US00D888115S

(12) United States Design Patent

Leavitt et al.

(10) Patent No.: US D888,115 S
(45) Date of Patent: ** Jun. 23, 2020

(54) **NOZZLE**

(71) Applicant: **Stratasys, Inc.**, Eden Prairie, MN (US)

(72) Inventors: **Paul Leavitt**, Minneapolis, MN (US); **Aaron Gregg**, Minneapolis, MN (US); **Ben Krall**, Eagan, MN (US); **Bryan Migliori**, Lakeville, MN (US); **James Flannigan**, Roseville, MN (US)

(73) Assignee: **STRATASYS, INC.**, Eden Prairie, MN (US)

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

(21) Appl. No.: **29/597,374**

(22) Filed: **Mar. 16, 2017**

(51) **LOC (12) Cl.** **15-09**

(52) **U.S. Cl.**
USPC **D15/138**

(58) **Field of Classification Search**
USPC D15/21, 138–144, 144.1, 144.2, 199; D23/213, 223
CPC A24C 5/24; B05C 5/0225; B05C 11/101; B05C 11/1013; B05C 11/1047; B41J 2/35; B41J 2/345
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,030,341	A *	6/1977	Sullivan	G01N 1/2813 73/61.54
4,567,489	A	1/1986	Obstfelder et al.	
4,728,392	A	3/1988	Miura et al.	
5,121,329	A	6/1992	Crump	
5,169,081	A	12/1992	Goedderz	
5,303,141	A	4/1994	Batchelder et al.	

(Continued)

FOREIGN PATENT DOCUMENTS

DE	102010015451	A1	10/2011
GB	816016		7/1959

(Continued)

OTHER PUBLICATIONS

Chinese Office Action dated May 30, 2016 for corresponding Chinese Application No. 201380043584.4, filed Feb. 15, 2015.

(Continued)

Primary Examiner — Patricia A Palasik
(74) *Attorney, Agent, or Firm* — Westman, Champlin & Koehler, P.A.

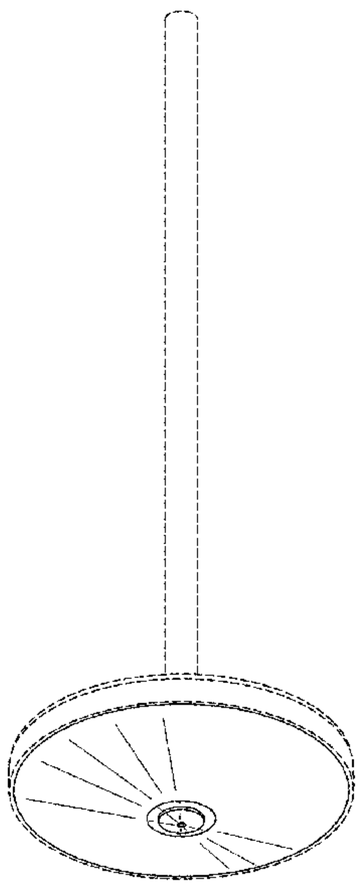
(57) **CLAIM**

The ornamental design for a nozzle, as shown and described.

DESCRIPTION

FIG. **1** is a top perspective view of a first embodiment of a nozzle showing our new design;
FIG. **2** is a bottom perspective view thereof;
FIG. **3** is a side view thereof, the opposing side, the front and the rear being identical;
FIG. **4** is a bottom view thereof;
FIG. **5** is top view thereof;
FIG. **6** is an enlarged section view taken through the section line indicated in FIG. **3**;
FIG. **7** is a top perspective view of a second embodiment thereof;
FIG. **8** is a bottom perspective view of FIG. **7**;
FIG. **9** is a side view of FIG. **7**, the opposing side, the front and the rear being identical;
FIG. **10** is a bottom view of FIG. **7**;
FIG. **11** is a top view of FIG. **7**; and,
FIG. **12** is an enlarged section view taken through the section line indicated in FIG. **7**.
The broken lines shown in the drawings are included for purposes of illustrating portions of the nozzle and form no part of the claimed design.

1 Claim, 8 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

5,312,224	A	5/1994	Batchelder et al.	
5,340,433	A	8/1994	Crump	
5,370,467	A	12/1994	Ikehata et al.	
5,503,785	A	4/1996	Crump et al.	
5,738,817	A	4/1998	Danforth et al.	
5,764,521	A	6/1998	Batchelder et al.	
5,866,058	A	2/1999	Batchelder et al.	
5,900,207	A	5/1999	Danforth et al.	
5,939,008	A	8/1999	Comb et al.	
5,968,561	A	10/1999	Batchelder et al.	
5,975,493	A	11/1999	Ellingson et al.	
6,004,124	A	12/1999	Swanson et al.	
6,022,207	A	2/2000	Dahlin et al.	
6,054,077	A	4/2000	Comb et al.	
6,067,480	A	5/2000	Stuffle et al.	
6,070,107	A	5/2000	Lombardi et al.	
6,085,957	A	7/2000	Zinniel et al.	
6,129,872	A	10/2000	Jang	
6,193,923	B1	2/2001	Leyden et al.	
6,223,919	B1 *	5/2001	Kuehn	B65D 41/0471 215/252
6,228,923	B1	5/2001	Lombardi et al.	
6,257,517	B1	7/2001	Babish et al.	
6,505,089	B1	1/2003	Yang et al.	
6,547,995	B1	4/2003	Comb	
6,645,412	B2	11/2003	Priedemann, Jr.	
6,685,866	B2	2/2004	Swanson et al.	
6,722,872	B1	4/2004	Swanson et al.	
6,730,252	B1	5/2004	Teoh et al.	
6,749,414	B1	6/2004	Hanson et al.	
6,790,403	B1	9/2004	Priedeman, Jr. et al.	
6,814,907	B1	11/2004	Comb	
6,869,559	B2	3/2005	Hopkins	
6,923,634	B2	8/2005	Swanson et al.	
6,981,656	B2 *	1/2006	Fisher	B05C 5/0225 239/104
6,998,087	B1	2/2006	Hanson et al.	
7,122,246	B2	10/2006	Comb et al.	
7,172,715	B2	2/2007	Swanson et al.	
7,236,166	B2	6/2007	Zinniel et al.	
7,249,696	B2 *	7/2007	Penalver Garcia	B05B 1/306 222/309
7,384,255	B2	6/2008	LaBossiere et al.	
7,604,470	B2	10/2009	LaBossiere et al.	
7,611,071	B2 *	11/2009	Bolyard, Jr.	B05C 5/0225 239/124
7,625,200	B2	12/2009	Leavitt	
D614,027	S *	4/2010	Fallat, II	D9/442
7,896,209	B2	3/2011	Batchelder et al.	
7,938,351	B2	5/2011	Taatjes et al.	
7,938,356	B2	5/2011	Taatjes et al.	
8,033,811	B2	10/2011	Swanson et al.	
8,153,182	B2	4/2012	Comb et al.	
8,221,669	B2	7/2012	Batchelder et al.	
D667,080	S *	9/2012	Sanwald	D23/223
8,953,034	B1 *	2/2015	Milosevic	B23Q 17/2409 348/92
2003/0056870	A1	3/2003	Comb et al.	
2004/0182510	A1	9/2004	Pfeifer et al.	
2005/0003317	A1 *	1/2005	Mizuno	F23D 14/38 431/345
2005/0112518	A1 *	5/2005	Watanabe	F23D 14/28 431/153
2005/0129941	A1	6/2005	Comb et al.	
2005/0258660	A1 *	11/2005	Wu	F16M 13/04 294/139
2006/0027232	A1 *	2/2006	Parker	F23D 14/48 126/349
2006/0158456	A1	7/2006	Zinniel et al.	
2007/0003656	A1	1/2007	LaBossiere et al.	
2007/0228590	A1	10/2007	LaBossiere et al.	
2008/0213419	A1	9/2008	Skubic et al.	
2009/0035405	A1	2/2009	Leavitt	
2009/0263582	A1	10/2009	Batchelder	
2009/0273122	A1	11/2009	Batchelder et al.	
2009/0274540	A1	11/2009	Batchelder et al.	
2010/0005987	A1	1/2010	Shapira	
2010/0096072	A1	4/2010	Hopkins et al.	
2010/0096485	A1	4/2010	Taatjes et al.	
2010/0096489	A1	4/2010	Taatjes et al.	
2010/0100224	A1	4/2010	Comb et al.	
2010/0283172	A1	11/2010	Swanson	
2010/0327479	A1	12/2010	Zinniel et al.	
2011/0074065	A1	3/2011	Batchelder et al.	
2011/0076495	A1	3/2011	Batchelder et al.	
2011/0076496	A1	3/2011	Batchelder et al.	
2011/0117268	A1	5/2011	Batchelder et al.	
2011/0121476	A1	5/2011	Batchelder et al.	
2011/0233804	A1	9/2011	Batchelder et al.	
2012/0046779	A1	2/2012	Pax et al.	
2012/0067501	A1	3/2012	Lyons	
2012/0068378	A1	3/2012	Swanson et al.	
2012/0070523	A1	3/2012	Swanson et al.	
2012/0161350	A1	6/2012	Swanson et al.	
2012/0162305	A1	6/2012	Swanson et al.	
2012/0162314	A1	6/2012	Swanson et al.	
2012/0164256	A1	6/2012	Swanson et al.	
2012/0164330	A1	6/2012	Swanson et al.	
2013/0026680	A1	1/2013	Ederer et al.	
2013/0269731	A1	10/2013	Crouch et al.	
2014/0048969	A1	2/2014	Swanson et al.	

FOREIGN PATENT DOCUMENTS

GB	2410495 A	8/2005
JP	2004148198	5/2004
KR	20080072788	8/2008
KR	20120060240	6/2012

OTHER PUBLICATIONS

Chinese Office Action dated Jan. 27, 2016 for corresponding Chinese Application No. 201380043584.4 filed Feb. 15, 2015.

Supplementary Extended Search Report dated Mar. 3, 2016 for corresponding European Patent Application No. 13829600.9 filed Aug. 16, 2013/.

Chinese Office Action dated Sep. 1, 2015 for corresponding Chinese Application No. 201380043584.4, filed Feb. 15, 2015.

U.S. Appl. No. 13/334,910, filed Dec. 22, 2011, entitled "Spool Assembly for Additive Manufacturing System, and Methods of Manufacture and Use Thereof".

U.S. Appl. No. 13/334,921, filed Dec. 22, 2011, entitled "Consumable Assembly with Payout Tube for Additive Manufacturing System".

www.envisiontec.com, "3D-Bioplotter", Datasheet, Mar. 2011.

International Search Report and Written Opinion dated Nov. 1, 2013, for International Application No. PCT/US2013/055308.

* cited by examiner

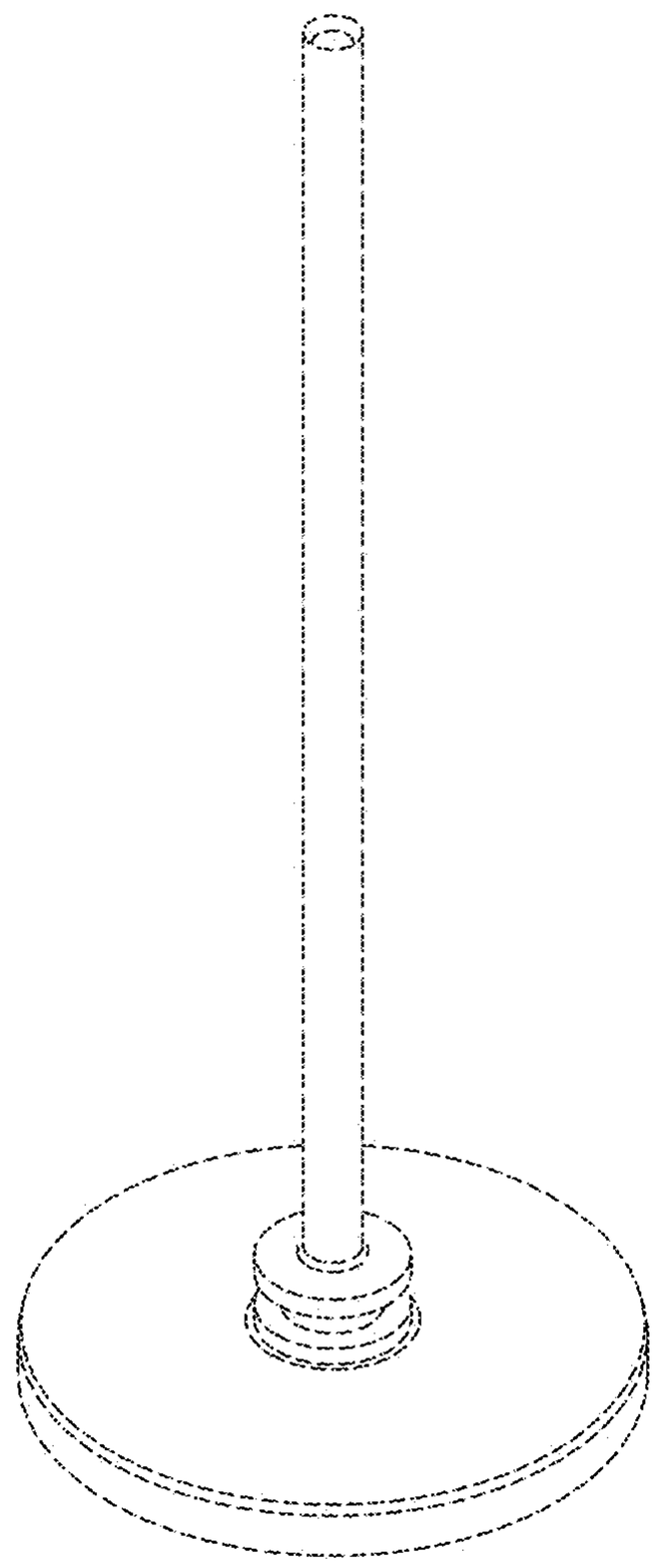


Fig. 1

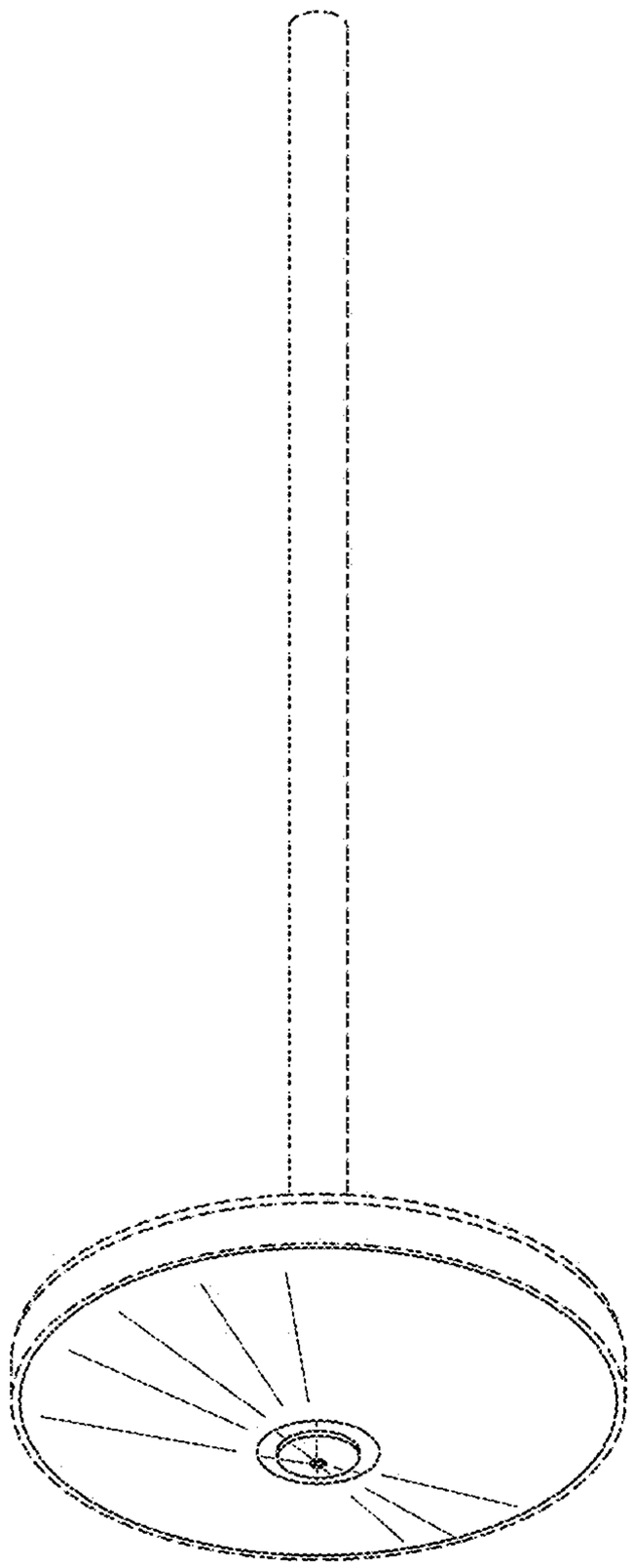


Fig. 2

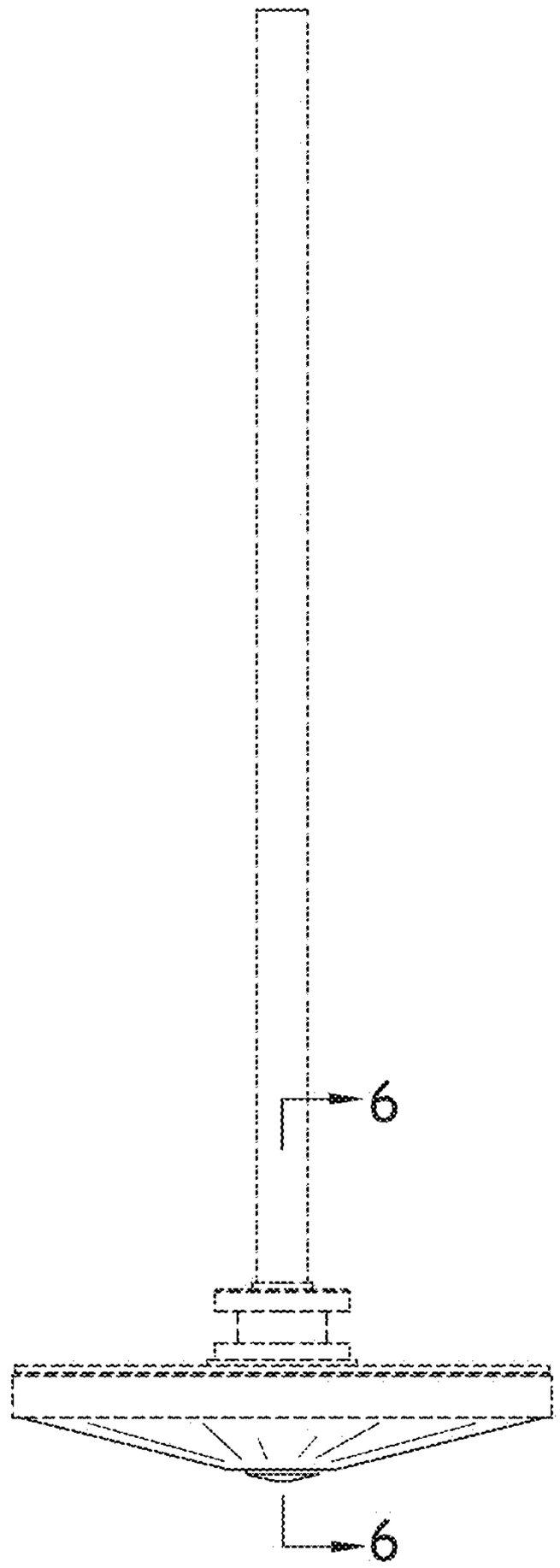


Fig. 3

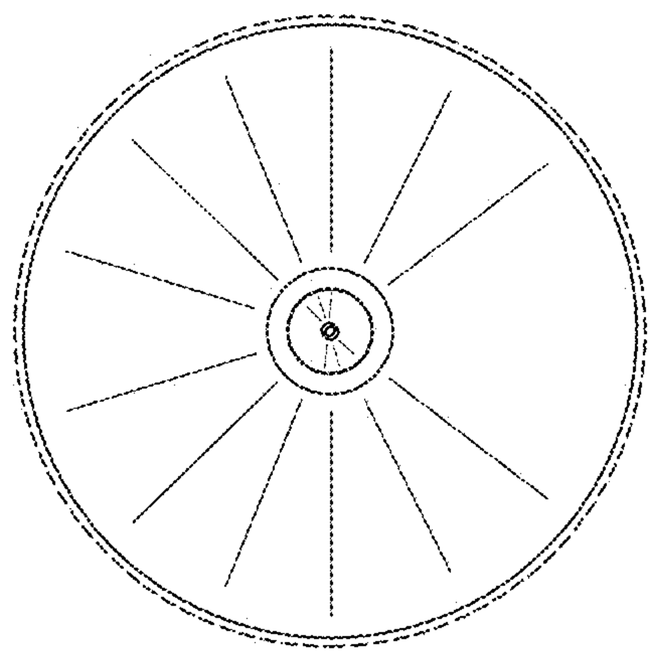


Fig. 4

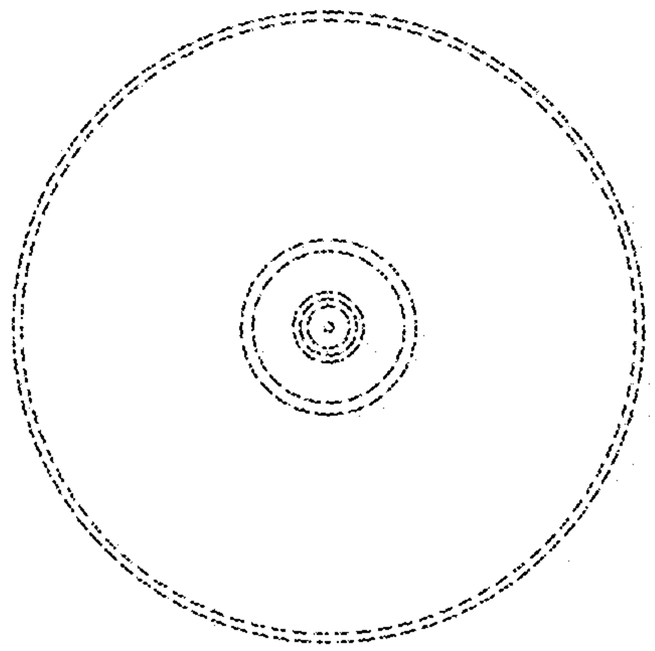


Fig. 5

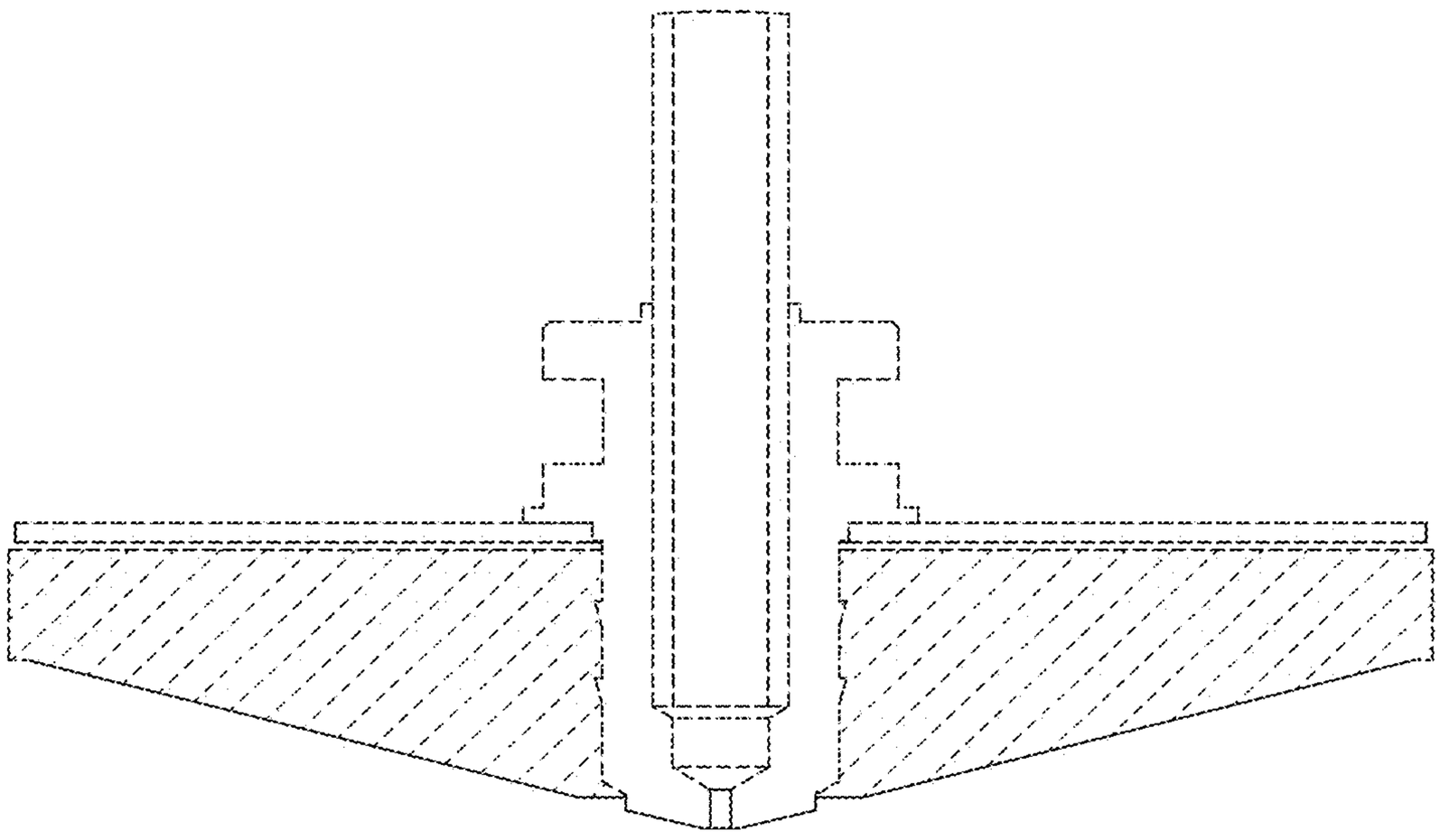


Fig. 6

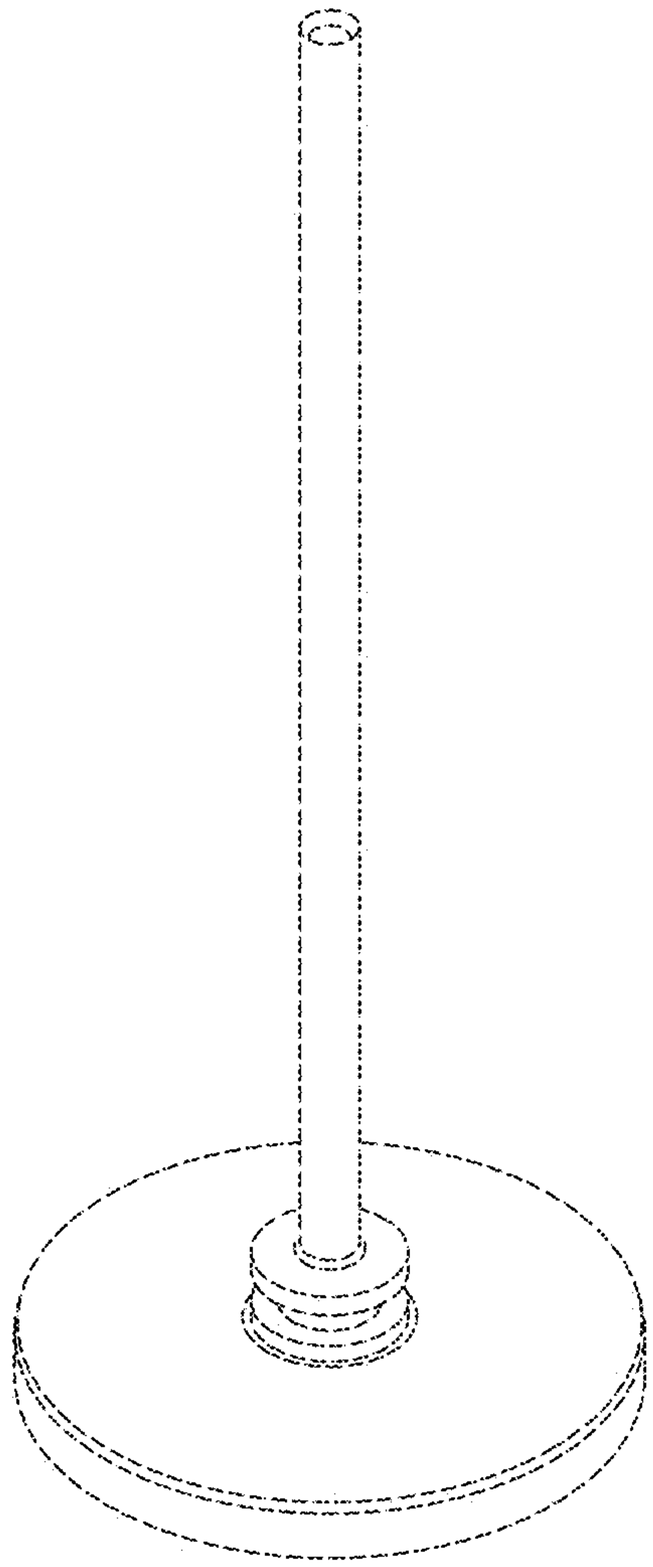


Fig. 7

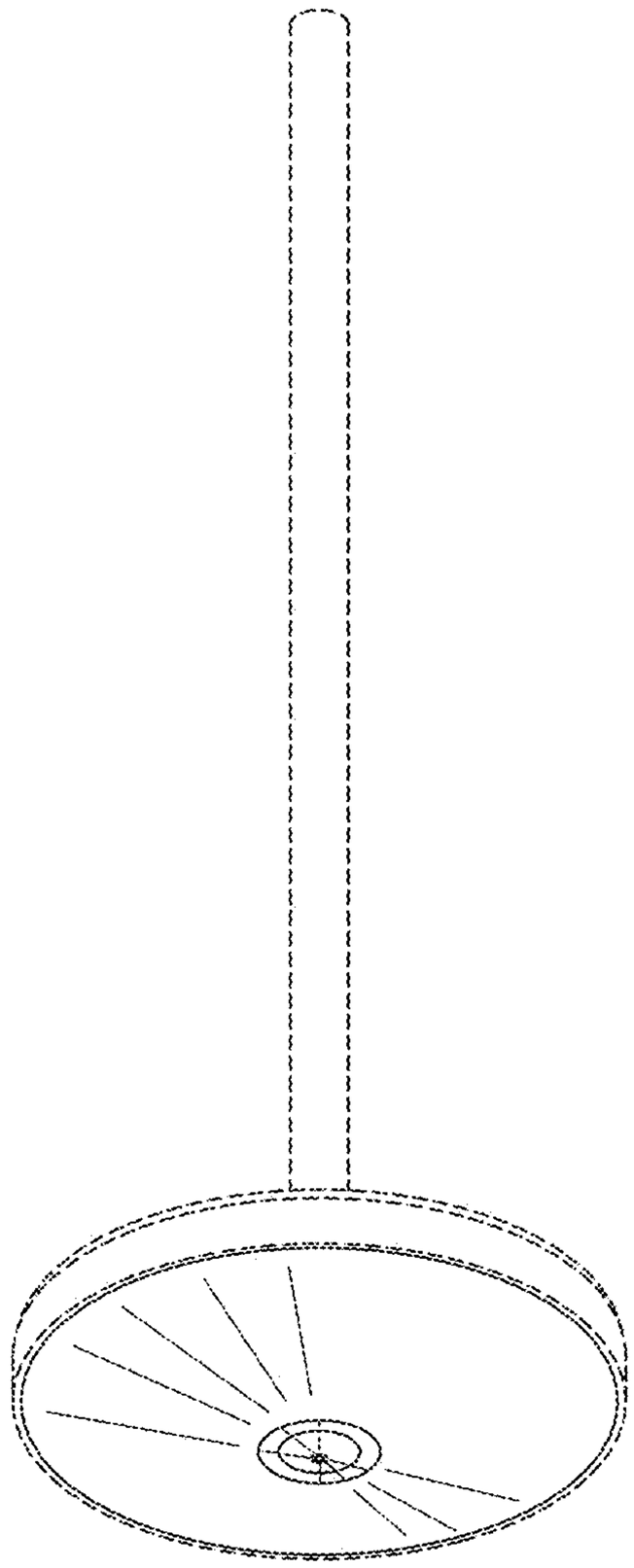


Fig. 8

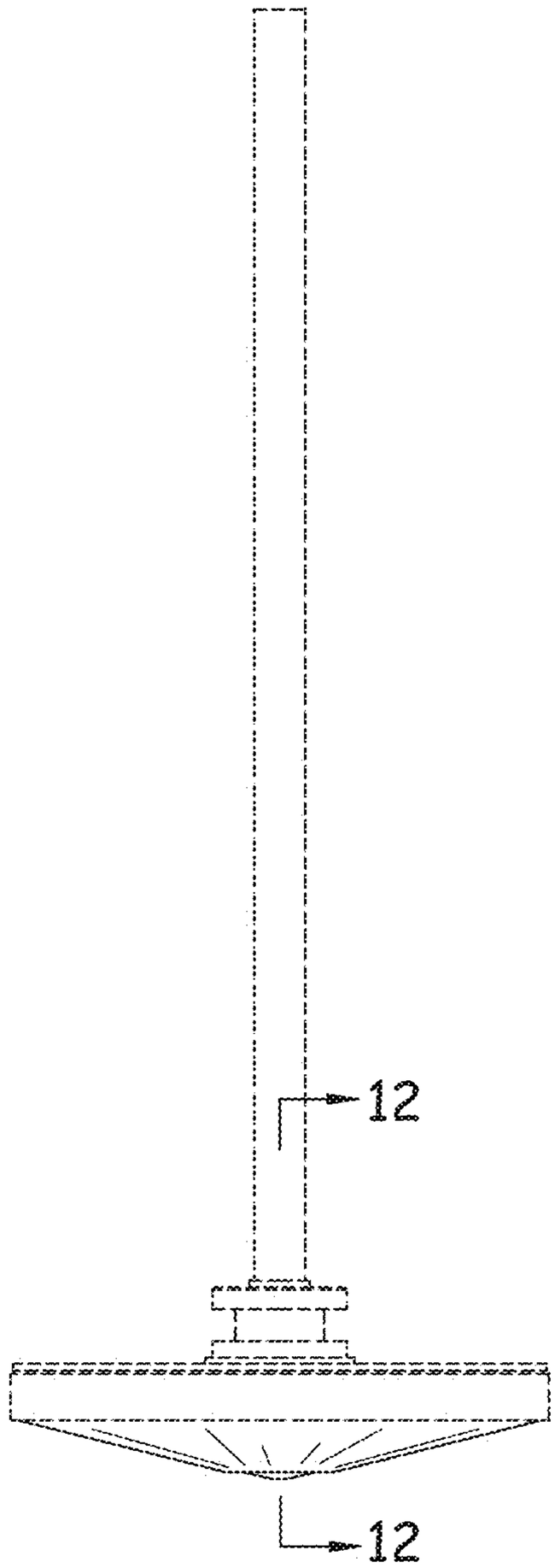


Fig. 9

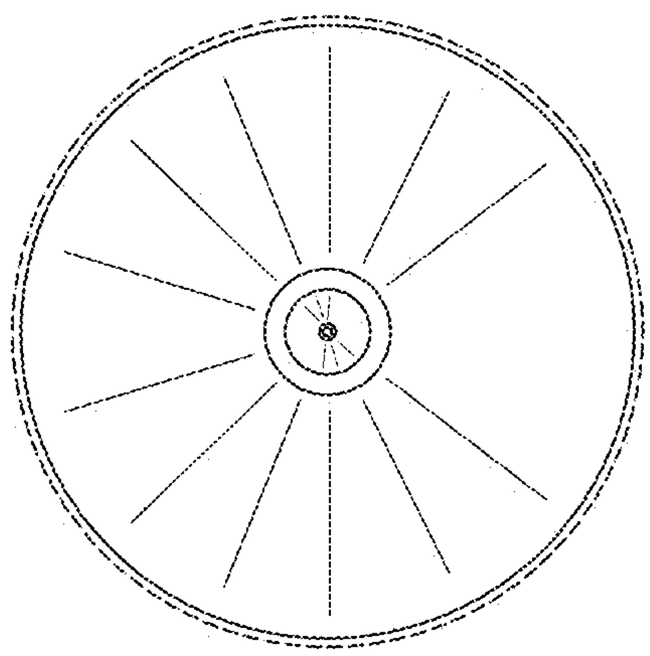


Fig. 10

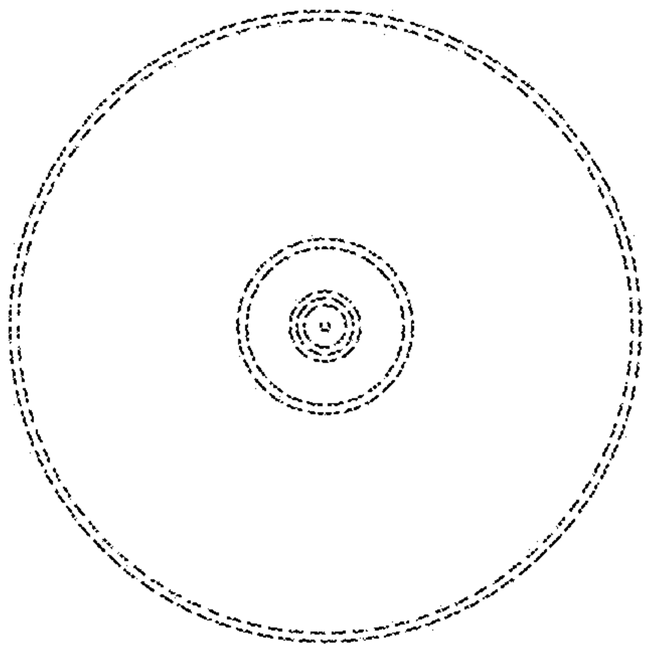


Fig. 11

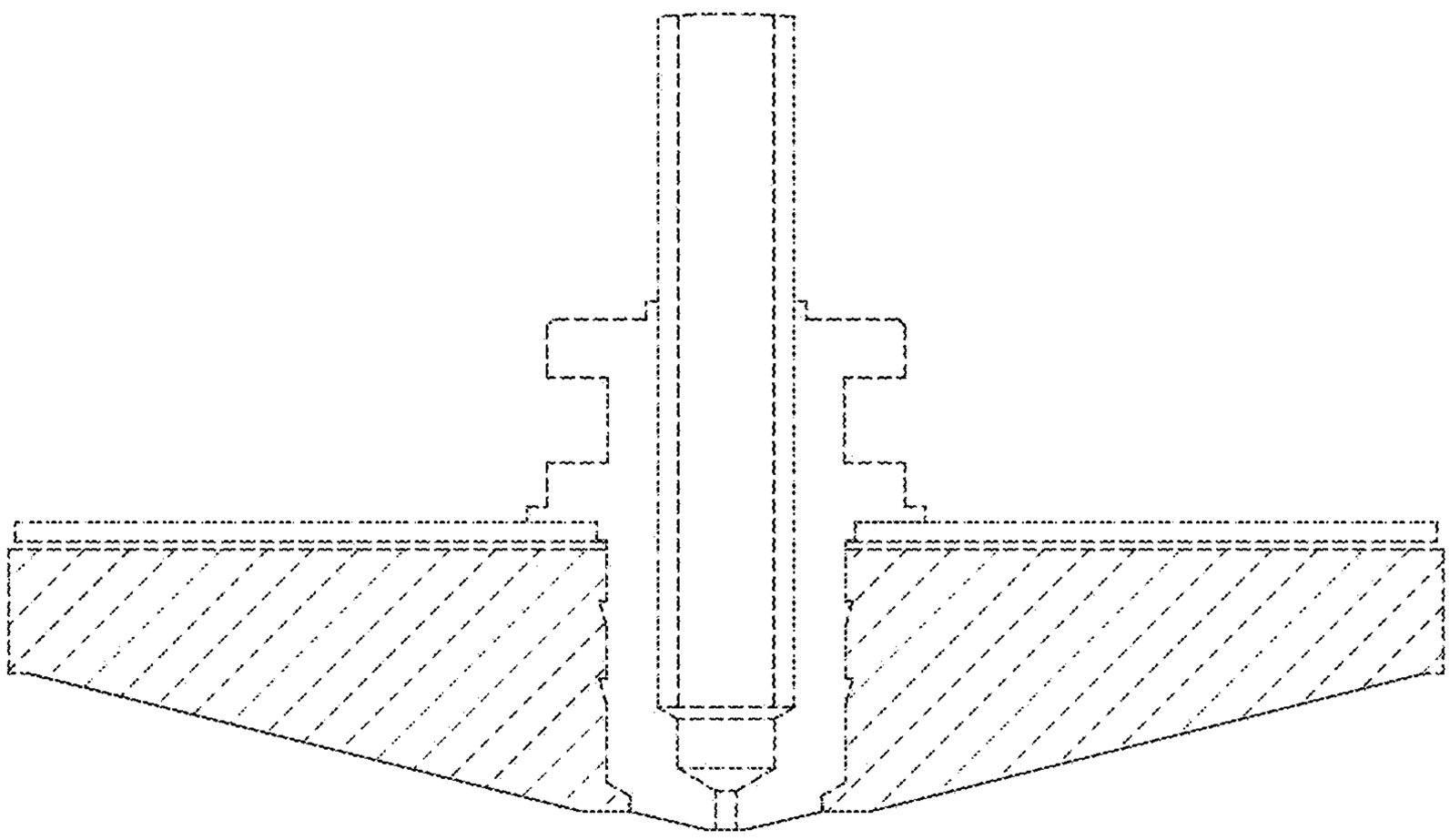


Fig. 12