

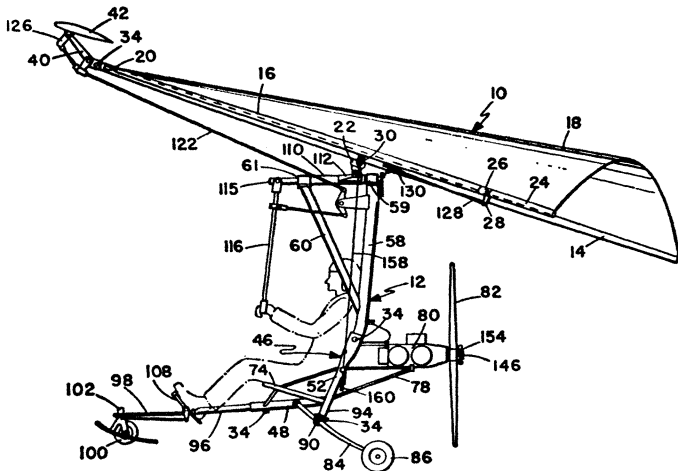
current patents

AERONAUTICS

Fold-Up Flying Machine

An airplane that fits in the back of a station wagon won a patent last week for two engineers at Ryan Aeronautical Co.

The lightweight, folding plane was originally designed for the military as a rescue craft for downed pilots, according to Peter F. Girard, who developed the concept



with Fred Landgraf. But its versatility and portability make it a good prospect for the civilian market, he says.

The plane has a speed of about 75 miles per hour, and can take off within 100 feet, according to Girard. By pulling a few pins it can be dismantled into a half dozen pieces, each of which can be carried by one man. The whole plane weighs about 175 pounds empty, and has a range of 50 to 100 miles.

Main feature of the design is a flexible, folding wing with triangular panels fastened to a rigid keel and leading edges. A small canard wing similar to that added to the design of the mammoth Boeing SST adds stability and quick control to the midget plane, any part of which can be fitted through a porthole 25 inches in diameter.

Development of the plane for civilian use will have to wait until the pressures of the Vietnam war ease, according to Girard.

Patent 3,361,388.

NUCLEAR POWER

Keeping Fuel Particles Intact

Nuclear fuels produce radioactive wastes as well as heat; disposing of them is a major problem.

A new way of enclosing fuel in particles so that the fission product wastes remain within the particle coating, patented last week, should eliminate the need for costly fuel element purging systems in gas-cooled reactors.

The fuel particles, developed by Jack C. Bokros and Alan S. Schwartz of Gulf General Atomic, surround the fuel, thorium and uranium, with an interior layer of spongy, soot-like carbon that can absorb gaseous fission products without expanding and cracking the hard pyrolytic graphite outer coating which protects the particle.

54/science news/vol. 93/20 january 1968

The new particles are being tested in General Atomic's Peachbottom, Pa., plant (SN: 11/25/67) and are being planned for the much larger reactor at Fort St. Vrain, Colo. The patent was assigned to the Atomic Energy Commission.

Patent 3,361,638.

SPACE ENGINEERING

Pump Keeps Gyros Level

Space vehicle control requires gyroscopes to sense changes in direction. The gyros have to be kept immovable within their containers, so that only movement of the whole container will cause an output signal.

A fluid suspension system eliminates the need for complicated bearings and pivots, but the fluid has to be pumped through the gyro housing at a constant pressure to eliminate movement.

A high-speed pump that eliminates pulsating movement in the suspension fluid was patented last week by Robert F. Anderson of Honeywell, Inc. The pump uses a piezoelectric crystal that changes shape in response to an electric signal. The pump runs off the same high-speed source that drives the gyro rotors, thus saving an additional component, says Anderson.

The patent was assigned to the National Aeronautics and Space Administration.

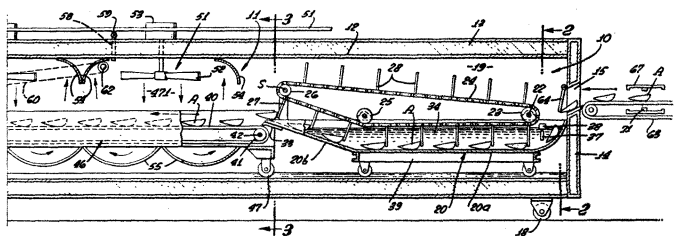
Patent 3,361,067.

FOOD PROCESSING

Liquid Nitrogen Freezes Avocados

Avocados don't keep well, which makes them expensive in off-season. They also don't freeze well, using ordinary techniques. Texture, color and flavor all suffer.

A new technique, using liquid nitrogen at minus 320 degrees F., has successfully frozen avocado halves,



which are now being distributed to hotels and other institutions in the country.

The nitrogen technique, patented last week, was developed by Walter E. Hirtensteiner of Poway, Calif.

One drawback to liquid nitrogen freezing is that the liquid in the fruit forms large ice crystals, causing cracking and splitting. Under the new technique, the avocado halves are frozen on the surface by a brief application of liquid nitrogen, then frozen all the way through more slowly with cold gaseous nitrogen as it boils off.

Small surface cracking which still occurs under the liquid nitrogen treatment can be eliminated by sprinkling the avocados with water or, preferably, with dilute lemon juice, which acts as a preservative in addition, according to Hirtensteiner.

Patent 3,361,578.