

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT4538470

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
SADATOSHI SONODA	06/20/2017
TAKUJI IWATANI	06/15/2017
KENICHI MIYAZAKI	09/01/2014
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<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	15549271
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<b>SIGNATURE:</b>	/Victor Santos/
<b>DATE SIGNED:</b>	08/07/2017
<b>Total Attachments: 7</b>	
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Patent

Orrick Ref.

ASSIGNMENT OF PATENT

WHEREAS, WE, **SONODA Sadatoshi**, Citizen of Japan, with mailing address at c/o TANAKA KIKINZOKU KOGYO K.K. Hiratsuka Factory, 1-75, Shin-machi, Hiratsuka-shi, Kanagawa 254-0076 Japan, **IWATANI Takuji**, Citizen of Japan, with mailing address at c/o TANAKA KIKINZOKU KOGYO K.K. Hiratsuka Factory, 1-75, Shin-machi, Hiratsuka-shi, Kanagawa 254-0076 Japan and **MIYAZAKI Kenichi**, Citizen of Japan, with mailing address at c/o TANAKA KIKINZOKU KOGYO K.K. Hiratsuka Factory, 1-75, Shin-machi, Hiratsuka-shi, Kanagawa 254-0076 Japan, (hereinafter referred to as "ASSIGNORS") have invented and own a certain invention entitled "SEALING CAP FOR ELECTRONIC COMPONENT," for which a PCT application was filed on March 10, 2016 serial no. PCT/JP2016/057530, and which claims priority to Japanese Application no. 2015-048786, filed March 11, 2015; and

WHEREAS, **TANAKA KIKINZOKU KOGYO K.K.**, a corporation organized and existing under and by virtue of the laws of Japan and having its principal place of business at 7-3, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-6422 Japan (hereinafter referred to as "ASSIGNEE"), is desirous of acquiring the exclusive right, title and interest in, to and under said invention and in, to and under any Patent and similar legal protection to be obtained therefor in the United States of America, its territorial possessions and in any and all countries foreign thereto.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, **ASSIGNORS** hereby sell, assign, transfer and set over unto **ASSIGNEE**, its successors and assigns, the full and exclusive right, title and interest to said invention and to all Letters Patent or application or similar legal protection, not only in the United States and its territorial possessions, but in all countries foreign thereto to be obtained for said invention by said application, and to any continuation, division, renewal, substitute or reissue thereof or any legal equivalent thereof in the United States or a foreign country for the full term or terms for which the same may be granted, including all priority rights under the Paris Convention for the Protection of Industrial Property; and **ASSIGNORS** hereby authorize and request the United States Commissioner of Patents and Trademarks and any officials of foreign countries whose duty it is to issue patents or any legal equivalent thereof to issue said patents and equivalents to said **ASSIGNEE**, its successors and assigns, in accordance with this **ASSIGNMENT** and hereby transfers all rights of action, power and benefit belonging to or accruing from the invention including the right to undertake proceedings to recover past and future damages and claim all other relief in respect of

any acts of infringement thereof whether such acts shall have been committed before or after the date of this **ASSIGNMENT**.

**ASSIGNORS** hereby covenant that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this **ASSIGNMENT**;

**ASSIGNORS** further covenant that **ASSIGNEE** will, upon its request, be provided promptly with all pertinent facts and documents relating to said application, said invention and said Letters Patent and legal equivalents as may be known and accessible to **ASSIGNORS** and that **ASSIGNORS** will testify as to the same in any interference or litigation related thereto and will promptly execute and deliver to **ASSIGNEE** or its legal representative any and all papers, instruments or affidavits required to apply for, obtain, maintain, issue and enforce said application, said invention and said Letters Patent and said equivalents in the United States or in any foreign country, which may be necessary or desirable to carry out the purposes thereof.

[Signatures begin on following page:]

WITNESS my hand at Kanagawa JAPAN,  
(City & State OR Province & Country)

this 20 day of June, 20 17.

S. Sonoda

SONODA Sadatoshi

WITNESS my hand at Kanagawa JAPAN,  
(City & State OR Province & Country)

this 15 day of June, 20 17.

IWATANI Takuji

IWATANI Takuji

WITNESS my hand at \_\_\_\_\_,  
(City & State OR Province & Country)

this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

\_\_\_\_\_  
MIYAZAKI Kenichi

(Translation of Substantial Part)

Invention Report

Date of Report Writing: September 1, 2014

Inventor: Contribution ratio 40%

SONODA, Sadatoshi, Personnel No. 01956, AuAg Dept.

Signature

Inventor: Contribution ratio 30%

MIYAZAKI, Kenichi, Personnel No. 02893, Hiratsuka

Scaled

Inventor: Contribution ratio 30%

IWATANI, Takuji, Personnel No. 03277, Hiratsuka

Scaled

Inventor: Contribution ratio 0%

This document, upon filled out and sealed, shall automatically replace a deed of assignment, which verifies the above inventors agreed to assign the rights of the below-mentioned invention to Tanaka Kikinzoku Kogyo K.K. in regard to domestic and overseas patent, utility model and design registrations.

Title of the Invention: SEALING CAP FOR ELECTRONIC COMPONENT

Summary of the Invention (Please describe the point of the invention clearly and concisely. Penciling is not acceptable.)

To invent an AuSn fusion cap for sealing a crystal oscillator PKG. To realize the invention, an AuSn-fused area, i.e. a peripheral area of a flat plate and a flange part of a squeezing cap should be subjected to grooving and unevenness machining.

Effects of Grooving and Unevenness Machining

1. They serve as a basin for molten AuSn and the shape is stabilized.

2. Au plating on an edge of a machined part is thicker than the counterpart on the periphery, and thereby fusibility will be improved. (Reduction in an Au thickness means also reduction in costs.)

3. Working will improve a flatness of a fused area, so that sealing performance will also improve. (Reduction in an Au volume means also reduction in costs.)

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TK1636-OP

# 発明報告書

発明部門役員	TKK/I 役員	TKK/I 責任者

部長・工場長	CM	M	特許担当
14.9.02 伊藤	14.9.01 橋		14.9.1 (印)

記載年月日	2014 年 9 月 1 日		
ふりがな 発明者名	所属	AuAg 系 事業部	そのだ さとし
	割合	40 %	園田 定敏 (社員 No. : 01956)
ふりがな 発明者名	所属	平塚	みやま けんいち
	割合	30 %	宮崎 兼一 (社員 No. : 02893)

当欄の記入・捺印により、下記発明考案に関し国内および外国で特許・実用新案登録および意匠登録を受ける権利を田中貴金属工業株式会社へ譲渡したことを証明する譲渡証書に替えます。

発明の名称 電子部品封止用キャップ

3661441号

発明の要約（発明のポイントをわかりやすく簡潔に記述して下さい。鉛筆書き不可）

水晶振動子 PKG 封止用 AuSn 融着キャップの発明

AuSn 融着部（平板の周辺部、絞りキャップのフランジ部）に溝加工、凹凸加工を施す。

溝加工、凹凸加工の効果

①溶融した AuSn の湯溜りとなり形状が安定する

②加工部のエッジの Au めっきが周辺よりも厚くなるので融着性が向上する。（Au めっき厚を減らせるのでコスト削減）

③加工により融着部の平坦度が向上するので封止性が向上する。（AuSn ボリュームを減らせるのでコスト削減）

（発明部署意向 ①特許出願 ②ノウハウ登録）

先行調査・関連出願

☒ 無 ☐ 有（出願番号・社内番号→）

発明に至った 経路	発案者	<input checked="" type="checkbox"/> TKK の人 <input type="checkbox"/> 相手先の人 <input type="checkbox"/> 両方（不明な場合も含む）
	きっかけ ヒント	<input type="checkbox"/> 自己の研究、社内の打合せ、特許・文献 不良対策、改善、その他、カタログ <input type="checkbox"/> 相手先への要望・問題提起 試作依頼、検討依頼、その他 <input checked="" type="checkbox"/> 仕様打合せ、不良打合せ 技術交流会、その他
	効果確認	<input type="checkbox"/> 社内で行った <input type="checkbox"/> 相手先で評価してもらった <input checked="" type="checkbox"/> 試していない <input type="checkbox"/> その他（ ）

相手先との関わり

相手先との関わり事項 ☐ 図面 ☐ 用語 ☐ 用途 ☐ 商品名 ☐ 実施例 ☐ データ ☐ その他 ☐ 無し

☒ 有 会社名  
（後島精工）

特許出願時の共願要否 ☐ TTK 単独出願が適当 ☐ 共願が適当 ☐ 相手先へ連絡して決める  
☐ 相手先の了解をとる・とった ☒ その他（後島精工は特許取得済）

※ユーザー関連の出願はトラブル防止の為、必ず相手先会社名を記入して下さい。

重要度

☐ 特に重要 ☒ 重要 ☐ 普通 実施状況 ☐ 着想 ☒ 試作実験（予定） ☐ 量産：相手先（ ）

出願の緩急

☐ 普通 ☒ 特に急ぐ（10 月 31 日迄：理由 ） 製品名（ ） 納入量（ ）

審査請求時期

☐ 出願と同時に ☒ 公開後判断

外国出願要否

☒ 要（日本出願の早期審査後となります） ☐ 不要 ☐ 保留 ☐ 出願済

※ 上長の判断が異なる場合は朱筆訂正願います。

知財 部	先行調査	<input type="checkbox"/> 新規性・進歩性有り <input type="checkbox"/> 新規性無し <input type="checkbox"/> 進歩性無し	7/11 NO. 参照
	結論	<input type="checkbox"/> 特許出願単独 <input type="checkbox"/> 特許出願共願 <input type="checkbox"/> ノウハウ登録 <input type="checkbox"/> 不採用 <input type="checkbox"/> 一般ノウハウ	

知的財産部	部長	CM	先行調査	受入	担当
					9/8

受付番号	-	-			
（※実施工程コード： ）					
社内番号					

PATENT  
REEL: 043218 FRAME: 0494



7. この構造・構成の重要な要素は何ですか  
溝加工追加による, AuSn 融着性の向上

凹凸加工

3. 高圧調整

2. 引出電極部

8. それぞれこれらの要素の機能は？

9. これらの機能を有する他の構造・構成は？

凹凸加工 ~ Au/Ni 凹凸加工 → AuSn 融着

型番: 2016. 1612. 1210. 1008

↓ 実施例に示す通り

10. (この発明の構造・構成が有する問題点を解消するための) 更なる改良品の構造・構成は？

線り加工困難性を抑