

Title (en)
Laboratory freezer appliance.

Title (de)
Gefriergerät für Laborzwecke.

Title (fr)
Appareil de congélation pour laboratoire.

Publication
EP 0454491 A2 19911030 (EN)

Application
EP 91303808 A 19910426

Priority
US 51476890 A 19900426

Abstract (en)
A laboratory freezer appliance providing a usable storage space on the order of 5 to 20 cubic feet (0.14 to 0.57 cubic metres) capable of storage temperatures of -160 DEG C and lower including an insulated freezer chamber (12), heat transfer tubes (60) in proximity to the freezer chamber (12) carrying liquid argon at ultra-low temperatures which absorbs heat from the freezer chamber (12) thereby vaporising the argon in the heat transfer tubes (60); a closed cycle, hermetically-sealed free piston Stirling cycle heat pump (20) providing a cold end (32) above a vertical displacer (154) driven by a linearly reciprocating piston at a temperature differential to the freezer chamber (12) of about -13 DEG C; a condensing chamber (90) surrounding the cold end (32) of the heat pump (20) for condensing argon vapour to the argon liquid; and a distributor (70) for distributing liquid argon from the condensing chamber (90) to the heat transfer tubes (60) and returning argon vapour to the condensing chamber (90), all without mechanical pumping of the argon, in a continuous, closed cycle refrigeration system.

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F25B 9/14; **F25B 25/00**; **F25D 11/04**

IPC 8 full level
F02G 1/043 (2006.01); **F25B 9/14** (2006.01); **F25B 25/00** (2006.01); **F25D 11/04** (2006.01); **F28D 15/02** (2006.01); **F25B 23/00** (2006.01); **F25D 23/00** (2006.01)

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Cited by
EP1167900A1; US6758056B1; EP1312875A4; EP1255087A1; EP1016701A3; US6442959B1; US6363727B1; WO2004029526A1; US6751963B2

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