

Title (en)  
MULTI-PUMP SYSTEM WITH SYSTEM CHECK

Title (de)  
MEHRPUMPENSYSTEM MIT SYSTEMCHECK

Title (fr)  
SYSTÈME MULTI-POMPE AVEC CONTRÔLE DE SYSTÈME

Publication  
**EP 3635258 A4 20210310 (EN)**

Application  
**EP 18802603 A 20180517**

Priority  
• US 201715600580 A 20170519  
• US 2018033276 W 20180517

Abstract (en)  
[origin: US2017254333A1] Design solutions to mitigate the following four fatal flaws in the conventional pump system design; namely, (1) surprised pump-failure in single pump design that can result in costly water damage; (2) the threat of fatal high voltage electrocution accident in flooding situation; (3) grid power outage and no energy supply to support the needed pumping power that result in water damage; (4) stinky smell from the sitting foil water in the well after a period of low seeping rate with or without activated pumping. The principles described in the content disclosure, the proposed designs can completely mitigate the above four fatal design issues.

IPC 8 full level  
**F04D 13/08** (2006.01); **F04B 23/02** (2006.01); **F04B 23/04** (2006.01); **F04B 49/06** (2006.01); **F04D 13/06** (2006.01); **F04D 13/14** (2006.01); **F04D 15/00** (2006.01); **F04D 15/02** (2006.01)

CPC (source: EP KR US)  
**F04B 23/02** (2013.01 - EP KR US); **F04B 23/021** (2013.01 - US); **F04B 23/04** (2013.01 - EP KR US); **F04B 49/007** (2013.01 - KR); **F04B 49/06** (2013.01 - EP KR US); **F04D 13/08** (2013.01 - EP KR US); **F04D 13/12** (2013.01 - KR); **F04D 13/14** (2013.01 - EP US); **F04D 15/00** (2013.01 - EP US); **F04D 15/0072** (2013.01 - KR); **F04D 15/0088** (2013.01 - EP KR US); **F04D 15/02** (2013.01 - EP US); **F04D 15/0218** (2013.01 - EP KR US); **F05D 22/10/11** (2013.01 - KR); **F05D 22/70/30** (2013.01 - KR)

Citation (search report)  
• [XY] US 8594851 B1 20131126 - SMAIDRIS THOMAS F [US]  
• [Y] US 6325093 B1 20011204 - OOSHIMA NOBUO [JP]  
• [Y] US 9181953 B2 20151110 - STEGER PERRY C [US], et al  
• [Y] US 6953329 B2 20051011 - RARDIN GERALD L [US]  
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• [X] US 2011200452 A1 20110818 - NOEL RAYMOND ASCORD [CA]  
• See references of WO 2018213639A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)  
**US 2017254333 A1 20170907**; CA 3063194 A1 20181122; CN 110998097 A 20200410; EP 3635258 A1 20200415; EP 3635258 A4 20210310; JP 2020521081 A 20200716; KR 20200009048 A 20200129; RU 2019142094 A 20210621; RU 2019142094 A3 20211012; TW 201901038 A 20190101; TW I683963 B 20200201; WO 2018213639 A1 20181122; ZA 201908209 B 20210428

DOCDB simple family (application)  
**US 201715600580 A 20170519**; CA 3063194 A 20180517; CN 201880032889 A 20180517; EP 18802603 A 20180517; JP 2019564025 A 20180517; KR 20197037151 A 20180517; RU 2019142094 A 20180517; TW 107103682 A 20180201; US 2018033276 W 20180517; ZA 201908209 A 20191210