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[Continued on next page]

(54) Title: COUNTERWEIGHT ATTACHMENT AND REMOVAL SYSTEM AND MACHINE USING SAME

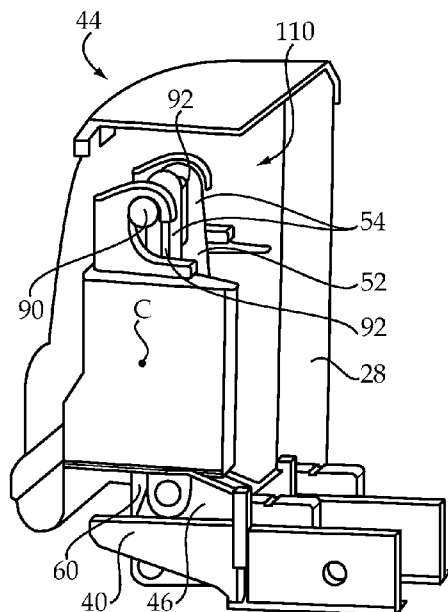


Figure 7

(57) Abstract: A counterweight attachment and removal system (44, 120) includes a machine mounting bracket (46, 122) and a link (52, 124) having two spaced apart arms (54). A proximal end (56) of the link (52, 124) is pivotably coupled with the machine mounting bracket (46, 122). A rotate cylinder (60, 126) has a proximal end (62) pivotably coupled with the machine mounting bracket (46, 122) and a distal end (66) pivotably coupled with a distal end (68) of the link (52, 124). A slide cylinder (82, 128) has a proximal end (84) pivotably coupled with the link (52, 124) and a distal end (88) pivotably coupled with a lift pin (90, 130). The lift pin (90, 130) is positioned through slots (92) defined by the two spaced apart arms (54). The counterweight attachment and removal system (44, 120) includes a first configuration in which the link (52, 124) is pivoted away from the machine mounting bracket (46, 122), the rotate cylinder (60, 126) is retracted, the slide cylinder (82, 128) is extended, and the lift pin (90, 130) is positioned through distal portions (104) of the slots (92). According to a second configuration, the link (52, 124) is pivoted toward the machine mounting bracket (46, 122), the rotate cylinder (60, 126) is extended, the slide cylinder (82, 128) is retracted, and the lift pin (90, 130) is positioned through proximal portions (102) of the slots (92).



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A. CLASSIFICATION OF SUBJECT MATTER***E02F 9/18(2006.01)i, B66C 23/72(2006.01)i***

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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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: excavator, loader, heavy machine, counterweight, counterbalance, attachment, cylinder, lift.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 08-333776 A (KOMATSU LTD) 17 December 1996	1-6
Y	See paragraphs 0020-0023 and figures 5, 6.	7-10
Y	US 05833268A A (ALDROVANDI; LOUIS) 10 November 1998 See column 5 lines 36-40 and figure 1.	7-10
A	JP 08-319637 A (KOMATSU LTD) 03 December 1996 See paragraphs 0012-0015 and figures 1, 2.	1-10
A	US 05156215A A (JENSEN; TONY A.) 20 October 1992 See column 3 lines 19-64 and figures 1-5.	1-10



Further documents are listed in the continuation of Box C.



See patent family annex.

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