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SharkNinja et al. v. Dyson Technology Limited,

IPR2023-01323

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August 11, 2022

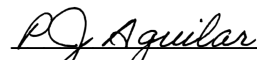
Re: EP0791758A1

To Whom It May Concern:

This is to certify that the above-referenced documents (**341-45439_Mouhot_EP0791758A1_FR into EN**) have been translated from French into English by a professional translator on our staff who is skilled in the French language.

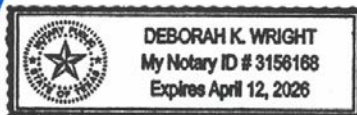
The English translation conforms essentially to the original French except for those words or phrases for which there are no equivalents. Such words or phrases are noted in the translation along with the best English meaning.

All statements made in this declaration of our own knowledge are true, and all statements made on information and belief are believed to be true. We certify these statements under the understanding that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001). To the best of our knowledge, the aforementioned documents are a true, full, and accurate translation into English of the specified document.


P.J. Aguilar

Subscribed and sworn to before me on August 11, 2022.


Deborah K. Wright
Notary Public, State of Texas



My commission expires on April 12, 2026

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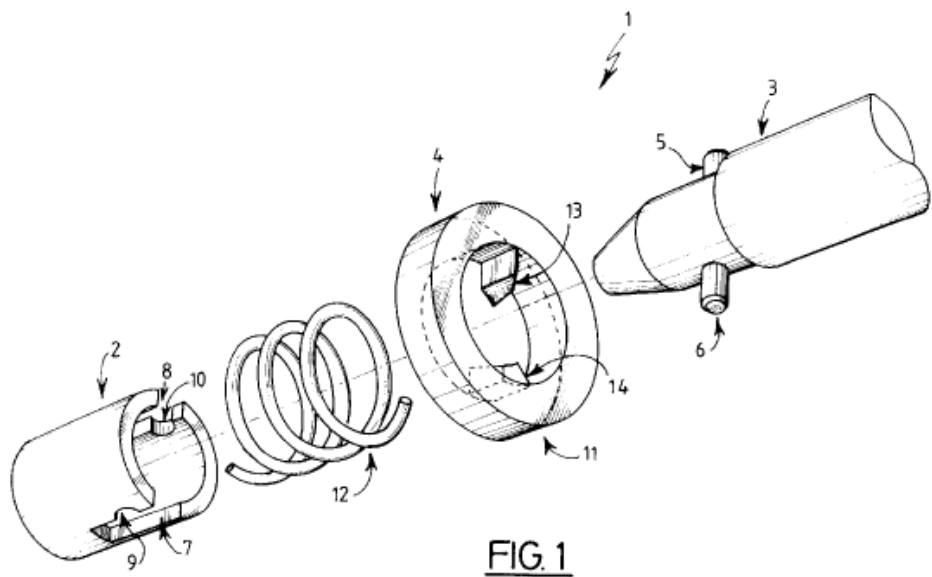
(54)

Bayonet-type quick coupler

(57)

This coupler for connecting two steering members, in particular for a motor vehicle, one of which comprises a socket (2) provided with at least one slot (7, 8) for receiving a lateral protruding part (5, 6) of a shank (3) of the other member, and comprising means (4) for locking the lateral protruding part of the shank in position inside the slot of the socket, is characterized in that at least one of the sides of the socket (2) delimiting the slot

comprises stop means (9, 10) that delimit at least one locking position of the lateral protruding part and in that the locking means (4) comprise wedge-shaped means (13, 14), movable in the slot between a locking position, in which these wedge-shaped means prevent the lateral protruding part of the shank from disengaging from the stop means of the slot of the socket, and a retracted position.



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Description

The present invention relates to a bayonet-type quick coupler for connecting two steering members, especially for a motor vehicle.

In particular, the invention relates to a quick coupler for connecting two members, one of which comprises a socket provided with at least one slot for receiving a lateral protruding part of a shank of the other member, the coupler comprising means for locking the lateral protruding part of the shank in position inside the slot of the socket.

A quick coupler of this type is already known in the prior art, in particular from document FR-A-2 628 488 of the applicant, in which the socket comprises at least one helical slot and supports a guide and locking member that elastically pushes the lateral protruding part of the shank into the bottom of the helical slot so as to lock it in this position.

Furthermore, grooves are provided between the socket and the guide and locking member to enable axial movement of this member relative to this socket, while at the same time preventing this member from moving angularly around the socket, in order to ensure that the shank is correctly locked in position inside the socket.

However, it is understood that the structure of such a coupler is relatively complex and costly to implement.

The purpose of the invention is therefore to solve these problems.

For this purpose, the invention relates to a bayonet-type quick coupler for connecting two steering members, in particular for a motor vehicle, one of which comprises a socket provided with at least one slot for receiving a lateral protruding part of a shank of the other member, the coupler comprising means for locking the lateral protruding part of the shank in position inside the slot of the socket, characterized in that at least one of the sides of the socket delimiting the slot comprises stop means that delimit at least one locking position of the lateral protruding part and in that the locking means comprise wedge-shaped means movable in the slot between a first locking position, in which these wedge-shaped means prevent the lateral protruding part of the shank from disengaging from the stop means of the slot of the socket, and a second retracted position.

The invention will be better understood upon reading the following description, given for illustrative purposes only, and with reference to the appended drawings in which:

- Figure 1 shows an exploded perspective view of a quick coupler according to the invention; and
- Figures 2 and 3 illustrate the operation of this quick coupler.

A bayonet-type quick coupler denoted by the general reference 1 can be seen in these figures.

This quick coupler enables two steering members, in particular for a motor vehicle, one of which comprises a socket 2 provided with at least one slot for receiving a corresponding lateral protruding part of a shank 3 of the other member.

Furthermore, the quick coupler also comprises means 4 for locking the lateral protruding part of the shank 3 in position inside the slot of socket 2 for connection of the shank and socket.

In the embodiment shown in these figures, the shank 3 comprises two lateral diametrically opposite protruding parts 5 and 6, for example, consisting of the ends of a rod passing through this shank.

These lateral protruding parts are adapted to be inserted into two corresponding slots 7, 8 of the socket 2.

In the embodiment shown in these figures, these slots of the socket are axial slots and at least one of the sides of the socket 2 delimiting each slot comprises stop means that delimit at least one position for locking the corresponding lateral protruding part of the shank inside this socket.

In the embodiment shown, the stop means, for example, consist of a lateral recess 9 and 10 of each corresponding side of the socket, respectively.

The locking means 4 comprise wedge-shaped means movable in the or each corresponding slot of the socket between a first locking position, in which these wedge-shaped means prevent the corresponding lateral protruding part of the shank from disengaging from the stop means of the corresponding slot of the socket, and a second retracted position, as will be described in greater detail below.

In fact, these locking means 4, for example, can comprise a ring arranged, for example, around the socket and denoted in the figures by the general reference 11, this ring being combined with resilient means, like a coil spring 12, which urges it axially toward its locking position, whereas the above-described wedge-shaped means include parts protruding radially toward the inside of this ring, as denoted in the figures by references 13 and 14, [and] these parts protruding radially toward the inside of the ring extend into the slots of the socket.

Conventional means (not shown) for holding the ring on the socket are also provided to limit its axial movement toward the front end thereof, which is adapted to receive the shank.

As can be seen more clearly in Figures 2 and 3, each radial protruding part of the wedge-shaped means 14, for example, of this ring 11, comprises, on one side, a first support surface 14a, for example, adapted to cooperate with the end of the socket delimiting the slot, opposite the one comprising the stop means 9, for example, and, on the other side, i.e., facing the stop means 9, at least one sloped surface for guiding and locking the corresponding lateral protruding part of the shank in the socket.

In the embodiment shown, the corresponding side of the wedge-shaped means 14, for example, comprises first and second sloped surfaces 14b, 14c one being an extension of the other, which are angularly offset relative to each other, the first one [surface] 14b enabling movement of the wedge-shaped means 14 toward their second retracted position during insertion of the shank into the socket, by the corresponding lateral protruding part thereof coming to bear against this surface, and [thereby] guiding this lateral protruding part in the direction of the stop means 9 of the corresponding side of the slot, and the second one [surface] 14c enabling this laterally protruding part of the shank to be locked in position in these stop means of the socket.

It is understood that, when the shank 3 is inserted into socket 2, each lateral protruding part 6, for example, of this shank, comes to bear against the first sloped surface 14b, for example, of the corresponding wedge-shaped means 14, for example, which extend into the corresponding slot 7, for example, of the socket.

This insertion of the shank into the socket then causes these wedge-shaped means, and therefore the ring 11, to retract against the resilient bias of means 12, in order to clear the way for this shank.

In addition, the or each lateral protruding part 6 of the shank is guided by the first sloped surface 14b of the corresponding wedge-shaped means, in the direction of the corresponding stop means consisting, for example, of recess 9 of the slot of the socket.

Once the lateral protruding parts of the shank are in this position, the resilient means 12 push the ring and the wedge-shaped means so that the second sloped surface 14c of these wedge-shaped means comes to bear against the corresponding lateral protruding part 6 of the shank, for example, and against the corresponding edge of the socket delimiting the slot, in order to ensure that the shank is locked in position inside the socket, while preventing the or each lateral protruding part of the shank from disengaging from the stop means of the socket.

If the shank is not sufficiently inserted into the socket, the ring and the wedge-shaped means, under the action of the resilient means, cause this shank to be ejected from the socket so as to prevent any incorrect locking position thereof inside the socket.

It is understood that various embodiments of this coupler may be considered.

Thus, for example, various embodiments of the locking means, slots and stop means of the socket may be considered.

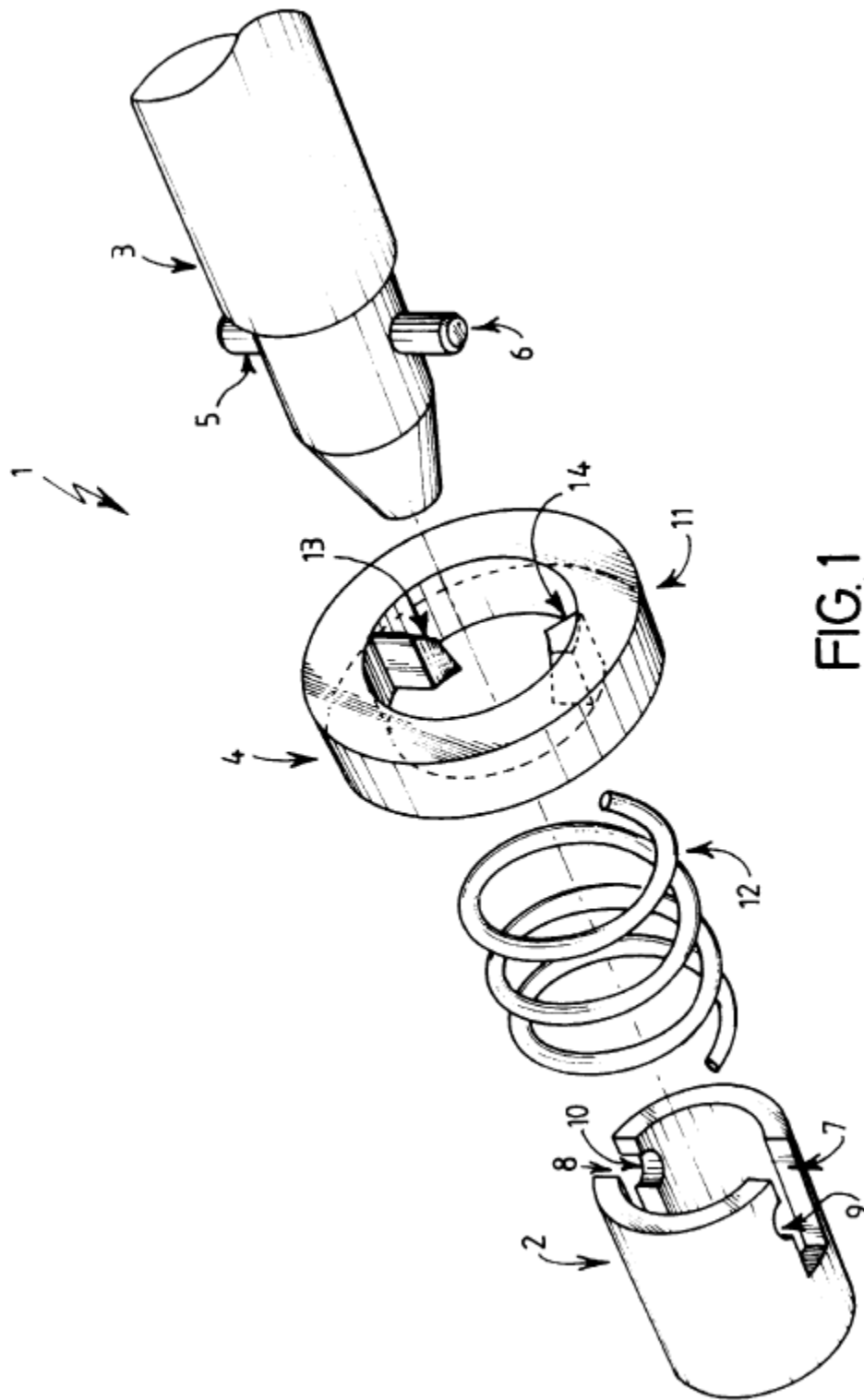
It is therefore understood that the quick coupler according to the invention has a certain number of advantages relative to couplers of the prior art, insofar as its structure is extremely simple, reliable and easy to manufacture.

It should also be noted that such a coupler may find numerous applications, especially in the automotive industry, for connecting two steering members, in particular for a motor vehicle, such as [for connecting] a steering wheel to a steering column member thereof, or the like.

Claims

1. A bayonet-type quick coupler for connecting two steering members, in particular for a motor vehicle, one of which comprises a socket (2) provided with at least one slot (7, 8) for receiving a lateral protruding part (5, 6) of a shank (3) of the other member, the coupler comprising means (4) for locking the lateral protruding part (5, 6) of the shank (3) in position in the slot (7, 8) of the socket (2), characterized in that at least one of the sides of the socket (2) delimiting the slot comprises stop means (9, 10) that delimit at least one locking position of the lateral protruding part and in that the locking means (4) comprise wedge-shaped means (11, 13, 14), movable in the slot between a first locking position, in which these wedge-shaped means (13, 14) prevent the lateral protruding part (5, 6) of the shank (3) from disengaging from the stop means (9, 10) of the slot (7, 8) of the socket (2), and a second retracted position.
2. The coupler according to claim 1, characterized in that the shank (3) comprises at least two diametrically opposite lateral protruding parts (5, 6) and in that the socket (2) comprises at least two corresponding diametrically opposite slots (7, 8).
3. The coupler according to claim 1 or 2, characterized in that the stop means of the corresponding side of the socket comprise at least one recess (9, 10) for receiving the corresponding lateral protruding part.
4. The coupler according to any one of the preceding claims, characterized in that wedge-shaped means (11, 13, 14) are urged into their first locking position by resilient means (12).

5. The coupler according to any one of the preceding claims, characterized in that the wedge-shaped means (13, 14) include, on one side, a first support surface (14a) adapted to cooperate with the side of the socket (2) delimiting the slot (7, 8), opposite the one comprising the stop means (9, 10) and, on the other side, at least one sloped surface (14b, 14c) for guiding and locking the lateral protruding part in the corresponding stop means.
6. The coupler according to claim 5, characterized in that the other corresponding side of the wedge-shaped means (13, 14) comprises first and second sloped surfaces (14b, 14c), one being an extension of the other, which are offset angularly relative to each other, the first one [surface] (14b) enabling movement of the wedge-shaped means (13, 14) toward their second retracted position during insertion of the shank (3) into the socket (12) and [thereby] guiding the corresponding lateral protruding part in the direction of the stop means, and the second one [surface] (14c) [enabling] locking of the protruding part in position in the stop means.
7. The coupler according to any one of the preceding claims, characterized in that the wedge-shaped means are in the form of at least one radial protruding part (13, 14) of a guide ring (11) movable relative to the socket.
8. The coupler according to claim 7, characterized in that the or each slot (7, 8) of the socket (2) is an axial slot and in that the guide ring (11) is movable axially relative to this socket, in order to enable axial movement of the wedge-shaped means (13, 14) in the corresponding slot.
9. The coupler according to claim 8, characterized in that the ring is arranged around the socket and in that the radial protruding parts (13, 14) are directed toward the inside thereof.



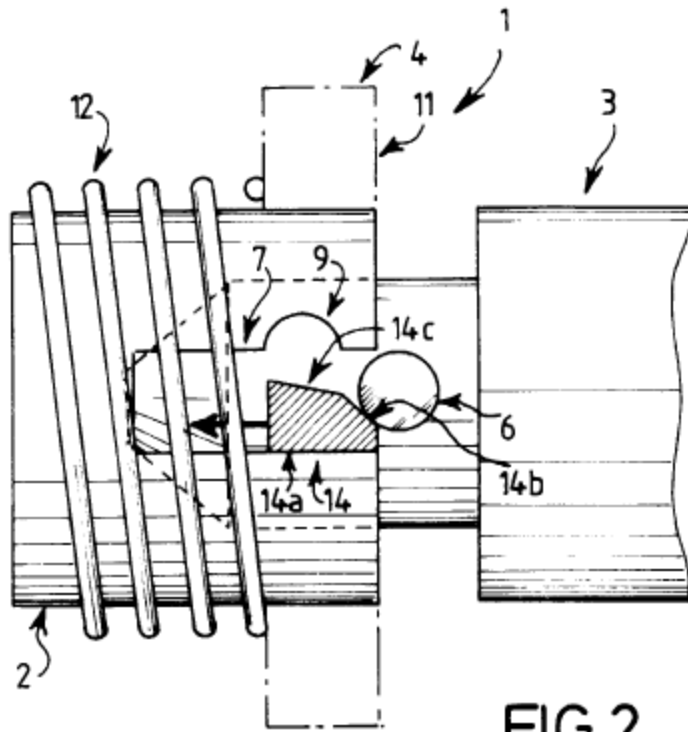


FIG. 2

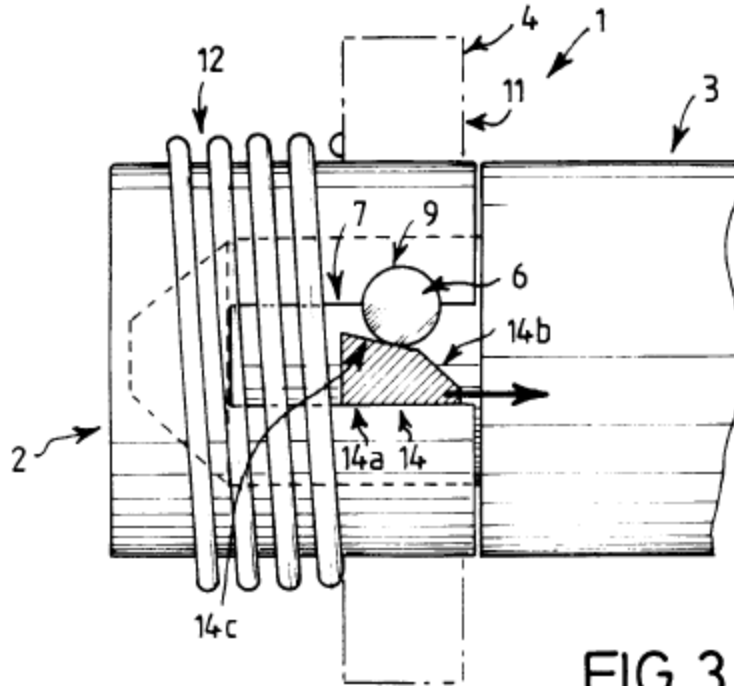


FIG. 3



European
Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 40 0413

RELEVANT DOCUMENTS			
Category	Name of document with indication, if necessary, of significant parts	Concerns claim	CLASSIFICATION OF THE APPLICATION (Intl. Cl. ⁶)
Y	US 4 708 511 A (EDMINSTER ROBERT E) November 24, 1987 * Column 2, line 33 - column 5, line 49; figures *	1	F16B21/04 F16B7/20 F16D1/108
D, Y	FR 2 628 488 A (ECIA EQUIP COMPOSANTS IND AUTO) September 15, 1989 * Page 3, line 1 - page 5, line 34; figures *	1	
A	---	2,4	
A	GB 270 167 A (FRED HENDERSON) * Entire document *	4,7	
A	---	1,4,7,9	
	FR 1 496 227 A (J. MCCARTY) * Entire document *		

The present search report was prepared for all patent claims			SEARCHED TECHNICAL AREAS (Intl. Cl. ⁶)
			F16B F16D
Search location		Concluding date of search	Examiner
THE HAGUE		June 4, 1997	Areso y Salinas, J
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