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- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

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12 November 2009

(54) **Title:** DOOR CLOSER

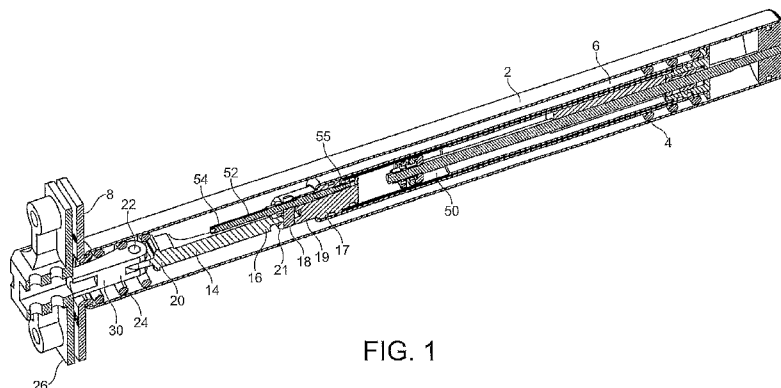


FIG. 1

(57) **Abstract:** A door closer for mounting between a door leaf and a door frame, the door closer comprising: an elongate housing for mounting in one of the door leaf or door frame, a plunger disposed in and movable along the housing, a biasing element disposed in the housing and biasing the plunger inwardly of the housing, and a rigid tension member having a first end pivotally connected at a first pivot to the plunger and a second end, and an anchor element assembly to which the second end is pivotally connected at a second pivot, the first and second pivots having parallel pivot axes, the anchor element assembly comprising a mounting member, for mounting in the other of the door leaf or door frame, and a link member extending from the mounting member, the second pivot being located at a free end of the link member remote from the mounting member, wherein the rigid tension member comprises a central portion between the first and second ends thereof, at least a part of the central portion having a reduced thickness in a direction orthogonal to the axes of the first and second pivots.



**INTERNATIONAL SEARCH REPORT**

international application No  
**PCT/GB2008/000555**

**A. CLASSIFICATION OF SUBJECT MATTER**  
**INV. E05F3/10 E05F3/12**

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)  
**E05F**

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 practical, search terms used)  
**EPO-Internal**

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 1 263 666 A (AMMUS SYTYTIN OY [FI]) 16 February 1972 (1972-02-16) cited in the application the whole document	1,4
A Y	figure 1; compounds 5,13 figure 1	2,3,5-13 34-37
X	GB 954 216 A (RUDOLF HEIL) 2 April 1964 (1964-04-02) the whole document	1
A	figure 1; compound 30	4
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Further documents are listed in the continuation of Box C.       See patent family annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*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)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed
- \*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
- \*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
- \*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.
- \* & \* document member of the same patent family

Date of the actual completion of the international search <b>28 May 2008</b>	Date of mailing of the international search report <b>24/09/2009</b>
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer <b>Schnedler, Marlon</b>
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/GB2008/000555

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2005/124079 A (REILOR HOLDINGS LTD [GB]; HESKETH MARK RICHARD [GB]) 29 December 2005 (2005-12-29) cited in the application figures 1-5,11,12 claims 1-6 page 20, lines 4-29	1
A	figures 5,11,12 page 20, lines 22-29	2-4
Y	----- EP 0 330 129 A (HEATH SAMUEL & SONS PLC [GB]) 30 August 1989 (1989-08-30) figures 1,2 column 6, lines 9-31 -----	34-37

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB2008/000555

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

see additional sheet(s)

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13, 34-37

A door closer comprising a threaded adjuster pin being captive in a plunger by the same pivot pin which is connecting a tension member to the plunger.

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2. claims: 14-27, 34-37

A door closer comprising a rigid tension member interconnecting an anchor element assembly and a plunger.

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3. claims: 28-33, 34-37

A door closer comprising a threaded adjuster pin having an elongate head extending away from a plunger, for adjusting the operation of an hydraulic damper which is damping the movement of the plunger in the housing of the door closer.

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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2008/000555

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 1263666	A	16-02-1972	NONE	
GB 954216	A	02-04-1964	CH 376390 A DE 1906413 U	31-03-1964 10-12-1964
WO 2005124079	A	29-12-2005	EP 1766174 A2 GB 2415227 A	28-03-2007 21-12-2005
EP 0330129	A	30-08-1989	AU 3019689 A CA 1315302 C DE 68903342 D1 DE 68903342 T2 DK 84289 A ES 2035968 T3 GB 2216181 A IE 61242 B1 PT 89815 A US 4991256 A ZA 8901217 A	24-08-1989 30-03-1993 10-12-1992 27-05-1993 25-08-1989 01-05-1993 04-10-1989 19-10-1994 04-10-1989 12-02-1991 29-11-1989