

REVISED VERSION

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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): 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, 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, KN, KP, KR, 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.

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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

[Continued on next page]

(54) Title: GRAVITY DRAIN VALVE

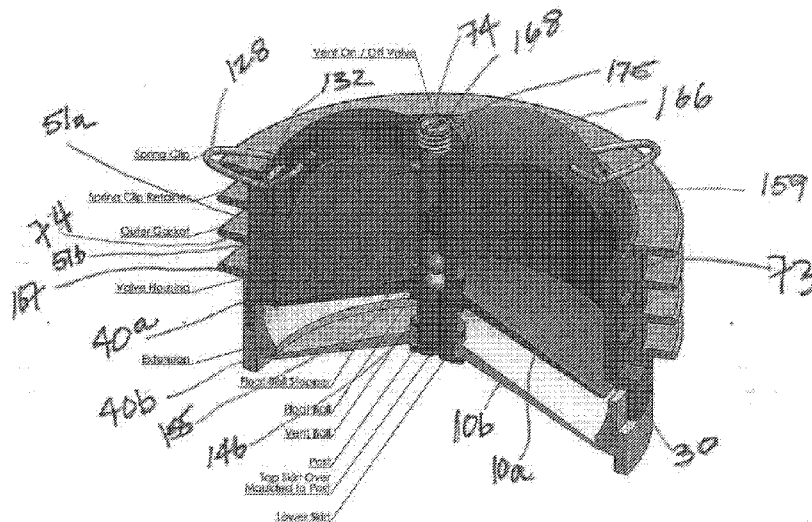


FIG. 18a

(57) Abstract: A drain valve device includes a drain valve housing (40, 56, 90, 104) arranged to be located within a drain opening. The housing (40, 56, 90, 104) has a wall structure (42, 119) surrounding an axis (46) so as to define an internal flow passage (156) through the housing (40, 56, 90, 104) and a strut member (58, 59, 148, 166) depending radially inwardly from the wall structure (42, 119). The device has one or more valve members (10, 88, 138, 146, 155, 160). A gas vent passage (136) may be provided in the housing and a vent valve (146) or control member (168) may be provided to selectively prevent flow through the gas vent passage (136).

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21 January 2016

**(15) Information about Correction:**  
see Notice of 21 January 2016

INTERNATIONAL SEARCH REPORT

International application No  
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A. CLASSIFICATION OF SUBJECT MATTER  
INV. E03C1/298 F16K15/14  
ADD.  
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED  
Minimum documentation searched (classification system followed by classification symbols)  
E03C F16K E03D E03F  
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 589 716 A1 (TECE GMBH [DE]) 8 May 2013 (2013-05-08) abstract	1
X	US 2012/167295 A1 (FIMA GIOVANNI [US]) 5 July 2012 (2012-07-05)  paragraph [0027] - paragraph [0033]; figure 1B paragraphs [0056], [0060]	1-3, 9-11,16, 28-30
A	GB 2 481 921 A (POLYPIPE TERRAIN LTD [GB]) 11 January 2012 (2012-01-11) figures 5,6	1,28
A	US 2 912 999 A (KERSH RONALD C) 17 November 1959 (1959-11-17) figures 3,5	1,9
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Further documents are listed in the continuation of Box C.  See patent family annex.

\* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p>
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Date of the actual completion of the international search  2 December 2015	Date of mailing of the international search report  22/12/2015
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Flygare, Esa
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2015/026690

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 211 212 A (LANGDON JESSE D) 13 August 1940 (1940-08-13) figure 4 -----	17,20,22
X	US 1 104 869 A (BOWSER LAFAYETTE E [US]) 28 July 1914 (1914-07-28) figure 1 -----	17
X	US 2013/305441 A1 (WILLIAMSON GREG [AU] ET AL) 21 November 2013 (2013-11-21) abstract paragraphs [0030], [0033], [0034], [0035], [0036], [0038] -----	17,24-27

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2015/026690

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2015/026690
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2589716	A1	08-05-2013	DE 102011085867 A1
			EP 2589716 A1
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US 1104869	A	28-07-1914	NONE
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			CA 2786453 A1
			US 2013305441 A1
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**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-16, 28-30

Drain valve with a skirt valve

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2. claims: 17-27

Drain valve with a vent conduit

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