

# (12) International Application Status Report

**Received at International Bureau:** 07 March 2017 (07.03.2017)

**Information valid as of:** 23 April 2018 (23.04.2018)

**Report generated on:** 22 February 2019 (22.02.2019)

**(10) Publication number:**

WO2018/086273

**(43) Publication date:**

17 May 2018 (17.05.2018)

**(26) Publication language:**

Chinese (ZH)

**(21) Application Number:**

PCT/CN2017/074685

**(22) Filing Date:**

24 February 2017 (24.02.2017)

**(25) Filing language:**

Chinese (ZH)

**(31) Priority number(s):**

201610984753.X (CN)

**(31) Priority date(s):**

09 November 2016 (09.11.2016)

**(31) Priority status:**

Priority document received (in compliance with PCT Rule 17.1)

**(51) International Patent Classification:**

**E01D 19/16** (2006.01); **E01D 4/00** (2006.01)

**(71) Applicant(s):**

SHENZHEN MUNICIPAL DESIGN & RESEARCH INSTITUTE CO., LTD. [CN/CN]; Municipal Design Building, No. 3007, Sungang West Road, Futian District Shenzhen, Guangdong 518000 (CN) *(for all designated states)*

**(72) Inventor(s):**

JIANG, Ruijuan; Municipal Design Building, No. 3007, Sungang West Road, Futian District Shenzhen, Guangdong 518000 (CN)  
CHEN, Yiyan; Municipal Design Building, No. 3007, Sungang West Road, Futian District Shenzhen, Guangdong 518000 (CN)  
YU, Fang; Municipal Design Building, No. 3007, Sungang West Road, Futian District Shenzhen, Guangdong 518000 (CN)  
WU, Qiming; Municipal Design Building, No. 3007, Sungang West Road, Futian District Shenzhen, Guangdong 518000 (CN)  
DONG, Jucan; Municipal Design Building, No. 3007, Sungang West Road, Futian District Shenzhen, Guangdong 518000 (CN)

**(74) Agent(s):**

JIAQUAN IP LAW FIRM; ZHANG, Ping No.910, Building A, Winner Plaza, No.100, West Huangpu Avenue, Tianhe District Guangzhou, Guangdong 510627 (CN)

**(54) Title (EN):** FLEXIBLE STAY CABLE CONNECTION STRUCTURE AND BRIDGE STRUCTURE

**(54) Title (FR):** STRUCTURE DE LIAISON À CÂBLE DE HAUBAN FLEXIBLE ET STRUCTURE DE PONT

**(54) Title (ZH):** 一种柔性拉索连接结构与桥梁结构

**(57) Abstract:**

**(EN):** A flexible stay cable connection structure, comprising a flexible stay cable (100), and further comprising a first connecting part (200) connected to the top end of the flexible stay cable (100), and a second connecting part (300) connected to the bottom end of the flexible stay cable (100). The flexible stay cable (100) is connected to the first connecting part (200) and/or the second connecting part (300) by means of a spherical bearing pair. A bridge structure, comprising arch ribs (400) and a crossbeam (500), and further comprising a flexible stay cable connection structure. The flexible stay cable (100) and the bridge structure is rotatably connected by means of a hinge assembly and a spherical hinge assembly, so that the phenomenon of uneven force applied to steel wires in the stay cable due to the inclination of the stay cable is avoided, and the service life of a bridge is prolonged; moreover, the connecting ends of the flexible stay cable (100) are respectively located under the arch ribs (400) and above the surface of a bridge, thus facilitating overhauling. The flexible stay cable (100) can be prefabricated in a factory, so that the construction period is shortened, and the efficiency is improved.

**(FR):** L'invention concerne une structure de liaison à câble de hauban flexible, comprenant un câble de hauban flexible (100), et comprenant en outre une première partie de liaison (200) reliée à l'extrémité supérieure du câble de hauban flexible (100), et une seconde partie de liaison (300) reliée à l'extrémité inférieure du câble de hauban flexible (100). Le câble de hauban flexible (100) est relié à la première partie de liaison (200) et/ou à la seconde partie de liaison (300) par une paire d'appuis à rotule. L'invention concerne en outre une structure de pont comprenant des arcs (400) et une entretoise (500), et comprenant en outre une structure de liaison à câble de hauban flexible. Le câble de hauban flexible (100) et la structure de pont sont reliés rotatifs au moyen d'un ensemble d'articulation et d'un ensemble d'articulation à rotule, ce qui permet d'éviter le phénomène d'application d'une force

irrégulière aux fils d'acier du câble de hauban, dû à l'inclinaison du câble de hauban, et de prolonger en outre la durée de vie d'un pont ; de plus, les extrémités de liaison du câble de hauban flexible (100) sont situées respectivement sous les arcs (400) et au-dessus de la surface d'un pont, ce qui facilite une remise en état. Le câble de hauban flexible (100) peut être préfabriqué en usine, ce qui permet de raccourcir la période de construction et d'améliorer le rendement.

**(ZH):** 一种柔性拉索连接结构,其中连接结构包括柔性拉索(100),还包括与柔性拉索(100)的顶端连接的第一连接部(200),以及与柔性拉索(100)的底端连接的第二连接部(300),柔性拉索(100)与第一连接部(200)和/或第二连接部(300)之间通过球铰副连接。一种桥梁结构,包括拱肋(400)与横梁(500),还包括柔性拉索连接结构。通过铰接组件与球铰组件实现了柔性拉索(100)与桥梁结构之间的转动连接,避免了因拉索倾斜造成的拉索内钢丝受力的不均匀,有助于延长桥梁的使用寿命;同时柔性拉索(100)的连接端分别位于拱肋(400)下部和桥面上部,方便检修;柔性拉索(100)可以通过工厂预制,有助于缩短工期,提升效率。

### **International search report:**

Received at International Bureau: 17 August 2017 (17.08.2017) [CN]

### **International Report on Patentability (IPRP) Chapter II of the PCT:**

Not available

### **(81) Designated States:**

AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

European Patent Office (EPO) : AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR

African Intellectual Property Organization (OAPI) : BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG

African Regional Intellectual Property Organization (ARIPO) : BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW

Eurasian Patent Organization (EAPO) : AM, AZ, BY, KG, KZ, RU, TJ, TM

### **Declarations:**

Declaration of inventorship (Rules 4.17(iv) and 51bis.1(a)(iv)) for the purposes of the designation of the United States of America