

INVENTION

Current U. S. Patents

A missile that can be launched from under the sea has been developed, eliminating the need for a complex launching pad and the danger from explosion.

➤ A READY-TO-BE-LAUNCHED missile that hangs underwater from a balloon floating on the top of the water received a patent from the U.S. Patent Office in Washington, D.C.

Launching the missile from under the sea will do away with the expensive and complex rocket launching pad, reports the inventor, Navy Cmdr. John Emery Drain, Sanford, Fla. The mass of the water surrounding the sides of the missile will act as semi-rigid launch rails, replacing such equipment as fuel and oxidizer storage facilities, cryogenic systems, concrete launching pads, large steel gantries and armored block houses, he said. This equipment often costs as much as five times as much as the missile itself.

In addition, launching the missile in the water is much safer for personnel, since any explosion due to a malfunctioning in the missile will be absorbed by the surrounding water, he said.

Cmdr. Drain was awarded patent 3,180,225 for his underwater missile launching system in which a missile can be shot out of the water regardless of the size of the waves. The missile, which almost floats because it has a specific gravity close to that of water, is held in vertical position by a dampener plate at the bottom end. The balloon, connected to the missile by a line, floats the entire apparatus in the water until launching.

Patent rights to the suspended water-launched missile were assigned to the Government through the Secretary of the Navy.

Using the sea as a rocket launch site was first studied by Cmdr. Drain and two Navy co-workers, Lt. Cmdr. Charles Stalzer and Lt. Cmdr. James Keihner. In an early simulation test in the late 1950s, the three men actually launched a telephone pole from a lagoon in Point Mugu, Calif.

Tennis Trainer

A tennis player can practice his serves with a newly patented training device that quickly returns the tennis balls.

The device consists of a large concave-shaped netting mounted on a stand. Attached to the stand in front of the netting is a ball-returning panel, which has a horizontal strip several inches high across its middle.

When the player wishes to practice, he removes the strip, leaving an opening which is set at a height equivalent to just above the upperside of a tennis net. He then tries to hit the ball through the opening. If the ball hits the panel in front, it bounces back to the player. If it misses the panel or goes through the opening, it hits the netting

behind, rolls down the netting and back to the player.

The trainer earned patent 3,180,643 for Oskar Kallai, North Brabant, The Netherlands.

For a list of registered patent attorneys and agents and other Patent Office information, writes the Commissioner of Patents, Washington, D.C. 20231, or call 202-967-4058 for specific information.

• Science News Letter, 87:319 May 15, 1965

ENGINEERING

Bridge Floors Tested In Refrigerated Rooms

➤ A REFRIGERATED ROOM will soon be helping engineers observe the damaging effects of ten long winters in two short weeks.

The room, which will be 12 feet square and 7 feet high, will be used to find out why bridge floors deteriorate under the effects of winter weather and deicing chemicals. In the room, sections of bridge floors will be frozen and thawed, soaked and dried and dosed with salt and other chemicals while undergoing constant load or repeated loads simulating traffic.

The chamber, financed by a \$200,000 contract from the Highway Research Board, Washington, D.C., is to be built at the University of Illinois, Urbana.

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