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Patent Anatomy and Data/Metadata Guide:

THE INFO HELD WITHIN PATENTS

- ✓ Front page guides: US, EP, CA
- ✓ Data/Metadata

United States (US) Patent: US11026577B2

Document type (12) **United States Patent** (10) Patent No.: **US 11,026,577 B2** Publication number
Martin (45) Date of Patent: **Jun. 8, 2021** Publication date

Title (54) **REBOUND TONOMETRY METHOD AND APPARATUS**

Applicant/location (71) Applicant: **Reichert, Inc.**, Depew, NY (US)

Inventor/location (72) Inventor: **Gabriel N. Martin**, Buenos Aires (AR)

Original assignee/location (73) Assignee: **Reichert, Inc.**, Depew, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 313 days.

Application number (21) Appl. No.: **16/007,501**

Application date (22) Filed: **Jun. 13, 2018**

Priority data (65) **Prior Publication Data**

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(51) **Int. Cl.**
A61B 3/16 (2006.01)
A61B 3/00 (2006.01)

Classification

(52) **U.S. Cl.**
CPC **A61B 3/16** (2013.01); **A61B 3/0025** (2013.01)

(58) **Field of Classification Search**
CPC A61B 3/16; A61B 3/0025; A61B 3/10
See application file for complete search history.

(56) **References Cited**

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(57) **ABSTRACT**

Viscoelastic properties of the cornea are derived from an ophthalmic measurement signal representing velocity as a function of time of a contact probe rebounded by the eye. The viscoelastic properties include a "Lost Energy Ratio" (LER), a "Time Shift" (TS), a damping parameter (σ), and an elastic parameter (η). An improved method for determining intra-ocular pressure from the measurement signal is also disclosed, wherein a first derivative of the measurement signal at a moment in time when velocity of the probe is zero due to contact of the probe with the cornea is calculated and correlated to an intra-ocular pressure value. Abstract

20 Claims, 2 Drawing Sheets
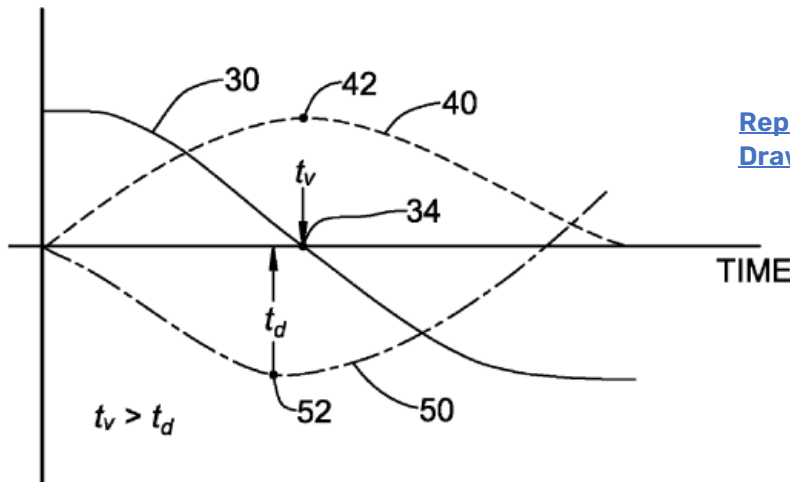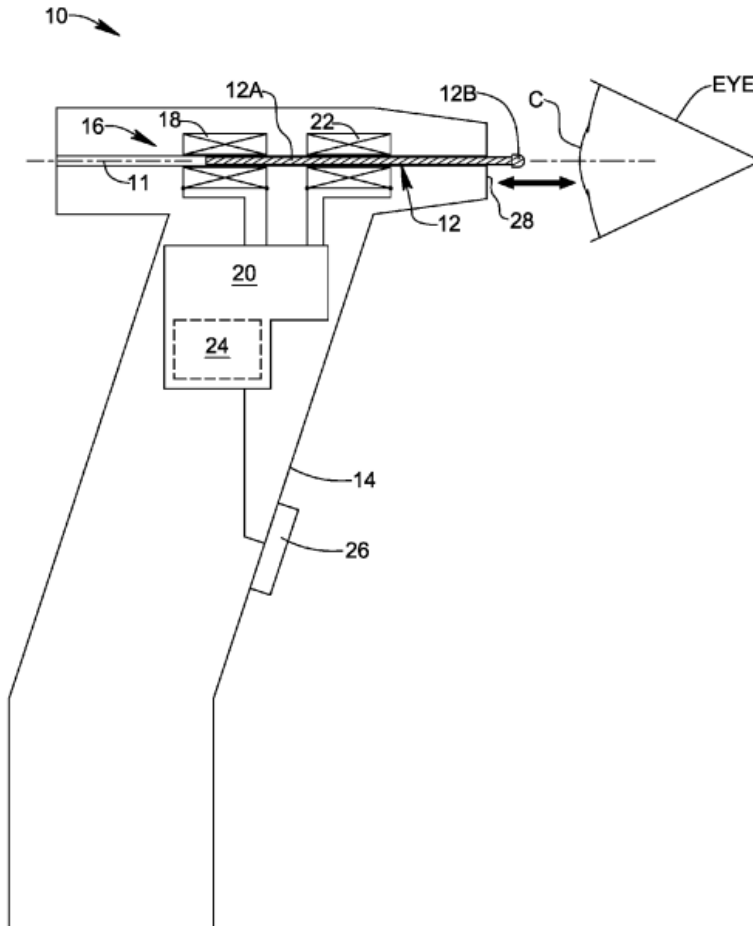
Representative Drawing

Following contents: Drawings | Description: Field of the invention/Background, Summary of the invention, Description of drawings, Detailed description of the invention | Claims

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MARTIN (43) Pub. Date: Dec. 19, 2019

(54) **REBOUND TONOMETRY METHOD AND APPARATUS**

(71) Applicant: **Reichert, Inc.**, Depew, NY (US)

(72) Inventor: **Gabriel N. MARTIN**, Buenos Aires (AR)

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(57) **ABSTRACT**

Viscoelastic properties of the cornea are derived from an ophthalmic measurement signal representing velocity as a function of time of a contact probe rebounded by the eye. The viscoelastic properties include a "Lost Energy Ratio" (LER), a "Time Shift" (TS), a damping parameter (σ), and an elastic parameter (η). An improved method for determining intra-ocular pressure from the measurement signal is also disclosed, wherein a first derivative of the measurement signal at a moment in time when velocity of the probe is zero due to contact of the probe with the cornea is calculated and correlated to an intra-ocular pressure value.

Following contents: Drawings | Description: Field of the invention/Background, Summary of the invention, Description of drawings, Detailed description of the invention | Claims

European (EP) Patent : EP3581089B1

Following contents: Description: Field of the invention/Background, Summary of the invention, Description of drawings, Detailed description of the invention | Claims | Drawings | References Cited in Description

European (EP) Application Publication: EP3581089A1

Title (54) **REBOUND TONOMETRY METHOD AND APPARATUS**

Abstract (57) Viscoelastic properties of the cornea are derived from an ophthalmic measurement signal representing velocity as a function of time of a contact probe rebounded by the eye. The viscoelastic properties include a "Lost Energy Ratio" (LER), a "Time Shift" (TS), a damping parameter (σ), and an elastic parameter (η). An improved method for determining intra-ocular pressure from the measurement signal is also disclosed, wherein a first derivative of the measurement signal at a moment in time when velocity of the probe is zero due to contact of the probe with the cornea is calculated and correlated to an intra-ocular pressure value.

FIG. 1
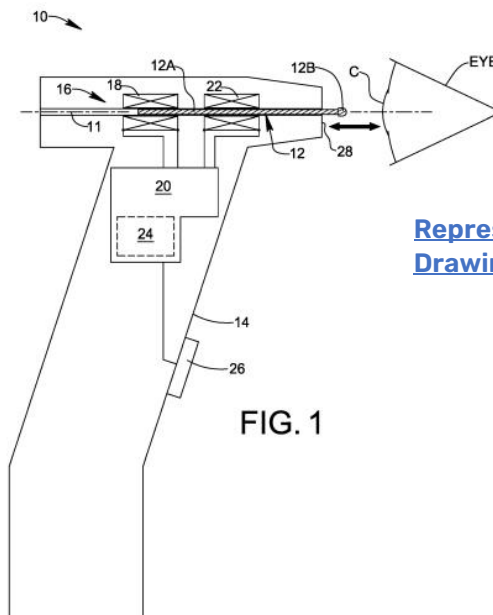
EP 3 581 089 A1

Following contents: Description: Field of the invention/Background, Summary of the invention, Description of drawings, Detailed description of the invention | Claims | Drawings | European Search Report | References cited in description

Title (54) Titre : METHODE ET APPAREIL DE TONOMETRIE DE REBOND
(54) Title: REBOUND TONOMETRY METHOD AND APPARATUS
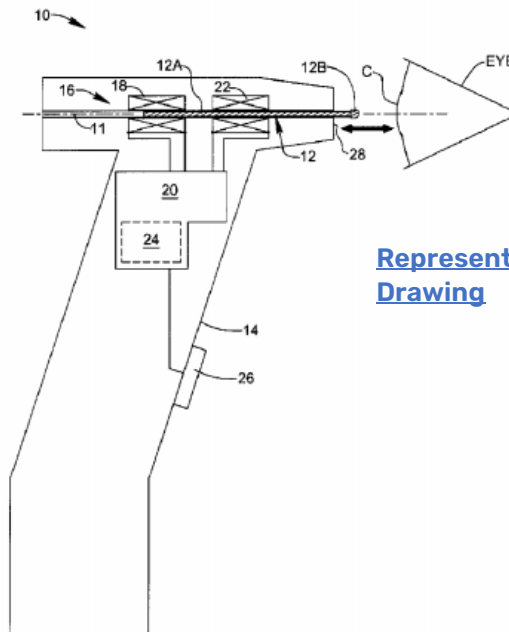
Representative Drawing

(57) Abrégé/Abstract:
Viscoelastic properties of the cornea are derived from an ophthalmic measurement signal representing velocity as a function of time of a contact probe rebounded by the eye. The viscoelastic properties include a "Lost Energy Ratio" (LER), a "Time Shift" (TS), a

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Patent Data/Metadata

There is a vast amount of data held within patents which can be leveraged for innovation intelligence. When this data is carefully combed through, there are various insights such as new players entering a space or geographic hotspots can be extracted and explored further. These insights, when understood, can help you analyze your industry in more detail, and unlock newfound opportunities and information.

Here are some suggested considerations and tips to help you get started:

- Some data is found within the pages of patent documents. Other data may relate and link to patent documents, and further metadata is potentially available from other sources. Data pulled in from other sources to supplement and complement patent data can be very useful. For example, you could extract information such as what companies are active in a specific area and the size of those companies.

- The volume or counts of documents can be used to see trends, identify the biggest players, and make comparisons. Consider a patent document or different families depending on the analysis. When analyzing people, you may count individuals, households, extended families depending on the purpose. Patents are similar in that you may count individual documents, by application, by the invention and its equivalents filed around the world, or an extended version which may capture variations too.

- Individual fields may have multiple values. The count of these fields may carry some importance and insight. It may be important to consider whether to analyze and visualize the first value or all the values. Using the first value will count a document once but may hide other values (e.g. a prolific inventor never listed first).

- Some data is captured at one particular moment in time and may change. Consider what fields may change at a later date and then monitor tem for change using alerts. Rankings, such as relevance rankings or scores, are likely to change frequently and mark the moment in time of the assessment so these are worth monitoring on an ongoing basis.

- It may be useful to assign personalized or custom data fields to documents to allow for more meaningful analysis and visualizations for your organization.

Basic/identification

Publication number	unique to an indivual document, assigned by the patent office
Application number	applies to applications and associated granted patents from the same application, within a single authority
Family identifier/number	there are variety of family types which may span many authorities – there may or may not be an assigned and usuable family ID
Document type	may includes authority and document type (e.g. US application), as types of documents vary between authorities

Time/dates

Publication date	date the document was published by the patent office
Application date	date the applicant files the application
Earliest priority date	date from which prior art should be considered
Issue/grant date	date a granted patent issues – for patents, this is typically its publication date
Expiry date (estimated)	date a granted patent expires – it is not part of the patent record, varies between authorities, and may include multiple considerations to calculate; also a patent may lapse or become invalidated prior to its temporal expiry date

The Players

Original assignees / applicants	generally the original owner(s) or applicant(s) of the patent application; may be a person or company/organization
Current Assignees	current owner(s) of the patent right – may differ from original if the patent ownership was transferred to another; may be a person or company/organization; standardized assignee names are very valuable when available, as entity names can vary a lot within patent documents
Inventors	often contains multiple inventors, as every individual who worked on the invention should be listed, with their location information
Examiners	person(s) from the patent office who examines the application and determines whether an application should be granted. Interacts with the attorney/agent through patent prosecution
Attorney, Agent, Firm	handles prosecution on behalf of the applicant
Assignee type	type of entity (e.g. university) may be of interest, but this is not a data field that is inherent to the patent document itself
Assignee size and other entity data	additional info on the entity, such as company size, may be useful for understanding and analysis and may be gathered from other sources, outside the patent document itself

The Tech

Text	parts of the patent including text can be analyzed or searched: title, abstract, description, claims (all, independent, dependent)
Keywords	keywords can be analyzed including keyword frequency and relevance using keywords
Main concepts	concepts can be gleaned or extracted from text in a variety of ways
Segmentation/categories based on text	creation of categories based on the text of the document
Classification (e.g. IPC, CPC)	heirarchical classification systems, usually assigned by patent offices
Citations	consider the backward or forward citations to provide additional understanding of the technology and its evolution and for finding prior art; only backward citations are available from patent documents

Origin/Geography

Authority	country or authority where the patent right was sought and potentially granted
Family members authorities and priority authority	consider authorities of other family members to understand geographic spread and coverage (various family types)
Inventor address/location	where the technology was developed
Original assignee/applicant address/location	where the technology was funded from
Current assignee address/location	location of current owner(s)

More

Legal status	consider the current status of the document – 'dead or alive' or more details may be available
Legal events	detailed legal events for an individual document may be lengthy and often use codes to mark types of activity
File wrapper / file history	captures the details of patent prosecution
Litigation	if a patent is involved in litigation; many litigation details may be available
Licensing	information associated with licensing
SEP	standard essential patents and associated information, such as standards
Family size	consider members of various patent families as a measure of investment and/or investment
Number and length of claims	claims may be considered specially, apart from the rest of the patent to consider # of indepenedent or all claims and length
Forward citations	documents that cited the patent in focus and the information around them, such as counts, companies, timeline, categories, and more
Backward citations	documents the focused patent cited and the information around them, such as counts, companies, age, categories, and more

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