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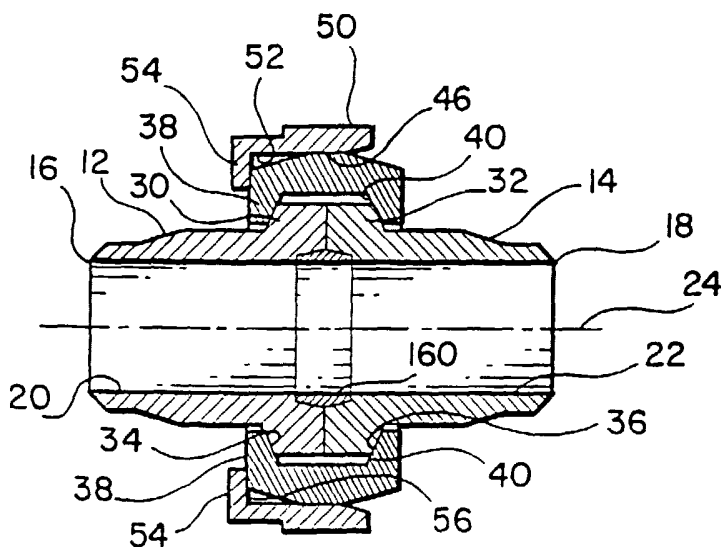
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PIPE COUPLING WITH ASSEMBLY TOOL



(57) Abstract: A pipe coupling (fig. 1) includes mating hub sections (14, 16) engaged by outer split clamp elements (38) that are compressed together against mating tapered surfaces (30) of the hub sections to draw the hub sections together into tight fitting relationship. The clamp elements (38) are driven into a compressed condition by an outer locking ring (50) that fits over the split clamp elements to draw the hub sections together and to retain the hub sections against axial separation. The clamp elements (38) have locking surfaces (46) engageable by the locking ring (50) and axial movement of the locking ring is limited by appropriate stop surfaces (54) and retainers. A locking sleeve installation and removal tool (64) utilizing an actuator system is described.



WO 02/023075 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/28103

A. CLASSIFICATION OF SUBJECT MATTER		
IPC(7) : F16L 17/00 US CL : 285/365		
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. : 285/365, 364, 411, 406, 421, 408		
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.
A ^v	US 5,951,066 A (LANE et al) 14 September 1999, figs. 1-7.	1-10, 18-22
A	US 5,098,134 A (MONCKTON) 24 March 1992, figs. 1-6.	1-10, 18-22
A	US 4,527,818 A (RUNDELL) 09 July 1985, figs. 1-5.	1-10, 18-22
A	US 4,159,132 A (HITZ) 26 June 1979, figs. 1-14.	1-10, 18-22
A	US 3,404,902 A (LATHAM et al) 08 October 1968, figs. 1-3.	1-10, 18-22
A	US 3,451,697 A (BULA) 24 June 1969, fig. 1	1-10, 18-22
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* "A"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier document published on or after the international filing date	"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
"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)	"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
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International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	✓ US 3,406,991 A (DECKER, JR. et al) 22 October 1968, fig. 1.	1-10, 18-22
A	✓ US 3,352,575 A (DASPIT) 14 November 1967, fig. 3.	1-10, 18-22
A	✓ US 3,231,298 A (TOMB et al) 25 January 1966, figs. 1-4.	1-10, 18-22
X	US 2,688,500 A (SCOTT) 07 September 1954, fig. 1.	18-19
A	US 2,104,123 A (DAMSEL) 10 September 1935, figs. 1-2. ✓	1-10, 18-22
X	US 591,828 A (DUNCAN) 19 October 1897, figs. 1-2.	20-22

INTERNATIONAL SEARCH REPORT

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BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group 1, claim(s) 1-10 and 16-22, drawn to a pipe coupling.

Group 2, claim(s) 11-15, drawn to a pipe coupling locking ring installing and removing tool.

The inventions listed as Groups 1 and 2 do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group 1 is drawn to the structure of the pipe coupling. Group 2 is drawn to the structure of the installation tool. These two structures relate to two distinct inventive concepts.