



- (51) International Patent Classification:
B65D 90/62 (2006.01) *B65G 69/18* (2006.01)
- (21) International Application Number:
PCT/GB2018/051763
- (22) International Filing Date:
22 June 2018 (22.06.2018)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
1709995.3 22 June 2017 (22.06.2017) GB
- (71) Applicant: **MATCON LTD** [GB/GB]; Bramley Drive,
Vale Park West, Evesham Worcestershire WR11 1JH (GB).
- (72) Inventors: **HONDA, Hajime**; NISSHIN ENGINEERING
INC., 5-3-77 tsurugaoka fujimino-shi, Saitama 356-0045
(JP). **PIEPEREIT, Edward J.**; 1 Parkland Mews, Park
Street, Stow-on-the-Wold Gloucestershire GL54 1BA
(GB).
- (74) Agent: **MAUCHER JENKINS**; 26 Caxton Street, London
Greater London SW1H 0RJ (GB).
- (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, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, 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.
- (84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,

(54) Title: MATERIAL DISCHARGE APPARATUS, METHOD FOR DISCHARGING FLOWABLE MATERIAL THEREWITH, KIT AND METHOD FOR CONVERTING THE VALVE OF A MATERIAL DISCHARGE APPARATUS

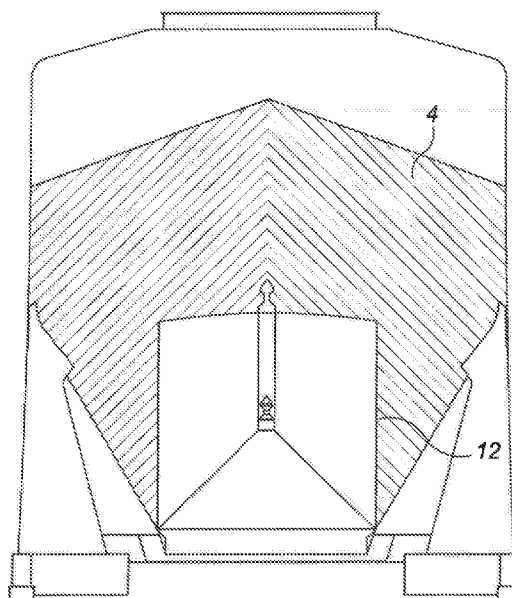


FIG. 4b

(57) Abstract: Material discharge apparatus comprising a material receiving chute (6) having a longitudinal axis; a valve (12) above the chute (6) movable between raised and lowered positions to control flow of material into the material receiving chute from a bulk store thereof above the latter; an actuating device (20) having a movable part for moving the valve between raised and lowered positions; wherein the movable part of the actuating device is disposed so as to move along a single central axis aligned with the valve; wherein the valve (12) comprises one or more sidewall (70) that is substantially parallel with the longitudinal axis of the chute.



UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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))*

(88) Date of publication of the international search report:

31 January 2019 (31.01.2019)

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2018/051763

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D90/62 B65G69/18
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)
B65D B65G

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	DE 10 2005 010573 A1 (GEL VERFAHRENSTECHNIK GMBH & C [DE]) 22 September 2005 (2005-09-22) page 3, paragraph 23 - page 4, paragraph 33 figures 1-3	1-12,17
X	US 4 884 923 A (WELLINK THEODORUS A [NL]) 5 December 1989 (1989-12-05) column 2, line 10 - column 3, line 25 figures 2-6	1-6, 8-11,13, 17
X	WO 2004/081434 A1 (HEAD ENGINEERING AB [SE]; HILLSTROEM ANDERS [SE]) 23 September 2004 (2004-09-23) page 9, line 14 - page 12, line 12 figures 1-4	1-6, 8-12,17
	----- -/--	

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"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)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

12 December 2018

Date of mailing of the international search report

18/12/2018

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

Piolat, Olivier

INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2018/051763

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/086976 A1 (HERMANNS SILO GMBH [DE]; HERMANNS KARL [DE]; HEINRICHS WALDEMAR [DE]) 24 August 2006 (2006-08-24) page 7, line 30 - page 16, line 15 figures 1-4 -----	1-6, 8-11, 13-18
X	EP 0 088 253 A1 (WURTH PAUL SA [LU]) 14 September 1983 (1983-09-14) page 7, line 9 - page 8, line 23 figures 6-8 -----	1-6, 8-11, 13-18
X	EP 1 512 643 A2 (SEMENENKO IVAN [GB]) 9 March 2005 (2005-03-09) -----	1,2, 4-11,13, 17
A	column 2, paragraph 10 - column 3, paragraph 20 figures 1-2d -----	14,18

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2018/051763

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-13, 17

Material discharge apparatus

2. claims: 14-16, 18

Valve cover

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2018/051763

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102005010573 A1	22-09-2005	DE 102005010573 A1	22-09-2005
		DE 202004003650 U1	17-06-2004
US 4884923 A	05-12-1989	BE 1000608 A4	14-02-1989
		CA 1297344 C	17-03-1992
		DE 3864314 D1	26-09-1991
		DE 8806163 U1	04-08-1988
		EP 0292031 A1	23-11-1988
		ES 2024624 B3	01-03-1992
		GR 3002838 T3	25-01-1993
		NL 184103 B	16-11-1988
		US 4884923 A	05-12-1989
WO 2004081434 A1	23-09-2004	SE 0300673 A	13-09-2004
		WO 2004081434 A1	23-09-2004
WO 2006086976 A1	24-08-2006	AT 413551 T	15-11-2008
		DE 102005007519 B3	19-10-2006
		EP 1848906 A1	31-10-2007
		ES 2317489 T3	16-04-2009
		WO 2006086976 A1	24-08-2006
EP 0088253 A1	14-09-1983	CA 1209800 A	19-08-1986
		CS 235037 B2	16-04-1985
		DE 3361813 D1	27-02-1986
		EP 0088253 A1	14-09-1983
		IN 159019 B	07-03-1987
		JP H0516201 Y2	28-04-1993
		JP H04106345 U	14-09-1992
		JP S58167705 A	04-10-1983
		LU 84000 A1	17-11-1983
		US 4512702 A	23-04-1985
EP 1512643 A2	09-03-2005	AT 398587 T	15-07-2008
		AU 2004206983 A1	17-03-2005
		EP 1512643 A2	09-03-2005
		GB 2405632 A	09-03-2005
		JP 2005170509 A	30-06-2005
		US 2005045670 A1	03-03-2005