



(12) **United States Design Patent**  
**Fujimoto et al.**

(10) **Patent No.:** **US D992,845 S**  
(45) **Date of Patent:** **\*\* Jul. 18, 2023**

(54) **ROLLER SHAFT FOR SUBSTRATE  
CLEANING**

D231,328 S \* 4/1974 Nassor ..... D8/384  
D241,074 S \* 8/1976 Hamisch ..... D18/58  
D359,673 S \* 6/1995 Gibson ..... D8/352

(Continued)

(71) Applicant: **EBARA CORPORATION**, Tokyo (JP)

(72) Inventors: **Tomoaki Fujimoto**, Tokyo (JP);  
**Mitsuru Miyazaki**, Tokyo (JP);  
**Takuya Inoue**, Tokyo (JP)

**FOREIGN PATENT DOCUMENTS**

JP 2003208932 A \* 7/2003  
JP 2003-318149 A 11/2003

(Continued)

(73) Assignee: **EBARA CORPORATION**, Tokyo (JP)

(\*\*) Term: **15 Years**

**OTHER PUBLICATIONS**

(21) Appl. No.: **29/758,287**

Myhandb.bb—Washer—Oval—Diaphragm <https://www.myhandb.bb/washer-oval-diaphragm-cxp5233.html> (Year: 2023).\*

(Continued)

(22) Filed: **Nov. 13, 2020**

(30) **Foreign Application Priority Data**

May 15, 2020 (JP) ..... 2020-009569 D

(51) **LOC (14) Cl.** ..... **15-05**

(52) **U.S. Cl.**  
USPC ..... **D32/25**

(58) **Field of Classification Search**

USPC ..... D8/382, 383, 385–387, 394, 397, 399;  
D32/1, 3, 13, 19, 24, 25, 27, 29, 30–35  
CPC .. B08B 1/00; B08B 1/04; B24D 13/08; B24D  
13/10

See application file for complete search history.

*Primary Examiner* — Kevin K Rudzinski  
*Assistant Examiner* — Richard E Yenchesky  
(74) *Attorney, Agent, or Firm* — BakerHostetler

(57) **CLAIM**

The ornamental design for a roller shaft for substrate cleaning, as shown and described.

**DESCRIPTION**

FIG. 1 is a left side view of a roller shaft for substrate cleaning showing our new design;  
FIG. 2 is a right side view thereof;  
FIG. 3 is a front view thereof, including a detail view of a portion thereof;  
FIG. 4 is a top view thereof, including a detail view of a portion thereof;  
FIG. 5 is a cross-section view thereof, taken along the line 5-5 of FIG. 1;  
FIG. 6 is an enlarged top perspective view; and,  
FIG. 7 is an enlarged left side view thereof.  
The broken lines in the figures show portions of the roller shaft that form no part of the claimed design.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

D28,511 S \* 4/1898 Huennekens ..... D8/399  
1,251,832 A \* 1/1918 Spencer ..... F16B 39/24  
411/980  
2,945,750 A \* 7/1960 Gareis ..... B24D 13/08  
51/297  
3,250,047 A \* 5/1966 Block ..... B24D 13/08  
29/432.1  
D213,016 S \* 12/1968 Kleemeir ..... D32/25  
D229,502 S \* 12/1973 Thielen ..... D32/25  
D230,254 S \* 2/1974 Smith ..... D8/399

**1 Claim, 7 Drawing Sheets**

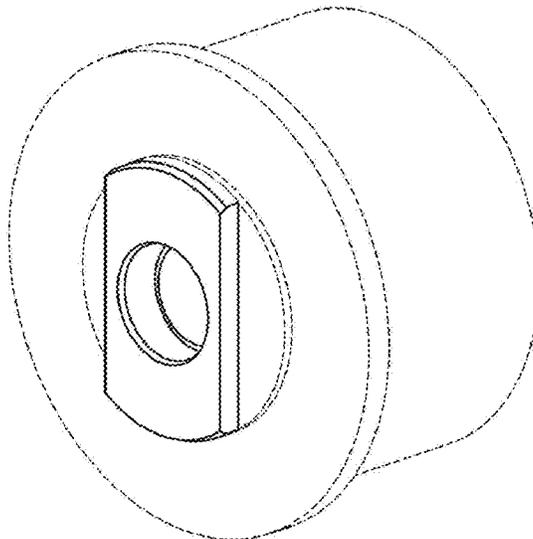




FIG.1

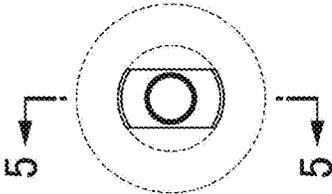


FIG.2

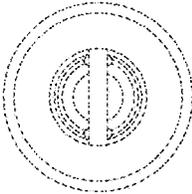


FIG.3



FIG.4

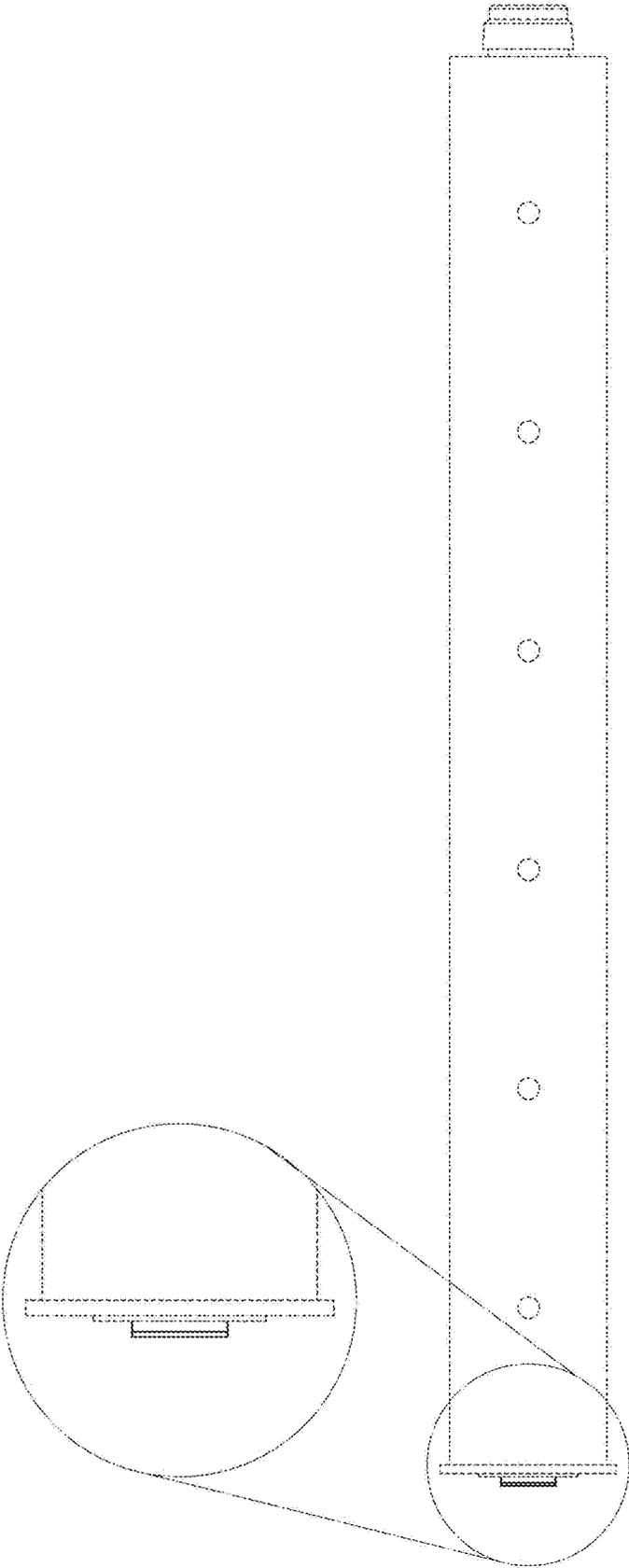


FIG.5

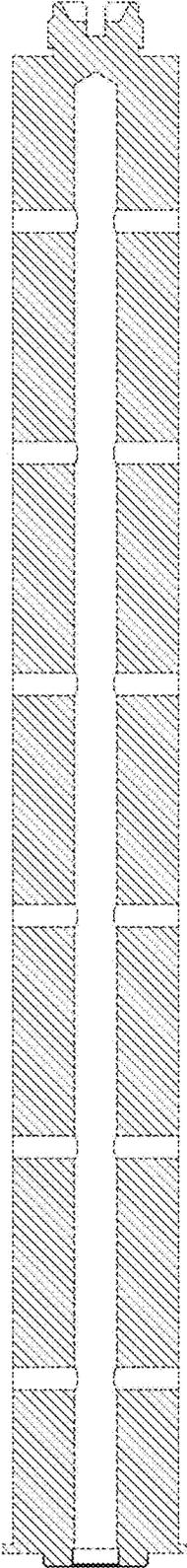


FIG.6

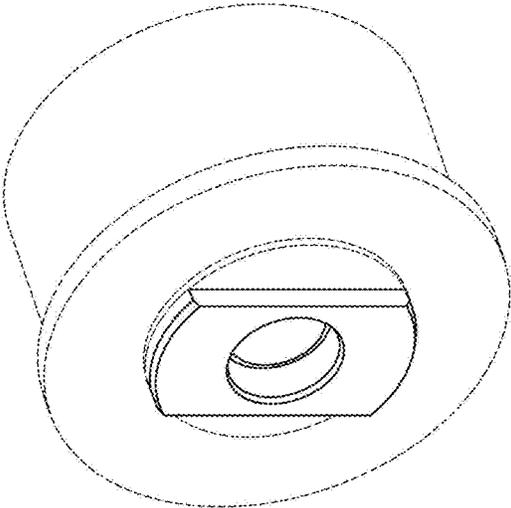


FIG.7

