

United States Patent [19]

Nishiyama et al.

6,049,153 **Patent Number:** [11]

*Apr. 11, 2000 **Date of Patent:** [45]

| [54] | MOTOR | | | |
|----------------------------------|--|---|--|--|
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| [73] | Assignee: | Matsushita Electric Industrial Co., Ltd., Osaka, Japan | | |
| [*] | Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2). | | | |
| [21] | Appl. No.: | 08/945,460 | | |
| [22] | PCT Filed | Feb. 21, 1997 | | |
| [86] | PCT No.: | PCT/JP97/00489 | | |
| | § 371 Date | E: Feb. 2, 1998 | | |
| | § 102(e) D | Pate: Feb. 2, 1998 | | |
| [87] | PCT Pub. No.: WO97/31422 | | | |
| | PCT Pub. Date: Aug. 28, 1997 | | | |
| [30] | Foreign Application Priority Data | | | |
| Feb. 23, 1996 [JP] Japan 8-35988 | | | | |
| | | | | |
| [58] | Field of Search | | | |

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OTHER PUBLICATIONS

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English translation of Japanese language search report for Int'l Appln. No. PCT/JP97/00489.

Primary Examiner—Nestor Ramirez Assistant Examiner—Burt Mullins Attorney, Agent, or Firm-Ratner & Prestia

ABSTRACT [57]

A motor comprises a stator core having plural teeth and slots provided among the teeth, a winding applied on the teeth by a turn, and a rotor incorporating plural permanent magnets. The rotor is rotated and driven by utilizing reluctance torque in addition to magnetic torque. Since the winding is not crossed, the size of the coil end is reduced.

21 Claims, 7 Drawing Sheets

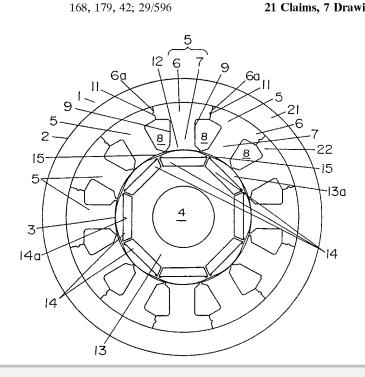




Fig. I

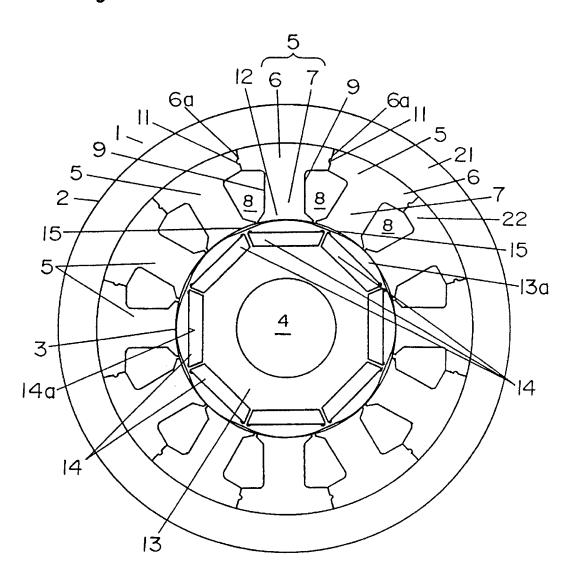


Fig. 2

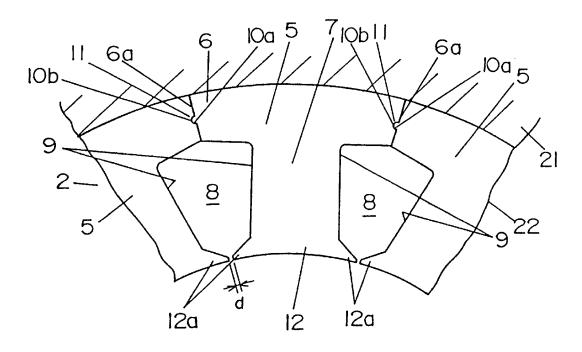


Fig. 3

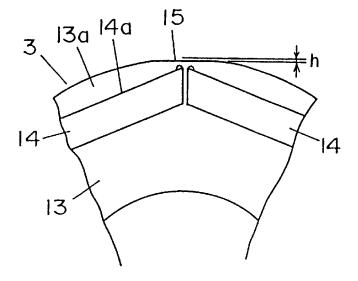


Fig.4

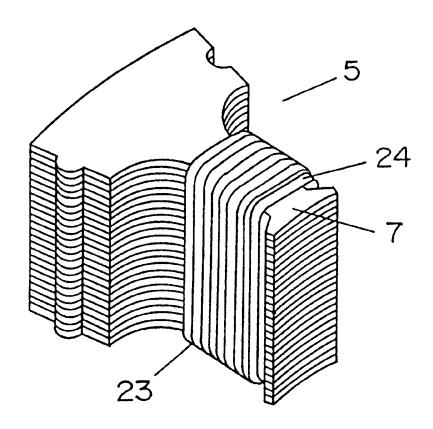
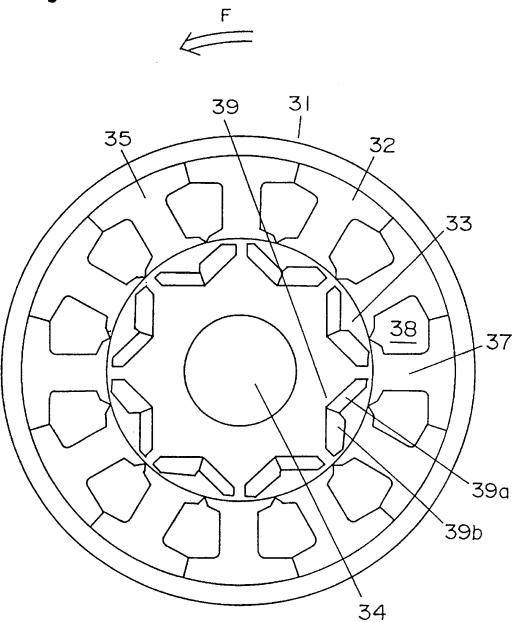


Fig.5





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