



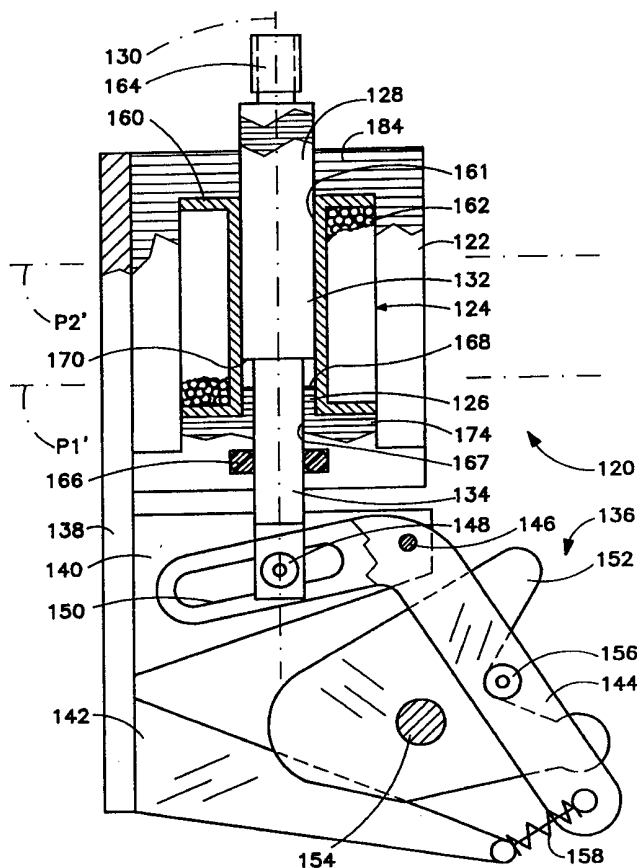
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(21) International Application Number: PCT/US99/00210 (22) International Filing Date: 6 January 1999 (06.01.99) (30) Priority Data: 60/070,807 8 January 1998 (08.01.98) US (71) Applicant: ROBOTECH, INC. [US/US]; 1318 60th Street, Brooklyn, NY 11219 (US). (72) Inventors: LIVSHITS, David; Daniel Hanavi Street 7/6, 77470 Ashdod (IL). MOSTOVOY, Alexander; Aseret Hashvatim Street 2/3, 78680 Ashqelon (IL). KATEV, Georgy; Hahal Oz Street 27/3/2, 68150 Yaffo (IL). SHLIAKHECKIY, Victor; Bialik Street 285/7, 78200 Ashqelon (IL). (74) Agent: SUDOL, R., Neil; Coleman Sudol, LLP, 14th floor, 708 Third Avenue, New York, NY 10017 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. (88) Date of publication of the international search report: 23 September 1999 (23.09.99)	

(54) Title: MAGNET ASSEMBLY WITH RECIPROCATING CORE MEMBER AND ASSOCIATED METHOD OF OPERATION

(57) Abstract

An electromagnetic assembly includes a casing, a solenoid disposed inside the casing, a stationary magnetic core, and a movable magnetic core. The stationary magnetic core is disposed at least partially inside the solenoid and is fixed relative to the solenoid and the casing, while the movable magnetic core is disposed for reciprocation partially inside the solenoid along an axis. The stationary magnetic core, the movable magnetic core, the solenoid, and the casing have rectangular or square cross sections in planes oriented essentially perpendicularly to the axis.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/00210

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H01F7/16 H01F7/08 H01F7/18

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)

IPC 6 H01F

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 192 936 A (NEFF JAMES A ET AL) 9 March 1993 (1993-03-09) column 2, line 56 - column 3, line 31 ---	1,2,12, 14,42, 44-46
X	US 2 595 755 A (GENERAL ELECTRIC COMPANY) 6 May 1952 (1952-05-06) column 3, line 74 - column 4, line 14 ---	1,2,13, 14,42, 44-46
A	EP 0 644 561 A (BINDER MAGNETE) 22 March 1995 (1995-03-22) figures 3-11 --- -/-	2-4,10, 11,42, 45-47

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

29 July 1999

Date of mailing of the international search report

04.08.99

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/00210

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	DE 34 25 574 A (SHARP KK) 31 January 1985 (1985-01-31) page 5, line 12 - page 7, line 9; figure 6A ---	15,16, 27,28, 48-50
A	US 5 523 684 A (ZIMMERMANN DANIEL E) 4 June 1996 (1996-06-04) column 3, line 16 - line 34 ---	16,17
A	FR 1 170 474 A (A.A.L. CHANEAC) 15 January 1959 (1959-01-15) figures 1,2 ---	24,40
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/00210

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ 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: 1-14,18-26,33-47

constructional details of a magnetic assembly

2. Claims: 1,15-17,27-32

energization of a solenoid

3. Claims: 48-62

energy conversion method

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/00210

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