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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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(12) **United States Patent**
Ahow

(10) **Patent No.:** **US 9,869,137 B2**
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(54) **UNDERGROUND WELL ELECTRICAL
CABLE TRANSITION WITH FLOATING
PISTON SEAL**

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(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 298 days.

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CPC **E21B 17/023** (2013.01); **E21B 43/128**
(2013.01)

(58) **Field of Classification Search**
CPC E21B 17/023; E21B 17/028; E21B 43/128
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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

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(57) **ABSTRACT**

A penetrator for enabling an electrical cable transition into an underground well. The well has a well casing for containing fluids and pressures from reaching the environment external to the well. The well casing has a wellhead, multiple electrical conductors passing through the penetrator at the wellhead to supply electrical power to down-hole equipment. The wellhead penetrator device provides a reliable sealing solution and which may be quickly installed within wellhead. The penetrator device provides a design which increases the pressure upon the critical sealing surfaces with the electrical conductors as pressure increases within the well casing. The service life of the penetrator seal is maximized to avoid costly downtime to the well operation. The penetrator device is readily installed by maintenance crews and a minimum number of components are utilized. No adhesives or sealants are required in the installation.

16 Claims, 8 Drawing Sheets

