

Title (en)
SELF-HOLDING MAGNET WITH A PARTICULARLY LOW ELECTRIC TRIGGER VOLTAGE

Title (de)
SELBSTHALTEMAGNET MIT BESONDERS KLEINER ELEKTRISCHER AUSLÖSELEISTUNG

Title (fr)
AIMANT DE MAINTIEN PRÉSENTANT UNE PUISSANCE D'EXCITATION ÉLECTRIQUE PARTICULIÈREMENT FAIBLE

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Application
EP 14739699 A 20140620

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Abstract (en)
[origin: WO2014202761A1] The invention relates to a self-holding magnet with a spring (accumulator spring) and a first armature. The self-holding magnet is capable of holding the first magnet armature against the spring force in a lift position which is determined by a stop; the stop thus determines at least the remaining air gap of a working air gap. The magnetic circuit of the self-holding magnet comprises a magnetic shunt which has a particularly low reluctance of the same order of magnitude as the series reluctance of the remaining working air gap(s). The working air gap(s) and the shunt are magnetically connected in parallel in relation to the flow generated by a permanent magnet but are connected in series in relation to the flow generated by the (trigger) coil. The self-holding magnet additionally has at least one of the following three positive feedback devices: (1.) a resilient stop: the stop is capable of compressing to a certain extent and in the process is much more rigid than the accumulator spring but much less rigid than a solid stop made of iron would be, said stop preferably being 100 to 10,000 times more rigid than the accumulator spring; (2.) a shunt which is designed such that a movement of the armature results in a reduction of the reluctance of the shunt in that the self-holding magnet is designed as a reversal lifting magnet, the retaining force which can hold the accumulator spring in a biased manner being generated with as little characterizing influence as possible, and the shunt is designed as an armature/counter armature piece system, wherein energizing the coil in order to trigger the drive (counter excitation) then leads to a reduction of the flow in the air gap without a characterizing influence and to an increase of the flow through the armature/counter armature piece system, the force generated by the latter acting as much as possible in the same direction as the force of the accumulator spring; and (3.) a shunt which is designed such that a movement of the armature results in a reduction of the reluctance of the shunt in that the shunt is provided with a second armature (shunt armature) which is capable of closing the small air gap of the shunt up to a known (even smaller) remaining air gap. The force acting on the shunt armature is transmitted onto the armature of the self-holding magnet by means of a known device, for example a tappet, such that the force acts on said armature in the same direction as the force of the accumulator spring.

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