



US006622544B2

(12) **United States Patent**  
**Akerblom**

(10) **Patent No.:** **US 6,622,544 B2**  
(45) **Date of Patent:** **Sep. 23, 2003**

(54) **MEASURING DEVICE IN WHICH A MEASURING HEAD IS MOVABLY SUPPORTED**

(76) Inventor: **Bengt Akerblom**, Vårby Allé 23, S-143 40 Vårby (SE)

(\* ) 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.: **10/169,999**

(22) PCT Filed: **Jan. 11, 2001**

(86) PCT No.: **PCT/SE01/00017**

§ 371 (c)(1),  
(2), (4) Date: **Jul. 12, 2002**

(87) PCT Pub. No.: **WO01/51882**

PCT Pub. Date: **Jul. 19, 2001**

(65) **Prior Publication Data**

US 2003/0000286 A1 Jan. 2, 2003

(30) **Foreign Application Priority Data**

Jan. 14, 2000 (SE) ..... 0000105

(51) **Int. Cl.**<sup>7</sup> ..... **G01B 13/06**; G01B 13/16;  
G01B 13/12; G01N 37/00

(52) **U.S. Cl.** ..... **73/37.5**

(58) **Field of Search** ..... 73/37.5, 105, 866.5

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,802,086 A \* 4/1974 Walker ..... 33/174 R  
3,884,076 A 5/1975 Studer ..... 73/37.6  
4,195,446 A \* 4/1980 Angst ..... 51/105 GG

4,325,249 A 4/1982 Berglund ..... 324/226  
4,607,525 A \* 8/1986 Turner et al. .... 73/37.5  
4,607,960 A \* 8/1986 Wulff ..... 374/7  
4,647,855 A 3/1987 Berglund ..... 324/226  
4,658,633 A \* 4/1987 Freer ..... 73/37.5  
4,854,156 A 8/1989 Hoefel et al. .... 73/37.5  
4,876,883 A \* 10/1989 Ecoffey et al. .... 73/37.5  
4,977,777 A \* 12/1990 Bieg ..... 73/37.5  
5,184,503 A \* 2/1993 Hancock ..... 73/37.5  
5,361,615 A \* 11/1994 Kirii et al. .... 72/19  
5,386,716 A \* 2/1995 Thurston et al. .... 73/37.5  
5,719,342 A \* 2/1998 Borchers et al. .... 73/866.5  
5,753,799 A \* 5/1998 Shah ..... 73/40  
5,756,908 A \* 5/1998 Knollmeyer et al. .... 73/866.5  
5,829,928 A \* 11/1998 Harmand et al. .... 408/83.5  
5,922,941 A \* 7/1999 Winkler et al. .... 73/40

\* cited by examiner

*Primary Examiner*—Hezron Williams

*Assistant Examiner*—David J. Wiggins

(74) *Attorney, Agent, or Firm*—Young & Thompson

(57) **ABSTRACT**

A measuring device (1) has a measuring housing (5) in which a measuring head (6) is movably supported, the measuring housing having at least one connection (13) for the supply of pressurized air for supporting by air the measuring head (6) in the measuring housing (5). The measuring head is designed to let out air and to generate an air cushion towards a measuring object (3). On the measuring head (6) there is provided at least one guide element (20) that is extending axially and protrudes into a chamber (12) in the measuring housing (5), the guide element gliding in and being supported by air in a channel (21) in a guide part (15), which forms an end wall to the chamber (12). Also a shaft (16) included in the measuring head extends through and is supported by air in the guide part (15).

**8 Claims, 2 Drawing Sheets**

