US006793719B2

(12) **United States Patent**
Kim et al.

(10) **Patent No.: US 6,793,719 B2**
(45) **Date of Patent: Sep. 21, 2004**

(54) **CONCENTRATING CHAMBER IN OXYGEN CONCENTRATING APPARATUS**

(75) Inventors: **Min Jung Kim**, Suwin (KR); **Tae Soo Lee**, Gyonggi-do (KR)

(73) Assignee: **Oxus Co., Ltd.**, Seoul (KR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/272,297**

(22) Filed: **Oct. 17, 2002**

(65) **Prior Publication Data**

US 2003/0084789 A1 May 8, 2003

(30) **Foreign Application Priority Data**

Oct. 22, 2001 (KR) 2001-65132

(51) **Int. Cl.**[7] **B01D 53/053**

(52) **U.S. Cl.** **96/130**; 95/130; 96/136; 96/137; 96/142; 96/144; 96/149

(58) **Field of Search** 95/130; 96/108, 96/130, 134–138, 142–144, 149, 151

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,258,899	A	*	7/1966	Coffin	96/114
3,464,186	A	*	9/1969	Hankison et al.	96/115
3,483,677	A	*	12/1969	Pinto	96/137
3,572,008	A	*	3/1971	Hankison et al.	95/105
4,071,337	A	*	1/1978	Evans	96/114
4,572,725	A	*	2/1986	Kojima	96/137
4,655,801	A	*	4/1987	Kojima et al.	96/137
4,673,419	A	*	6/1987	Kojima	96/144
4,892,569	A	*	1/1990	Kojima	96/113
5,129,927	A	*	7/1992	Tsubouchi	96/113
5,268,021	A	*	12/1993	Hill et al.	95/98
5,275,642	A	*	1/1994	Bassine	96/149
5,340,381	A	*	8/1994	Vorih	95/21
5,549,736	A	*	8/1996	Coffield et al.	96/133
5,578,115	A	*	11/1996	Cole	96/121
5,730,778	A	*	3/1998	Hill et al.	95/12
5,871,564	A	*	2/1999	McCombs	95/98
5,997,617	A	*	12/1999	Czabala et al.	96/130
6,162,283	A	*	12/2000	Conrad et al.	95/98
6,217,635	B1	*	4/2001	Conrad et al.	95/97
6,391,098	B1	*	5/2002	Thomas	96/111

* cited by examiner

Primary Examiner—Robert H. Spitzer
(74) *Attorney, Agent, or Firm*—Liniak, Berenato & White, LLC

(57) **ABSTRACT**

A concentrating chamber in an oxygen concentrating apparatus is provided, in which a process for adsorbing nitrogen to concentrate oxygen is performed in a single case. The concentrating chamber in an oxygen concentrating apparatus includes: a casing having upper and lower openings; an adsorption unit for performing an oxygen concentration through a compressed air and counter-flowing the stored oxygen to perform a nitrogen rinsing in the casing; a check valve operating according to a predetermined pressure, for supplying the oxygen concentrated in the adsorption unit and rinsing the nitrogen adsorbed in the adsorption unit; and upper and lower manifolds for supplying the concentrated oxygen through the upper and lower ends of the casing, or supplying the compressed air and simultaneously exhausting the rinsed nitrogen, through the upper and lower ends of the casing. The concentrating chamber in an oxygen concentrating apparatus includes at least two casings.

19 Claims, 10 Drawing Sheets