



US006081059A

United States Patent [19]

[11] Patent Number: **6,081,059**

Hsu

[45] Date of Patent: **Jun. 27, 2000**

[54] **OUTER-ROTOR ELECTRIC MOTOR HAVING INNER-STATOR FORMED BY CONCENTRICALLY WRAPPING FLATTENED STATOR ELEMENTS ON STATOR CORE**

4,350,914	9/1982	Searle	310/194
4,395,815	8/1983	Stanley et al.	29/598
4,712,035	12/1987	Forbes et al.	310/269
4,818,911	4/1989	Taguchi et al.	310/259
5,642,011	6/1997	Fanning et al.	310/216

[76] Inventor: **Chun-Pu Hsu**, 19, Wu-Chien Sixth Road, Wu-Ku Industrial Park, Wu-Ku, Taipei Hsien, Taiwan

Primary Examiner—Nestor Ramirez
Assistant Examiner—Tran N Nguyen

[57] **ABSTRACT**

An electric motor of outer-rotor type includes: an inner stator mounted on a stator holder, an outer rotor rotatably circumferentially disposed around the inner stator, a shaft coaxially secured with the outer rotor, and a housing combined with the stator holder for encasing the outer rotor and the inner stator within the housing; with the inner stator including an annular core made of magnetic conductor, a plurality of fin arrays made of magnetic conductors and formed as a fin array assembly concentrically wrapped on the annular core, and a plurality of insulating coil bobbins each coil bobbin pre-wound with the coil windings thereon and jacketed on each fin array, thereby forming an inner stator having a stable construction, a higher winding capacity, higher magnetic flux density and higher output power, as well as a lower production cost.

[21] Appl. No.: **09/296,691**

[22] Filed: **Apr. 21, 1999**

[51] **Int. Cl.**⁷ **H02K 1/12; H02K 15/02**

[52] **U.S. Cl.** **310/179; 310/216; 310/218; 310/259; 310/269; 29/596; 29/597; 29/598**

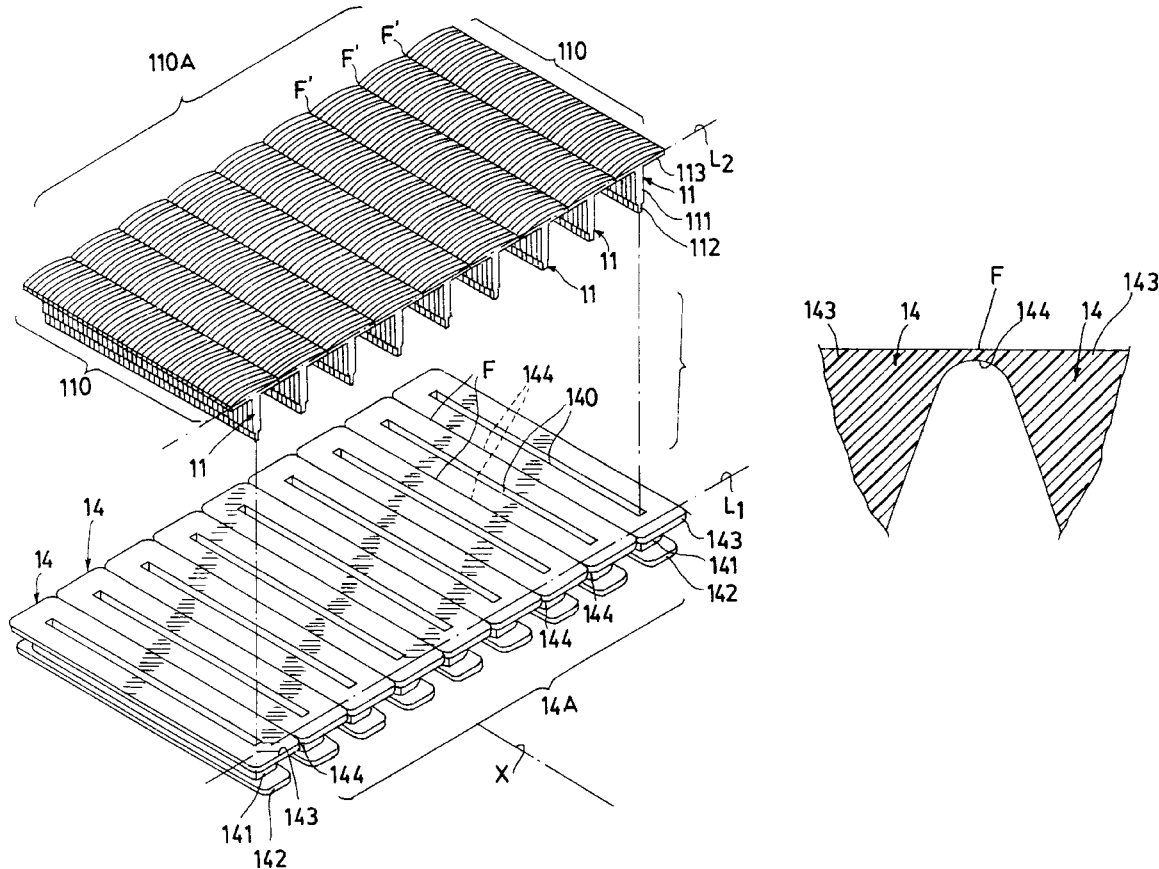
[58] **Field of Search** 310/254, 259, 310/41, 216, 218, 269, 156, 194; 29/596, 597, 598, 609, 605

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,577,851	5/1971	Detheridge	29/596
3,886,256	5/1975	Ohuchi et al.	310/216
4,102,040	7/1978	Rich	29/598

11 Claims, 8 Drawing Sheets



Intellectual Ventures Exhibit 2002

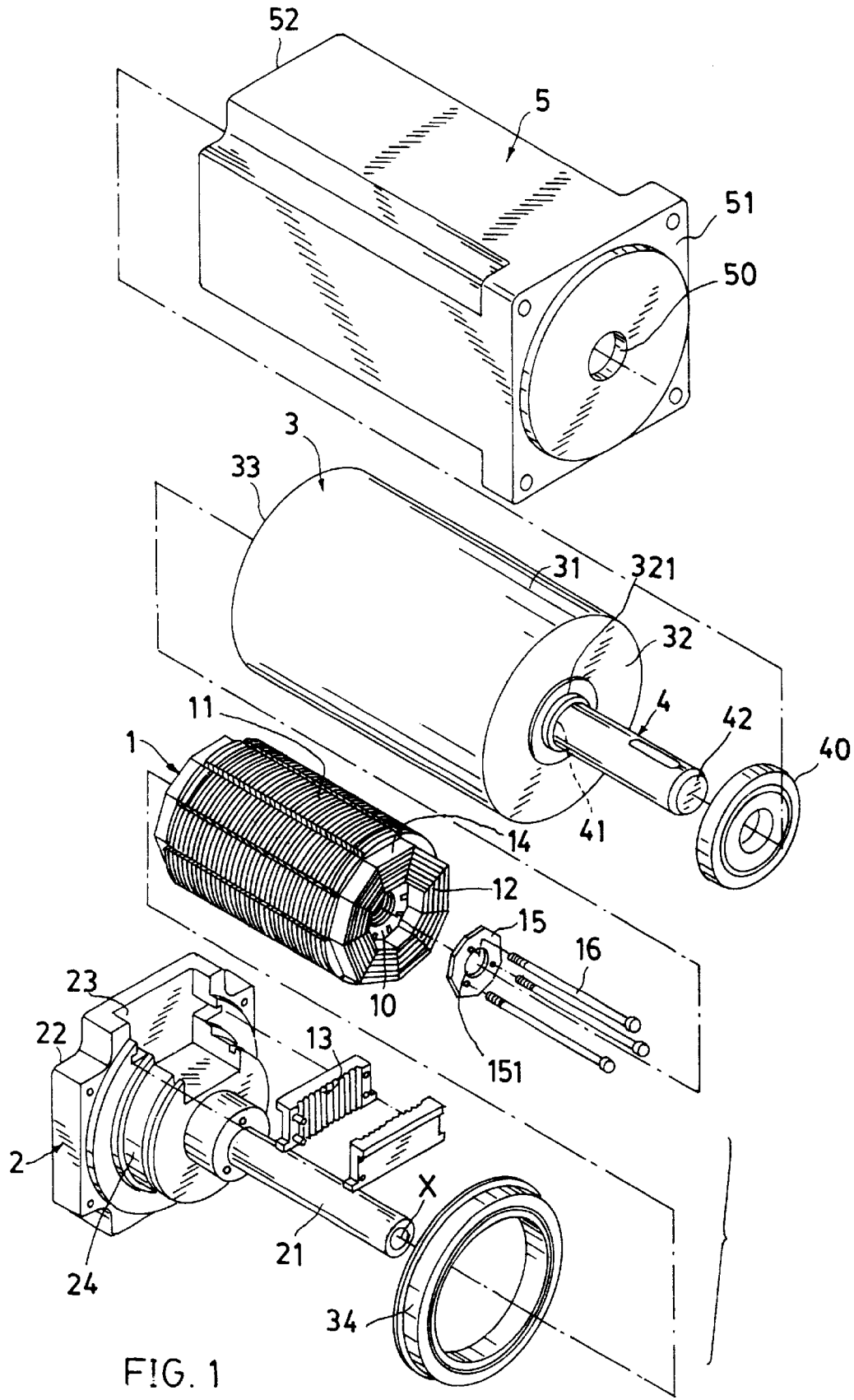
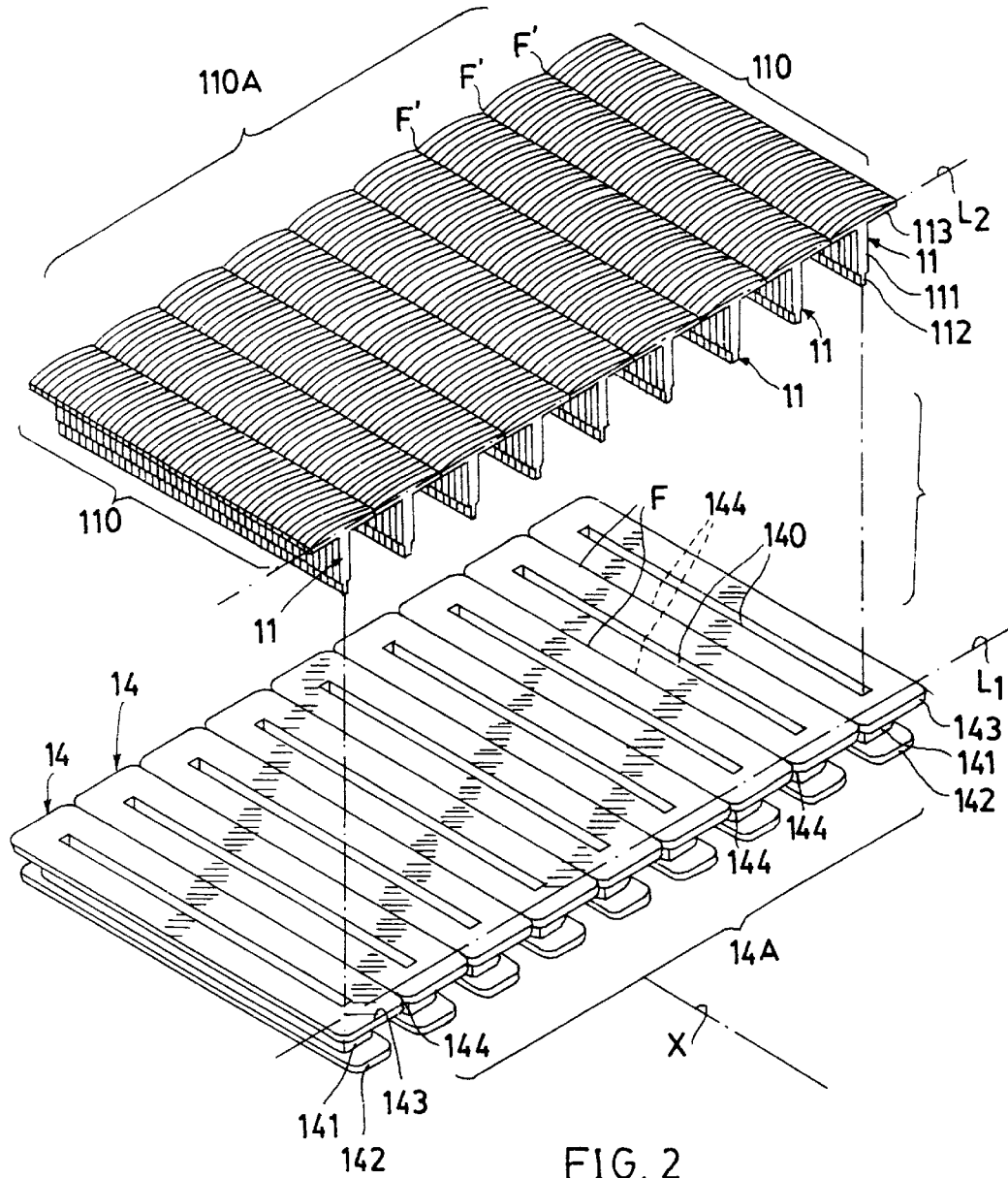


FIG. 1



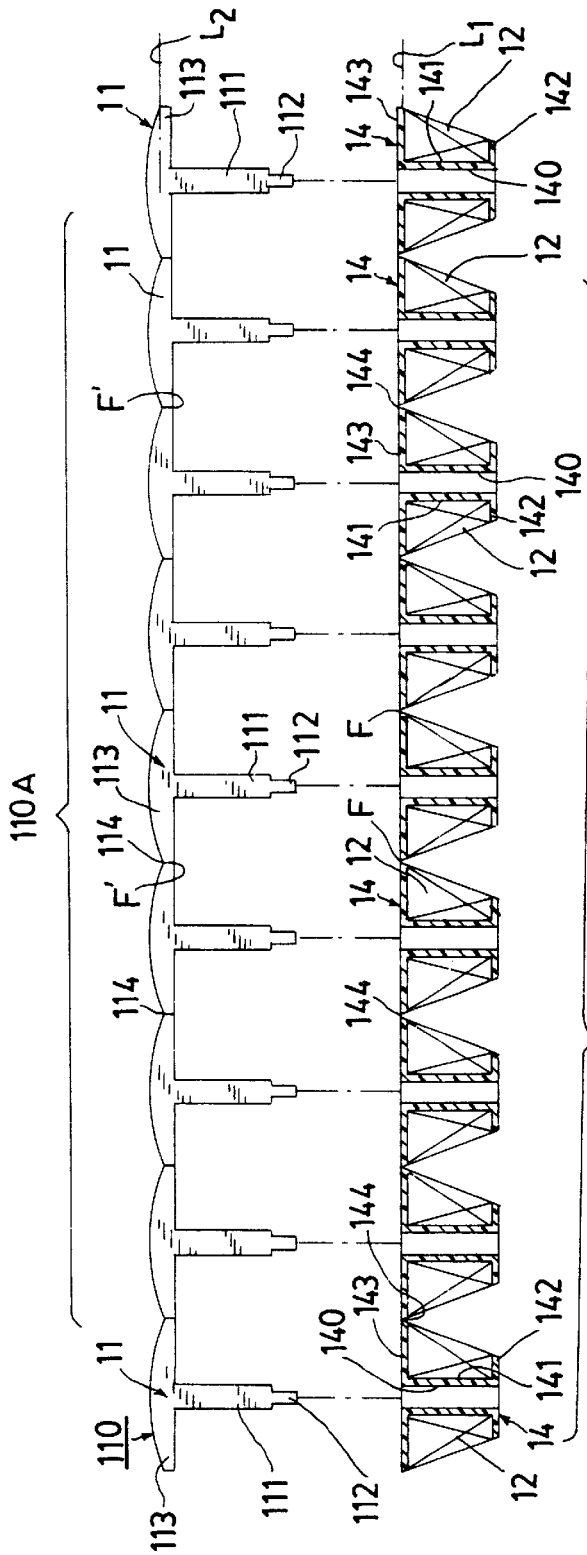


FIG. 3

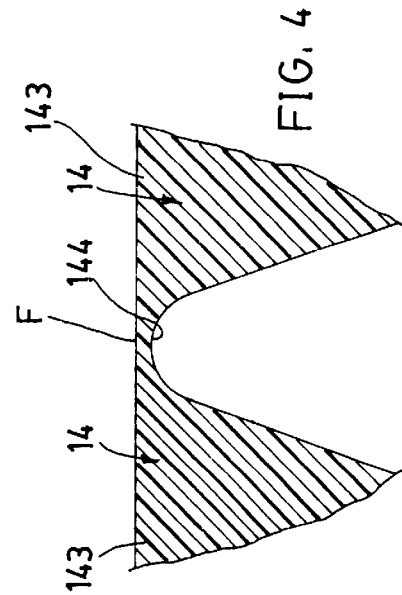


FIG. 4

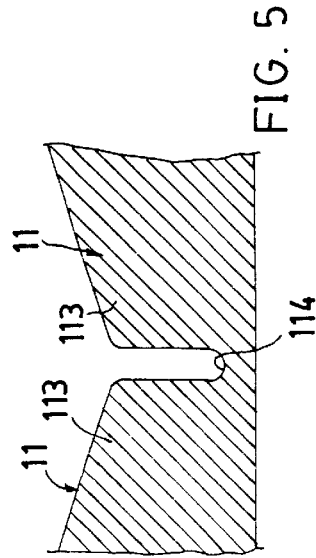


FIG. 5

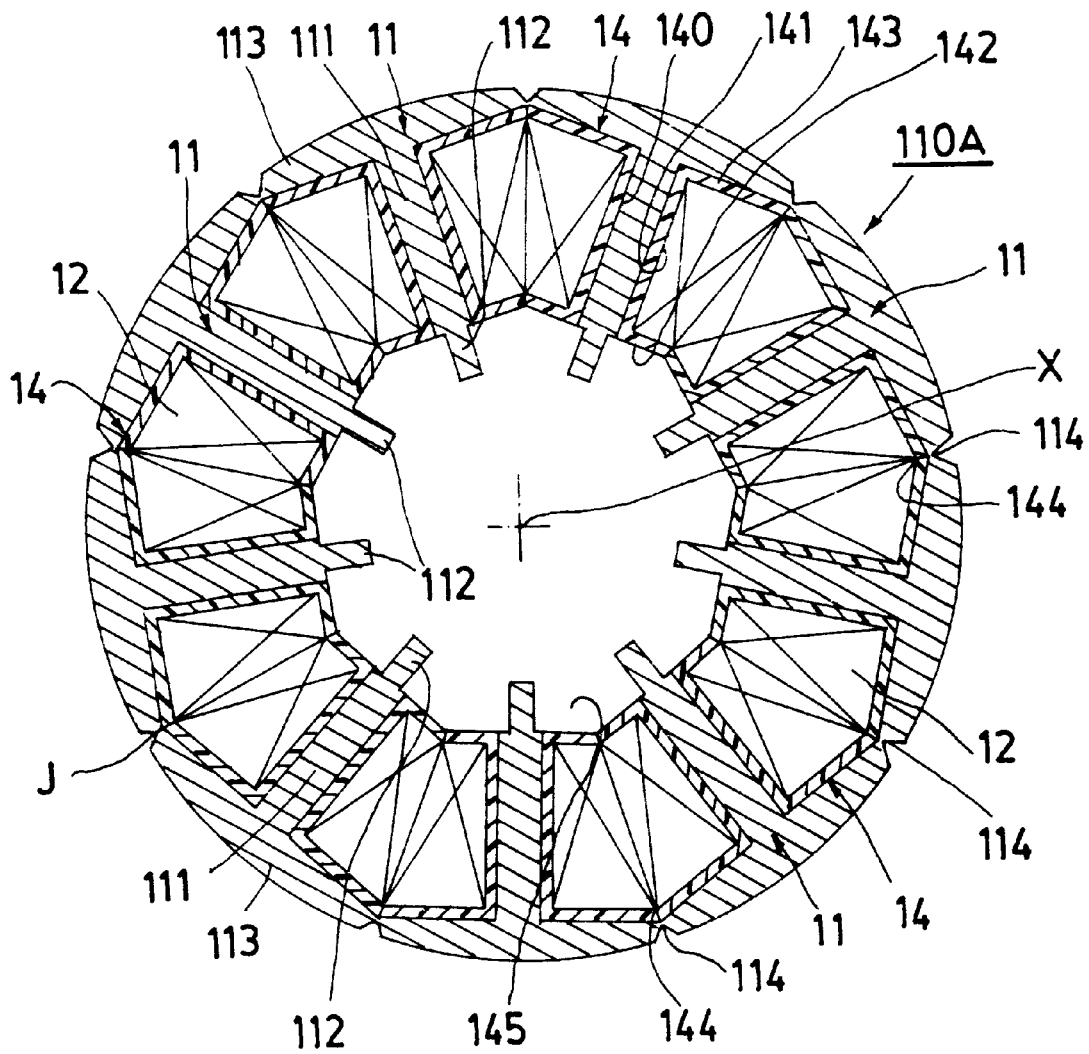


FIG. 6

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.