



US00D920070S

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

(10) **Patent No.:** **US D920,070 S**

(45) **Date of Patent:** **** May 25, 2021**

(54) **DIRECTIONAL DRILLING ASSEMBLY**

(71) Applicant: **XR LATERAL, LLC**, Houston, TX (US)

(72) Inventors: **Edward C. Spatz**, Spring, TX (US);
Michael R. Reese, Houston, TX (US);
David P. Miess, Spring, TX (US);
Gregory Prevost, Spring, TX (US)

(73) Assignee: **XR Lateral, LLC**, Houston, TX (US)

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

(21) Appl. No.: **29/720,331**

(22) Filed: **Jan. 12, 2020**

Related U.S. Application Data

(62) Division of application No. 29/616,762, filed on Sep. 8, 2017, now Pat. No. Des. 874,234.

(51) **LOC (13) Cl.** **08-05**

(52) **U.S. Cl.**
USPC **D8/70**

(58) **Field of Classification Search**
USPC D8/70, 82, 85-87, 105; D15/139
CPC B25B 13/06; B25B 13/5091; B25B 15/00;
B25B 15/001; B25B 15/002; B25B
15/004; B25B 15/005; B25B 15/008;
B25B 15/02; B25B 15/04; B25B 17/00;
B25B 21/007; B25B 23/00; B25B
23/0035; B25B 23/005; B25B 23/12;
B25B 23/1405; B25B 27/18; B25B 31/12;
B25B 51/08; B25B 51/108; B25B
2251/66; B23P 15/00

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,919,897 A 1/1960 Sims
3,561,549 A 2/1971 Garrison et al.

4,465,147 A	8/1984	Feenstra et al.	
4,485,879 A	12/1984	Kamp et al.	
4,729,438 A	3/1988	Walker et al.	
4,848,490 A	7/1989	Anderson	
6,073,707 A	6/2000	Noe et al.	
6,722,453 B1	4/2004	Crooks	
8,162,081 B2	4/2012	Ballard et al.	
D710,174 S *	8/2014	Moss	D8/70
D710,175 S *	8/2014	Moss	D8/70
D710,176 S *	8/2014	Santamarina	D8/70
D713,706 S *	9/2014	Jing	D15/140
D717,626 S *	11/2014	Dickrede	D8/70
D731,277 S *	6/2015	Manwaring	D8/70
D732,364 S *	6/2015	Rinaldis	D8/70
9,163,460 B2	10/2015	Isenhour et al.	
D786,645 S *	5/2017	Svendsen	D15/139
D793,831 S *	8/2017	Russell	D8/70
D793,832 S *	8/2017	Russell	D8/70
D793,833 S *	8/2017	Russell	D8/70

(Continued)

OTHER PUBLICATIONS

Baker Hughs Incorporated; "Navi-Drill Motor Handbook"; revised Jan. 2017 [206 pages].

(Continued)

Primary Examiner — Darlington Ly
(74) *Attorney, Agent, or Firm* — Michael S. McCoy;
Amatong McCoy LLC

(57) **CLAIM**

The ornamental design for a directional drilling assembly, as shown and described.

DESCRIPTION

FIG. 1 is a front elevation view of a directional drilling assembly showing our new design;
FIG. 2 is a left side elevation view thereof;
FIG. 3 is a right side elevation view thereof; and,
FIG. 4 is a rear elevation view thereof.

1 Claim, 1 Drawing Sheet



(56)

References Cited

U.S. PATENT DOCUMENTS

D813,003 S * 3/2018 Chang D8/70
9,963,938 B2 5/2018 Foote et al.
D874,234 S * 2/2020 Spatz D8/70

OTHER PUBLICATIONS

Cobra Downhole Motors; "Motor Manual" dated Feb. 2016 [126 pages].
National Oilwell Varco; "Drilling Motors", 2011 [20 pages].
Schlumberger; "Powerpak, Steerable Motor Handbook", 2004 [204 pages].
Spatz, et al.; U.S. Appl. No. 29/616,762, filed Sep. 8, 2017 [3 pages].
Spatz, et al.; U.S. Appl. No. 29/616,766, filed Sep. 8, 2017 [3 pages].
Spatz, et al.; U.S. Appl. No. 29/616,768, filed Sep. 8, 2017 [3 pages].
Spatz, et al.; U.S. Appl. No. 29/616,772, filed Sep. 8, 2017 [3 pages].
Spatz, et al.; U.S. Appl. No. 29/616,773, filed Sep. 8, 2017 [3 pages].
Spatz, et al.; U.S. Appl. No. 29/616,776, filed Sep. 8, 2017 [3 pages].
Tomahawk Downhole, L.L.C.; "The Cutting Edge in Mud Motors and Mud Motor Components, Motor Handbook" Rev. 7, 2011 [79 pages].
Wenzel Downhole Tools; "Motor Handbook", 4th Edition Ver. 1.0a; Issue Date, Dec. 23, 2013 [135 pages].
Wenzel Downhole Tools; "Motor Handbook", 4th Edition Ver. 1.0a; Issue Date, Dec. 23, 2013 [Part 1: 64 pages].
Wenzel Downhole Tools; "Motor Handbook", 4th Edition Ver. 1.0a; Issue Date, Dec. 23, 2013 [Part 2: 65 pages].

* cited by examiner

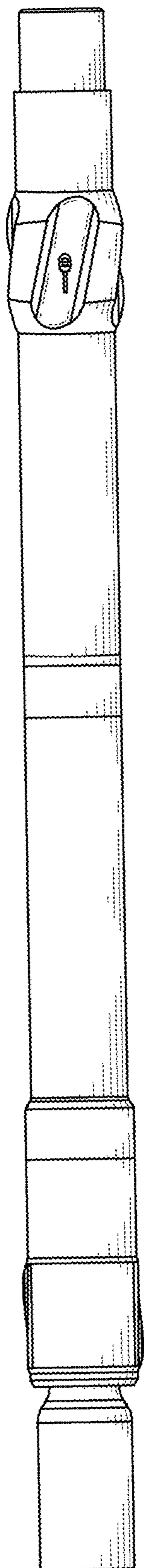


FIG. 1

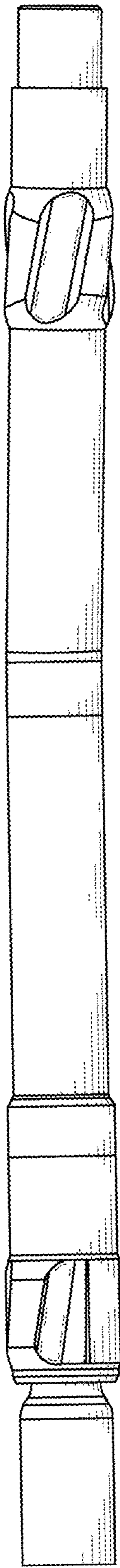


FIG. 2

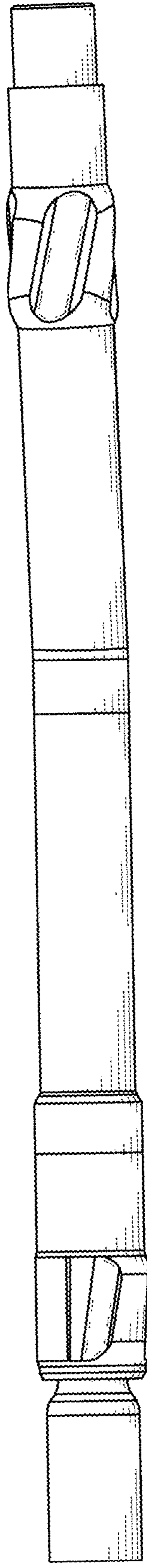


FIG. 3

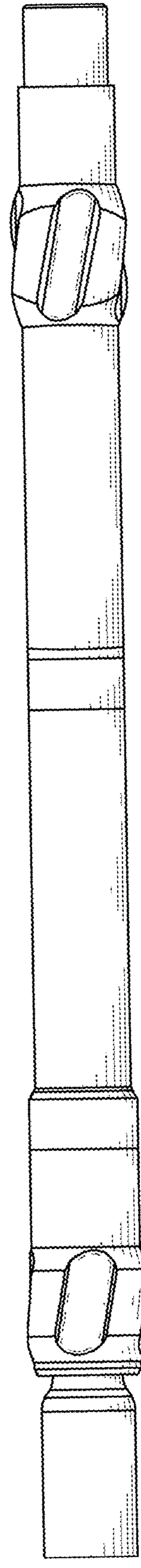


FIG. 4