

Title (en)  
Railway vehicle with a vertical supporting actuator

Title (de)  
Schienenfahrzeug mit einem vertikalen Stützaktuator

Title (fr)  
Véhicule ferroviaire avec un vérin vertical de support

Publication  
**EP 0947409 B1 20031015 (DE)**

Application  
**EP 99102508 A 19990210**

Priority  
DE 19815197 A 19980404

Abstract (en)  
[origin: US6273002B1] A rail vehicle equipped with a support actuator of variable vertical length mounted between a vehicle body and a running gear located underneath. In order to maintain an operational supporting device and adequate ride comfort after a failure or overload of the support actuator, an emergency spring coaxial with the support actuator is provided, which only becomes effective when the stroke of the support actuator falls short of a preset value.

IPC 1-7  
**B61F 5/02**; **B61F 5/14**

IPC 8 full level  
**B61F 5/02** (2006.01); **B61F 5/14** (2006.01); **B61F 5/10** (2006.01); **B61F 5/22** (2006.01); **B61F 5/24** (2006.01)

CPC (source: EP KR US)  
**B61F 5/02** (2013.01 - EP US); **B61F 5/10** (2013.01 - KR); **B61F 5/144** (2013.01 - EP US)

Cited by  
CN100465019C; CN108996412A; EP1391331A3; US7520494B2

Designated contracting state (EPC)  
AT BE CH DE ES FR GB IT LI NL

DOCDB simple family (publication)  
**US 6273002 B1 20010814**; AT E252011 T1 20031115; CA 2266106 A1 19991004; CA 2266106 C 20020625; CZ 106599 A3 19991013; CZ 286114 B6 20000112; DE 19815197 C1 19990722; DE 59907332 D1 20031120; EP 0947409 A1 19991006; EP 0947409 B1 20031015; ES 2209255 T3 20040616; HU 221873 B1 20030228; HU 9900866 D0 19990628; HU P9900866 A2 20010129; JP 3017731 B2 20000313; JP H11321645 A 19991124; KR 100294385 B1 20010712; KR 19990082924 A 19991125

DOCDB simple family (application)  
**US 28343499 A 19990401**; AT 99102508 T 19990210; CA 2266106 A 19990318; CZ 106599 A 19990325; DE 19815197 A 19980404; DE 59907332 T 19990210; EP 99102508 A 19990210; ES 99102508 T 19990210; HU P9900866 A 19990402; JP 9658399 A 19990402; KR 19990011743 A 19990403