



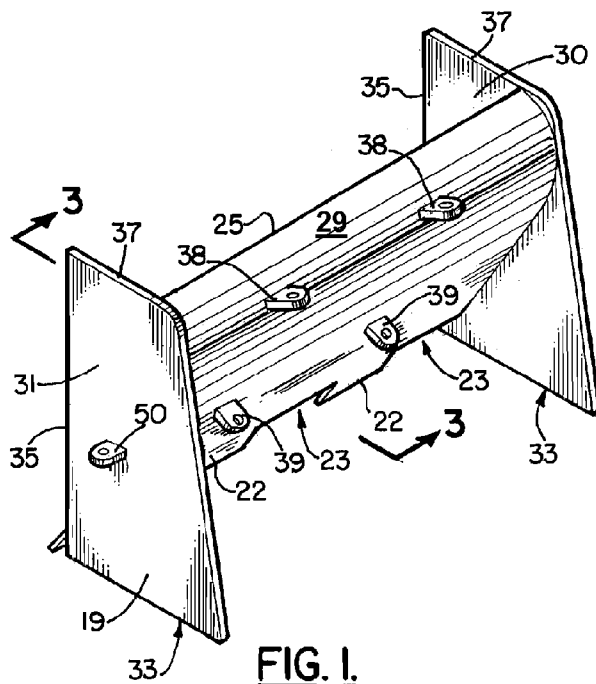
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- (81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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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21 March 2013

(54) **Title:** HYDRAULIC BUCKET APPARATUS

(57) **Abstract:** A hydraulic clamshell bucket apparatus employs a frame that includes an upper lifting member that enables the frame to be lifted with a crane or other lifting device. First and second hydraulically powered jaws are each attached to the frame. Jaw pivots are provided on the frame, each jaw pivotally attached to the frame at a jaw pivot. First and second hydraulic cylinders are each connected to the frame. Each cylinder pivots on the frame above the jaw pivots, each cylinder connected to the frame at an upper cylinder pivot. Lower cylinder pivots are provided on the jaws, each cylinder pivotally attached to a jaw at a lower cylinder pivot. Each jaw has a concave surface. First and second digging implements are attached to the jaws, the first digging implement attached to the first jaw, the second digging implement attached to the second jaw. Each digging implement has a concave portion. Each digging implement is wider than the jaw to which it is attached so that each implement extends laterally away from the jaw to which it is attached. A pair of side panels is attached to each digging implement at positions spaced away from the jaws.

A. CLASSIFICATION OF SUBJECT MATTER***E02F 3/413(2006.01)i, B66C 3/02(2006.01)i***

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)

E02F 3/413; B66C 3/00; B66F 9/12; E02F 3/40

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: clamshell, bucket, dig, jaw, grapple, tong, side panel, side cover, implement, tooth.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	KR 20-0394093 Y1 (Choi Chang Duk) 30 August 2005 See claims 1-3 and figures 1-4.	1-2, 4-10 3, 11-20
Y	KR 10-2011-0021425 A (KOMAC HEAVY INDUSTRY CO., LTD et al.) 04 March 2011 See claims 1-3 and figures 5-7.	1-2, 4-10
A	JP 2002-194765 A (HITACHI CONSTR MACH CO LTD) 10 July 2002 See paragraphs 0023-0033 and figures 2, 5.	1-20
A	US 03920137A A (MCCAIN WILLARD E.) 18 November 1975 See column 1; line 53 - column 2; line 52 and figure 1.	1-20



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

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"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

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"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

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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cited in search reportPublication
datePatent family
member(s)Publication
date

KR 20-0394093 Y1

30.08.2005

None

KR 10-2011-0021425 A

04.03.2011

None

JP 2002-194765 A

10.07.2002

JP 4361675 B2

11.11.2009

US 03920137A A

18.11.1975

None