July 7, 1964 C. W. MIER 3,139,697

TOY HAND GRENADE

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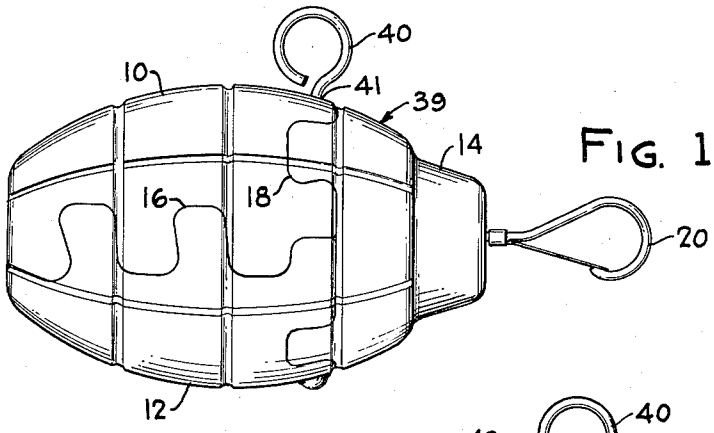


FIG. 1

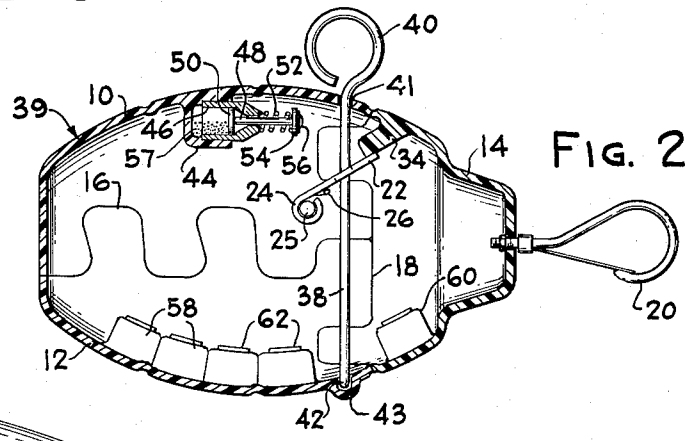


FIG. 2

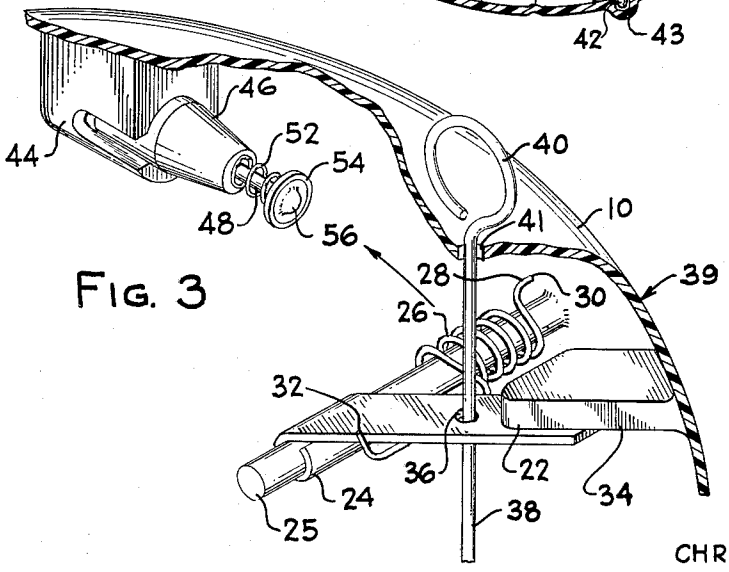


FIG. 3

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TOY HAND GRENADE

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3 Claims. (Cl. 46—17)

This invention relates generally to toys. More particularly, the invention relates to a toy simulating a hand grenade.

Summarized briefly, the invention has reference to a toy hand grenade closely resembling, in external configuration and size, a true grenade. Internally, the grenade is designed to include a detonating mechanism characterized by its adaptability to produce a loud report accompanied by a smoke-simulating cloud, upon impact of the grenade against the ground surface when thrown. At the same time, the grenade is designed to break into a plurality of jaggedly edged sections, in the manner of a fragmentation grenade, to add still further to the faithful simulation of a true hand grenade.

The construction which I have devised to accomplish these results includes a sectionally constituted body the several portions of which are releasably interengaged with one another in a manner to break apart on impact.

In one section, a spring-loaded arm is latched in a triggered position by a pin engaged between at least two of the body sections to hold the entire device together until it is ready for use. When the pin is pulled, the trigger or arm is free to swing to its detonating position, but for the restraint imposed thereupon by an abutment in a section adjacent that upon which the arm is mounted.

On the same section as that on which the arm is mounted, I provide a cartridge containing talcum powder or the like. A spring-urged plunger sliding in the cartridge has a head on which is a cap or other small powder charge. When the arm is released for swinging movement, responsive to impact against the ground, it strikes the plunger, detonating the cap while simultaneously forcing the plunger inwardly to expel a quantity of the smoke-simulating powder.

One important object of the present invention is to provide a toy as briefly described above that will simulate closely, in appearance and in function, a true grenade, thus to impart a high degree of enjoyment and attractiveness to boys using the same.

Another object is to permit re-use of the toy an indefinite number of times, despite its adaptability to break into pieces on impact.

A further object is to include a novel mechanism within the device that will be securely latched in an inoperative but triggered condition by a removable pin in the same manner as a true hand grenade.

A further object is to make the mechanism respond accurately in every instance to fragmentation of the toy upon impact.

Still another object is to provide a toy hand grenade that will be comparatively inexpensive, considering the close resemblance thereof, both in appearance and in operating characteristics, to a true hand grenade.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawings, in which like reference characters designate like parts throughout the several views, and wherein:

FIGURE 1 is a side elevational view of a grenade constructed according to the present invention;

FIGURE 2 is a longitudinal sectional view therethrough; and

FIGURE 3 is an enlarged fragmentary perspective view.

Referring to the drawing in detail, in the illustrated, preferred embodiment of the invention, the grenade includes three releasably interlocked body sections **10, 12, 14**. Body sections **10, 12**, are identically but oppositely formed and arranged as side sections extending from one end of the grenade to a location past the midpoint thereof. The section **14** comprises an end section extending the remainder of the length of the device.

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Approximately semi-cylindrical sections **10, 12, 14** are preferably formed of a moldable, strong resilient material having high impact strength and as shown, are so shaped as to define a generally elliptical shell having intersecting circumferential and longitudinal grooves, thus simulating faithfully a typical fragmentation grenade.

As shown to best advantage in FIGURE 1, the sections **10, 12** have a first series of interlocking teeth **16** along their respective side edges. At their front ends, sections **10, 12** have a second series of teeth **18** mating with complementary teeth provided on the rear end edge of the cup-shaped nose or end section **14**. The section **14** at its closed front end has an opening in which is swivelly mounted a conventional snap clasp **20** designed for suspending the device from one's belt while it is awaiting use.

In accordance with the invention, I provide within the shell an arm or hammer **22** having at one end a sleeve **24** loosely receiving a post **25** integrally or otherwise connected to the inner surface of the section **14** adjacent the juncture of the three sections. A torsion spring **26** has one end **28** extended as a finger lockingly engaged in a small recess **30** provided in the inner surface of the section **10**. Spring **26** receives the post **25**, and at its other end, has an elongated, hook-like longitudinal-extension or tang **32** bearing against arm **22** to resiliently, yieldably bias the same in one direction into engagement, at the free end of the arm, with an abutment **34** integrally formed on the inner surface of the nose section **14** (see FIGURE 2).

An elongated, straight safety or locking pin **38** has a loop **40** at one end disposed exteriorly of the shell **39** defined by the several sections. The pin **38** extends diametrically across the inside of the shell, passing loosely through an opening **41** of section **10**, and aperture **36** of arm **22**. Section **12** has a bump **43** formed with an internal recess or socket **42** in which is received the other end of the pin.

Molded on the inner surface of section **10** is a retaining cup **44** receiving a removable tube **46** having a forward end in which a stem **48** is axially slidable. Stem **48** has a flat, disc-shaped inner head **50** within the tube. Exteriorly of the tube, a compression, coil spring **52** extends about the stem, abutting at one end against the tube and at its other end against an outer, flat, disc-shaped head **54** to resiliently, yieldably bias the stem outwardly of the tube. On the head **54** there is adhesively mounted a small, explosive cap **56** of the type used in cap pistols. Within the tube is a quantity of talcum powder **57**, which may be of a tan or brown hue so as to simulate smoke in a manner to be described hereinafter.

It is preferred to provide a weighting means of an adjustable nature in the device, so that when thrown, it will tend to fall with its weighted side down to prevent damage to its mechanism and locate said mechanism for maximum efficiency when the device is used. To this end, I provide a plurality of containers **58, 60** molded on or otherwise fixedly attached to the inner surfaces of sections **12, 14** respectively, in a row extending along the side of the shell opposite the tube **46**. Containers **58, 60** have filler openings closed by removable stoppers **62**, and within the containers I provide sand or the like, not shown. I may use lead weights or other weighting means in place of the illustrated weight means.

In use of the device, the sections **10, 12** are connected, and the arm **22** is swung to its illustrated position against

the restraint of the spring **26**. Then, while the arm is held in this position manually, the pin **38** is inserted through openings **41**, **36** to lock the arm in the illustrated, cocked position thereof. Then, the nose section **14** is interengaged with the previously interconnected sections **10**, **12**. This locates the abutment **34** in position holding the arm against swinging movement from its cocked position toward the head **54**.

When the device is to be thrown, the user pulls the pin **38**, so that the arm **22** is now restrained only by the abutment **34**.

The device is now ready to be hurled. When it is thrown, and strikes the ground, the resilient sections tend to collapse momentarily against the inherent resiliency thereof, and fly apart in faithful simulation of the fragmentation of a real grenade. This of course releases the arm **22** which is accordingly swung at high velocity, under the force of the spring **26**, into engagement with the head **54**, detonating the explosive cap **56** and forcing the stem **48** inwardly within tube **46**.

The smoke-simultating powder is thus forced out of the tube **46** by the inward movement of head **50**. For this purpose, there is a small space surrounding the stem **48** at the nose end of the tube **46**. A cloud of "smoke" is thus released seemingly simultaneously with the loud report caused by detonation of the cap **56**.

All of this, as will be readily seen, provides an exceedingly faithful simulation of the appearance, operating characteristics, fragmentation, and detonation on impact of a true grenade.

The device is resuable, by providing single-use refill tubes **46** each equipped with its piston stem and cap **56**. Alternatively, I may provide a filler cap on a reusable tube to permit it to be refilled with a new supply of powder **57**.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any change in construction that may be permitted within the scope of the appended claims.

I claim as my invention, and desire to protect by Letters Patent:

1. A toy hand grenade comprising:
(*a*) a hollow shell including a plurality of normally joined body sections having connections opening on impact of the shell against a hard surface to separate the sections from one another;
(*b*) means in one of said sections for supporting a percussion cap;
(*c*) a hammer pivoted in said one section under spring load tending to bias the same to a cap-detonating position; and
(*d*) an abutment rigid with a second section of said shell,
(1) said abutment engaging the hammer against movement to its cap-detonating position when said sections are joined,
(2) said abutment being moved clear of the hammer to free the same for detonation of the cap in response to said separation of the sections.

2. A toy hand grenade comprising:
(*a*) a hollow shell including a plurality of normally joined body sections having connections opening on impact of the shell against a hard surface to separate the sections from one another;
(*b*) means in one of said sections for supporting a percussion cap;

(*c*) a hammer pivotally connected at one end to said one section under spring load tending to bias the hammer from a normally cocked position to a cap-detonating position,
(1) said hammer having an aperture intermediate its opposite ends,
(2) said one section having an opening in line with said aperture in the cocked position of the hammer;
(*d*) a lock pin slidably, removably engaged in said opening and aperture to releasably latch the hammer against movement to the cap-detonating position; and
(*e*) an abutment rigid with a second section of said shell,
(1) said abutment engaging the other end of the hammer when the sections are joined to hold the same in its cocked position,
(2) said abutment being moved clear of the hammer to free the same for bias to its cap-detonating position in response to said separation of the sections.

3. A toy hand grenade comprising:
(*a*) a hollow, generally elliptical shell externally configured to simulate a fragmentation grenade, said shell including;
(1) a pair of elongated side sections forming one end and the major part of the length of the shell, said side sections having a first series of complementary, interlocking teeth along one end edge, and
(2) a nose section forming the remainder of the length and the other end of the shell, said nose section having a series of teeth mating with the second series of teeth of both of said side sections, the several teeth of the side and nose sections disengaging in response to impact of the shells against a hard surface to free the sections from one another;
(*b*) means in one of the side sections for supporting a percussion cap;
(*c*) a hammer pivotally connected at one end to said one side section under spring load tending to bias the hammer from a normally cocked position to a cap-detonating position,
(1) said hammer having an aperture intermediate its ends,
(2) said one side section having an opening and the other side section having a recess,
(3) said opening, recess, and aperture being in alignment in the cocked position of the hammer;
(*d*) a lock pin slidably, removably engaged in said opening, aperture, and recess to releasably latch the hammer against movement to the cap-detonating position thereof; and
(*e*) an abutment rigid with said nose section,
(1) said abutment engaging the other end of the hammer when the sections are joined to hold the same in its cocked position,
(2) said abutment being moved clear of the hammer to free the same for bias to its cap-detonating position in response to said separation of the sections.

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