March 3, 1970 J. A. MYERS 3,498,218

BOMBLET

Filed March 6, 1968

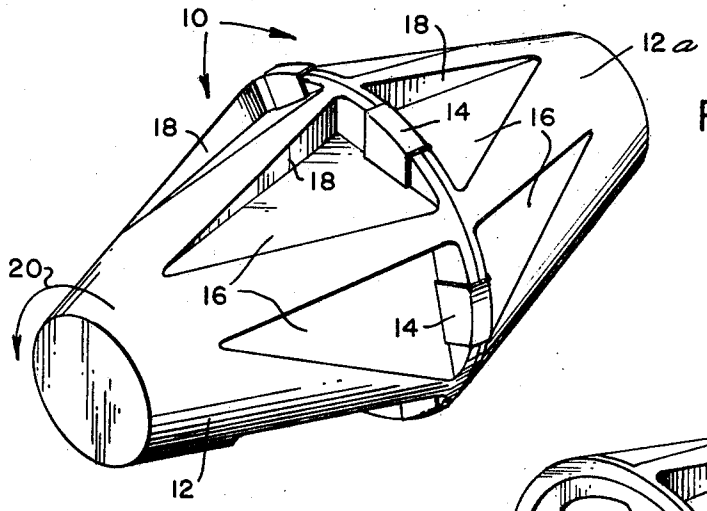


FIG. 1.

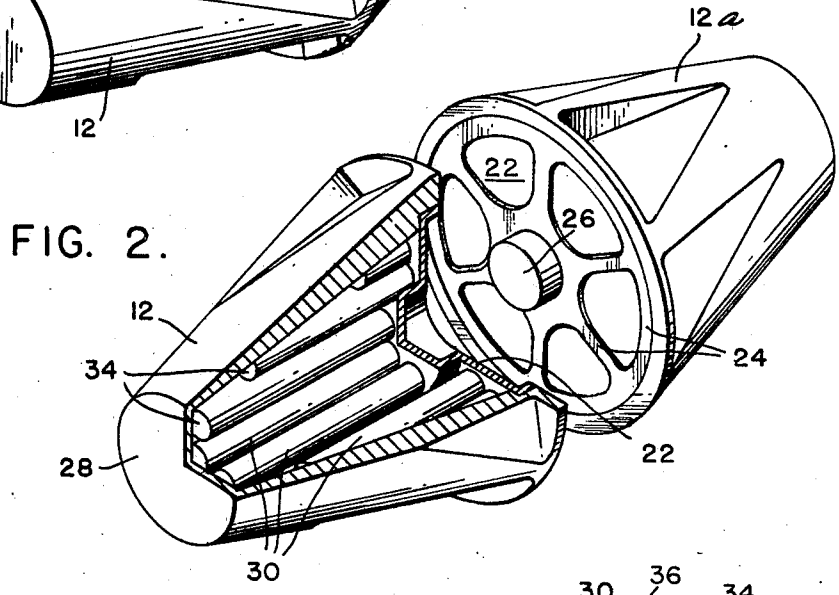


FIG. 2.

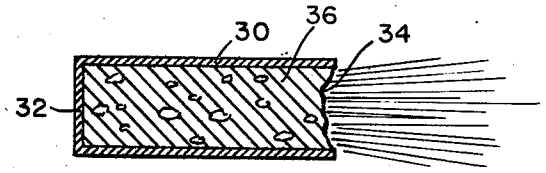


FIG. 3.

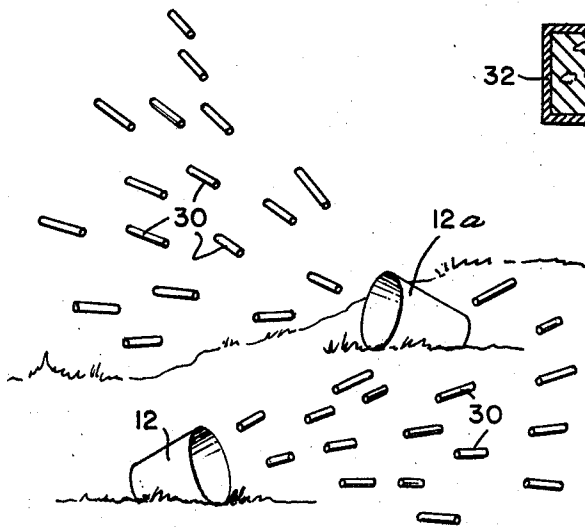


FIG. 4.

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BOMBLET

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Int. Cl. F42b 25/12

U.S. Cl. 102—6 5 Claims

ABSTRACT OF THE DISCLOSURE

Bomblet formed of two frusto-conical containers separably secured togther at their bases, the containers being substantially filled with cylindrical tubes of various lengths, each closed at one end, and containing a gelled chemical and volatile gas under pressure. Upon ground impact, the containers are explosively separated and the gas and chemical particles issuing from the tubes project them by jet propulsion, dispersing the chemical particles to various loci.

Background of the invention

In the delivery of chemical particles to a ground target, one of the practices proposed is to release modules from an aircraft, each containing a plurality of bomblets or submuntions which contain a chemical agent, the bomblets dispersing in a pattern continquous wtih the desired target area, the patent to Myers et al. 3,332,348 being exemplary of such technique. In the further development of this general technique, it has been found desirable to provide more uniform dispersal of the bomblets, improved penetration of same through foilage, and variable distances of propagation of the chemical from the locus of ground impact of a bomblet.

Brief description of the drawing

FIG. 1 is an isometric view of an assembled bomblet;

FIG. 2 is an exploded view of FIG. 1, a portion being broken away;

FIG. 3 is a longitudinal section through one of the tubules shown in FIG. 2; and

FIG. 4 depicts a manner of dispersion of tubules upon ground impact of a bomblet.

Description of the preferred embodiment

Referring first to FIG. 1, the assembled bomblet **10** comprises a pair of frusto-conical containers **12**, **12***a*, secured together at their bases by a plurality of U-shaped frangible clips **14**, the containers having angularly spaced recesses **16**, forming vanes **18**, which cause the bomblet to spin about its longitudinal axis as it falls through the air, as illusrtated by arrow **20**.

Referring now to FIG. 2, the base of each half of the bomblet is closed by a diaphragm **22**, the periphery of which is sealed to same in any suitable manner, such as by welding, cementing or the like. An explosive network **24** is disposed between the diaphragms and is initiated by a fuze **26**. The fuze, which forms no part of the inventioni per se, is preferably of the type which arms when the bomblet reaches a predetermined speed of rotation and which is impact sensitive to initiate the explosive network.

The space between a diaphragm **22** and an end wall **28** is filled with tubules **30** of various lengths, one of which is illutsrated in FIG. 3, each tubule having an end wall **32** disposed adjacent a diaphragm and an opposite open end forming a jet propulsion nozzle **34**. Each tubule and the space surrounding all of the tubules is filled with a

gelled or slurried chemical **36** containing a volatile gas which may rapidly expand when the pressure within the bomblet halves is suddenly released.

In operation, a cluster of bomblets is released from an air dropped module (not shown) and they rotate as they fall, arming the fuze. Upon ground impact, as depicted in FIG. 4, the fuze initiates the explosive network, rupturing the clips and peripherally severing the diaphragms and releasing the pressure within the bomblet containers. The volatile gas within the chemical now rapidly expands, issuing with the chemical from the open end of each tubule and propelling it away from the locus of the bomblet. As will be apparent, since the tubules are of various lengths and thus contain various amounts of propulsive energy, they will be projected various distances from the point of impact. The remaining chemical surrounding the modules also issues from each container by the expanding gas contained therein, dispersing it in a cloud projecting from the now open end of same.

Gelled chemicals and the volatile gas contained therein are manufactured by Technidyne, Inc., West Chester, Pa. In the filling of the bomblet, it is first assembled as shown in FIG. 1, and the chemical-gas mixture under pressure is delivered to each bomblet half through sutiable pipe fittings (not shown) after which the fittings are closed. Closable bleed ports may also be provided in each bomblet half to exhaust entrapped air or alternatively the bomblet halves may be evacuated prior to filling of same.

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.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes wtihout the payment of any royalties thereon or therefor.

What is claimed is:

1. A bomblet, comprising;

(a) a pair of frusto-conical containers,

(b) frangible means securing the containers together in base-to-base relationship,

(c) a diaphragm sealingly closing the base of each container,

(d) an explosive network disposed between the diaphragms adapted to peripherally sever same and rupture the frangible means.

(e) a plurality of cylindrical tubules of various lengths filling each container and extending axially thereof,

(f) each tubule and the surrounding space being filled with a chemical material and a volatile gas under pressure,

(g) each tubule having a closed end adjacent the diaphragm and an opposite open end, and

(h) a fuze disposed centrally of said explosive network adapted to initiate same,

(i) the construction and arrangement being such that when the explosive network severs the diaphragms and ruptures the frangible means the containers separate and the tubules are jet propelled therefrom to various distances, dispersing their contained chemical along their trajectories.

2. A bomblet in accordance with claim **1** wherein the outside surface of each container is provided with angularly spaced cut-outs, forming rotating air vane surfaces within its frusto-conical envelope, thereby permitting stacking of a plurality of bomblets in a minimum of space.

3. A bomblet in accordance with claim **2** wherein said cut-outs are so shaped to form radially extending flanges at the base of each container and a plurality of frangible U-shaped clips securing the flanges together.

4. A bomblet in accordance with claim 1 wherein said explosive network is disc shaped, having a plurality of spokes joined to a rim portion disposed contiguous with the periphery of the diaphragms.

5. A bomblet in accordance with claim 1 wherein a portion of the tubules of each container are nested within a cylindrical volume approximately of the minor inner diameter of the container and substantially its axial length and the remainder are nested concentrically thereof in annuli of increasing diameter and smaller axial length, whereby the tubles contain various amounts of chemical and gas.

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SAMUEL W. ENGLE, Primary Examiner

U.S. Cl. X.R.

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