

## Search History:

### Limited Classification Search

The Patent Analyst performed a limited classification search within the following US, IPC, CPC, ECLA, or F-Term classification areas:

CPC Class/Subclass(es): F16H 57/039; F16H 2055/065; F16H 57/0025; F16H 2057/012; F16H 2057/02078; F16H 57/021; F16H 2057/0213; G01D 5/142 (2018.08)

IPC (8) Class/Subclass(es): F16H 57/03; F16C 17/10; F16C 19/16; F16H 1/16; F16H 19/02; F16H 19/04; F16H 55/22; F16H 57/01; F16H 57/02; G01D 5/14 (2018.01)

U.S. Class/Subclass(es): 74/29; 74/30; 74/89.14; 74/425; 74/724

See Global Search Results.

### Global Patent Literature Text Search

The Patent Analyst performed the following global text search, which was not limited by classification but may or may not have been limited by other criteria:

Questel Orbit: <https://www.orbit.com>

#	Search query	Results
1	(( (KINEMATICS)/PA/OPA/PAH/OWR/REAS )	394
2	(WORM_GEAR)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND ( (KINEMATICS)/PA/OPA/PAH/OWR/REAS )	61
3	(( (MILLER D KENNETH)/IN/OIN/INH/INV )	685
4	(( (PLESNIAK D ADAM)/IN/OIN/INH/INV )	9
5	(( (ZECH D KYLE)/IN/OIN/INH/INV )	2
6	(( (HENDERSON D MARK)/IN/OIN/INH/INV )	87
7	(US20160091051)/PN	1
8	..CITBF NOSOURCE SS 7 1 RANKED	19
9	..SIMILARITY SS 7 RANKED 1	22068
10	(20140352465)/PN	1
11	..CITBF NOSOURCE SS 10 1 RANKED	26
12	((((SLEW OR SWIVEL) 3D DRIVE+) AND ((REDUC+ OR LIMIT+) 4D (PLURAL+ OR MULTI+)) AND (((CONTACT+ OR CONNECT+ OR ENGAG+) 5D (PLANET+ OR GEAR+)) 5D (WORM_GEAR+ OR WORM_SHAFT+ OR SHAFT+ OR PINION+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX	413
13	((((SLEW OR SWIVEL) 3D DRIVE+) AND ((REDUC+ OR LIMIT+) 4D (PLURAL+ OR MULTI+)) AND (((CONTACT+ OR CONNECT+ OR ENGAG+) 5D (PLANET+ OR GEAR+)) 5D (WORM_GEAR+ OR WORM_SHAFT+ OR SHAFT+ OR	48

	PINION+)) AND CARRIER+ AND PLANET+)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX	
14	((((SLEW OR SWIVEL) 3D DRIVE+) AND ((REDUC+ OR LIMIT+) 4D (PLURAL+ OR MULTI+)) AND (((CONTACT+ OR CONNECT+ OR ENGAG+) 5D (PLANET+ OR GEAR+)) 5D (WORM_GEAR+ OR WORM_SHAFT+ OR SHAFT+ OR PINION+)) AND ((OMIT+ OR ELIMINATE+) 4D (CARRIER+ OR SPLIN+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX	2
15	((SLEW 3D DRIVE+) AND ((REDUC+ OR LIMIT+) 7D (PLURAL+ OR MULTI+)) AND ((PLANET+ OR GEAR+) 5D (WORM_GEAR+ OR WORM_SHAFT+ OR SHAFT+ OR PINION+)) AND (DIRECT+ 4D CONTACT+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX	9
16	(WORM_GEAR+ AND ((REDUC+ OR LIMIT+) 4D (PLURAL+ OR MULTI+)) AND (DIRECT+ 4D CONTACT+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX	1088
17	(WORM_GEAR+ AND ((REDUC+ OR LIMIT+) 4D (PLURAL+ OR MULTI+)) AND (DIRECT+ 4D CONTACT+) AND ((OMIT+ OR ELIMINATE+) 4D (CARRIER+ OR SPLIN+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX	8
18	(WORM_GEAR+ AND ((REDUC+ OR LIMIT+) 4D (PLURAL+ OR MULTI+)) AND (DIRECT+ 4D CONTACT+) AND (((CONTACT+ OR CONNECT+ OR ENGAG+) 5D (PLANET+ OR GEAR+)) 5D (WORM_GEAR+ OR WORM_SHAFT+ OR SHAFT+ OR PINION+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX	685
19	(074030)/PCL	518
20	(074089140)/PCL	354
21	(074425)/PCL	1262
22	((((OMIT+ OR ELIMINATE+) 4D (CARRIER+ OR SPLIN+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (074030 OR 074089140 OR 074425 OR 074029 OR 074724)/PCL	2
23	(((((CONTACT+ OR CONNECT+ OR ENGAG+) 5D (PLANET+ OR GEAR+)) 5D (WORM_GEAR+ OR WORM_SHAFT+ OR SHAFT+ OR PINION+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (074030 OR 074089140 OR 074425 OR 074029 OR 074724)/PCL	1278
24	(F16H-001/16)/IPC	6403
25	(F16H-057/03)/IPC	2332
26	(F16H-019/04)/IPC	4968
27	((((OMIT+ OR ELIMINATE+) 4D (CARRIER+ OR SPLIN+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEY	126

	W/TX AND (F16H-001/16 OR F16H-057/03 OR F16H-057/02 OR F16H-057/01 OR F16C-017/10 OR F16H-055/22 OR F16C-019/16 OR F16H-019/04 OR F16H-019/02 OR G01D-005/14)/IPC	
28	(((((CONTACT+ OR CONNECT+ OR ENGAG+) 5D (PLANET+ OR GEAR+)) 5D (WORM_GEAR+ OR WORM_SHAFT+ OR SHAFT+ OR PINION+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (F16H-001/16 OR F16H-057/03 OR F16H-057/02 OR F16H-057/01 OR F16C-017/10 OR F16H-055/22 OR F16C-019/16 OR F16H-019/04 OR F16H-019/02 OR G01D-005/14)/IPC	14465
29	(((((CONTACT+ OR CONNECT+ OR ENGAG+) 4D (PLANET+)) 4D (WORM_GEAR+ +SHAFT+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (F16H-001/16 OR F16H-057/03 OR F16H-057/02 OR F16H-057/01 OR F16C-017/10 OR F16H-055/22 OR F16C-019/16 OR F16H-019/04 OR F16H-019/02 OR G01D-005/14)/IPC	0
30	(F16H-057/039)/CPC	613
31	(F16H-057/021)/CPC	2317
32	(F16H-2057/02078)/CPC	89
33	((((OMIT+ OR ELIMINATE+) 4D (CARRIER+ OR SPLIN+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (F16H-057/039 OR F16H-057/021 OR F16H-057/0025 OR F16H-2055/065 OR F16H-2057/02078 OR F16H-2057/012 OR F16H-2057/0213 OR G01D-005/142)/CPC	33
34	(((((CONTACT+ OR CONNECT+ OR ENGAG+) 4D (PLANET+)) 4D (WORM_GEAR+ +SHAFT+)))/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (F16H-057/039 OR F16H-057/021 OR F16H-057/0025 OR F16H-2055/065 OR F16H-2057/02078 OR F16H-2057/012 OR F16H-2057/0213 OR G01D-005/142)/CPC	1
35	worm_gear* 4d ((hole* OR aperture* OR opening* OR indent* OR recess*) 4d (multi* OR plural* OR two OR double OR second*))	732
36	(worm_gear* 4d ((hole* OR aperture* OR opening* OR indent* OR recess*) 4d (multi* OR plural* OR two OR double OR second*))) 6d end	43

**Google Patents: <https://patents.google.com>**

#	Search query	Results
1	assignee: kinematics	222
2	assignee: kinematics AND slew	1
3	slew drive integrated reducer assembly	181
4	slew drive worm gear integrated reducer carrier planetary gears holes	4
5	slew drive worm gear direct contact planetary gears reducer	66

6	slew drive planetary gear reducer integrated direct contact shaft pin	49
7	worm gear direct contact planetary carrier multiple reducer	471
8	slew drive threaded shaft carrier plural reducers connect	2
9	slew drive threaded shaft distal end direct connected planetary gears reducer	9
10	worm gear plurality holes distal end	85854

**Computer Accessed Text Databases Searched**

The Patent Analyst searched the following computer accessed text databases:

**Google:** <https://www.google.com/>

#	Search query	Results
1	slew drive integrated reducer assembly	103000
2	slew drive worm gear integrated reducer carrier planetary gears holes	17400
3	slew drive worm gear direct contact planetary gears reducer	83400
4	slew drive planetary gear reducer integrated direct contact shaft pin	77100
5	worm gear direct contact planetary carrier multiple reducer	84100
6	slew drive threaded shaft carrier plural reducers connect	12700
7	slew drive threaded shaft distal end direct connected planetary gears reducer	28700

**YouTube:** [https://youtube.com](https://youtube.com/)

#	Search query	Results
1	slew drive integrated reducer assembly	n/a
2	slew drive worm gear integrated reducer carrier planetary gears holes	n/a
3	slew drive worm gear direct contact planetary gears reducer	n/a
4	slew drive planetary gear reducer integrated direct contact shaft pin	n/a
5	worm gear direct contact planetary carrier multiple reducer	n/a
6	slew drive threaded shaft carrier plural reducers connect	n/a
7	slew drive threaded shaft distal end direct connected planetary gears reducer	n/a

Date search was completed: 02 October 2018

KB/DD