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The Director

of the United States Patent and Trademark Office has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this United States

Patent

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Katherine Kelly Vidal

DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE



US011398675B2

(12) **United States Patent**  
**Gershenson**

(10) **Patent No.:** **US 11,398,675 B2**

(45) **Date of Patent:** **Jul. 26, 2022**

(54) **ANTENNA FOR RECEIVING DATA FROM LOW EARTH ORBIT SATELLITES**

(71) Applicant: **Vladimir Evgenievich Gershenson,**  
Moscow (RU)

(72) Inventor: **Vladimir Evgenievich Gershenson,**  
Moscow (RU)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 325 days.

(21) Appl. No.: **16/644,728**

(22) PCT Filed: **Aug. 29, 2017**

(86) PCT No.: **PCT/RU2017/000627**  
§ 371 (c)(1),  
(2) Date: **Mar. 9, 2020**

(87) PCT Pub. No.: **WO2019/045585**  
PCT Pub. Date: **Mar. 7, 2019**

(65) **Prior Publication Data**  
US 2022/0115779 A1 Apr. 14, 2022

(51) **Int. Cl.**  
**H01Q 3/12** (2006.01)  
**H01Q 3/18** (2006.01)

(52) **U.S. Cl.**  
CPC ..... **H01Q 3/18** (2013.01)

(58) **Field of Classification Search**  
CPC ..... H01Q 15/14; H01Q 1/12; H01Q 3/12;  
H01Q 3/14; H01Q 3/18; H01Q 19/10  
See application file for complete search history.

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*Primary Examiner* — Tho G Phan  
(74) *Attorney, Agent, or Firm* — Ipsilon USA, LLP

(57) **ABSTRACT**

The present invention relates to a feed-motion antenna device. Provided is an antenna for receiving data from low Earth orbit satellites, the antenna comprising a fixedly mounted antenna reflector, a moveable feed, a feed positioner configured to move the feed in the focal plane of the antenna reflector, the feed positioned having a primary rotation axis and an auxiliary rotation axis, and a control device configured to send control signals to the feed positioner. The primary rotation axis of the feed positioner passes through the center of the antenna reflector and the primary rotation axis is perpendicular to the focal plane of the antenna reflector; the auxiliary rotation axis of the feed positioner is parallel to the primary rotation axis. The feed positioner comprises an equal-arm structure comprising a first arm and a second arm, and each arm is arranged in a plane perpendicular to the primary and auxiliary rotation axes. The first arm is connected at one its end to the primary rotation axis and adapted to be rotated around the primary rotation axis, the feed is connected to an end of the second arm, and the first arm and the second arm are connected to each other at the auxiliary rotation axis and are adapted to be rotated with respect to each other. The diameter of the

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