

Title (en)  
Low cost linear actuator.

Title (de)  
Linearbetätiger mit niedrigem Kostenaufwand.

Title (fr)  
Actionneur linéaire à faible coût.

Publication  
**EP 0494653 A1 19920715 (EN)**

Application  
**EP 92100178 A 19920108**

Priority  
US 64033591 A 19910111

Abstract (en)  
An inexpensive linear actuator compressor motor for cryogenic coolers includes a linear actuator (10) having a unique core (22) with a cylindrical bore (24) disposed through the axial center of the core (22) along the longitudinal axis (26) thereof. The bore (24) includes first and second parallel annular peripheral recesses (34 and 36) circumferentially coaxially disposed about the longitudinal axis (26) thereof to provide first and second cavities (38, 40) therein. The actuator (10) includes first and second pistons (28, 30) located within said bore (24). First and second annular magnets (46, 48) as well as first and second coils (51, 52) are located within the first and second annular cavities (38, 40), respectively. A tap hole is provided for charging air space behind an air gap (50) with a working fluid, e.g. helium. When the coils (51, 52) are energized, magnetic fields are created which interact with the magnetic fields provided by magnets (46, 48) to cause linear motion of the first and second pistons (28, 30). The movement of the pistons (28, 30) is effective to compress the working fluid in the compression space (32). <IMAGE>

IPC 1-7  
**F04B 3/00**; **F04B 35/04**; **H01F 7/16**

IPC 8 full level  
**F04B 27/08** (2006.01); **F04B 3/00** (2006.01); **F04B 35/04** (2006.01); **H01F 7/16** (2006.01); **H01F 7/122** (2006.01)

CPC (source: EP)  
**F04B 3/00** (2013.01); **F04B 35/045** (2013.01); **H01F 7/1646** (2013.01); **H01F 7/122** (2013.01); **H01F 2007/1692** (2013.01)

Citation (search report)  
• [Y] FR 1258407 A 19610414 - CHAUSSON USINES SA  
• [Y] US 2054097 A 19360915 - REPLOGLE JAMES B

Cited by  
EP0774630A4; EP2421012A1; EP2111626A4; EP0620367A1; US5944302A; US8360749B2; US6460347B1; WO9410741A1; US8529225B2; WO2009076734A1; JP2003527537A

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DE FR GB

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