

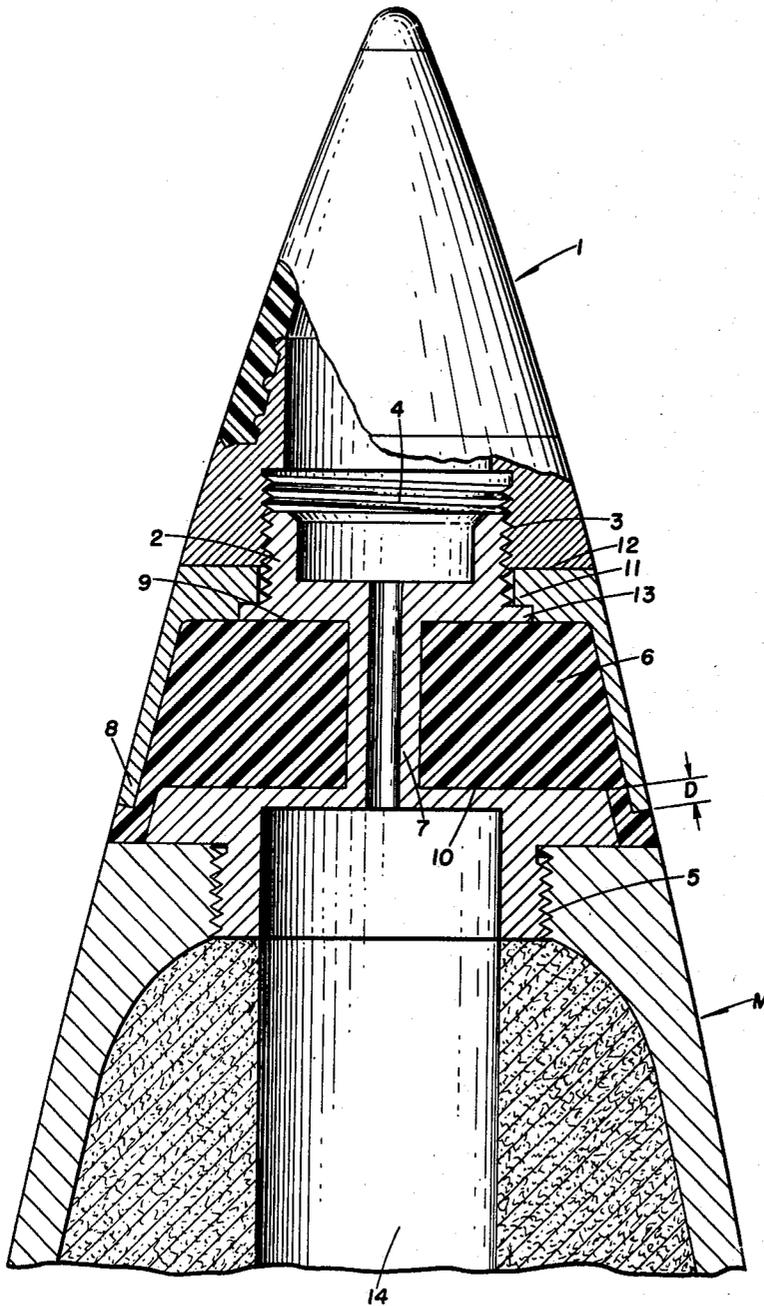
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J. H. KUCK ET AL

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PROJECTILE CHOKE

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INVENTORS.
JOHN H. KUCK
JULES H. SREB
BY
G. D. O'Brien
ATTORNEY

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PROJECTILE CHOKE

John H. Kuck, Silver Spring, Md., and Jules H. Sreb, Washington, D.C., assignors to the United States of America as represented by the Secretary of the Navy

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8 Claims. (Cl. 102—70.2)

The present invention relates to a tuned radio-frequency choke which is to be used with a proximity fuze, when the latter is applied to a missile that includes a rocket or equivalent propelling agent.

It is well known that the hot gases emitted from a rocket, a ram jet or the like, are ionized and therefore in effect constitute a conductive extension of the rocket etc. from which they emanate. Thus the radiation resistance of the latter is increased and also caused to fluctuate irregularly, disturbing the amplitude of oscillations generated by the proximity fuze. This effect is usually referred to as "burning noise" and may cause erratic operation and/or misfiring of the fuze, such as premature actuation thereof.

An object of the invention is to provide means for preventing such effects, and this object is accomplished by decoupling the fuze from the body of the missile, by interposing a special choke between them.

Other objects and many of the attendant advantages of this invention will be appreciated readily as the same becomes understood by reference to the following detailed description, when considered in connection with the accompanying drawing, the single figure of which illustrates the structure.

In said drawing, 1 represents the proximity fuze, which may be of any conventional or modified construction. Normally, such fuzes are screwed directly to the shells or other missiles, but here the fuze 1 is secured instead to a special adapter 2 which has threads 3 at its forward end to fit into the threads 4 of the fuze, while at its rear end the adapter has threads 5 to fit in the missile M, the forward end of which is indicated.

The adapter 2 has a central tubular column 7, and a frusto-conical shield 8 spaced from said column surrounds it as shown, thus defining an annular chamber 6 between the tube 7 and the frusto-conical shield 8, and the two end walls 9 and 10 of the adapter. The shield 8 has an inwardly extending flange 11 which slips over the threads 3 and is secured accurately in position between the rear end surface 12 of the fuze 1 and the forward surface of a flange 13 formed on the adapter 2.

The tube 7 provides a passage for the electrical conductors which connect the proximity fuze 1 to the battery, detonator etc., not shown, located to the rear of the wall 10, in a cavity 14 formed in the missile M, in the usual way.

The annular chamber or cavity 6 must of course be of proper dimensions to constitute a choke at the frequency of the oscillations produced by the circuit in the proximity fuze 1, thus substantially isolating the fuze from the body of the rocket, ram jet, etc., and preventing fluctuations of the radiation resistance or the capacitance of the latter from influencing the oscillators in any way.

Preferably the cavity 6 formed within the shield 8 will be filled with a plastic material having suitable dielectric and insulating properties, as well as good mechanical strength, for example, polyethylene. The amount of overhang D of the rear end of the shield 8 affords a certain degree of control of the impedance of the choke, since this overhanging portion, of length D, provides a capacitance with respect to the adjacent rear flange of the

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adapter 2. In this way the frequency for which the choke is effective may be predetermined.

It is desired particularly to point out that, by the use of the present invention, it will not be necessary to utilize a geometric quarter-wave choke for the frequency at which the fuze is to operate.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. In a missile having a proximity fuze, means electrically isolating the fuze from the missile comprising a tuned choke interposed between the fuze and the missile, said choke including a central column, a pair of spaced-apart flanges on said column, a shield connected to one of said flanges and extending in spaced insulated relation to the other of said flanges to define an annular cavity.

2. In a missile having a proximity fuze, means electrically isolating the fuze from the missile comprising a tuned choke interposed between the fuze and the missile, said choke comprising a conductive member having an annular cavity therein.

3. In a missile having a proximity fuze, means electrically isolating the fuze from the missile comprising a tuned choke interposed between the fuze and the missile, said choke comprising a conductive member having an annular cavity therein, said cavity being filled with a solid dielectric.

4. In a missile having a proximity fuze, an adapter mechanically connecting said fuze to the missile, said adapter having a centrally located passage therethrough to accommodate the electrical connections leading to the fuze, and an annular cavity in said adapter rendering said adapter substantially non-conducting at the operating frequency of the fuze.

5. In a missile having a proximity fuze and a body portion, an electrical choke securing said fuze to said body portion, said choke including a central column, a pair of spaced-apart flanges, and a frusto-conical shield attached to one of said flanges, said fuze, choke and missile jointly defining a stream-lined outer surface.

6. In a missile having a proximity fuze, an electrical choke connecting said fuze to the body of the missile, said choke having a central column, a pair of spaced-apart annular walls, and a substantially frusto-conical outer surface, constituting a continuation of the surfaces of fuze and missile.

7. An electrical choke for insertion between the fuze and body of a missile, said choke comprising a central column, a pair of spaced-apart flanges and a shield defining an annular cavity filled with a dielectric, and confined between conductive surfaces.

8. An electrical choke for insertion between the fuze and body of a missile, said choke comprising a central column, a pair of spaced-apart annular flanges, a frusto-conical shield connected to one of said flanges and extending in spaced telescoping relation to the other flange with an annular slot that constitutes a gap in its electrical circuit, the surfaces defining said gap providing a capacitive connection across the gap.

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