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54 **Electromagnetic contactor with energy balanced closing system.**

57 An electromagnetic contactor or motor controller (10) in which an energy efficient bounceless contact closing operation is utilized. The energy supplied to the armature (40) of the electromagnetic closing coil (31) is such that the armature attains a predetermined velocity during its closing operation which predetermined velocity is approximately sufficient to allow the armature to move to its final fixed closed disposition where the air gap (58) between it and a permanent magnet (86) is reduced to zero at a velocity of approximately zero. One field of use is in the motor starters. An advantage lies in the fact that the present system reduces the required contact closing energy to a minimal amount.

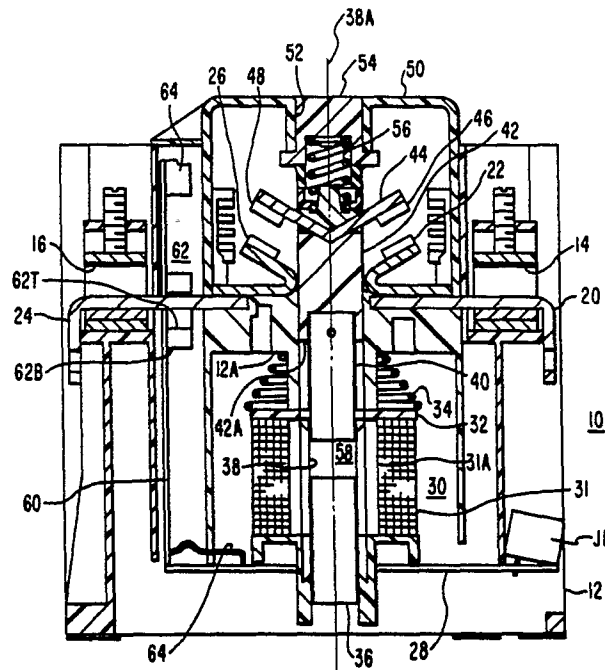


FIG. 2



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| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|--|---|--|---|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int. Cl.4) |
| X | DE-A-2601799 (LICENTIA) * the whole document * | 1 | H01H50/30 |
| Y | --- | 2-5 | |
| Y | US-A-3339161 (J.P. CONNER ET AL.) * column 3, line 24 - column 4, line 31; figure 7 * | 2-5 | |
| X | DE-A-2110071 (BBC) * page 2, paragraph 2 * | 1 | |
| A | DE-A-2511564 (CONCORDIA FLUIDTECHNIK) * page 2, last paragraph - page 3, paragraph 1 * | 1 | |
| A | FR-A-2560429 (TELEMECANIQUE) * page 5, line 4 - line 5 * | 2 | |
| | | | TECHNICAL FIELDS SEARCHED (Int. Cl.4) |
| | | | H01H H01F |
| The present search report has been drawn up for all claims | | | |
| Place of search THE HAGUE | | Date of completion of the search 14 AUGUST 1989 | Examiner OVERDIJK J. |
| CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | | | |