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C. J. CUSTER ET AL

2,995,089

ANTENNA FOR PROXIMITY FUSE

Filed Oct. 31, 1949

Fig. 1.

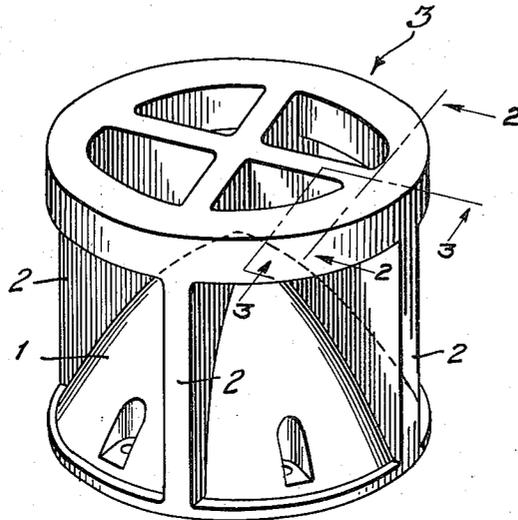


Fig. 2.

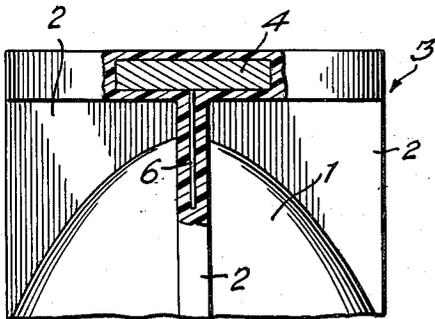
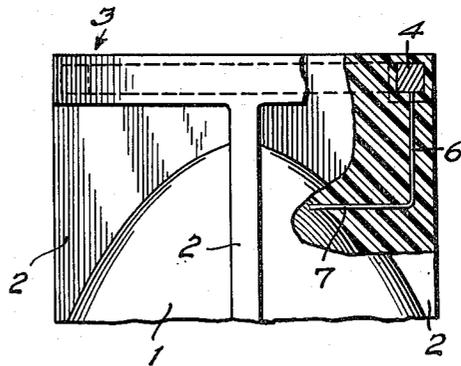


Fig. 3.



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ANTENNA FOR PROXIMITY FUSE

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1 Claim. (Cl. 102—70.2)

This invention relates to an antenna for a proximity fuse of the type which is mounted on the nose of a missile such as a bomb.

A known type of electric proximity fuse is provided with a ring antenna, as shown, for example, in Research Paper RP 1723, vol. 37, July 1946, of The National Bureau of Standards, pages 5 and 6. This is an exposed circular antenna rigidly mounted on the nose of the fuse so that it projects out ahead of the missile. This type of antenna is in general quite satisfactory, but it has been found that under some conditions fuses so equipped do not function satisfactorily. We have ascertained this to be caused by detuning of the tuned circuit, apparently caused by a layer of dirty water on the body of the missile. This is believed, to in effect, extend the missile body closer to the antenna ring, thus greatly increasing the antenna to counterpoise (body) capacity.

It is a primary object of our invention to correct this situation by providing an improved antenna and nose cap construction for the proximity fuse, in which the antenna is molded into a thick layer of plastic insulating material. This greatly reduces the capacity variation between the dry and the wet condition, because the capacity between the ring and any conducting or semi-conducting layer of moisture will decrease as it is moved further from the surfaces which can be affected thereby.

The specific nature of the invention, as well as other objects and advantages thereof, will clearly appear from a description of a preferred embodiment as shown in the accompanying drawing, in which:

FIG. 1 is a perspective view of a combined nose cap and antenna according to our invention;

FIG. 2 is a sectional view taken on line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken on line 3—3 of FIG. 1.

Referring to the drawings, the device is provided with the usual rounded nose cap portion 1, of a suitable

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molded plastic, such for example as Lucite. Holes 12 are provided in the cap 1 to enable mounting on the nose of a fuse. Integral with cap portion 1 are upstanding fins 2 which support ring 3, all integrally molded of the same material. Imbedded in ring 3 is antenna 4, also of ring shape, and having a lead 6 running from the antenna 4 inside one of the fins 2 and then bending at right angles as at 7 so that a free end thereof extends into the nose of the fuse for connection to the electric circuit thereof. It will be evident that the complete device may be molded in one simple operation to provide an inexpensive constant-capacity antenna which is free from undesirable detuning under practical conditions encountered in service.

It will be understood that the invention is not limited to an antenna of the precise shape and configuration shown, but may be constructed to provide an antenna of any suitable shape within the scope of the appended claim.

We claim:

A constant capacity ring antenna device adapted to be mounted on the nose of a proximity fuze missile, said ring antenna device comprising in combination: a plastic rounded nose cap portion having holes therein to enable mounting on the proximity fuze nose; upstanding plastic fins integral with said cap portion and extending transversely forward thereof; a plastic ring integrally supported on said fins and projecting out ahead of said cap portion; a ring antenna completely embedded in said plastic ring; and an antenna lead transversely running from said antenna inside one of said fins and then bending at right angles through said nose cap portion so that the free end of said lead can be electrically connected to said fuze; said cap portion, said fins, and said ring being integrally molded of the same plastic material with said ring antenna and said lead embedded therein.

References Cited in the file of this patent

UNITED STATES PATENTS

2,316,623 Roberts ----- Apr. 13, 1943
2,425,558 Ohlendorf ----- Aug. 12, 1947

OTHER REFERENCES

Generator Powered Proximity Fuze, Huntoon et al., "Electronics," December 1945.
Proximity Fuzes for Artillery, Selvidge, "Electronics," February 1946.