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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

grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

Andres Ibarra

DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE



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(12) **United States Patent**
Thomas et al.

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(54) **PIER TOOL AND METHOD OF USE**

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E02D 5/44 (2006.01)

(71) Applicant: **PPI ENGINEERING & CONSTRUCTION SERVICES, LLC**,
Houston, TX (US)

(52) **U.S. Cl.**
CPC *E02D 3/08* (2013.01); *E02D 5/36*
(2013.01); *E02D 5/44* (2013.01); *E02D 7/06*
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(72) Inventors: **Ronald D. Thomas**, Kingwood, TX
(US); **Tommy L. Williamson**, New
Braunfels, TX (US)

(58) **Field of Classification Search**
CPC E02D 3/08
See application file for complete search history.

(73) Assignee: **PPI ENGINEERING & CONSTRUCTION SERVICES, LLC**,
Houston, TX (US)

(56) **References Cited**

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

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Primary Examiner — Janine M Kreck
(74) *Attorney, Agent, or Firm* — Nolte Intellectual
Property Law Group

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28, 2017.

(57) **ABSTRACT**

A pier tool, includes: a tubular body having an uphole end
and a downhole end and defining a flow path therethrough
and a tamping head disposed within the flow path of the
tubular body and defines tamping surface on a downhole
side of the tamping head A method for forming a pier
includes assembling a pier tool mandrel, a pier tool mandrel
including the pier tool and forming a rammed aggregate pier
using the pier tool mandrel.

(51) **Int. Cl.**
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24 Claims, 5 Drawing Sheets

