PTO-1390 (09-11)
Approved for use through 4/30/2013. OMB 0651-0021
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER	U.S. APPLICATION NO. (If known, see 37 CFR 1.5)
bellaUSNPbolus	

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/US2010/002509	September 14, 2010	September 15, 2009

TITLE OF INVENTION
Computer Implemented Animal Management System

APPLICANT(S) FOR DO/EO/US
Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☑ This is a FIRST submission of items concerning a submission under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a submission under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☐ The US has been elected (Article 31).
5. ☐ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. ☐ is attached hereto (required only if not communicated by the International Bureau).
   b. ☐ has been communicated by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. ☐ is attached hereto.
   b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. ☐ are attached hereto (required only if not communicated by the International Bureau).
   b. ☐ have been communicated by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☑ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. ☑ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☑ A preliminary amendment.
14. ☑ An Application Data Sheet under 37 CFR 1.76.
15. ☐ A substitute specification.
16. ☑ A power of attorney and/or change of address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13*ter*.3 and 37 CFR 1.821- 1.825.
18. ☐ A second copy of the published International Application under 35 U.S.C. 154(d)(4).
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).

This collection of information is required by 37 CFR 1.414 and 1.491-1 .492. The information is required to obtain or retain a b enefit by the public, w hich is to file (and by the USPTO to pro cess) 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 15 minutes to complete, including gathering information, preparing, and submitting the completed 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 FEE S OR COMPLE TED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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PTO-1390 (09-11)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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U.S. APPLICATION NO. (if known, see 37 CFR 1.5)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
	PCT/US2010/002509	bellaUSNPbolus

20. Other items or information:

See Firm Transmittal Letter

The following fees have been submitted	CALCULATIONS	PTO USE ONLY
21. ☑ Basic national fee (37 CFR 1.492(a)) **$380**	$ 380.00	
22. ☑ Examination fee (37 CFR 1.492(c)) If the written opinion prepared by ISA/US or the international preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4)..... **$0** All other situations..... **$250**	$250.00	
23. ☑ Search fee (37 CFR 1.492(b)) If the written opinion of the ISA/US or the International preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4)..... **$0** Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority..... **$120** International Search Report prepared by an ISA other than the US and provided to the Office or previously communicated to the US by the IB..... **$490** All other situations..... **$620**	$ 120.00	
TOTAL OF 21, 22 and 23 =	$750.00	

☑ Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing in compliance with 37 CFR 1.821(c) or (e) in an electronic medium or computer program listing in an electronic medium) (37 CFR 1.492(j)).
The fee is **$310** for each additional 50 sheets of paper or fraction thereof.

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof (round up to a whole number)	RATE	
- 100 =	/50 =		x $310	$

Surcharge of **$130.00** for furnishing any of the search fee, examination fee, or the oath or declaration after the date of commencement of the national stage (37 CFR 1.492(h)).	$	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	$	
Total claims	28 - 20 =	8	x $ 60	$480.00	
Independent claims	1 - 3 =		x $250	$	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ $450	$ 450.00	
			TOTAL OF ABOVE CALCULATIONS =	$1680.00	
☑ Applicant claims small entity status. See 37 CFR 1.27. Fees above are reduced by ½.					
			SUBTOTAL =	$ 840.00	
Processing fee of **$130.00** for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(i)). +				$	
			TOTAL NATIONAL FEE =	$	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +				$	
			TOTAL FEES ENCLOSED =	$ 840.00	
			Amount to be refunded:	$	
			Amount to be charged	$	

a. ☐ A check in the amount of $ _____ to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees.

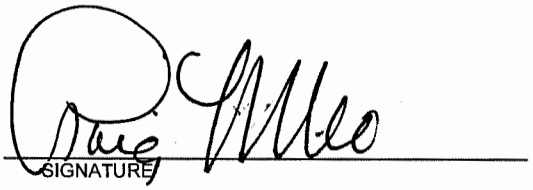
c. ☐ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. _____.

d. ☑ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038. The PTO-2038 should only be mailed or faxed to the USPTO. However, when paying the basic national fee, the PTO-2038 may NOT be faxed to the USPTO.

ADVISORY: If filing by EFS-Web, do **NOT** attach the PTO-2038 form as a PDF along with your EFS-Web submission. Please be advised that this is **not** recommended and by doing so your **credit card information may be displayed via PAIR**. To protect your information, it is recommended paying fees online by using the electronic payment method.

NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.

SEND ALL CORRESPONDENCE TO:



SIGNATURE

Craig R. Miles

NAME

45,954

REGISTRATION NUMBER

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:	bellaUSNPbolus

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Basic National Stage Fee	2631	1	190	190
Natl Stage Search Fee - U.S. was the ISA	2641	1	60	60
Natl Stage Exam Fee - all other cases	2633	1	125	125
Pages:				
Claims:				
Claims in excess of 20	2615	8	30	240
Multiple dependent claims	2616	1	225	225
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**840**

Electronic Acknowledgement Receipt

EFS ID:	12127119
Application Number:	13391614
International Application Number:	PCT/US10/02509
Confirmation Number:	3807
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:	bellaUSNPbolus
Receipt Date:	21-FEB-2012
Filing Date:	
Time Stamp:	20:23:22
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$840
RAM confirmation Number	8117
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, Ltd. v. ST Reproductive Tech., LLC

1	Transmittal Letter	Transmittal_Letter.pdf	31175 2f0ac1b5e2b0c33a37f4058e8a6b1c288e53922d	no	3
Warnings:					
Information:					
2	Application Data Sheet	Application_Data_Sheet.pdf	36149 8781fbcd423fafdf93a3f801127713e179896571	no	5
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
3	Oath or Declaration filed	Declaration.pdf	106480 cdc825c6edaa7ba691ac7effc1a873b2431aa38b	no	6
Warnings:					
Information:					
4	Power of Attorney	POA_Inventor_NR.pdf	21371 831003c64fe2261fa8759ee179ceb0fde5e36731	no	1
Warnings:					
Information:					
5	Oath or Declaration filed	Small_Entity_Statement_Inventor_NR.pdf	29383 8e5ec95a191d17fe225fbc75715f63ba0299c977	no	2
Warnings:					
Information:					
6	Power of Attorney	POA_Inventor_SW.pdf	20133 d5d2a318f3e0e4c9590361c2d1f35646de11a357	no	1
Warnings:					
Information:					
7	Oath or Declaration filed	Small_Entity_Statement_Inventor_SW.pdf	26268 ec306f2ecc56fd49ca09511db1b67a3753c3ed47	no	2
Warnings:					
Information:					
8	Power of Attorney	POA_Inventor_SC.pdf	20196 d9e69e4f8aca5a4b3849f308aeecbdca8d50cd40	no	1
Warnings:					
Information:					
9	Oath or Declaration filed	Small_Entity_Statement_Inventor_SC.pdf	80719 b3be4b7eb91e5d264d6fb70617694bff9e49e943	no	2

Warnings:					
Information:					
10	Power of Attorney	POA_Inventor_BY.pdf	28561 33a265ee803095b5f66f75f6f7961b319bca2714	no	1
Warnings:					
Information:					
11	Oath or Declaration filed	Small_Entity_Statement_Inventor_BY.pdf	42370 600c0ea8bcddabd89ab93db13a2914bbcca2bd65	no	2
Warnings:					
Information:					
12	Power of Attorney	POA_Assignee.pdf	20952 ec1e405d813e4839f0a20515aaf90355e09217a2	no	1
Warnings:					
Information:					
13	Assignee showing of ownership per 37 CFR 3.73(b).	Statement.pdf	132983 d017a620e6a661a8454e7ac4bdcddda7788c9016	no	9
Warnings:					
Information:					
14	Oath or Declaration filed	Small_Entity_Statement_Business.pdf	28628 46c1e3541a12bf4a8351ff3c66010f699d2fd795	no	2
Warnings:					
Information:					
15	Specification	Specification.pdf	291415 c0ce7ed9c3f32496845bba82a9b2a2a187a9bb8b	no	36
Warnings:					
Information:					
16	Drawings-only black and white line drawings	Drawings.pdf	492732 32c115badef5f2c16e2fbe45e9046a5f8a2045b0	no	13
Warnings:					
Information:					
17	Information Disclosure Statement (IDS) Form (SB08)	IDS.pdf	85241 450a9d5e9c7d3f68cf54dced71a3f60985894396	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					

18	Non Patent Literature	SmartStock.pdf	3507078 22883cb812f2414ae8ba38125658e2abcc1c78ef	no	12
Warnings:					
Information:					
19	Non Patent Literature	Boehmer.pdf	50225 0dd1b5b9cd2da2c3372969c2ae2a5868968e95f6	no	4
Warnings:					
Information:					
20	Non Patent Literature	Cooper.pdf	226469 c3add36b007a001838a100f43c51c56dbb52cb88	no	33
Warnings:					
Information:					
21	Preliminary Amendment	Prelim_Amendment.pdf	66031 d52227594cdfef353eec88100a61c33db0ab7538	no	10
Warnings:					
Information:					
22	Transmittal of New Application	USPTO_Transmittal.pdf	90097 6e60d03152f9aa238fbbde0e88f46ad42ed5799e	no	3
Warnings:					
Information:					
23	Fee Worksheet (SB06)	fee-info.pdf	38064 8eff28e5b95ae2f55d4d9af74e13aa2ad31adba6	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	5472720	

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

Int'l Application No.: PCT/US2010/002509

Int'l Filing Date: September 14, 2010

Application No.:

Filed:

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.:

Group Art Unit:

Examiner:

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

LETTER OF TRANSMITTAL

Dear Sir/Madam:

Please find enclosed for filing the United States National Stage of International Patent Application No. PCT/US2010/002509, including the following documents:

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

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 11 of 452

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

8. a Statement Establishing Small Entity Status -- Inventor of Scott R. Cockroft (2 page(s)), hereby claimed;

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

10. a Statement Establishing Small Entity Status -- Inventor of Billy J. Yeager (2 page(s)), hereby claimed;

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

12. a Statement under 37 CFR 3.73 (b) (1 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 (8 page(s));

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

14. a Specification (36 page(s));

15. Formal Drawings (13 sheet(s));

16. an Information Disclosure Statement By Applicant (2 page(s)) along with copies of each cited reference not already available at the USPTO;

17. a Preliminary Amendment (10 page(s));

18. a Transmittal Letter to the United States Designated /Elected Office (DO/EO/US) concerning filing under 35 U.S.C. §371 (Form PTO-1390) (3 page(s)); and

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

Please note:

This application 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 US Provisional Patent Application No. 61/276,723, filed September 15, 2009, each hereby incorporated by reference herein.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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All right, title, and interest in this United States National Phase application, filed this 21 day of February, 2012, entitled "Computer Implemented Animal Management System" is owned in the entirety by Bella Technologies, LLC.

I have this 21 day of February, 2012, 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 National Phase patent application.

Direct all correspondence to:

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

Customer No.: 39208

Dated this 21 day of February, 2012

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
PTO 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
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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

Int'l Application No.: PCT/US2010/002509

Int'l Filing Date: September 14, 2010

Application No.:

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For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.:

Group Art Unit:

Examiner:

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

APPLICATION DATA SHEET

Application Information

Application Type::	Regular
Subject Matter::	Utility
Suggested Classification::	--
Suggested Group Art Unit::	--
CD-ROM or CD-R::	No
Title::	Computer Implemented Animal Management System
Attorney Docket Number::	bellaUSNPbolus
Request For Early Publication::	No
Request For Non-Publication::	No
Suggested Drawing Figure::	1
Total Drawing Sheets::	13

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Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 14 of 452

Small Entity::	Yes
Petition Included::	No
Secrecy Order in Parent Application::	No

Applicant Information

Applicant Authority Type::	Inventor
Primary Citizenship Country::	US
Status::	Full Capacity
Given Name:	Nicholas
Middle Name::	P.
Family Name::	Rettedal
City of Residence::	Fort Collins
State or Province of Residence::	Colorado
Country of Residence::	US
Street of Mailing Address::	3737 Landings Dr., Unit #D-14
City of Mailing Address::	Fort Collins
State or Province of Mailing Address::	Colorado
Postal or Zip Code of Mailing Address::	80525

Applicant Information

Applicant Authority Type::	Inventor
Primary Citizenship Country::	US
Status::	Full Capacity
Given Name:	Stephen
Middle Name::	M.
Family Name::	Weilnau
City of Residence::	Greeley
State or Province of Residence::	Colorado
Country of Residence::	US
Street of Mailing Address::	5006 West 27th Street
City of Mailing Address::	Greeley

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 15 of 452

State or Province of Mailing Address::	Colorado
Postal or Zip Code of Mailing Address::	80634

Applicant Information

Applicant Authority Type::	Inventor
Primary Citizenship Country::	US
Status::	Full Capacity
Given Name:	Scott
Middle Name::	R.
Family Name::	Cockroft
City of Residence::	Greeley
State or Province of Residence::	Colorado
Country of Residence::	US
Street of Mailing Address::	27712 County Road 62
City of Mailing Address::	Greeley
State or Province of Mailing Address::	Colorado
Postal or Zip Code of Mailing Address::	80631

Applicant Information

Applicant Authority Type::	Inventor
Primary Citizenship Country::	US
Status::	Full Capacity
Given Name:	Billy
Middle Name::	J.
Family Name::	Yeager
City of Residence::	Gilbert
State or Province of Residence::	Arizona
Country of Residence::	US
Street of Mailing Address::	351 E. Civic Center Drive #204
City of Mailing Address::	Gilbert
State or Province of Mailing Address::	Arizona

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 16 of 452

Postal or Zip Code of Mailing Address:: 85233

Correspondence Information

Name:: CR MILES, P.C.

Street of Mailing Address:: 405 Mason Court

Suite 119

City of Mailing Address:: Fort Collins

State or Province of Mailing Address:: Colorado

Postal or Zip Code of Mailing Address:: 80524

Telephone:: (970) 492-0000

Fax:: (970) 492-0003

Electronic Mail:: intentionally left blank

Correspondence Customer Number:: 39208

Representative Information

Attorney Name:: Craig R. Miles

Registration Number:: 45,954

Domestic Priority Information

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This Application	National Stage of	PCT/US2010/002509	10/14/2010
PCT/US2010/002509	An application claiming the benefit under 35 USC 119(e)	61/276,723	10/15/2009

Foreign Priority Information

None.

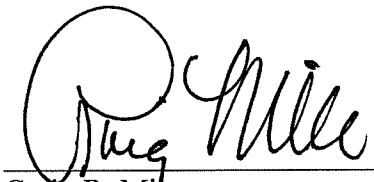
Assignment Information

Assignee Name:: Bella Technologies, LLC

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 17 of 452

Dated this 21 day of February, 2012

Respectfully Submitted,

By: 

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

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

Int'l Application No.: PCT/US2010/002509

Int'l Filing Date: September 14, 2010

Application No.:

Filed:

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.:

Group Art Unit:

Examiner:

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

DECLARATION FOR PATENT APPLICATION

Declaration of Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager.

I, Nicholas P. Rettedal, hereby declare:

I am a citizen of United States of America and my residence and mailing address is 3737 Landings Dr., Unit #D-14, Fort Collins, Colorado 80525 USA.

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.

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.

I, Billy J. Yeager, hereby declare:

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 19 of 452

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.

Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager each declares:

I believe that I am the original and first 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 the 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.

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:

- 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 PAGES:

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 20 of 452

Nicholas P. Rettedal

Date: 2-15-2012

UNITED STATES OF AMERICA)
STATE OF COLORADO)
COUNTY OF ~~[illegible]~~ Weld)

SUBSCRIBED AND AFFIRMED OR SWORN to before me in the County of Weld, State of Colorado, United States of America, by Nicholas P. Rettedal, this 16th day of February, 2012. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

CYNTHIA J. RUSER NOTARY PUBLIC STATE OF COLORADO

My Commission Expires March 4, 2013

Notary Public
My Commission Expires: 3-4-2013

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 21 of 452

Stephen M. Weilnau

Date: Feb. 16 2012

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 Stephen M. Weilnau, this 16th day of February, 2012. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

CYNTHIA J. RUSER NOTARY PUBLIC STATE OF COLORADO

My Commission Expires March 4, 2013

Notary Public
My Commission Expires: 3-4-2013

Scott R. Cockroft

Date: 2-16-2012

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 16th day of February, 2012. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

CYNTHIA J. USER NOTARY PUBLIC STATE OF COLORADO

My Commission Expires March 4, 2013

Notary Public
My Commission Expires: 3-4-2013

Billy J. Yeager

Date: 2/16/2012

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 16th day of February, 2012. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Arizona.

Trenton Vasiliow
Notary Public
Maricopa County, Arizona
My Comm. Expires 12-14-15

Notary Public
My Commission Expires: 12-14-15

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

Int'l Application No.: PCT/US2010/002509

Int'l Filing Date: September 14, 2010

Application No.:

Filed:

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.:

Group Art Unit:

Examiner:

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
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 15 day February, 2012

By: _____
Stephen M. Weilnau, Applicant/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

Int'l Application No.: PCT/US2010/002509

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Group Art Unit:

Examiner:

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
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.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 26 of 452

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 15 day of February, 2012

By: _____
Stephen M. Weilnau, Applicant/Inventor

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 27 of 452

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

Int'l Application No.: PCT/US2010/002509

Int'l Filing Date: September 14, 2010

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Confirmation No.:

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Examiner:

Mail Stop PCT
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 15 day February, 2012

By: _____
Scott R. Cockroft, Applicant/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

Int'l Application No.: PCT/US2010/002509

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Attorney Docket No.: bellaUSNPbolus

Confirmation No.:

Group Art Unit:

Examiner:

Mail Stop PCT
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.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 29 of 452

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 12 day of February, 2012

By: _____
Scott R. Cockroft, Applicant/Inventor

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 30 of 452

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

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Nicholas P. Rettedal
Art Unit	
Examiner Name	
Attorney Docket Number	bellaUSNPbolus

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- 2006/0185605	08-24-2006	Renz, et al.	
		US- 2007/0271320	11-22-2007	Tsuyuzaki	
		US- 2008/0104209	05-01-2008	Singhal, et al.	
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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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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 2

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Nicholas P. Rettedal
Art Unit	
Examiner Name	
Attorney Docket Number	bellaUSNPbolus

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	
		BOEHMER, et al. Effects of Temperature of Consumed Water on Rumen Temperature of Beef Cows. Oklahoma Agricultural Experiment Station, 2009, 4 total pages.	
		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.	
		SMARTSTOCK USA. Website, http://www.smartstock-usa.com, originally downloaded 12/30/2011, 12 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.

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.

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

Int'l Application No.: PCT/US2010/002509

Int'l Filing Date: September 14, 2010

Application No.:

Filed:

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.:

Group Art Unit:

Examiner:

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

PRELIMINARY AMENDMENT

Before examining the above-identified United States National Stage of International Patent Application No. PCT/US2010/002509 and calculating the fee due, please amend the application as follows:

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 33 of 452

SPECIFICATION AMENDMENTS

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.

Please insert the priority claim after the title of the application on page 1, as follows:

--This application 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 US Provisional Patent Application No. 61/276,723, filed September 15, 2009, each hereby incorporated by reference herein.--

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 34 of 452

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:

1-20 (canceled).

21 (original). 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;

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;

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Smaxtec, Inc. v. ST Reproductive Tech, LLC
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j) obtaining a logical value relating to said animal.

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

26 (original). 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

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Smaxtec, Inc. v. ST Reproductive Tech, LLC
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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 (original). 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 (original). 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 (original). 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.

30 (original). 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 (original). 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

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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 (original). 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 (original). 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 (original). 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 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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35 (original). 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 (original). 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 (original). 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 (original). 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 (original). 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.

40 (original). 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.

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41 (original). 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 (original). 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 (original). 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 (original). 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 (original). 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 (original). 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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Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 40 of 452

REMARKS

This application 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 US Provisional Patent Application No. 61/276,723, filed September 15, 2009, each hereby incorporated by reference herein.

Cancellation of Claims. Applicant without prejudice cancels claims 1-20. Applicant does not waive any right to have the canceled claims 1-20 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 has amended Specifications to insert the priority claim as set out above.

The applicant respectfully requests entry of this Preliminary Amendment to the file and examination of claims 21-46.

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Page 41 of 452

CONCLUSION

The applicant submits this Preliminary Amendment to cancel claims 1-20 and respectfully requests examination of claims 21-46 of this United States National Stage application.

Dated this 21 day of February, 2012

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 telephone
(970) 492-0003 facsimile

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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 **Int'l Application No.:** PCT/US2010/002509 **Int'l Filing Date:** September 14, 2010 **Application No.:** **Filed:** **For:** Computer Implemented Animal Management System **Attorney Docket No.:** bellaUSNPbolus	**Confirmation No.:** **Group Art Unit:** **Examiner:**

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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 21 day February, 2012

By: _____
Billy J. Yeager, Applicant/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

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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.

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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 21 day of February, 2012

By: _____
Billy J. Yeager, Applicant/Inventor

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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 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 15 day of February, 2012

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

PTO/SB/96 (07-09)
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STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager

Application No./Patent No.: _____ Filed/Issue Date: _____

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 it is:

1. ☒ the assignee of the entire right, title, and interest in;

2. ☐ an assignee of less than the entire right, title, and interest in (The extent (by percentage) of its ownership interest is _____ %); or

3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

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 therefore is attached.

OR

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.

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.

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

☒ As required by 37 CFR 3.73(b)(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

02/21/2012
Date

Craig Miles
Printed or Typed Name

Attorney of Record
Title

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Alexandria, VA 22313-1450

ASSIGNMENT OF PATENT RIGHTS

THIS ASSIGNMENT is between and among Nicholas P. Rettedal, whose address is 3737 Landings Dr., Unit #D-14, Fort Collins, Colorado 80525 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;

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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

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;

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

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

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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.

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:

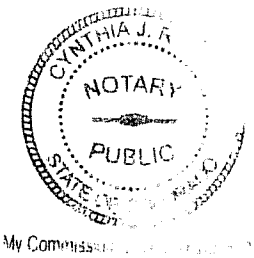
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Nicholas P. Rettedal

Date: 2-16-2012

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 Nicholas P. Rettedal, this 16th day of February, 2012. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.



My Commiss

Notary Public
My Commission Expires: 3-4-2013

Date: Feb. 16 2012

Stephen M. Weilnau

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 Stephen M. Weilnau, this 16th day of February, 2012. 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: 3-4-2013

CYNTHIA J. RUSE NOTARY PUBLIC STATE OF COLORADO

My Commission Expires March 4, 2013

Scott R. Cockroft

Date: 2-16-2012

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 16th day of February, 2012. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Colorado.

Cynthia Ruser
Notary Public
My Commission Expires: 3-4-2013

CYNTHIA J. RUSER NOTARY PUBLIC STATE OF COLORADO

My Commission Expires March 4, 2013

Billy J. Yeager

Date: 2/16/2012

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 16th day of February, 2012. WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Arizona.

Trenton Vasilow
Notary Public
Maricopa County, Arizona
My Comm. Expires 12-14-15

Notary Public
My Commission Expires: 12-14-15

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
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

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entity status. Bella Technologies, LLC appears to qualify as a small business concern as defined in 37 C.F.R. §1.27(a)(2).

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 15 day of February, 2012

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

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COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM

This application 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 US 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-Insulator (SOI) technology is used to achieve this level of integration. The Hitachi μ-Chip can

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

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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.

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.

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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.

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.

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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.

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

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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.

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

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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 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

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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-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

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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-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

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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 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

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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, 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

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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 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

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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 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

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(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 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

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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 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.

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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).

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

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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 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)

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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 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

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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 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

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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.

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

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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 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)

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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 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).

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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 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)

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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 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.

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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 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.

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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.

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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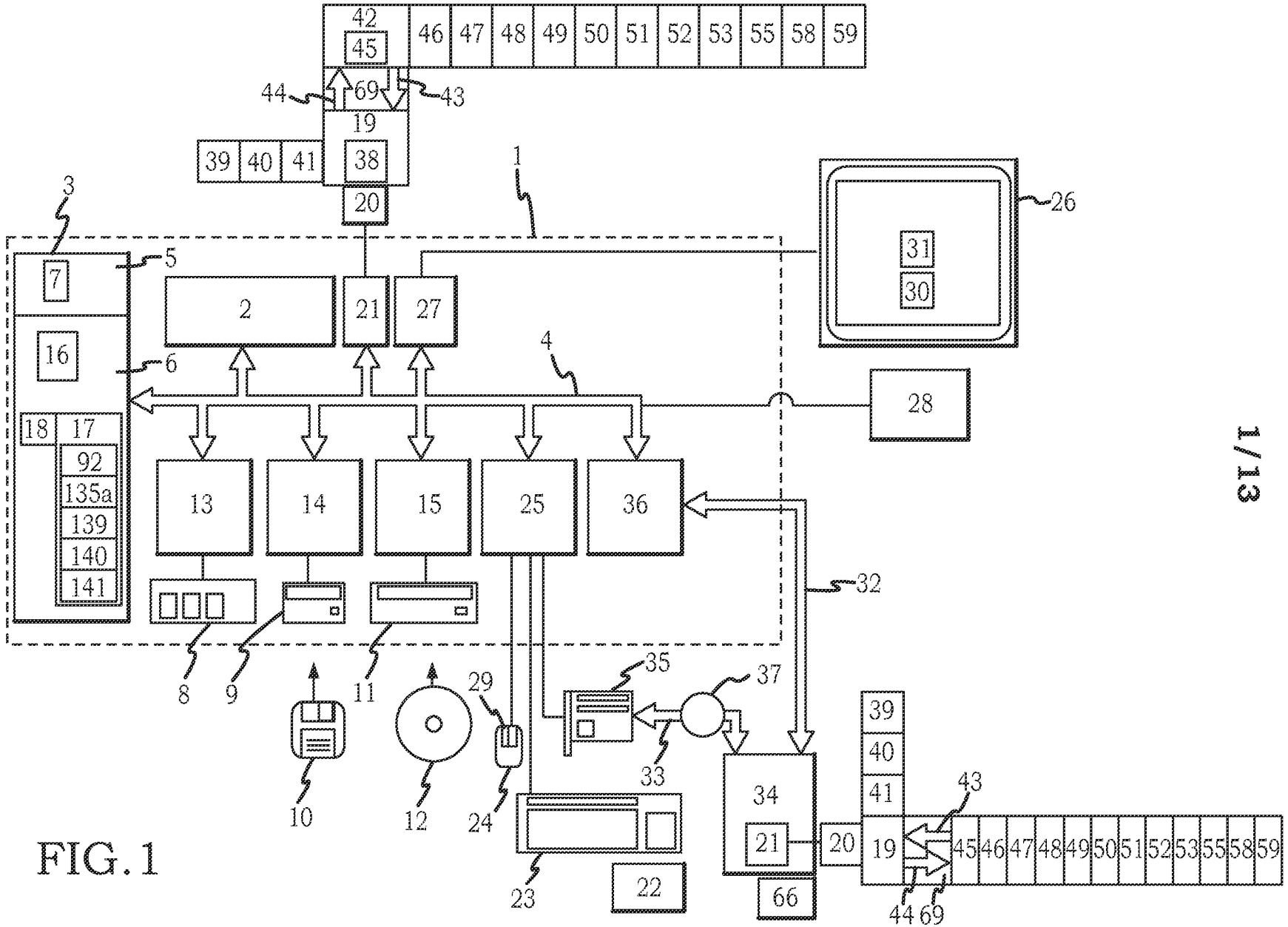

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FIG. 1

1/13

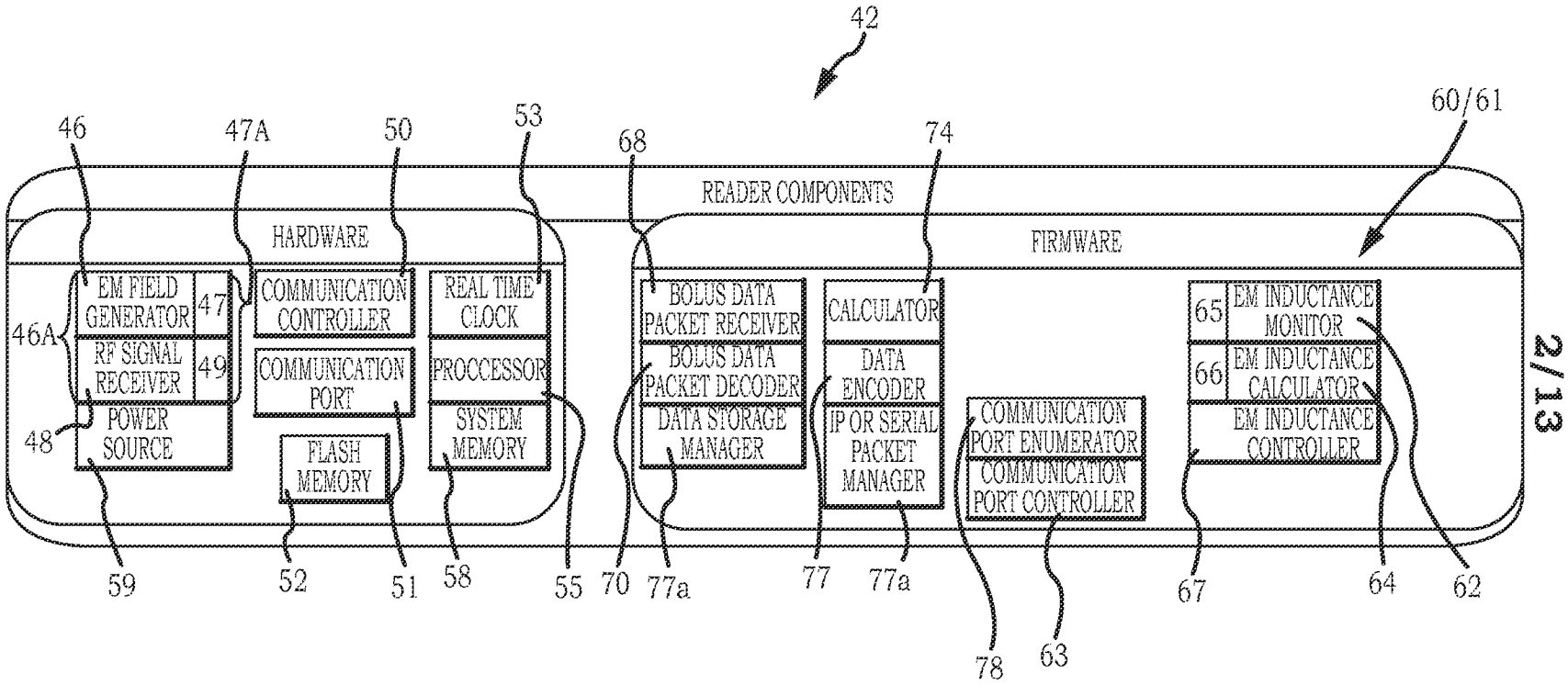

42
46
47A
50
53
68
74
60/61
READER COMPONENTS
HARDWARE
FIRMWARE
EM FIELD GENERATOR
47
RF SIGNAL RECEIVER
49
46A
POWER SOURCE
48
COMMUNICATION CONTROLLER
COMMUNICATION PORT
FLASH MEMORY
REAL TIME CLOCK
PROCCESSOR
SYSTEM MEMORY
BOLUS DATA PACKET RECEIVER
BOLUS DATA PACKET DECODER
DATA STORAGE MANAGER
CALCULATOR
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

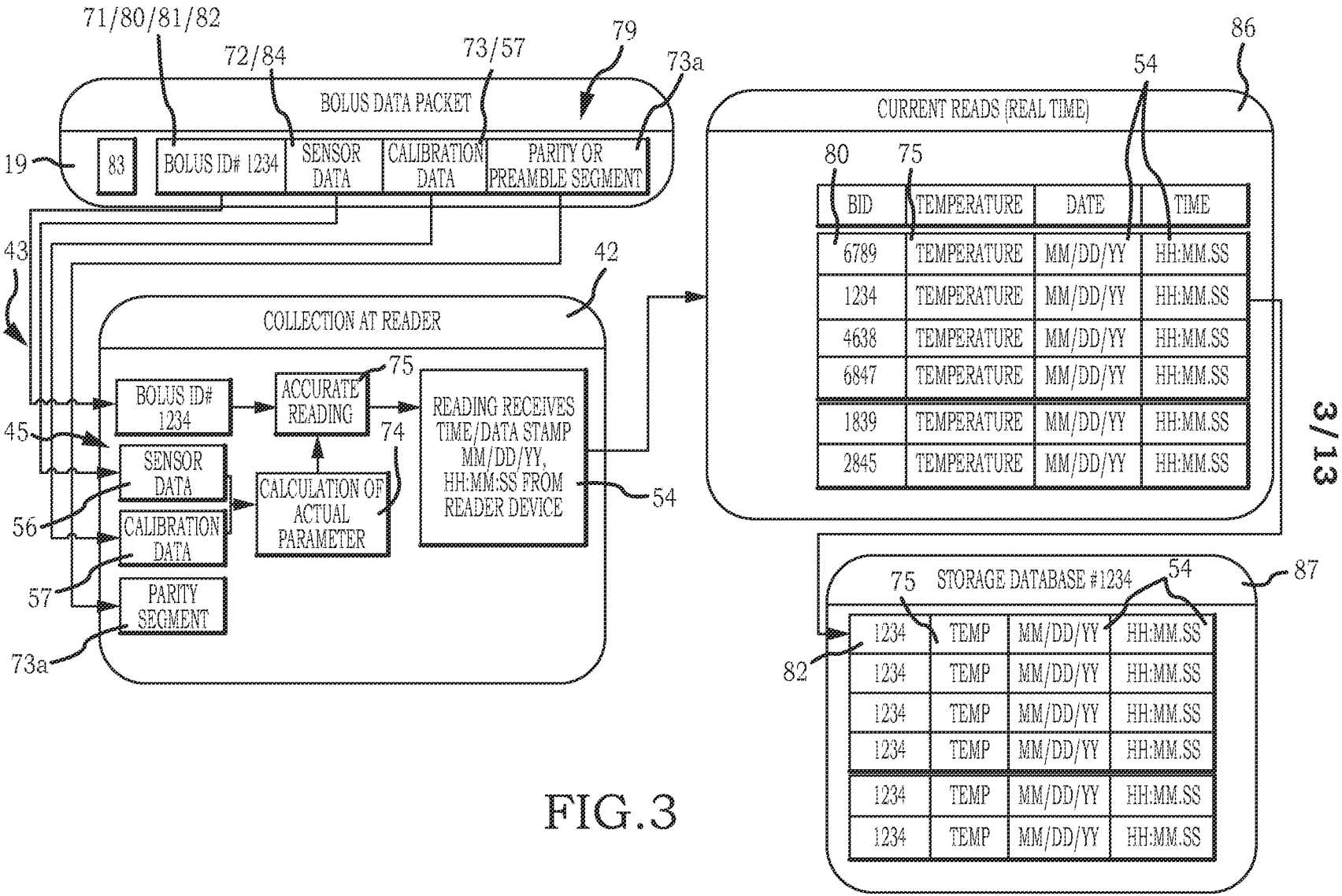

71/80/81/82
72/84
73/57
79
73a
BOLUS DATA PACKET
19
83
BOLUS ID# 1234
SENSOR DATA
CALIBRATION DATA
PARITY OR PREAMBLE SEGMENT
43
42
COLLECTION AT READER
BOLUS ID# 1234
ACCURATE READING
75
READING RECEIVES TIME/DATA STAMP MM/DD/YY, HH:MM:SS FROM READER DEVICE
45
SENSOR DATA
74
CALCULATION OF ACTUAL PARAMETER
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

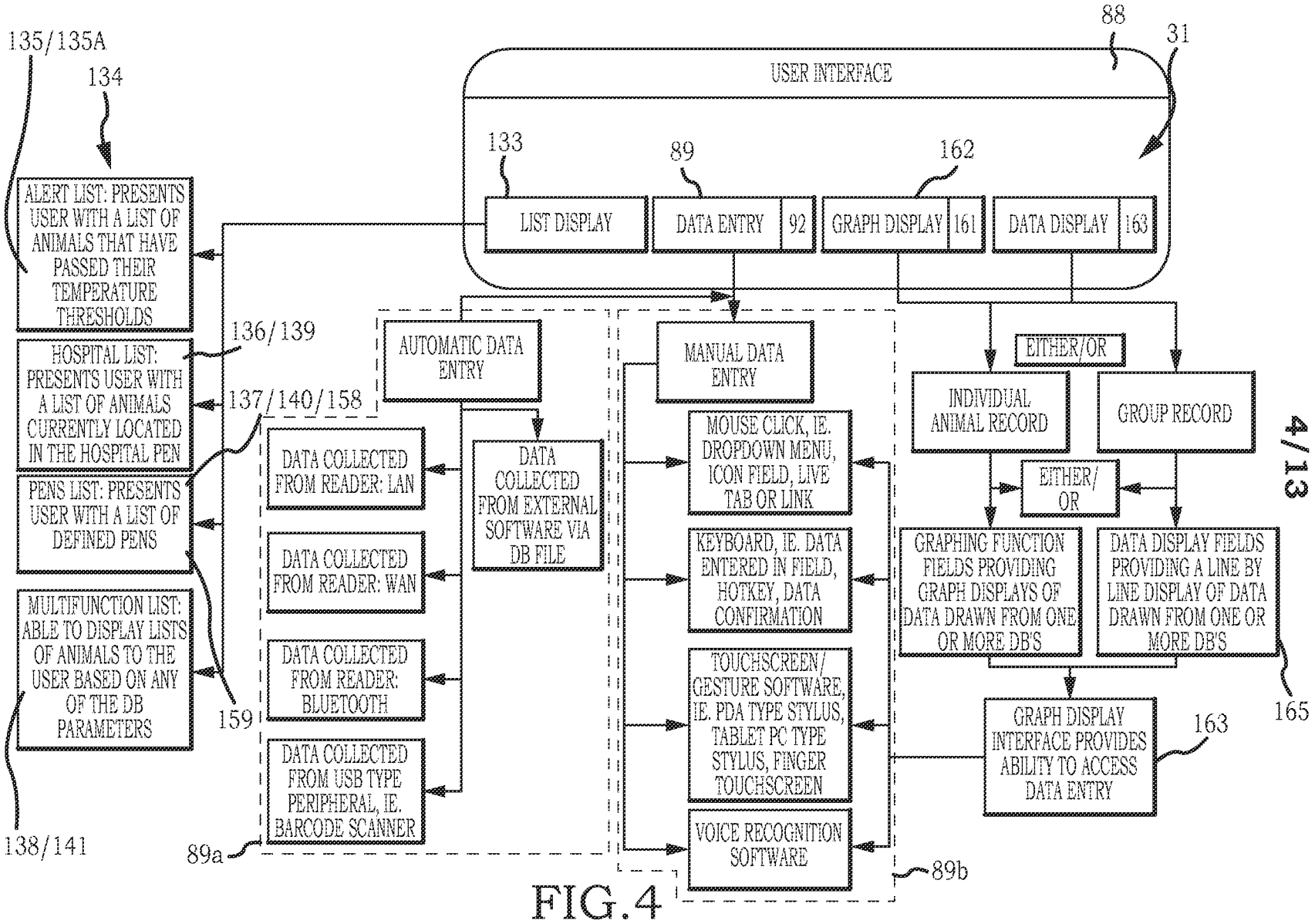

135/135A
134
88
31
USER INTERFACE
133
89
162
LIST DISPLAY
DATA ENTRY
92
GRAPH DISPLAY
161
DATA DISPLAY
163
ALERT LIST: PRESENTS USER WITH A LIST OF ANIMALS THAT HAVE PASSED THEIR TEMPERATURE THRESHOLDS
136/139
HOSPITAL LIST: PRESENTS USER WITH A LIST OF ANIMALS CURRENTLY LOCATED IN THE HOSPITAL PEN
137/140/158
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

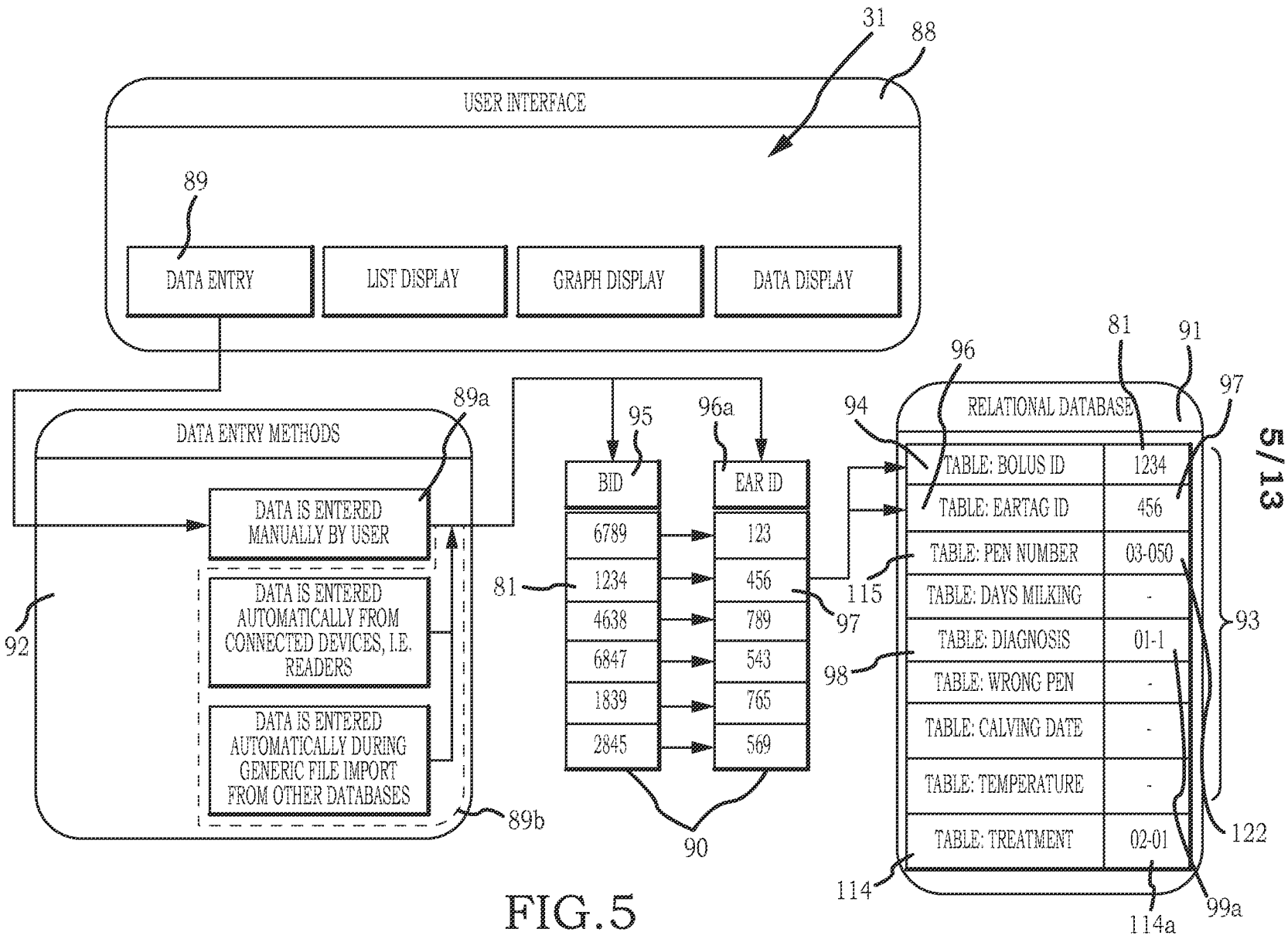

31
88
USER INTERFACE
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
89a
DATA ENTRY METHODS
DATA IS ENTERED MANUALLY BY USER
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS
DATA IS ENTERED AUTOMATICALLY DURING GENERIC FILE IMPORT FROM OTHER DATABASES
89b
92
95
96a
BID
EAR ID
6789
123
1234
456
4638
789
6847
543
1839
765
2845
569
81
97
90
96
94
81
91
97
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

5/13

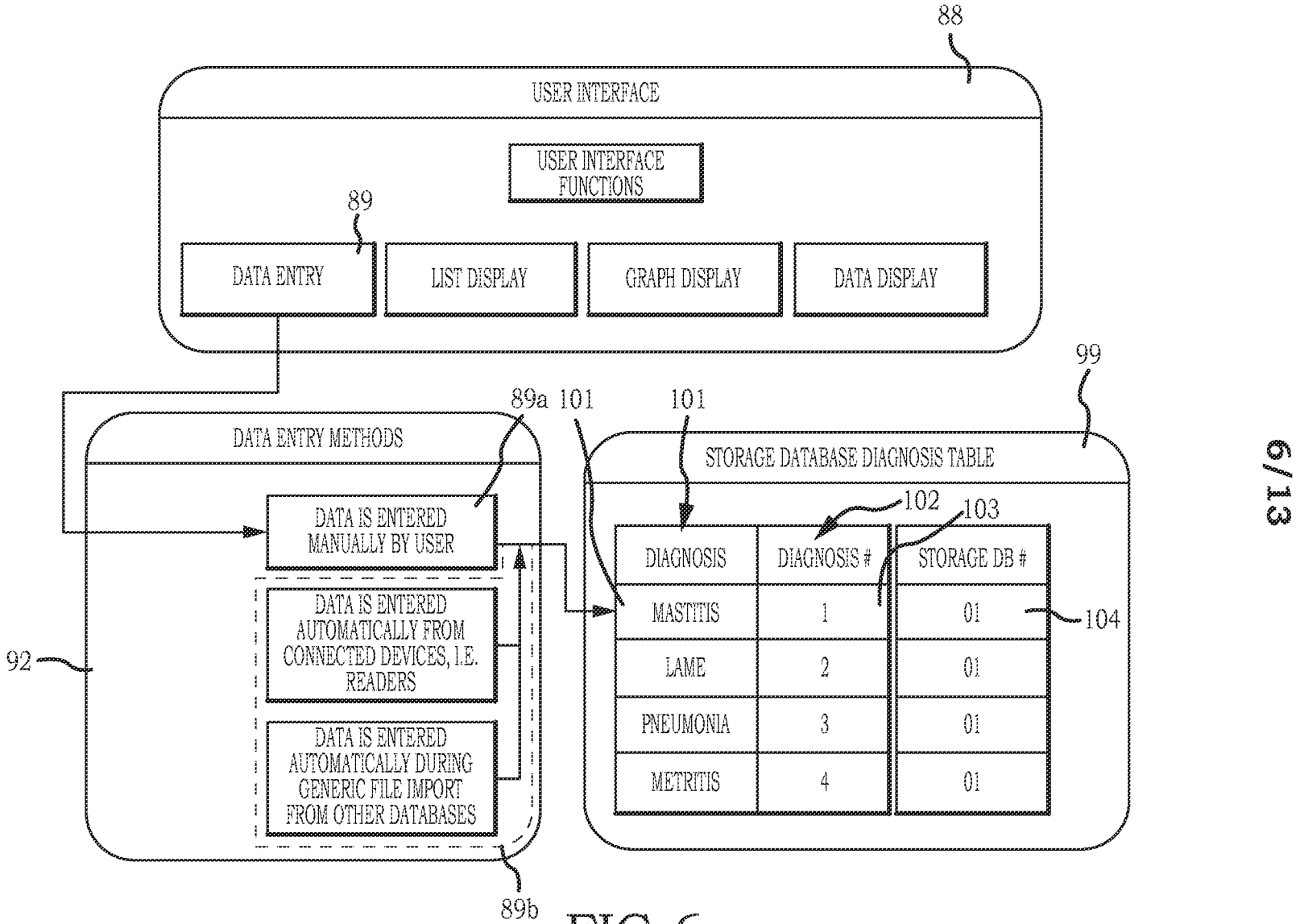
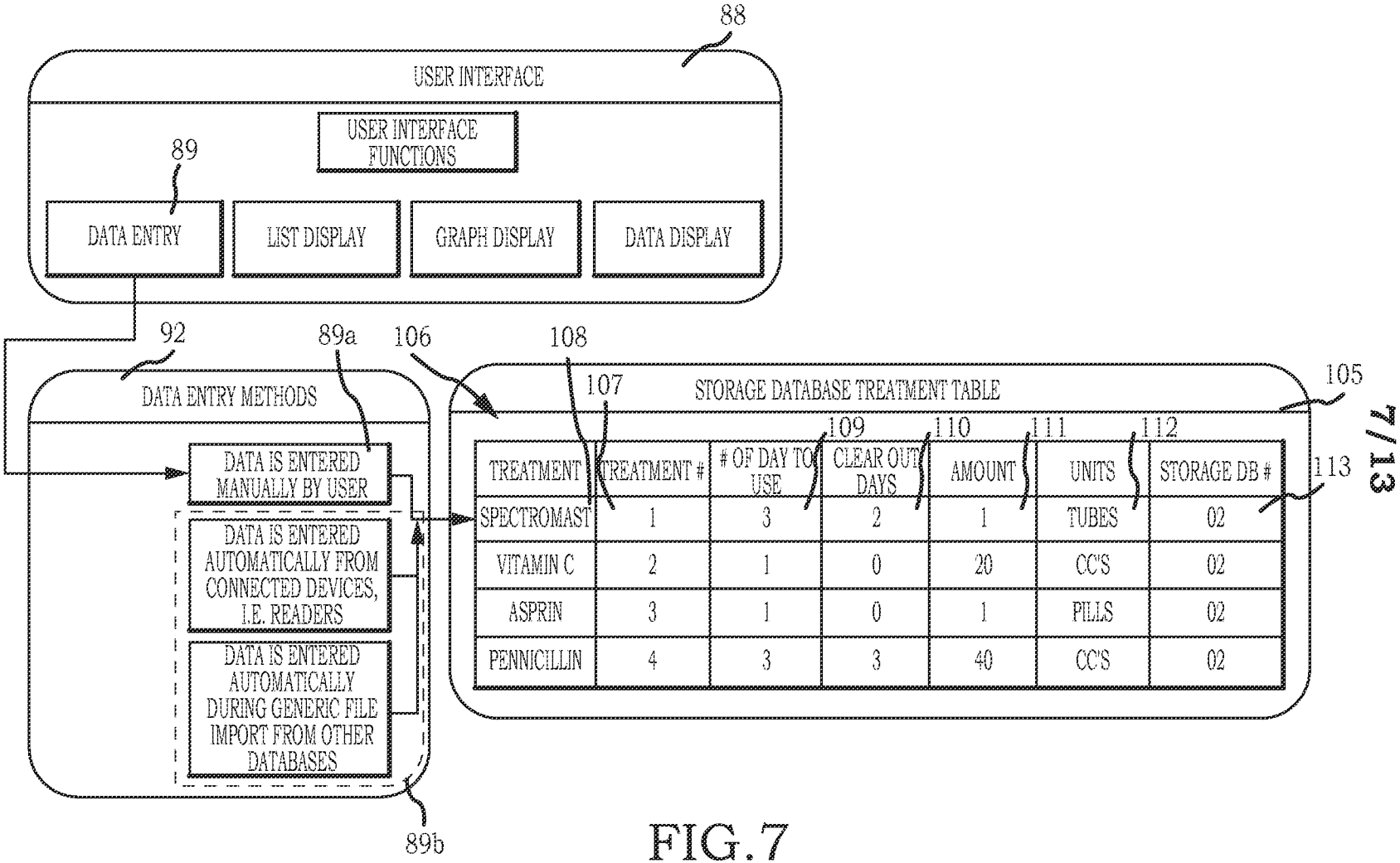

88
USER INTERFACE
USER INTERFACE FUNCTIONS
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
99
89a
101
101
DATA ENTRY METHODS
STORAGE DATABASE DIAGNOSIS TABLE
102
103
DATA IS ENTERED MANUALLY BY USER
DIAGNOSIS
DIAGNOSIS #
STORAGE DB #
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS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

FIG.6

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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

7/13

FIG.7

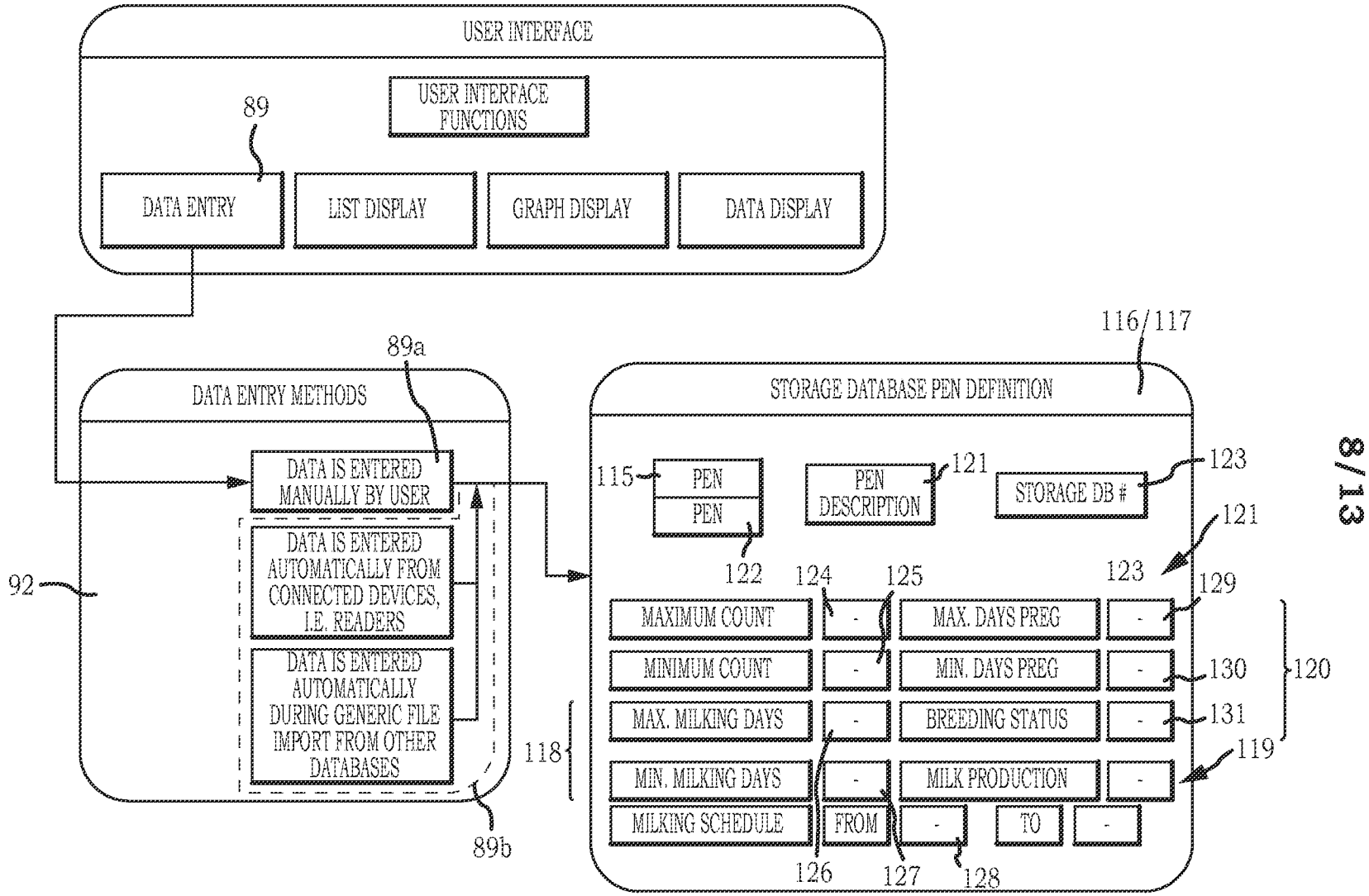

USER INTERFACE
USER INTERFACE FUNCTIONS
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
89a
DATA ENTRY METHODS
DATA IS ENTERED MANUALLY BY USER
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS
DATA IS ENTERED AUTOMATICALLY DURING GENERIC FILE IMPORT FROM OTHER DATABASES
92
89b
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

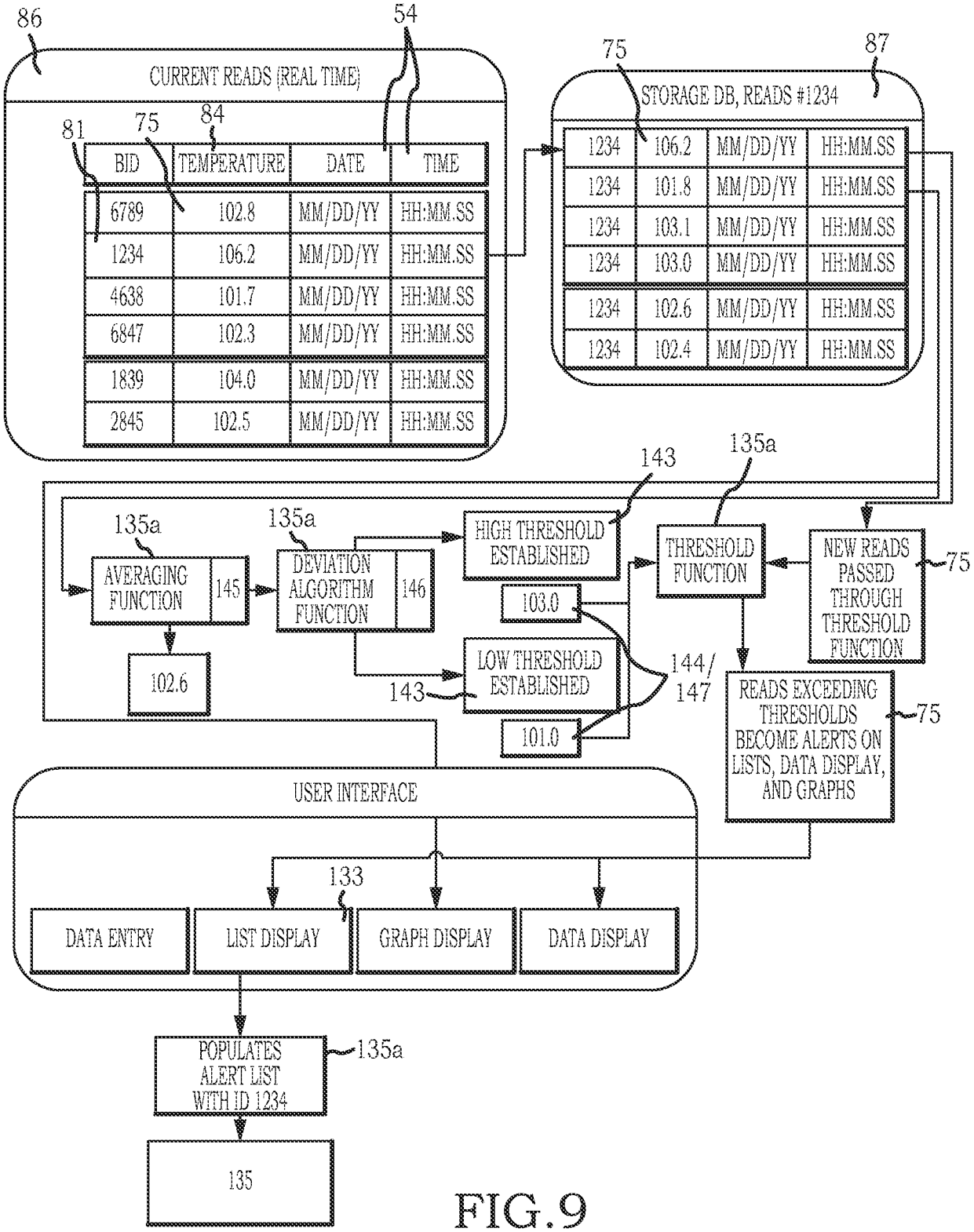

86
54
CURRENT READS (REAL TIME)
81
75
84
BID
TEMPERATURE
DATE
TIME
6789 102.8 MM/DD/YY HH:MM.SS
1234 106.2 MM/DD/YY HH:MM.SS
4638 101.7 MM/DD/YY HH:MM.SS
6847 102.3 MM/DD/YY HH:MM.SS
1839 104.0 MM/DD/YY HH:MM.SS
2845 102.5 MM/DD/YY HH:MM.SS
75
87
STORAGE DB, READS #1234
1234 106.2 MM/DD/YY HH:MM.SS
1234 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
DEVIATION ALGORITHM FUNCTION
146
135a
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

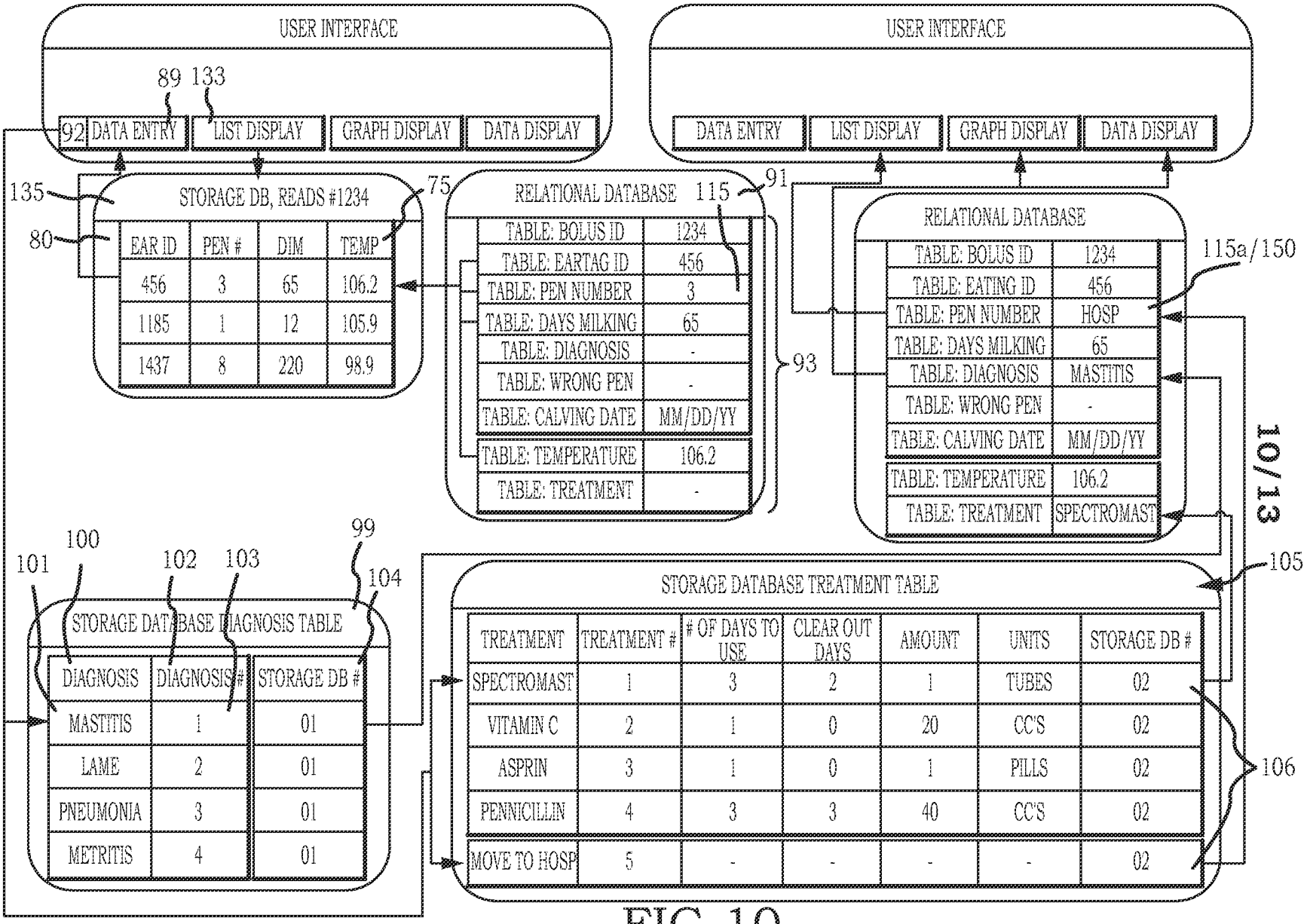

USER INTERFACE
89
133
92
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
USER INTERFACE
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
135
80
STORAGE DB, READS #1234
75
EAR ID
PEN #
DIM
TEMP
456
3
65
106.2
1185
1
12
105.9
1437
8
220
98.9
RELATIONAL DATABASE
115
91
TABLE: BOLUS ID
1234
TABLE: EARTAG 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
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
115a/150
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

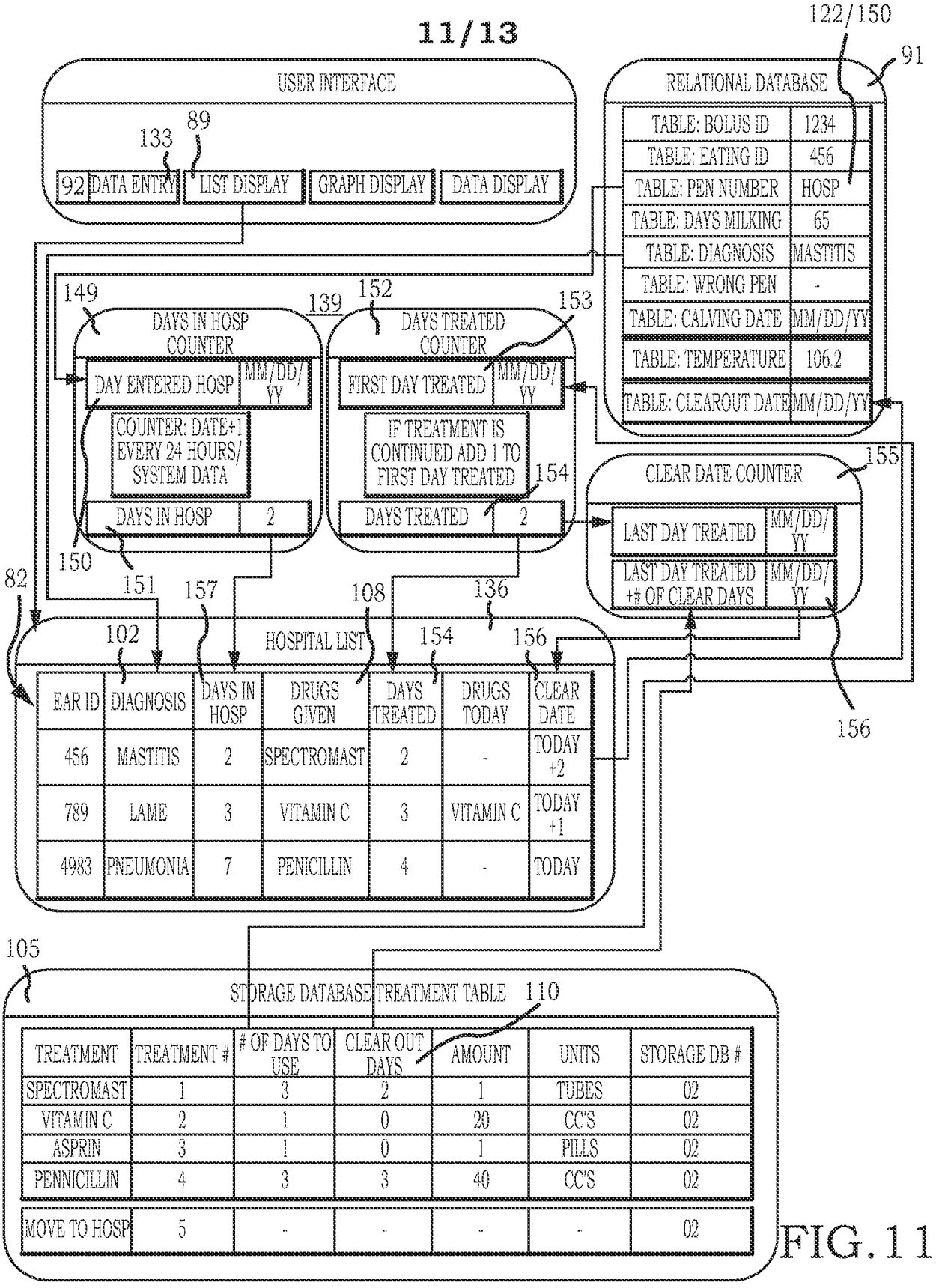

USER INTERFACE
89
133
92
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
122/150
91
RELATIONAL DATABASE
TABLE: BOLUS ID 1234
TABLE: EATING ID 456
TABLE: PEN NUMBER HOSP
TABLE: DAYS MILKING 65
TABLE: DIAGNOSIS MASTITIS
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 106.2
TABLE: 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

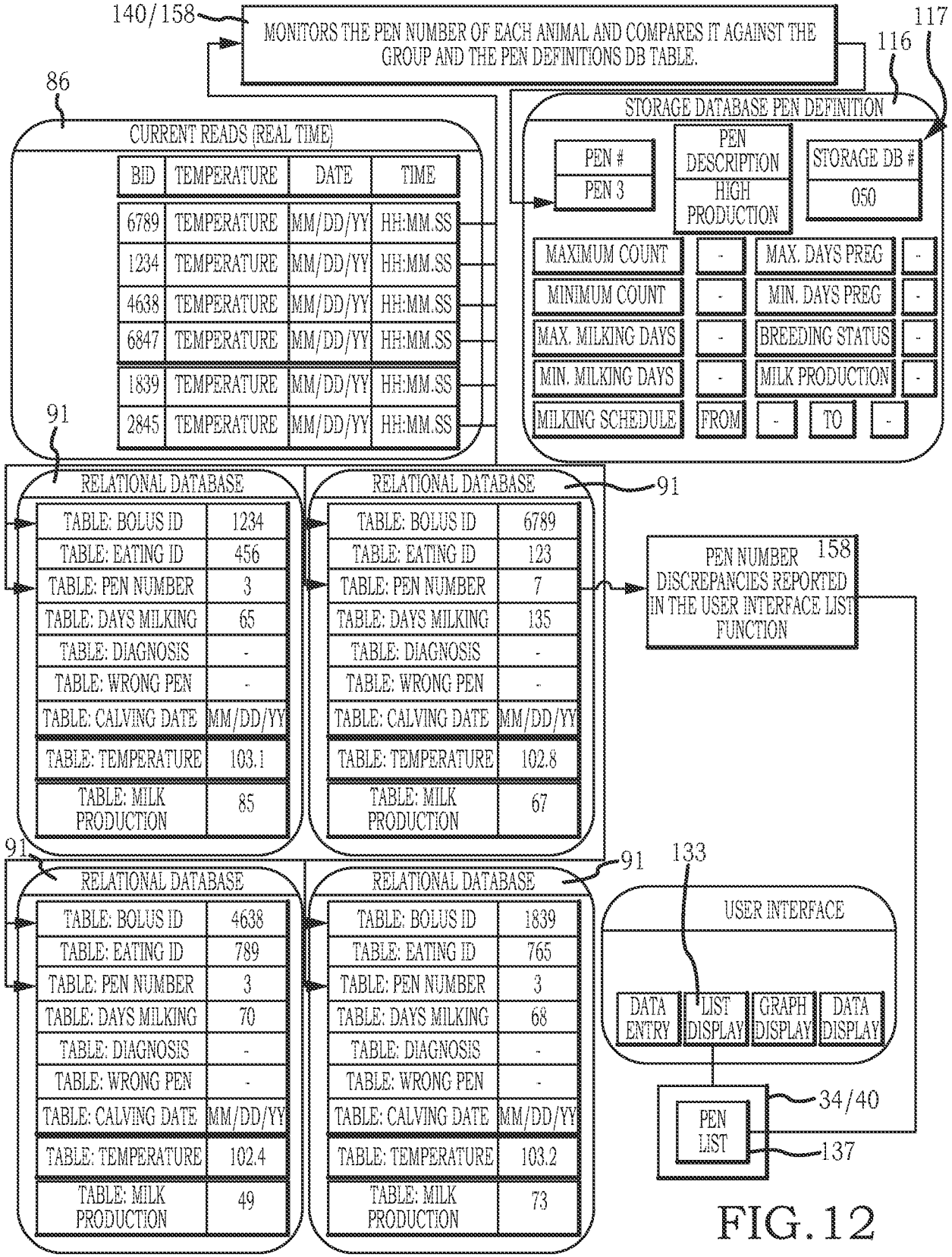

140/158
MONITORS THE PEN NUMBER OF EACH ANIMAL AND COMPARES IT AGAINST THE GROUP AND THE PEN DEFINITIONS DB TABLE.
117
116
86
CURRENT READS (REAL TIME)
BID | TEMPERATURE | DATE | TIME
6789 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1234 | TEMPERATURE | MM/DD/YY | HH:MM.SS
4638 | TEMPERATURE | MM/DD/YY | HH:MM.SS
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

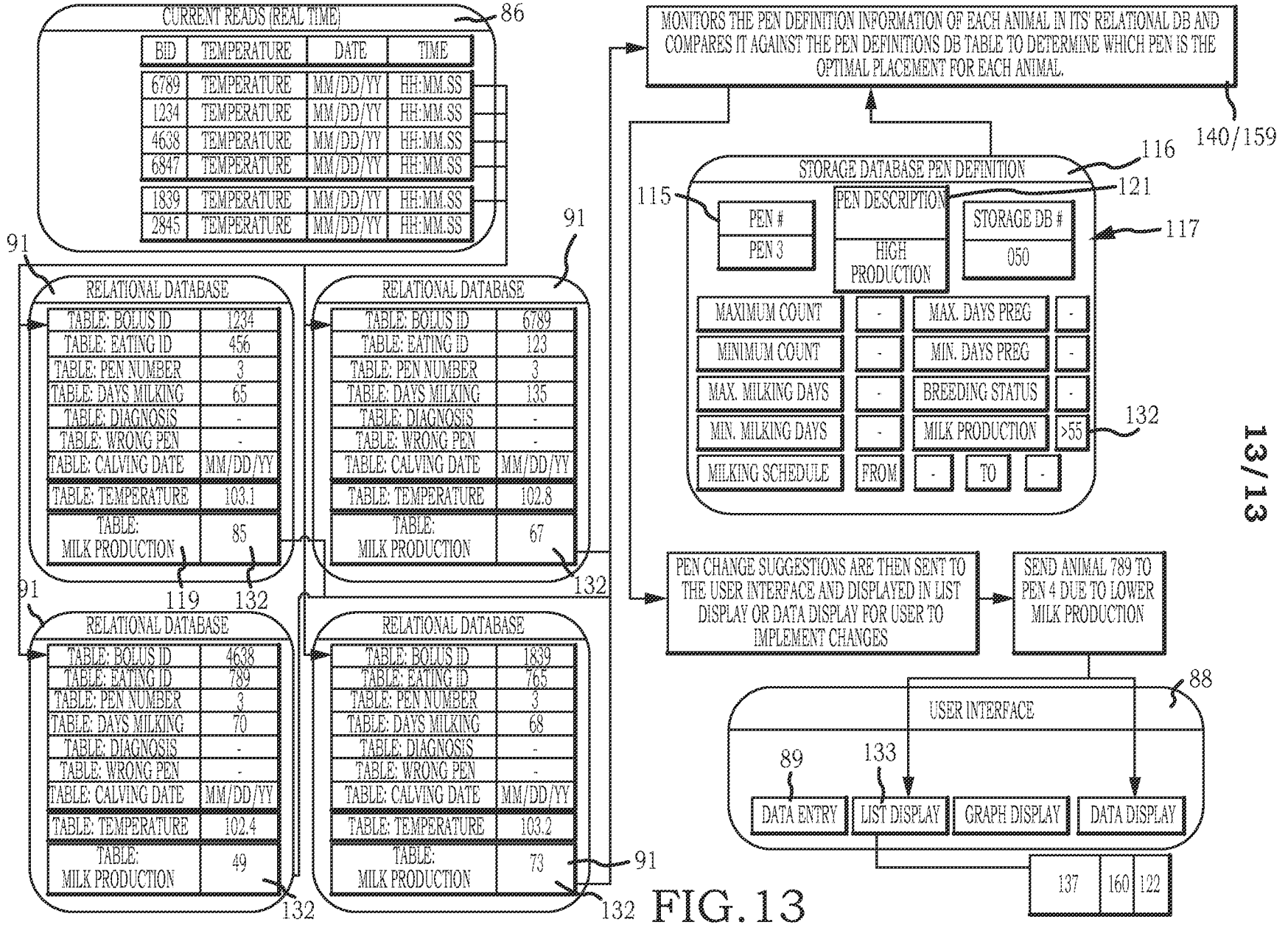

CURRENT READS (REAL TIME)
86
BID | TEMPERATURE | DATE | TIME
6789 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1234 | TEMPERATURE | MM/DD/YY | HH:MM.SS
4638 | TEMPERATURE | MM/DD/YY | HH:MM.SS
6847 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1839 | TEMPERATURE | MM/DD/YY | HH:MM.SS
2845 | TEMPERATURE | MM/DD/YY | HH:MM.SS
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
91
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
121
HIGH PRODUCTION
STORAGE DB #
117
050
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

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

Int'l Application No.: PCT/US2010/002509

Int'l Filing Date: September 14, 2010

Application No.:

Filed:

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.:

Group Art Unit:

Examiner:

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

POWER OF ATTORNEY - INVENTOR

I, Nicholas P. Rettedal, residing at 3737 Landings Dr., Unit #D-14, Fort Collins, Colorado 80525 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 15 day February, 2012

By: _____
Nicholas P. Rettedal, Applicant/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

Int'l Application No.: PCT/US2010/002509

Int'l Filing Date: September 14, 2010

Application No.:

Filed:

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.:

Group Art Unit:

Examiner:

Mail Stop PCT
Commissioner for Patents
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.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 108 of 452

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 15 day of February, 2012

By: _____
Nicholas P. Rettedal, Applicant/Inventor

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 109 of 452

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(10) International Publication Number
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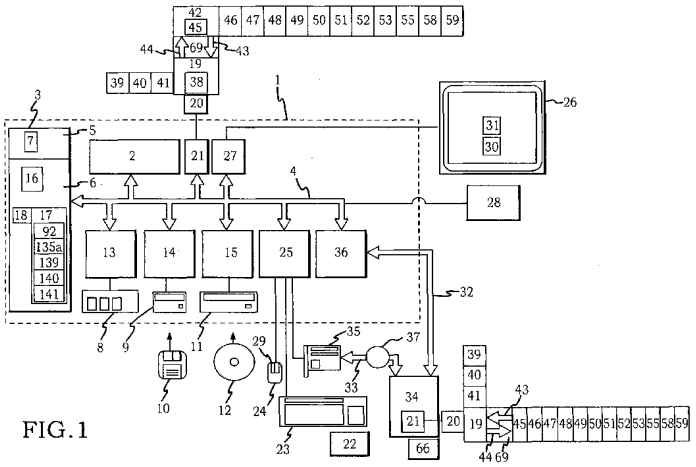


FIG.1

(57) **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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COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM

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-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

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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 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.

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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.

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.

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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.

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

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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.

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

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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.

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

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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 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

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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-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

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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-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

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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 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 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,

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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 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).

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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 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

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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 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

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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).

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

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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 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.

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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 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

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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 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

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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.

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

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(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 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

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(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 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).

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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 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

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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 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

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be understood to 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.

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 subsequent application or continuation, division, or continuation-in-part application thereof, or

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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.

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.

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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.

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.

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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.

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.

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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;

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

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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 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

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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.

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

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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 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

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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.

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.

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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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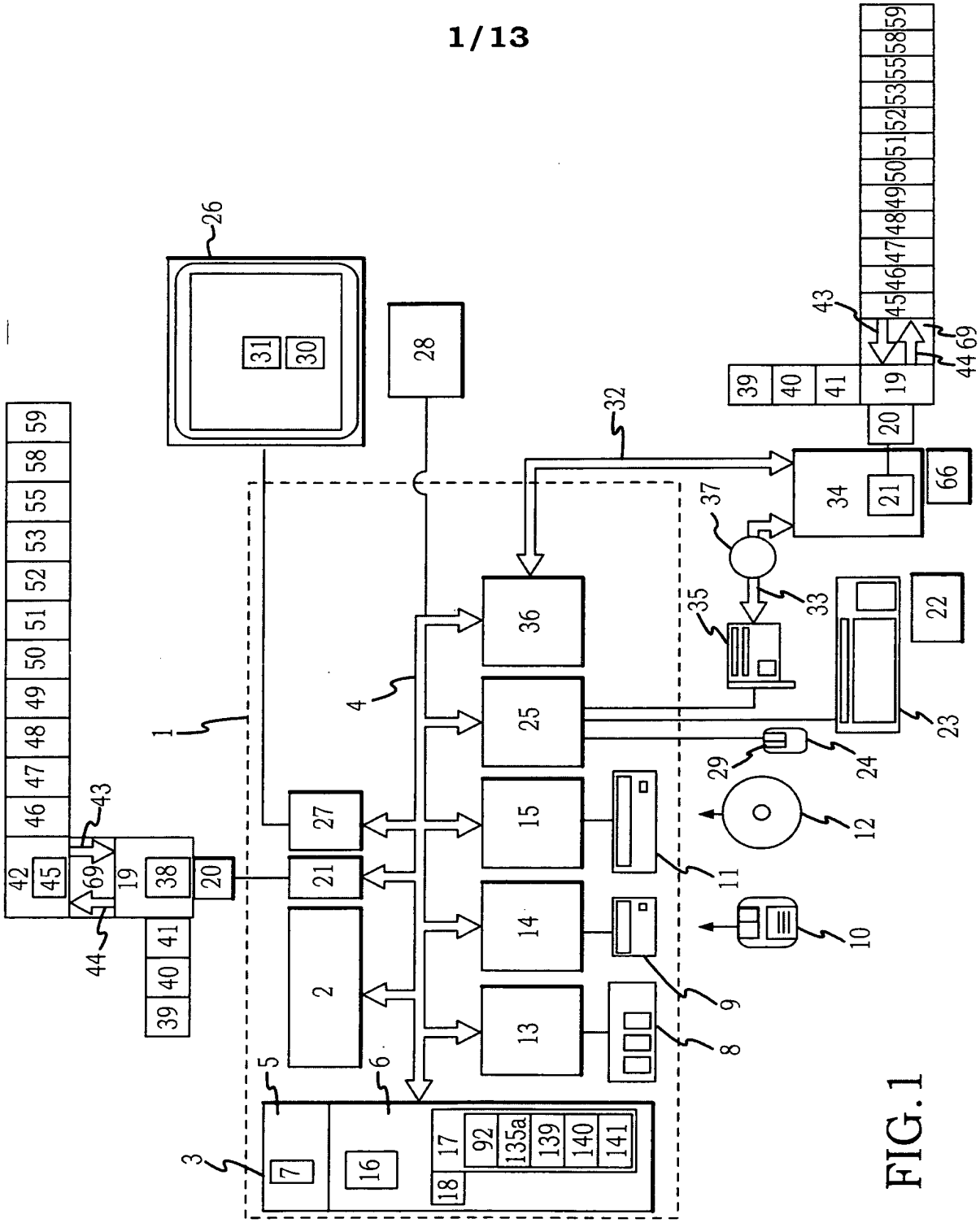

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66
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92
135a
139
140
141

FIG. 1

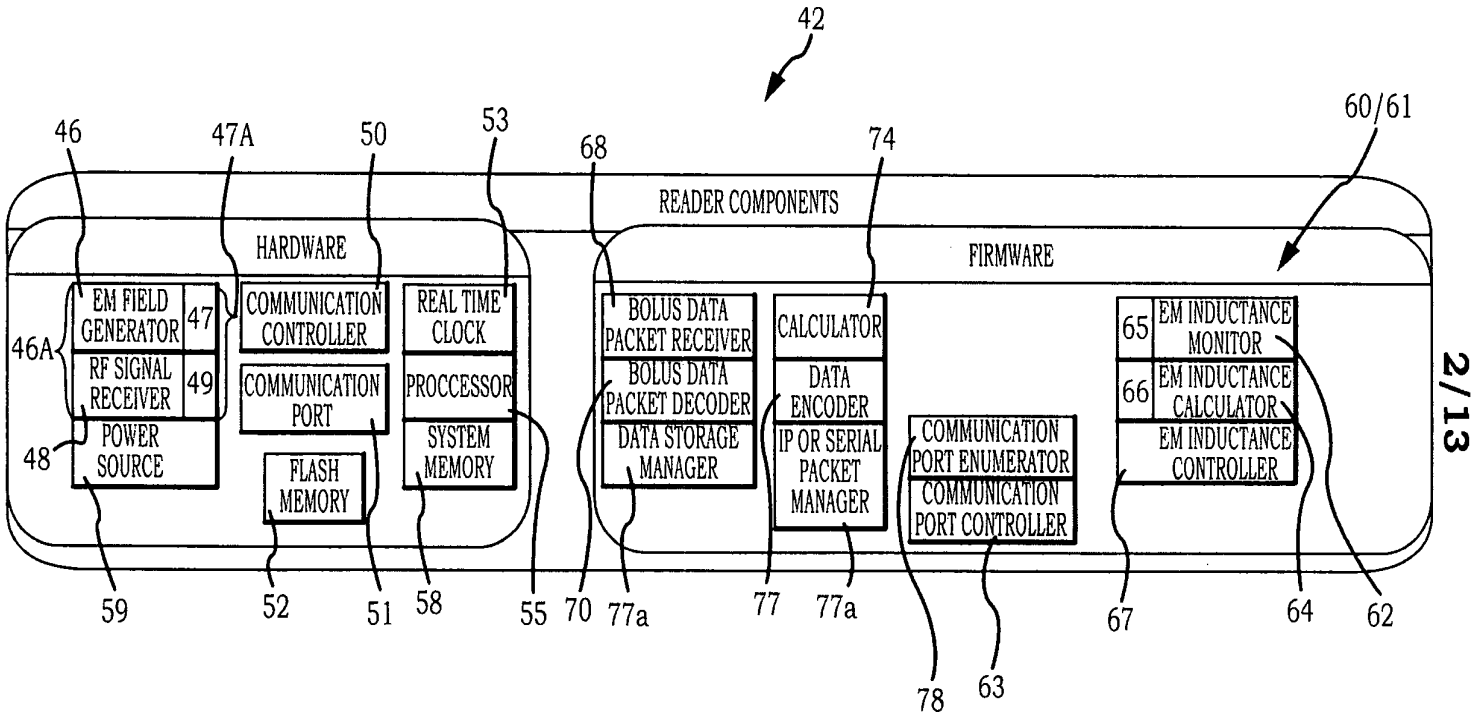

42
46
47A
50
53
68
74
60/61
READER COMPONENTS
HARDWARE
FIRMWARE
EM FIELD GENERATOR
47
46A
RF SIGNAL RECEIVER
49
POWER SOURCE
48
COMMUNICATION CONTROLLER
COMMUNICATION PORT
FLASH MEMORY
REAL TIME CLOCK
PROCCESSOR
SYSTEM MEMORY
BOLUS DATA PACKET RECEIVER
BOLUS DATA PACKET DECODER
DATA STORAGE MANAGER
CALCULATOR
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

FIG.2

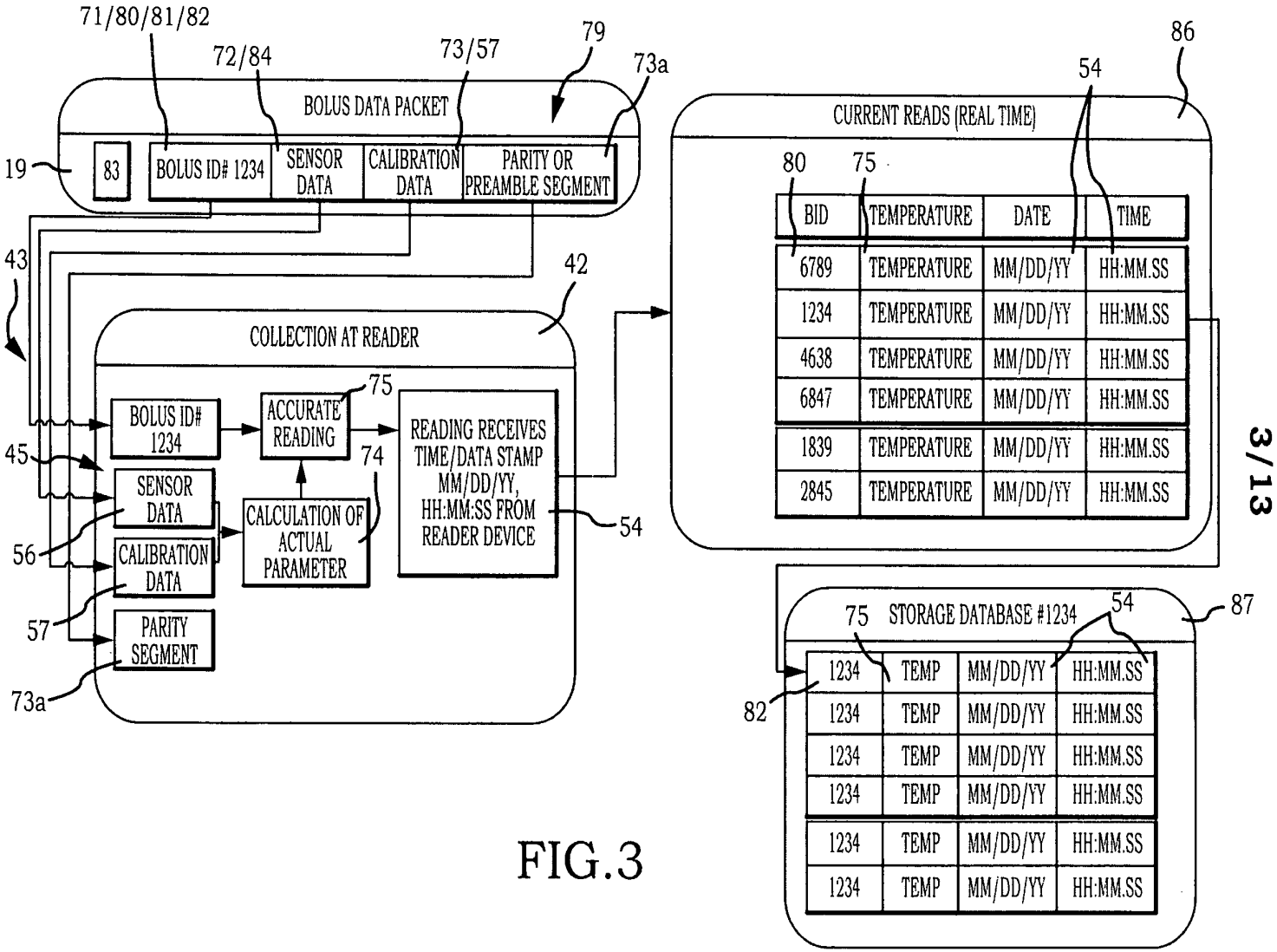

71/80/81/82
72/84
73/57
79
73a
86
54
BOLUS DATA PACKET
19
83
BOLUS ID# 1234
SENSOR DATA
CALIBRATION DATA
PARITY OR PREAMBLE SEGMENT
CURRENT READS (REAL TIME)
80
75
BID
TEMPERATURE
DATE
TIME
6789 TEMPERATURE MM/DD/YY HH:MM.SS
1234 TEMPERATURE MM/DD/YY HH:MM.SS
4638 TEMPERATURE MM/DD/YY HH:MM.SS
6847 TEMPERATURE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

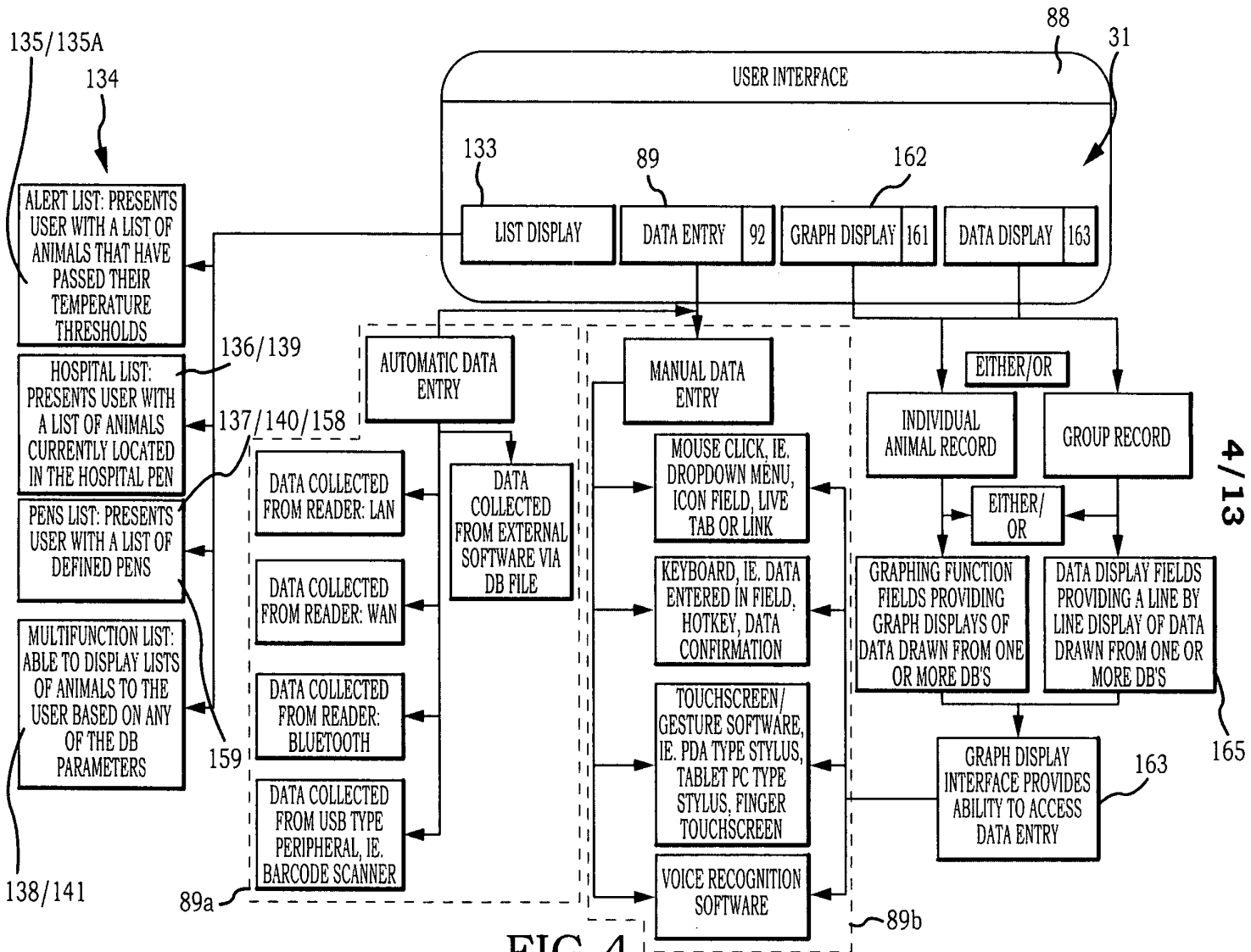

135/135A
134
88
31
USER INTERFACE
133
89
162
LIST DISPLAY
DATA ENTRY
92
GRAPH DISPLAY
161
DATA DISPLAY
163
ALERT LIST: PRESENTS USER WITH A LIST OF ANIMALS THAT HAVE PASSED THEIR TEMPERATURE THRESHOLDS
136/139
HOSPITAL LIST: PRESENTS USER WITH A LIST OF ANIMALS CURRENTLY LOCATED IN THE HOSPITAL PEN
137/140/158
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
89a
DATA COLLECTED FROM EXTERNAL SOFTWARE VIA DB FILE
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

FIG.4

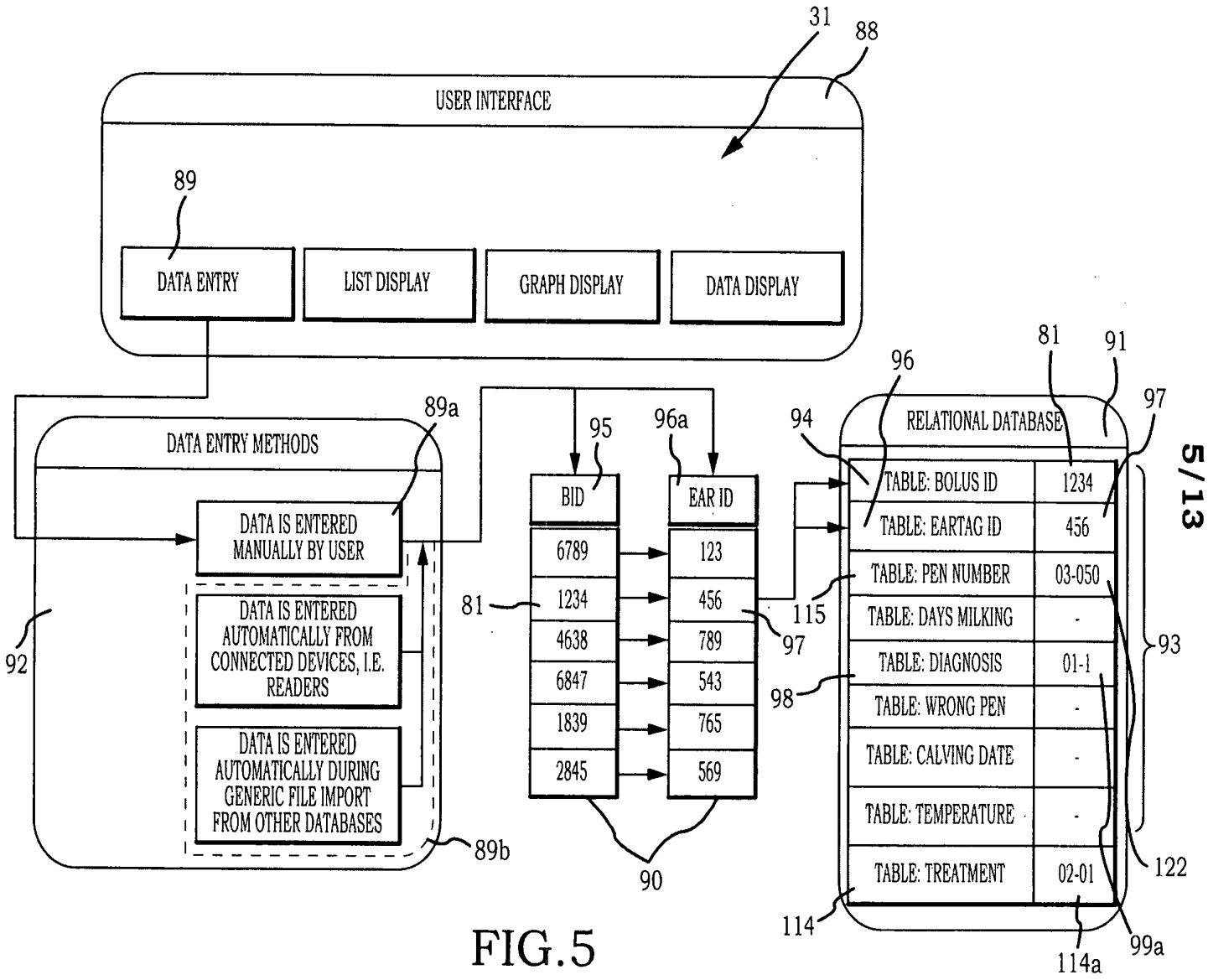

31
88
USER INTERFACE
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
89a
DATA ENTRY METHODS
DATA IS ENTERED MANUALLY BY USER
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS
DATA IS ENTERED AUTOMATICALLY DURING GENERIC FILE IMPORT FROM OTHER DATABASES
92
89b
95
96a
BID
EAR ID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

FIG.5

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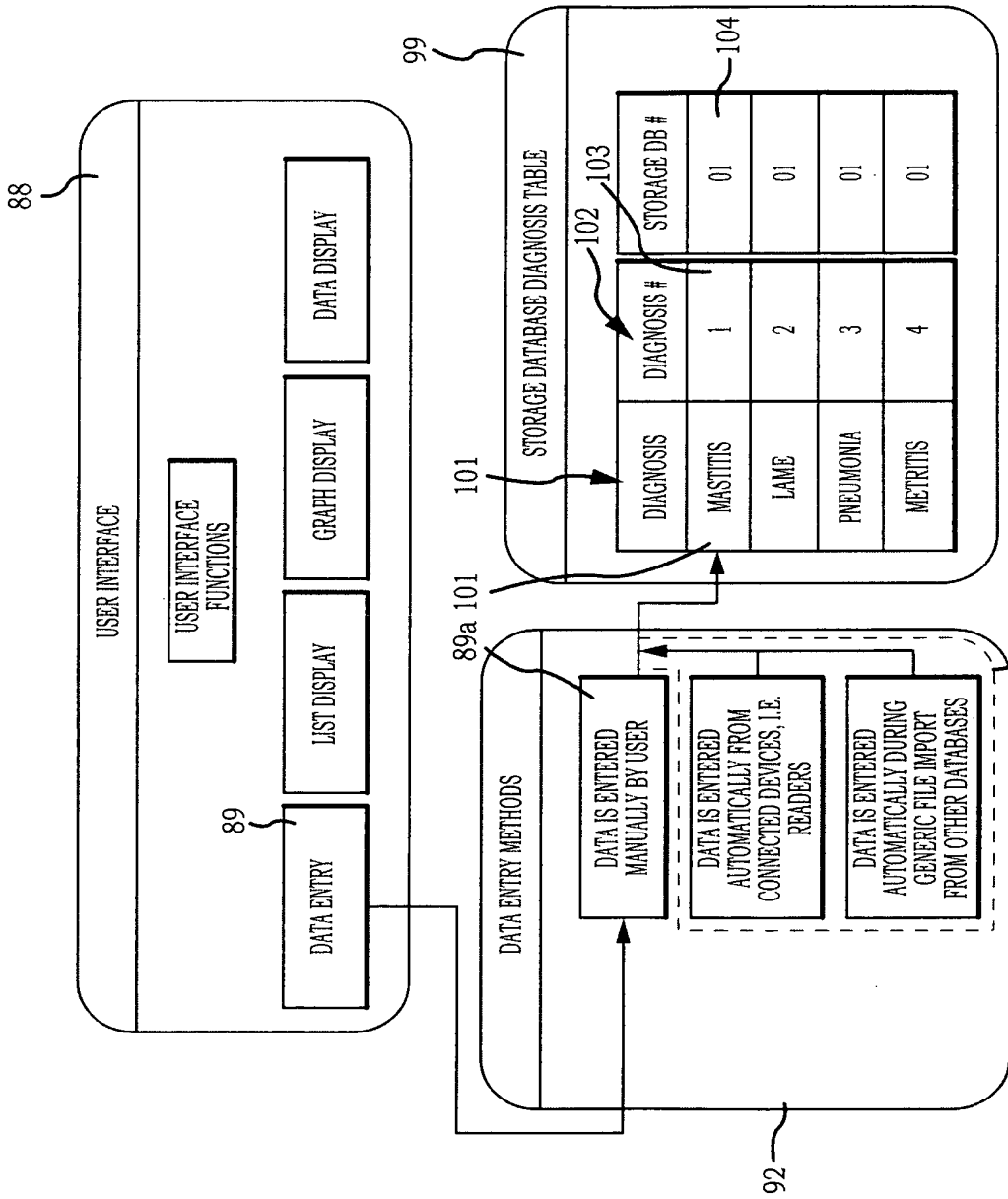
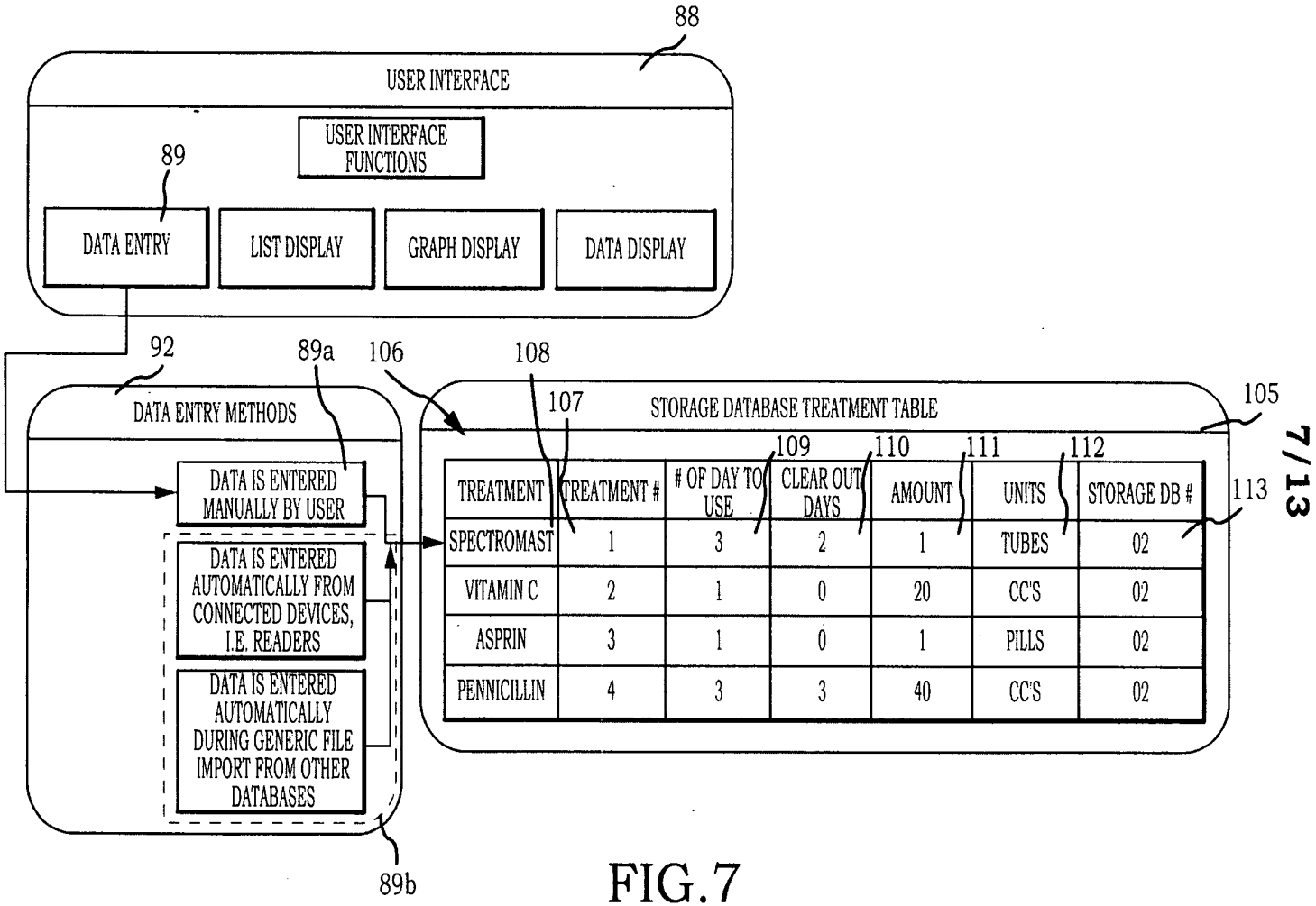


FIG.6



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

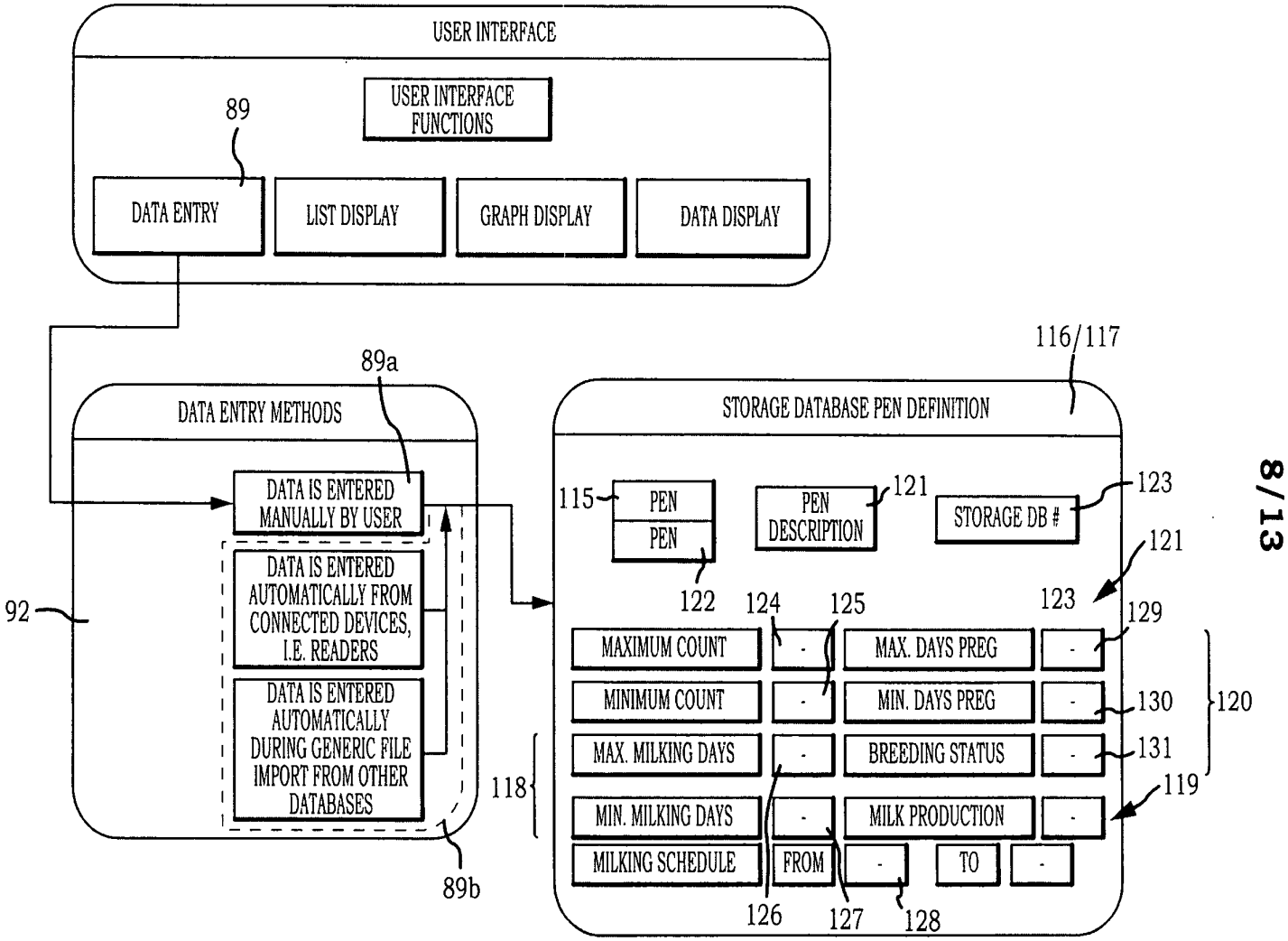

USER INTERFACE
USER INTERFACE FUNCTIONS
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
89a
DATA ENTRY METHODS
DATA IS ENTERED MANUALLY BY USER
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS
DATA IS ENTERED AUTOMATICALLY DURING GENERIC FILE IMPORT FROM OTHER DATABASES
92
89b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

FIG.8

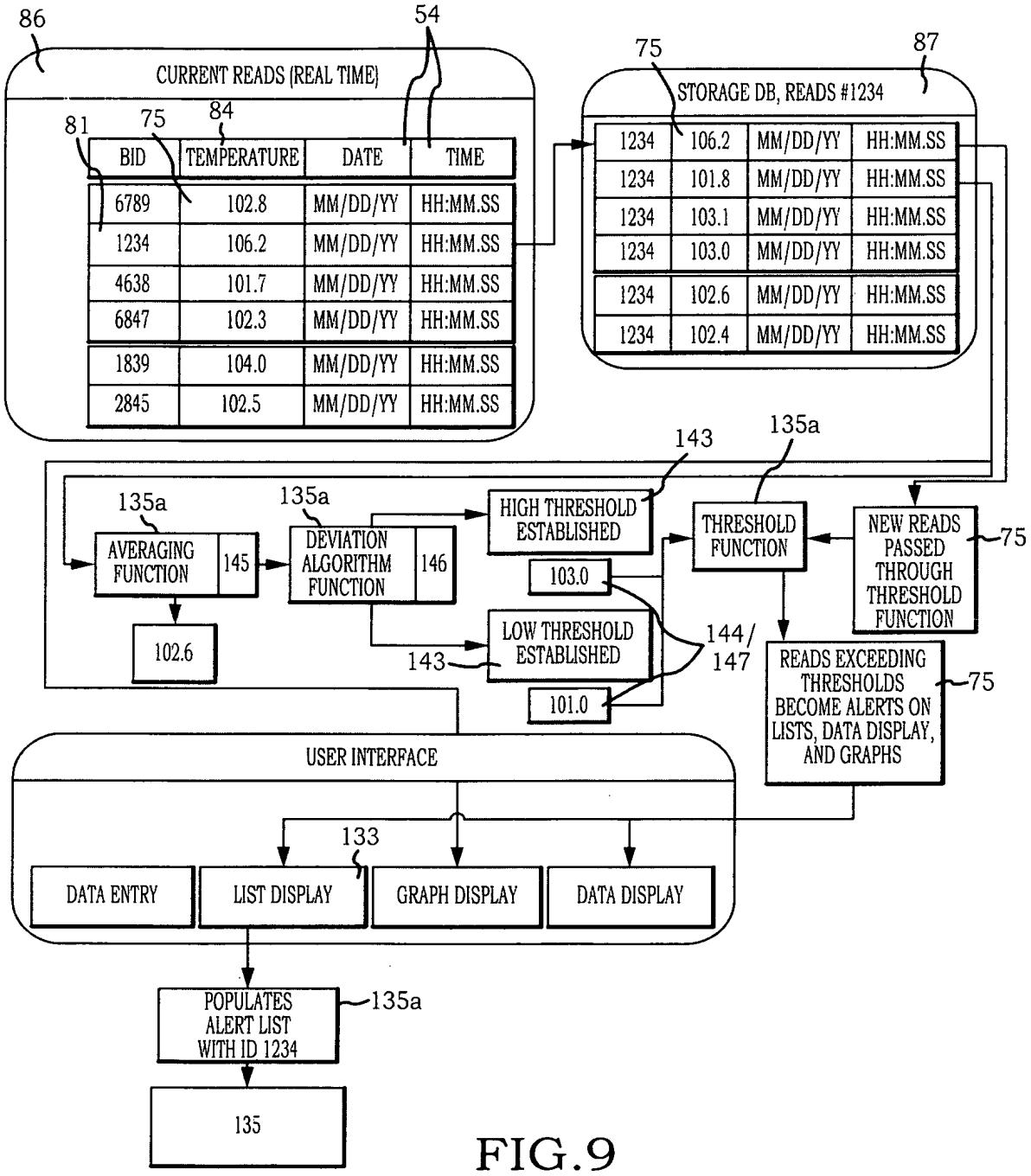

86
54
CURRENT READS (REAL TIME)
81
75
84
BID
TEMPERATURE
DATE
TIME
6789 102.8 MM/DD/YY HH:MM.SS
1234 106.2 MM/DD/YY HH:MM.SS
4638 101.7 MM/DD/YY HH:MM.SS
6847 102.3 MM/DD/YY HH:MM.SS
1839 104.0 MM/DD/YY HH:MM.SS
2845 102.5 MM/DD/YY HH:MM.SS
75
87
STORAGE DB, READS #1234
1234 106.2 MM/DD/YY HH:MM.SS
1234 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
135a
AVERAGING FUNCTION 145
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
101.0
READS EXCEEDING THRESHOLDS BECOME ALERTS ON LISTS, DATA DISPLAY, AND GRAPHS
75
USER INTERFACE
133
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
POPULATES ALERT LIST WITH ID 1234
135a
135

FIG.9

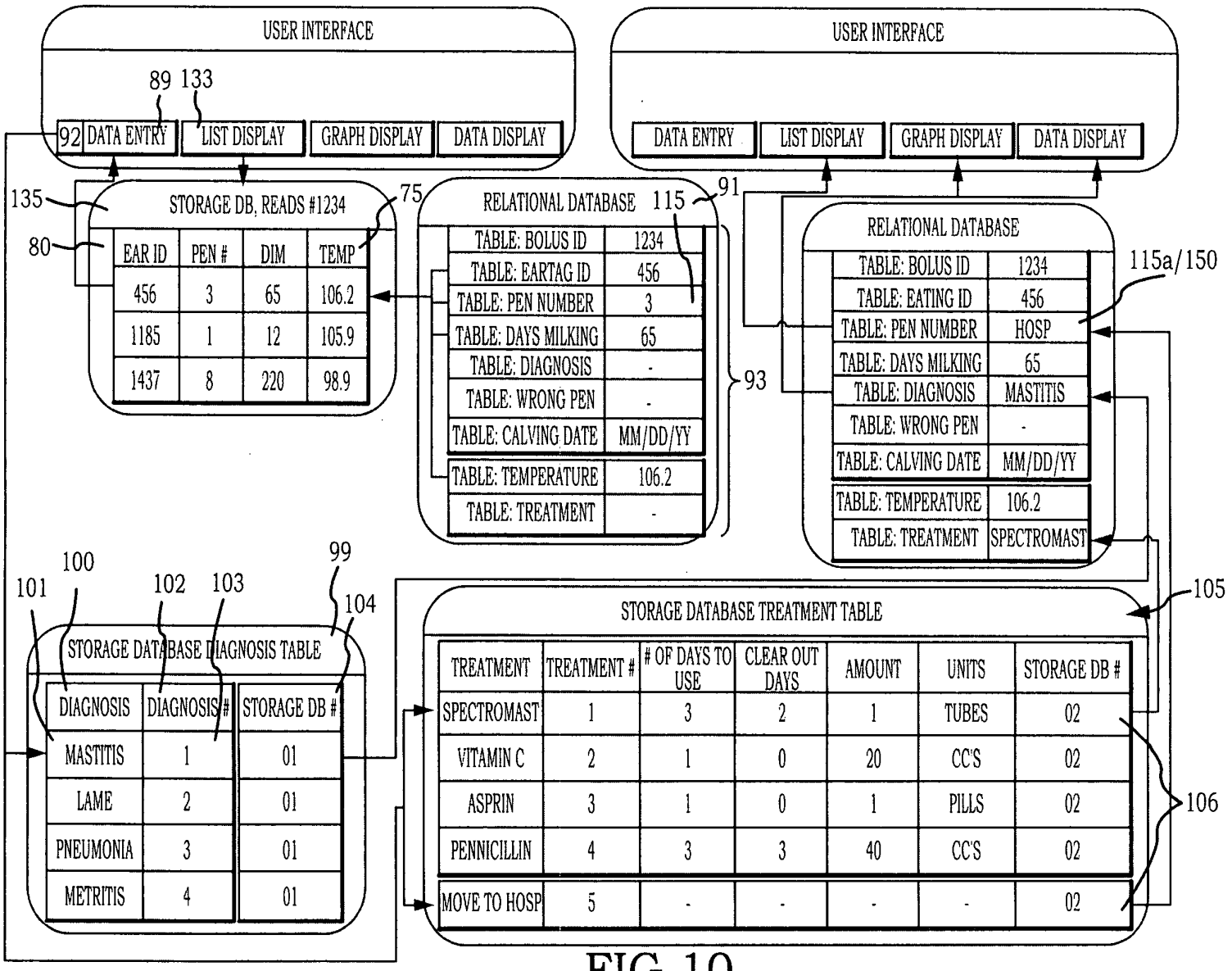

USER INTERFACE
89 133
92 DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
USER INTERFACE
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
135
80
STORAGE DB, READS #1234
75
EAR ID | PEN # | DIM | TEMP
456 | 3 | 65 | 106.2
1185 | 1 | 12 | 105.9
1437 | 8 | 220 | 98.9
RELATIONAL DATABASE
115
91
TABLE: 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
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

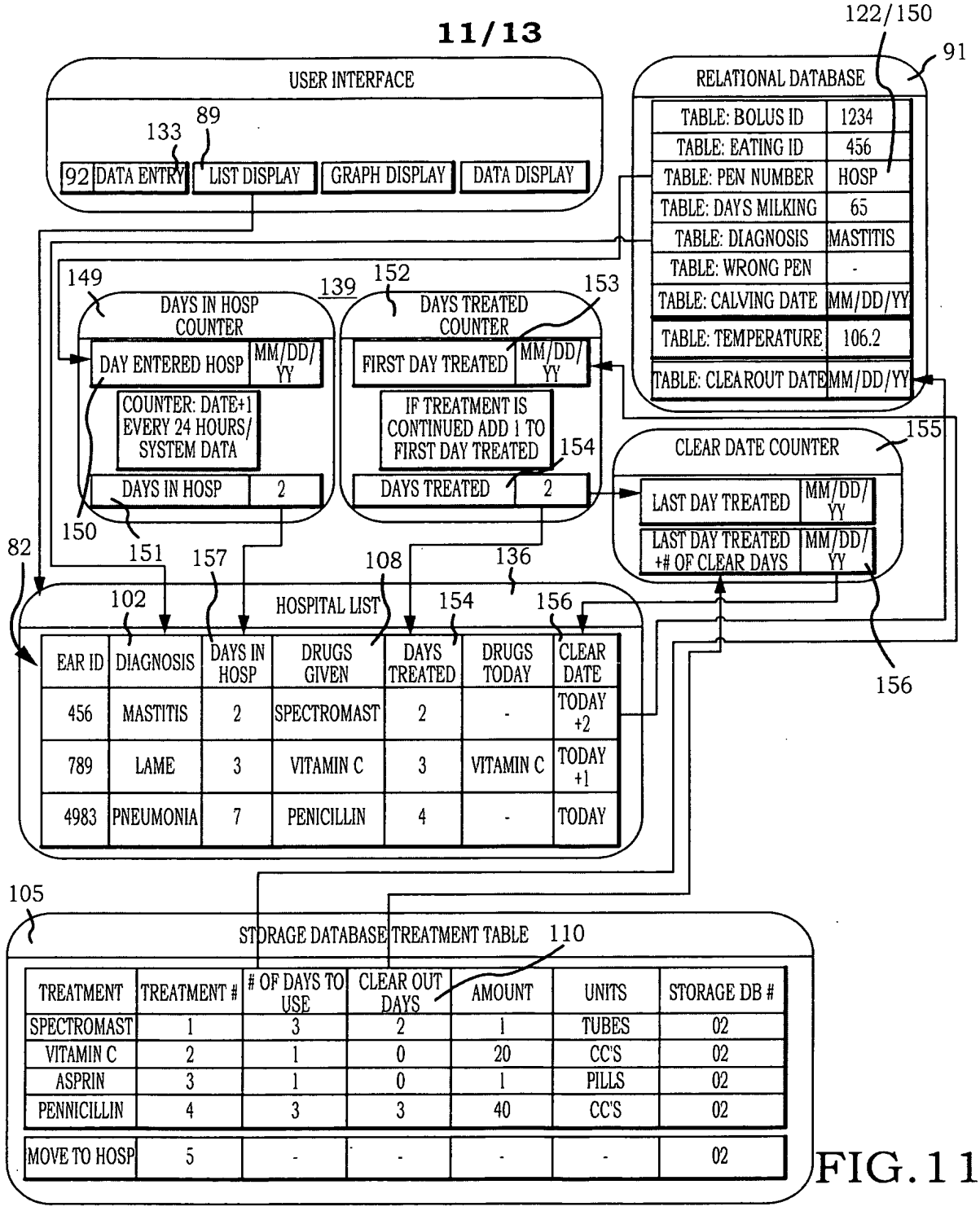

USER INTERFACE
89
133
92 DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
122/150
91
RELATIONAL DATABASE
TABLE: BOLUS ID 1234
TABLE: EATING ID 456
TABLE: PEN NUMBER HOSP
TABLE: DAYS MILKING 65
TABLE: DIAGNOSIS MASTITIS
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 106.2
TABLE: 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
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
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

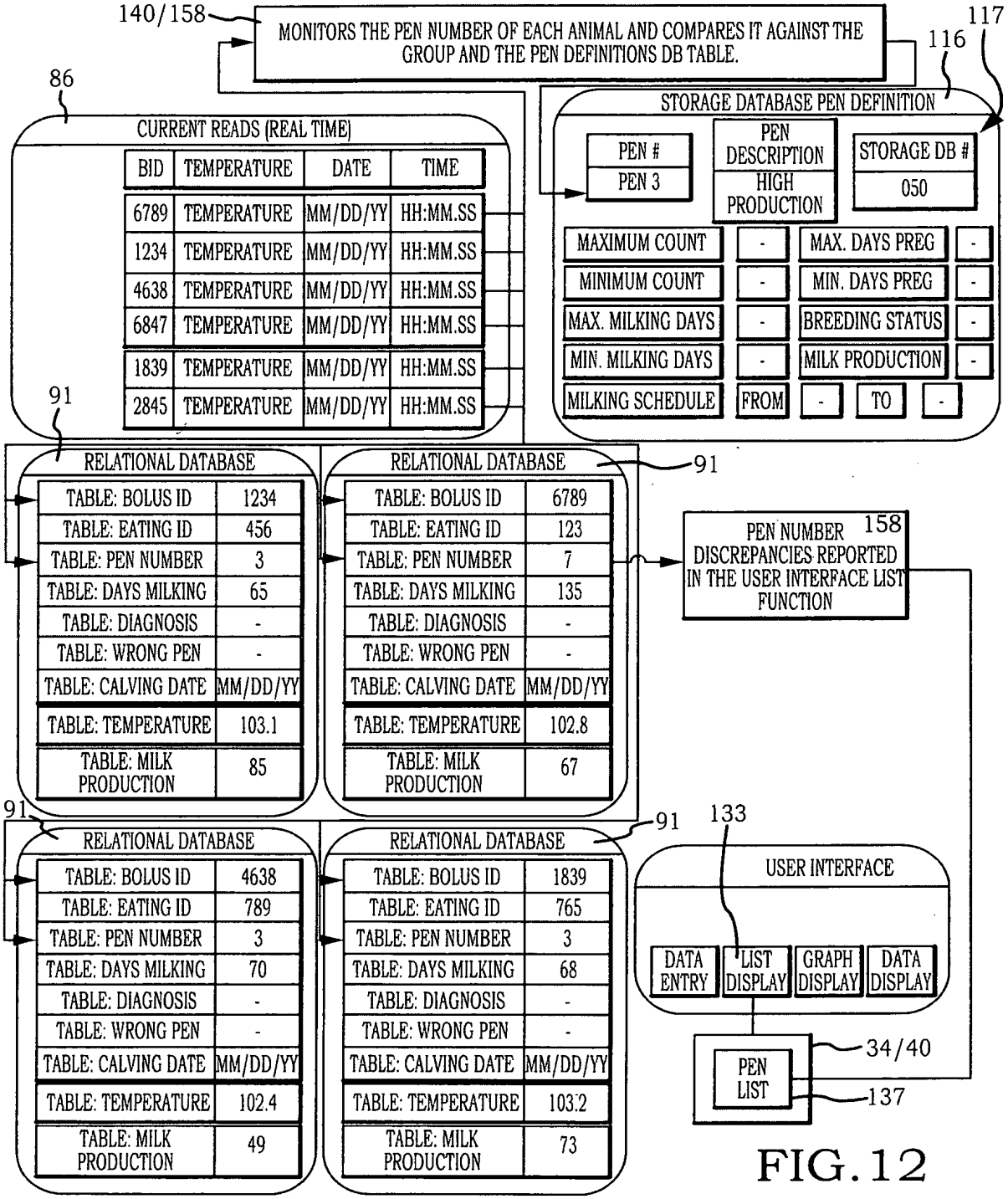

140/158
MONITORS THE PEN NUMBER OF EACH ANIMAL AND COMPARES IT AGAINST THE GROUP AND THE PEN DEFINITIONS DB TABLE.
117
116
86
CURRENT READS (REAL TIME)
BID | TEMPERATURE | DATE | TIME
6789 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1234 | TEMPERATURE | MM/DD/YY | HH:MM.SS
4638 | TEMPERATURE | MM/DD/YY | HH:MM.SS
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

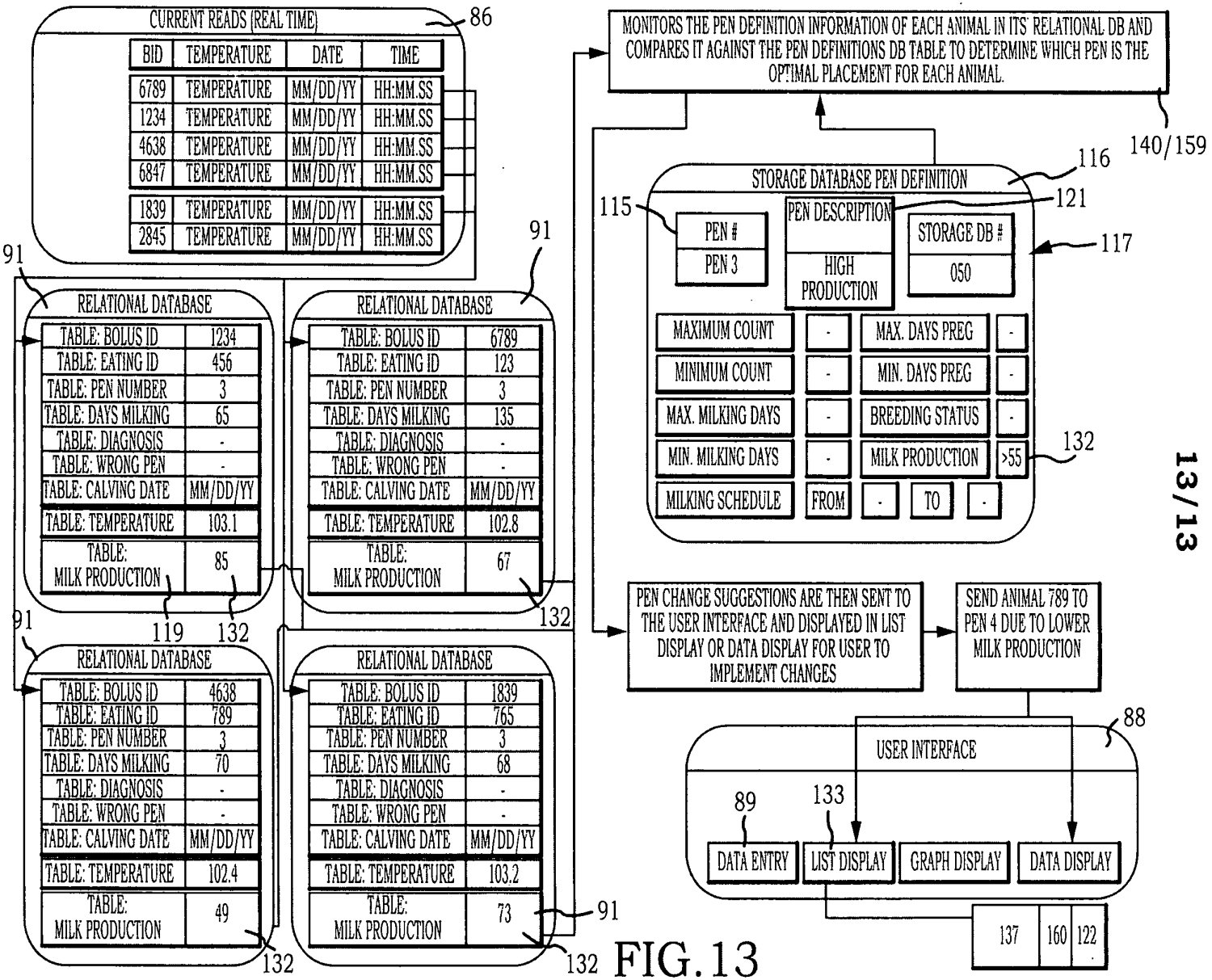

CURRENT READS (REAL TIME)
86
BID | TEMPERATURE | DATE | TIME
6789 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1234 | TEMPERATURE | MM/DD/YY | HH:MM.SS
4638 | TEMPERATURE | MM/DD/YY | HH:MM.SS
6847 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1839 | TEMPERATURE | MM/DD/YY | HH:MM.SS
2845 | TEMPERATURE | MM/DD/YY | HH:MM.SS
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
91
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
121
HIGH PRODUCTION
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

FIG. 13

13/13

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Number: 61/276,723
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Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a),(b) or (b-*bis*)

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Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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295657

THE UNITED STATES OF AMERICA

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UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

September 29, 2010

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APPLICATION NUMBER: *61/276,723*
FILING DATE: *September 15, 2009*
RELATED PCT APPLICATION NUMBER: *PCT/US10/02509*

THE COUNTRY CODE AND NUMBER OF YOUR PRIORITY APPLICATION, TO BE USED FOR FILING ABROAD UNDER THE PARIS CONVENTION, IS *US61/276,723*

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Patent and Trademark Office

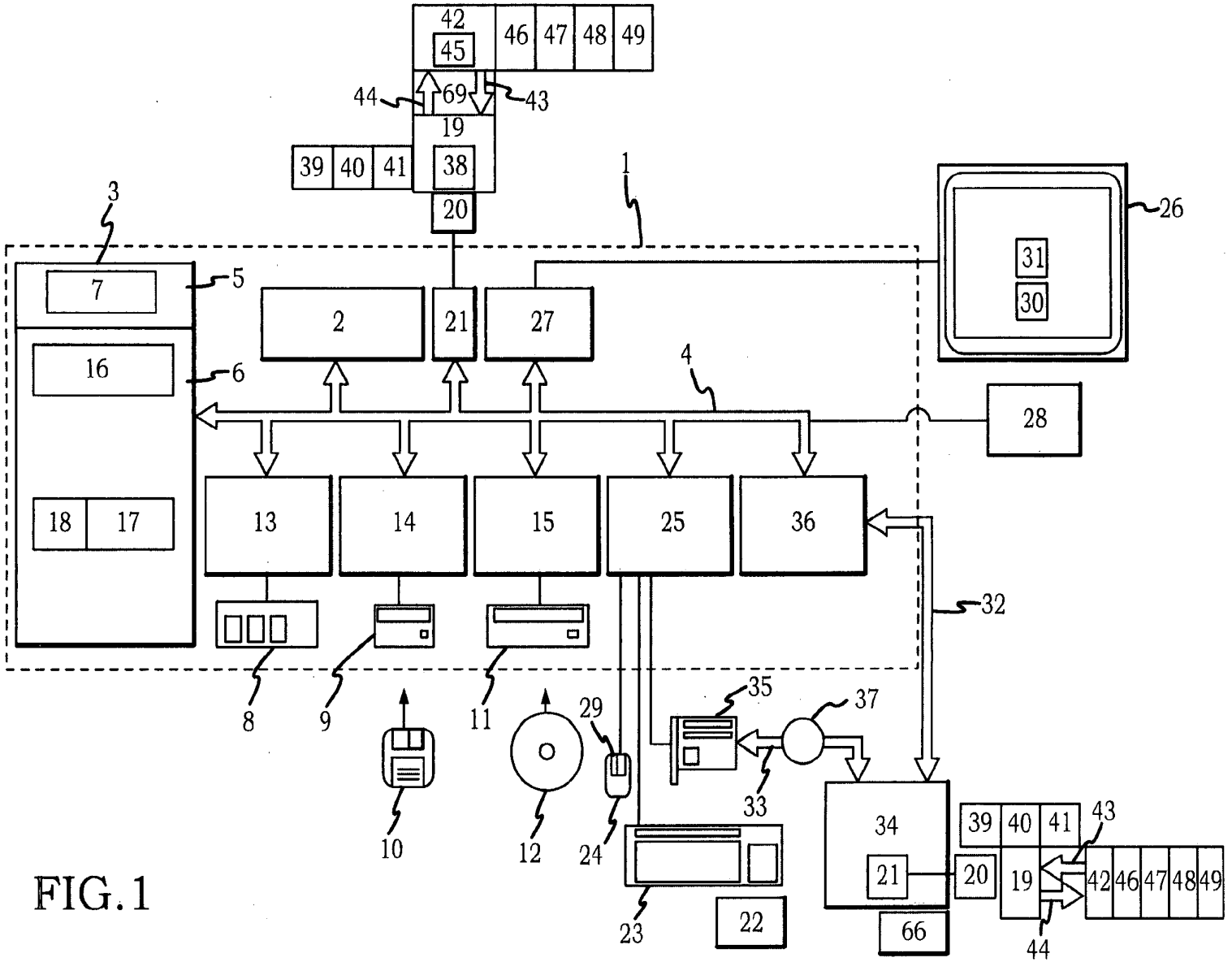

42
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FIG. 1

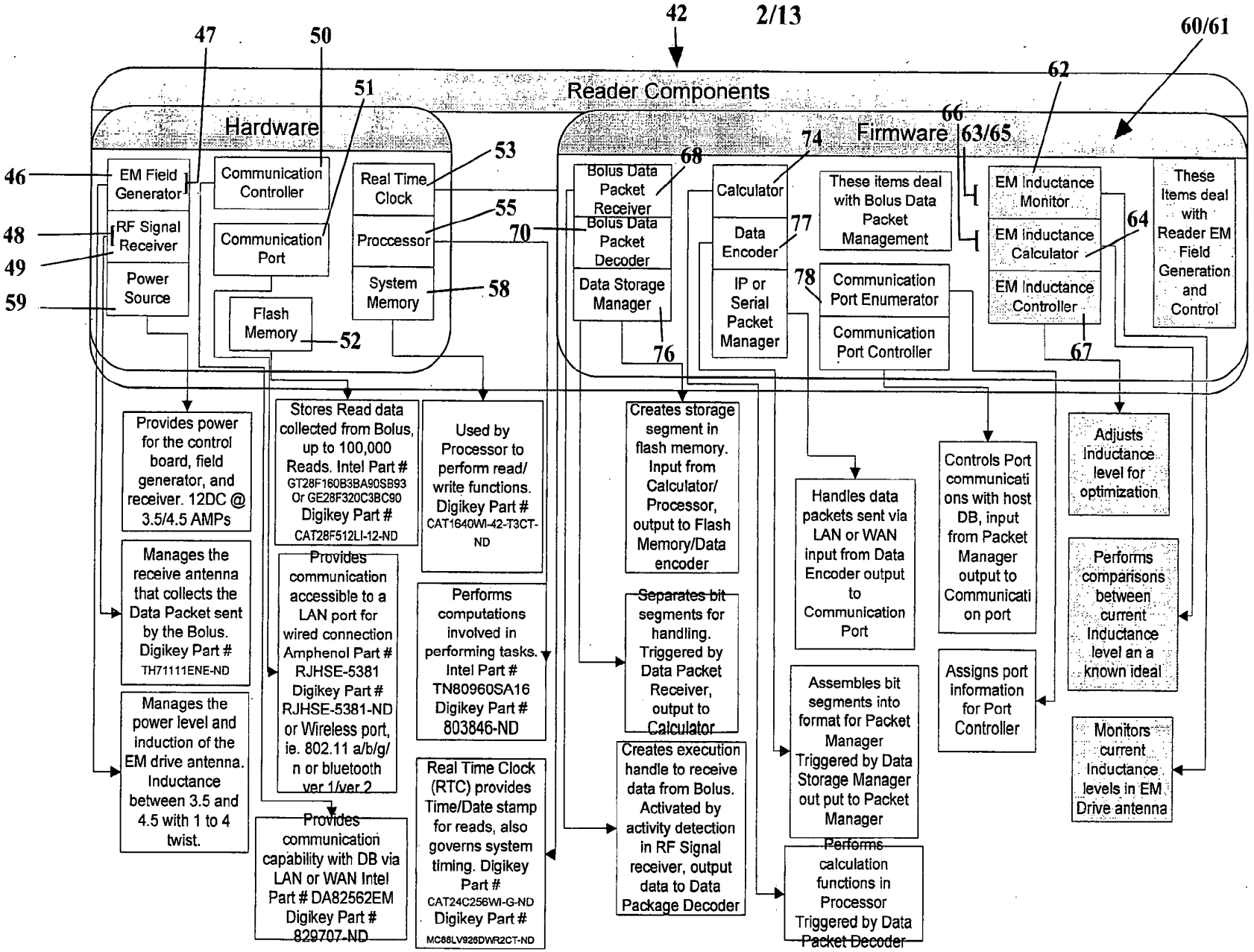

42
47
50
51
60/61
62
Reader Components
Hardware
Firmware
66
63/65
46
48
49
59
53
55
70
68
74
64
EM Field Generator
RF Signal Receiver
Power Source
Communication Controller
Communication Port
Flash Memory
52
Real Time Clock
Proccessor
System Memory
58
Bolus Data Packet Receiver
Bolus Data Packet Decoder
Data Storage Manager
76
Calculator
Data Encoder
77
IP or Serial Packet Manager
78
These items deal with Bolus Data Packet Management
Communication Port Enumerator
Communication Port Controller
EM Inductance Monitor
EM Inductance Calculator
EM Inductance Controller
67
These Items deal with Reader EM Field Generation and Control
Provides power for the control board, field generator, and receiver. 12DC @ 3.5/4.5 AMPs
Manages the receive antenna that collects the Data Packet sent by the Bolus. Digikey Part # TH71111ENE-ND
Manages the power level and induction of the EM drive antenna. Inductance between 3.5 and 4.5 with 1 to 4 twist.
Stores Read data collected from Bolus, up to 100,000 Reads. Intel Part # GT28F160B3BA90SB93 Or GE28F320C3BC90 Digikey Part # CAT28F512LI-12-ND
Provides communication accessible to a LAN port for wired connection Amphenol Part # RJHSE-5381 Digikey Part # RJHSE-5381-ND or Wireless port, ie. 802.11 a/b/g/n or bluetooth ver 1/ver 2
Provides communication capability with DB via LAN or WAN Intel Part # DA82562EM Digikey Part # 829707-ND
Used by Processor to perform read/write functions. Digikey Part # CAT1640WI-42-T3CT-ND
Performs computations involved in performing tasks. Intel Part # TN80960SA16 Digikey Part # 803846-ND
Real Time Clock (RTC) provides Time/Date stamp for reads, also governs system timing. Digikey Part # CAT24C256WI-G-ND Digikey Part # MC68LV926DWR2CT-ND
Creates storage segment in flash memory. Input from Calculator/Processor, output to Flash Memory/Data encoder
Separates bit segments for handling. Triggered by Data Packet Receiver, output to Calculator
Creates execution handle to receive data from Bolus. Activated by activity detection in RF Signal receiver, output data to Data Package Decoder
Handles data packets sent via LAN or WAN input from Data Encoder output to Communication Port
Assembles bit segments into format for Packet Manager Triggered by Data Storage Manager out put to Packet Manager
Performs calculation functions in Processor Triggered by Data Packet Decoder
Controls Port communications with host DB, input from Packet Manager output to Communication port
Assigns port information for Port Controller
Adjusts Inductance level for optimization
Performs comparisons between current Inductance level an a known ideal
Monitors current Inductance levels in EM Drive antenna

FIG. 2

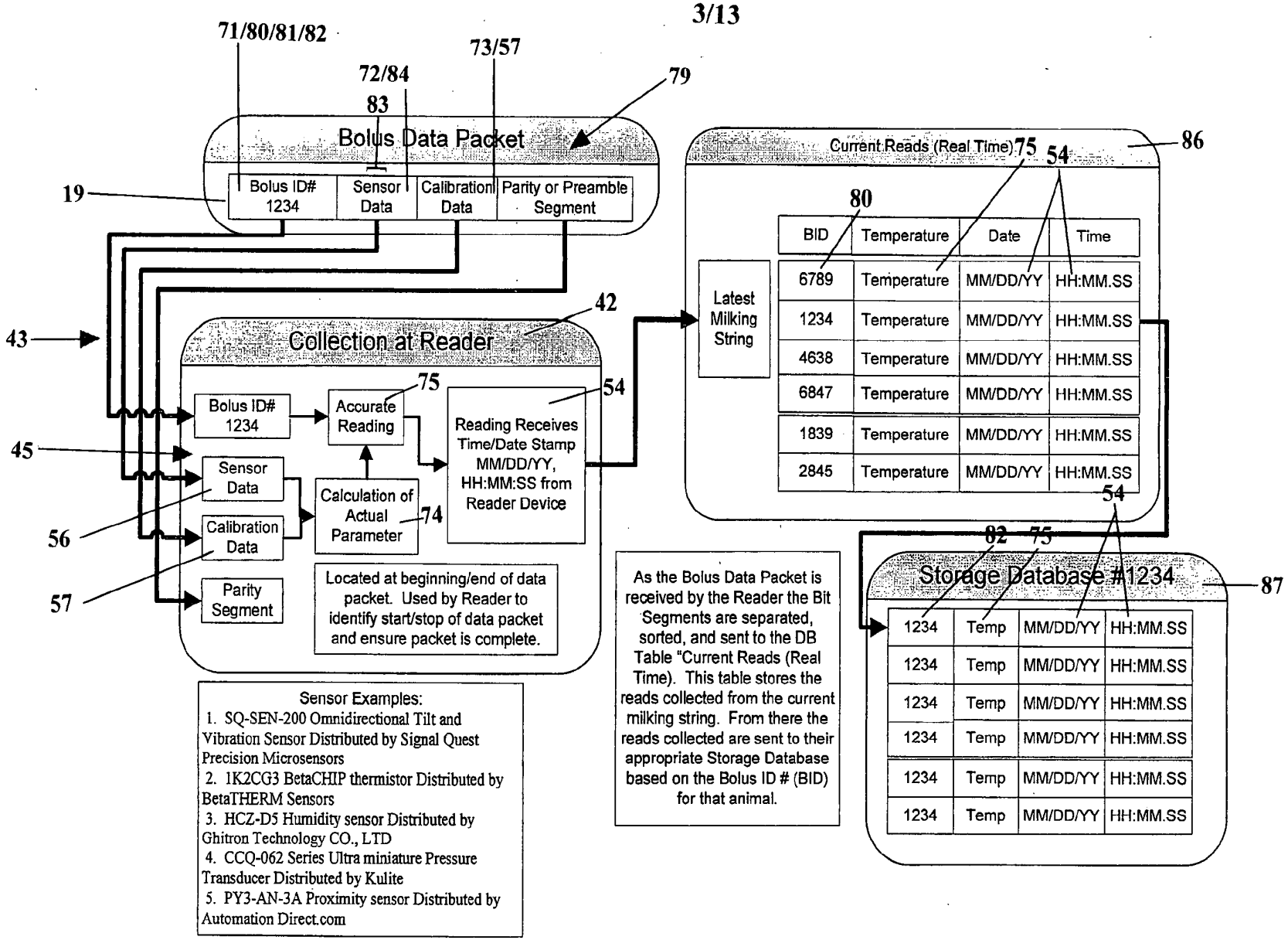

71/80/81/82
72/84
83
73/57
79
Bolus Data Packet
Bolus ID# 1234
Sensor Data
Calibration Data
Parity or Preamble Segment
19
43
42
Collection at Reader
Bolus ID# 1234
Accurate Reading
75
Reading Receives Time/Date Stamp MM/DD/YY, HH:MM:SS from Reader Device
54
45
Sensor Data
Calculation of Actual Parameter
74
56
Calibration Data
57
Parity Segment
Located at beginning/end of data packet. Used by Reader to identify start/stop of data packet and ensure packet is complete.
Current Reads (Real Time)
75
54
86
80
Latest Milking String
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
54
82
75
Storage Database #1234
87
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
As the Bolus Data Packet is received by the Reader the Bit Segments are separated, sorted, and sent to the DB Table "Current Reads (Real Time). This table stores the reads collected from the current milking string. From there the reads collected are sent to their appropriate Storage Database based on the Bolus ID # (BID) for that animal.
Sensor Examples:
1. SQ-SEN-200 Omnidirectional Tilt and Vibration Sensor Distributed by Signal Quest Precision Microsensors
2. 1K2CG3 BetaCHIP thermistor Distributed by BetaTHERM Sensors
3. HCZ-D5 Humidity sensor Distributed by Ghitron Technology CO., LTD
4. CCQ-062 Series Ultra miniature Pressure Transducer Distributed by Kulite
5. PY3-AN-3A Proximity sensor Distributed by Automation Direct.com

FIG. 3

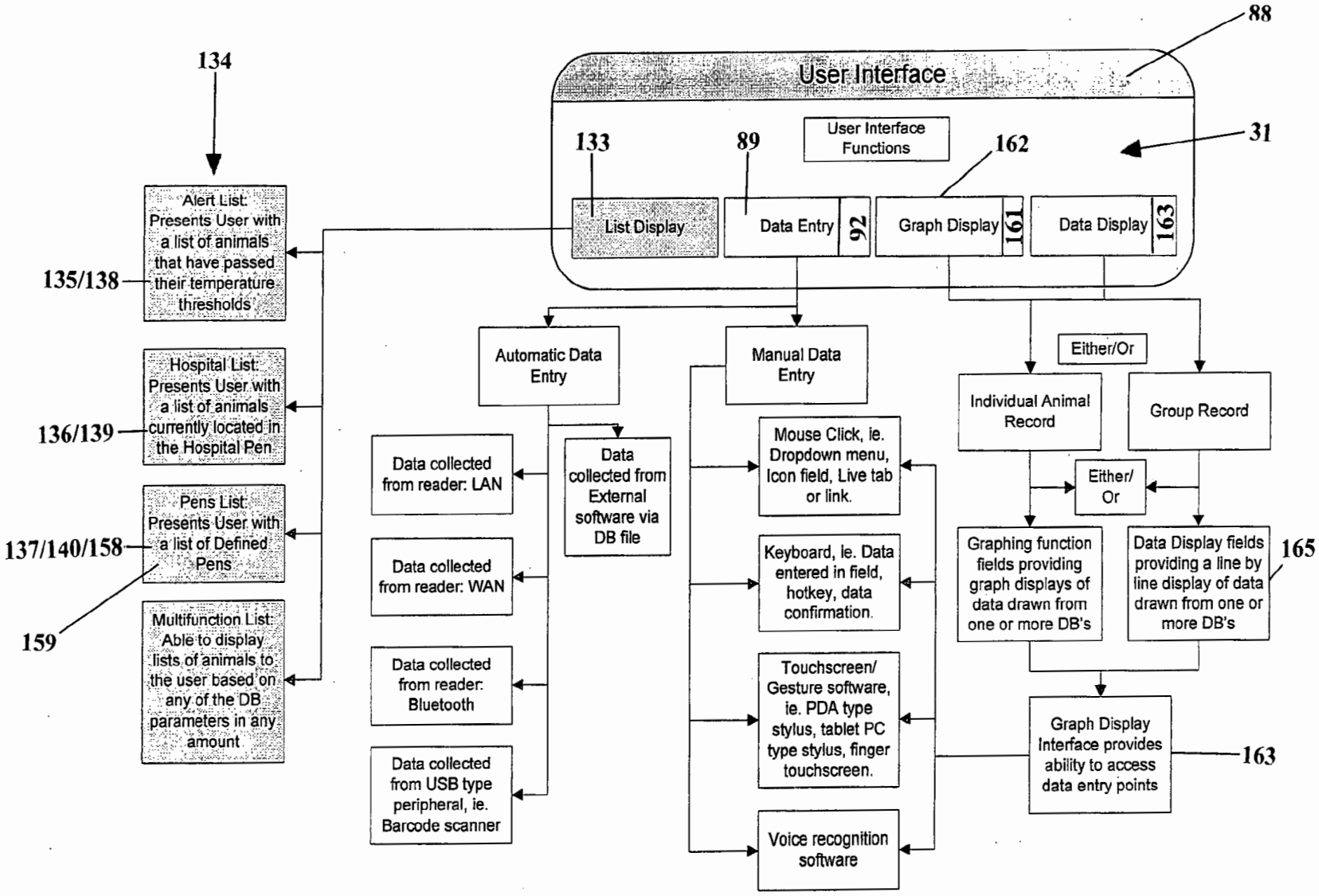

88
User Interface
134
133
89
User Interface Functions
162
31
List Display
Data Entry
92
Graph Display
161
Data Display
163
Alert List: Presents User with a list of animals that have passed their temperature thresholds
135/138
Hospital List: Presents User with a list of animals currently located in the Hospital Pen
136/139
Pens List: Presents User with a list of Defined Pens
137/140/158
159
Multifunction List: Able to display lists of animals to the user based on any of the DB parameters in any amount
Automatic Data Entry
Manual Data Entry
Either/Or
Individual Animal Record
Group Record
Either/ Or
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
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
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 points
163

FIG. 4

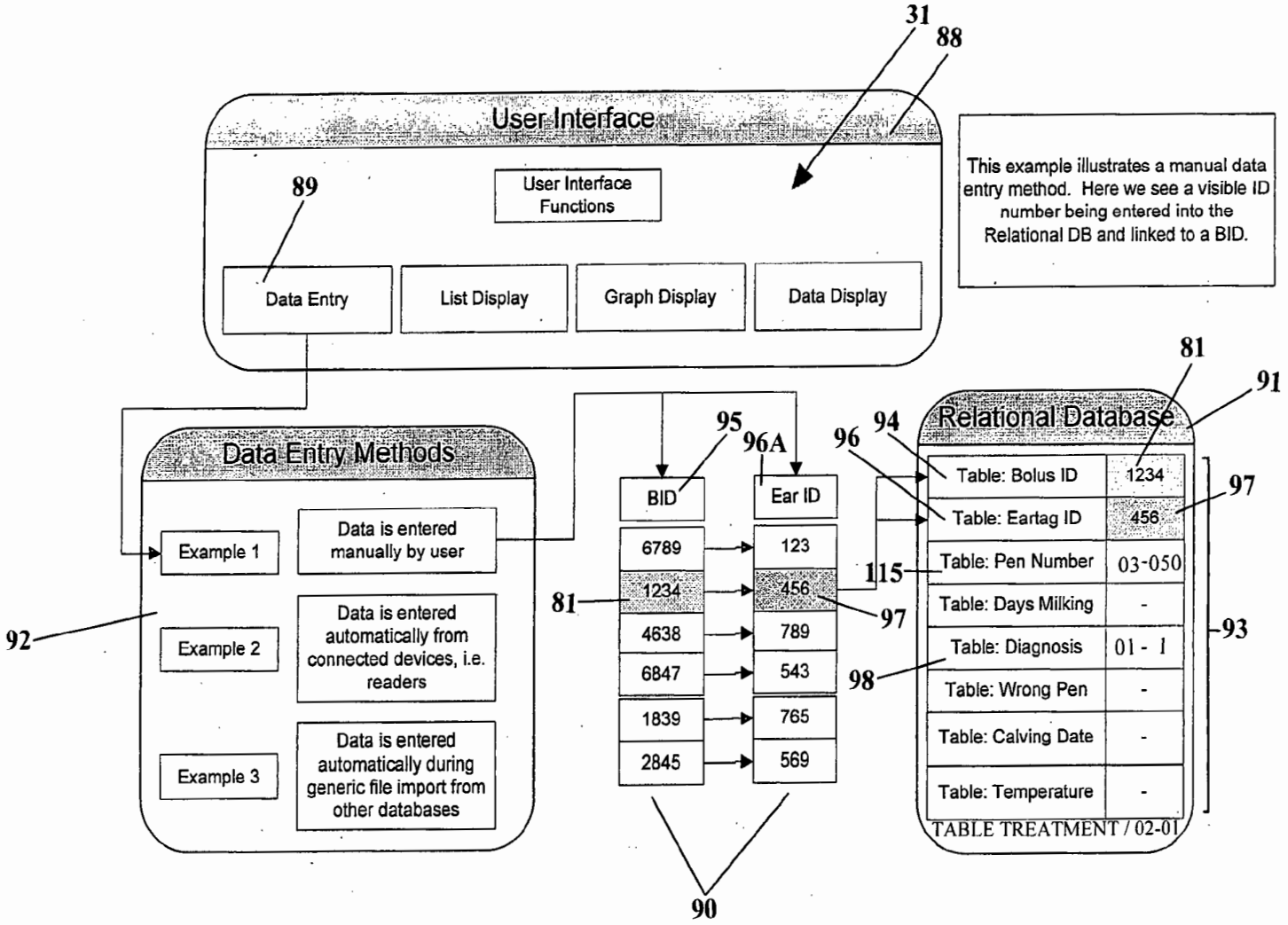

31
88
User Interface
89
User Interface Functions
Data Entry
List Display
Graph Display
Data Display
This example illustrates a manual data entry method. Here we see a visible ID number being entered into the Relational DB and linked to a BID.
81
91
Relational Database
Data Entry Methods
95
96A
96
94
BID
Ear ID
Table: Bolus ID
1234
97
Table: Eartag ID
456
Example 1
Data is entered manually by user
6789
123
Table: Pen Number
03-050
115
92
Example 2
Data is entered automatically from connected devices, i.e. readers
81
1234
456
97
Table: Days Milking
-
4638
789
Table: Diagnosis
01 - 1
93
6847
543
98
Table: Wrong Pen
-
1839
765
Table: Calving Date
-
Example 3
Data is entered automatically during generic file import from other databases
2845
569
Table: Temperature
-
TABLE TREATMENT / 02-01
90

FIG. 5

Storage DBs differ from Relational DBs in that the information stored here rarely changes. These DB tables are user configurable allowing the user to add as many components of the same type depending on the user's needs. In this example the user configures a "Diagnosis" table for "Mastitis". This table is assigned a "Diagnosis #" inside the "Diagnosis Table #1". The UI uses these assignments to access data stored here later for new and existing diagnoses of ill animals. If an animals is diagnosed with Mastitis, the user inputs the new information, then the UI looks for the "Diagnosis Table #" in this case 01, then the "Diagnosis #" in this case 1. The UI then sends a command to the Relational DB to change the animal's "Diagnosis Status" to 01,1.

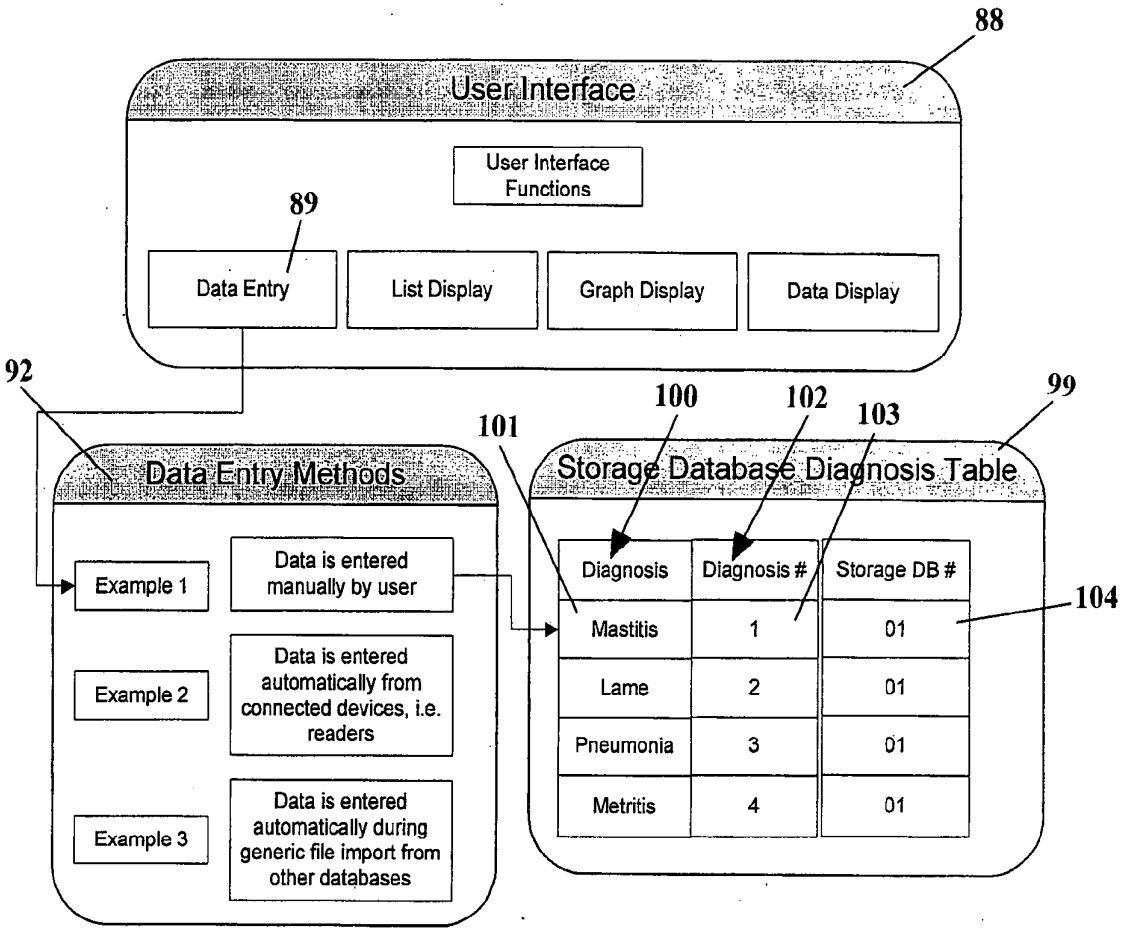


FIG. 6

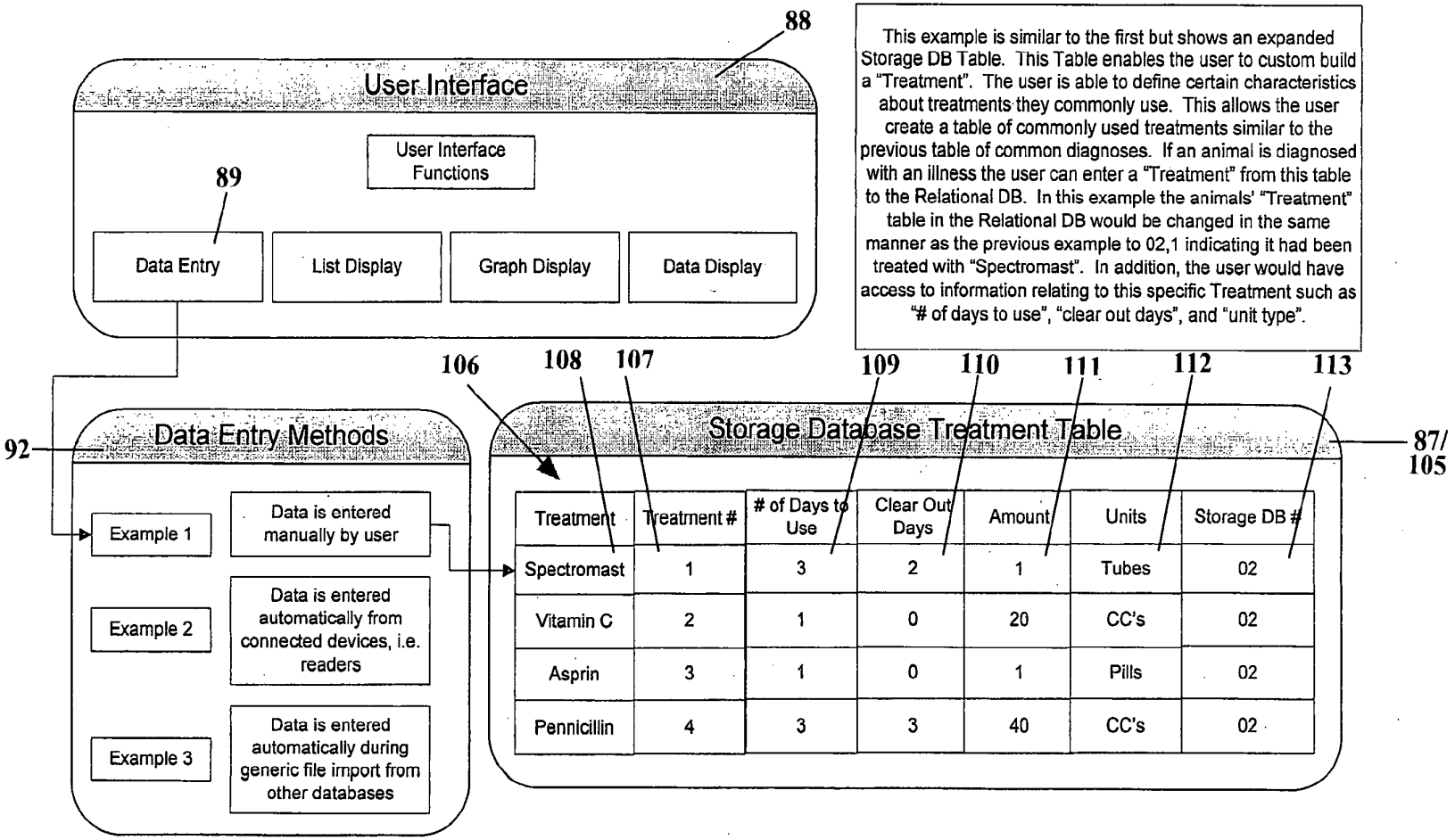

88
User Interface
User Interface Functions
89
Data Entry
List Display
Graph Display
Data Display
This example is similar to the first but shows an expanded Storage DB Table. This Table enables the user to custom build a "Treatment". The user is able to define certain characteristics about treatments they commonly use. This allows the user create a table of commonly used treatments similar to the previous table of common diagnoses. If an animal is diagnosed with an illness the user can enter a "Treatment" from this table to the Relational DB. In this example the animals' "Treatment" table in the Relational DB would be changed in the same manner as the previous example to 02,1 indicating it had been treated with "Spectromast". In addition, the user would have access to information relating to this specific Treatment such as "# of days to use", "clear out days", and "unit type".
106
108
107
109
110
111
112
113
92
Data Entry Methods
Example 1
Data is entered manually by user
Example 2
Data is entered automatically from connected devices, i.e. readers
Example 3
Data is entered automatically during generic file import from other databases
Storage Database Treatment Table
87/
105
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

FIG. 7

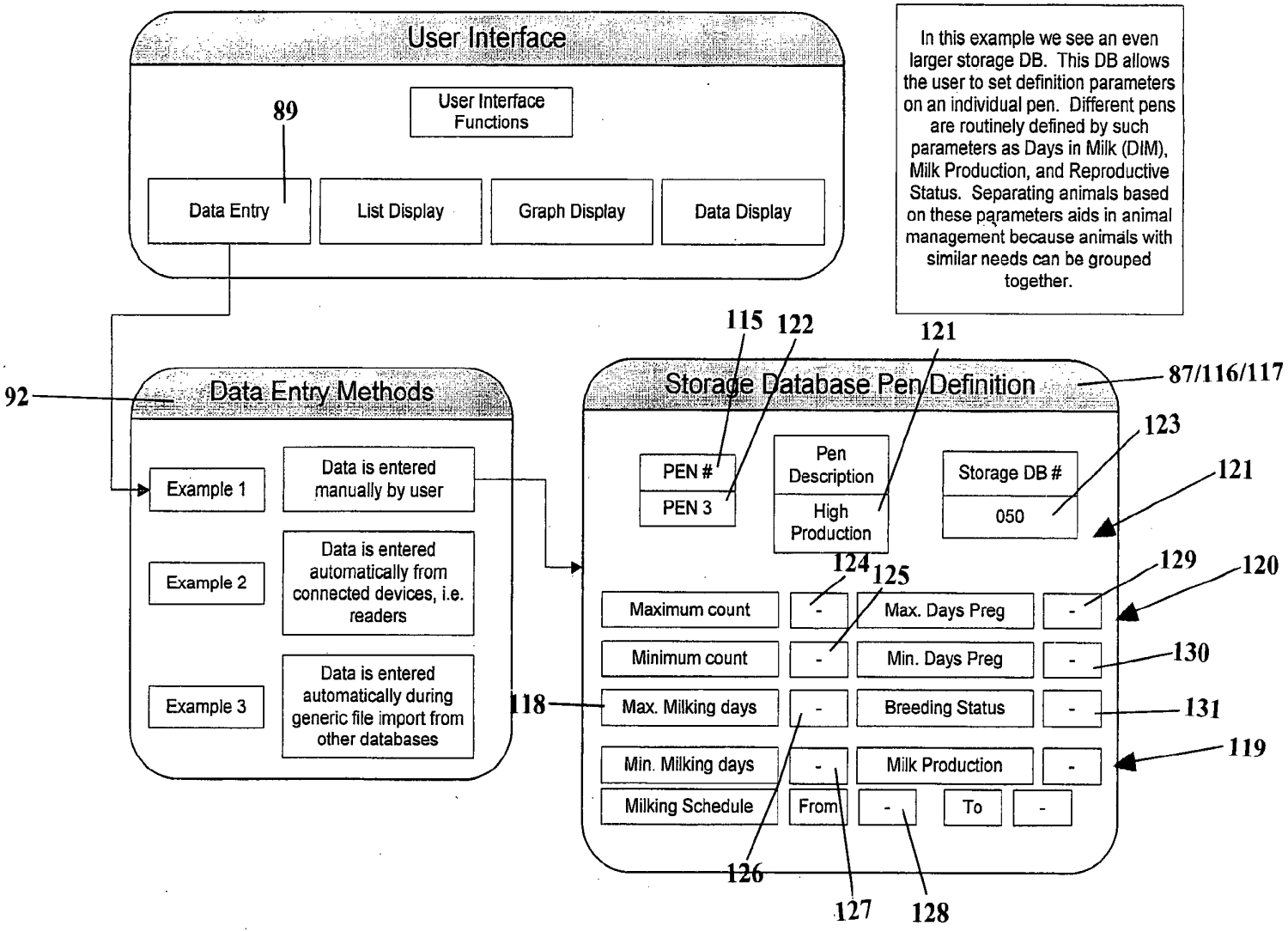

User Interface
User Interface Functions
89
Data Entry
List Display
Graph Display
Data Display
In this example we see an even larger storage DB. This DB allows the user to set definition parameters on an individual pen. Different pens are routinely defined by such parameters as Days in Milk (DIM), Milk Production, and Reproductive Status. Separating animals based on these parameters aids in animal management because animals with similar needs can be grouped together.
92
Data Entry Methods
Example 1
Data is entered manually by user
Example 2
Data is entered automatically from connected devices, i.e. readers
Example 3
Data is entered automatically during generic file import from other databases
115
122
121
Storage Database Pen Definition
87/116/117
PEN #
PEN 3
Pen Description
High Production
Storage DB #
050
123
121
124
125
129
120
Maximum count
Max. Days Preg
Minimum count
Min. Days Preg
130
118
Max. Milking days
Breeding Status
131
Min. Milking days
Milk Production
119
Milking Schedule
From
To
126
127
128

FIG. 8

This schematic illustrates how the Alert Process of the UI works. As reads come into the DB Current Reads those reads are sent to their respective Storage DB Reads. The software then averages these reads to establish a mean, run a mean deviation function setting a threshold above and below the mean, then new reads are compared to these thresholds. If reads exceed these thresholds an Alert is generated in UI notifying the user of a potential issue with the animal.

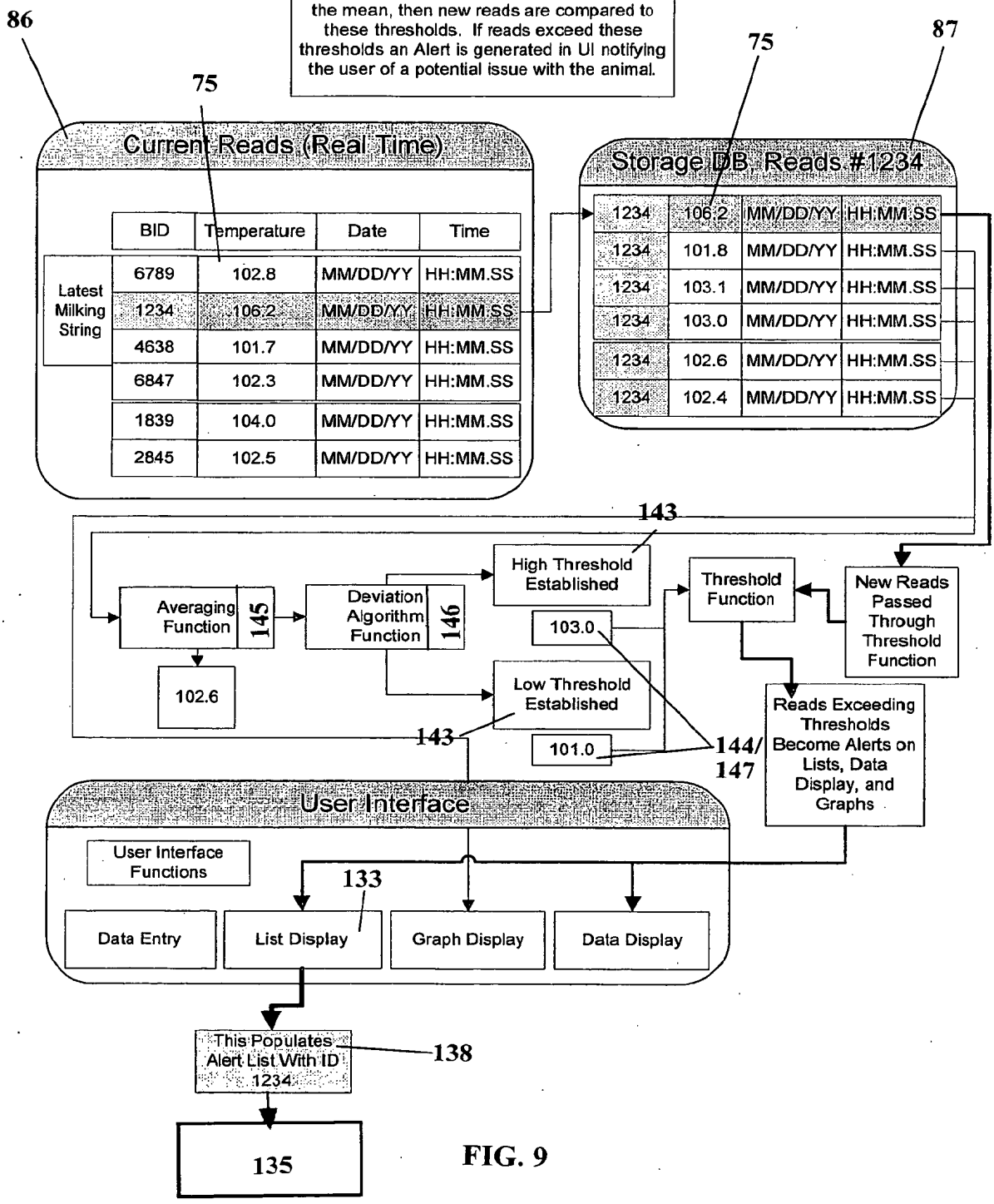


FIG. 9

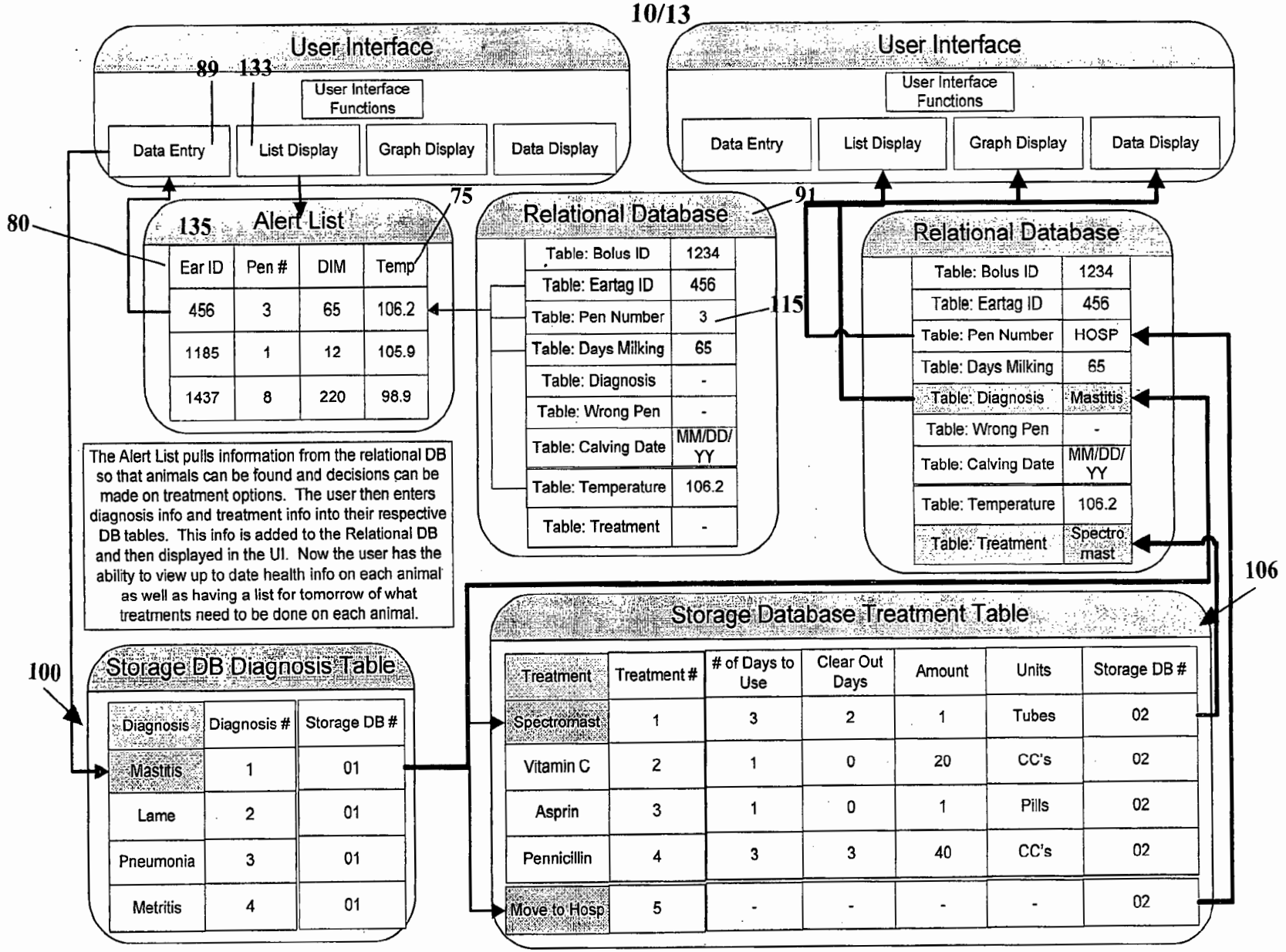

User Interface
89
133
User Interface Functions
Data Entry
List Display
Graph Display
Data Display
User Interface
User Interface Functions
Data Entry
List Display
Graph Display
Data Display
80
135
Alert List
75
Ear ID
Pen #
DIM
Temp
456
3
65
106.2
1185
1
12
105.9
1437
8
220
98.9
Relational Database
91
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
-
115
Relational Database
Table: Bolus ID
1234
Table: Eartag 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
106
The Alert List pulls information from the relational DB so that animals can be found and decisions can be made on treatment options. The user then enters diagnosis info and treatment info into their respective DB tables. This info is added to the Relational DB and then displayed in the UI. Now the user has the ability to view up to date health info on each animal as well as having a list for tomorrow of what treatments need to be done on each animal.
100
Storage DB Diagnosis Table
Diagnosis
Diagnosis #
Storage DB #
Mastitis
1
01
Lame
2
01
Pneumonia
3
01
Metritis
4
01
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

FIG. 10

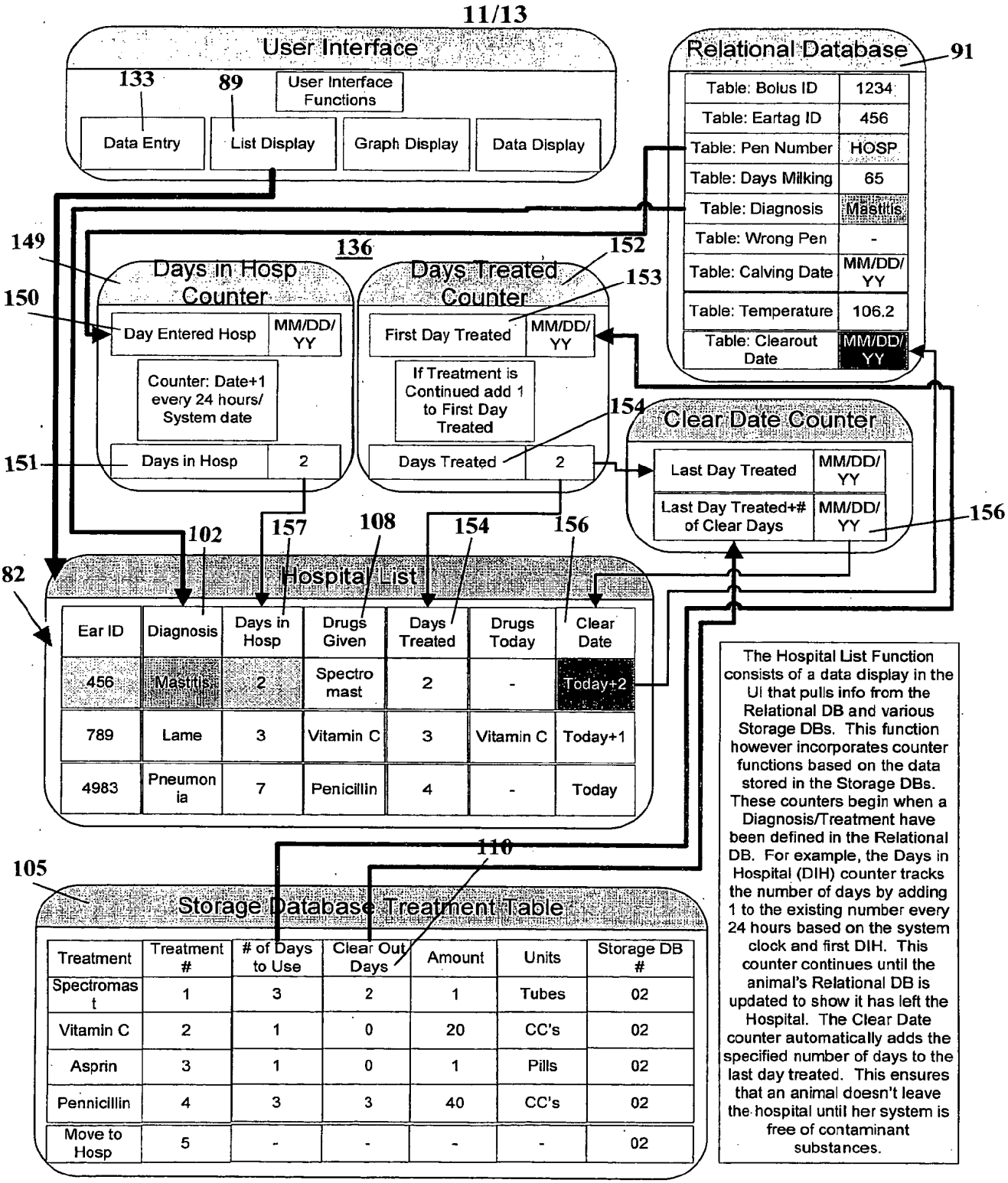

11/13
User Interface
133
89
User Interface Functions
Data Entry
List Display
Graph Display
Data Display
Relational Database
91
Table: Bolus ID
1234
Table: Eartag ID
456
Table: Pen Number
HOSP
Table: Days Milking
65
Table: Diagnosis
Mastitis
Table: Wrong Pen
-
Table: Calving Date
MM/DD/YY
Table: Temperature
106.2
Table: Clearout Date
MM/DD/YY
149
136
152
153
150
Days in Hosp Counter
Day Entered Hosp
MM/DD/YY
Counter: Date+1 every 24 hours/ System date
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
Clear Date Counter
Last Day Treated
MM/DD/YY
Last Day Treated+# of Clear Days
MM/DD/YY
156
151
102
157
108
154
156
82
Hospital List
Ear ID
Diagnosis
Days in Hosp
Drugs Given
Days Treated
Drugs Today
Clear Date
456
Mastitis
2
Spectro mast
2
-
Today+2
789
Lame
3
Vitamin C
3
Vitamin C
Today+1
4983
Pneumonia
7
Penicillin
4
-
Today
105
110
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
The Hospital List Function consists of a data display in the UI that pulls info from the Relational DB and various Storage DBs. This function however incorporates counter functions based on the data stored in the Storage DBs. These counters begin when a Diagnosis/Treatment have been defined in the Relational DB. For example, the Days in Hospital (DIH) counter tracks the number of days by adding 1 to the existing number every 24 hours based on the system clock and first DIH. This counter continues until the animal's Relational DB is updated to show it has left the Hospital. The Clear Date counter automatically adds the specified number of days to the last day treated. This ensures that an animal doesn't leave the hospital until her system is free of contaminant substances.

FIG. 11

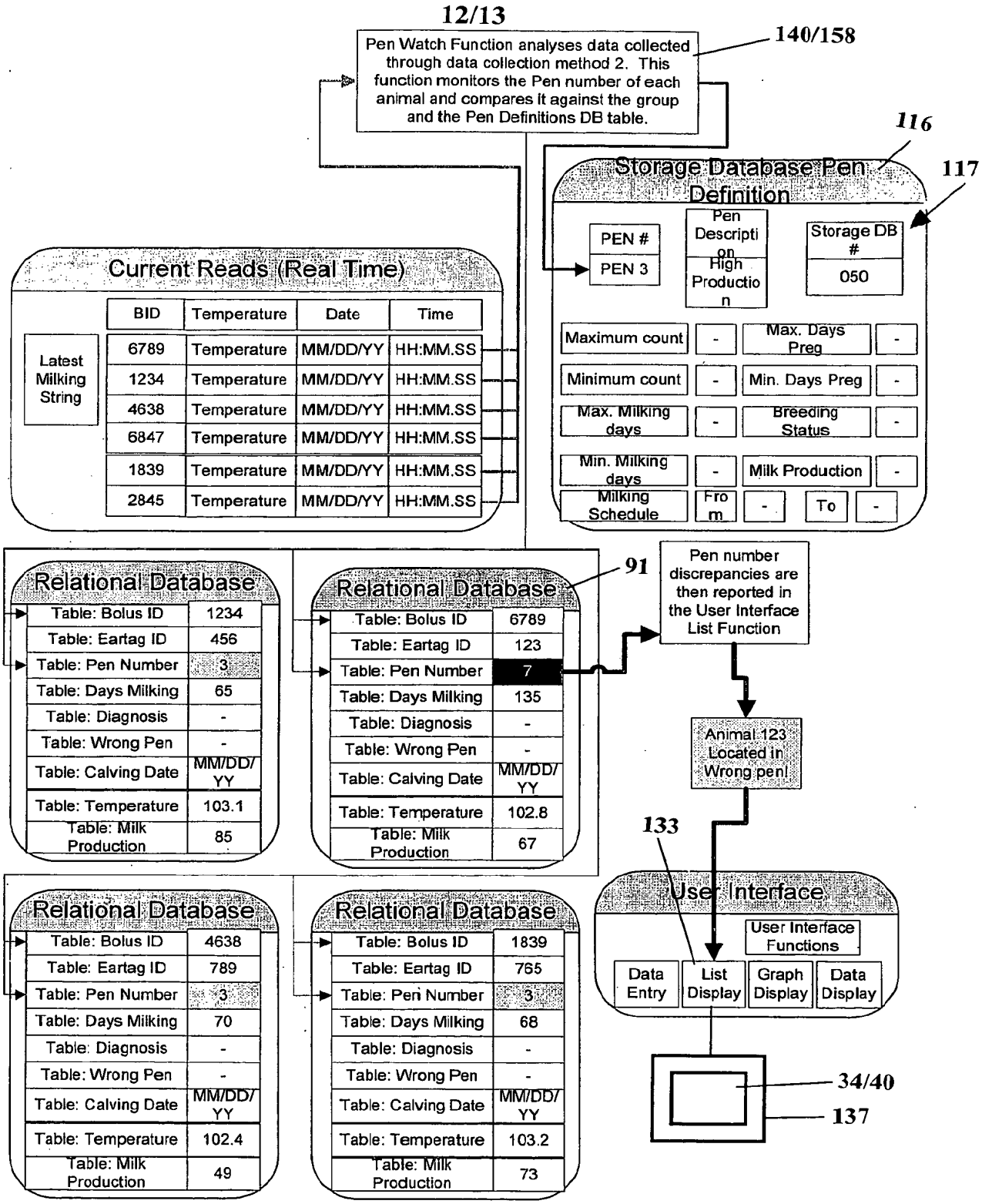

12/13
Pen Watch Function analyses data collected through data collection method 2. This function monitors the Pen number of each animal and compares it against the group and the Pen Definitions DB table.
140/158
116
117
Storage Database Pen Definition
PEN #
PEN 3
Pen Description
High Production
Storage DB #
050
Maximum count
Max. Days Preg
Minimum count
Min. Days Preg
Max. Milking days
Breeding Status
Min. Milking days
Milk Production
Milking Schedule
From
To
Current Reads (Real Time)
Latest Milking String
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
Relational Database
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 103.1
Table: Milk Production 85
Relational Database
91
Table: Bolus ID 6789
Table: Eartag 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 are then reported in the User Interface List Function
Animal 123 Located in Wrong pen!
133
Relational Database
Table: Bolus ID 4638
Table: Eartag 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: Eartag 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
User Interface
User Interface Functions
Data Entry
List Display
Graph Display
Data Display
34/40
137

FIG. 12

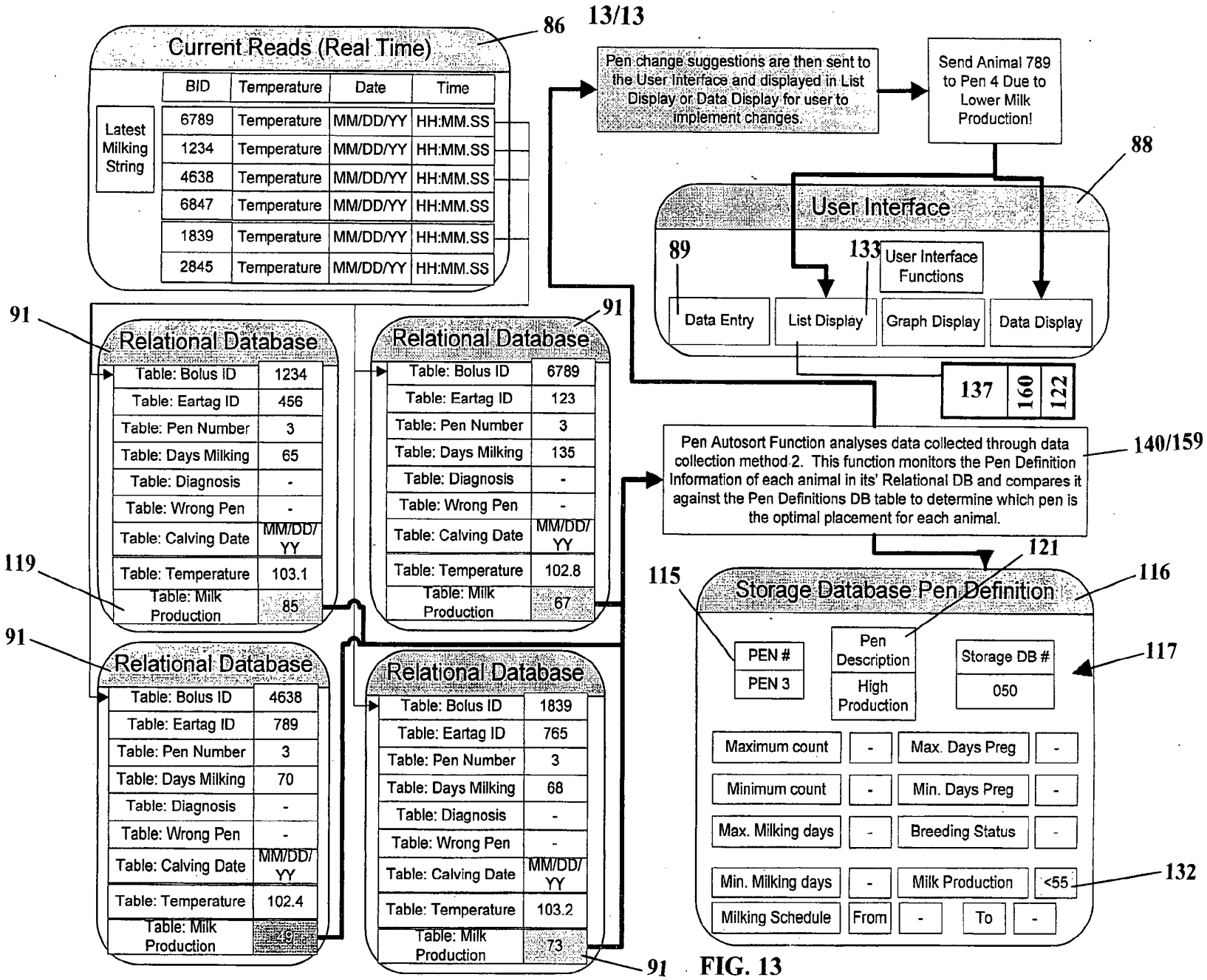

13/13
Current Reads (Real Time)
86
BID
Temperature
Date
Time
Latest Milking String
6789 Temperature MM/DD/YY HH:MM.SS
1234 Temperature MM/DD/YY HH:MM.SS
4638 Temperature MM/DD/YY HH:MM.SS
6847 Temperature MM/DD/YY HH:MM.SS
1839 Temperature MM/DD/YY HH:MM.SS
2845 Temperature MM/DD/YY HH:MM.SS
Pen change 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
User Interface Functions
Data Entry
List Display
Graph Display
Data Display
137
160
122
91
Relational Database
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 103.1
Table: Milk Production 85
91
Relational Database
Table: Bolus ID 6789
Table: Eartag 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
119
91
Relational Database
Table: Bolus ID 4638
Table: Eartag 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: Eartag 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
91
Pen Autosort Function analyses data collected through data collection method 2. This function 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
121
115
Storage Database Pen Definition
116
PEN #
PEN 3
Pen Description
High Production
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 -

FIG. 13

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.:** BellaUSBolus	**Confirmation No.:** **Group Art Unit:** **Examiner:**

CERTIFICATE OF EXPRESS MAILING

I, Justin Ruth Miles, hereby certify to the truth of the following items:

1. I am an employee of CR MILES P.C., 405 Mason Court, Suite 119, Fort Collins, CO 80524.

2. I have this day deposited the attached Specification (36 page(s)) with the United States Postal Service as "Express Mail" for mailing to:

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

Dated this 15 day of September, 2009

Justin Ruth Miles

U.S. PTO
61/276723
09/15/2009

PTO/SB/16 (12-08)
Approved for use through 06/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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PROVISIONAL APPLICATION FOR PATENT COVER SHEET – Page 1 of 2

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. EM182237410US

17224 U.S.PTO 091509

INVENTOR(S)		
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Nicholas P.	Rettedal	Greeley, Colorado
Stephen M.	Weilnau	Greeley, Colorado
Scott R.	Cockroft	Kersey, Colorado
Billy J.	Yeager	Greeley, Colorado

Additional inventors are being named on the 0 *separately numbered sheets attached hereto.*

TITLE OF THE INVENTION (500 characters max):

Computer Implemented Animal Management System

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

☒ The address corresponding to Customer Number: 39208

OR

☒ Firm or Individual Name Craig Miles c/o CR MILES, P.C.

Address 405 Mason Court, Suite 119

City	State	Zip
Fort Collins	CO	80524
Country USA	**Telephone** 970-492-0000	**Email** crmiles@crmiles.com

ENCLOSED APPLICATION PARTS *(check all that apply)*

☒ Application Data Sheet. See 37 CFR 1.76

☐ CD(s), Number of CDs _____

☒ Drawing(s) *Number of Sheets* 13

☒ Other (specify) see firm transmittal letter

☒ Specification (e.g. description of the invention) *Number of Pages* 36

Fees Due: Filing Fee of $220 ($110 for small entity). If the specification and drawings exceed 100 sheets of paper, an application size fee is also due, which is $270 ($135 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).

METHOD OF PAYMENT OF THE FILING FEE AND APPLICATION SIZE FEE FOR THIS PROVISIONAL APPLICATION FOR PATENT

☒ Applicant claims small entity status. See 37 CFR 1.27.

☒ A check or money order made payable to the *Director of the United States Patent and Trademark Office* is enclosed to cover the filing fee and application size fee (if applicable).

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized to charge the filing fee and application size fee (if applicable) or credit any overpayment to Deposit Account Number: _____ .

110.00

TOTAL FEE AMOUNT ($)

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. 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 8 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, 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.

17224 U.S.PTO
091509

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.:** BellaUSBolus	**Confirmation No.:** **Group Art Unit:** **Examiner:**

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

CERTIFICATE UNDER 37 C.F.R. § 1.10 FOR "EXPRESS MAIL"

Date of Deposit: September 15, 2009 Express Mail Label No.: EM182237410US

I hereby certify that this document is being deposited with the United States Postal Service on the date indicated above in an envelope as "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 and addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Justin Ruth Miles

LETTER OF TRANSMITTAL

Dear Sir/Madam:

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

1. a Provisional Application Cover Sheet (2 page(s));
2. an Application Data Sheet (5 page(s));
3. a Power of Attorney -- Inventor of Nicholas P. Rettedal (2 page(s));

PTO/SB/16 (12-08)
Approved for use through 06/30/2010. 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 displays a valid OMB control number.

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____

_____

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

SIGNATURE _____ Date Sept. 15, 2009

TYPED or PRINTED NAME Craig Miles REGISTRATION NO. 45,954 *(if appropriate)*

TELEPHONE 970-492-0000 Docket Number: BellaUSBolus

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.: BellaUSBolus	

CERTIFICATE OF EXPRESS MAILING

I, Justin Ruth Miles, hereby certify to the truth of the following items:

1. I am an employee of CR MILES P.C., 405 Mason Court, Suite 119, Fort Collins, CO 80524.

2. I have this day deposited the attached Provisional Application for Patent Cover Sheet (2 pages(s)) with the United States Postal Service as "Express Mail" for mailing to:

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

Dated this 15 day of September, 2009

Justin Ruth Miles

4. a Statement Establishing Small Entity Status -- Inventor of Nicholas P. Rettedal (2 page(s)), hereby claimed;

5. a Power of Attorney -- Inventor of Stephen M. Weilnau (2 page(s));

6. a Statement Establishing Small Entity Status -- Inventor of Stephen M. Weilnau (2 page(s)), hereby claimed;

7. a Power of Attorney -- Inventor of Scott R. Cockroft (2 page(s));

8. a Statement Establishing Small Entity Status -- Inventor of Scott R. Cockroft (2 page(s)), hereby claimed;

9. a Power of Attorney -- Inventor of Billy J. Yeager (2 page(s));

10. a Statement Establishing Small Entity Status -- Inventor of Billy J. Yeager (2 page(s)), hereby claimed;

11. a Specification (36 page(s));

12. a set of drawing sheets (13 pages(s));

13. this firm Letter of Transmittal (3 page(s)) along with a Fee Transmittal Form FY2009 (1 page(s)) and a check in the amount of $ 110.00 payable to the Commissioner for Patents;

14. Certificate of Express Mailing indicated on each document; and

15. a Return Postcard Receipt.

Please note:

All right title and interest in this United States provisional patent application entitled "Computer Implemented Animal Management System", filed September 15, 2009, is owned by Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager.

I have this 15 day of September, 2009 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 Postal Service as Express Mail, postage prepaid, in an envelope addressed to:

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

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 178 of 452

Please process the enclosed United States provisional patent application and return the enclosed postcard receipt.

Direct all correspondence to:

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

Customer Number: 39208

Dated this 15 day of September, 2009

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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 179 of 452

PTO/SB/17 (10-08)
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Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL
For FY 2009

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 110.00

Complete if Known	
Application Number	
Filing Date	September 15, 2009
First Named Inventor	Nicholas P. Rettedal
Examiner Name	
Art Unit	
Attorney Docket No.	BellaUSBolus

METHOD OF PAYMENT (check all that apply)

☑ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☐ Deposit Account Deposit Account Number: _____ Deposit Account Name: _____

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☐ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☐ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES Fee ($)	FILING FEES Small Entity Fee ($)	SEARCH FEES Fee ($)	SEARCH FEES Small Entity Fee ($)	EXAMINATION FEES Fee ($)	EXAMINATION FEES Small Entity Fee ($)	Fees Paid ($)
Utility	330	165	540	270	220	110	
Design	220	110	100	50	140	70	
Plant	220	110	330	165	170	85	
Reissue	330	165	540	270	650	325	
Provisional	220	110	0	0	0	0	110.00

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	52	26
Each independent claim over 3 (including Reissues)	220	110
Multiple dependent claims	390	195

Total Claims	Extra Claims	Fee ($)	Fee Paid ($)
0 - 20 or HP =	0	x 26.00	= 0.00

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee ($)	Fee Paid ($)
0 - 3 or HP =	0	x 110.00	= 0.00

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims Fee ($)	Multiple Dependent Claims Fee Paid ($)
195.00	0.00

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $270 ($135 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).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
- 100 =	0	/ 50 = 0 (round up to a whole number)	x 135.00	= 0.00

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other (e.g., late filing surcharge):	0

SUBMITTED BY

Signature		Registration No. (Attorney/Agent) 45,954	Telephone 970-492-0000
Name (Print/Type)	Craig R. Miles		Date Sept. 15 2009

This collection of information is required by 37 CFR 1.136. 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 30 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	**Confirmation No.:**
Application No.:	**Group Art Unit:**
Filed:	**Examiner:**
For: Computer Implemented Animal Management System	
Attorney Docket No.: BellaUSBolus	

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

CERTIFICATE UNDER 37 C.F.R. § 1.10 FOR "EXPRESS MAIL"

Date of Deposit: September 15, 2009 Express Mail Label No.: EM182237410US

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Justin Ruth Miles

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(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 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.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 181 of 452

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 9 day of September, 2009

By: _____
Nicholas P. Rettedal, Applicant/Inventor

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 182 of 452

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.:** BellaUSBolus	**Confirmation No.:** **Group Art Unit:** **Examiner:**

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

CERTIFICATE UNDER 37 C.F.R. § 1.10 FOR "EXPRESS MAIL"

Date of Deposit: September 15, 2009 Express Mail Label No.: EM182237410US

I hereby certify that this document is being deposited with the United States Postal Service on the date indicated above in an envelope as "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 and addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Justin Ruth Miles

POWER OF ATTORNEY - INVENTOR

I, Scott R. Cockroft, residing at 27700 Weld County Road 388, Kersey, Colorado 80644 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 assigned 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.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 183 of 452

Dated this 9th day of September, 2009

By: _____
Scott R. Cockroft, Applicant/Inventor

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 184 of 452

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.: BellaUSBolus	

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

CERTIFICATE UNDER 37 C.F.R. § 1.10 FOR "EXPRESS MAIL"

Date of Deposit: September 15, 2009 Express Mail Label No.: EM182237410US

I hereby certify that this document is being deposited with the United States Postal Service on the date indicated above in an envelope as "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 and addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Justin Ruth Miles

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(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 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.

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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 9th day of September, 2009

By: _____
Scott R. Cockroft, Applicant/Inventor

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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	**Confirmation No.:**
Application No.:	**Group Art Unit:**
Filed:	**Examiner:**
For: Computer Implemented Animal Management System	
Attorney Docket No.: BellaUSBolus	

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

CERTIFICATE UNDER 37 C.F.R. § 1.10 FOR "EXPRESS MAIL"

Date of Deposit: September 15, 2009 Express Mail Label No.: EM182237410US

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Justin Ruth Miles

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(c) state that the following facts are true:

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Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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Dated this 9th day of September, 2009

By: _____
Stephen M. Weilnau, Applicant/Inventor

Smaxtec Exhibit 1002
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Justin Ruth Miles

POWER OF ATTORNEY - INVENTOR

I, Nicholas P. Rettedal, residing at 2182 35th Avenue Court, Unit 1, 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 assigned 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.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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Dated this 9 day of September, 2009

By: _____
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Justin Ruth Miles

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 assigned 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.

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Smaxtec, Inc. v. ST Reproductive Tech, LLC
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Dated this 9th day of September, 2009

By: _____
Stephen M. Weilnau, Applicant/Inventor

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Justin Ruth Miles

APPLICATION DATA SHEET

Application Information

Application Type::	Regular
Subject Matter::	Utility
Suggested Classification::	None
Suggested Group Art Unit::	None
CD-ROM or CD-R::	None
Title::	Computer Implemented Animal Management System

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Attorney Docket Number::	BellaUSBolus
Request For Early Publication::	No
Request For Non-Publication::	No
Suggested Drawing Figure::	1
Total Drawing Sheets::	13
Small Entity::	Yes
Petition Included::	No
Secrecy Order in Parent Application::	No

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Correspondence Customer Number::	39208

Representative Information

Attorney Name::	Craig R. Miles
Registration Number::	45,954

Domestic Priority Information

None

Foreign Priority Information

None

Assignment Information

None

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Dated this 15 day of September, 2009

Respectfully Submitted,

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Justin Ruth Miles

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I, Billy J. Yeager, residing at 4750 West 29th Street, Apt. 812, 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 assigned 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.

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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Dated this 14 day of September, 2009

By: _____
Billy J. Yeager, Applicant/Inventor

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ABSTRACT

A computer implemented animal management system which functions to link retrieved animal identification information and sensed animal information from a plurality of RFID devices implanted in a plurality of animals to corresponding information for each of the plurality of animals stored in a database a computer in a data configuration which provides logical variables insertable into logical expressions to provide logical values related to each of said plurality of animals servable to a computer network.

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V. 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;

i) 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;

j) 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;

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

l) 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 12, wherein said at least one logical expression solves whether to artificially inseminate
each of said plurality of animals.

14. The computer implemented animal tracking system as described in clam 13, wherein said at least one logical expression solves whether conception has occurred as to each of said plurality of animals.

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

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16. The computer implemented animal tracking system as described in clam 15, 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.

17. The computer implemented animal tracking system as described in clam 16, wherein said computer network comprises a wide area network.

18. The computer implemented animal tracking system as described in clam 17, further comprising at least one client computer capable of configuration with said executable program instructions connected to said computer network.

19. The computer implemented animal tracking system as described in clam 18, wherein said at least one client computer comprises a wireless palm device.

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

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

22. The computer implemented animal tracking system as described in clam 21, wherein said at least one client computer comprises a portable RFID device reader connected to said cellular telephone.

23. 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;

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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;

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.

24. The computer implemented method of animal tracking as described in claim 23, 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.

25. The computer implemented method of animal tracking as described in claim 24, 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.

26. The computer implemented method of animal tracking as described in claim 25, 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

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animal information from a third bit segment of said plurality of RFID devices implanted in said plurality of animals.

27. The computer implemented method of animal tracking as described in claim 26, 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 location information from a fourth 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 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.

29. The computer implemented method of animal tracking as described in claim 28, 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.

30. The computer implemented method of animal tracking as described in claim 29, 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.

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31. The computer implemented method of animal tracking as described in claim 30, 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.

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 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.

33. The computer implemented method of animal tracking as described in claim 29, 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.

34. The computer implemented method of animal tracking as described in claim 33, 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.

35. The computer implemented method of animal tracking as described in claim 34, 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.

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36. The computer implemented method of animal tracking as described in claim 29, 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 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.

37. The computer implemented method of animal tracking as described in claim 36, 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.

38. The computer implemented method of animal tracking as described in claim 37, wherein said step of obtaining a logical value relating to said animal comprises the step of obtaining for a selected period of time as to each of said plurality of animals which to artificially inseminate.

39. The computer implemented method of animal tracking as described in claim 37, wherein said step of obtaining a logical value relating to said animal comprises the step of obtaining for a selected period of time as to each of said plurality of animals whether conception has occurred.

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40. The computer implemented method of animal tracking as described in claim 23, 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.

41. The computer implemented method of animal tracking as described in claim 40, further comprising the step of providing a computer network connected to said computer.

42. The computer implemented method of animal tracking as described in claim 41, further comprising the step of providing a wide area network to which said computer connects.

43. The computer implemented method of animal tracking as described in claim 42, 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.

44. The computer implemented method of animal tracking as described in claim 43, 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.

45. The computer implemented method of animal tracking as described in claim 44, 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.

46. The computer implemented method of animal tracking as described in any one of claims 43, 44, or 45, further comprising the step of providing a portable RFID device reader.

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47. The computer implemented method of animal tracking as described in claim 46, further comprising the step of connecting said portable RFID device reader to said client computer.

48. The computer implemented animal tracking system as described in clam 46, further comprising the step of connecting said portable RFID device reader to said wireless palm device.

49. The computer implemented animal tracking system as described in clam 46, further comprising the step of connecting said portable RFID device reader to said cellular telephone.

50. The computer implemented animal tracking system as described in clam 46, 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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COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM

I. BACKGROUND

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

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-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.

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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 hardware and software and methods of using such hardware and software in various permutations and combinations.

II. SUMMARY OF THE INVENTION

Accordingly, a broad object of the invention is to provide a 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

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form a various program modules to integrate retrieved RFID information with relational database tables and storage database tables 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.

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.

III. A BRIEF DESCRIPTION OF THE DRAWINGS

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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.

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.

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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.

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.

IV. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

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

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.

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

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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 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 data encoder-decoder system to describe computer programs, applications, or modules which can be utilized separately or in combination in accordance with various aspects or embodiments 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 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

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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 means 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-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

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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) for programming RFID data to a RFID device (19)(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-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

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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 (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 animal management application (17), 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 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

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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 or adapter (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 wide area network, 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, 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

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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) which provides an amount of RFID information (45) from the RFID (19). One non-limiting embodiment of the RFID reader (42) shown in Figures 1 and 2, provides 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 and about 4.5 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 the RFID (19)(as one example Digikey Part No. TH71111ENE-ND); a communication controller (50) which provide communication with the server computer (1) or remote computer (34) via LAN or WAN (as one example Intel Part No. DA82562EM; Digikey Part No. 829707-ND); a LAN port (51) for wired connection to the server computer (1) or remote computer (34)(one example Amphenol Part No. RJHSE-5381; Digikey Part No. 829707-ND); a first RFID reader memory (52) which stores the amount of RFID information (45) transmitted with the radio-frequency carrier signal (43)(as one example Intel Part No. GT28F160B3BA9DSB93, Digikey Part No. CAT28F512LI-12-ND), a clock (53)(as one example Digikey Part No. CAT24C256WI-G-ND; Digikey Part No. MC88LV926DWR2T-ND) which functions to couple a date-time stamp (54) to the amount of RFID information (45); a RFID reader processor (55) which performs computations based on sensed RFID object information (56)(which can be sensed animal information where the RFID

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object is an animal (40)) and calibration data (57)(further described below)(as one example Intel Part No. T80960SA16; Digikey Part No. 803846-ND), a second RFID reader memory (58) used by the RFID reader processor (55) to perform read-write functions (as one example Digikey Part No. CAT1640WI-42-T3cT-ND), and a RFID reader power source (59)(typically 12 volt direct current in the range of 3.5-4.5 amperes.

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) located 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) can include an electromagnetic induction monitor module (62) which functions to monitor current inductance levels (63) in the electromagnetic drive antenna (47), an electromagnetic inductance calculator module (64) which functions to compare a 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 to Figure 2, 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)(as further described below). The decoder module (70) can as to certain separated RFID information (45) activate a RFID reader calculator module (74) to perform calculation functions and generate RFID object characteristic values (75) from sensed RFID object information (56). A data management module (76) can function in part to activate an RFID data encoder module (77) which functions to assemble transmitted RFID information (45) of the bit

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segments (71)(72)(73) of the RFID (19) into a form which can be used by the data management module (76). A communication port enumerator module (78) functions to assign port information for a port controller module (78) which functions to control communications between the data management module (76) and server computer (1) or the remote computer (34).

While the above example provides an example of a RFID reader (42) 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 on non-limiting example, the 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 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 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

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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).

The RFID object identification information (80), the sensed RFID object characteristic value (84) 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 (53). The calculated RFID object characteristic value (84) and time-date stamp (53) matched to the RFID object identification information (80) in the current reads database table (86) can in a further step be separated 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

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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).

Now referring primarily to Figure 4, as described above, the RFID object characteristic values (85), 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) regardless as to whether the data is transmitted from the 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").

Again referring primarily to Figures 1, 4, and 5, the animal management application (17) of the server computer can further function to generate a graphic user interface (88) which can be viewed for example 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) into which data can be entered for transfer to RFID relational database tables (91) and RFID object database tables (87)

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by click event such as mouse click of drop down menus, key board, touch screen, PDA stylus, voice recognition, or the like.

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. 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 identifier (97) in the 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 (87)(in this example the "Diagnosis Storage Database Table" (99)) which can be configured to include any number of diagnosis identifiers (100) (for example row "Mastitis" (101)) in the diagnosis category (column "Diagnosis" (102)), each diagnosis identifier (100) can be matched with a diagnosis identifier number (103) (Mastitis matched with diagnosis identifier number 1) and matched with a storage database identifier (104) (Mastitis matched with storage database 01). Upon entry of the diagnosis identifier (100) matched with the diagnosis identifier number (103) and storage database number (104) the animal management application (17) can operates to update the RFID object relational database table (91) of the RFID object (39) (animal (40)) to include the diagnosis status (105) in the correspondingly linked field (refer to Figure 5 in which the linked field Table:

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Diagnosis has been update 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 list of RFID object storage database table (87) related to prior retrieved RFID object relational database table (91) of a particular RFID object (39) (animal (40)). By click event 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)) would be updated for example in the Table: Treatment (114) to include, 02, 1 (see 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 8, 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 list of RFID object database table (87) related to prior retrieved RFID object relational database table (91) of a particular RFID object (39)(animal (40))(or the RFID object database table (87) can be generated directly. By click event in the RFID object relational database table (91) of a Pen Number (115), a Pen Definition Storage Database Table (116) can be graphically displayed which allows a pen definition (117) to be created for the RFID object (39) (animal (40))(or generally for a pen). By creating a pen definition (117) for the RFID object (39) (animal (40)), those RFID objects (39) 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 number (115) for a category of RFID objects (39)(animal (40)) such as a pen description (121), pen number (122), RFID object database table identifier (123), maximum count (124), minimum count (125), maximum milking days (126),

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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 oject relational database tables (91)(see Figure 5 showing pen number (115) 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 certain 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 (138), hospital module (139), pen module (140), or malfunction module (141), or the like, as further described below.

Now referring primarily to Figure 9, which provides a block diagram which illustrates how the alert module (138) populates an alert list (142). While the example provided by Figure 9, illustrates how the alert module (138) 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 (142) for the sensed RFID object characteristics (84) such as location, temperature, pH, heart rate, blood pressure, partial pressures of dissolved gases, or the like.

Now referring primarily to Figures 3 and 9, with respect to the sensed RFID object characteristic value (84), as a non-limiting example of temperature, which can be updated from time to tome, each RFID object characteristic value (75) for temperature added to the RFID object database table (87) stored in the memory element(3) of the server computer (1) or remote computer (34) for a particular RFID object (39)(animal (40) can be compared with the prior established threshold values (144) for the sensed RFID object characteristic value (75) for temperature for the same animal (4) by the alert module (138). As one non-limiting example of the functionalities of the alert module (138), in a first step the alert module (138) can operate to

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average all the prior sensed RFID object characteristic values (75) for a particular sensed RFID object characteristic (84)(temperature) of a particular RFID object (39)(animal (40)) to generate a mean value (145) for the prior sensed RFID object characteristic values (85) for temperature (for example a mean temperature of 102.6°F). In a second step the alert module (138) can operate on all of the prior sensed RFID object characteristic values (85) for temperature of that particular RFID object (39)(animal (40)) to establish a mean deviation value (146) for the prior sensed RFID object characteristic values (75) for temperature to produce a RFID object characteristic value range (147) for the sensed RFID object characteristic values (75) (temperature) for that particular RFID object (39)(animal (40)) (for example a range (147) of about 103°F to about 101.0°F). The numeric value at the end of the RFID object characteristic value range (147) provides a RFID object characteristic value range threshold (148)(about 101.0 and about 103.0 in the example provided in Figure 9). In a third step the alert module (138), compares each new sensed RFID object characteristic value (85) to the RFID object characteristic value range thresholds (144). In a fourth step the alert module (138) operates to populate the alert list (135) viewable by click event on the list display icon (133) with RFID object identification information (80) coupled to the RFID object characteristic value (85) of a particular RFID object characteristic (84) which exceeded the established RFID object characteristic value range thresholds (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) (as shown in the example, an animal (40) temperature that falls outside of the RFID object characteristic value range thresholds (144). The alert list module (138) can further function upon click event of a listed RFID object (39) to retrieve the corresponding RFID object relational data base table (91) for the listed RFID object (39)(animal (40)). The RFID object relational data base table (91) allow the RFID object (39)(animal (40)) to be located by pen number. 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.

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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 (136) includes a hospital days counter (149) which functions to calculate the number days the RFID object (39)(animal (40)) has been located in a hospital pen. The hospital days counter (149) retrieves from the corresponding RFID object relational data base table (91) and 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 (136) 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)(141) 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

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of the RFID information (90) in the corresponding RFID object relational data base tables (91) of each RFID object (39)(40). As one example, the pen description (21) for example "high production" can correspond to a milk production of an RFID object (39)(40) in the range of greater than milk production value (132)(for example "55") . The autosort module (159) can operate to compare the 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 autosort 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 autosort module (159) all the RFID objects (39) can be included in an autosort 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

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"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 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.

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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 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

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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.

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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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.: BellaUSBolus	

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

CERTIFICATE UNDER 37 C.F.R. § 1.10 FOR "EXPRESS MAIL"

Date of Deposit: September 15, 2009 Express Mail Label No.: EM182237410US

I hereby certify that this document is being deposited with the United States Postal Service on the date indicated above in an envelope as "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 and addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Justin Ruth Miles

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(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 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.

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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 14 day of September, 2009

By: _____
Billy J. Yeager, Applicant/Inventor

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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.:** **Filed:** **For:** Computer Implemented Animal Management System **Attorney Docket No.:** BellaUSBolus	**Confirmation No.:** **Group Art Unit:** **Examiner:**

CERTIFICATE OF EXPRESS MAILING

I, Justin Ruth Miles, hereby certify to the truth of the following items:

1. I am an employee of CR MILES P.C., 405 Mason Court, Suite 119, Fort Collins, CO 80524.

2. I have this day deposited the attached drawing sheets (13 sheet(s)) with the United States Postal Service as "Express Mail" for mailing to:

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

Dated this 15 day of September, 2009

Justin Ruth Miles

Box No. VIII (iii) DECLARATION: ENTITLEMENT TO CLAIM PRIORITY

The declaration must conform to the standardized wording provided for in Section 213; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iii). If this Box is not used, this sheet should not be included in the request.

Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application specified below, where the applicant is not the applicant who filed the earlier application or where the applicant's name has changed since the filing of the earlier application (Rules 4.17(iii) and 51*bis*.1(a)(iii)):

In relation to this international application:

Bella Technologies, LLC is entitled to claim priority of earlier applications No. 61/276,723 filed September 15, 2009, by virtue of the following:

An Assignment of Patent Rights from Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager dated September 10, 2010 to Bella Technologies, LLC.

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iii)".

Box No. VIII (ii) DECLARATION: ENTITLEMENT TO APPLY FOR AND BE GRANTED A PATENT

The declaration must conform to the standardized wording provided for in Section 212: see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (ii). If this Box is not used, this sheet should not be included in the request.

Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4.17(ii) and 51*bis*.1(a)(ii)), in a case where the declaration under Rule 4.17(iv) is not appropriate:

In relation to this international application:

Bella Technologies, LLC is entitled to apply for and be granted a patent by virtue of the following:

An Assignment of Patent Rights from Nicholas P. Rettedal, Stephen M. Weilnau, Scott R. Cockroft and Billy J. Yeager dated September 10, 2010 to Bella Technologies, LLC.

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (ii)".

Box No. VIII (iv) DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America)

The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.

Declaration of inventorship (Rules 4.17(iv) and 51*bis*.1(a)(iv)) for the purposes of the designation of the United States of America:

I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/..... (if furnishing declaration pursuant to Rule 26*ter*).

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day, month and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior Applications: US 61/276,723, filed September 15, 2009

I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 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 PCT international filing date of the continuation-in-part application.

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.

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Inventor's Signature: Date: September 10, 2010
(The signature must be that of the inventor, not that of the agent)

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Inventor's Signature: Date: September 10, 2010
(The signature must be that of the inventor, not that of the agent)

☒ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".

Continuation of Box No. VIII (i) to (v) DECLARATION

*If the space is insufficient in any of Boxes Nos. VIII (i) to (v) to furnish all the information, including in the case where **more than two inventors are to be named** in Box No. VIII (iv), in such case, write "Continuation of Box No. VIII ..." (indicate the item number of the Box) and furnish the information in the same manner as required for the purposes of the Box in which the space was insufficient. If additional space is needed in respect of two or more declarations, a separate continuation box must be used for each such declaration. If this Box is not used, this sheet should not be included in the request.*

Name: COCKROFT, Scott R.

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Inventor's Signature: Scott R. Cockroft Date: 9-10-2010

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Inventor's Signature: _____ Date: _____

Continuation of Box No. VIII (i) to (v) DECLARATION

If the space is insufficient in any of Boxes Nos. VIII (i) to (v) to furnish all the information, including in the case where more than two inventors are to be named in Box No. VIII (iv), in such case, write "Continuation of Box No. VIII ..." (indicate the item number of the Box) and furnish the information in the same manner as required for the purposes of the Box in which the space was insufficient. If additional space is needed in respect of two or more declarations, a separate continuation box must be used for each such declaration. If this Box is not used, this sheet should not be included in the request.

Name: COCKROFT, Scott R.

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Inventor's Signature: _____ Date: _____

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PATENT APPLICATION FEE DETERMINATION RECORD

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Application or Docket Number	Filing Date	☐ To be Mailed
13/391,614	02/21/2012	

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	95		N/A	
☒ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	310		N/A	
☒ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	125		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	36 minus 20 =	* 16	X $30 =	480	OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	* 0	X $125 =	0		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 $250 ($125 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))				225			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1235		TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 02/21/2012

	(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 ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 36	Minus	** 36	= 0	X $30 =	0	OR	X $ =	
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $125 =	0	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	0	OR	TOTAL ADD'L FEE	

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
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 number found in the appropriate box in column 1.

Legal Instrument Examiner:
/ROBERT TALBERT/

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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))*

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(54) **Title**: COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM

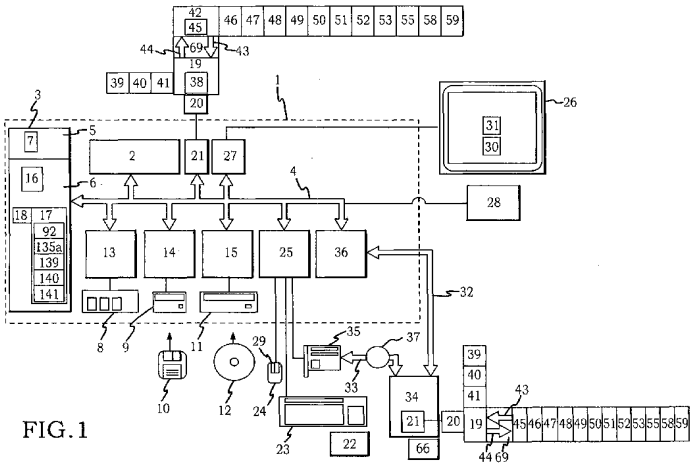


FIG.1

(57) **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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COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM

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-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

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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 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.

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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.

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.

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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.

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

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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.

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

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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.

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

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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 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

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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-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

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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-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

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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 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 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,

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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 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).

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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 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

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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 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

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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).

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

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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 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.

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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 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

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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 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

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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.

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

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(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 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

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(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 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).

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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 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

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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 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

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be understood to 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.

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 subsequent application or continuation, division, or continuation-in-part application thereof, or

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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.

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.

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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.

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.

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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.

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.

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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;

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

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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 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

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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.

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

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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 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

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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.

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.

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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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1/13

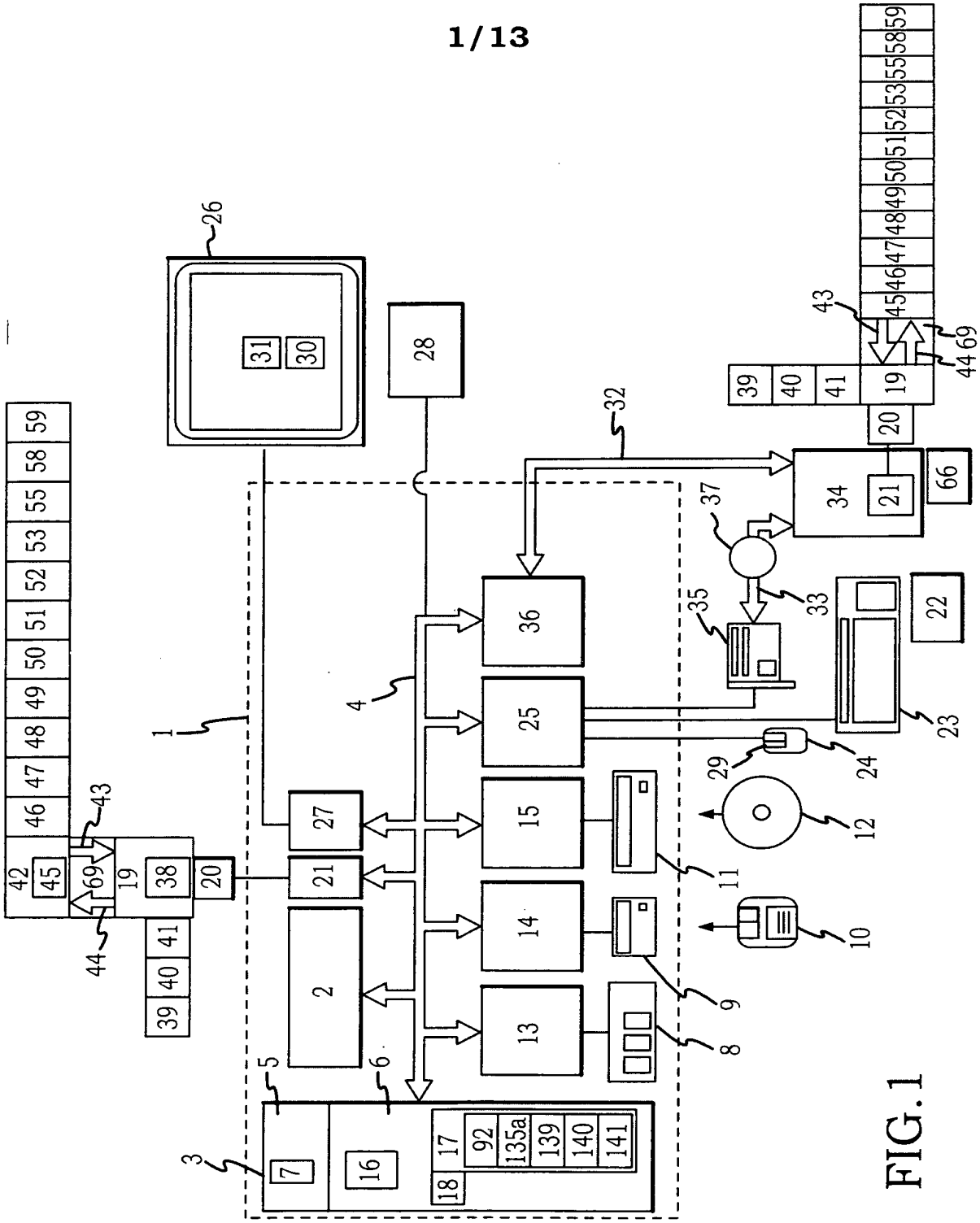

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92
135a
139
140
141

FIG. 1

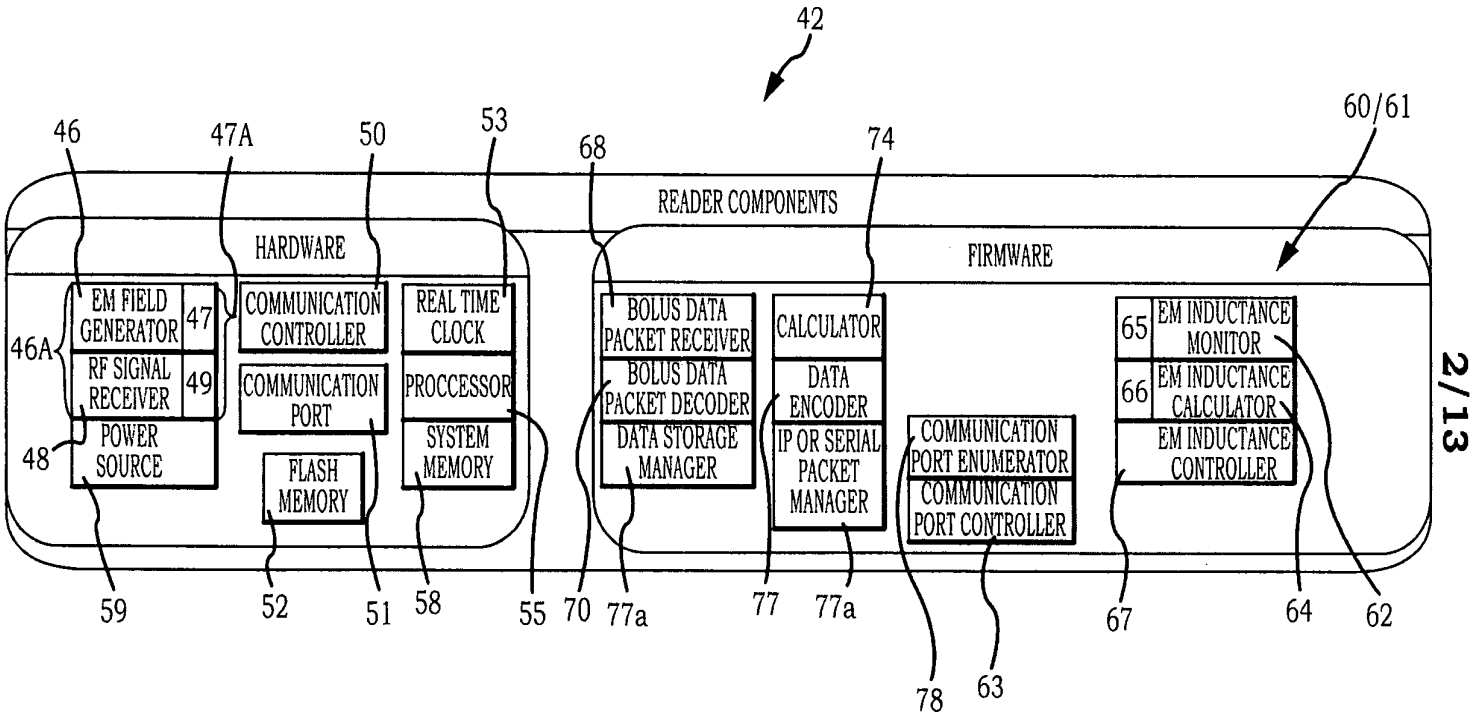


FIG.2

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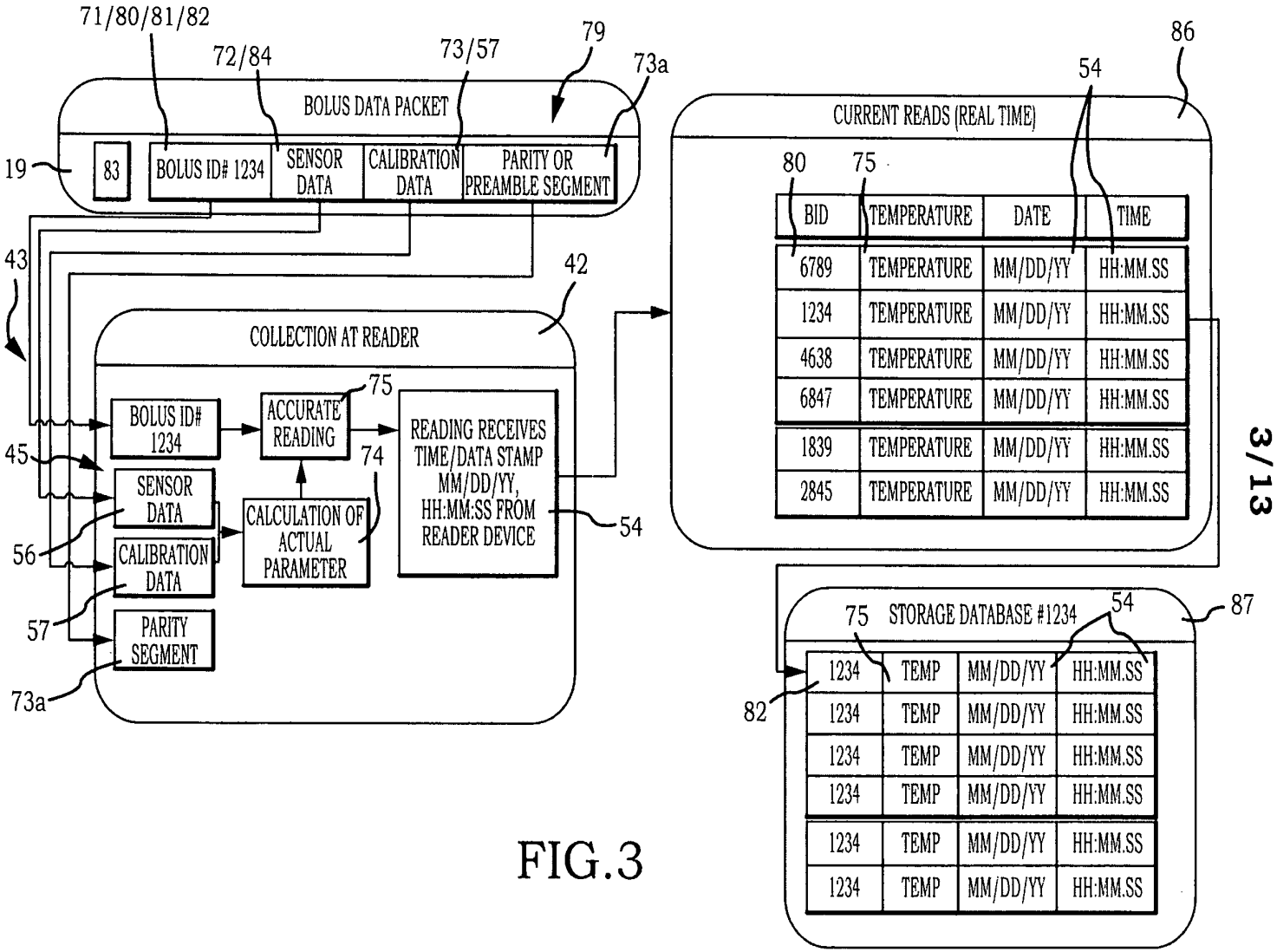

71/80/81/82
72/84
73/57
79
73a
BOLUS DATA PACKET
19
83
BOLUS ID# 1234
SENSOR DATA
CALIBRATION DATA
PARITY OR PREAMBLE SEGMENT
43
42
COLLECTION AT READER
BOLUS ID# 1234
ACCURATE READING
75
READING RECEIVES TIME/DATA STAMP MM/DD/YY, HH:MM:SS FROM READER DEVICE
74
45
SENSOR DATA
CALIBRATION DATA
PARITY SEGMENT
56
57
73a
CALCULATION OF ACTUAL PARAMETER
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
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1234 TEMP MM/DD/YY HH:MM.SS

FIG.3

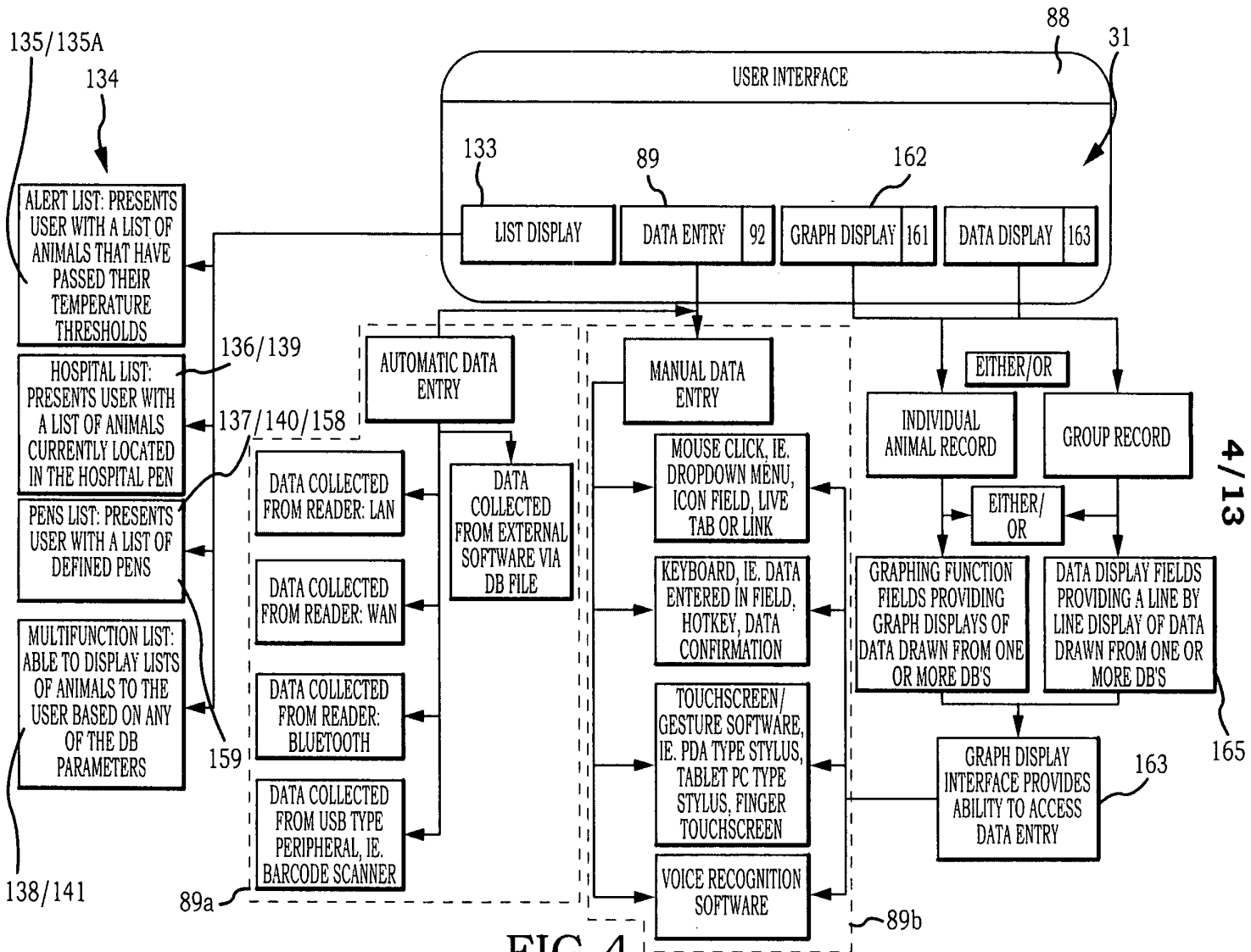

135/135A
134
88
31
USER INTERFACE
133
89
162
LIST DISPLAY
DATA ENTRY
92
GRAPH DISPLAY
161
DATA DISPLAY
163
ALERT LIST: PRESENTS USER WITH A LIST OF ANIMALS THAT HAVE PASSED THEIR TEMPERATURE THRESHOLDS
136/139
HOSPITAL LIST: PRESENTS USER WITH A LIST OF ANIMALS CURRENTLY LOCATED IN THE HOSPITAL PEN
137/140/158
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
89a
DATA COLLECTED FROM EXTERNAL SOFTWARE VIA DB FILE
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

FIG.4

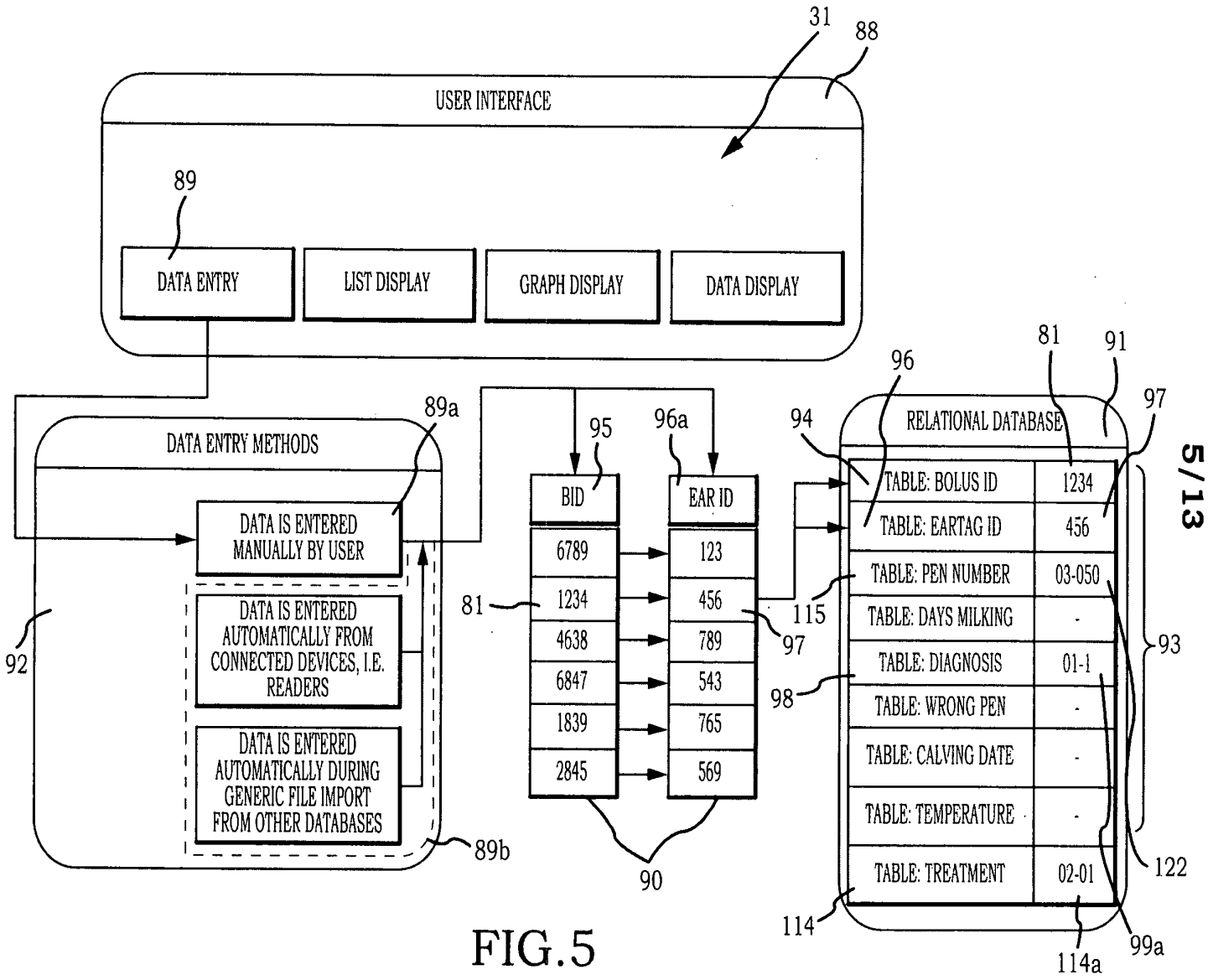

31
88
USER INTERFACE
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
89a
DATA ENTRY METHODS
DATA IS ENTERED MANUALLY BY USER
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS
DATA IS ENTERED AUTOMATICALLY DURING GENERIC FILE IMPORT FROM OTHER DATABASES
92
89b
95
96a
BID
EAR ID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

FIG.5

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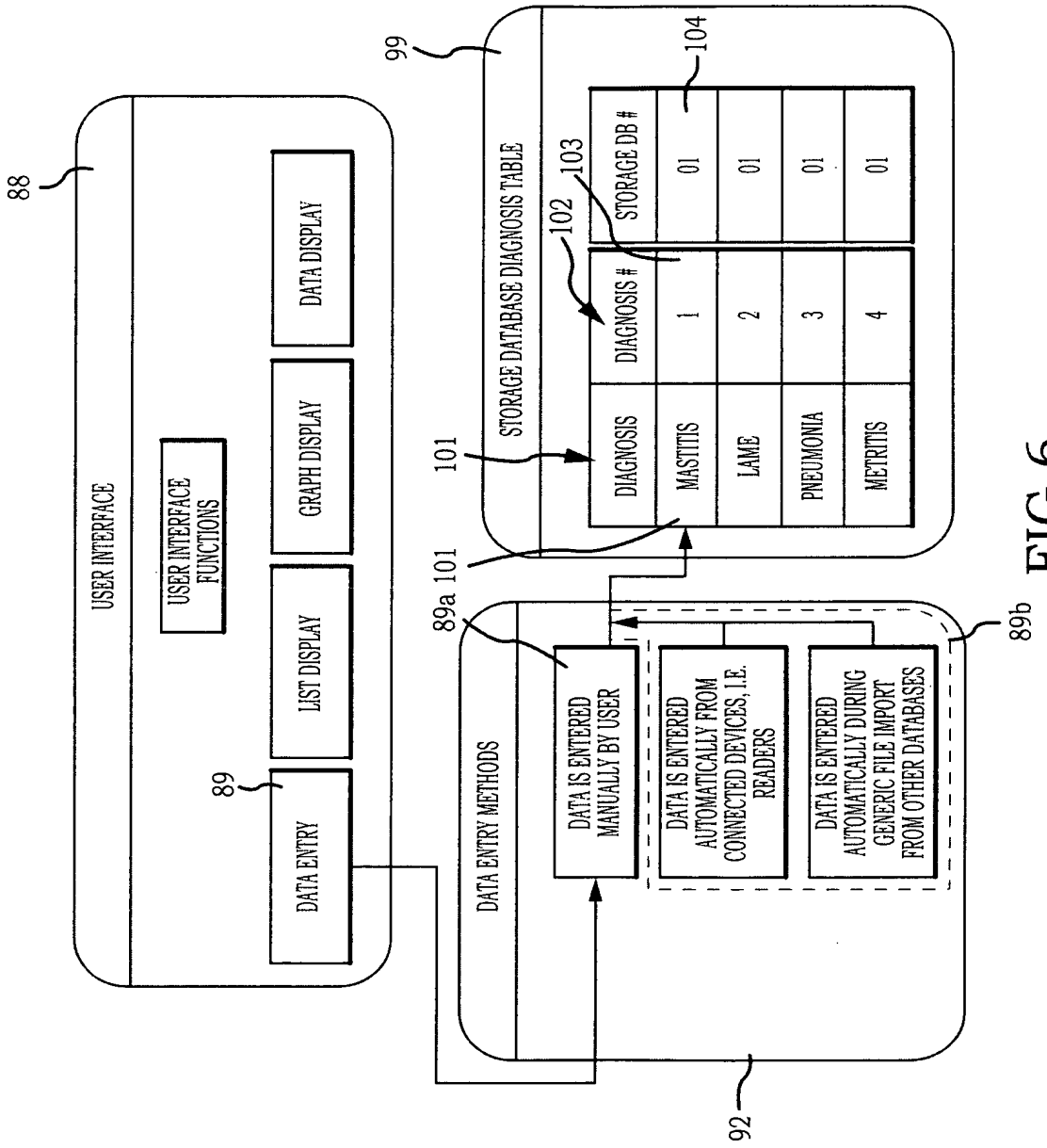
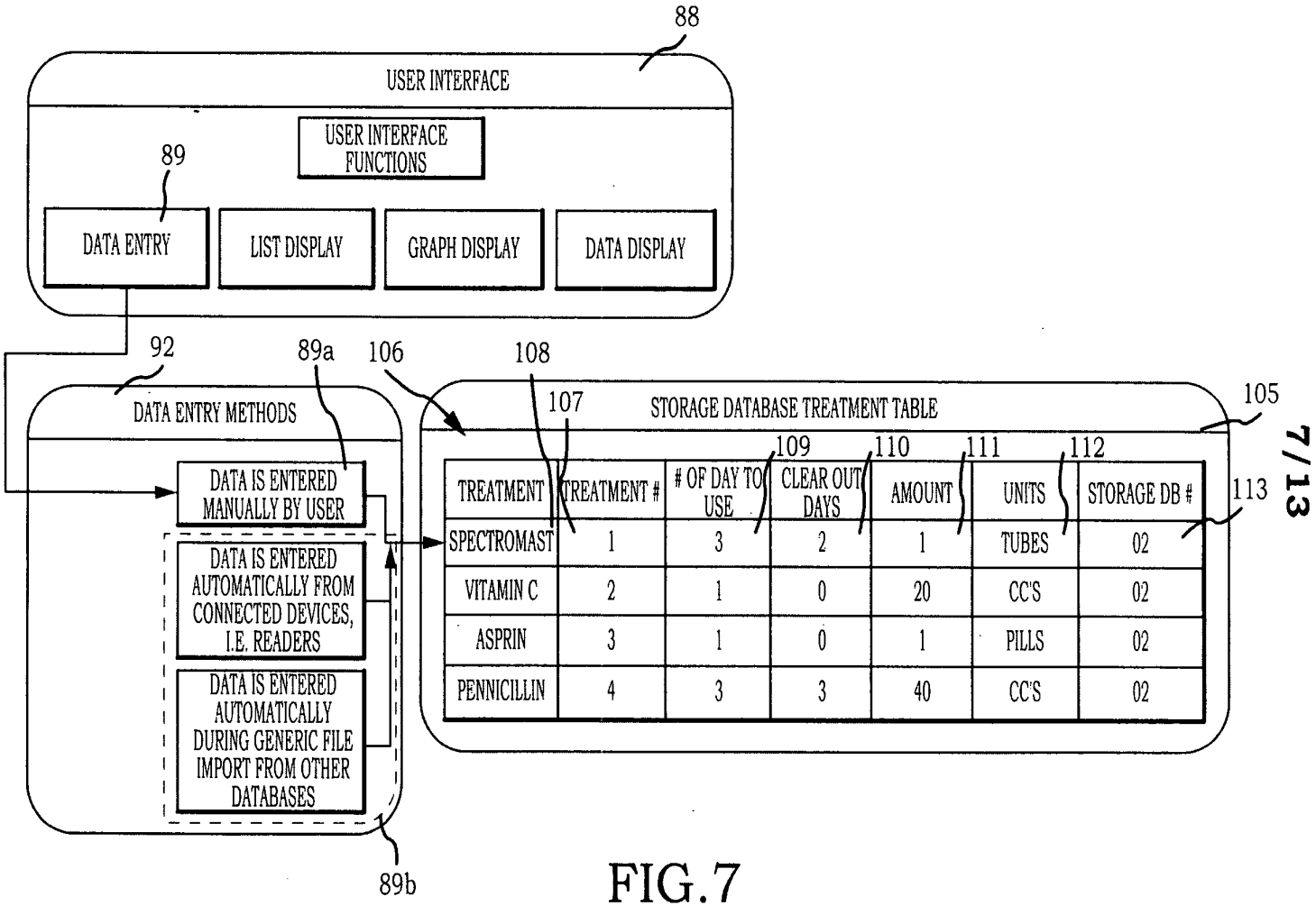


FIG.6



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

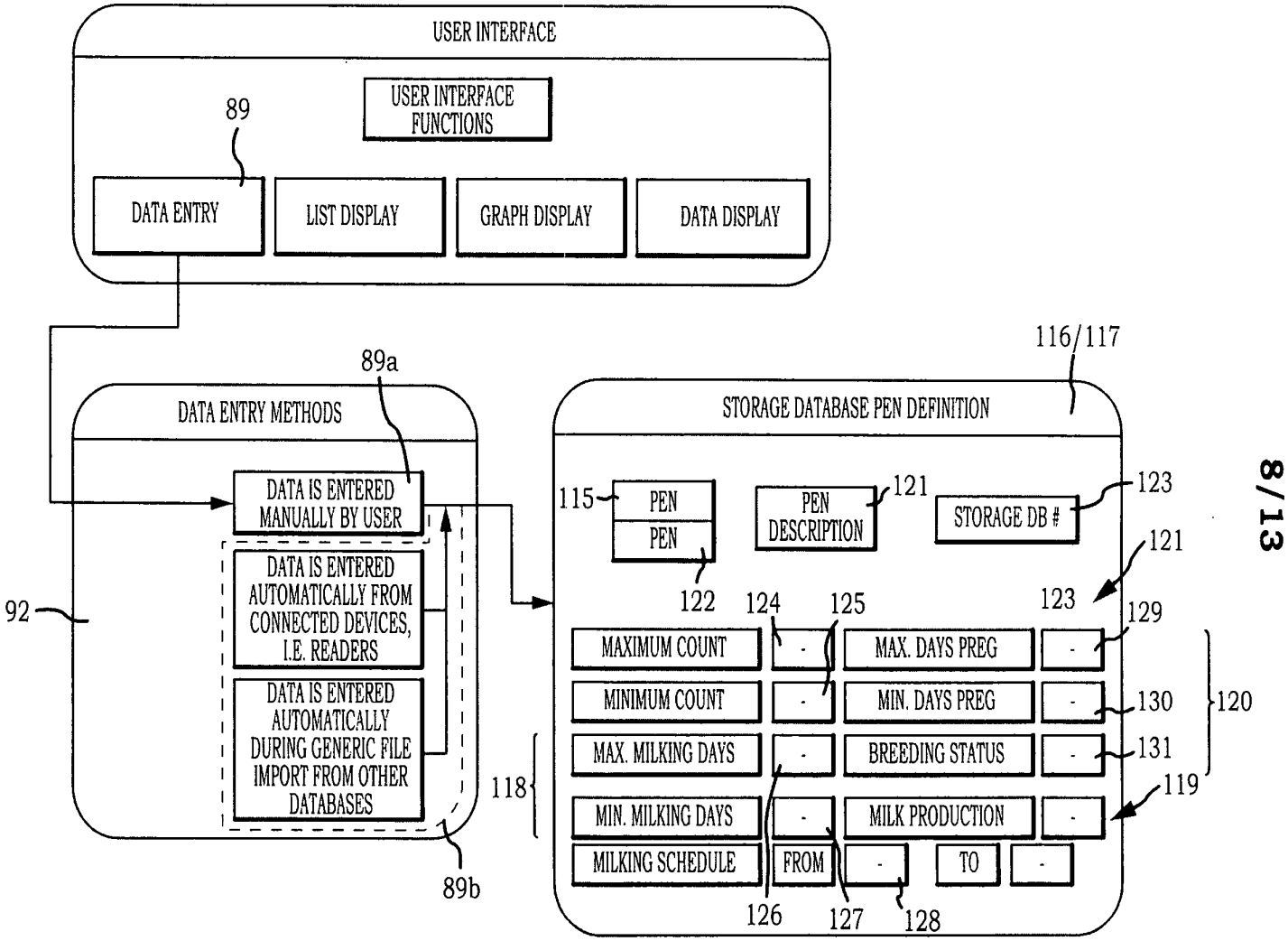

USER INTERFACE
USER INTERFACE FUNCTIONS
89
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
89a
DATA ENTRY METHODS
DATA IS ENTERED MANUALLY BY USER
DATA IS ENTERED AUTOMATICALLY FROM CONNECTED DEVICES, I.E. READERS
DATA IS ENTERED AUTOMATICALLY DURING GENERIC FILE IMPORT FROM OTHER DATABASES
92
89b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

FIG.8

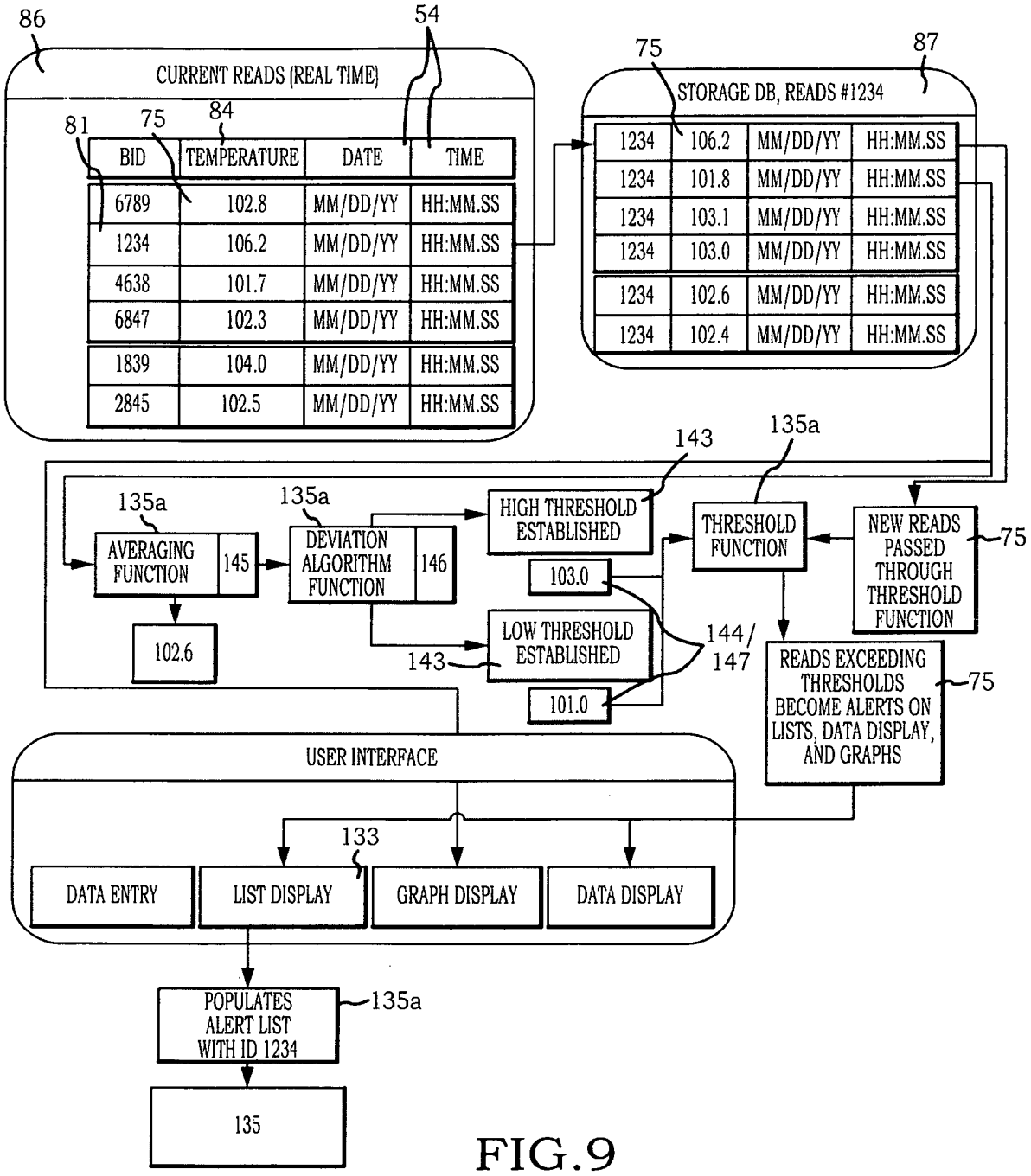

86
54
CURRENT READS (REAL TIME)
81
75
84
BID
TEMPERATURE
DATE
TIME
6789 102.8 MM/DD/YY HH:MM.SS
1234 106.2 MM/DD/YY HH:MM.SS
4638 101.7 MM/DD/YY HH:MM.SS
6847 102.3 MM/DD/YY HH:MM.SS
1839 104.0 MM/DD/YY HH:MM.SS
2845 102.5 MM/DD/YY HH:MM.SS
75
87
STORAGE DB, READS #1234
1234 106.2 MM/DD/YY HH:MM.SS
1234 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
135a
AVERAGING FUNCTION
145
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
101.0
READS EXCEEDING THRESHOLDS BECOME ALERTS ON LISTS, DATA DISPLAY, AND GRAPHS
75
USER INTERFACE
133
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
POPULATES ALERT LIST WITH ID 1234
135a
135

FIG.9

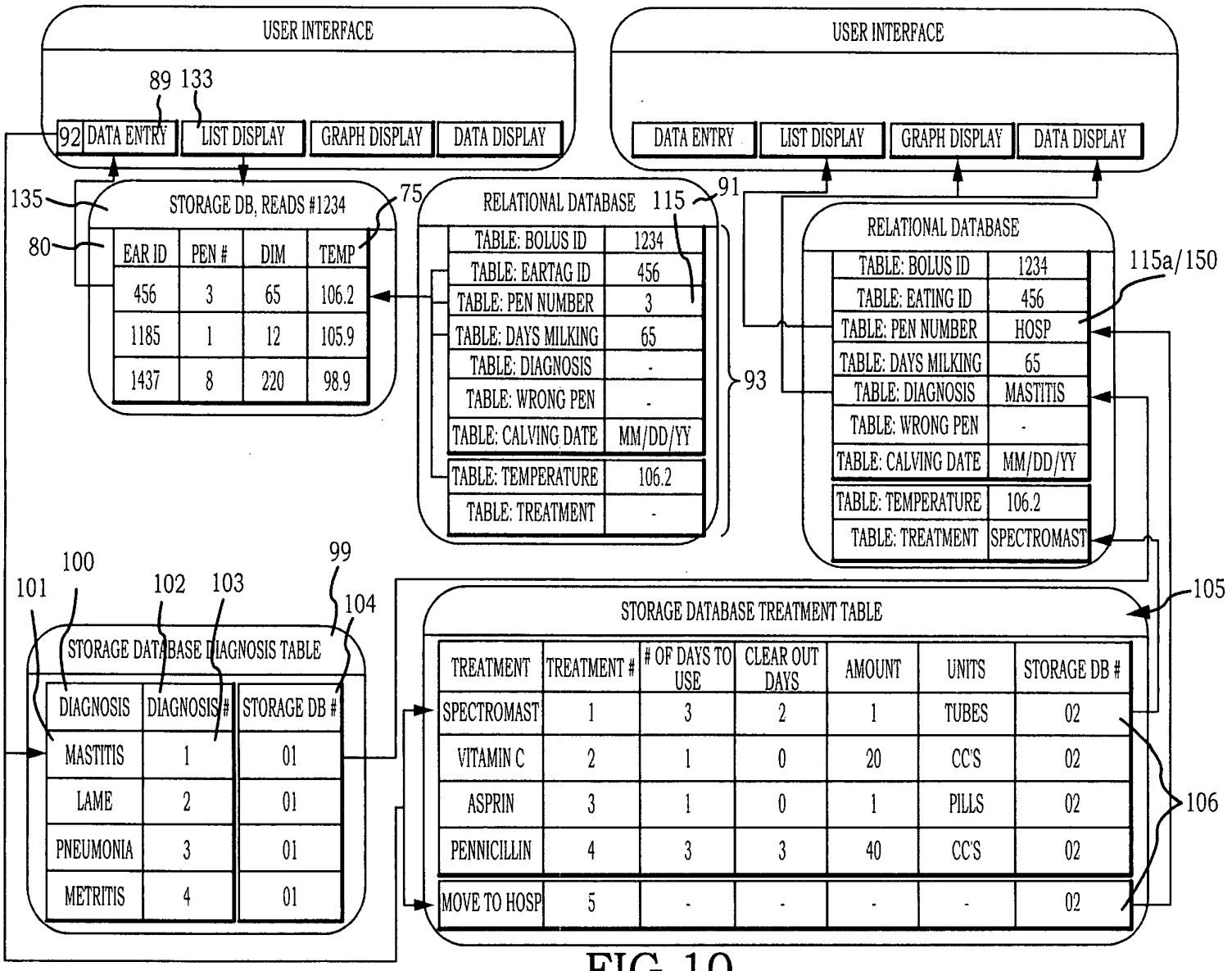

USER INTERFACE
89 133
92 DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
USER INTERFACE
DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
135
80
STORAGE DB, READS #1234
75
EAR ID | PEN # | DIM | TEMP
456 | 3 | 65 | 106.2
1185 | 1 | 12 | 105.9
1437 | 8 | 220 | 98.9
RELATIONAL DATABASE
115
91
TABLE: 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
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

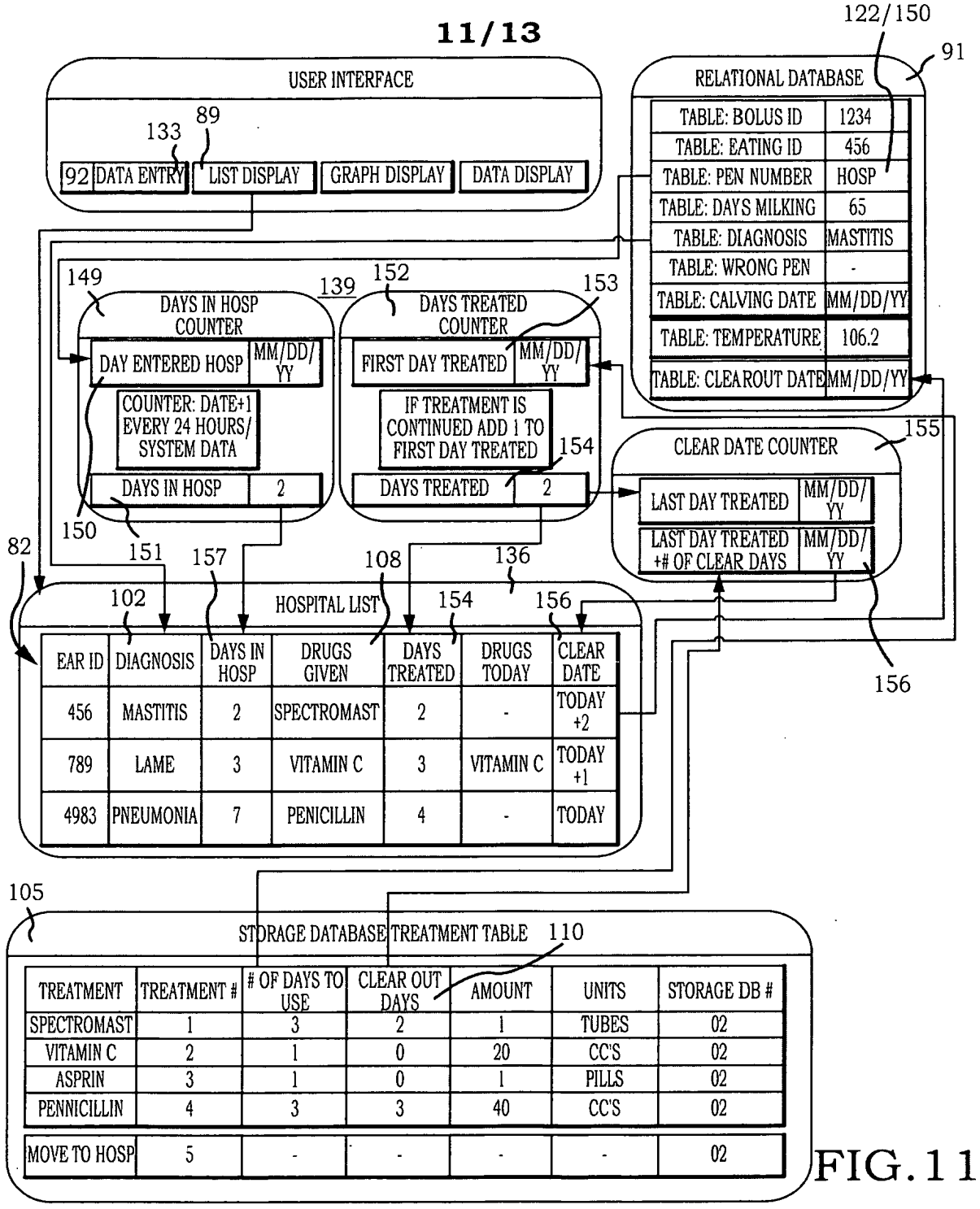

USER INTERFACE
89
133
92 DATA ENTRY
LIST DISPLAY
GRAPH DISPLAY
DATA DISPLAY
122/150
91
RELATIONAL DATABASE
TABLE: BOLUS ID 1234
TABLE: EATING ID 456
TABLE: PEN NUMBER HOSP
TABLE: DAYS MILKING 65
TABLE: DIAGNOSIS MASTITIS
TABLE: WRONG PEN -
TABLE: CALVING DATE MM/DD/YY
TABLE: TEMPERATURE 106.2
TABLE: 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
154
DAYS TREATED 2
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
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
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

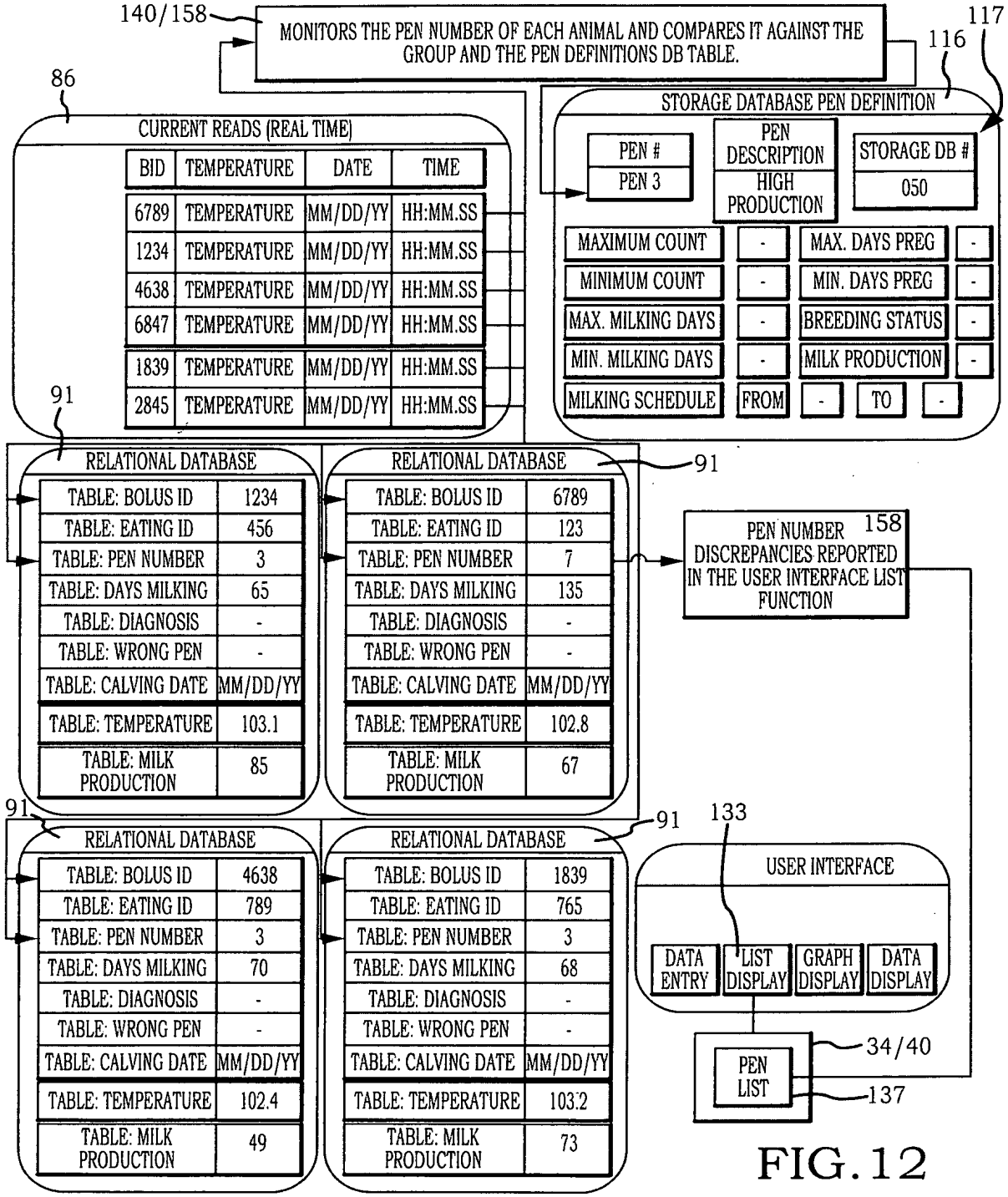

140/158
MONITORS THE PEN NUMBER OF EACH ANIMAL AND COMPARES IT AGAINST THE GROUP AND THE PEN DEFINITIONS DB TABLE.
117
116
86
CURRENT READS (REAL TIME)
BID | TEMPERATURE | DATE | TIME
6789 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1234 | TEMPERATURE | MM/DD/YY | HH:MM.SS
4638 | TEMPERATURE | MM/DD/YY | HH:MM.SS
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

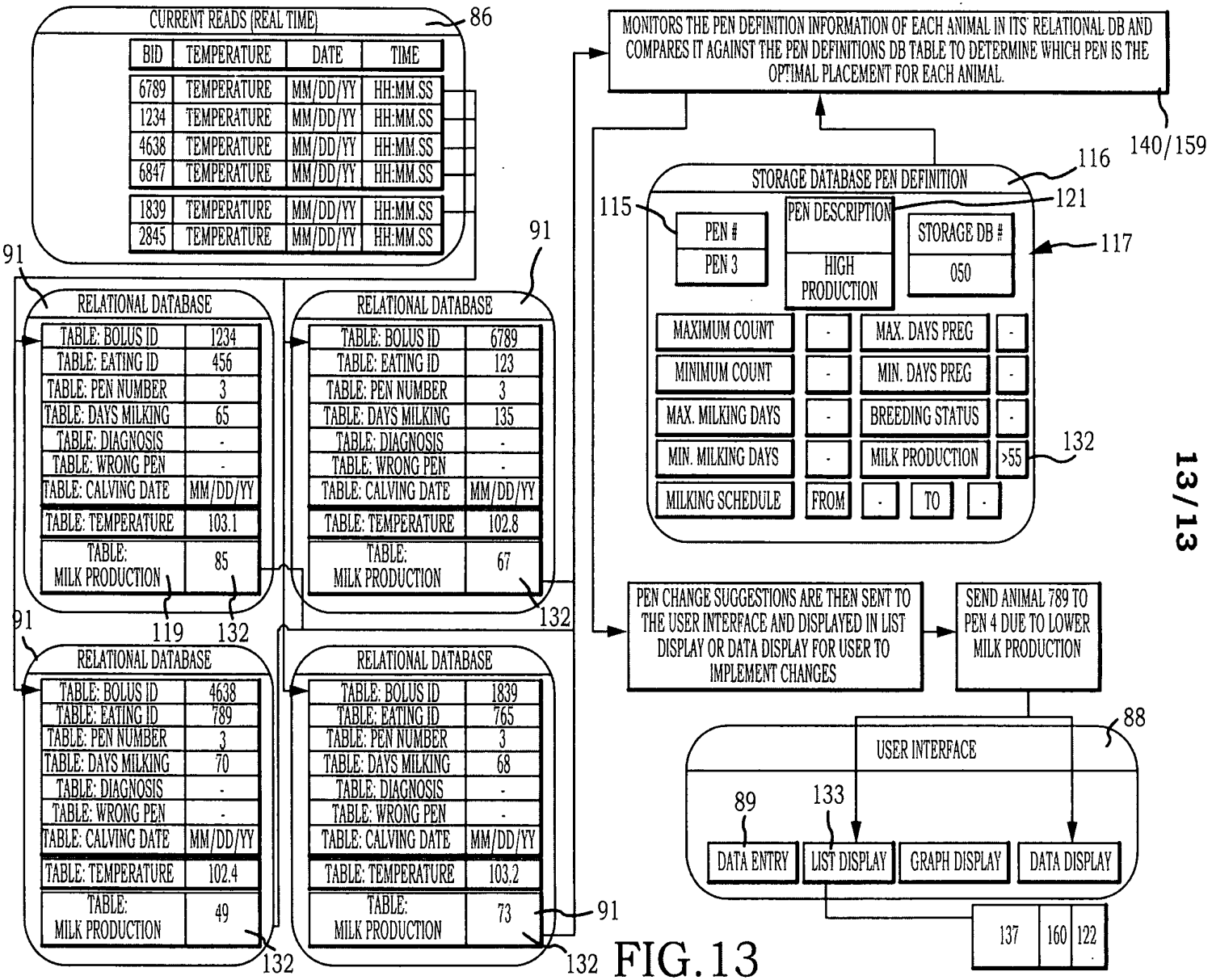

CURRENT READS (REAL TIME)
86
BID | TEMPERATURE | DATE | TIME
6789 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1234 | TEMPERATURE | MM/DD/YY | HH:MM.SS
4638 | TEMPERATURE | MM/DD/YY | HH:MM.SS
6847 | TEMPERATURE | MM/DD/YY | HH:MM.SS
1839 | TEMPERATURE | MM/DD/YY | HH:MM.SS
2845 | TEMPERATURE | MM/DD/YY | HH:MM.SS
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
91
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
121
HIGH PRODUCTION
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

FIG. 13

13/13

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

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
13/391,614	Nicholas P. Rettedal	bellaUSNPbolus

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

INTERNATIONAL APPLICATION NO.	
PCT/US10/02509	
I.A. FILING DATE	PRIORITY DATE
09/14/2010	09/15/2009

CONFIRMATION NO. 3807
371 FORMALITIES LETTER

OC000000053221270

Date Mailed: 03/21/2012

Notification of Insufficient Fees (DO/EO/US)

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as a Designated Office (37 CFR 1.494):

- Indication of Small Entity Status
- Priority Document
- Copy of the International Application filed on 02/21/2012
- Copy of the International Search Report filed on 02/21/2012
- Copy of IPE Report filed on 03/19/2012
- Preliminary Amendments filed on 02/21/2012
- Information Disclosure Statements filed on 02/21/2012
- Oath or Declaration filed on 02/21/2012
- U.S. Basic National Fees filed on 02/21/2012
- Assignment filed on 02/21/2012
- Priority Documents filed on 02/21/2012
- Power of Attorney filed on 02/21/2012

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

- Additional claim fees of $**240** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

Total additional fees required for this application is $**240** for a Small Entity:

Total additional claim fee(s) for this application is $**240**
- $**240** for **16** total claims over 20.

ALL OF THE ITEMS SET FORTH ABOVE MUST BE SUBMITTED WITHIN TWO (2) MONTHS FROM THE DATE OF THIS NOTICE OR BY 32 MONTHS FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

CHARITTA A SHELTON

Telephone: (571) 272-3926

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UNITED STATES DEPARTMENT OF COMMERCE
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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
13/391,614	02/21/2012		840	bellaUSNPbolus	26	1

CONFIRMATION NO. 3807

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

FILING RECEIPT

OC000000053221269

Date Mailed: 03/21/2012

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**

Applicant(s)

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

Assignment For Published Patent Application

Bella Technologies, LLC

Power of Attorney: The patent practitioners associated with Customer Number 39208

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/US10/02509 09/14/2010
which claims benefit of 61/276,723 09/15/2009

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 03/19/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/391,614**

Projected Publication Date: 06/28/2012

Non-Publication Request: No

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

Title

Computer Implemented Animal Management System

Preliminary Class

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.

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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.

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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NOT GRANTED

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/391,614

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	190		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	60		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	125		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	36 minus 20 =	* 16	x 30 =	480	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 125 =	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))				225			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1080		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.

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET

Substitute for Form PTO-1360
(For use with Form PTO/SB/06)

Application Number	Filing Date
13391614	

Applicant(s) Nicholas Rettedal

* May be used for additional claims or amendments

CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT	
	Indep	Depend	Indep	Depend	Indep	Depend
1	1		---	---		
2		1	---	---		
3		1	---	---		
4		1	---	---		
5		1	---	---		
6		1	---	---		
7		1	---	---		
8		1	---	---		
9		1	---	---		
10		1	---	---		
11		1	---	---		
12		1	---	---		
13		1	---	---		
14		1	---	---		
15		1	---	---		
16		1	---	---		
17		1	---	---		
18		1	---	---		
19		1	---	---		
20		1	---	---		
21	1		1			
22		1		1		
23		1		1		
24		1		1		
25		1		1		
26		1		1		
27		1		1		
28		1		1		
29		1		1		
30		1		1		
31		1		1		
32		1		1		
33		1		1		
34		1		1		
35		1		1		
36		1		1		
37		1		1		
38		1		1		
39		1		1		
40		1		1		
41		1		1		
42		3		3		
43		3		3		
44		3		3		
45		3		3		
46		3		3		
47						
48						
49						
50						
Total Indep	2		1		0	
Total Depend	54	↵	35	↵	0	↵
Total Claims	56		36		0	

CLAIMS	*		*		*	
	Indep	Depend	Indep	Depend	Indep	Depend
51						
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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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

Group Art Unit:

Examiner:

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

REPLY TO NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

The applicant, in response to the Notice to File Missing Parts of Nonprovisional Application mailed on March 21, 2012, submits the fee amount of $240.00 for the additional claim fees.

Dated this 2 day of April, 2012

Respectfully Submitted,

By: _____

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

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

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
13/391,614	Nicholas P. Rettedal	bellaUSNPbolus

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

INTERNATIONAL APPLICATION NO.	
PCT/US10/02509	
I.A. FILING DATE	PRIORITY DATE
09/14/2010	09/15/2009

CONFIRMATION NO. 3807
371 FORMALITIES LETTER



Date Mailed: 03/21/2012

Notification of Insufficient Fees (DO/EO/US)

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as a Designated Office (37 CFR 1.494):

- Indication of Small Entity Status
- Priority Document
- Copy of the International Application filed on 02/21/2012
- Copy of the International Search Report filed on 02/21/2012
- Copy of IPE Report filed on 03/19/2012
- Preliminary Amendments filed on 02/21/2012
- Information Disclosure Statements filed on 02/21/2012
- Oath or Declaration filed on 02/21/2012
- U.S. Basic National Fees filed on 02/21/2012
- Assignment filed on 02/21/2012
- Priority Documents filed on 02/21/2012
- Power of Attorney filed on 02/21/2012

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

- Additional claim fees of $**240** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

Total additional fees required for this application is $**240** for a Small Entity:

Total additional claim fee(s) for this application is $**240**
- $**240** for **16** total claims over 20.

ALL OF THE ITEMS SET FORTH ABOVE MUST BE SUBMITTED WITHIN TWO (2) MONTHS FROM THE DATE OF THIS NOTICE OR BY 32 MONTHS FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 301 of 452

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

CHARITTA A SHELTON

Telephone: (571) 272-3926

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 302 of 452

Electronic Patent Application Fee Transmittal

Application Number:	13391614
Filing Date:	21-Feb-2012
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:	bellaUSNPbolus

Filed as Large Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	1615	4	60	240
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**240**

Electronic Acknowledgement Receipt

EFS ID:	12452814
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
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:	bellaUSNPbolus
Receipt Date:	02-APR-2012
Filing Date:	21-FEB-2012
Time Stamp:	21:32:35
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$240
RAM confirmation Number	6638
Deposit Account	
Authorized User	

File Listing:

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

Illumina Exhibit 1002
Sinotec, Ltd. v. ST Reproductive Tech., LLC

1	Transmittal Letter	Transmittal_Letter.pdf	20235 adc67fbe10ed5b1a51a3b40b37aee936ebd0b226	no	2
Warnings:					
Information:					
2	Applicant Response to Pre-Exam Formalities Notice	Reply.pdf	15539 16ba400eee7cb64542c4354f779ccc8781bb37be	no	1
Warnings:					
Information:					
3	Miscellaneous Incoming Letter	Notice.pdf	30137 3935900822bd24dd6935476aeb01011bf7dec88b	no	2
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30151 b79221129e31adef1b0a3bc1be2e253a52d66035	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	96062		

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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

Group Art Unit:

Examiner:

Mail Stop Missing Parts
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 Notification of Insufficient Fees (1 page(s));

2. a copy of the Notification of Insufficient Fees (2 page(s)); and

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

I have this 2 day of April, 2012, 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 307 of 452

Dated this 2 day of April, 2012

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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 308 of 452

Document code: WFEE

United States Patent and Trademark Office
Sales Receipt for Accounting Date: 10/25/2012

CSHELTON ADJ #00000001 Mailroom Dt: 04/02/2012
Seq No: 6638 Sales Acctg Dt: 04/03/2012 13391614
01 FC : 1615 -240.00 OP

Document code: WFEE

United States Patent and Trademark Office
Sales Receipt for Accounting Date: 10/25/2012

CSHELTON SALE #00000002 Mailroom Dt: 04/02/2012 13391614
01 FC : 2615 120.00 OP

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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

Group Art Unit: 2612

Examiner:

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

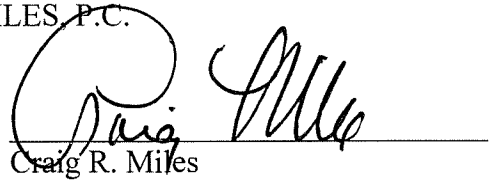
SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97(b)(3)

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 16 day of April, 2012

Respectfully Submitted,

CR MILES, P.C.

By: 

Craig R. Miles
ATTORNEY FOR APPLICANTS
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	13/391,614
	Filling Date	February 21, 2012
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2612
	Examiner Name	-
	Attorney Docket Number	bellaUSNPbolus
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
	2012/0068848	03-22-2012	Campbell, et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Acknowledgement Receipt

EFS ID:	12554448
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
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:	bellaUSNPbolus
Receipt Date:	16-APR-2012
Filing Date:	21-FEB-2012
Time Stamp:	20:02:39
Application Type:	U.S. National Stage under 35 USC 371

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	21573 f8558e4acc17ab6e3b9e2c76b6ad8a161f58be6d	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	17930 316c9f42f38890250c30ce177808f30a0876f6d9	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	14919 11e447a39a7dd160afccd34b253fcefb6b68b75d	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
		Total Files Size (in bytes):	54422		

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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

Group Art Unit: 2612

Examiner:

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

LETTER OF TRANSMITTAL

Sir/Madam:

Please find enclosed 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)(4) (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 16 day of April, 2012, 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 315 of 452

Direct all correspondence to:

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

Customer No.: 39208

Dated this 16 day of April, 2012

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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 316 of 452

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.: 13/391,614

Filed: February 21, 2012

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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)

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Dated this 22 day of June, 2012

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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	13/391,614
	Filling Date	February 21, 2012
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2612
	Examiner Name	-
	Attorney Docket Number	bellaUSNPbolus
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
	5,818,354	10-06-1998	Gentry
	5,984,875	11-16-1999	Brune
	2005/0134452	06-23-2005	Smith
	2008/0236500	10-02-2008	Hodges et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Acknowledgement Receipt

EFS ID:	13088038
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
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:	bellaUSNPbolus
Receipt Date:	22-JUN-2012
Filing Date:	21-FEB-2012
Time Stamp:	18:13:55
Application Type:	U.S. National Stage under 35 USC 371

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	21235 dafebeb15bac59f253f02d4aa65b6bfd806dc7ba	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	18783 f531bf456e777ea44e259a579a7bada23706605a	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	17324 1bbfe337d46e44229eaf411e0fe81609a7dbcbff	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	57342	

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

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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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

Group Art Unit: 2612

Examiner:

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

LETTER OF TRANSMITTAL

Sir/Madam:

Please find enclosed 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)(4) (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));

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

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 321 of 452

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 June, 2012

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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 322 of 452

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
13/391,614	02/21/2012	Nicholas P. Rettedal	bellaUSNPbolus

CONFIRMATION NO. 3807

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

PUBLICATION NOTICE

OC000000055100093

Title: Computer Implemented Animal Management System

Publication No.US-2012-0161964-A1
Publication Date:06/28/2012

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

Document code: WFEE

United States Patent and Trademark Office
Sales Receipt for Accounting Date: 10/25/2012

CSHELTON RF #30117474 Mailroom Dt: 10/25/2012 13391614

Credit Card Refund Total: $120.00

American Express XXXXXXXXXXXX2015

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
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U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
13/391,614	Nicholas P. Rettedal	bellaUSNPbolus

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

INTERNATIONAL APPLICATION NO.	
PCT/US10/02509	
I.A. FILING DATE	PRIORITY DATE
09/14/2010	09/15/2009

CONFIRMATION NO. 3807
371 ACCEPTANCE LETTER

OC000000057323977

Date Mailed: 10/31/2012

NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office in its capacity as a Designated / Elected Office (37 CFR 1.495), has determined that the above identified international application has met the requirements of 35 U.S.C. 371, and is ACCEPTED for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above and the relevant dates are:

02/21/2012	03/15/2012
DATE OF RECEIPT OF 35 U.S.C. 371(c)(1), (c)(2) and (c)(4) REQUIREMENTS	DATE OF COMPLETION OF ALL 35 U.S.C. 371 REQUIREMENTS

A Filing Receipt (PTO-103X) will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE " FILING DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1), (c)(2) and (c)(4) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN ABOVE.** *The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363).* Once the Filing Receipt has been received, send all correspondence to the Group Art Unit designated thereon.

The following items have been received:

- Indication of Small Entity Status
- Copy of the International Application filed on 02/21/2012
- Copy of the International Search Report filed on 02/21/2012
- Copy of IPE Report filed on 03/19/2012
- Preliminary Amendments filed on 02/21/2012
- Information Disclosure Statements filed on 02/21/2012
- Oath or Declaration filed on 02/21/2012
- U.S. Basic National Fees filed on 02/21/2012
- Assignment filed on 02/21/2012
- Priority Documents filed on 02/21/2012
- Power of Attorney filed on 02/21/2012

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 325 of 452

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

CHARITTA A SHELTON

Telephone: (571) 272-3926

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
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UNITED STATES PATENT AND TRADEMARK OFFICE

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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/391,614	02/21/2012	2612	1080	bellaUSNPbolus	26	1

CONFIRMATION NO. 3807

UPDATED FILING RECEIPT

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



Date Mailed: 10/31/2012

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, Fort Collins, CO;
Stephen M. Weilnau, Greeley, CO;
Scott R. Cockroft, Greeley, CO;
Billy J. Yeager, Gilbert, AZ;

Applicant(s)

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Stephen M. Weilnau, Greeley, CO;
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Billy J. Yeager, Gilbert, AZ;

Assignment For Published Patent Application

Bella Technologies, LLC

Power of Attorney: The patent practitioners associated with Customer Number 39208

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/US10/02509 09/14/2010
which claims benefit of 61/276,723 09/15/2009

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 03/19/2012
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/391,614**
Projected Publication Date: Not Applicable

Non-Publication Request: No

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

Computer Implemented Animal Management System

Preliminary Class

340

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 (1-866-999-4158).

Smaxtec Exhibit 1002
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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).

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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, facilitate, and accelerate 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.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/391,614

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	195		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	60		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	125		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	36 minus 20 =	* 16	x 31 =	496	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 125 =	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))				230			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1106		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	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/391,614	02/21/2012	Nicholas P. Rettedal	bellaUSNPbolus	3807

39208 7590 11/13/2013

CR MILES, P.C.
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EXAMINER	
TWEEL JR, JOHN ALEXANDER	

ART UNIT	PAPER NUMBER
2687	

MAIL DATE	DELIVERY MODE
11/13/2013	PAPERPAPER

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. 13/391,614	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 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, 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 *2/21/12*.

☐ 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) *21-46* 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) *21-30 and 34-46* is/are rejected.

8)☒ Claim(s) *31-33* 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/08) Paper No(s)/Mail Date *2/21/12;4/16/12;6/22/12*.

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.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

- Page 5, Line 14: The correct article before “hospital" should read –a--.
- Page 11, Line 4: There is no period at the end of this sentence.
- Page 17, Line 2: 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 21-30 and 34-40 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 21, the computer implemented method of animal tracking taught by Renz includes the following claimed steps, as noted, 1) the claimed connecting a computer to an RFID reader is achieved using the animal management system (No. 80) connected to an RFID transponder (Paragraph 183) that interrogates an animal's tag, 2) the claimed reading an RFID device implanted in an animal is achieved using said transponder to read an implanted device (Paragraph 265), 3) the claimed retrieving an amount of animal identification information is achieved using the data systems (No. 88) containing unique animal identification numbers (Paragraph 178), 4) the claimed the claimed retrieving an amount of date-time information is read on the specification (Paragraph 232) wherein treatment dates can be tracked in addition to feeding times (Paragraph 462), 5) the claimed retrieving an amount of sensed animal information is shown in Figure 59 wherein a box (No. 276) displays the temperature of the animal (Paragraph 253), 6) the claimed retrieving an amount of animal location information is read on the specification (Paragraph 204) that allows a user to record movement from location to location, and 7) the claimed obtaining a logical value is read on the specification that states (Paragraph 195) a pen location is determined based on the location of the animal. However, there is no mention of linking to the information retrieved from the RFID device an amount of animal information stored in a data base of a computer, converting the information retrieved into a plurality of logical variables, and inserting at least one of the plurality of logical variables into a 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 22, the Renz reference gathers identification information for a plurality of animals, in this case cattle.

For claim 23, the Renz reference gathers date-time information for a plurality of cattle being kept in a plurality of pens.

For claim 24, the Renz reference gathers temperature information for a plurality of animals, in this case cattle.

For claim 25, the Renz reference tracks the locations of a plurality of cattle through several holding pens.

For claim 26, the database of Renz is designed to be used to track the identification, location, and health of a number of cattle.

For claim 27, the Renz reference gathers temperature information (Paragraph 253) of a plurality of cattle.

For claim 28, the Renz reference gathers health information for a plurality of animals (Paragraph 175).

For claim 29, the information gathered in the Renz reference also includes pen and lot number (Paragraph 29).

For claim 30, the Renz reference also measures the number of days for a particular treatment (Paragraphs 192-194).

For claims 34 and 35, 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 36, a typical interface method used in the Renz reference is an Internet server (Paragraph 173).

For claims 37 and 38, the Renz reference may perform data transfer using various network configurations such as wide area and local networks (Paragraph 172).

For claim 39, the Renz reference contemplates the use of a computer in one location having limited access to data generated from other locations (Paragraph 185).

For claim 40, the Renz reference mentions the use of hand-held tag readers (Paragraph 253).

4. Claims 41-46 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 40 above, and further in view of **Gray** [US 2005/0145187].

For claim 41, there is no mention of a cellular telephone capable of configuration with the program used in Renz or Tsuyuzaki.

Cellular telephones 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 42, the Renz reference uses a hand-held treatment device (Paragraph 172).

For claims 43-45, the Gray reference allows access using personal computers (No. 18), cell phones (No. 22), and PDAs (No. 20).

For claim 46, use of a bolus is not new in the prior art. The Gray reference mentions a prior art device using a bolus transponder (Paragraph 14).

5. Claims 31-33 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.

6. 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.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yoakum [U.S. 5,963,132] presents an encapsulated transponder.

Cox [U.S. 7,962,096] represents a plurality of transponders in a file system.

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.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571 272 3021. 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
11/8/2013

/John A Tweel Jr./
Primary Examiner, Art Unit 2687

Notice of References Cited	Application/Control No. 13/391,614	Applicant(s)/Patent Under Reexamination RETTEDAL ET AL.	
	Examiner John A. Tweel Jr.	Art Unit 2687	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2005/0145187	07-2005	Gray, James DeWayne	340/010.1
*	B	US-5,963,132	10-1999	Yoakum, Jay	340/572.1
*	C	US-7,962,096	06-2011	Cox, Steve	340/539.32
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*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.

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. 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 contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Nicholas P. Rettedal
Art Unit	
Examiner Name	
Attorney Docket Number	bellaUSNPbolus

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
/JT/		US- 2006/0185605	08-24-2006	Renz, et al.	
/JT/		US- 2007/0271320	11-22-2007	Tsuyuzaki	
/JT/		US- 2008/0104209	05-01-2008	Singhal, et al.	
		US-			
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		US-			

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	/John Tweel Jr/	Date Considered	11/08/2013

*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.**

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

PTO/SB/08b (07-09)
Approved for use through 07/31/2012. 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 contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 2

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Nicholas P. Rettedal
Art Unit	
Examiner Name	
Attorney Docket Number	bellaUSNPbolus

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]
/JT/		International PCT Patent Application No. PCT/US2010/002509, filed September 14, 2010	
/JT/		US Provisional Patent Application No. 61/276,723, filed September 15, 2009	
/JT/		BOEHMER, et al. Effects of Temperature of Consumed Water on Rumen Temperature of Beef Cows. Oklahoma Agricultural Experiment Station, 2009, 4 total pages.	
/JT/		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.	
/JT/		SMARTSTOCK USA. Website, http://www.smartstock-usa.com, originally downloaded 12/30/2011, 12 total pages.	

Examiner Signature	/John Tweel Jr/	Date Considered	11/08/2013

*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.**

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13391614	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	11/08/2013								
	1	-								
	2	-								
	3	-								
	4	-								
	5	-								
	6	-								
	7	-								
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	24	✓								
	25	✓								
	26	✓								
	27	✓								
	28	✓								
	29	✓								
	30	✓								
	31	O								
	32	O								
	33	O								
	34	✓								
	35	✓								
	36	✓								

Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 343 of 452

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13391614	RETTEDAL ET AL.
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CLAIM		DATE								
Final	Original	11/08/2013								
	37	✓								
	38	✓								
	39	✓								
	40	✓								
	41	✓								
	42	✓								
	43	✓								
	44	✓								
	45	✓								
	46	✓								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13391614	RETTEDAL ET AL.
	Examiner	Art Unit
	JOHN A TWEEL JR	2687

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
340	539.13	11/8/13	JAT
	539.12	11/8/13	JAT
	572.1	11/8/13	JAT
119	51.02	11/8/13	JAT
340	10.1	11/8/13	JAT

SEARCH NOTES		
Search Notes	Date	Examiner

INTERFERENCE SEARCH			
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

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	13/391,614
	Filling Date	February 21, 2012
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2612
	Examiner Name	-
	Attorney Docket Number	bellaUSNPbolus
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/	5,818,354	10-06-1998	Gentry
/JT/	5,984,875	11-16-1999	Brune
/JT/	2005/0134452	06-23-2005	Smith
/JT/	2008/0236500	10-02-2008	Hodges et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:
/John Tweel Jr/	11/08/2013

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	13/391,614
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	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2612
	Examiner Name	-
	Attorney Docket Number	bellaUSNPbolus
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/	2012/0068848	03-22-2012	Campbell, et al.

EXAMINER SIGNATURE:	DATE CONSIDERED:
/John Tweel Jr/	11/08/2013

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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

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 29 day of November, 2013

Respectfully Submitted,

CR MILES, P.C.

By: _____

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

Electronic Patent Application Fee Transmittal

Application Number:	13391614
Filing Date:	21-Feb-2012
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:	bellaUSNPbolus

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

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:	17531366
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
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:	bellaUSNPbolus
Receipt Date:	29-NOV-2013
Filing Date:	21-FEB-2012
Time Stamp:	14:28:53
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$90
RAM confirmation Number	168
Deposit Account	
Authorized User	

File Listing:

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

Illumina Exhibit 1002
Sinatec, Inc. v. ST Reproductive Tech., LLC

1	Transmittal Letter	Transmittal_Letter.pdf	24305 962cabf739dcb033e85c80c324391a38d85ef86b	no	2
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	19834 904e83c878dddc0f48c577ad4ad767cde4719253	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	24297 b5d6cf4fefe538d357416f850c0256179f0b755b	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Foreign Reference	NZ_OA_1.pdf	24596 ebd94d4bcc08d536966de49ee1968b512660bb94	no	1
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Information:					
5	Foreign Reference	NZ_OA_2.pdf	18558 db5784fb888874c7260486fd987dee45231de0c4	no	1
Warnings:					
Information:					
6	Foreign Reference	NZ_OA_3.pdf	27153 e6d955703ff90a2734ab16f66c69935a569f1496	no	1
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Information:					
7	Information Disclosure Statement (IDS) Form (SB08)	NZ_OA_4.pdf	31933 e96fad689a0b557819f683557615ec842095e8ff	no	3
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Information:					
This is not an USPTO supplied IDS fillable form					
8	Fee Worksheet (SB06)	fee-info.pdf	30222 6894ee92455dba4db81263c4844189aaef1fd55b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	200898		

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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

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

1. a Supplemental Information Disclosure Statement under 37 C.F.R. § 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 29 day of November, 2013, 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 354 of 452

Direct all correspondence to:

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

Customer No.: 39208

Dated this 29 day of November, 2013

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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 355 of 452

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	13/391,614
	Filling Date	February 21, 2012
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr, John A.
	Attorney Docket Number	bellaUSNPbolus
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 /of country where published	T2
		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.	
		Corresponding New Zealand patent application No.: 599357; Letters Patent dated September 3, 2012, 1 page.	
		New Zealand patent application No.: 610343; OA dated November 11, 2013, 3 total pages.	
		International Patent Cooperation Treaty Patent Application No. PCT/US2011/001788, filed October 19, 2011.	
		United States Provisional Patent Application No. 61/455,419, filed October 19, 2010.	
		United States Patent Application No. 13/824,270, filed March 15, 2013.	

EXAMINER SIGNATURE:	DATE CONSIDERED:

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.: 13/391,614

Filed: February 21, 2012

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Attorney Docket No.: bellaUSNPbolus

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Examiner: Tweel Jr, John A.

Mail Stop Amendment
Commissioner for Patents
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CR MILES, P.C.

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Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

Group Art Unit: 2687

Examiner: Tweel Jr, John A.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
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Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 358 of 452

Direct all correspondence to:

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Fort Collins, CO 80524

Customer No.: 39208

Dated this 13 day of February, 2014

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By: _____

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Smaxtec Exhibit 1002
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 359 of 452

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	13/391,614
	Filling Date	February 21, 2012
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr, John A.
	Attorney Docket Number	bellaUSNPbolus
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
	6,371,927	04-16-2002	Brune et al.
	6,099,482	08-08-2000	Brune et al.
	5,984,875	11-16-1999	Brune

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Patent Application Fee Transmittal

Application Number:	13391614
Filing Date:	21-Feb-2012
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Jill Buck
Attorney Docket Number:	bellaUSNPbolus

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

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:	18196933
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Jill Buck
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaUSNPbolus
Receipt Date:	13-FEB-2014
Filing Date:	21-FEB-2012
Time Stamp:	13:36:53
Application Type:	U.S. National Stage under 35 USC 371

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	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	24087 deb7f5e19c0ca3115d4ba1be44602d75a971ec82	no	1

Warnings:	
Information:	

This is not an USPTO supplied IDS fillable form					
2	Transmittal Letter	Transmittal_Ltr.pdf	29689 d029e47ecdbbddb9ff257b807c6464d67e2ce96d	no	2
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Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	31515 4ce94f0a0c50bf06308138e338166cd51286813b	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
4	Fee Worksheet (SB06)	fee-info.pdf	30277 b79bb4523bca86211cf48e8fa6e57661219ebf6d	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	115568		

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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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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

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 November 13, 2013. 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 one (1) month extension of time from February 13, 2014 to and including March 13, 2014, is submitted herewith. 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 5, line 12, with:

--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]] a hospital list of RFID objects which are receiving treatment in accordance with a treatment plan.--

2. Please replace the paragraph beginning on page 10, line 27, 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).--

3. Please replace the paragraph beginning on page 16, line 22, 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)

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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).--

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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:

1-20 (canceled).

21 (currently amended). 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 said RFID device implanted in said animal;~~

~~f) retrieving an amount of animal location information from said RFID device implanted in said animal;~~

~~g)~~ linking an amount of animal information of said animal stored in a data base of said computer 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~~, said amount of animal information stored in said data base of said computer comprising an amount of milk production information or an amount of days milked;

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~~h)~~ converting said amount of animal information of said animal stored in said database of said computer linked to 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~~ one or more logical variables;

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

~~j)~~ obtaining a logical value relating to said animal.

22 (currently amended). The computer implemented method of animal tracking as described in claim 21, wherein ~~said step of~~ retrieving and linking ~~an amount of animal identification information from a first bit segment of an RFID device implanted in an animal~~ comprise:

~~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; and

correspondingly linking an amount of animal information of said plurality of animals stored in said data base of said computer to said amount of information retrieved from said plurality of RFID device.

23 (currently amended). 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~~ further comprising 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 (currently amended). 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~~ further comprising retrieving an amount of sensed animal information from ~~a third bit segment of~~ said plurality of RFID devices implanted in said plurality of animals.

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25 (currently amended). 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~~ further comprising retrieving an amount of animal location information from ~~a fourth bit segment of~~ said plurality of RFID devices implanted in said plurality of animals.

26 (canceled).

27 (currently amended). The computer implemented method of animal tracking as described in claim [[26]] 25, 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 further 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 (currently amended). 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~~ correspondingly linking an amount of animal information of said plurality of animals stored in said data base of said computer to said amount of information retrieved from said plurality of RFID device further comprises correspondingly 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 stored in said data base of said computer to said amount of information retrieved from said plurality of RFID devices implanted in said animals.

29 (currently amended). The computer implemented method of animal tracking as described in claim 28, wherein ~~the step of~~ retrieving an amount of animal location

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

30 (currently amended). 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 further 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 (currently amended). The computer implemented method of animal tracking as described in claim 27, wherein ~~the step of~~ correspondingly 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 to said amount of information retrieved from said plurality of RFID devices implanted in said plurality of animals further comprises ~~the step of~~ correspondingly 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~~ to said amount of information retrieved from said plurality of RFID devices implanted in said plurality of animals.

32 (currently amended). 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 further comprises ~~the step of~~ inserting ~~an amount of desired pen count information,~~ an amount of milk production information or [[,]]an amount of days milked information~~, and an amount of reproductive information~~.

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33 (currently amended). 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 (currently amended). 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~~ correspondingly linking an amount of animal information of said plurality of animals stored in said data base of said computer to said amount of information retrieved from said plurality of RFID device further comprises correspondingly 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 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 to said amount of information retrieved from ~~each said bit segment of~~ said plurality of RFID devices implanted in said plurality of animals.

35 (currently amended). 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~~ further comprising 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.

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36 (currently amended). 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 (currently amended). 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 (currently amended). 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 (currently amended). 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.

40 (currently amended). 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 (currently amended). 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.

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42 (currently amended). 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 (currently amended). 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 (currently amended). 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 (currently amended). 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 (currently amended). 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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REMARKS

Applicant provides the following remarks to the non-final action mailed November 13, 2013.

1. **Status Of The Claims.** Claims 21-46 are pending in the subject application. Claims 21-30 and 34-40 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. 2007/0271320 ("Tsuyuzaki"). Claims 41-46 are rejected under 35 U.S.C.A. Section 103 (a) as being unpatentable over Renz in view of Tsuyuzaki as applied to claim 40 above, and further in view of Gray in United States Patent Publication No. 2005/0145187 ("Gray"). Claims 31-33 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.

2. **Allowable Subject Matter.** The Examiner found claims 31 through 33 allowable subject to being rewritten in independent form.

3. **Amendments To Claims.** The Claims have been amended as set out above without the addition of any new matter solely for the purpose of expediting an allowance of Claims 21-25 and 27-46.

Applicant as to each of Claims 21-25 and 27-46 has removed the recitation of "the step of" or "said step of" as a matter of form.

As to Claim 1, Applicant has further included from Claim 31 the recitation of "an amount of milk production information or an amount of days milked information". As to element g), Applicant has amended the recitation as to form only to recite "linking an amount of animal information of said animal stored in a data base of said computer to said amount of information retrieved from said RFID device implanted in said animal". As to element h), Applicant has amended the recitation as to form only to recite "converting said

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amount of animal information of said animal stored in said database of said computer linked to said amount of information retrieved from said RFID device implanted in said animal".

As to Claim 22, Applicant has further included the features of claim 26.

As to Claims 23-25 and 27-46, Applicant has amended each of the Claims to harmonize the language with Claim 21.

4. Cancellation of Claims. Applicant without prejudice has canceled claim 26. 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.

5. The Rejections Under 35 U.S.C.A. Section 103 Are Overcome. Applicant has amended Claim 1 to further include "an amount of milk production information or an amount of days milked information" from claim 31 which was found allowable. Applicant believes that Claim 1 is now in condition for allowance. Applicant respectfully requests allowance of Claim 1 and each of claims 2-25 and 27-46 which are made ultimately dependent upon Claim 1 and are therefore also now in condition for allowance.

6. Request For Telephonic Interview. Applicant respectfully requests a telephonic interview with the Examiner to address any remaining concerns to bring claims 21-25 and 27-46 to an allowance.

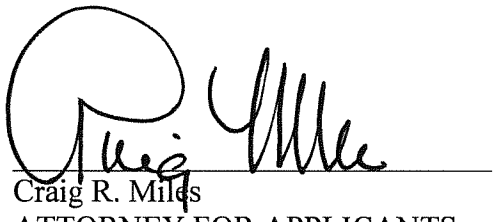
Smaxtec Exhibit 1002
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CONCLUSION

Claims 1-20 and 26 have without prejudice been canceled. Claims 21-25 and 27-46 have been amended without the addition of any new matter. Applicant believes that the amendment to Claim 21 places claims 21-25 and 27-46 in condition for allowance and Applicant respectfully requests allowance of claims 21-25 and 27-46.

Dated this 12 day of March, 2013

Respectfully Submitted,

By: 

Craig R. Miles
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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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

Group Art Unit: 2687

Examiner: Tweel Jr, John A.

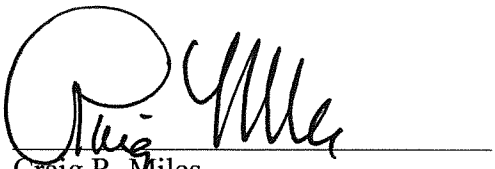
Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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)(1). The one month extension of time extends until March 13, 2014, the period in which the applicant can timely file a reply in the above-reference application which would otherwise be due within three months of the mailing date of the official communication mailed November 13, 2013. 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)(1) of $100.00.

Dated this 12 day of March, 2014

Respectfully Submitted,

By: 

Craig R. Miles
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Electronic Patent Application Fee Transmittal

Application Number:	13391614
Filing Date:	21-Feb-2012
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Jill Buck
Attorney Docket Number:	bellaUSNPbolus

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

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:				
Extension - 1 month with $0 paid	2251	1	100	100

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
		Total in USD ($)		**100**

Electronic Acknowledgement Receipt

EFS ID:	18447454
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Jill Buck
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaUSNPbolus
Receipt Date:	12-MAR-2014
Filing Date:	21-FEB-2012
Time Stamp:	15:23:28
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$100
RAM confirmation Number	1985
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, Ltd. v. ST Reproductive Tech., LLC

1	Transmittal Letter	Transmittal_ltr.pdf	27890 edefa4abcf9488b7fa8400133e60e3e79a3d96b7	no	2
Warnings:					
Information:					
2	Amendment Copy Claims/Response to Suggested Claims	Response.pdf	261563 1e7367a436aa7e7dd554a5d5dcb7a1ffd90a9b32	no	13
Warnings:					
Information:					
3	Extension of Time	Ext_time.pdf	25417 5c468cc6f21187d29b19200c7101780f55a34663	no	1
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30253 e0248077da89b0a57e5d386fc80c3a943c082336	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	345123		

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.: 13/391,614

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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

LETTER OF TRANSMITTAL

Dear Sir/Madam:

In response to the Office Action mailed November 13, 2013, please find the following documents:

1. a Response and Request For Reconsideration Under 37 C.F.R. § 1.111 (13 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 12 day of March, 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.

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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 12 day of March, 2014

Respectfully Submitted,

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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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
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 APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/391,614	Filing Date 02/21/2012	☐ 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

03/12/2014	(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))	* 25	Minus	** 36	= 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
/ANNIE SINGLETON/

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

Application No.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

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 March, 2014

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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	13/391,614
	Filling Date	February 21, 2012
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr, John A.
	Attorney Docket Number	bellaUSNPbolus
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
	8,545,436	10-01-2013	Robertson et al.
	8,547,248	10-01-2013	Zdeblich et al.
	8,588,887	11-19-2013	Arneson et al.
	2011/0212782	09-01-2011	Thompson et al.
	2013/0231188	09-05-2013	Berberich 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 /of country where published	T2
		HACH. Digital Inductive Conductivity Sensor, Convertible Body Style. Website, http:/www.hach.com, product page downloaded 3/5/2014, 2 total pages	

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Patent Application Fee Transmittal

Application Number:	13391614
Filing Date:	21-Feb-2012
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Jill Buck
Attorney Docket Number:	bellaUSNPbolus

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

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:	18466709
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Jill Buck
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaUSNPbolus
Receipt Date:	13-MAR-2014
Filing Date:	21-FEB-2012
Time Stamp:	18:09:33
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$90
RAM confirmation Number	6081
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, Ltd. v. ST Reproductive Tech., LLC

1	Transmittal Letter	Transmittal_ltr.pdf	16005 382303cc9dfeaabba49414be2f640e9762028474	no	2
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	12766 64823240a281e969ffa7159081169e714c8168fc	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	23681 a4e9ebe861f49211a8880084112887eaed39b374	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Non Patent Literature	Digital_Inductive_Conductivity.pdf	29335 76c9764033d1074cb92836128ad008bce040fafe	no	2
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	30277 c07ea14d667402e970e5e19aacf9a45edb3ab472	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	112064		

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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

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 enclosed 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 March, 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 392 of 452

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 March, 2014

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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 393 of 452

Electronic Patent Application Fee Transmittal

Application Number:	13391614
Filing Date:	21-Feb-2012
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Jill Buck
Attorney Docket Number:	bellaUSNPbolus

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

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:	18533588
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
Title of Invention:	Computer Implemented Animal Management System
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Jill Buck
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	bellaUSNPbolus
Receipt Date:	20-MAR-2014
Filing Date:	21-FEB-2012
Time Stamp:	12:29:33
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$90
RAM confirmation Number	11906
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, Ltd. v. ST Reproductive Tech., LLC

1	Fee Worksheet (SB06)	fee-info.pdf	30276 86669f895bc97aeb40c25f1381f738050ef736a9	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	30276

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

39208 7590 05/15/2014

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: 05/15/2014

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/391,614	02/21/2012	Nicholas P. Rettedal	BELLAUSNPBOLUS	3807

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	08/15/2014

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 05/15/2014
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.
13/391,614	02/21/2012	Nicholas P. Rettedal	BELLAUSNPBOLUS	3807

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	08/15/2014

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 399 of 452

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
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/391,614	02/21/2012	Nicholas P. Rettedal	BELLAUSNPBOLUS	3807

39208 7590 05/15/2014

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: 05/15/2014

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. 13/391,614	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 *amendment filed 3/12/14*.
   ☐ 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 *21-25 and 27-46*. 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 See Continuation Sheet
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

Continuation of Attachment(s) 2. Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date: 11/29/13;2/13/14;3/13/14.

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 3/12/14. Claims 21-25 and 27-46 have been amended. Claim 26 has been canceled.

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 21-25 and 27-46 are allowed.

4. The following is an examiner's statement of reasons for allowance:

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.

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."

5. 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, Mohammad Ghayour can be reached on 571 272 3021. 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
5/13/2014

/John A Tweel Jr./
Primary Examiner, Art Unit 2687

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. 3807

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/391,614	02/21/2012 RULE	340	2687	bellaUSNPbolus

APPLICANTS

INVENTORS

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

**** CONTINUING DATA ***************************

This application is a 371 of PCT/US10/02509 09/14/2010
which claims benefit of 61/276,723 09/15/2009

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
03/19/2012

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	26	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		
1080	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

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	13/391,614
	Filling Date	February 21, 2012
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr, John A.
	Attorney Docket Number	bellaUSNPbolus
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/	6,371,927	04-16-2002	Brune et al.
/JT/	6,099,482	08-08-2000	Brune et al.
/JT/	5,984,875	11-16-1999	Brune

EXAMINER SIGNATURE:	DATE CONSIDERED:
/John Tweel Jr/	05/13/2014

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	13/391,614
	Filling Date	February 21, 2012
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr, John A.
	Attorney Docket Number	bellaUSNPbolus
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/	8,545,436	10-01-2013	Robertson et al.
/JT/	8,547,248	10-01-2013	Zdeblich et al.
/JT/	8,588,887	11-19-2013	Arneson et al.
/JT/	2011/0212782	09-01-2011	Thompson et al.
/JT/	2013/0231188	09-05-2013	Berberich 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 /of country where published	T2
/JT/		HACH. Digital Inductive Conductivity Sensor, Convertible Body Style. Website, http:/www.hach.com, product page downloaded 3/5/2014, 2 total pages	

EXAMINER SIGNATURE:	DATE CONSIDERED:
/John Tweel Jr/	05/13/2014

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13391614	RETTEDAL ET AL.
	Examiner	Art Unit
	JOHN A TWEEL JR	2687

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
340	539.13	11/8/13	JAT
	539.12	11/8/13	JAT
	572.1	11/8/13	JAT
119	51.02	11/8/13	JAT
340	10.1	11/8/13	JAT

SEARCH NOTES		
Search Notes	Date	Examiner
All classes searched	5/13/14	JAT

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
340	539.13	5/13/14	JAT
	572.1	5/13/14	JAT

	/J.A.T./ Primary Examiner.Art Unit 2687

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13391614	RETTEDAL ET AL.
	Examiner	**Art Unit**
	JOHN A TWEEL JR	2687

CPC						
Symbol					**Type**	**Version**
A01K		11	/	008	F	2013-01-01
A01K		11	/	006	I	2013-01-01
			/			
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	25	
/JOHN A TWEEL JR/ Primary Examiner.Art Unit 2687	5/13/14	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	21	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13391614	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)				
340	572.1				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	25	
/JOHN A TWEEL JR/ Primary Examiner.Art Unit 2687	5/13/14	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	21	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13391614	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		17	12	33										
	2		18	13	34										
	3		19	14	35										
	4		20	15	36										
	5	1	21	16	37										
	6	2	22	17	38										
	7	3	23	18	39										
	8	4	24	19	40										
	9	5	25	20	41										
	10		26	21	42										
	11	6	27	22	43										
	12	7	28	23	44										
	13	8	29	24	45										
	14	9	30	25	46										
	15	10	31												
	16	11	32												

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 25	
/JOHN A TWEEL JR/ Primary Examiner.Art Unit 2687 (Primary Examiner)	5/13/14 (Date)	O.G. Print Claim(s) 21	O.G. Print Figure 1

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	13/391,614
	Filling Date	February 21, 2012
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr, John A.
	Attorney Docket Number	bellaUSNPbolus
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 /of country where published	T2
/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/		Corresponding New Zealand patent application No.: 599357; Letters Patent dated September 3, 2012, 1 page.	
/JT/		New Zealand patent application No.: 610343; OA dated November 11, 2013, 3 total pages.	
/JT/		International Patent Cooperation Treaty Patent Application No. PCT/US2011/001788, filed October 19, 2011.	
/JT/		United States Provisional Patent Application No. 61/455,419, filed October 19, 2010.	
/JT/		United States Patent Application No. 13/824,270, filed March 15, 2013.	

EXAMINER SIGNATURE:	DATE CONSIDERED:
/John Tweel Jr/	05/13/2014

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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

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 23 day of June, 2014

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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	13/391,614
	Filling Date	February 21, 2012
	First Named Inventor	Nicholas P. Rettedal
	Art Unit	2687
	Examiner Name	Tweel Jr, John A.
	Attorney Docket Number	bellaUSNPbolus
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 /of country where published	T2
		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.	
		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.	
		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.	

EXAMINER SIGNATURE:	DATE CONSIDERED:

Electronic Patent Application Fee Transmittal

Application Number:	13391614
Filing Date:	21-Feb-2012
Title of Invention:	COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Jill Buck
Attorney Docket Number:	BELLAUSNPBOLUS

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

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:	19384415
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
Title of Invention:	COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Jill Buck
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	BELLAUSNPBOLUS
Receipt Date:	23-JUN-2014
Filing Date:	21-FEB-2012
Time Stamp:	17:08:04
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$90
RAM confirmation Number	4196
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_ltr.pdf	14772 3dc0fa8c7fcfa6e5c4933176cbf41cbbd0ca92a8	no	2
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	Statement.pdf	12267 b5c45415bb0bc29d879ddd34b2f40bd9e883aceb	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Information Disclosure Statement (IDS) Form (SB08)	Citation.pdf	20261 db3da39ec6f4387a87f815fb188db653c7b042c6	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Non Patent Literature	CAJA_et_al.pdf	387083 5d05885498173c08a44e4dcb6d56d0b768f60ed8	no	19
Warnings:					
Information:					
5	Non Patent Literature	FALLON_et_al.pdf	1533149 b3c5e7b512323921979cf899172f4732af9f5d21	no	28
Warnings:					
Information:					
6	Non Patent Literature	GHIRARDI_et_al.pdf	315640 9a03b77e51ddb3a19c7e5e1b65c423e331de7d22	no	11
Warnings:					
Information:					
7	Non Patent Literature	GHIRARDI_et_al2.pdf	311504 6e643a135ea8cc7335dec1ff098600a5a918e363	no	10
Warnings:					
Information:					
8	Non Patent Literature	SCANGA_et_al.pdf	71664 6e1026db36ddce40a88326abfaafa18fb4f3fa0f	no	2
Warnings:					
Information:					

9	Fee Worksheet (SB06)	fee-info.pdf	30457 2812586965dc0e2f6254eb766bd7e804b3185209	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	2696797

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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

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 enclosed 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 23 day of June, 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 421 of 452

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 June, 2014

Respectfully Submitted,

CR MILES, P.C.

By: _____

Craig R. Miles
ATTORNEY FOR APPLICANTS
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 422 of 452

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 05/15/2014
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 Buck	(Depositor's name)
	(Signature)
July 29, 2014	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/391,614	02/21/2012	Nicholas P. Rettedal	BELLAUSNPBOLUS	3807

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	08/15/2014

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 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 July 29, 2014
Typed or printed name Craig R. Miles Registration No. 45,954

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

July 28, 2014

CR MILES
INTELLECTUAL PROPERTY
PATENT & TRADEMARK LAW®

PATENT & TRADEMARK ATTORNEYS

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 Sir,

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

405 Mason Court, Suite 119 | Fort Collins, CO USA 80524
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:	13391614
Filing Date:	21-Feb-2012
Title of Invention:	COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Filer:	Craig R. Miles/Jill Buck
Attorney Docket Number:	BELLAUSNPBOLUS

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

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:				
Utility Appl Issue Fee	2501	1	480	480
Publ. Fee- Early, Voluntary, or Normal	1504	1	0	0

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt

EFS ID:	19718718
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
Title of Invention:	COMPUTER IMPLEMENTED ANIMAL MANAGEMENT SYSTEM
First Named Inventor/Applicant Name:	Nicholas P. Rettedal
Customer Number:	39208
Filer:	Craig R. Miles/Jill Buck
Filer Authorized By:	Craig R. Miles
Attorney Docket Number:	BELLAUSNPBOLUS
Receipt Date:	29-JUL-2014
Filing Date:	21-FEB-2012
Time Stamp:	17:17:52
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$480
RAM confirmation Number	3893
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_ltr.pdf	19037 4b5d02833504eb815669730683 82f226620c10c2	no	2
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	Fee_Address.pdf	12299 6bec0a4787f94e4c8c97affade309d06b750ae31	no	1
Warnings:					
Information:					
3	Issue Fee Payment (PTO-85B)	Fee_Transmittal.pdf	68140 c25b092f0459a2f4b6f76d195344482c3e14f6af	no	2
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	32201 fb888461df7d4b64c886c0bc1e114e493adc70a8	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	131677		

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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

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

Commissioner:

Enclosed 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 13/391,614, filed February 21, 2012 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 429 of 452

I have this 29 day of July, 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 documents.

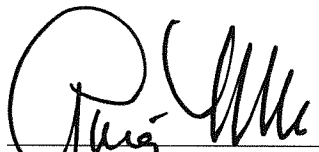
Direct all correspondence to:

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

USPTO Customer No.: 39208

Dated this 29 day of July, 2014

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 430 of 452

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.: 13/391,614

Filed: February 21, 2012

For: Computer Implemented Animal Management System

Attorney Docket No.: bellaUSNPbolus

Confirmation No.: 3807

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

Dear Sir/Madam:

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 29 July, 2014

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 telephone
(970) 492-0003 facsimile

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.
13/391,614	02/21/2012	Nicholas P. Rettedal	BELLAUSNPBOLUS	3807

7590 07/31/2014

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**
07/31/2014	PAPER

NOTICE OF NON-COMPLIANT INFORMATION DISCLOSURE STATEMENT

An Information Disclosure Statement (IDS) filed 6-23-14 in the above-identified application fails to meet the requirements of 37 CFR 1.97(d) for the reason(s) specified below. Accordingly, the IDS will be placed in the file, but the information referred to therein has not been considered.

The IDS is not compliant with 37 CFR 1.97(d) because:

☑ The IDS lacks a statement as specified in 37 CFR 1.97(e).

☐ The IDS lacks the fee set forth in 37 CFR 1.17(p).

☐ The IDS was filed after the issue fee was paid. Applicant may wish to consider filing a petition to withdraw the application from issue under 37 CFR 1.313(c) to have the IDS considered. See MPEP 1308.

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

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/391,614	09/02/2014	8823515	BELLAUSNPBOLUS	3807

39208 7590 08/13/2014

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 82 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, Fort Collins, 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	8,823,515
Issue Date	September 2, 2014
First Named Inventor	Rettedal, Nicholas P.
Title	Computer Implemented Animal Management System
Attorney Docket No.	RT-20 (US-02)

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 Moreno	Telephone	936-870-3960
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:	32848556
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
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:	BELLAUSNPBOLUS
Receipt Date:	08-JUN-2018
Filing Date:	21-FEB-2012
Time Stamp:	17:17:55
Application Type:	U.S. National Stage under 35 USC 371

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	ExecutedPOA515.pdf	687307 70c08b0647b8e028d47626aa215337d4e773d074	no	1

Warnings:

Information:	
Total Files Size (in bytes):	687307

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 DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/391,614	02/21/2012	Nicholas P. Rettedal	BELLAUSNPBOLUS

CONFIRMATION NO. 3807

OC000000100352099

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: 06-18-2018

DENIAL OF REQUEST FOR POWER OF ATTORNEY

The request for Power of Attorney filed 06-8-2018 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 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
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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

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
13/391,614	02/21/2012	Nicholas P. Rettedal	BELLAUSNPBOLUS

CONFIRMATION NO. 3807

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

MISCELLANEOUS NOTICE

OC000000100352099

Date Mailed: 06/18/2018

A communication which cannot be delivered in electronic form has been mailed to the applicant.

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	8,823,515
Issue Date	September 2, 2014
First Named Inventor	Rettedal, Nicholas P.
Title	Computer Implemented Animal Management System
Attorney Docket No.	RT-20 (US-02)

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 Moreno	Telephone	936-870-3960
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.: 8,823,515 Filed/Issue Date: September 2, 2014

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 025003, Frame 0159, 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 025003, Frame 0159, 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 025003, Frame 0159, 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 025003, Frame 0159, 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:	32974605
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
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:	BELLAUSNPBOLUS
Receipt Date:	22-JUN-2018
Filing Date:	21-FEB-2012
Time Stamp:	13:27:11
Application Type:	U.S. National Stage under 35 USC 371

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	ExecutedPOA515.pdf	687307 70c08b0647b8e028d47626aa215337d4e773d074	no	1

Warnings:

Information:					
2	Assignee showing of ownership per 37 CFR 3.73	Statementunder373.pdf	110000 c86f84beb7508516ea7c65fd4c7fc95635633295	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	797307	

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
13/391,614	02/21/2012	Nicholas P. Rettedal	BELLAUSNPBOLUS

CONFIRMATION NO. 3807

POWER OF ATTORNEY NOTICE

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

OC000000100566848

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 assignee who has intervened as provided by 37 CFR 3.71. 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**.

/nhassani/

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
13/391,614	02/21/2012	Nicholas P. Rettedal	RT-20 (US-02)

CONFIRMATION NO. 3807

114662
ST Reproductive Technologies, LLC
22575 State Highway 6 South
Navasota, TX 77868

POA ACCEPTANCE LETTER

OC000000100566929

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**.

/nhassani/

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
8,823,515	13/391,614

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

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:	33598976
Application Number:	13391614
International Application Number:	
Confirmation Number:	3807
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-02)
Receipt Date:	31-AUG-2018
Filing Date:	21-FEB-2012
Time Stamp:	16:25:15
Application Type:	U.S. National Stage under 35 USC 371

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	144361 21fcf539f830bf51a1acbeebfef70a9923e4bae6	no	2

Warnings:

Information:	
Total Files Size (in bytes):	144361

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
13/391,614	02/21/2012	Nicholas P. Rettedal	RT-20 (US-02)	136378

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