

S curve analysis and its evaluation concerning the technical development trend and new commodity announcement history of the electric toothbrush

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Japan TRIZ society

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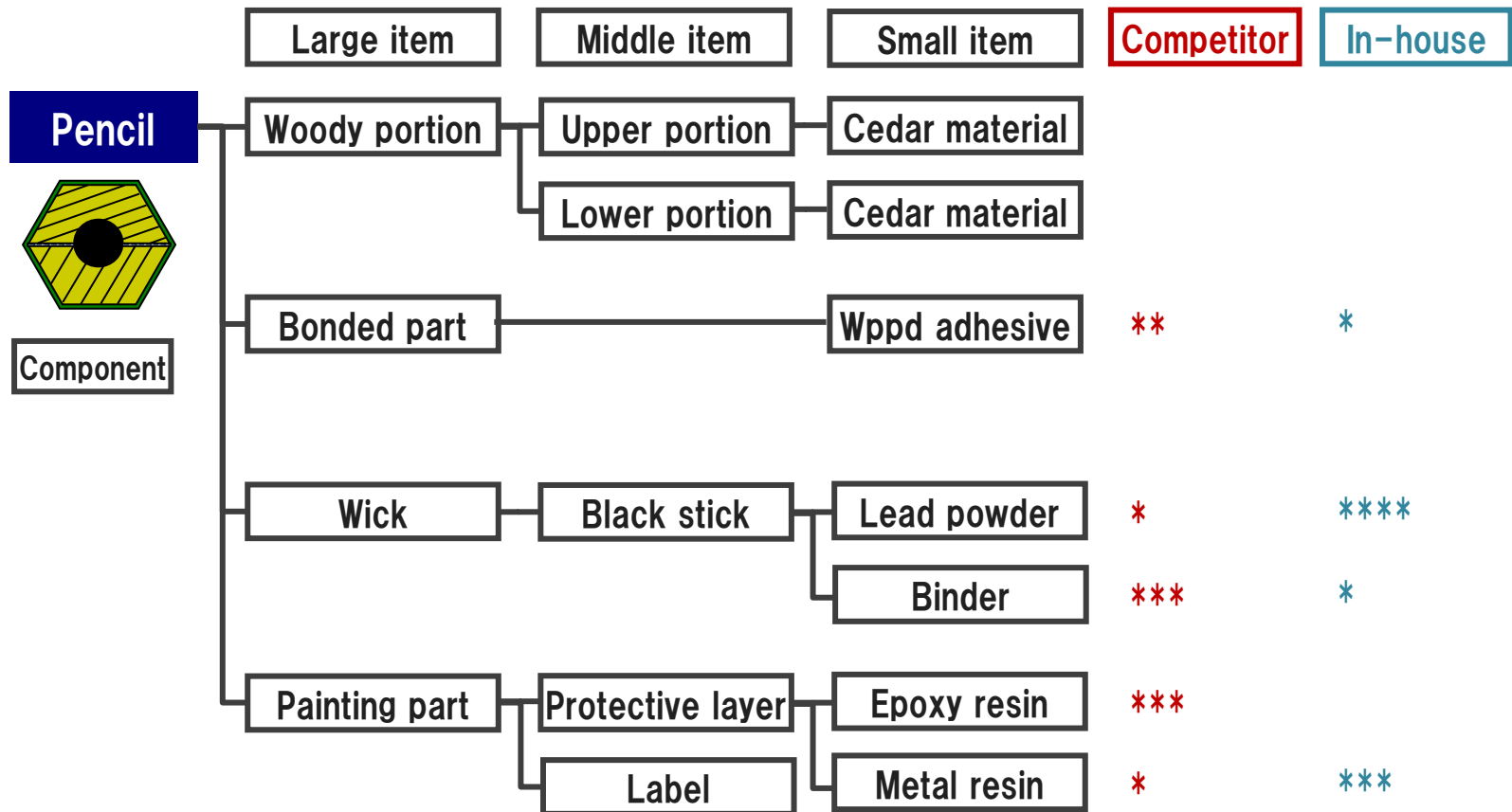
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Introduction

- The activity of the Trinity of a continuous research and development strategy, the Intellectual Property strategy, and the business strategy is important.
- Whether it uses it in the place where the site of done "S curve analysis" in the Intellectual Property creation society very when ..research and development strategy.. Intellectual Property strategy.. especially advancing it among the activities of the Trinity is examined about the point.

Intellectual Property activity on the site of research and development

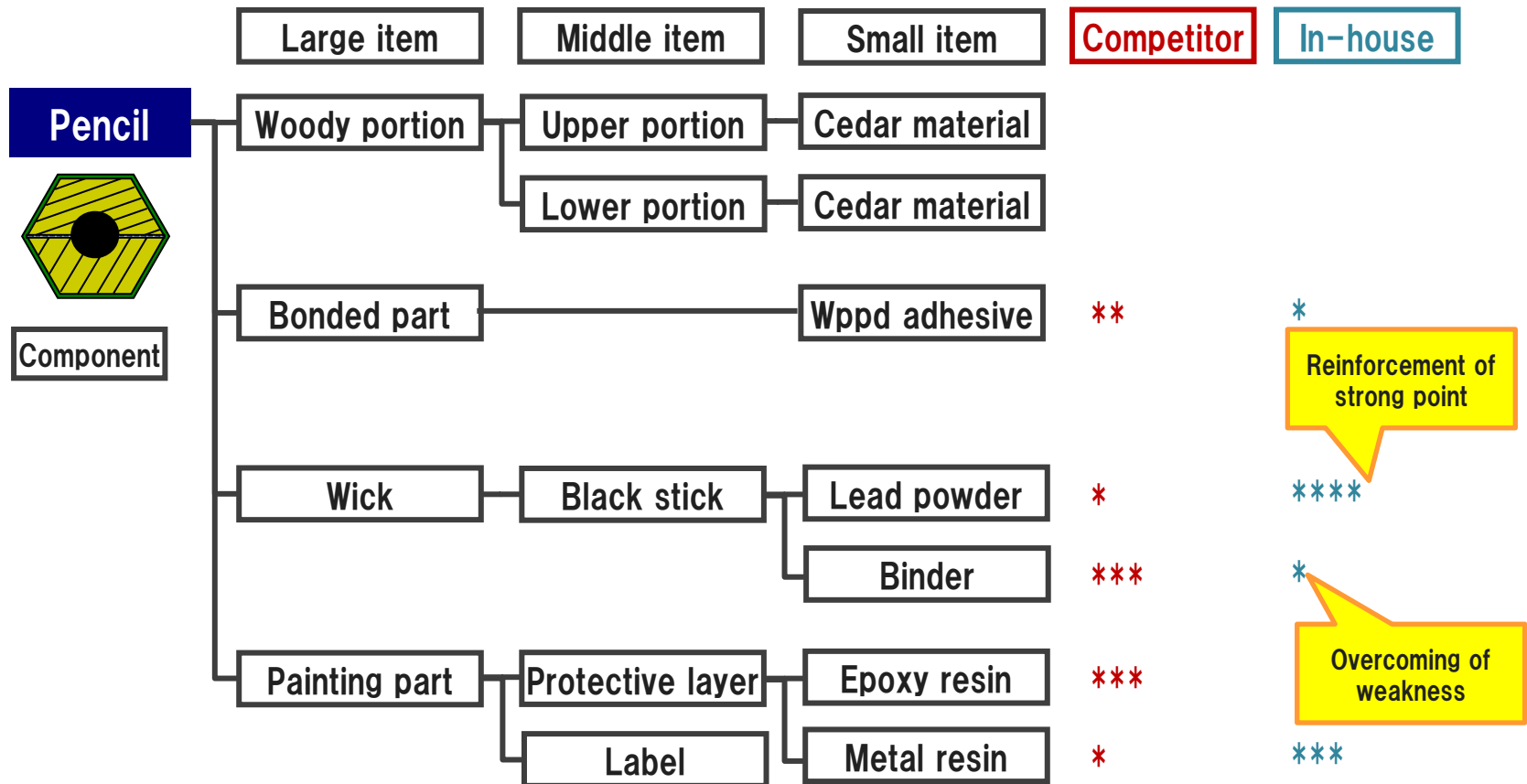
- Our technological areas can be **overviewed** by traditional patent maps, and the target patent application **policy** can be determined



- Structure and composition of a Tree Patent Map

Intellectual Property activity on the site of research and development

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Problem recognition on the development site

- **The timing of the patent application is applied for when an inventory concentration at the end of the fiscal year etc. , doing the application or technical problems are solved.**

Problem recognition on the development site

- The timing of the patent application is applied for when an inventory concentration at the end of the fiscal year etc. , doing the application or technical problems are solved.



- I wonder whether it is a patent application with the strategic characteristic in which it tempers with the development trend of the other companies really.
- Do not you agree to "S curve" of the aspect of so-called TRIZ?

Setting of the problem

- The timing of patent application is concentrated at the end of the fiscal year, etc. like stocktaking, or when technical problems are solved



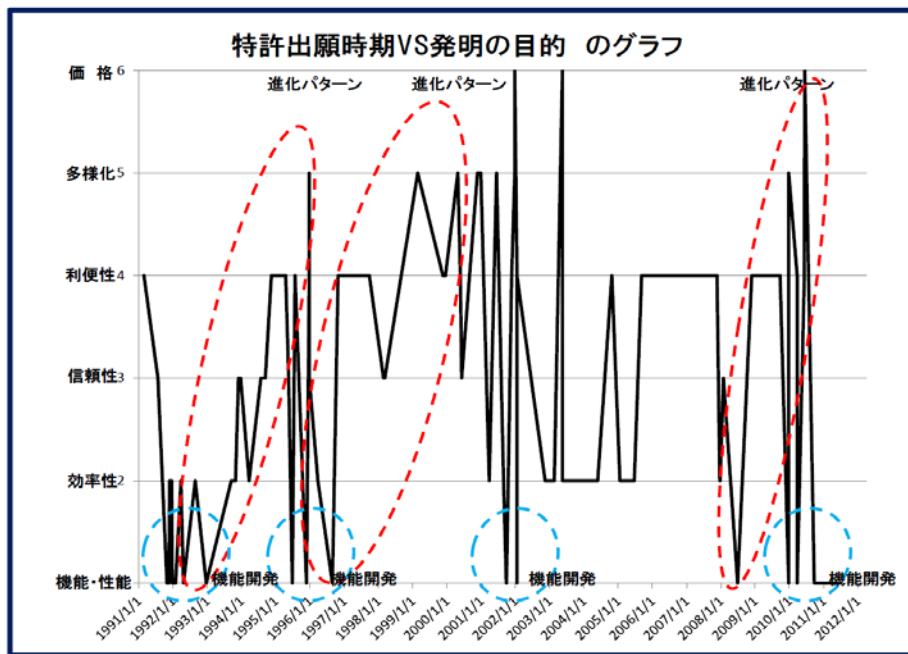
- Are the patents really applied with strategic characteristic considering the development trend of the other companies?
- Doesn't it agree with the so-called "S curve" of the TRIZ aspect?



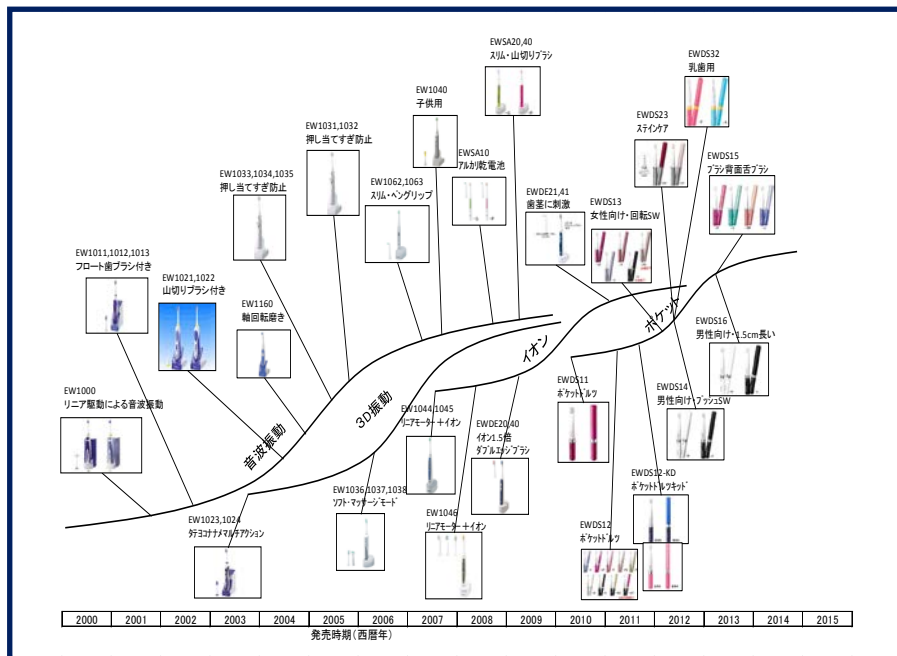
Can't the "**Aspect of the S curve**" be introduced into the patent analysis on the other companies?

S curve obtained from Intellectual Property Creation Research Subcommittee activities

- There is a **relation** between the problem transition and commodity sales history



Problem transition of electric toothbrush



Sales history of electric toothbrush

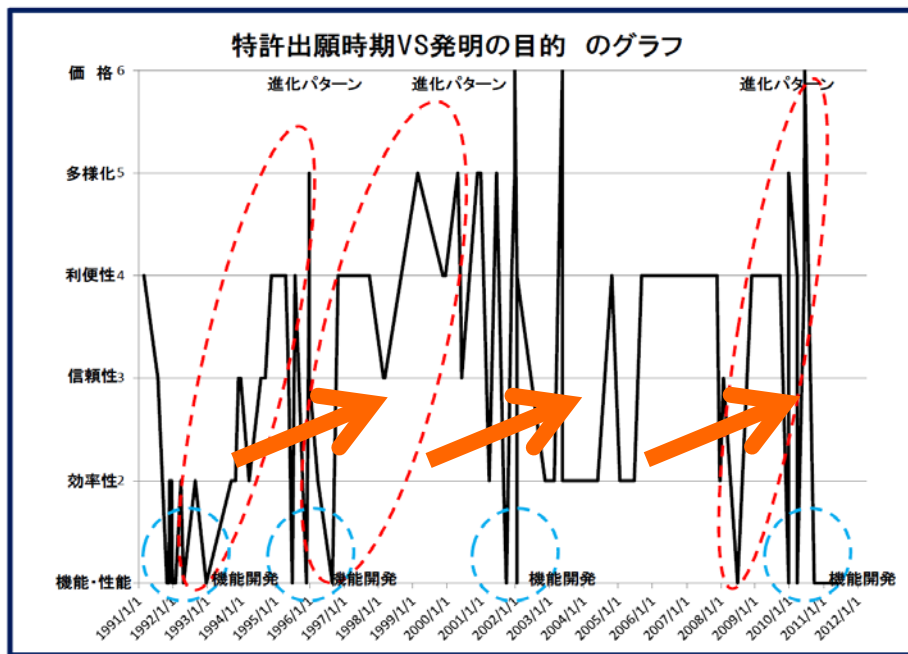
⇒ It is possible to catch a rough **whole image** of the S curve from information on "Registered patents"

⇒ The **starting point** extraction of the S curve (patents on functions and the performances) is also possible

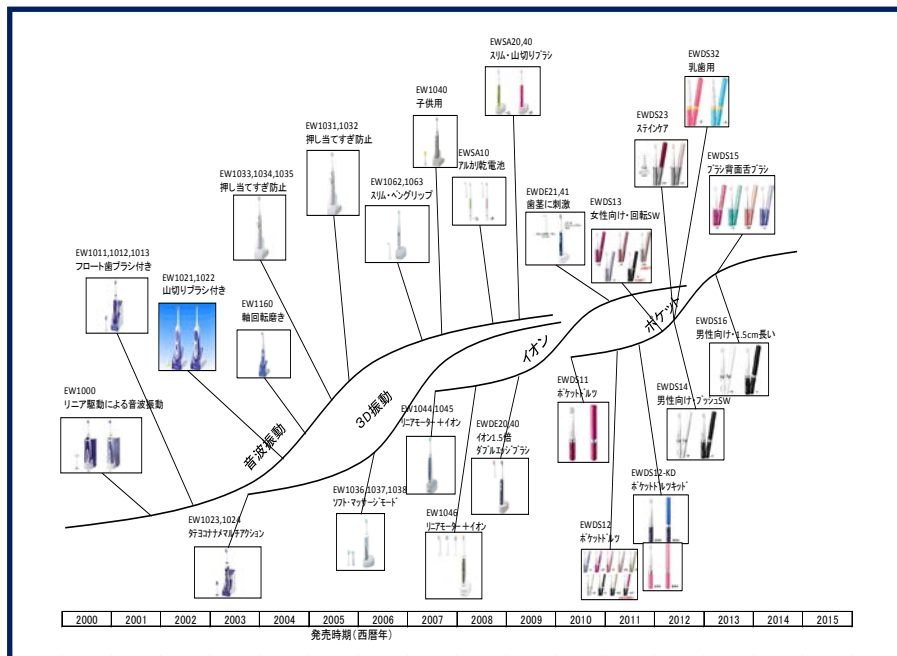
Figure: From TRIZ Intellectual Property Creation Research Subcommittee

S curve obtained from Intellectual Property Creation Research Subcommittee activities

- There is a **relation** between the problem transition and commodity sales history



Problem transition of electric toothbrush



Sales history of electric toothbrush

- ⇒ The timing of the jump in the S curve is important as **strategic information**
- ⇒ Can the **jump** of the S curve not be judged more **precisely**?

Figure: From TRIZ Intellectual Property Creation Research Subcommittee

Purpose of this examination

- It pays attention to "Application patent", and it challenges the refinement of S curve by the problem transition analysis.
- It challenges the trend analysis of technological development and the commodity that comes into the market from S curve and S curve group that obtains it by the problem transition analysis.
- Citation information on the patent and the relation of S curve are examined, and the use of Citation information is examined.



Methods of analysis of patent specification

1. Reading **【Summary】** of patent specification to extract problems → **Easy** analysis
2. Items are selected from "Key word list to classify the problem"

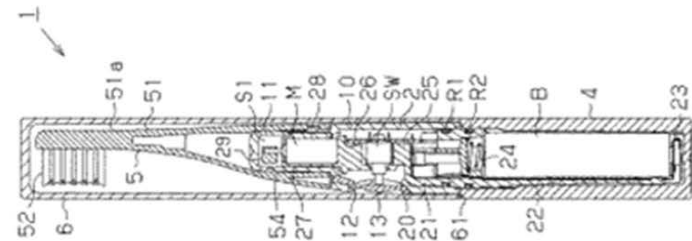
項番.366 一覧 前次 全文 レイアウト 印刷 引用 最新書誌 経過監視 ファミリ  公報:

特開2011-136147 平成23年7月14日 特願2010-214277 平成22年9月24日 10頁 3クレーム 請求有
パナソニック電工株式会社 <北川 忠伸><北村 嘉宏>
A61C 17/22 (2006.01)

電動歯ブラシ

(57)【要約】**【課題】歯の擦掃性能に優れ、磨き勝手のよい電動歯ブラシを提供する。**

【解決手段】この電動歯ブラシ1は、振動源としてのモータを收容する本体ケース2と、この本体ケース2の先端部に取り付けられてブラシ毛52が植設される歯ブラシ5と、本体ケース2の先端部とは反対側の端部である基端部に取り付けられる把持部ケース4を含む。本体ケース2の前側の前壁部において把持部ケース4と直接的に対向する部分の長さを長さPとし、本体ケース2の後側の後壁部において把持部ケース4と直接的に対向する部分の長さを長さQとしたとき、長さQが長さPよりも小さい。



Convenience (4): [Kama] such as specific part, elements, and parts to improve addition or convenience of profit function and additional new features included
Improvement of make and new features included
- Applicability, coexisting, connectivity, operativeness, portability, exchangeability, Sen Synge, and guidance

- The analysis result is published in the poster presentation.

Patent specification: Shareresearch

"Key word list to classify problem" (Intellectual Property Creation Research Subcommittee)

Key word list to classify problem

項目	内容／代表的なキーワード
性能	速度、正確度など、製品本来の機能または用途と関連した属性の改善
	強度、速度、力、トルク、寿命、軽量化、適用性、
効率性	仕事、作業のはかどり具合など、資源・財の配分について無駄の排除、減少
	自動化、制御性、一貫性、機能効率、能率、3D振動、省エネ、バッテリー寿命、
信頼性	製品の故障率の低下、製品の寿命を延長させるための特定部分、要素、部品などの構造や機能性の改善
	製造精度、測定精度、検出精度、ロバスト性(強靱性)、安全性、安定性、防水性、
	耐環境性、耐候性、耐光性、耐薬品性、発火防止、漏電防止
利便性	便利機能や付加的な新機能の追加、または便宜性を向上させるための特定部分、要素、部品などの構造や機能性の改善
	適用性、両立性、接続性、操作性、携帯性、交換性、センシング、ガイダンス
多様化	多品種少量生産の実現に有利な製品構造の改善、新たな生産方法または個別固定などの改善、製造設備や検査設備などの改善
	汎用性、見かけ、美観、個別化、リサイクル性、環境性
価格	生産効率を向上させるための製品構造の改善、収率(良品率)、特定部分、要素、部品などの構造改善、新たな生産方法または個別工程などの改善、製造設備や検査設備などの改善
	コスト削減、製造性、生産性、初期投資、運転コスト、流通コスト、

- "Key word list to classify problem" (Intellectual Property Creation Research Subcommittee)

Problem in analysis of summary of detailed statement

- The problem is not one but a multi itemization (For instance, the reference concerning the cost is included), and what should read a lot of the patent ..whether aim...

項番.128 一覧 前次 全文 レイアウト 印刷 引用 最新書誌 経過監視 ファミリ

特開2003-189937 平成15年7月8日 特願2001-392225 平成13年12月25日 8頁 5クレーム 未請求
松下電工株式会社 <北村 嘉宏><藤原 充>
A46B 5/00;A61C 17/22

Manufactured ⇒ price (6)

電動歯ブラシ

(57)【要約】(修正有)【課題】組み立てを容易にするとともにアクチュエータの振動がハウジングに伝わるのを防止する。

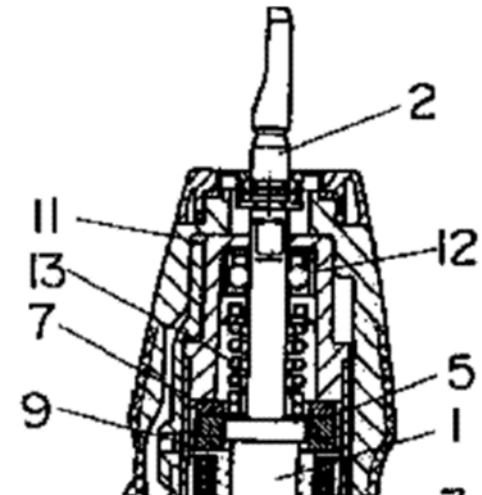
【解決手段】アクチュエータ16の駆動によって歯ブラシを駆動する電動歯ブラシである。シャーシー17にアクチュエータ16と電池27を同軸上に組み込む。アクチュエータ16と電池27との間にシャーシー17より支持壁19を延出する。アクチュエータ16と支持壁19との間に弾性体18を設けてアクチュエータ16を付勢してシャーシー17に保持した。

Vibration prevention ⇒ reliability (3)

【特許請求の範囲】

【請求項1】アクチュエータによって歯ブラシを駆動する電動歯ブラシであって、シャーシーにアクチュエータと電池を軸方向を揃えて組み込み、アクチュエータと電池との間にシャーシーより支持壁を延出し、アクチュエータと支持壁との間に弾性体を設けてアクチュエータを付勢してシャーシーに保持して成ることを特徴とする電動歯ブラシ。

【関係公報】-



⇒The purpose

⇒Other parts of patent specification, for instance, claim and details of invention when it is indefinite

It tempers with the explanation and information in the form of execution and it judges it.

Patent specification: Sharesearch

"Key word list to classify problem" (Intellectual Property Creation Research Subcommittee)

Methods of use and analysis of Detailed Description information

- The problem extraction ⇒ detailed is analyzed from information on the patent specification.

【 analysis step 】

- The form etc. of a detailed explanation and practicing the claim and the invention are read, and the intended purpose is extracted.
- The content that agrees from "Key word list to classify the problem" is selected.
- Judgment in S curve:
Improvement by part structure
Description of effect
Straightening "Improvement of manufacturing"
With the judgment

Price (6)

Reliability (3)

Price (6)

Price (6)

いるから、シャーシーにアクチュエータ及び電池を組み込んでいてシャーシーをハウジングに組み込むことでアクチュエータ及び電池の組み込みがおこなえ、組み立て性を高めることができ、それによって、アクチュエータはシャーシーより延出した支持壁とアクチュエータとの間に介装した弾性体によって付勢されてシャーシーに保持されていることから、アクチュエータの振動がハウジングに伝わるのを防止することができるという利点がある。

【0036】請求項2においては、請求項1の効果に加えて、アクチュエータ、電池、回路体及びスイッチ等を組み込んだシャーシーにフック部を形成し、フック部をハウジングの係止部に係止しているから、シャーシーのフック部をハウジングの係止部に係止することで、シャーシーをハウジングに容易に組み込むことができ、組み立て性を、一層、高めることができるという利点がある。

【0037】請求項3においては、請求項1の効果に加えて、シャーシーの電池収納部の近傍に電池押圧リブと、電池に対してアクチュエータとは反対側に配設される二次コイル枠を押圧する枠押圧用リブを設け、電池押圧リブにて電池を、枠押圧用リブにて二次コイル枠を押圧しているから、シャーシーに形成した電池押圧用リブによって電池を押圧し、電池とは反対側でシャーシーに形成した枠押圧用リブにて二次コイル枠を押圧することから、シャーシーを介して電池及び二次コイル枠を相互に押圧することができ、一層のたつき防止を図ることができるという利点がある。

Price (6)

にフィルタを損傷するようになく、フィルタの覆う蓋を省くことができるという利点がある。

【図面の簡単な説明】

【図1】本発明の実施の一形態を示す要部の斜視図である。

【図2】同上の歯ブラシを外した断面図である。

【図3】同上の歯ブラシを外した正面図である。

【図4】同上の要部の側断面図である。

【図5】同上の分解側面図である。

【図6】(a)はシャーシーの下部の側面図、(b)は正面断面図である。

【図7】同上の組み立て状態の部分拡大断面図である。

【図8】(a)はシャーシーの下部の正面図、(b)は側面図である。

【図9】(a)は電池カバーの平面図、(b)は側面図である。

【図10】(a)は要部の正面断面図、(b)は(a)のイ部の拡大断面図である。

【図11】同上の要部の側断面図である。

【図12】(a)はハウジングの一部破断した正面図、(b)は表示パネルの正面図である。

【図13】(a)は分解側面図、(b)は一部破断した正面図である。

【図14】従来例の歯ブラシを外した正面図である。

【図15】従来例の全体側断面図である。

【符号の説明】

15 スイッチ

16 アクチュエータ

Price (6) :Improvement, yield (rate of quality item) of product structure to improve productive efficiency, and specific part

New structural reforms such as amount, elements, and parts and production method or individual processes, etc.

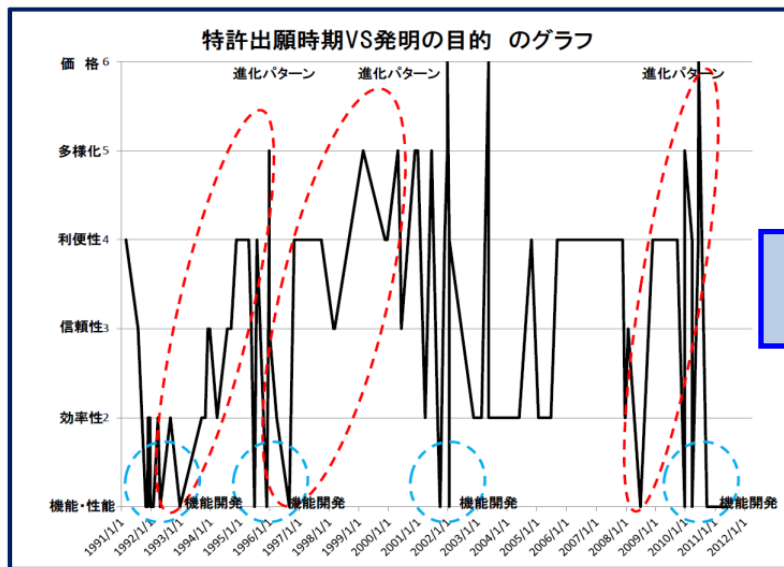
Improvement, ...drinking... manufacturing facilities, and improvement of inspection equipment etc.

Patent specification: Sharesearch

"Key word list to classify problem" (Intellectual Property Creation Research Subcommittee)

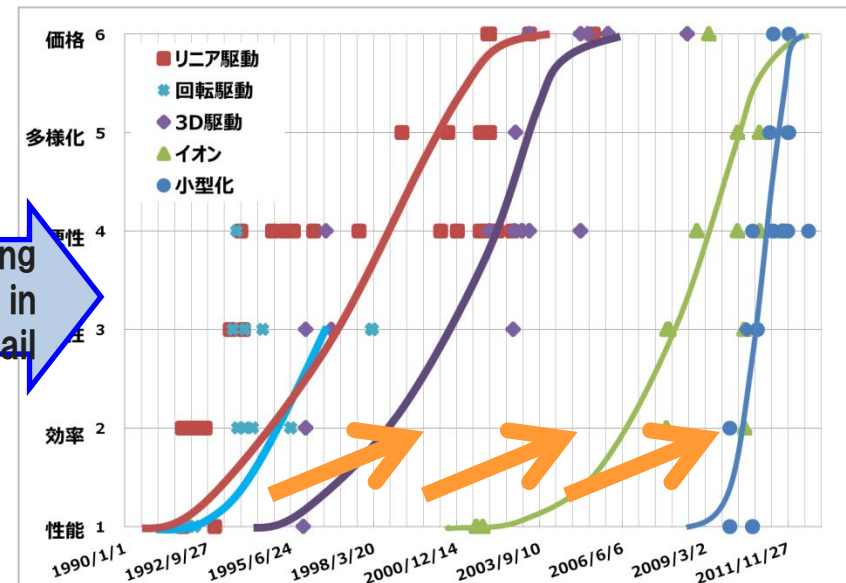
Result of detailed analysis that uses Detailed Description information

- A detailed S curve can be acquired by the transition analysis of the problem of the application patent.
- The time of the jump from S curve to S curve can be judged (durability).
(for instance, linear drive (rotation drive) ⇒ 3D drive ⇒ ion ⇒ miniaturization etc)



< summary analysis >

It is quick and a whole down shot of the transition of the problem.



< detailed analysis that uses detailed statement information >

The transition of the problem is analyzed in detail.

⇒The trend and the strategy of development (competing axis) can be gripped.

⇒The current state of the other companies can be expected by the comparison with S curve of its company.

Use of Citation information

- What is Citation . . . ?

Analysis that uses information on quotation/quotation

Tree structural Citation Map that forward (It is quoted) and rear (quotation).

- Citation from examination information on Patent Office
- The citation analysis on the application already patent is executed by the realities examination of the matter that the examination claim was done after it applies.

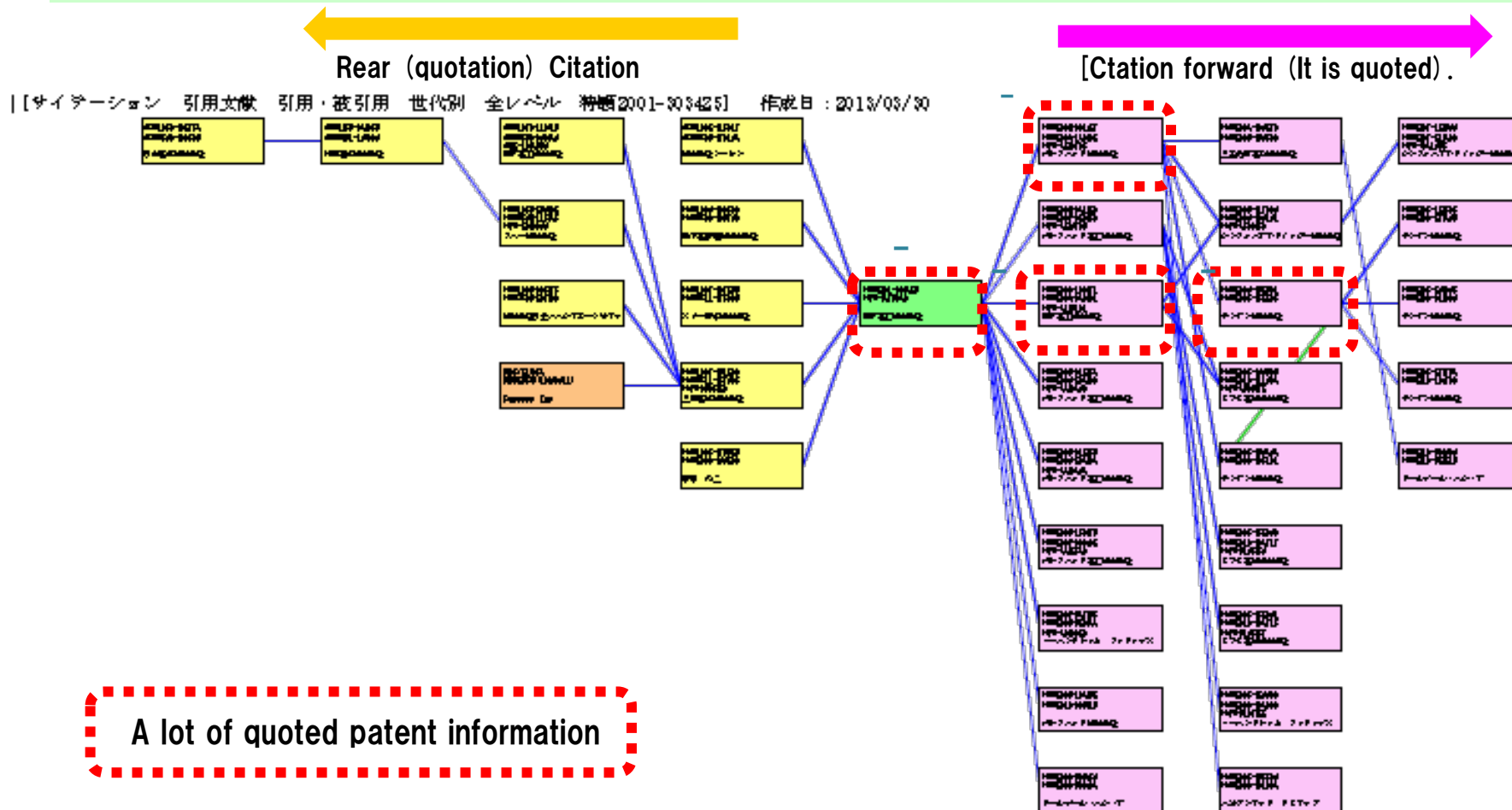
Past patent information judged that the examiner quoted in the Notification of Reasons for Refusal is affixed.

⇒Quotation patent information used for the patent examiner's analysis is assumed to be an information resource.

Citation can be analyzed.

Use of Citation information (Patent Office information)

- :* mark that analyzes [saite-shon] based on information on Patent Office, and investigates patent that is basic (one with a lot of numbers of references forward)



- This Citation information is an offer from Mr. Kataoka of Patbrain Co. Ltd.

Use of Citation information

- **Citation of Goldfire:**

There is no change in the analysis that uses information on quotation/quotation.

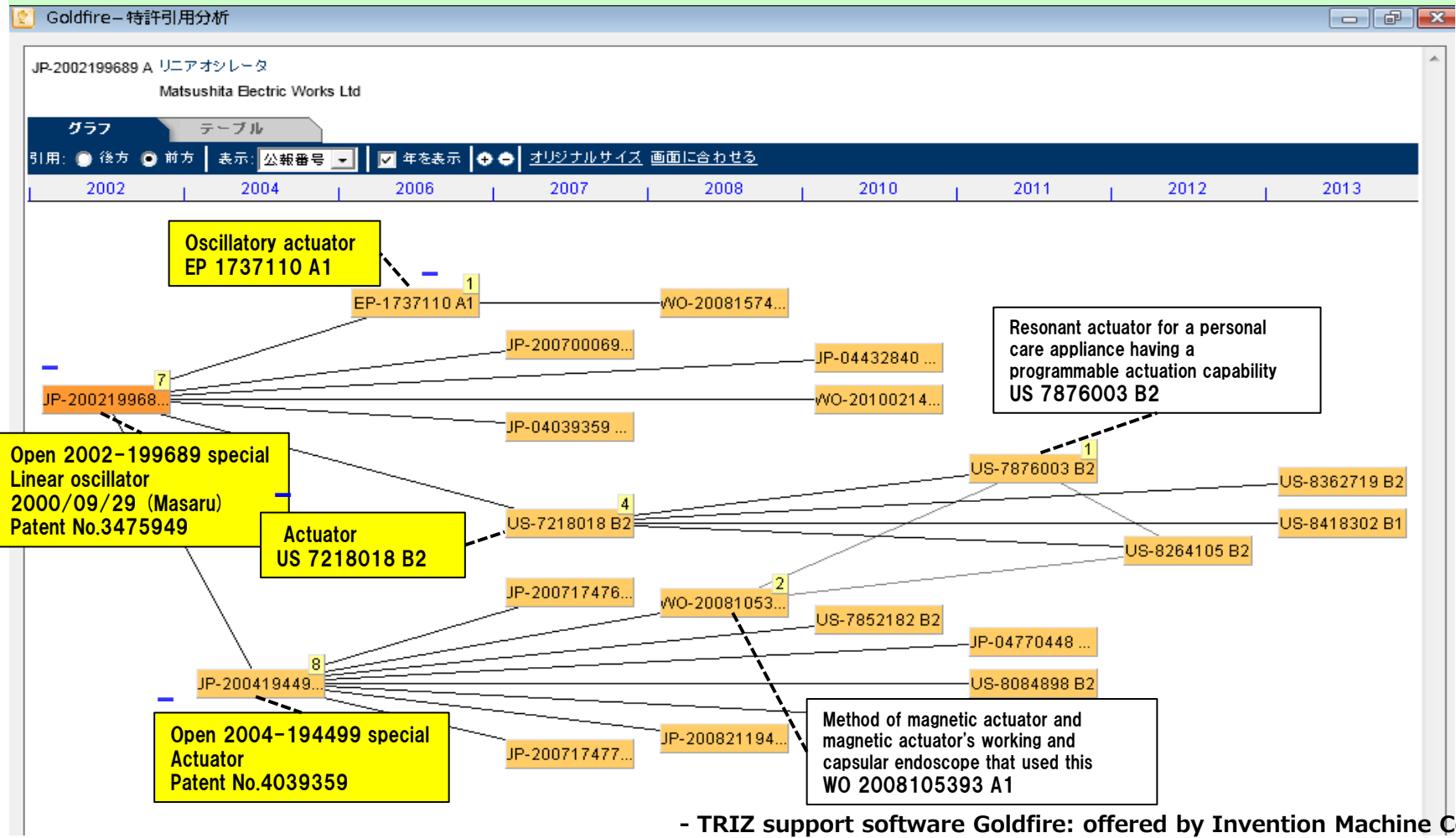
Tree structural Citation Map that forward (It is quoted) and rear (quotation) .

Citation analysis of which resource is quotation patent information has been described to patent specification for which inventor applied

The third person doesn't analyze, and information that the system added is included.

Citation information by Goldfire

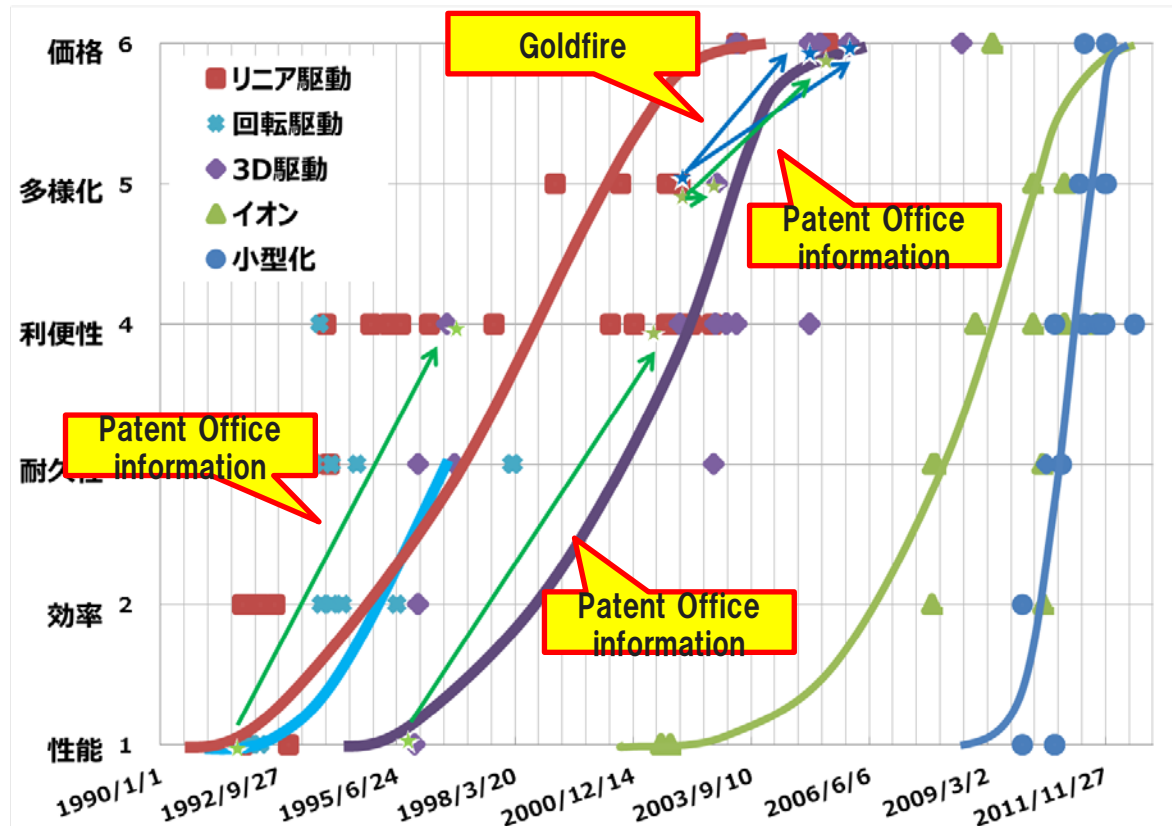
- :* mark that analyzes Citation of quotation patent described in detailed statement, and investigates patent that is basic (one with a lot of numbers of references forward)



- TRIZ support software Goldfire: offered by Invention Machine Co.

Relation between Citation information and the S curve

- There is a correlation in [saite-shon] information and S curve.
- The transition of the core technology is made clear according to patent information obtained because of the [saite-shon] analysis.



Transition and Citation information on problem of electric toothbrush
(The application patent is contained.)

Summary

- The methodology to understand the trend of development by doing “Problem transition S curve analysis” of the patent specification and “Citation analysis” the Trinity when the research and development and the intellectual property activity were especially done on the site and the relativity were able to be arranged as a comprehensible case.
 - The whole is executed and looked down at, the problem transition analysis are executed for the summary of the patent specification. If this detailed analysis is done, it becomes easy to judge the jump point of S curve.
 - It becomes easy to see a competing axis and the strategy like directionality and the stage etc. of development on which it concentrates by doing the problem transition analysis for not only the registration patent but also the application patent.
 - The strategic intelligence increases from can the understanding of the distribution of a basic patent that becomes important in S curve by acquiring Citation information, and the understanding of the directionality of development.
- The obtained finding and the arranged concrete case material are made the best use of, and a further coordinated strengthening of the in-house Trinity (especially, research and development and wisdom fortune activity) will be promoted in the future.

-
- EOF