

The
United
States
of
America



The Director of the United States Patent and Trademark Office

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extensions.

Jon W. I. Dudas

Director of the United States Patent and Trademark Office



US007409966B2

**(12) United States Patent
Chang**

(10) Patent No.: **US 7,409,966 B2**
(45) Date of Patent: **Aug. 12, 2008**

(54) BALL VALVE

(76) Inventor: **Hung-Chung Chang**, No. 84-3,
Wunchang E. 6th St., Beitun District,
Taichung City 406 (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 160 days.

(21) Appl. No.: **11/417,203**

(22) Filed: **May 4, 2006**

(65) **Prior Publication Data**

US 2007/0256746 A1 Nov. 8, 2007

(51) Int. Cl. **F16K 11/087** (2006.01)

(52) U.S. Cl. **137/625.47; 251/317**

(58) Field of Classification Search **137/625.47; 251/317**

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,905,197 A * 9/1959 Janes 137/625.47

3,236,495 A * 2/1966 Buchholz 251/315.12
3,675,895 A * 7/1972 Matousek 251/315.12
4,026,516 A * 5/1977 Matousek 251/315.12
4,441,524 A * 4/1984 Mese 137/625.47
4,685,488 A * 8/1987 Corbin et al. 137/328

* cited by examiner

Primary Examiner—John Fox
(74) Attorney, Agent, or Firm—Browdy and Niemark

(57) **ABSTRACT**

A ball valve includes a valve seat having a chamber therein and bores communicated with the chamber, a ball, which has a plurality of channels, received in the chamber, a shaft connected to the ball, and a plurality of lids connected to the valve seat to close the bores. The ball valve further includes two plugs received in the chamber, each of which has a through hole and a concave portion fitting the ball to completely cover the ball therein when the first plug is combined with the second plug, a first recess, two second recesses at opposite sides of the first recess and two slot around the second recesses respectively, wherein the slots form two receiving slots when the first plug is combined with the second plug, and two pads, each of which has a through hole, received in the receiving slots respectively to cover the ball.

12 Claims, 6 Drawing Sheets

