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(Search Report Sample)

Date: Nov. 11, 2007

To:
XX

PATENTABILITY SEARCH REPORT

This is to summarize our patentability search results for the following invention:

XXXXXXXXXXXXXXXXXX

Search language:
Japanese

Period of the search:
Before Nov. 2007

Database used in the search:
Patolis, NRI and IPDL

Japanese patent type searched:
Japanese patent documents, both unexamined and examined

SEARCH RESULTS

We used Patolis, NRI and IPDL to search Japanese patents published before Dec. 2007, and have reviewed 674 Japanese patent documents.

After the review, 4 Japanese patent documents are identified as documents of relevance or general state of the art, and are summarized below.

Documents Considered to be Relevant:

| No. | Patent No. | Title | Relevance to the invention* |
|-----|---------------|---|-----------------------------|
| 1 | JP2005-123638 | Electronic Part Mounting Device and Electronic Part Mounting Method | Y |
| 2 | JP03-179800 | Component Mounting Method | A |
| 3 | JP04-064283 | Electronic Component Mounting Device | A |
| 4 | JP08-162797 | Electronic Part Mounter | X |

***Note:**

X: document of particular relevance: the claimed invention cannot be considered novel or non-obviousness when the document is taken alone.

Y: document of relevance: the claimed invention cannot be considered non-obviousness when the document is combined with one or more other documents, such combination being obvious to a person skilled in the art.

A: general state of the art: not considered to be of particular relevance.

Please note that the relevance ranking above is based on our searcher and reviewer's non-patent-attorney opinion, and it may change significantly depending on many circumstances.

Titles, Abstracts of the Japanese Patent Documents:

Titles, abstracts, bibliographical information and main drawings of the 4 patent applications are summarized below.

Please note that some of the abstracts below are semi-machine translation output so there might be flaws in the translation.

1. Publication number: JP2005-123638

Publication date: 2005-05-12

Inventor: Arikado Kazuo

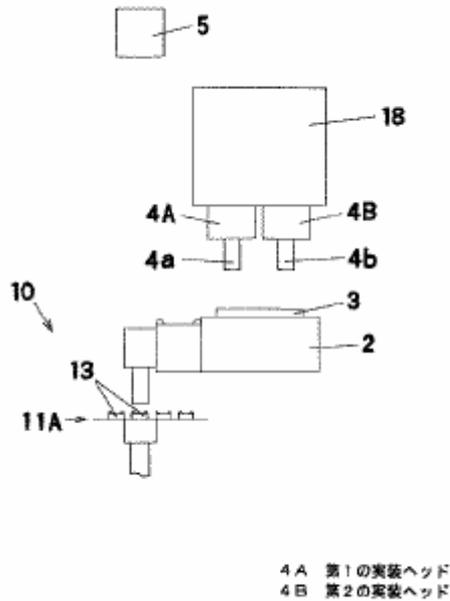
Applicant: Matsushita Electric Ind Co Ltd

Title: Electronic Part Mounting Device and Electronic Part Mounting Method

Abstract:

Problem To Be Solved: To provide an electronic part mounting device and an electronic part mounting method which can cope with two embodiments of die bonding and flip chip bonding by the same device.

Solution: In an electronic part mounting device, electronic parts supplied to a part supply part 10 in a face-up state are taken out to be mounted on a board 3. A flip chip 13 supplied by a first holding table 11A is taken out by a take-up head 9 and is transferred to a mounting head 4 in an upside-down state to be mounted on the board 3. A die 14 supplied by a second holding table 11B is directly picked up by the mounting head 4 to be mounted on the board 3. Thus, it is possible to cope with two embodiments of die bonding and flip chip bonding by the same device.



4A: first mounting head
4B: second mounting head

Comments from the searcher/reviewer:

This patent application teaches a mounting apparatus and mounting method. In the 3rd embodiment, a mounting apparatus with two mounting heads (4A, 4B) is disclosed (paragraph [0035]). No detailed disclosure about the driving mechanism for the two mounting heads.

Relevant portions: paragraph [0045], Fig.7, etc.

2. Publication number: JP03-179800

Publication date: 1991-08-05

Inventor: Sasaki Hidetoshi; Tanaka Suehiro; Wachi Akihiko

Applicant: Matsushita Electric Ind Co Ltd

Title: Component Mounting Method

Abstract:

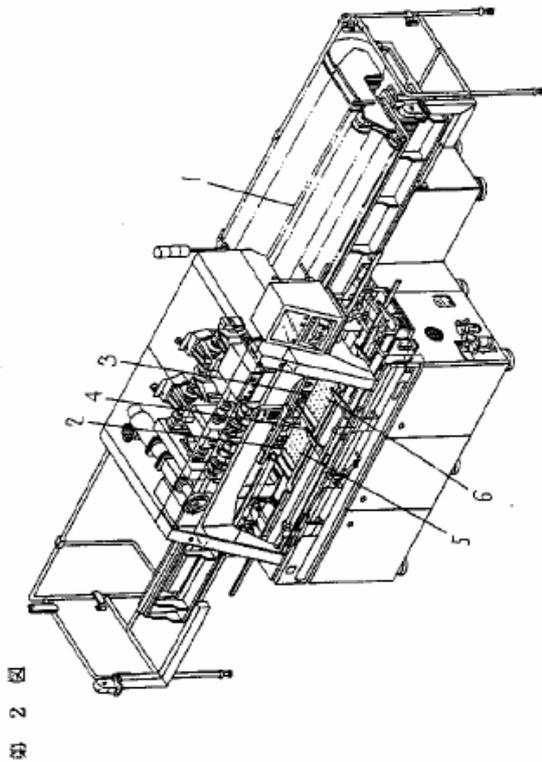
Purpose: To enable various types of components to be mounted at a high speed by a method wherein component feed sections are previously arranged at the same space with mounting heads, and part feed sections possessed of component common to the mounting heads are arranged.

Constitution: First of all, components of the same type (feed sections 7, 8) are taken out by mounting heads 2 and 3 and mounted on printed wiring boards 5 and 6. Then, a component is taken out from a feed section 9 by the mounting head 2 and mounted on the board 5. At this point, the mounting head 3 is not put in a take-out operation. The same as the above-mentioned, a component is taken out from the feed section 9 by the mounting head 3 and mounted on the printed board 6. At this point, the mounting head 2 is not put in a take-out operation.

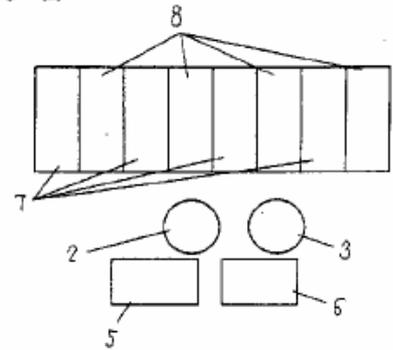
Family list

2 family member for JP03-179800 derived from 1 application

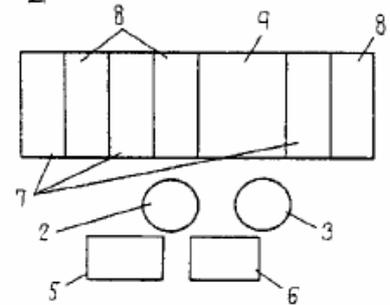
Publication info: JP2762637B2



第 3 図



第 4 図



2, 3: mounting head units

Comments from the searcher/reviewer:

This patent application discloses a mounting method of a mounting apparatus with a plurality of mounting heads (two mounting heads as showed in the drawings and embodiment). No detailed disclosure about whether the two mounting heads share the same axis but looks like they are as showed in the drawings.

No detailed disclosure about the driving mechanism for the two mounting heads.

Relevant portions: claim 1, embodiment, Fig.2, Fig.3, etc.

3. Publication number: JP04-064283

Publication date: 1992-02-28

Inventor: Shirakawa Tokio; Uchida Kanji; Wakao Hiroshi; Seno Masayuki

Applicant: Matsushita Electric Ind Co Ltd

Title: Electronic Component Mounting Device

Abstract:

Purpose: To remarkably reduce a tact by composing of an X-axis robot, and a Y-axis robot for positioning to drive it in a Y-axis direction.

Constitution: First and second mounting heads 15, 16 of an X-axis robot 20 are positioned independently by first and second drive motors 17, 18 on arbitrary two electronic components 14 of a first component supply unit 11, then suck the components 14, regulate to position them at a predetermined position on a printed board 22 by the motors 17, 18 in an X-axis direction and by a Y-axis robot 21 in a

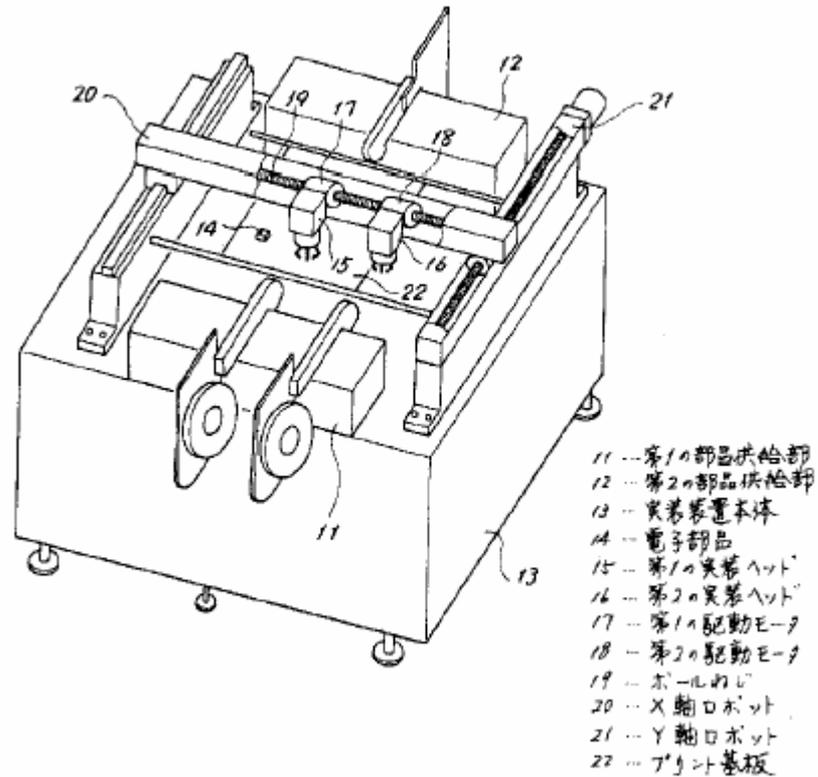
Y-axis direction to be mounted. Accordingly, the heads 15, 16 are positioned independently on the robot 20 simultaneously suck the two components 14 to be able to mount them to remarkably reduce a tact, thereby enhance productivity.

Family list

2 family member for JP04-064283 derived from 1 application

Publication info: JP2930378B2

JP04-064283 A



- 15: first mounting head
- 16: second mounting head
- 17: first driving motor
- 18: second driving motor

Comments from the searcher/reviewer:

This patent application teaches a mounting apparatus with two mounting heads sharing the same axis. These two mounting heads are driven by different driving motors.

Relevant portions: claim 1, embodiment, Fig.1, etc.

4. Publication number: JP08-162797

Publication date: 1996-06-21

Inventor: Kanayama Shinji; Kabeshita Akira; Shida Satoshi; Enchi Kouhei; Takahashi Kenji

Applicant: Matsushita Electric Ind Co Ltd

Title: Electronic Part Mounter

Abstract:

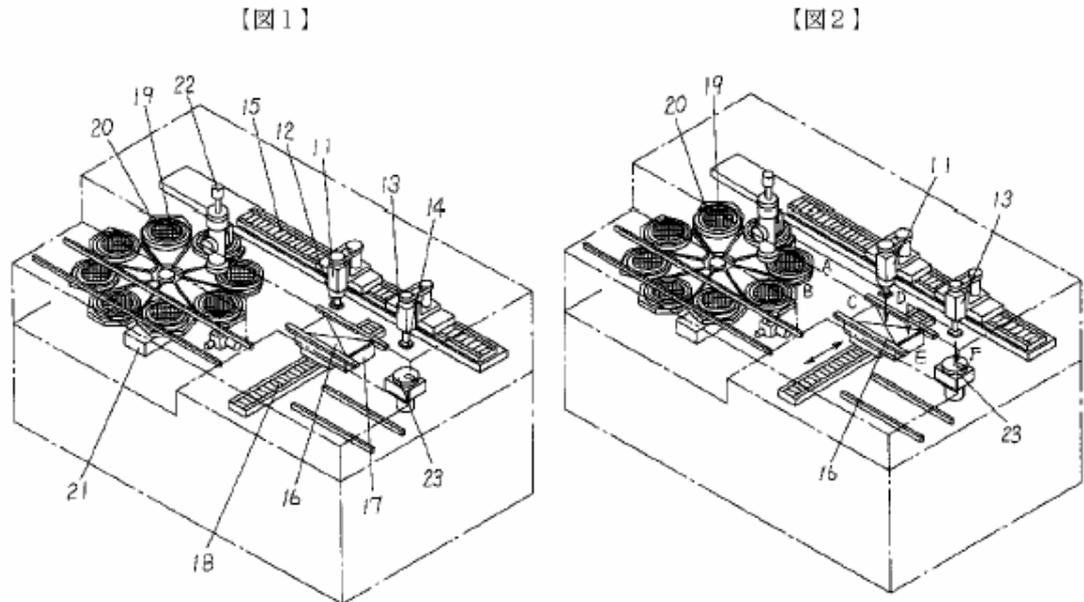
Purpose: To provide an electronic part mouter, in which a mounting work is shortened, the supply of parts is simplified and the space of a facility is saved, accuracy of which can be improved and by which expansion to the mixed loading mounting of COB mounting and STM mounting, monolithic mounting corresponding to a multiplication, the COG mounting of an ACF junction system, etc., is facilitated. Constitution: A first part transfer head 11 and a second transfer head 13 are NC-driven in the X-axis direction respectively independently on the same axis, and a circuit board 16 is NC-driven in the Y-axis direction. The supply section of an electronic part 19 and a transfer pan 23 for supplying paste are arranged on both sides of a board stage 17. Accordingly, the mounting work of COB mounting is shortened, the supply of parts is simplified, the space of a facility is saved, and the accuracy is improved.

Family list

2 family members for JP08-162797 derived from 2 applications

Publication info: JP08-162797 A

US5894657 A



- 11: first component mounting head
- 13: second component mounting head
- 15: X axis robot for driving both 11 and 13 moving independently along the X axis.

Comments from the searcher/reviewer:

This patent application teaches an electronic component mounting apparatus with two mounting heads (11 and 13) sharing the same axis. The two mounting heads are driven by an X robot (15) to move along the X axis

Relevant portions: claim 2, paragraph [0009], [0011], [0016], Fig.1, Fig. 2, etc.

SUMMARY AND COMMENTS

We used Patolis, NRI and IPDL to search Japanese patents published before Dec. 2007, and have reviewed about 674 hits from our search. After reviewing these hits, 4 Japanese patent documents that disclose mounting apparatus with two mounting heads sharing the same axis are identified as documents of relevance or general state of the art.

Out of the 4 Japanese documents cited in this report, 3 documents disclose mounting apparatus with two mounting heads sharing the same axis, but these 5 documents neither have detailed disclosure about the driving mechanism, nor disclose two separate driving motors for the two mounting heads. One document (JP08-162797) teaches a mounting apparatus with two mounting heads that share the same axis and are driven by an X axis robot to move along the X axis.

In addition to the original Japanese patent documents cited in this report, machine translation output for these 4 Japanese patent documents are also provided for your convenience.

Would you please review the search report and the attachments. If you have any questions regarding the search results, or if there is anything else we can be of your assistance, such as human translation for the cited Japanese patent applications, please do not hesitate to contact us.

Note:

It should be understood that the quality of machine translation is far below that of a human translation. While machine translation output can let you know what is being described in a patent application, it can rarely tell you what is being said. It is unwise to make any significant decision basing on machine translation output without discussing it with your professional translators.

Sincerely yours,

Search: xxx
Review and machine translation: xxx, xxx

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Attachments:

- Attachment-1: Japanese patent documents cited in this report (4 pdf files)
- Attachment-2: Machine translation output of the Japanese patent documents cited in this report (4 word files)
- Attachment-4: List of the search hits reviewed (excel file)