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SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application Number
EP 94 91 4138

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X A	US-A-4 083 393 (OKADA) 11 April 1978 * column 2, line 50 - column 3, line 23; figures 1-5 *	1-3 6	F16B37/08 F16B39/36 B23P11/02

TECHNICAL FIELDS SEARCHED (Int.Cl.5)

F16B

The supplementary search report has been drawn up for the claims attached hereto.

Place of search	Date of completion of the search	Examiner
THE HAGUE	8 February 1995	Calamida, G

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C04)

CLAIMS:

1. A method of rapidly engaging and disengaging first and second coupling members provided with external and internal threads, respectively, comprising the steps of:

inserting the first coupling member within the second coupling member;

moving the internal threads of the second coupling member apart from each other;

continuing to move the first coupling member within the second coupling member by sliding movement;

briefly rotating the first coupling member such that the external threads thereof tightly engage the internal threads of the second coupling member locking the coupling members together;

rotating the first coupling member in the opposite direction to release the tight engagement between the external threads of the first coupling member and the internal threads of the second coupling member;

moving the internal threads of the second coupling member apart from each other; and

removing the first coupling member from the second coupling member by sliding movement.

2. A coupling device comprising:

a first member provided with threads;

a second member having an opening therein lying along a longitudinal axis into which said first member may be inserted;

threaded elements movably mounted with respect to said second member;

means permitting said first member, as it is inserted within said opening and moved along said axis by sliding movement, to cause said threaded elements to move radially outward, afterwhich brief

rotating movement of said first member tightly moves said first member into engagement with said second member; and

means moving said threaded elements radially outward, permitting said first member to be moved outwardly along said axis by sliding movement.

3. A coupling device as in claim 2, wherein said threaded elements comprise a plurality of internally threaded elements having frustoconical surfaces mating with corresponding frustoconical surfaces within the second member thus permitting said threaded elements to move inwardly and outwardly in a radial direction relative to the second member and means biasing said threaded elements inwardly within said second member.

4. A coupling device as in claim 3, wherein said means moving said threaded elements radially outward comprises a movably mounted key element associated with each of said internally threaded elements and provided with a sloping supporting surface, each of said threaded elements having a corresponding sloping supporting surface, such that movement of said key elements causes sliding movement of said threaded elements along the juncture of said sloping supporting surfaces moving said internally threaded elements outwardly.

5. A coupling device as in claim 4, wherein said means moving said threaded elements outwardly further comprises a cap associated with said second member, means biasing said cap away from said second member, said threaded elements being movable with said cap whereas said key elements move with said second member, such that movement of said cap and said second member towards each other against the

force of said biasing means causes the aforementioned movement of said key elements.

6. A coupling device as in claim 2, wherein said second member comprises a cylinder provided with a plurality of slots therein, a plurality of threaded elements, means mounting said elements to move between a first inner position wherein the threads are positioned to mate with the threads of said first member and a second, outer position wherein the threads are out of engagement with the threads of said first member, means urging said threaded elements to said first, inner position, slotted portions within said threaded elements including inclined supporting surfaces, and wherein said means moving said threaded elements outwardly permitting said first member to move outwardly along said axis by sliding movement comprises key elements extending through said slots of said cylinder including sloping supporting surfaces engaging the supporting surfaces of said threaded elements and means moving said keys upwardly causing said threaded elements to move outwardly towards said second position as there is sliding movement between the supporting surfaces of the keys and the threaded elements.

7. A coupling device as in claim 6, wherein said means moving said key elements comprises a sleeve, said key elements secured to said sleeve, a cap connected to said cylinder, spring means urging said cap and sleeve away from each other, such that manual movement of said cap and sleeve towards each other moves said key elements, the sliding action between said supporting surfaces of said key elements and the threaded elements moving said threaded elements to their second outer position.