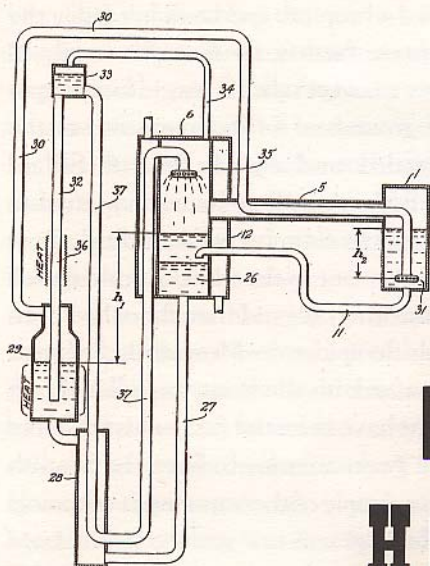

HAVE PERFECT TIMING



This patent drawing depicts a refrigerator design that utilizes electromagnetic energy to circulate a coolant. Result: a fridge that is safe, but very loud.

**LEO
Szilard
and
ALBERT
Einstein's
HOWLING
REFRIGERATOR**

.....
1898-1964
and
1879-1955
.....

The two physicist inventors, Szilard and Einstein, put together their knowledge of thermodynamics, and their big hearts, to develop numerous refrigerator designs that were safe. Eventually, they settled on three designs that represented alternate methods of achieving cooling in a refrigerator based on different principles: absorption, diffusion, and electromagnetism. All of these had one thing in common — the absence of moving parts, for it was this feature that the dynamic duo considered to be the root of the refrigerant leak problem. Moving parts require bearings and seals, and these things inevitably wear out. The pair wasted no time, and in the fall of 1926, the patent filing began. There were to be 45 refrigerator-related patents in all.

One early design was an improvement on an Electrolux model already on the market, which they considered to be the best available. This model was one of a group that used heat from a flame (e.g., gas or propane) to drive the cooling system, rather than a piston. Heat from a flame drove the expansion of the gas that led to the transfer of heat from the air to the coils. Einstein and Szilard felt this so-called absorption refrigerator, and others like it, were safer. In their new and improved design, a heat source drove butane through a series of chambers and tubes. Pressure was decreased by the presence of ammonia to reduce the boiling point of the butane. In a chamber in the presence of ammonia, the butane vaporized, drawing heat from its surroundings. The gaseous mixture then traveled to another chamber that had water in it. The water dissolved the ammonia, and the now liquid butane was recirculated.

In 1926, Szilard began approaching companies with their absorption refrigerator design, and he instigated work on the building of prototypes at the Institute of Technology in Berlin. There were three early customers. One company, Bamag-Meguinn, did not remain in the venture long due to external issues. A Swiss arm of Electrolux bought a patent for an absorption refrigerator for the equivalent of \$750, about \$10,000 in today's dollars, and all parties thought they had a good bargain. As it turns out, Electrolux did not act on the patent; it appears instead that they were eliminating