Dec. 12, 1967 E. L. BISCHOFF 3,357,356

EXPLODING MISSILE CASE

Filed July 19, 1961

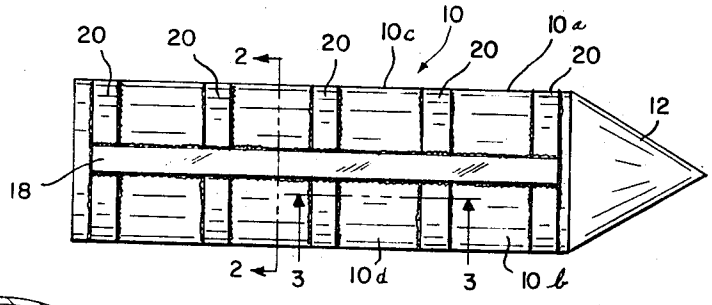



Fig-1

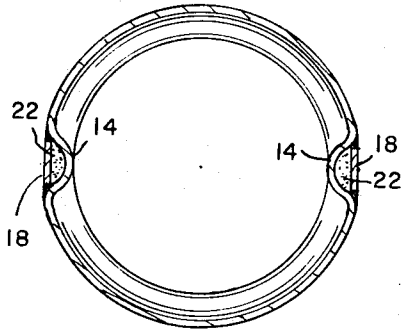



Fig-2

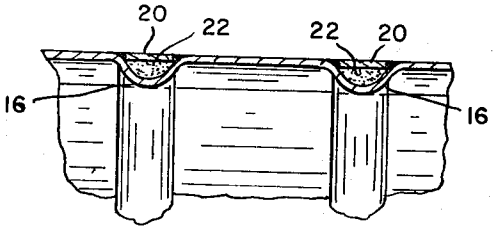



Fig-3

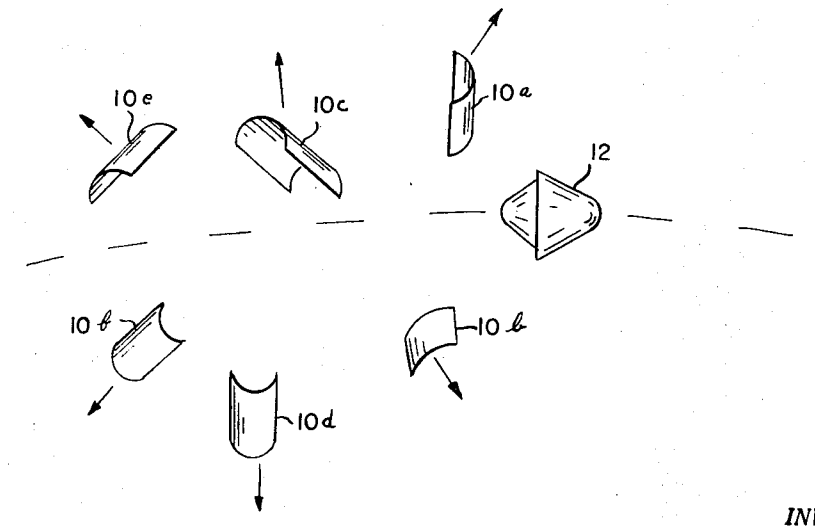



Fig-4

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# 3,357,356
# EXPLODING MISSILE CASE

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1 Claim. (Cl. 102—49.5)

This invention relates to cases and the like used on missiles including the type known as intercontinental ballistics missiles. More specifically, this invention relates to the confusing and thwarting of the enemy's detection apparatus.

Many missile detection systems utilizing radar or active infrared depend upon the reflection of energy from the target being tracked. Other detection systems rely upon visible detection of the target by utilizing sun reflections from the target.

During the course of hurling a nose cone with pay load or warhead on its prescribed trajectory, the various stage cases of the propulsion system are expended and severed from the missile, thereby reducing the size of the structure remaining in flight.

Normally, by the time the energy of the final stage of the propulsion system has been expended, the course of the trajectory is in the stratosphere. When the nose cone and pay load are separated from the final stage missile case, usually by an explosive charge, flight conditions are such that the after-body will continue in flight for a period of time on the same general trajectory as the nose cone but at diminishing speed until re-entry is made and the after-body consumed on descent.

As the nose cone and warhead are approaching the enemy, and while the final stage case is also on the same general trajectory, the enemy's detection apparatus could be on the true target or on the false after-body. The true target would normally be the smaller of the two.

The object of this invention is to provide a final stage missile case which after becoming an after-body will divide into segments approximating the cross sectional areas of the nose cone.

Another object of this invention is to provide false targets with reflective characteristics comparable to the true target in order to confuse the enemy's detection apparatus.

Additional objects, advantages and features of the invention reside in the construction, arrangement and combination of parts involved in the embodiment of the invention as will appear from the following description and accompanying drawings wherein:

FIG. 1 is a side elevation of a missile case with nose cone and warhead intact;

FIG. 2 is a section along line 2—2 of FIG. 1 showing a cross section of the longitudinal explosive charge;

FIG. 3 is a section along line 3—3 of FIG. 1 showing a cross section of the circumferential explosive charges; and

FIG. 4 is a schematic of the nose cone and warhead on its flight trajectory and the missile case after division.

Referring to FIG. 1, missile case **10** comprises a hollow cylindrical walled structure with opening at each end. Nose cone and warhead **12** is severably attached to the forward end of case **10**. Missile case **10** has a plurality of inwardly formed dimpled troughs **14** of a cross section as shown on FIG. 2 and extending longitudinally



along the missile case structure. Likewise a plurality of like dimpled troughs **16** of a cross section as shown on FIG. 3 extend circumferentially about the cylindrical portion of missile case **10**. It is thus seen that the longitudinal and circumferential troughs intersect each other. The dimpled troughs **14** and **16** may be rolled or otherwise formed at any convenient stage of case manufacture. Longitudinal closure strips **18** are continuous-welded in place over the longitudinal troughs **14** as shown on FIG. 1 and FIG. 2. Semi-circular closure strips **20** are similarly continuous-welded in place over the circumferential troughs **16** as shown on FIG. 1 and FIG. 3. It is thus noted that the linear trough cavities formed between the troughs **14** and **16** and the closure strips **18** and **20** are hermetically sealed from both the inside of the case and from the outside. The cavities so formed may be charged with a suitable heat resistant explosive **22**. One manner of charging the contiguous cavities would be to inject molten explosive through a sealable opening. The type of explosive used and the manner of charging are not shown or claimed as part of this invention. It is noted that the missile case **10** is outlined into segments **10***a*, **10***b*, **10***c* etc. by the troughs **14** and **16**.

In operation, when the final stage missile case has expended its fuel, the nose cone and warhead is separated from the after-body by means of an explosive charge. After a preset length of time to insure sufficient separation, the after-body is divided into segments by detonating the explosive carried within the trough cavities of the after-body. This detonation may be triggered through a suitable delay by the same device which triggers the charge to separate the nose cone and after-body. The device which triggers the separation of the nose cone from the after-body and triggers the detonation to divide the missile case into segments is well known to the art and is not shown or claimed as part of this invention.

As shown on FIG. 4, the various segments upon division are hurled out on a spread pattern while at the same time travelling on the same general flight trajectory as the nose cone. The segments will follow this same general pattern until there has been enough loss of velocity to produce re-entry into the atmosphere. Since the reflective characteristics of the segments are similar to those of the nose cone, it is obvious the enemy's detection apparatus will be unable readily to distinguish the true target from the false targets.

While a preferred form of the invention has been shown and described, various modifications and substitutions of equivalents will occur to those skilled in the art after a study of the foregoing disclosure. Hence the disclosure should be taken in an illustrative rather than in a limiting sense, and it is the desire and intention to reserve all modifications within the scope of the appended claim.

I claim:

An exploding missile case structure for housing a propulsion system propelling a pay load into flight after which the case structure is explosively divided into segments of substantially the same radar reflective characteristics as the pay load, said case structure comprising: a hollow cylindrical case detachably joinable at one end to a pay load and having a plurality of longitudinal cavities formed by inwardly dimpled longitudinal troughs in said case and sealed with closure strips continuous welded across the opening of said longitudinal troughs, a plurality of circumferential cavities formed by inwardly

dimpled circumferential troughs in said case joining said longitudinal troughs and sealed with closure strips continuous welded across the opening of said circumferential troughs, said longitudinal and said circumferential cavities being hermetically sealed from within and without said case and outlining said case into a plurality of arcuate segments at least a portion of which have substantially the same radar reflective characteristics when divided as that of the pay load, and explosive in said cavities for dividing said case into the outlined arcuate segments at a predetermined time after the pay load has separated from said case in flight.

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