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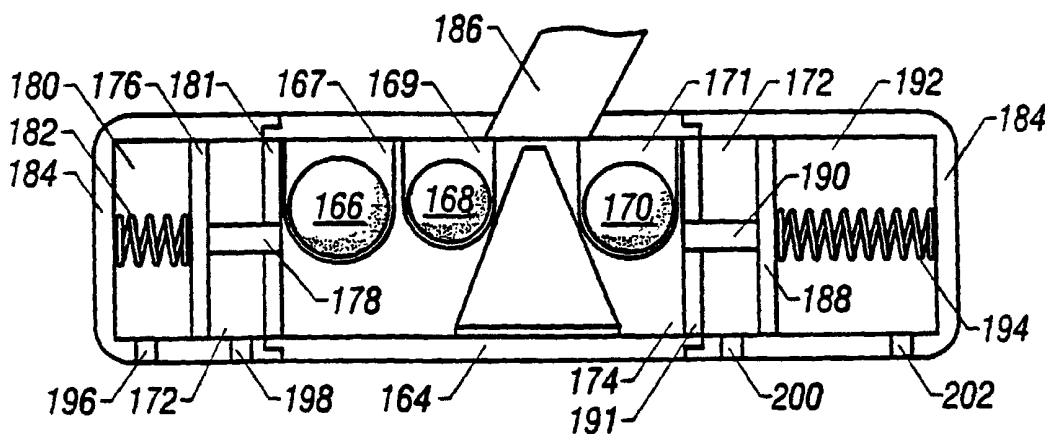
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(54) Title: MECHANISM FOR DROPPING A PLURALITY OF BALLS INTO TUBULARS



(57) Abstract: A housing (164) is attached to a tubular sub located within a tubing string suspended in an earth borehole, the connection being an angled ball channel (186) connected between the housing (164) and the tubular sub (84). A ball carrier (174) is provided within the interior of the housing (164) which can be moved in two opposite directions either using pneumatic or hydraulic pressure against one or two pistons (176, 188). The ball carrier (174) can have either two balls or three balls (167, 169, 170). The movement of the ball carrier by the applied pressure causes one of the pockets (167, 169, 171) holding the balls to be aligned with the ball channel which allows the balls to be successively dropped into the ball channel and thus into the interior of the tubing string. Means are provided for ensuring that the balls are dropped in the proper sequence.



WO 01/07748 A3

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :E21B 33/068

US CL :166/70, 75.15; 137/268

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)

U.S. : 166/70, 75.15; 137/268; 15/104.062

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2,713,909 A (BAKER) 26 July 1955 (26/07/55), see Figures 1-3.	1-3
X	US 2,955,654 A (STOGNER et al) 11 October 1960 (11/10/60), see Figures 1-3.	1-3,7-9
X	US 4,491,177 A (BAUGH) 01 January 1985 (01/01/85), see Figures 1-6.	1
X	US 3,039,531 A (SCOTT) 19 June 1962 (19/06/62), see Figure 2.	1
X	US 3,146,477 A (BERGMAN et al) 01 September 1964 (01/09/64), see Figures 1-6.	1

 Further documents are listed in the continuation of Box C.
 See patent family annex.

* Special categories of cited documents:	*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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O document referring to an oral disclosure, use, exhibition or other means	
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