

Why are safety reliefs installed on all cryogenic liquid oxygen, nitrogen, argon or carbon dioxide fill hoses?

Safeties are not only installed on fill hoses. They are also installed on any cryogenic line that is sealed on both sides. This is because cryogenic liquid trapped in a line will vaporize and expand exponentially, creating tremendous pressure in hoses, piping or tubing. This expanding liquid nitrogen, oxygen, argon, or CO₂ can easily build enough pressure to cause the line or hose to explode with great force.

This is a danger that is easily overlooked and one that is not obvious to someone without prior knowledge or training.

Whether you are filling medical oxygen bases, transferring liquid from one DOT4 vessel to another, or otherwise filling from a bulk source, it is essential to have a relief for expanding vapor.

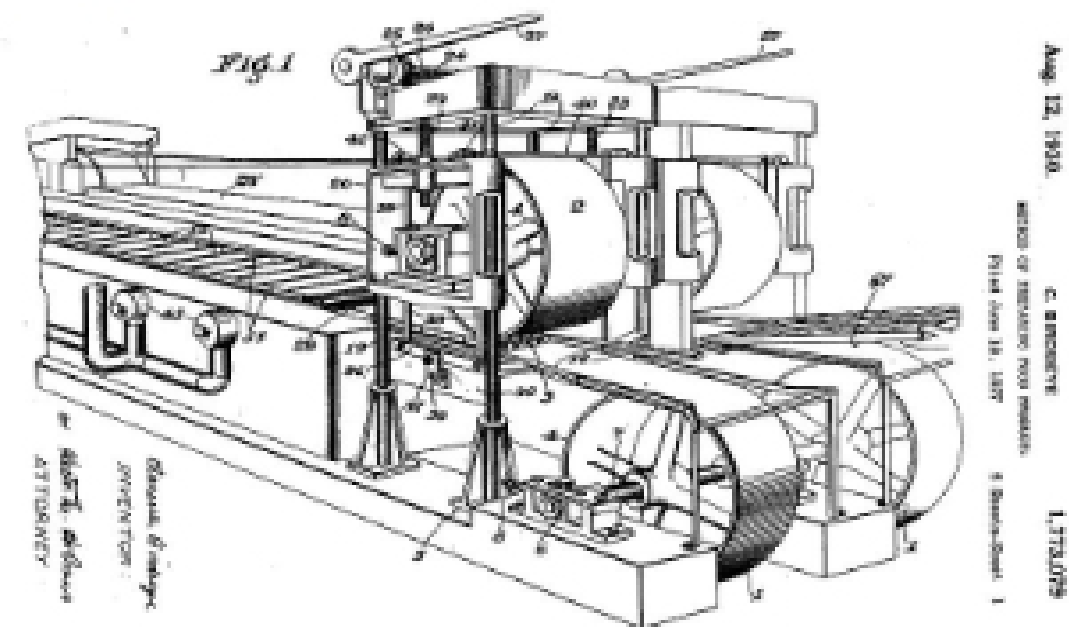
Never forget to be sure the hose you are using to fill has a properly rated safety relief installed somewhere between the valves or other connections that could trap liquid!

<http://cryonews.blogspot.com/>



Clarence Birdseye

- Designer of freezing equipment, father of frozen food industry in US
- 1912-15, field naturalist for US Biological Survey in Canada, saw Eskimos place fresh fish on ice, expose to wind, freeze solid. Fish thawed and eaten much later retained all fresh characteristics (flesh quality, taste)
- Realized flash freezing prevented formation of large crystals, no damage to cellular structure of food
- Worked to perfect freezing methods from 1917 - 1925
- Patent for wax-packing dressed foods in cartons were frozen between two flat refrigerated surfaces under pressure
- 1930 First retail sale of frozen foods, Springfield MA
- Contracted production of retail display units for grocery stores
- Held 300 patents



Invention of the Bubble Chamber

- Invented by Donald Glaser in 1952
 - Glaser won the Nobel Prize in Physics for this in 1960
 - Glaser was POSSIBLY inspired by bubbles in beer
- Vessel filled with a clear, superheated liquid
 - Normally filled with Liquid Hydrogen because of its simplicity and low interference with the high-energy process being studied
- Used to detect electrically charged particles
 - The device uses a piston in a chamber to decrease pressure resulting in bubbles forming. The bubble density is proportional to a particle's energy loss.
 - Chamber is in a magnetic field to force the charged particles to move in a helical path.
- Led to the discovery of weak neutral current, establishing the electroweak theory
- Being replaced by wire chambers and spark chambers.

