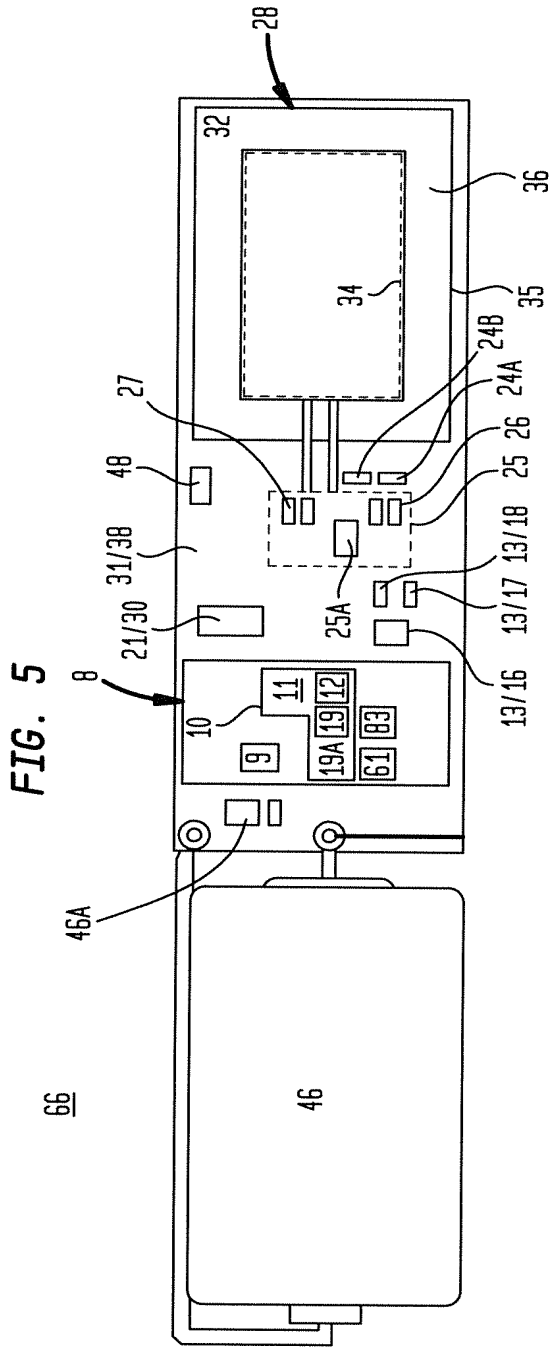


FIG. 5

FIG. 6

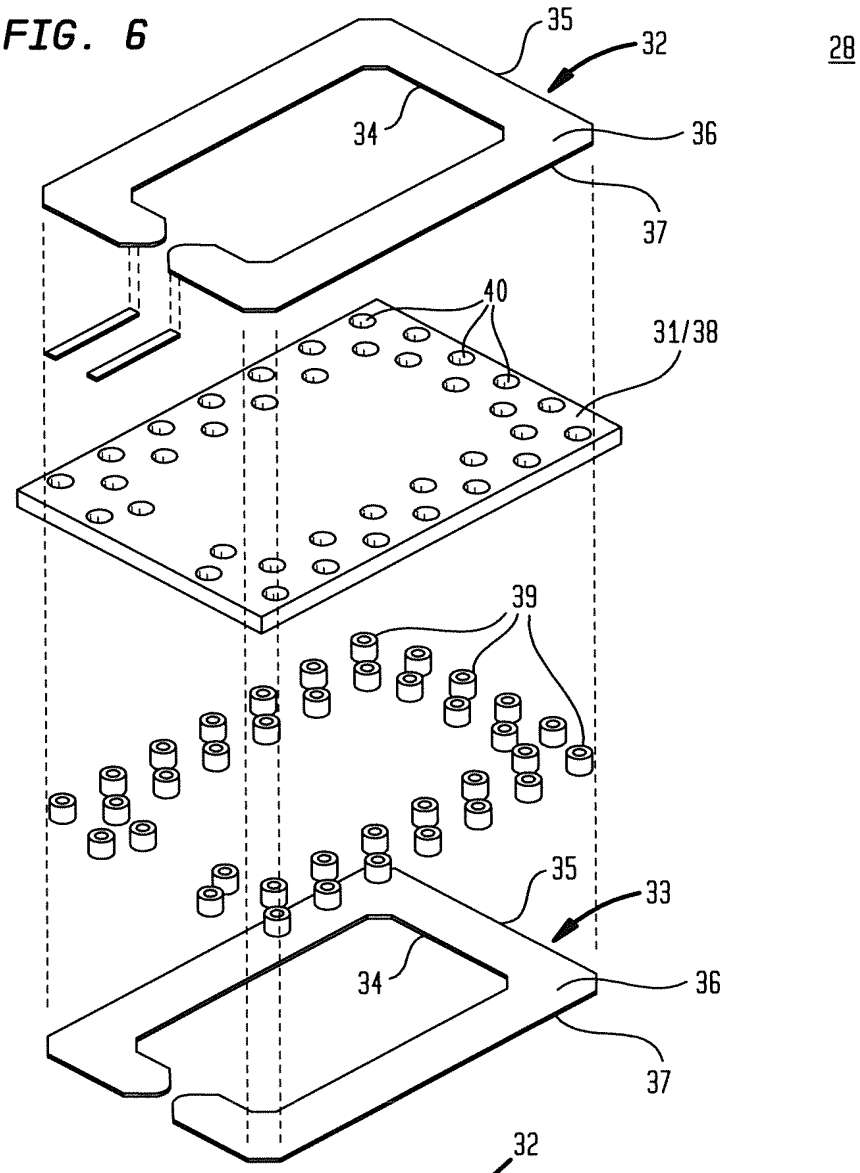


FIG. 7

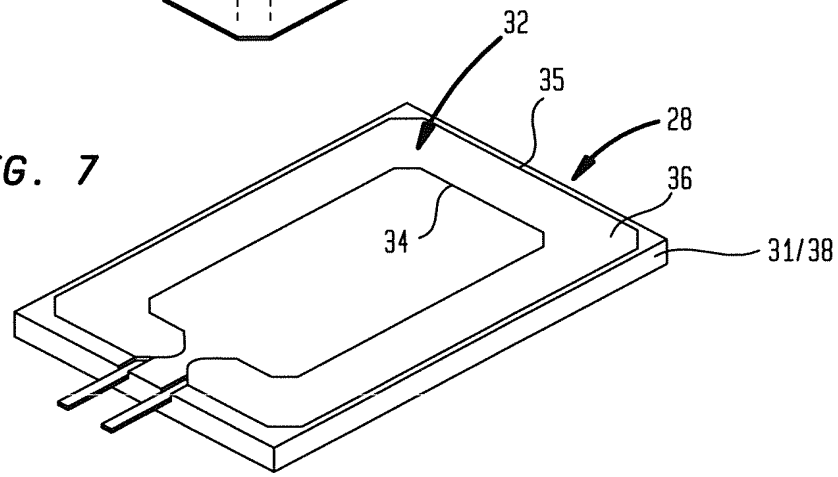


FIG. 8

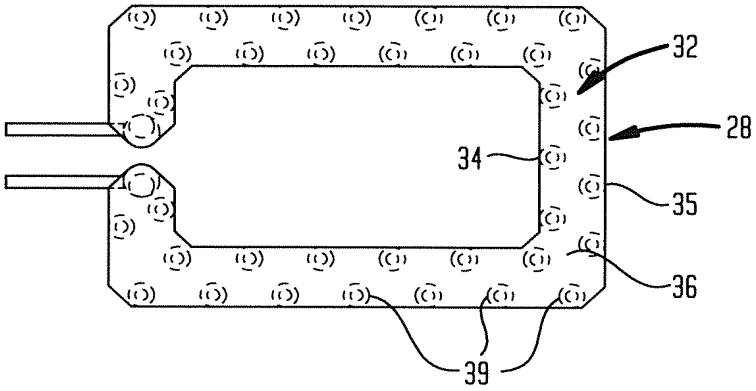


FIG. 9

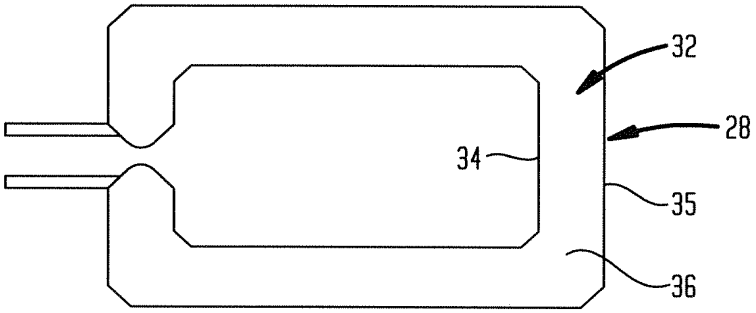


FIG. 10

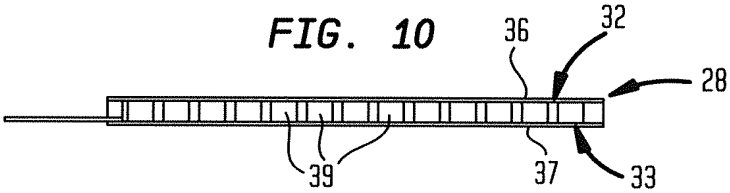


FIG. 11

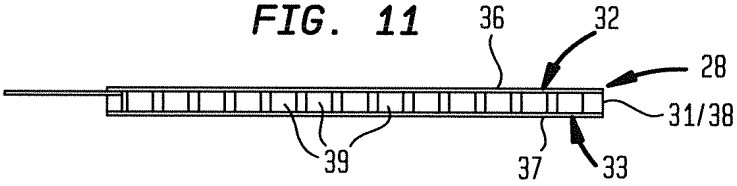


FIG. 12

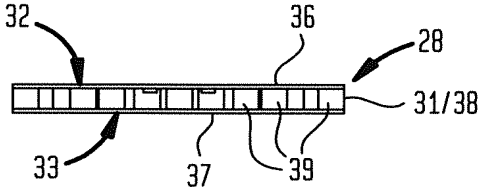
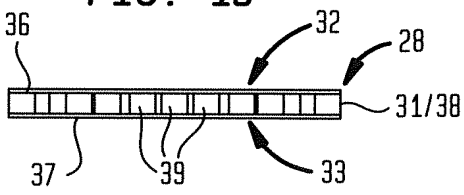


FIG. 13



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/036911

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61B 5/07; A61D 99/00; G08B 23/00 (2016.01)
CPC - A61B 5/07; A61B 5/073; A61B 5/076; A61D 99/00; G08B 23/00 (2016.05)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC - 340/573.100; 340/573.300; 600/301; 600/302
CPC - A61B 5/07; A61B 5/073; A61B 5/076; A61D 99/00; G08B 23/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 340/573.1, 573.3; 600/301, 302 (keyword delimited)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase, Orbit, Google Patents, Google Scholar
Search terms used: bolus, sensor, ruminant, animal, reticulorumen, temperature, accelerometer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009/0182207 A1 (RISKEY et al.) 16 July 2009 (16.07.2009) entire document	1-14, 16, 37-49, 64-66
---		---
Y		15, 17-28, 32-36, 50-63
Y	US 2013/0197323 A1 (RETTEDAL et al.) 01 August 2013 (01.08.2013) entire document	15, 50-63
Y	US 2010/0302039 A1 (GOTO et al.) 02 December 2010 (02.12.2010) entire document	17-20, 52-63
Y	US 2002/0128542 A1 (VAN OVER) 12 September 2002 (12.09.2002) entire document	21-28, 56-63
Y	US 6,416,782 B1 (MAAS) 09 July 2002 (09.07.2002) entire document	23-28, 32-36, 58-63
A	US 2001/0001176 A1 (CAJA LOPEZ et al.) 17 May 2001 (17.05.2001) entire document	1-28, 32-66

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
07 October 2016	26 OCT 2016
Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450 Facsimile No. 571-273-8300	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/036911

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
See supplemental page

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-28, 32-66

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/036911

Continued from Box No. III Observations where unity of invention is lacking

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-28, 32-66 , drawn to a bolus for measuring change in one or more physiological parameters of a ruminant animal.
Group II, claims 29-31, drawn to a bolus comprising a radio signal generator and antenna with electrically conductive loops.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:
the special technical feature of the Group I invention: bolus comprising: one or more sensors each capable of generating a sensor signal which varies based on a corresponding change in one or more physiological parameters of a ruminant animal; a computer code contained in said memory element to enable and disable one or more of said plurality of sensors, a housing providing an outer most external surface of said bolus, as claimed therein is not present in the invention of Group II.
The special technical feature of the Group II invention: bolus comprising: an antenna electrically connected to said radio signal generator, said antenna having a pair of electrically conductive loops disposed a distance apart; and one or more vias which interconnect said pair of loops as claimed therein is not present in the invention of Group I.

Groups I and II lack unity of invention because even though the inventions of these groups require the technical feature of a bolus comprising: a radio signal generator capable of generating a radio signal, this technical feature is not a special technical feature as it does not make a contribution over the prior art. Specifically, US 2013/0197323 A1 (RETTEDAL et al.) 01 August 2013 (01.08.2013) teaches a bolus (An animal monitoring device configured as a bolus for oral administration to reside in an animal's stomach, abstract) comprising: a radio signal generator capable of generating a radio signal (the animal monitoring device (6) can further include a radio frequency signal receiver (23) capable of receiving a second radio frequency signal (24) carrying programming data (24A) generated by a second radio frequency generator (25) having a location outside of the monitored animal (3). The second radio frequency signal (24) carrying programming data (24A) can be processed by the microcontroller (7) to reprogram a programmable module (26) to correspondingly alter the operation of the animal monitoring device (6), para 0025; radio frequency signal generator which generates a first radio frequency signal, claim 69).

Since none of the special technical features of the Group I or II inventions are found in more than one of the inventions, unity of invention is lacking.

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Electronic Acknowledgement Receipt

EFS ID:	28146435
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Jill Smith Buck
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	24-JAN-2017
Filing Date:	29-AUG-2014
Time Stamp:	11:10:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_ltr.pdf	40992 3b6af1c074912e0446122c5f225318e18e9ec2d0	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	43196 7dfceb1017eba3aa98a5a87d7357a96a2cc7c78d	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	36266 8ae9f223b19cd135d28326f2fcc4ed82540a95bf	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Foreign Reference	WO2016201242.pdf	2795340 cbd0d2ca5ae194edf86a85d17e42bb251cde4647	no	47
Warnings:					
Information:					
		Total Files Size (in bytes):	2915794		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager **Application No.:** 14/474,013 **Filed:** August 29, 2014 **For:** Computer Implemented Animal Management System **Attorney Docket No.:** bellaCONT1bolus (280-11)	**Confirmation No.:** 4228 **Group Art Unit:** 2687 **Examiner:** Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Sir/Madam:

Please find attached for entry into the above-identified patent application, documents as follow:

1. a Supplemental Information Disclosure Statement under 37 C.F.R. § 1.97 (c) and Statement under 37 C.F.R. §1.97(e)(1) (1 page(s));

2. a Supplemental Information Disclosure Statement (1 page(s)) along with copies of each cited reference not already available at the PTO; and

3. this firm Letter of Transmittal (2 page(s)).

I have this 24 day of January, 2017, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents into the above-identified patent application.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 323 of 424

Direct all correspondence to:

CR MILES P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

Customer No.: 39208

Dated this 24 day of January, 2017

Respectfully Submitted,

CR MILES P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 324 of 424

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)	4228

39208 7590 01/30/2017

CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

EXAMINER	
TWEEL JR, JOHN ALEXANDER	

ART UNIT	PAPER NUMBER
2687	

MAIL DATE	DELIVERY MODE
01/30/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/474,013	RETTEDAL ET AL.	
	Examiner	Art Unit	
	John A. Tweel Jr.	2687	

All participants (applicant, applicant's representative, PTO personnel):

(1) *John A. Tweel Jr.*. (3)_____.

(2) *Craig Miles*. (4)_____.

Date of Interview: *26 January 2017*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1,6,7,10 and 11*.

Identification of prior art discussed: *Renz, Gray*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The Applicant's representative attempted to delineate the differences between the prior art and the claimed invention. The Examiner stated he would take a closer look at the claims under question.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/John A Tweel Jr./ Primary Examiner, Art Unit 2687	

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 326 of 424

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/474,013	RETTEDAL ET AL.	
	Examiner	Art Unit	
	John A. Tweel Jr.	2687	

All participants (applicant, applicant's representative, PTO personnel):

(1) *John A. Tweel Jr.*. (3)_____.

(2) *Craig Miles*. (4)_____.

Date of Interview: *26 January 2017*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1,6,7,10 and 11*.

Identification of prior art discussed: *Renz, Gray*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The Applicant's representative attempted to delineate the differences between the prior art and the claimed invention. The Examiner stated he would take a closer look at the claims under question.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

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/John A Tweel Jr./ Primary Examiner, Art Unit 2687	

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager **Application No.:** 14/474,013 **Filed:** August 29, 2014 **For:** Computer Implemented Animal Management System **Attorney Docket No.:** bellaCONT1bolus (280-11)	**Confirmation No.:** 4228 **Group Art Unit:** 2687 **Examiner:** Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97(c)(2)

Applicant respectfully requests entry of this Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(c)(2). Applicant claims small entity status under 37 C.F.R. § 1.27, therefore Applicant submits the fee of $90.00 because the supplemental information disclosure statement was made after the mailing date of the first official action on the merits.

Dated this 13 day of February, 2017

Respectfully Submitted,

CR MILES P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT PUBLICATION DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
	2009/0030279	01-29-2009	Zander et al.

FOREIGN PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	DATE	COUNTRY	NAME OF PATENTEE OR APPLICANT OF CITED DOCUMENT
	2007089892, with English Abstract	04-12-2007	JP	Mori et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Patent Application Fee Transmittal

Application Number:	14474013
Filing Date:	29-Aug-2014
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Lioudmila Townsend
Attorney Docket Number:	bellaCONT1bolus (280-11)

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	2806	1	90	90
		Total in USD ($)		**90**

Electronic Acknowledgement Receipt

EFS ID:	28335953
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	13-FEB-2017
Filing Date:	29-AUG-2014
Time Stamp:	13:24:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$90
RAM confirmation Number	021317INTEFSW13253900
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	40109 3ffc0fe9502a68c5a77943a24d1acad23e7c1a8d	no	2
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	30780 2dd5f1d45277fc66d5bad3d8df3a8cb59f3b0545	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	29083 7a035f2b173f121f25e799a26fcd824c14c4d75b	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Foreign Reference	JP2007089892_with_English_Abstract.pdf	657922 1ad47e658bf18a0347e54f22b52567bca978b231	no	14
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	30664 eb63b09119aedd7e3622001ea969245ca77b7f95	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	788558		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Sir/Madam:

Please find attached for entry into the above-identified patent application, documents as follow:

1. a Supplemental Information Disclosure Statement under 37 C.F.R. § 1.97 (c)(2) (1 page(s));

2. a Supplemental Information Disclosure Statement (1 page(s)) along with copies of each cited reference not already available at the PTO; and

3. this firm Letter of Transmittal (2 page(s)).

I have this 13 day of February, 2017, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents into the above-identified patent application.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 337 of 424

Direct all correspondence to:

CR MILES P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

Customer No.: 39208

Dated this 13 day of February, 2017

Respectfully Submitted,

CR MILES P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
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(970) 492-0000
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 338 of 424

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)	4228

39208 7590 02/21/2017

CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

EXAMINER
TWEEL JR, JOHN ALEXANDER

ART UNIT	PAPER NUMBER
2687	

MAIL DATE	DELIVERY MODE
02/21/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 14/474,013	Applicant(s) RETTEDAL ET AL.	
	Examiner John A. Tweel Jr.	Art Unit 2687	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/28/16*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-5,8,9 and 12-20* is/are rejected.

8)☒ Claim(s) *6,7,10 and 11* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

The present application is being examined under the pre-AIA first to invent provisions.

1. This Office action is in response to the amendment filed 11/28/16. Claim 1 has been amended.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-5, 8, 9, and 12-20 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **Renz et al** [US 2006/0185605] in view of **Tsuyuzaki** [US 2007/0271320] and **Gray** [US 2005/0145187].

For claim 1, the computer implemented animal tracking system taught by Renz includes the following claimed subject matter, as noted, 1) the claimed processor communicatively coupled to a memory is met by the user-defined logic and computer source code (Paragraph 190) connected to a database (Paragraph 169), 2) the claimed first portion that retrieves an amount of animal identification from an RFID device is met by the data systems (No. 88) containing unique animal identification numbers (Paragraph 178), the system using RFID devices, 2) the claimed second portion that retrieves an amount of sensed animal information from the RFID device is shown in Figure 59 wherein a box (No. 276) displays the temperature of the animal (Paragraph 253), and 3) the claimed fifth portion that solves a logical expression to obtain at least

one logical value is read on the specification that states (Paragraph 195) a pen location is determined based on the location of an animal. However, there is no mention of a third portion that links the sensed animal identification information to the sensed animal information in a database, and enter the information retrieved from the bit segments in a database of the computer as logical variables into at least one logical expression.

Aside from the very obvious fact that data read from an RFID reader is usually automatically loaded into a computer database, the Tsuyuzaki reference presents a semiconductor device that not only includes a processing circuit (No. 42) that converts a pulse signal into a purposed signal, it also includes a storage circuit (No. 43) that allows the data to be stored after the signal processing. Also, the IC chip of the Tsuyuzaki reference generates an authentication signal for every authentication (Paragraph 10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include an authentication system in the primary reference for the purpose of more efficiently authenticating ID information found in the Renz reference.

Another claimed element not found in either reference above is a sensor coupled to the RFID device. However, this is not new in animal management. The system taught by Gray includes an ear tag (No. 14) that contains both an RFID device (No. 24) in conjunction with a biometric sensor (No. 40). This sensor collects data such as heart rate, temperature, and blood pressure and stores this information in memory to be polled by an RFID reader (No. 38). Furthermore, the passive electronic identification system taught by the Gray reference can be installed on a collar, implanted into the animal, or in a bolus (Paragraph 14). The knowledge presented by this reference was

in existence at the time of the primary references and presents an advantage in housing both the sensor and transmitter into the same apparatus. This is plain evidence that sensors and RFID transmitters have been used in conjunction with each other and is judged to be an obvious variation on the prior art for the purpose of providing a single unit that can perform multiple functions, thereby making the above combination more efficient.

For claim 2, the Renz reference gathers identification information for a plurality of animals, in this case cattle. The RFID devices of Gray may be implanted into the animal.

For claim 3, the Renz reference use RFID devices that have been implanted (Paragraph 265) into a plurality of animals.

For claim 4, the servers of Renz in conjunction with the central databases can be fully integrated with an animal health module (Paragraph 341) and all other modules of the processing system. This will provide the user with a complete history of the feeding habits of each animal.

For claim 5, the claimed amount of animal location information is read on the specification of Renz (Paragraph 204) that allows a user to record movement from location to location.

For claim 8, the Renz reference makes data entries based on the pen location (Paragraph 183) of the animal.

For claim 9, both the Renz and Gray references include GPS receivers to track the locations of the cattle.

For claim 12, the Renz reference also tracks and manages medicated rations and other special rations that have withdrawal days based on one or more ingredients used in said rations. The reference notifies users and details each managed ingredient and corresponding withdrawal days.

For claim 13, the Renz reference (Paragraph 183) uses an RFID transponder that interrogates an animal's tag and also communicates with the system for data input. The Gray reference also uses RFID devices and associated readers.

For claim 14, the Rena reference uses a web server (No. 70) to act as a central repository of information.

For claim 15, the Renz reference may use different network configurations such as wide area (Paragraph 172) for data transfer and management.

For claim 16, Figure 2 of Renz depicts a plurality of client computers capable of configuration connected to a network.

For claim 17, the system taught by Gray includes a livestock management system that tracks information regarding an individual animal through an RFID device (No. 14). The information is then relayed through a satellite system (No. 12) where it can then be loaded onto a public network for access by the user or owner having personal computers (No. 18), cell phones (No. 22), and PDAs (No. 20).

For claim 18, the Gray reference allows access using a cell phone (No. 22).

For claims 19 and 20, the Renz reference mentions the use of hand-held tag readers (Paragraph 253).

4. Claims 6, 7, 10, and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

The Renz reference records an amount of desired pen count information and an amount of reproductive information as seen in the specification (Paragraphs 19-21) that pertain to birthing and pregnancy checks. However, there is no mention of the amount of milk production information and amount of days milked information. Also, there is no mention of receiving date-time information received from the RFID device in the prior art. This, in conjunction with the other claimed subject matter, is considered unobvious subject matter.

Response to Arguments

Argument 1:

"*Renz* teaches that information outside of the animal ID additional animal data such as weight and temperature of the animal are manually entered into the animal management database and such information is not retrieved from the RFID...

Accordingly, a person of ordinary skill having read *Renz* in whole would understand that the reference in 0253 to the 'weight and temperature of the animal is displayed in box 276' is not retrieved from the RFID, nor does the RFID operate to

sense the weight or temperature of the animal, but rather this is entered into the animal management database by use of an(sic) discrete RS232 devices 98."

Argument 2:

"Firstly, a prior art reference must provide an enabling disclosure that describes the claimed invention in sufficient detail to enable a person of ordinary skill in the art to carry out the claimed invention…

It is well understood that if a claim term fails to recite sufficiently definitive structure or recites function without reciting sufficient structure for performing that function, then the claim should be construed as a means plus function claim...

Gray at Paragraph 0073 does not provide any detailed guidance or detailed information relating to any biometric detectors. Rather, *Gray* simply relies on the statement that, '[t]he RFID device is available from several sources.' That *Gray* is relying on prior art structures is further evidenced in Figure 2 referring to the RFID device sensors 40 as Prior Art.'"

6. Applicant's arguments filed 11/28/16 have been fully considered but they are not persuasive.

Response to Argument 1:

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections

are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Response to Argument 2:

Much is made by the applicant that the prior art is not “enabling” of the claims at issue. For this, the Examiner is drawn to the claim language at issue, specifically that the "sensed physiological animal information received by said RFID device from a sensor coupled to said RFID device”.

The Examiner then compares this claim language to the prior art, particularly, Gray, wherein in paragraph 73 the reference mentions "a set of biometric sensors 40 are integrated into the RFID 24”.

The Examiner must then ask: How is this *not* enabling? The claim language at issue merely states that the sensor is "coupled" to the RFID device. That's it. Coupled. No mention of boluses or bit segments or vibration sensors or thermistors or any other apparatus that the applicant has so helpfully reproduced from the original disclosure into their current arguments. The sensor is "coupled" to the RFID device. If this is the only limitation in the claim, then a sensor in the same housing as the RFID device would meet the claim language. And the subject matter found in Gray meets this claim language. The fact that the Gray reference is referring to Prior Art structures is immaterial. It is still prior art and therefore permissible in the rejection above. Absent any further limitations to the above claim language, the above rejection stands.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Tweel Jr. whose telephone number is (571)272-2969. The examiner can normally be reached on M-F 10-6:30.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on 571 272 6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAT
2/16/2017

/John A Tweel Jr./
Primary Examiner, Art Unit 2687

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT PUBLICATION DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
/J.A.T/	2009/0030279	01-29-2009	Zander et al.

FOREIGN PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	DATE	COUNTRY	NAME OF PATENTEE OR APPLICANT OF CITED DOCUMENT
/J.A.T/	2007089892, with English Abstract	04-12-2007	JP	Mori et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:
/JOHN A TWEEL JR/	02/16/2017

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
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Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
/J.A.T/	6,416,782	07-09-2002	Maas

UNITED STATES PATENT PUBLICATION DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
/J.A.T/	2001/0001176	05-17-2001	Caja Lopez et al.
/J.A.T/	2002/0128542	09-12-2002	Van Over
/J.A.T/	2010/0302039	12-02-2010	Goto et al.

FOREIGN PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	DATE	COUNTRY	NAME OF PATENTEE OR APPLICANT OF CITED DOCUMENT
/J.A.T/	2016/201242	12-15-2016	WO	Rettedal et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:
/JOHN A TWEEL JR/	02/16/2017

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	**Art Unit**
	JOHN A TWEEL JR	2687

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2015	05/26/2016	02/16/2017						
	1	✓	✓	✓						
	2	✓	✓	✓						
	3	✓	✓	✓						
	4	✓	✓	✓						
	5	✓	✓	✓						
	6	✓	✓	O						
	7	✓	✓	O						
	8	✓	✓	✓						
	9	✓	✓	✓						
	10	✓	O	O						
	11	✓	O	O						
	12	✓	✓	✓						
	13	✓	✓	✓						
	14	✓	✓	✓						
	15	✓	✓	✓						
	16	✓	✓	✓						
	17	✓	✓	✓						
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	33	-	-	-						
	34	-	-	-						
	35	-	-	-						
	36	-	-	-						

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 352 of 424

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	**Art Unit**
	JOHN A TWEEL JR	2687

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☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2015	05/26/2016	02/16/2017						
	37	-	-	-						
	38	-	-	-						
	39	-	-	-						
	40	-	-	-						
	41	-	-	-						
	42	-	-	-						
	43	-	-	-						
	44	-	-	-						
	45	-	-	-						
	46	-	-	-						

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
/J.A.T/	6,085,751	07-11-2000	Taparia

NON-PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	CITE NO.	AUTHOR, title of article, title of item, date, page(s), volume-issue number(s), publisher, city and /or country where published	T2
/J.A.T/		European Patent Application No. 11834759.0; Office Action mailed May 24, 2016, 8 pages total.	

EXAMINER SIGNATURE:	DATE CONSIDERED:
/JOHN A TWEEL JR/	02/16/2017

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

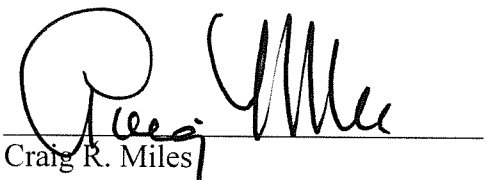
REQUEST FOR CONTINUED EXAMINATION UNDER 37 C.F.R. §1.114

This is a Request for Continued Examination under 37 C.F.R. §1.114. Applicant requests entry of the amendments set forth in the Response and Request for Reconsideration under 37 C.F.R. § 1.116 enclosed.

Applicant claims small entity status under C.F.R. § 1.27, therefore, the Request for Continued Examination is accompanied by the fee under 37 C.F.R. § 1.17(e)(2) in the amount of $300.00 and a Petition for Extension of Time under 37 C.F.R. § 1.36(a) and the fee under 37 C.F.R. § 1.17(a)(1) in the amount of $600.00.

Dated this 21 day of July, 2017

Respectfully Submitted,

By: 

Craig R. Miles
ATTORNEY FOR APPLICANT
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

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Alexandria, VA 22313-1450

PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. §1.136

This is a request to extend the period for filing a reply in the above-identified application under the provisions of 37 C.F.R. §1.136(a) and 37 C.F.R. §1.17(a)(2). The two month extension of time extends until July 21, 2017 period in which the applicant can timely file a reply in the above-referenced application which would otherwise be due within three months of the mailing date of the official communication mailed February 21, 2017. Applicant claims small entity status under 37 C.F.R. § 1.27, therefore Applicant submits the fee amount under 37 C.F.R. §1.17(a)(2) of $300.00.

Dated this 21 day of July, 2017

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
CR MILES P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97(b)(4)

Applicant respectfully requests entry of the attached Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(b)(4) made in compliance with Section 1.98 during the pendency of the above-identified United States patent application. No fee is required because submission of the supplemental information disclosure statement is made before the mailing date of the first office action after the filing of a request for continued examination under 37 C.F.R. §1.114.

Dated this 21 day of July, 2017

Respectfully Submitted,

CR MILES P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
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SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT PUBLICATION DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
	2007/0136154	06-14-2007	Chung
	2013/0197323	08-01-2013	Rettedal et al.
	2014/0240088	08-28-2014	Robinette et al.
	2016/0360994	12-15-2016	Rettedal et al.

NON-PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	CITE NO.	AUTHOR, title of article, title of item, date, page(s), volume-issue number(s), publisher, city and /or country where published	T2
		CARNÉ et al. Modeling the retention of rumen boluses for the electronic identification of goats. J Dairy Sci, February 2011, 94(2), pp. 716-726 (abstract only, 2 pages total).	
		GHIRARDI et al. Retention of different sizes of electronic identification boluses in the forestomachs of sheep. J Anim Sci, November 2006, 84(10), pp. 2865-2872.	
		International PCT Patent Application No.: PCT/US2016/066012; International Search Report and Written Opinion dated March 3, 2017, 9 pages total.	
		US Patent Application No.: 14/970,289, filed December 15, 2015.	

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Patent Application Fee Transmittal

Application Number:	14474013
Filing Date:	29-Aug-2014
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Lioudmila Townsend
Attorney Docket Number:	bellaCONT1bolus (280-11)

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	4	40	160
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 2 months with $0 paid	2252	1	300	300
Miscellaneous:				
RCE- 1st Request	2801	1	600	600
		Total in USD ($)		**1060**

Electronic Acknowledgement Receipt

EFS ID:	29861686
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Lioudmila Townsend
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	21-JUL-2017
Filing Date:	29-AUG-2014
Time Stamp:	19:54:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1060
RAM confirmation Number	072417INTEFSW19564100
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_Letter.pdf	46033 3005b224e44fa628647466df33a4f4869d5f1d9f	no	2
Warnings:					
Information:					
2	Response After Final Action	Response.pdf	472572 38f467bd1a647cf4469723e62cf3cf4e1c6621e5	no	13
Warnings:					
Information:					
3	Request for Continued Examination (RCE)	RCE.pdf	33652 68da2e997be0010d563b38aa55e842f3445b7ac9	no	1
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
4	Extension of Time	Ext_of_Time.pdf	34759 1cd5b1c06e695f0436af632e50671a7b975b41d7	no	1
Warnings:					
Information:					
5	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	33530 87d5b54684cc1ae3bb1681ffc99fbcf282ad7cde	no	1
Warnings:					
Information:					
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6	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	46199 803c106afa1402d7ddc2fcca1d789583a92c3f30	no	1

Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
7	Non Patent Literature	CARNE.pdf	103049 5b121118c1e5b6f8c00b34aa6eace22378ede828	no	2
Warnings:					
Information:					
8	Non Patent Literature	GHIRARDI.pdf	782139 97d0fb764b26d722481eb6f76783ee75c5ee5300	no	8
Warnings:					
Information:					
9	Non Patent Literature	ISR.pdf	600834 925d0b55aaba4606b5458da7c87dba77d1322c79	no	9
Warnings:					
Information:					
10	Fee Worksheet (SB06)	fee-info.pdf	33969 0a3b5db4ac9f75dfae12da37bcb00fc61d28d362	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2186736		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Dear Sir/Madam:

Please find attached a Response and Request for Reconsideration under 37 C.F.R. §1.116, including the following documents:

1. a Response and Request for Reconsideration under 37 C.F.R. §1.116 (13 page(s));
2. a Request For Continued Examination Under 37 C.F.R. §1.114 (1 page(s));
3. a Petition for Extension of Time Under 37 C.F.R. §1.136 (1 page(s));
4. a Supplemental Information Disclosure Statement under 37 C.F.R. § 1.97 (b)(4) (1 page(s));
5. a Supplemental Information Disclosure Statement (1 page(s)) along with copies of each cited reference not already available at the PTO; and
6. this firm Letter of Transmittal (2 page(s)).

I have this 21 day of July, 2017, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please enter the submitted documents in the above-identified patent application.

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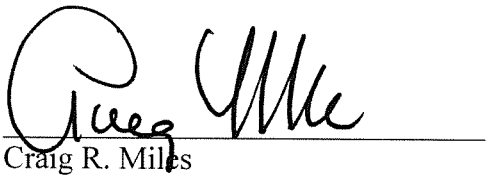
Direct all correspondence to:

CR MILES P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

USPTO Customer No.: 39208

Dated this 21 day of July, 2017

Respectfully Submitted,

By: 

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager **Application No.:** 14/474,013 **Filed:** August 29, 2014 **For:** Computer Implemented Animal Management System **Attorney Docket No.:** bellaCONT1bolus (280-11)	**Confirmation No.:** 4228 **Group Art Unit:** 2687 **Examiner:** Tweel Jr., John A.

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE AND REQUEST FOR RECONSIDERATION UNDER 37 C.F.R.§ 1.116

Dear Sir/Madam:

This paper is submitted in response to the final Office Action mailed on February 21, 2017. Applicant believes that this response addresses each concern raised by the Examiner in the Office Action and each of the claims is now in condition for allowance. Applicant further submits a Request for Continued Examination under 37 C.F.R. §1.114. Applicant claims small entity status under C.F.R. § 1.27, therefore, the Request for Continued Examination is accompanied by the fee under 37 C.F.R. § 1.17(e)(1) in the amount of $600.00 and a Petition for Extension of Time under 37 C.F.R. § 1.36(a) and 37 C.F.R. § 1.17(a)(2) in the amount of $300.00. Please amend the above-identified United States patent application as follows.

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SPECIFICATION AMENDMENT

It is respectfully requested that the specification be amended without prejudice, without admission, without surrender of subject matter, and without intention of creating any estoppel as to equivalents, as follows.

1. Please replace the paragraph beginning on page 13, line 20, with:

--The hardware can further include a communication controller (50) which provides communication with the server computer (1) or remote computer (34) via LAN or WAN (as non-limiting examples Intel Part No. DA82562EM; Digikey Part No. 829707-ND); a LAN port or a WAN port (51) for wired or wireless connection to the server computer (1) or remote computer (34)(as non-limiting examples of wired port connection Amphenol Part No. RJHSE-5381; Digikey Part No. 829707-ND or wireless port connection specification 802.11 revs. a, b, g, or n or BLUETOOTH ~~bluetooth~~ rev. 1 or BLUETOOTH ~~bluetooth~~ rev. 2). In alternate embodiment the RFID reader processor (55) can be programmed to further provide the functionalities of the communication controller (50) in the form of Intel Part No. TN80960SA16; Digikey Part No. 8093846-ND; or Microchip Technology Part No. 2411256-I/SM EEPROM.--

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AMENDMENTS TO THE CLAIMS

It is respectfully requested that the claims be amended without prejudice, without admission, without surrender of subject matter, and without intention of creating any estoppel as to equivalents, as follows. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1 (currently amended). A computer implemented animal management system, comprising:

a processor communicatively coupled to a non-transitory computer readable media ~~memory element~~ containing program instructions executable to:

retrieve ~~an amount of~~ animal identification information from an RFID device;

retrieve ~~an amount of~~ sensed ~~physiological~~ animal information from said RFID device, said sensed ~~physiological~~ animal information ~~received by said RFID device from~~ generated by a sensor coupled to said RFID device;

~~link~~ match said ~~amount~~ sensed animal information retrieved from said RFID device to ~~an amount of~~ animal information of said animal stored in a database including an amount of milk production or a number of days in milk;

enter said ~~amount of~~ sensed animal information retrieved from said RFID device ~~linked to~~ and said ~~amount of~~ animal information stored in said database as logical variables into at least one logical expression; and

solve said at least one logical expression to obtain a corresponding at least one logical ~~valuebell~~ value.

2 (currently amended). The system of claim 1, wherein said ~~amount of~~ animal identification information further comprises said animal identification information ~~from~~ correspondingly generated by a plurality of RFID devices ~~implantable~~ implanted in a plurality of animals.

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3 (currently amended). The system of claim 2, wherein said ~~amount of~~ sensed animal information comprises said sensed animal information ~~from~~ generated by said plurality of RFID devices ~~implantable~~ implanted in said plurality of animals.

4 (currently amended). The system of claim ~~3~~ 1, wherein said sensed animal information comprises sensed physiological information of said animal, and wherein said ~~amount of~~ animal information ~~of said animal~~ stored in said database comprises ~~an amount of~~ health information ~~for~~ associated with said animal, ~~each of said plurality of animals said amount of health information including an~~ and wherein said logical value indicates an occurrence of an illness of said animal.

5 (currently amended). The system of claim 4 3, wherein said sensed animal information comprises sensed location information of said animal, and wherein said ~~amount of~~ animal information of said animal stored in said database comprises ~~an amount of~~ animal location information of said animal.

6 (canceled).

7 (currently amended). The system of claim ~~6~~ 4, wherein said animal identification information further comprises said animal identification information correspondingly generated by a plurality of RFID devices implanted in a plurality of animals, wherein said sensed animal information comprises said sensed animal information generated by said plurality of RFID devices ~~i~~ implanted in said plurality of animals, wherein said at least one logical expression solves as to a selected period of time as to said plurality of animals correspondingly associated with said animal identification information ~~in each of a plurality of animal locations as to whether~~ if a greater than selected number of said illness have occurred.

8 (currently amended). The system of claim 5, wherein said plurality of animal locations comprises a plurality of pens ~~locations~~ each having pen definition based on amount of days in milk or an amount of milk production.

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9 (currently amended). The system of claim 8, ~~wherein said plurality of animal locations comprises a plurality of GPS locations~~ wherein said at least one logical value indicates in which of said plurality of pens each of said plurality of animals should be located based on said amount of milk production or said number of days in milk.

10 (currently amended). The system of claim ~~9~~ 5, wherein said plurality of animal locations comprises a plurality of pens each having a pen definition ~~wherein said amount of animal information of said animal stored in said database of said computer further comprises each of an amount of desired pen count information, an amount of milk production information, an amount of days milked information, and or an amount of~~ based on reproductive status of said animal.

11 (currently amended). The system of claim 10, wherein said at least one logical ~~expression solves as to a selected period of time in which of said plurality of pens~~ value indicates in which of said plurality of pens each of said plurality of animals should be located based on said reproductive status of each of said plurality of animals.

12 (currently amended). The system of claim ~~5~~ 7, wherein said amount of animal information of said animal stored in said database of said computer comprises ~~an amount of~~ date-time information as to administration of a first compound to each of said plurality of animals, ~~an amount of date-time information as to administration of a second compound to each of said plurality of animals, an amount of date-time information as to occurrence of first compound effects on each of said plurality of animals, an amount of date-time information as to occurrence of second compound effects on each of said plurality of animals~~ , and wherein said logical value indicates occurrence of said date-time to administer a second compound to each of said plurality of animals.

13-46 (canceled).

47 (new). A computer implemented animal management system, comprising:

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a processor communicatively coupled to a non-transitory computer readable media containing program instructions executable to:

retrieve animal identification information from an RFID device implanted in an animal;

retrieve sensed animal location information from said RFID device;

match said sensed animal location information retrieved from said RFID device to animal information associated with said animal identification information stored in a database;

enter said sensed animal location information retrieved from said RFID device and said animal information stored in said database as logical variables into at least one logical expression; and

solve said at least one logical expression to obtain a corresponding at least one logical value indicating if as to a selected period of time said sensed animal location matches said location information stored in said database.

48 (new). The system of claim 47, wherein said animal location information stored in said database comprises a plurality of pen locations each having a pen definition based on health status of an animal, wherein said animal information stored in said database further comprises health status of said animal associated said animal identification information, and wherein said logical variable value indicates which of said plurality of pens to locate said animal associated with said animal identification information based on said health status.

49 (new). The system of claim 47, wherein said animal location information stored in said database comprises a plurality of pen locations each having a pen definition based on a number of days in milk of an animal, wherein said animal information stored in said database further comprises said number of days in milk of said animal associated with said animal identification information, and wherein said logical variable value indicates which of said plurality of pens to locate said animal associated with said animal identification information based on said number of days in milk.

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50 (new). The system of claim 47, wherein said animal location information stored in said database comprises a plurality of pen locations each having a pen definition based on milk production of an animal, wherein said animal information stored in said database further comprises milk production information of said animal associated with said animal identification information, and wherein said logical variable value indicates which of said plurality of pens to locate said animal associated with said animal identification information in based on said milk production.

51 (new). The system of claim 47, wherein said animal location information stored in said database comprises a plurality of pen locations each having a pen definition based on reproductive status of an animal, wherein said animal information stored in said database further comprises reproductive status of said animal associated with said animal identification information, and wherein said logical variable value indicates which of said plurality of pens to locate said animal associated with said animal identification information in based on reproductive status.

52 (new). A computer implemented animal management system, comprising:

a processor communicatively coupled to a non-transitory computer readable media containing program instructions executable to:

retrieve animal identification information from an RFID device implanted in an animal;

retrieve sensed animal information from said RFID device;

retrieve date-time information from said RFID device;

match said sensed animal information retrieved from said RFID device to animal information stored in a database;

enter said sensed animal information retrieved from said RFID device and said animal information stored in said database as logical variables into at least one logical expression; and

solve said at least one logical expression to obtain a corresponding at least one logical value.

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53 (new). The system of claim 52, wherein said sensed animal information comprises sensed physiological information of said animal, and wherein said animal information stored in said database comprises health information associated with said animal, and wherein as to a selected period of time said at least one logical value indicates occurrence of an illness of said animal associated with said animal identification information.

54 (new). The system of claim 53, wherein said animal identification information further comprises said animal identification information correspondingly received from a plurality of RFID devices implanted in a plurality of animals, and wherein said sensed animal information comprises said sensed animal information receive from said plurality of RFID devices implanted in said plurality of animals, and wherein said logical value indicates a number of occurrences of said illness in a plurality of animals.

55 (new). The system of claim 54, wherein said logical value indicates occurrence of a greater than a pre-selected number of said illness in said plurality of animals.

56 (new). The system of claim 52, wherein said sensed animal information comprises sensed location information of said animal, and wherein said animal information stored in said database comprises location information associated with said animal, and wherein as to a selected period of time said at least one logical value indicates if said sensed location information of said animal occurs at said location information associated with said animal.

57 (new). The system of claim 56, wherein said plurality of animal locations comprises a plurality of GPS locations.

58 (new). The system of claim 52, wherein said animal information stored in said database of said computer comprises date-time information to administer a first compound or second compound to each of a plurality of animals, and wherein said logical value indicates occurrence of said date-time information to administer said first compound or second compound to said plurality of animals.

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59 (new). The system of claim 58, wherein said animal information stored in said database of said computer comprises date-time information of administration of a first compound or second compound to each of said plurality of animals, and wherein said logical value indicates elapsed period after administration of said a first compound or second compound.

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REMARKS

1. **Status Of The Claims.** Claims 1-20 are pending in the subject application. Claims 1-5, 8, 9 and 12-20 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over United States Patent Publication No. 2006/0185605 of Renz et al. ("*Renz*") in view of United States Patent Publication No. 2007/02771320 of Tsuyuzaki ("*Tsuyuzaki*") and US 2005/0145187 of Gray ("*Gray*"). Claims 6, 7, 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

Claims 1-5 and 7-12 have been amended without the addition of any new matter. Claims 6 and 13-46 have been without prejudice canceled. Applicant respectfully reserves the right to pursue any non-elected claims, canceled or otherwise unclaimed subject matter in one or more continuation, continuation-in-part, or divisional applications.

Claims 47 through 59 are newly added without the addition of any new matter.

2. **Specification Amendment.**

Applicant has amended the specification as set forth above solely to capitalize the use of the trademark BLOOTHTOOTH. Applicant respectfully requests entry of the amendment to the file wrapper.

2. **The Claim Rejections Under 35 U.S.C. § 103(a) Are Overcome.**

In the present Office Action, the Examiner has rejected Claims 1-5, 8, 9, and 12-20 under 35 U.S.C. § 103(a) as being unpatentable over *Renz* in view of *Tsuyuzaki* and Gray.

Applicant respectfully disagrees; however, Examiner found each of Claims 6, 7, 10, and 11 allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Based on the indication of the allowable subject matter, Applicant has rewritten each of Claims 6, 10 and 11 as new independent claims, as follows:

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Claim 6 as previously presented included the features of an amount of date-time information received from said RFID device which Examiner indicates that there is no mention of receiving date-time information received from the RFID device in the prior art. Accordingly, Applicant has rewritten Claim 6 as new independent Claim 52 including the feature of "retrieve date-time information from said RFID device." Accordingly, Applicant believes that new independent Claim 52 is allowable. Claims 53-59 are made ultimately dependent on Claim 52. Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. *MPEP 608.01 (n).* Therefore, each of Claims 53-59 should also be allowable.

Claim 10 as previously presented included the features of an amount of milk production information and an amount of days milked information which Examiner indicates there is not mention of the amount of milk production information and days milked information. Applicant has included the features of Claim 10 including an amount of milk production or a number of days in milk into Claim 1. Accordingly, Applicant believes that Claim 1 as amended is allowable. Claims 2-12 are made ultimately dependent on Claim 1. Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. *MPEP 608.01 (n).* Therefore, each of Claims 2-12 should also be allowable.

Claim 11 as previously presented included the features of at least one logical expression solves as to a selected period of time in which of said plurality of pens each of said plurality of animals should be located. Applicant has rewritten Claim 11 as new independent Claim 47 including solve said at least one logical expression to obtain a corresponding at least one logical value indicating if as to a selected period of time said sensed animal location matches said location information stored in said database. Accordingly, Applicant believes that new independent Claim 47 is allowable. Claims 48-51 are made ultimately dependent on Claim 47. Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. *MPEP 608.01 (n).* Therefore, each of Claims 47-51 should also be allowable.

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Based on the foregoing, Applicant respectfully requests allowance of each of Claims 1-5, 7-12 and 47-59.

Applicant believes that the amendments to Claims 1-5, 7-12 and newly added Claims 47-59 fully address each concern raised by Examiner as to the rejection of Claims 1-5, 8, 9, and 12-20 under 35 U.S.C. § 103(a) as being unpatentable over *Renz* in view of *Tsuyuzaki* and Gray; however, Applicant does not waive and reserves the right to make further amendments and further remarks in regard to Claims 1-5, 8, 9, and 12-20 as previously presented.

3. Request For Telephonic Interview. Applicant respectfully requests the courtesy of a telephonic interview with the Examiner to address any remaining concerns as to the allowability of any one of Claims 1-5, 7-12 and 47-59.

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CONCLUSION

Applicant has without prejudice canceled Claims 6 and 13-46. Applicant has amended Claims 1-5 and 7-12. Claims 47-59 are newly added. Applicant believes that Claims 1-5, 7-12 and 47-59 are now in condition for allowance and Applicant requests allowance of same.

Dated this 21 day of July, 2017

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
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Smaxtec Exhibit 1002
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PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/474,013	Filing Date 08/29/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	07/21/2017	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 24	Minus	** 20	= 4	X $40 =	160
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**160**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
MARQUITA JONES

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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NOTICE OF ALLOWANCE AND FEE(S) DUE

39208 7590 08/11/2017

CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

EXAMINER
TWEEL JR, JOHN ALEXANDER

ART UNIT	PAPER NUMBER
2687	

DATE MAILED: 08/11/2017

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)	4228

TITLE OF INVENTION: Computer Implemented Animal Management System

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	11/13/2017

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

39208 7590 08/11/2017

CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)	4228

TITLE OF INVENTION: Computer Implemented Animal Management System

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	11/13/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
TWEEL JR, JOHN ALEXANDER	2687	340-539130

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 381 of 424

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)	4228

39208 7590 08/11/2017

CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

EXAMINER	
TWEEL JR, JOHN ALEXANDER	
ART UNIT	PAPER NUMBER
2687	

DATE MAILED: 08/11/2017

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/474,013	Applicant(s) RETTEDAL ET AL.	
	Examiner John A. Tweel Jr.	Art Unit 2687	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *RCE and amendment filed 7/21/17*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-5,7-12 and 47-59*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/John A Tweel Jr./
Primary Examiner, Art Unit 2687

1. The present application is being examined under the pre-AIA first to invent provisions.

2. This Office action is in response to the amendment filed 7/21/17. Claims 1-5 and 7-12 have been amended. Claims 6 and 13-20 have been canceled. Claims 47-59 have been added.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-5, 7-12, and 47-59 are allowed.

5. The following is an examiner's statement of reasons for allowance:

The previously objected subject matter has been incorporated into the independent claims, thereby rendering them allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Tweel Jr. whose telephone number is (571)272-2969. The examiner can normally be reached on M-F 10-6:30.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on 571 272 6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAT
8/8/2017

/John A Tweel Jr./
Primary Examiner, Art Unit 2687

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	14/474,013
	Filling Date	August 29, 2014
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr., John A.
	Attorney Docket Number	bellaCONT1bolus (280-11)
Sheet 1 of 1	Express Mail Label No.:	-

UNITED STATES PATENT PUBLICATION DOCUMENTS

EXAMINER INITIALS	DOCUMENT NUMBER	PUBLICATION DATE MM-DD-YYYY	NAME OF PATENTEE OR APPLICANT
/J.A.T/	2007/0136154	06-14-2007	Chung
/J.A.T/	2013/0197323	08-01-2013	Rettedal et al.
/J.A.T/	2014/0240088	08-28-2014	Robinette et al.
/J.A.T/	2016/0360994	12-15-2016	Rettedal et al.

NON-PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	CITE NO.	AUTHOR, title of article, title of item, date, page(s), volume-issue number(s), publisher, city and /or country where published	T2
/J.A.T/		CARNÉ et al. Modeling the retention of rumen boluses for the electronic identification of goats. J Dairy Sci, February 2011, 94(2), pp. 716-726 (abstract only, 2 pages total).	
/J.A.T/		GHIRARDI et al. Retention of different sizes of electronic identification boluses in the forestomachs of sheep. J Anim Sci, November 2006, 84(10), pp. 2865-2872.	
/J.A.T/		International PCT Patent Application No.: PCT/US2016/066012; International Search Report and Written Opinion dated March 3, 2017, 9 pages total.	
/J.A.T/		US Patent Application No.: 14/970,289, filed December 15, 2015.	

EXAMINER SIGNATURE:	DATE CONSIDERED:
/JOHN A TWEEL JR/	08/08/2017

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 4228

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/474,013	08/29/2014	340	2687	bellaCONT1bolus (280-11)

APPLICANTS

Bella Technologies, LLC, Kersey, CO;

INVENTORS

Nicholas P. Rettedal, Loveland, CO;
Stephen M. Weilnau, Greeley, CO;
Scott R. Cockroft, Greeley, CO;
Billy J. Yeager, Gilbert, AZ;

**** CONTINUING DATA ***************************

This application is a CON of 13/391,614 02/21/2012 PAT 8823515
which is a 371 of PCT/US2010/002509 09/14/2010
which claims benefit of 61/276,723 09/15/2009

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
09/08/2014

Foreign Priority claimed	☐ Yes ☑ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No		CO	13	20	1
Verified and Acknowledged	/JOHN ALEXANDER TWEEL JR/ Examiner's Signature	Initials				

ADDRESS

CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524
UNITED STATES

TITLE

Computer Implemented Animal Management System

FILING FEE RECEIVED		
890	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	**Art Unit**
	JOHN A TWEEL JR	2687

CPC							
Symbol						**Type**	**Version**
A01K		11	/	008		F	2013-01-01
G06F		19	/	3418		I	2013-01-01
A61B		5	/	0002		I	2013-01-01
A01K		11	/	006		I	2013-01-01
A01K		29	/	005		I	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	24	
/JOHN A TWEEL JR/ Primary Examiner.Art Unit 2687	8/8/17	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	**Art Unit**
	JOHN A TWEEL JR	2687

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
340	539.13	G	0	8	B	1 / 08 (2006.01.01)						

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	24	
/JOHN A TWEEL JR/ Primary Examiner.Art Unit 2687	8/8/17	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	**Art Unit**
	JOHN A TWEEL JR	2687

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1		17		33	14	49								
2	2		18		34	15	50								
3	3		19		35	16	51								
4	4		20		36	17	52								
5	5		21		37	18	53								
	6		22		38	19	54								
6	7		23		39	20	55								
7	8		24		40	21	56								
8	9		25		41	22	57								
9	10		26		42	23	58								
10	11		27		43	24	59								
11	12		28		44										
	13		29		45										
	14		30		46										
	15		31	12	47										
	16		32	13	48										

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 24	
/JOHN A TWEEL JR/ Primary Examiner.Art Unit 2687 (Primary Examiner)	8/8/17 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14474013	RETTEDAL ET AL.
	Examiner	Art Unit
	JOHN A TWEEL JR	2687

CPC- SEARCHED		
Symbol	Date	Examiner
A61B 5/0002	9/10/15	JAT
G06F 19/3418	9/10/15	JAT
A01K 11/006	9/10/15	JAT
A01K 11/007	9/10/15	JAT
A01K 11/008	9/10/15	JAT
A01K 5/02	9/10/15	JAT
A01K 29/00	9/10/15	JAT
A01K 29/005	9/10/15	JAT
A01K 1/0209	9/10/15	JAT

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
340	539.13	9/10/15	JAT
	539.12	9/10/15	JAT
	572.1	9/10/15	JAT
	10.1	9/10/15	JAT
119	51.02	9/10/15	JAT

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
All classes searched	8/8/17	JAT

	/J.A.T./ Primary Examiner.Art Unit 2687

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
A61B	5/0002	8/8/17	JAT
G06F	19/3418	8/8/17	JAT
A01K	11/008	8/8/17	JAT
	11/006	8/8/17	JAT
340	539.13	8/8/17	JAT

	/J.A.T./ Primary Examiner.Art Unit 2687

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

FEE ADDRESS INDICATION FORM

Commissioner,

Please recognize as the "Fee Address" under the provisions of 37 C.F.R. §1.363 the address associated with customer number 39208 for the above-identified patent application for which the issue fee has been paid.

Dated this 13 day of November, 2017

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
CR MILES P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000 telephone
(970) 492-0003 facsimile

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

39208 7590 08/11/2017
CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Jill Smith Buck	(Depositor's name)
	(Signature)
November 13, 2017	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)	4228

TITLE OF INVENTION: Computer Implemented Animal Management System

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	11/13/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
TWEEL JR, JOHN ALEXANDER	2687	340-539130

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☒ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 Craig R. Miles
2 CR MILES P.C.
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Bella Technologies, LLC
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Kersey, Colorado

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☒ Payment by credit card. Form PTO-2038 is attached.
☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
☐ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
☐ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date 11/13/2017
Typed or printed name Craig R. Miles Registration No. 45,954

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 396 of 424

CR MILES
INTELLECTUAL PROPERTY
PATENT & TRADEMARK LAW ®

PATENT & TRADEMARK ATTORNEYS
CRAIG R. MILES
Patent & Trademark Attorney

CHERYL L. ANDERSON
Trademark & Copyright Attorney

SUSAN F. HUDACHEK, PhD
Registered Patent Agent

DARA T. JEFFRIES
IP Litigation Attorney

November 13, 2017

United States Patent and Trademark Office
Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Re: CR MILES P.C. to appear in upper case on Ribbon Copy

Dear Commissioner,

Please note that the name of our law firm is **CR MILES P.C.**, and we ask that it appears in upper case on the patent Ribbon Copy issued from the USPTO.

We appreciate your help in ensuring the proper format of our law firm name on documents from the United States Patent and Trademark Office.

Sincerely,

CR MILES P.C.

Craig Miles, Esq.

405 Mason Court, Suite 119 | Fort Collins, CO 80524 USA
970.492.0000 | fax 970.492.0003 | crmiles@crmiles.com | www.crmiles.com
CRMILES IS A PROFESSIONAL CORPORATION | INTERNATIONAL AND DOMESTIC INTELLECTUAL PROPERTY LAW

Electronic Patent Application Fee Transmittal

Application Number:	14474013
Filing Date:	29-Aug-2014
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Jill Smith Buck
Attorney Docket Number:	bellaCONT1bolus (280-11)

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
UTILITY APPL ISSUE FEE	2501	1	480	480
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**480**

Electronic Acknowledgement Receipt

EFS ID:	30927696
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Jill Smith Buck
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	13-NOV-2017
Filing Date:	29-AUG-2014
Time Stamp:	12:53:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$480
RAM confirmation Number	111317INTEFSW13034400
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Transmittal_ltr.pdf	50091 4cc6f60ffddcbf32aa5a5a78a46ce26d563153b5	no	2
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	Fee_Address.pdf	26840 b00f487772f1f897e58f4afbe1748caad1e8a67d	no	1
Warnings:					
Information:					
3	Issue Fee Payment (PTO-85B)	Fee_Transmittal.pdf	126112 8bcec34e108424d4f0d5e8fac1999bbdf0392b88	no	2
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	32319 72d3968e5a7fdad2f62da55838855e25e272e9ee	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	235362		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No.: 14/474,013

Filed: August 29, 2014

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaCONT1bolus (280-11)

Confirmation No.: 4228

Group Art Unit: 2687

Examiner: Tweel Jr., John A.

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER OF TRANSMITTAL

Dear Commissioner,

Attached for filing are documents as follows:

1. a Fee Address Indication Form pursuant to 37 C.F.R. §1.363 (1 page(s));

2. a Part B - Fee(s) Transmittal form PTOL-85 (1 page(s)), including a cover letter which states that our firm name appears in upper case on the Ribbon copy (1 page(s)); and

3. this firm Letter of Transmittal (2 page(s)).

Please note:

All right, title, and interest in United States Patent Application 14/474,013, filed August 29, 2014 is owned by Bella Technologies, LLC.

Please note that the name of our law firm is **CR MILES P.C.**, and we ask that it appears in upper case on the patent Ribbon Copies from your office. We appreciate your help in ensuring the proper format of our law firm name on documents from the United States Patent and Trademark Office.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 403 of 424

I have this 13 day of November, 2017, either myself personally, or through my direction of staff at this office, deposited all of the items listed in this Letter of Transmittal with the United States Patent and Trademark Office via EFS-Web.

Please process the submitted documents.

Direct all correspondence to:

CR MILES P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524

USPTO Customer No.: 39208

Dated this 13 day of November, 2017

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANT
USPTO Reg. No. 45,954
CR MILES P.C.
405 Mason Court, Suite 119
Fort Collins, CO 80524
(970) 492-0000
(970) 492-0003 facsimile

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 404 of 424

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/474,013	12/19/2017	9844206	bellaCONT1bolus (280-11)	4228

39208 7590 11/29/2017

CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Nicholas P. Rettedal, Loveland, CO;
Bella Technologies, LLC, Kersey, CO;
Stephen M. Weilnau, Greeley, CO;
Scott R. Cockroft, Greeley, CO;
Billy J. Yeager, Gilbert, AZ;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PTO/AIA/81A (02-15)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number

PATENT - POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Patent Number	9,844,206
Issue Date	December 19, 2017
First Named Inventor	Rettedal, Nicholas P.
Title	Computer Implemented Animal Management System
Attorney Docket No.	RT-20 (US-03)

I hereby revoke all previous powers of attorney given in the above-identified patent.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: 114662

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified patent to:

☐ The address associated with the above-identified Customer Number.

OR

☒ The address associated with the Customer Number identified in the box at right: 114662

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☐ Applicant.

OR

☒ Patent owner.

Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on _____.

SIGNATURE of Applicant or Patent Owner

Signature		Date	
Name	Juan Monroig	Telephone	936-870-3360
Title and Company	CEO, ST Reproductive Technologies, LLC		

NOTE: Signatures of all the applicants or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☐ A total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	32848619
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Ryan Scot Christensen/Justin wood
Filer Authorized By:	Ryan Scot Christensen
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	08-JUN-2018
Filing Date:	29-AUG-2014
Time Stamp:	17:18:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	ExecutedPOA.pdf	690060 7f72c809d7214d7b015cdb2cd290fbb477623f53	no	1

Warnings:

Information:	
Total Files Size (in bytes):	690060

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)

CONFIRMATION NO. 4228

MISCELLANEOUS NOTICE

39208
CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

OC000000100331331

Date Mailed: 06/15/2018

A communication which cannot be delivered in electronic form has been mailed to the applicant.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)

CONFIRMATION NO. 4228

OC000000100331331

39208
CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

Cc: ST REPRODUCTIVE TECHNOLOGIES, LLC
22575 STATE HIGHWAY 6 SOUTH
NAVASOTA, TX 77868

Date Mailed: 06/15/2018

DENIAL OF REQUEST FOR POWER OF ATTORNEY

The request for Power of Attorney filed 06/08/18 is acknowledged. However, the request cannot be granted at this time for the reason stated below.

- ☐ The Power of Attorney you provided did not comply with the new Power of Attorney rules that became effective on June 25, 2004. See 37 CFR 1.32.
- ☐ The revocation is not signed by the applicant, the assignee of the entire interest, or one particular principal attorney having the authority to revoke.
- ☑ The Power of Attorney is from an assignee and the Certificate required by 37 CFR 3.73(c) has not been received.
- ☐ The person signing for the assignee has omitted their empowerment to sign on behalf of the assignee.
- ☐ The inventor(s) is without authority to appoint attorneys since the assignee has intervened as provided by 37 CFR 3.71.
- ☐ The signature(s) of _____, a co-inventor in this application, has been omitted. The Power of Attorney will be entered upon receipt of confirmation signed by said co-inventor(s).
- ☐ The person(s) appointed in the Power of Attorney is not registered to practice before the U.S. Patent and Trademark Office.
- ☐ Only one Customer Number can be designated for the Power of Attorney in an application. The Customer Number that was captured is the first Customer Number provided on the Power of Attorney document.
- ☐ A request under 37 CFR 1.48 to add an inventor was granted in this application, however, no power of attorney consistent with the power of attorney granted by the originally named inventive entity has been

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

received. Thus, the addition of the inventor has resulted in the loss of power of attorney in the application. See 37 CFR 1.32(e).

- ☐ The power of attorney has not been accepted because the party who is giving power of attorney has not been identified. Power of attorney may only be signed by the applicant for patent (37 CFR 1.42) or the patent owner. A patent owner who was not the applicant must appoint any power of attorney in compliance with 37 CFR 3.71 and 3.73. See 37 CFR 1.32(b)(4).

- ☐ The power of attorney from the inventors has not been accepted because it is a copy from a prior national application for which benefit is claimed and the continuing application names an inventor who was not named as an inventor in the prior application.

- ☐ The power of attorney from the inventors has not been accepted because the power of attorney must be signed by the applicant for patent. See 37 CFR 1.32(b)(4).

- ☐ Any request to correct or update the name of the applicant must include an application data sheet (ADS) in compliance with 37 CFR 1.76 specifying the correct or updated name of the applicant in the applicant information section. Any request to change the applicant after an original applicant has been specified under 37 CFR 1.46(b) must include a new ADS in compliance with 37 CFR 1.76 specifying the applicant in the applicant information section and comply with 37 CFR 3.71 and 3.73. See 37 CFR 1.46(c).

Any inquiries regarding this notice should be directed to the Application Assistance Unit at 571-272-4200.

Application Assistance Unit
571-272-4200

PTO/AIA/81A (02-15)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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PATENT - POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Patent Number	9,844,206
Issue Date	December 19, 2017
First Named Inventor	Rettedal, Nicholas P.
Title	Computer Implemented Animal Management System
Attorney Docket No.	RT-20 (US-03)

I hereby revoke all previous powers of attorney given in the above-identified patent.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: 114662

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified patent to:

☐ The address associated with the above-identified Customer Number.

OR

☒ The address associated with the Customer Number identified in the box at right: 114662

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☐ Applicant.

OR

☒ Patent owner.

Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on _____

SIGNATURE of Applicant or Patent Owner

Signature		Date	
Name	Juan Monroig	Telephone	936-870-3360
Title and Company	CEO, ST Reproductive Technologies, LLC		

NOTE: Signatures of all the applicants or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☐ A total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: ST Reproductive Technologies, LLC

Application No./Patent No.: 9,844,206 Filed/Issue Date: December 19, 2017

Titled: COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM

ST Reproductive Technologies, LLC, a Limited Liability Company

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: NICHOLAS P. RETTEDAL To: BELLA TECHNOLOGIES, LLC

   The document was recorded in the United States Patent and Trademark Office at Reel 034009, Frame 0001, or for which a copy thereof is attached.

2. From: STEPHEN M. WEILNAU To: BELLA TECHNOLOGIES, LLC

   The document was recorded in the United States Patent and Trademark Office at Reel 034009, Frame 0001, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: SCOTT R. COCKROFT To: BELLA TECHNOLOGIES, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 034009, Frame 0001, or for which a copy thereof is attached.

4. From: BILLY J. YEAGER To: BELLA TECHNOLOGIES, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 034009, Frame 0001, or for which a copy thereof is attached.

5. From: BELLA TECHNOLOGIES, LLC To: ST REPRODUCTIVE TECHNOLOGIES, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 045824, Frame 0134, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Ryan Christensen/	June 22, 2018
Signature	Date
Ryan Christensen	60,291
Printed or Typed Name	Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	32975211
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Ryan Scot Christensen/Justin wood
Filer Authorized By:	Ryan Scot Christensen
Attorney Docket Number:	bellaCONT1bolus (280-11)
Receipt Date:	22-JUN-2018
Filing Date:	29-AUG-2014
Time Stamp:	13:28:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	ExecutedPOA.pdf	690060 7f72c809d7214d7b015cdb2cd290fbb477623f53	no	1

Warnings:

Information:					
2	Assignee showing of ownership per 37 CFR 3.73	Statementunder373.pdf	104455 06e0d21028266c849cdca0c420c92a1f26ea8c20	no	3
Warnings:					
Information:					
		Total Files Size (in bytes):	794515		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)

CONFIRMATION NO. 4228

114662
ST Reproductive Technologies, LLC
22575 State Highway 6 South
Navasota, TX 77868

POA ACCEPTANCE LETTER

OC000000100566879

Date Mailed: 06/28/2018

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/22/2018.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/yteferra/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/474,013	08/29/2014	Nicholas P. Rettedal	bellaCONT1bolus (280-11)

CONFIRMATION NO. 4228

POWER OF ATTORNEY NOTICE

39208
CR MILES, P.C.
CRAIG R. MILES
405 MASON COURT, SUITE 119
FORT COLLINS, CO 80524

OC000000100566801

Date Mailed: 06/28/2018

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/22/2018.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/yteferra/

PTO/SB/47 (03-09)
Approved for use through 07/31/2018. OMB 0651-0016
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

"FEE ADDRESS" INDICATION FORM

Address to:
Mail Stop M Correspondence
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

- OR -

Fax to:
571-273-6500

INSTRUCTIONS: The issue fee must have been paid for application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. **When to check the first box below**: If you have a Customer Number to represent the fee address. **When to check the second box below**: If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

☒ Customer Number: 114662

OR

☐ The attached Request for Customer Number (PTO/SB/125) form.

PATENT NUMBER (if known)	APPLICATION NUMBER
9,844,206	14/474,013

Completed by (check one):

☐ Applicant/Inventor

☒ Attorney or Agent of record 60,291 (Reg. No.)

☐ Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

☐ Assignee recorded at Reel Frame

/ Ryan Christensen /
Signature

Ryan Christensen
Typed or printed name

936-870-3960
Requester's telephone number

August 31, 2018
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more that one signature is required, see below*.

☑ * Total of forms are submitted.

This collection of information is required by 37 CFR 1.363. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 5 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.
SEND TO: Mail Stop M Correspondence, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	33599026
Application Number:	14474013
International Application Number:	
Confirmation Number:	4228
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	114662
Filer:	Ryan Scot Christensen/Justin Wood
Filer Authorized By:	Ryan Scot Christensen
Attorney Docket Number:	RT-20 (US-3)
Receipt Date:	31-AUG-2018
Filing Date:	29-AUG-2014
Time Stamp:	16:26:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Maintenance Fee Address Change	FeeAddressForm.pdf	144314 a7a8ada3ee8483545829bf3324c1b3ff3f0f1e35	no	2

Warnings:

Information:	
Total Files Size (in bytes):	144314

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY.DOCKET NO./TITLE	REQUEST ID
14/474,013	08/29/2014	Nicholas P. Rettedal	RT-20 (US-3)	136382

Acknowledgement of Loss of Entitlement to Entity Status Discount

The entity status change request below filed through Private PAIR on 04/09/2021 has been accepted.

CERTIFICATIONS:

Change of Entity Status:

X Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be notification of loss of entitlement to small or micro entity status, as applicable.

This portion must be completed by the signatory or signatories making the entity status change in accordance with 37 CFR 1.4(d)(4).

Signature:	/Ryan Christensen/
Name:	Ryan Christensen
Registration Number:	60291