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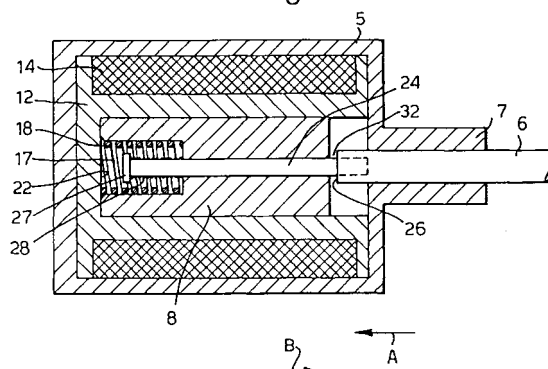
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(54) **Electromagnetic arrangements**

(57) An electromagnetic arrangement comprises an armature (12) mounted within a housing (5) and carrying an electrically energisable coil (14). A core (8) slides inwardly of a hollow space (10) against a compression spring (18) in response to electrical energisation of the coil (14), and slides in the opposite direction upon de-energisation of the coil in response to the stored energy of the spring (18). The core (8) is connected to an output member (6) by means of a control rod (24) freely slidable through the core (8) and which has an enlarged head (27) against which a second coil spring (28) acts. During inward movement of the core (8) in response to energisation of the coil (14), the core (8) pulls the output member (6) through the intermediary of a second spring (28) and a control rod (24) which is slidable through the core (8) and is fixed to the output member (6). During outward movement of the core (8) in response to de-energisation of the coil (14), an end face (15) of the core (8) pushes on an end face (26) of the output member (6). When the core (8) is at its innermost position, a predetermined amount of play (32) exists between the end (15) of the core (8) and the end face (26) of the output member (6). This allows the core (8) to accelerate before it abuts against the end face (26) of the output member (6).

sation of the coil (14), the core (8) pulls the output member (6) through the intermediary of a second spring (28) and a control rod (24) which is slidable through the core (8) and is fixed to the output member (6). During outward movement of the core (8) in response to de-energisation of the coil (14), an end face (15) of the core (8) pushes on an end face (26) of the output member (6). When the core (8) is at its innermost position, a predetermined amount of play (32) exists between the end (15) of the core (8) and the end face (26) of the output member (6). This allows the core (8) to accelerate before it abuts against the end face (26) of the output member (6).

Fig.2.



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# EUROPEAN SEARCH REPORT

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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                        |                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                    |                                              |
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| A                                                                                                                                                                                                                          | PATENT ABSTRACTS OF JAPAN<br>vol. 008, no. 037 (M-277),<br>17 February 1984 (1984-02-17)<br>& JP 58 193988 A (TAIHEIYOU KOGYO KK),<br>11 November 1983 (1983-11-11)<br>* abstract * | 3,4                                                                                                                                                                                                                                                                                |                                              |
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|                                                                                                                                                                                                                            |                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                    | H01F                                         |
| The present search report has been drawn up for all claims                                                                                                                                                                 |                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                    |                                              |
| Place of search<br>THE HAGUE                                                                                                                                                                                               |                                                                                                                                                                                     | Date of completion of the search<br>25 January 2000                                                                                                                                                                                                                                | Examiner<br>Marti Almeda, R                  |
| CATEGORY OF CITED DOCUMENTS                                                                                                                                                                                                |                                                                                                                                                                                     | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or<br>after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding<br>document |                                              |
| X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another<br>document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                    |                                              |

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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