

12

# EUROPEAN PATENT APPLICATION

21 Application number: 90830184.9

51 Int. Cl.<sup>5</sup>: E05D 7/10, E05D 5/10

22 Date of filing: 30.04.90

30 Priority: 11.05.89 IT 6734889

43 Date of publication of application:  
14.11.90 Bulletin 90/46

84 Designated Contracting States:  
AT BE CH DE DK ES FR GB GR IT LI LU NL SE

71 Applicant: Teksid S.p.A.  
Via Pianezza 123  
I-10151 Torino(IT)

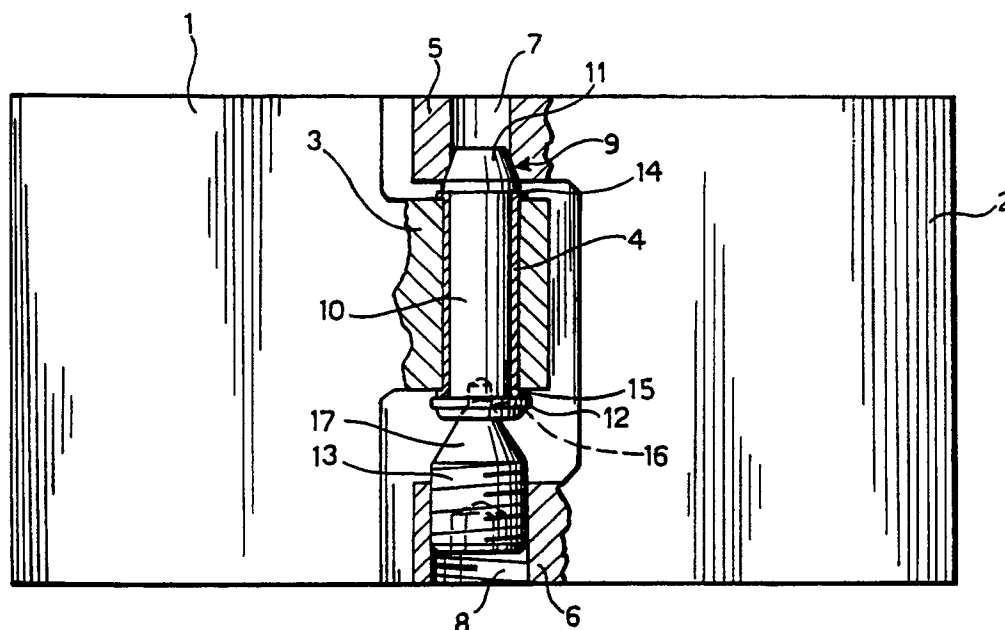
72 Inventor: Aschieri, Roberto  
Vicolo Magenta 41  
I-10090 Buttigliera Alta (Torino)(IT)

74 Representative: Rambelli, Paolo et al  
Jacobacci-Casetta & Perani S.p.A. Via Alfieri  
17  
I-10121 Torino(IT)

54 A hinge, particularly for the side doors of motor vehicles.

57 A hinge, particularly for the side doors of motor vehicles, comprises a forked element (2) and a flanged element (1) which are articulated to each other by an articulation pin (10) having a conical coupling surface (9) which engages a complementary conical surface carried by one prong (5) of the forked element, and has releasable clamping and

retaining means (13) which are associated with the other prong (6) of the forked element and can be moved manually between a clamping position in which they prevent the disengagement of the conical surfaces and a release position for enabling such disengagement in order to facilitate the quick removal and refitting of the door.



EP 0 397 610 A1

The present invention relates to a hinge, particularly for the side doors of motor vehicles, of the type comprising a forked element and a flanged element articulated to each other by an articulation pin which is inserted in the flanged element and engaged with the prongs of the forked element.

In hinges of the aforesaid type, the forked element constitutes the movable element which is fixed to the door of the motor vehicle and the flanged element constitutes the fixed element which is intended to be fixed to an upright of the structure of the motor vehicle. The forked element and the flanged element are interconnected permanently by a clinched pin or by a pin with a spring pin.

Since the fitting of the doors limits access to the interior of the roof panel of the motor vehicle, obstructing the subsequent fixing and finishing thereof, the object of the present invention is to provide a hinge which enables the doors to be removed and refitted quickly.

For this purpose, the subject of the invention is a hinge of the type specified above, characterised in that the articulation pin and one prong of the forked element have respective conical coupling surfaces, and in that releasable clamping and retaining means are provided which are associated with the other prong of the forked element and are movable between a clamping position in which they prevent the disengagement of the conical surfaces, and a release position in which they enable the disengagement of those surfaces.

By virtue of this characteristic, the quick removal and refitting of the doors is made particularly easy.

Further characteristics and the advantages of the hinge according to the invention will become clear from the detailed description which follows with reference to the appended drawing which shows a partially-sectioned, front elevational view of a hinge according to the invention.

With reference to the drawing, the hinge comprises a fixed element 1 which is intended to be welded or fixed by screws to an upright of the structure of the motor vehicle and a movable element 2 which is intended to be fixed to the motor-vehicle door. The fixed element 1 has a flange 3 which constitutes a first element of the hinge and has a hole in which a bush 4 of anti-friction material is inserted.

The movable element 2 has two lug-like prongs 5 and 6 with respective holes 7 and 8. The hole 7 has a conical surface portion 9 on its side which faces inwardly of the fork and the hole 8 is threaded internally.

An articulation pin, indicated 10, is inserted in the bush 4 and has a conical head 11 with a taper complementary to that of the conical surface 9 of

the hole 7. The other end of the pin has a conical seat 16 whose edges are clinched against a sealing washer 12.

A screw with a hexagonal recess, indicated 13, engages the threaded hole 8 and is movable as a result of a manual operation between a clamping position in which it engages the lower end of the pin 10, and a release position for enabling the disengagement of the conical surfaces 9 and 11. The screw 13 preferably has a conical end 17 for engaging the seat 16 in the pin in the clamping position.

The steps for assembling the hinge comprise, first of all, the insertion of the bush 4 in the hole of the fixed element 1 and the upsetting of its ends to form upper and lower collars 14 and 15. The pin 10 is then inserted fully in the bush for rotation, the washer 12 is fitted, and the lower end of the pin is clinched.

The conical surfaces 9 and 11 are then coupled by the screwing in of the screw 13 until the pin 10 and the movable element 2 are fixed firmly together.

The element 2, which is fixed to the pin, can rotate relative to the fixed element 1 with very little friction and without play, by virtue of the interposition of the anti-friction bush.

During the assembly of the motor vehicle, the door can be removed simply by the unscrewing of the screw 13, which need not necessarily be removed from its female thread, and the raising of the door by a few millimeters.

The hinge according to the invention thus enables the rapid connection of the door and can be fitted quickly and cheaply both to future products and to products currently in production.

## Claims

1. A hinge, particularly for the side doors of motor vehicles, of the type comprising a forked element (2) and a flanged element (1) articulated to each other by an articulation pin (10) which is inserted in the flanged element and engaged with the prongs (5, 6) of the forked element, characterised in that the articulation pin (10) and one prong (5) of the forked element have respective conical coupling surfaces (11, 9), and in that releasable clamping and retaining means (13) are associated with the other prong (6) of the forked element and are movable between a clamping position in which they prevent the disengagement of the conical surfaces, and a release position in which they enable the disengagement of those surfaces.

2. A hinge according to Claim 1, characterised in that it includes a bush (4) of anti-friction material

inserted in the flanged element, a pin (10) with a conical head (9) inserted rotatably in the bush with its conical head engaged in a complementary conical hole in one prong (5) of the forked element, and an annular sealing element (12) associated with the opposite end of the pin from the conical head, the retaining and clamping means being constituted by a device with a screw (13) and a female thread, associated with the other prong (6) of the forked element.

5

10

3. A hinge according to Claim 2, in which the pin (10) has a conical seat (16) at its opposite end from the head (9) and the screw (13) has a conical end (17) which is adapted to engage the seat (16) in the clamping position.

15

20

25

30

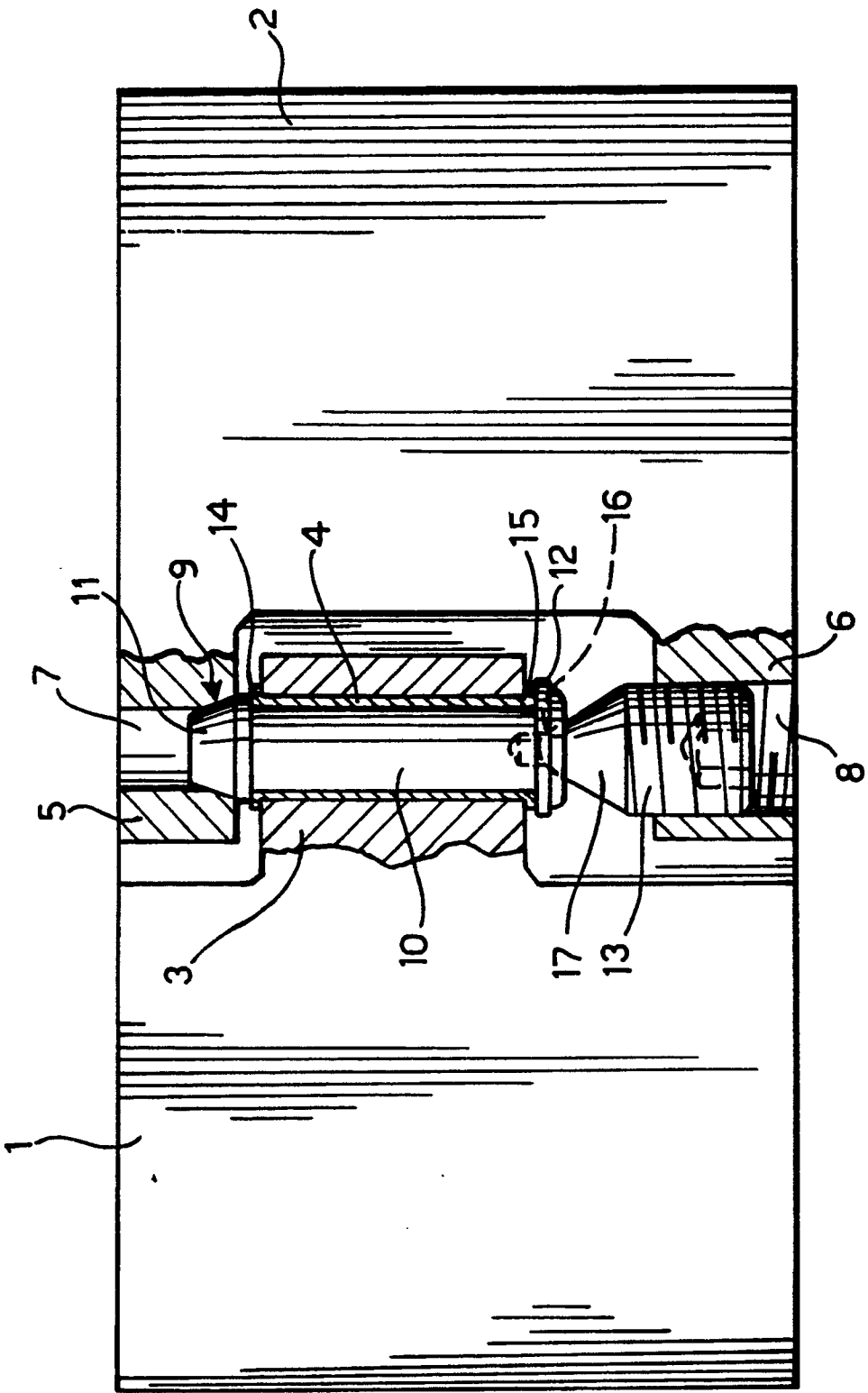
35

40

45

50

55





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number

EP 90 83 0184

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	DE-C- 155 502 (BOCK) * Whole document *	1	E 05 D 7/10 E 05 D 5/10
A	---	2,3	
A	DE-A-3 532 423 (SCHARWÄCHTER) * Figures 5,6; column 9, lines 56-61 *	1,2,3	
A	---		
A	DE-A-1 459 104 (SCHARWÄCHTER) * Figure 1 *	1,2,3	
	-----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E 05 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24-07-1990	Examiner NEYS B.G.
<b>CATEGORY OF CITED DOCUMENTS</b>			
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	