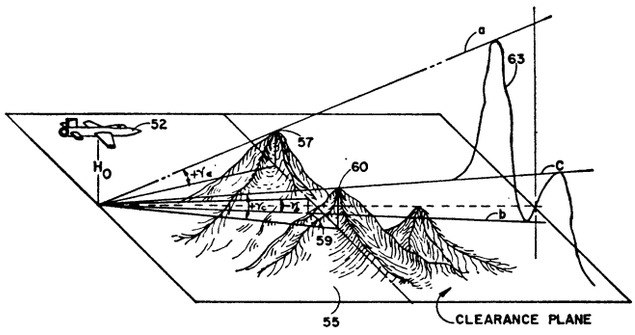
Current Patents

3-D Radar for Mountain Dodging

With enemy radars scanning the skies for attacking airplanes, it has become standard practice for intruders to "come in on the deck"—at heights of around 50 feet —to slip under the defenders' radar beams.

This brings its own dangers, especially in night operations, since even a well-trained pilot has great difficulty in avoiding hills and other obstacles at speeds ranging to 1,000 miles an hour or more. A split-second error can mean instant annihilation.

To aid pilots, electronics engineers have built radar systems that continuously display the location and distance of obstacles on a screen in the cockpit, providing more accurate information than the pilot's own eyes could give him.



Ordinarily, the pilot sees a series of blips that tell the direction and distance of obstacles. To determine the height of an oncoming mountain, however, he would have to turn to another screen.

A way of producing a three-dimensional picture of the route ahead on a standard terrain-avoidance radar without extensive modifications was patented last week by Algimantas H. Kazakevicius, Forest J. Dynan and Jerome M. Page. They assigned the patent to North American Aviation, Inc.

Under the new system, the pilot sees, not blips, but rough outlines of the obstacles in his path. A cross-sectional outline at the top of the display shows which obstacles he will clear and which he must fly around.

PATENT: 3,333,263

Satellite Antenna Aiming System

One of the better ideas for stabilizing satellites in orbit was to make them dumbell shaped so that gravity, pulling more on one end than the other, would keep that end permanently pointed at earth.

The idea works, but the satellites still wobble slightly due to forces as weak as the pressure of light, making it difficult to keep fixed antennas aboard properly aimed.

It would be simple to incorporate antenna-aiming devices in the satellites, but the resulting mechanical forces would easily overwhelm the weak force of gravity and upset the satellites' equilibrium.

One solution, patented last week by Friedrich Vilbig of Munich-Solln, Germany, is to use an entirely electronic aiming device in the antenna.

Four horn antennas, with infrared sensors mounted on them, bounce microwaves off a standard parabolic reflector. Power to each of the horns varies as the sensors, peering around the edges of a disk, see varying amounts of earth. This results in more of the radio energy being sent off in one direction than another, exactly compensating for the satellite's motion.

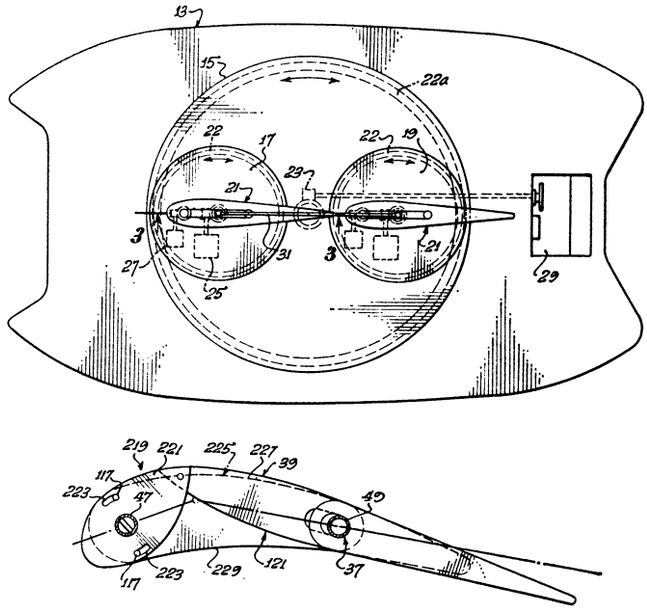
PATENT: 3,333,269

Sailless Sailboat Sails Backwards

The design of sailboats has been largely standard for hundreds of years—a slim hull with cloth sails hung on one or more masts.

A design that has neither sails, masts nor ropes but substitutes two swiveling airfoils that look much like the vertical part of an airplane's tail was patented last week by Edward M. Wright of Reseda, Calif.

The boat, a catamaran, could be reversed by simply revolving the twin airfoils to push in the other direction,



according to the patent. Its operation depends on the airfoils which can be cambered—bent—in two directions, unlike most airfoils—airplane wings, for example —which have a fixed shape.

The bendable airfoils could also be used as aircraft wings, creating variable lift or, perhaps, eliminating the need for control surfaces such as ailerons, the inventor says.

PATENT 3,332,383