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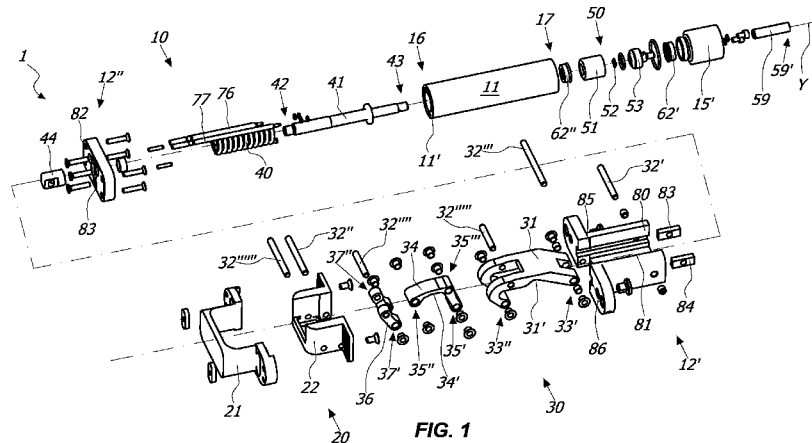
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[Continued on next page]

(54) Title: HYDRAULIC HINGE, IN PARTICULAR CONCEALED HINGE FOR DOORS



(57) Abstract: A hydraulic hinge for closing and/or opening and/or checking a closing element, such as a door, a window, a shutter or the like, anchored to a stationary support structure, such as a wall, a floor, a frame or the like. The hinge comprises a fixed element (20) anchorable to the stationary support structure and a movable element (10) anchorable to the closing element. The fixed element (20) and movable element (10) are mutually coupled in such a way that the latter (10) rotates with respect to the former (20) about a first longitudinal axis (X) between an open position and a closed position. One of the fixed element (20) and the movable element (10) includes at least one working chamber (13) defining a second longitudinal axis (Y), which comprises at least one portion (15) which includes: a plunger member (51) sliding along the second axis (Y) and a working fluid to hydraulically dampen the movement of the movable element (10). The plunger member (51) is mutually connected with one of the fixed element (20) and the movable element (10) so that the rotation of the latter (10) corresponds to the sliding of the former (51) and vice-versa. The plunger member (51) divides the at least one portion (15) of the working chamber (13) in at least two variable volume compartments (18, 19) fluidically communicating with each other. Upon one of the opening or closing of the closing element the working fluid flows from one of the first compartment (18) and the second compartment (19) to the other of the first compartment (18) and the second compartment (19), while upon the other of the opening or closing of the closing element the working fluid flows from the other of the first compartment (18) and the second compartment (19) to the one of the first compartment (18) and the second compartment (19).

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
 INV. E05D3/18 E05F3/10 E05F3/12 E05F3/20
 ADD.

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)
 E05D 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 practicable, search terms used)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 1 252 757 A (FREDERICK BENNETT) 10 November 1971 (1971-11-10) cited in the application	1-6,10, 11,14, 16,17, 36-38
A	page 2, line 41 - page 3, line 13; figures 1-7	7-9,12, 13
X	----- US 4 102 006 A (JENKINS ALBERT EDWARD) 25 July 1978 (1978-07-25) cited in the application column 2, line 26 - column 3, line 25; figures 1,2 -----	1-8,14, 36

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 application or patent 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
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Date of the actual completion of the international search 29 June 2015	Date of mailing of the international search report 15/10/2015
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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 Klemke, Beate
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2015/052183

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 all searchable 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.:

1-14, 16, 17, 36-38

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: 1-14, 16, 17, 36-38

hydraulic hinge, comprising a fixed element, a movable element, a plunger member, a working chamber divided into at least two variable volume compartments by the plunger member, wherein the working chamber is divided into at least two half-chambers

2. claims: 26-35

return valve for the piston of a hydraulic hinge

3. claims: 39-51

hinge comprising a first box-shaped element and a tubular element, both being connected by a connection assembly

4. claims: 52-63

means for adjusting a hinge comprising a first box-shaped element and a tubular element

5. claims: 15, 18-25

hydraulic circuit for a hydraulic hinge

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2015/052183

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 1252757	A	10-11-1971	NONE

US 4102006	A	25-07-1978	NONE
