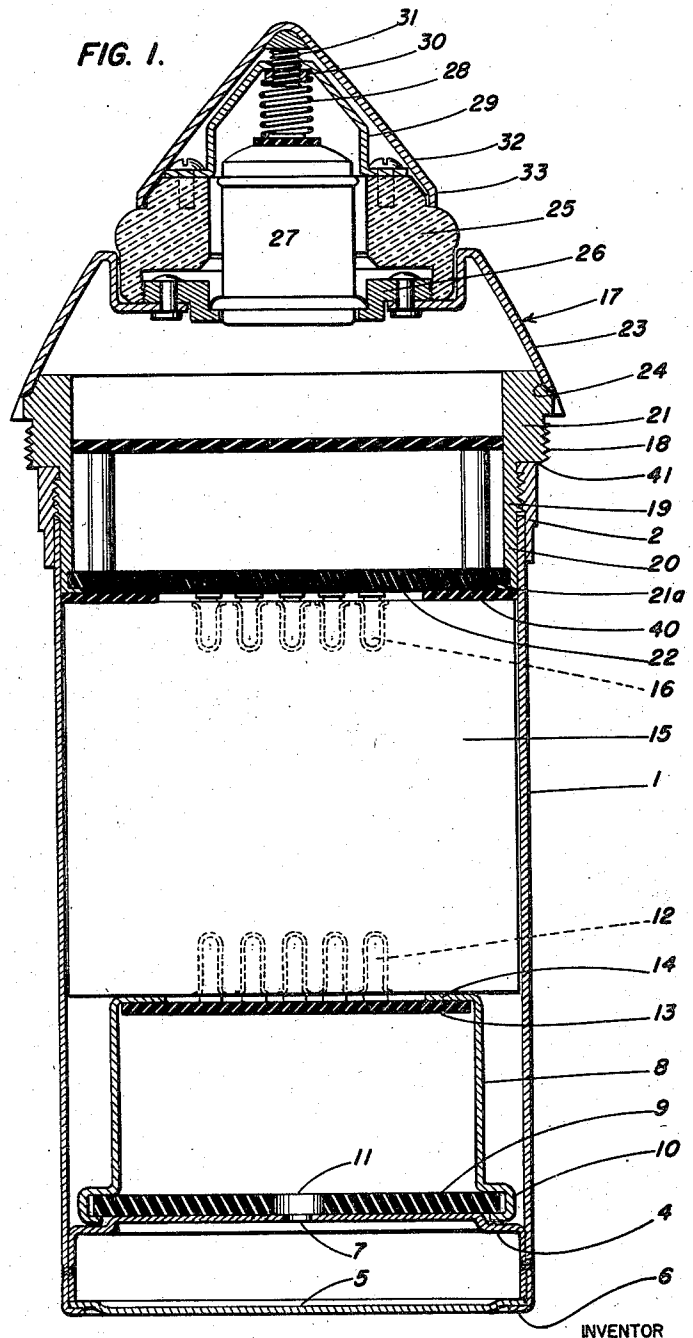
April 21, 1959 C. B. CRANE 2,882,822

FUZE HOUSING

Filed Jan. 5, 1944 2 Sheets-Sheet 1

FIG. 1.



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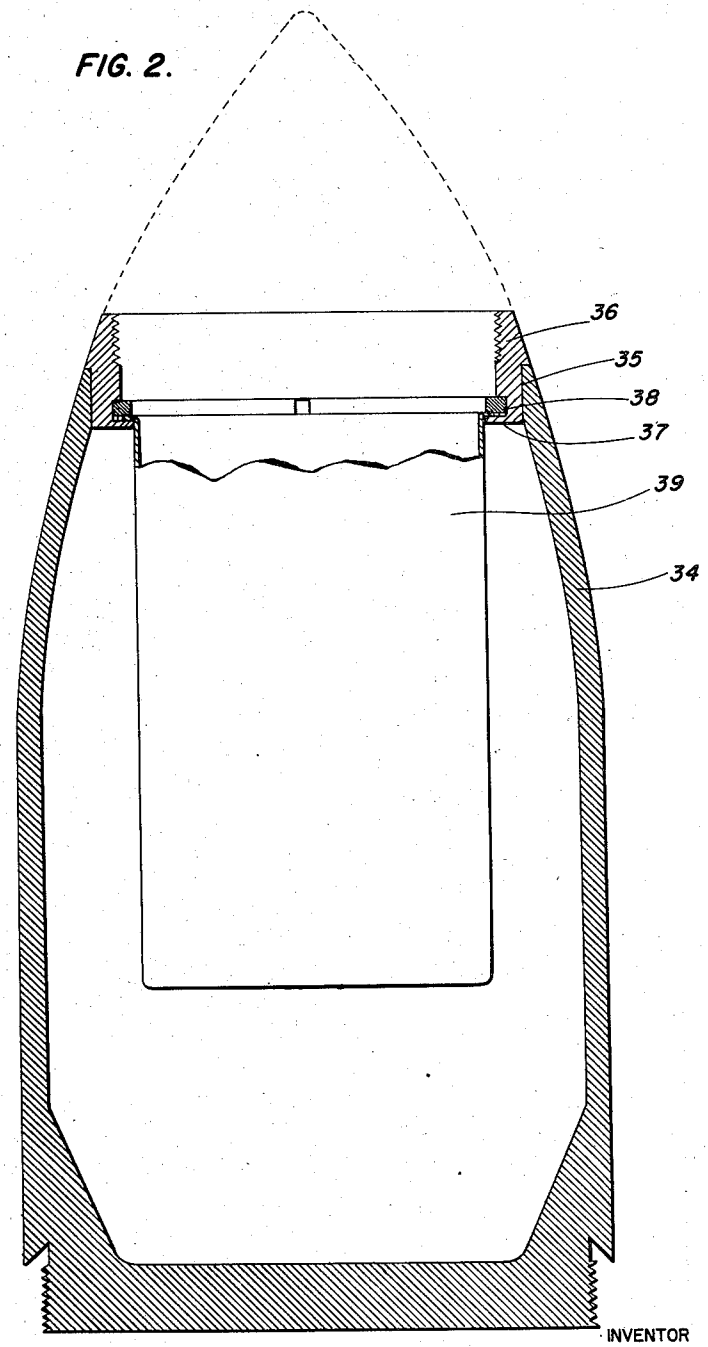
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FIG. 2.



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FUZE HOUSING

Clarence B. Crane, Oshkosh, Wis., assignor to the United States of America as represented by the Secretary of the Navy

Application January 5, 1944, Serial No. 517,051

2 Claims. (Cl. 102—70)

(Granted under Title 35, U.S. Code (1952), sec. 266)

This invention relates to fuzes, and particularly to housings therefor, including improved mechanical features of construction.

An object of the invention is to provide a fuze housing of simple and cheap construction, yet of sufficient strength and rigidity to be used in rapidly accelerated projectiles.

Another object is to provide a unitary fuze housing that can be readily assembled and which will hold the principal fuze parts in compact manner.

A further object is to provide an improved fuze structure and fuze housing suitable for use in fuzes having parts which must be effectively sealed against atmospheric moisture, yet which is easily assemblable and disassemblable.

Other objects will be apparent to those skilled in the art from a consideration of the entire disclosure hereof.

In the drawings:

Fig. 1 is a longitudinal diametric section of a fuze incorporating the principles of the present invention.

Fig. 2 is a longitudinal part-sectional view of a fuze of alternative construction.

In Fig. 1, unit can 1 has internally threaded, relatively heavy lip ring 2, welded to and projecting from its forward end. Booster cup 4 is welded to the inside surface of unit can 1 at its trailing end as shown; and forms a base member for the can unit. Cap 5 is placed over cup 4 and rim 6 is spun or pressed over the perimeter of cap 5 in order to hold it tightly in place as a closure, the rim being integrally formed of the material of can 1, as shown.

Central opening 7 is provided in cup 4, as indicated, so that a passage will be provided to the tetryl or other booster charge which is placed in cup 4 in any convenient manner.

Container 8 which has Bakelite or other insulating disc 9 clamped in crimped rim 10, is adapted to hold accessory mechanism (not shown and forming no part of the present invention). Disc 9 has central opening 11 as a firing train passage. Insulating plate 13 is suitably clamped against internal flange 14 of container 8 and carries plugs 12 adapted to engage in similarly placed sockets in container 15, which also has sockets in its forward face meshing with connection plugs 16 projecting rearwardly from the fuze head, generally designated 17. The main or supporting portion of the fuze head consists of a relatively heavy ring 21 having threaded portions 18, 19, the former for screwing the fuze into a projectile and the latter, of lesser diameter, adapted to be screwed into ring 2 to attach the fuze head to the unit can. Ring 21 is also provided with an integral rearwardly extending sleeve portion 20 adapted to project into the mouth of the can and having a portion 21*a* crimped or spun over to hold the insulating disc 22 which carries the connecting plugs 16.

The generally frusto-conic sheet metal ring 23 is welded to ring 21 to form a forward continuation thereof, being fitted into the peripherally relieved or rabbeted portion 24. A transparent lens ring 25 having a partly toroidal lens surface and internally threaded at its rear end is screwed onto a threaded ring 26 which is fastened to the inwardly projecting front flange of ring 23 by means of suitable bolts. The lens ring serves both as an optical member and a structural member, supporting the nose shield 29 and cap 32 and housing the photocell 27. The photocell is seated against a flange surrounding the central opening in ring 26 and is pressed against its seat by spring 28, the other end of which presses against the sheet metal nose shield 29. The nose shield is fastened to lens 25 by means of screws, and also serves a dual function, acting both as a structural member and as an electrostatic shield for the photocell. A central hole in the nose shield is reinforced by a tapped bushing 30 into which is screwed a stud 31 welded to metal cap 32 to permit attachment of the cap simply by screwing it into place. The base 33 of the cap is thus tightly pressed against lens 25, and preferably additionally waterproofed by the application of cement. Cement may also be applied to the other joints, to obviate all possibility of leakage.

Fig. 2 illustrates a modification in which the open front end of the ogival portion of a projectile 34 has a cylindrical internal surface 35 pressed or shrunk over the cooperating shoulder of ring 36. Ring 36 has an inwardly flanged base 37 and an adjacent groove in which a snap ring 38 may be placed to hold the rim of the unit can 39 in place, the rim overlying flange 37 as shown. The surface 35 furnishes a supporting area of substantial size for attachment of the can, without materially weakening the metal of the projectile. By means of split ring 38 the unit can may be readily snapped in place.

In the construction shown in Fig. 1, the tetryl or other booster charge is placed in cup 4 and the unit 15 is then pressed against head 17, an annular resilient gasket 40 being interposed. Plugs 16 are engaged in sockets in the forward face of container 15 and plugs 12 attached to disc 13 are then pressed into the sockets in the rear face of container 15. Unit can 1 is then slipped over the assembly and ring 2 is screwed onto threads 19 until the forward edge of ring 2 presses tightly against shoulder 41 of ring 21, in sealed relation thereto. Gasket 40 is thereby compressed and acts as a spring as well as a sealing agent, maintaining all the assembled units under pressure, to provide a tight structure.

While I have shown specific modifications, I do not wish to be limited to the exact structures illustrated, but only by the fair field of the appended claims.

The invention herein described may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

I claim:

1. A fuze construction including a nose portion comprising a pair of tapering sections including a first ogive section and a second frusto-conical section, means for securing said second section to a projectile to be supported thereby, a transparent annulus secured to and carried by said second section and having an integral portion contoured to form a lens, a photocell within said annulus in position to receive light entering through said lens portion, a combined electrostatic shield and holding means for said photocell secured to said annulus upon the side opposite said second section, a cap secured to said shield and sealed with respect to said annulus and coacting with said base section and annulus to form an enclosure for said photocell and shield, and means securing said first section to said shield.

2. A fuze construction adapted for incorporation in a projectile to form a nose portion thereof, said fuze construction comprising a pair of tapering sections including a first ogive section and a second frusto-conical section, said frusto-conical section having an inwardly projecting

flange secured thereto, a transparent annulus threaded to said flange to form a continuation of said frusto-conical section, an electro-static shield having a nose portion and a base portion, said base portion being secured to said annulus on the side opposite said second section, to interpose said annulus between said frusto-conical section and said shield, said annulus having an integral portion contoured to form a lens, a photocell positioned within said nose portion adjacent the annulus whereby to receive light entering through said lens portion, a coil-spring interposed between the nose portion of said shield and said photocell for forcing said photocell against said flange, and means securing said first ogive section to said shield.

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