

Current Patents

WEAPONRY

Death-dealing Cable

An array of bizarre weapons received patents last week, including a hollow cable that could be used to bombard an enemy with smoke, poison gas, bacteria, napalm, thermite or high explosive.

An explosive cord inside the cable would be detonated to rupture it and free the contents. A fuze at each end of the cable would ensure its going off even if it were severed, "accidentally or otherwise," according to the inventors.

The best way to use the cable, the inventors believe, would be to fly over a target and unreel it from spools in 500- or 1,000-foot lengths. By laying down several parallel cables and then crossing them with several more at right angles, "an unbroken curtain of fire, smoke or a toxic or incapacitating agent" could be produced.

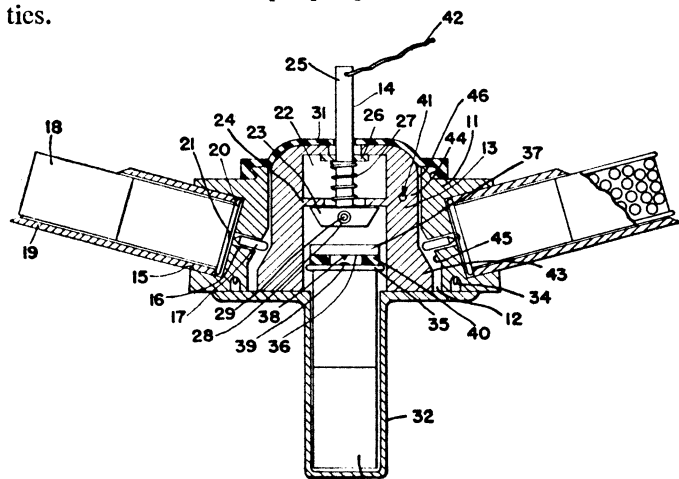
As protection against unexpected attack, the cable could be deployed from trucks, jeeps or tanks around the perimeter of a campsite. Because of the precision with which it can be deployed, the cable could also be used to selectively destroy bridges, buildings and other objects.

The inventors, Nicholas W. Brett, Baltimore, and Royale R. Crabtree, Towson, Md., assigned rights to patent No. 3,320,881 to the Army.

WEAPONRY

Mine Uses Shotgun Shells

The trouble with the conventional antipersonnel mines that are buried in a pathway to await an unsuspecting passerby, says another inventor, is that you can't predict their "effective casualty area." This term refers to the area in which half the people present will become casualties.



The reason, according to Robert J. Carlson of Somerville, N.J., is that most of the damage from such mines is caused by irregular metal shrapnel from the mine casing, which flies in unpredictable directions and has "obviously poor ballistic characteristics."

Carlson's solution is a mine that has no casing at all. It uses a ring of ordinary shotgun shells to produce "a predictable 360-degree effective casualty area." Half a dozen or more 10- or 12-gauge shells could easily be carried by troops, especially guerillas, who cannot afford the weight of a conventional armored casing.

Carlson's mine was granted patent No. 3,320,880; he assigned rights to the Army.

WEAPONRY

Ring-shaped Warhead

A missile warhead in the form of a continuous ring that expands rapidly when the missile explodes, mowing down everything in its path, was granted patent No. 3,320,888.

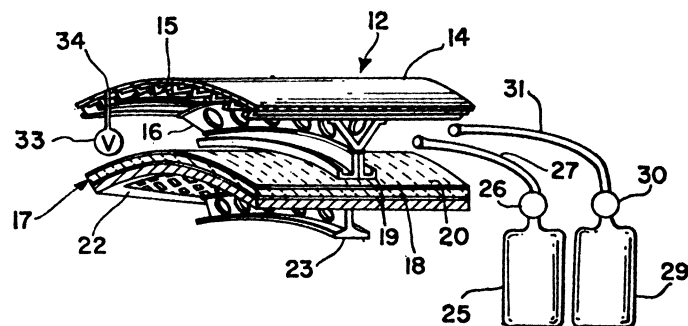
Wrapped around a high-explosive core, the ring is formed of segments arranged like those in the cross-hatch safety gates often used in homes with young children. Until the warhead detonates, the segments are almost parallel, gathered tightly around the missile. The force of the explosion causes the segments to unfold at speeds of several thousand feet per second.

An early version of the idea suffered from joints that often broke in the explosion, leaving gaps in the ring that reduced its effectiveness. Improved joints are one major difference in the current patent, assigned to the Navy by Frank F. Churchill of Dahlgren, Va.

CRYOGENICS

HST Fuel Cooler

One of the major problems facing the hypersonic aircraft of the future (SN: 6/3), as well as some of today's space rockets such as the Centaur, is keeping the liquid hydrogen fuel cold enough (minus 423 degrees F.) when the temperature of the vehicle skin is up in the thousands of degrees.



One past technique has been to use fuel tanks with an inner and outer wall, with the space between the walls filled with a noncondensable gas, usually helium. Unfortunately, the helium raises the thermal conductivity of the insulation, which necessitates a greater weight of insulation to keep the hydrogen in its liquid state.

A potential solution has been patented by Liam R. Jackson of Newport News, Va., who assigned rights to patent No. 3,321,159 to the National Aeronautics and Space Administration.

Jackson proposes that the space between the tank walls first be purged with helium to force out any air or vapor. Then carbon dioxide is let in from an on-board supply. The tank is next filled with liquid hydrogen, which causes the carbon dioxide to form an insulating frost on the outside of the inner tank wall. Nitrogen gas, which would liquefy if not for the frost shield, is then added from another on-board supply to purge everything but the frost from the between-wall space, without producing the conductivity-raising effect of helium.