

April 22, 1969

J. A. MYERS
FOLDING MUNITION

3,439,610

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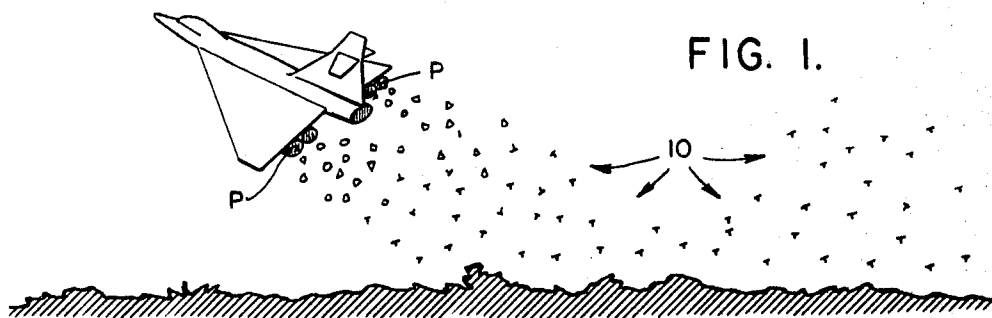


FIG. 1.

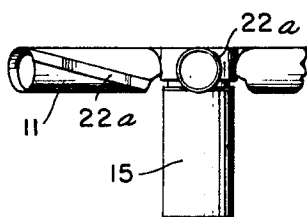


FIG. 7.

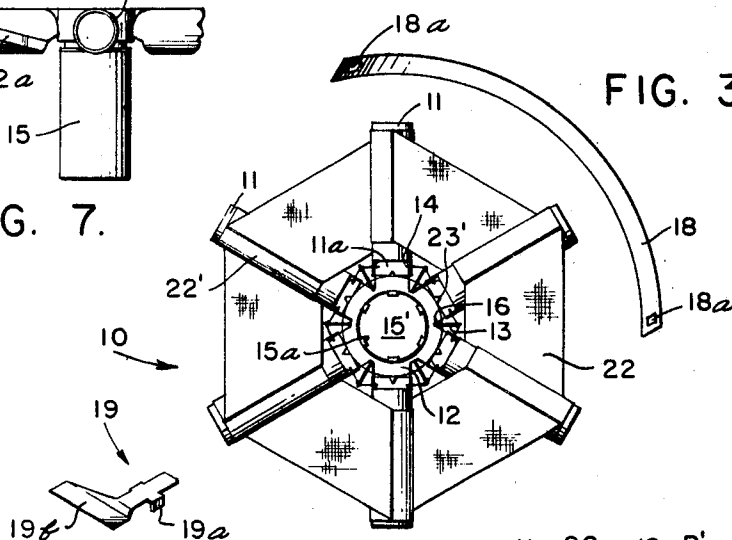


FIG. 3A.

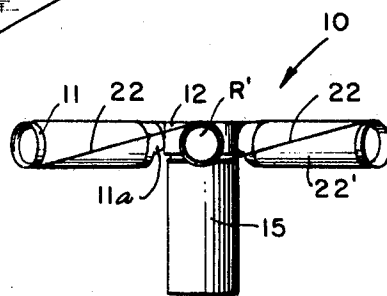


FIG. 3B.

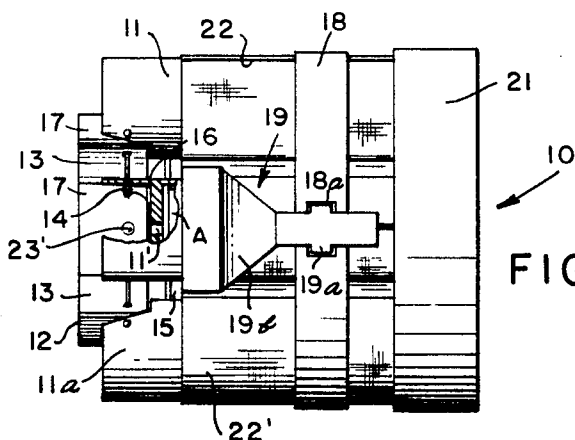


FIG. 2.

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FIG. 4.

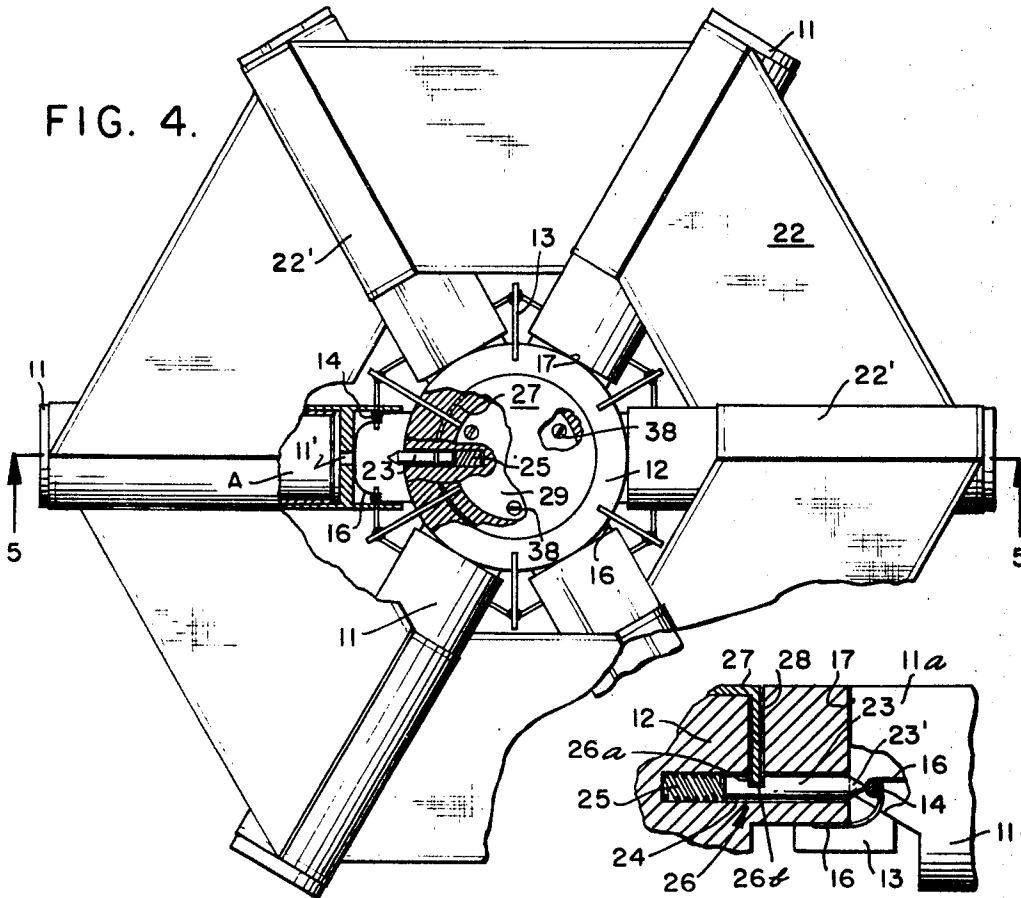


FIG. 6.

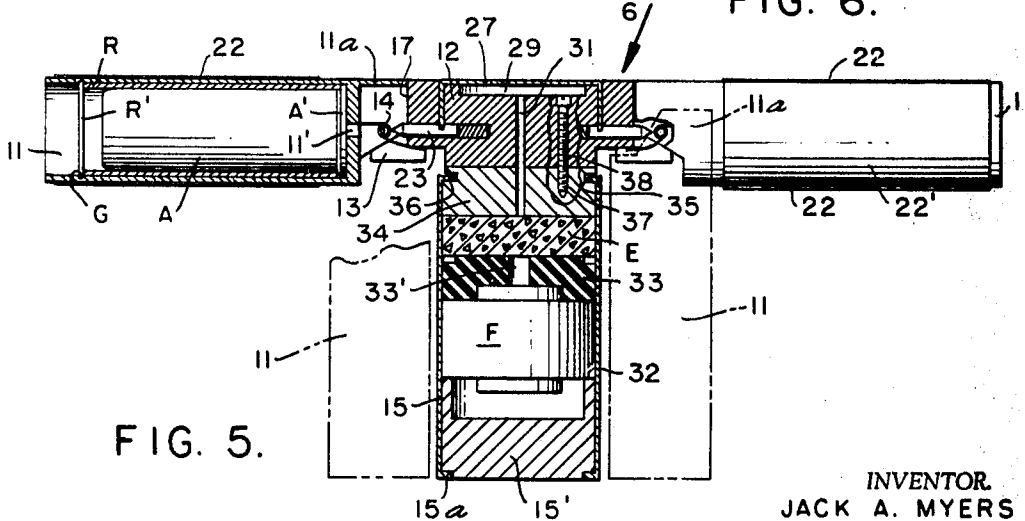


FIG. 5.

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3,439,610

FOLDING MUNITION

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Int. Cl. F42b 25/02, 25/16

U.S. Cl. 102—4

10 Claims

The invention described herein 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.

The present invention generally relates to munitions and more particularly to a folding munition, or device, which is to be ejected from a low-flying aircraft, as one of a group of munitions, in folded cylindrical form, expanded to assume a flat horizontal profile, floated to the ground, "bounced" skyward, and fired to cover a generally horizontal 360 degree field-of-fire.

When utilizing aircraft low-level attack techniques, for attacking enemy target areas, group dispensed munitions heretofore have tended to drop in concentrated patterns. As a result, advantages gained by utilizing low-level attack techniques have been partially off-set by an inability to effectively "saturate" relatively large target areas with effectively delivered payloads. In order to "saturate" a given target area numerous passes or runs over the target area have heretofore been required, consequently a loss of initiative, time and effectiveness has been experienced by the attacking aircraft. Even in instances where conventional parachutes have been employed, desired effects often are not realized due to the fact that the parachutes tend to undergo limited dispersion. Furthermore, the maximum target area coverage capabilities of conventional air-dropped devices, which detonate on impact, are inherently limited due to the fact that these devices normally employ ground level detonation or firing.

Therefore, it is the general purpose of the instant invention to provide a safe, simple, economic, and effective device, which may be mass-transported as a plurality of highly compacted devices, utilizing high-speed low-level attack aircraft, and subsequently mass-ejected and dispersed to provide maximum target area coverage, and then fired in a manner effecting maximum field-of-fire coverage.

An object of the instant invention is to provide a free-fall munition, which may be folded to assume a compact configuration for storage, transport, and ejection purposes, then expanded to assume a substantially flat configuration having a high glide, or horizontal drift to vertical drop, ratio, and, upon impact with the ground "bounce" upwardly and fire to substantially cover a 360 degree field of fire.

Another object is to provide a munition device, which may be ejected from an airborne vehicle, spin-armed, and then "bounced" prior to firing and subsequent to impact with the ground.

Still another object is to provide a folding munition which may be mass-ejected from an airborne vehicle and be dispersed over a wide target area.

A further object is to provide a munition device having the capability of transforming itself from a high-density configuration to a configuration having low-density, high-drag characteristics.

Yet a further object is to provide a gliding munition having a high payload to parts ratio, and one which is economical, simple, reliable, and effective in operation.

A still further object is to provide a folding munition for mass-ejection, which will undergo wide dispersion after ejection and descend at a relatively low-rate of descent, and substantially fire at a determinable distance from

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ground level for covering a maximum field-of-fire, and which is capable of utilizing conventional pre-loaded ammunition to achieve this result.

Other objects, advantages and novel features of the invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings wherein:

FIG. 1 is a diagrammatic view, not to scale, illustrating the wide dispersion characteristics of the munitions;

FIG. 2 is a side elevation, partly in section, of the device of the instant invention illustrating the device in a folded condition having a high density configuration;

FIGS. 3A and 3B comprise separate views, on a reduced scale, illustrating an opening sequence for the device of FIG. 2;

FIG. 4 is a partially sectioned plan view, on an enlarged scale, illustrating parts relationship when the munition is in an opened condition having high-drag configuration;

FIG. 5 is a partial cross-sectional view, taken generally along lines 5—5 of FIG. 4, of the device of the instant invention;

FIG. 6 is a detail view taken generally at 6 in FIG. 5; and

FIG. 7 is a partial view of a modification corresponding to the configuration of the device as shown in FIG. 3B.

Referring now to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views, there is shown in FIG. 1 a relatively large number of folding munitions 10, which have been ejected from a high-speed, low-level aircraft through being released in any suitable manner from pods P mounted beneath an attacking aircraft's wings and/or fuselage.

Each pod P is provided with a large number of tubes or racks, not shown, which receive and retain a relatively large quantity of separate munitions 10 in folded form. When an aircraft, having loaded pods, approaches a target area the tubes of the pods P are opened in a conventional manner to accommodate a substantially simultaneous ejection of the individual devices 10. However, it may be found desirable to control the rate of ejection so that the munitions 10 may be ejected in a "string." In any event, after the folded munitions or devices are ejected from a tube of a pod P they immediately "spring" open to assume an opened, high-drag configuration, as illustrated in FIGS. 3A and 3B. Each opened munition undergoes rotation, for purposes as will hereafter be more fully understood, and the plurality of ejected munitions undergo wide dispersion prior to impact with the target area.

Turning now to FIG. 2, each munition 10 is stored and transported in a folded configuration and "safe" condition. Each device comprises a plurality of barrels or payload ejection tubes 11 pivotally secured to a substantially circular firing-pin or trigger housing 12 by means of pivot posts 13, which extend radially from the housing 12, and pivot pins 14, extending generally at right angles from the posts 13 into cut-away pivot portions 11a of the firing tubes 11. Each tube 11 is adapted to receive and retain a round of conventional ammunition A, FIG. 5, such as a shot-gun shell, for example, or, where desired, chemical agents, and mechanical fragment payloads may be utilized. The tubes 11 each have formed at one end thereof a firing-pin port 11', the purpose of which will hereinafter be more fully described.

Tubes 11 are each provided a retainer R, FIG. 5, which is of a tubular configuration and seats against a rim A', as normally provided for conventional pre-loaded ammunition. The retainer R may be fabricated from any suitable material having sufficient size and strength to receive and secure the round A in place with its percussion cap arranged adjacent the firing-pin port 11'. Where

desired a retainer ring or frangible disk R' may be seated in the outermost or open end of each of the tubes 11 for securing the retainer R therein. Various means may be provided for maintaining the retainer ring R' in its seated position, however, a milled groove G is deemed to function quite satisfactorily for this purpose.

When the folding munition 10 is in a folded and compact configuration, the tubes 11 thereof are folded or pivoted about pins 14 so that their longitudinal axes are arranged in a parallel relationship, with respect to each other, and are disposed about a tubular activator casing 15. Each tube 11 is provided with a torsion spring 16, FIGS. 5 and 6, which constantly urges the tube to rotate outwardly about its pivot pins 14 through an angle of approximately ninety degrees to be disposed and retained against a stop-shoulder 17 formed to surround the housing 12. When the tubes 11 are disposed so as to be retained by the shoulder 17, they extend radially from the housing 12, FIGS. 3A and 3B, to define an open configuration for the device 10 wherein the tubes are arranged in a common plane at equi-distance spacing.

In order to retain the munition 10 in a folded configuration, a tension strap 18, FIG. 2, having detent receiving slots 18a formed near each end thereof, is held in place about the folded munition by a coupling pin 19 having right-angle detent lips 19a formed at each side thereof to be freely received within the slots 18a, FIG. 2. For releasing the strap 18, the coupling 19 is provided with an aerodynamic wing portion 19b. The portion 19b is so shaped as to be lifted outwardly from the folded tubes 11 by an airstream passing thereover. As the wing 19b is lifted, the detent lips 19a are extracted from the slots 18a, thus permitting the strap 18 to be released from around the folded tubes 11 and to be parted and expelled by an outward displacement of tubes as the springs 16 act thereagainst.

As an additional safety device, for storage purposes, a cap 21 may be positioned and frictionally retained over the open ends of the tubes 11, opposite the pivot pin receiving end portions 11a. The cap 21 serves to cover the normally open ends of the tubes to preclude passage of foreign matter and, further serves to assist the strap 18 in retaining the munition in a folded and "safe" condition. In practice, as the munitions are inserted within pods P, the cap 21 is manually removed from the munition 10 so that upon ejection from the pod P, the munition will open upon a release of strap 18, as initiated through a lifting of the wing portion 19b of coupling pin 19 by an airstream passing thereover.

An aerodynamic drag member comprising a flexible web 22 may be provided to span the space defined between the radially extending tubes 11, and is drawn taut through the outward pivotal displacement of the tubes 11. The web 22 may be secured to the tubes 11 in any suitable fashion, however, it has been found practical to form a plurality of sleeves 22' within the web 22 for receiving the tubes 11. The sleeves 22' may be formed in the web through any conventional technique, and, where desired, may be secured to the tube by suitable adhesive to retain the web in such a disposition as to impart a dihedral configuration thereto in order that the web impart the aforementioned rotation, as well as retard the rate of descent for the device.

When the tubes 11 of the munition 10 are folded about the casing 15 to assume a folded configuration the web 22 is folded, or pleated, and received in voids defined between the adjacent tubes. As the tubes are displaced outwardly, to impart an open configuration to the munition, the web 22 is drawn taut therebetween so that the munition's rate of descent may be significantly reduced and rotation be imparted to the munition for assisting in a translational displacement thereof as it descends and for initiating an arming of the munition in a manner as will hereinafter be more fully understood.

While the aforementioned dihedral web configuration

may be relied upon for imparting rotation to the device, it is to be understood that various means, such as, for example, a plurality of appropriately arranged openings may be formed in the web 22 and be utilized in a known manner to impart the desired rotation to the munition 10 as it descends. It is also feasible to remove the web and place a thin strip of tape 22a alongside of each tube to provide a boundary layer trip, FIG. 7, for thereby causing rotation of the munition when it is subjected to an airstream.

Within the firing-pin housing 12 there is arranged a plurality of radially disposed firing-pins 23, FIGS. 5 and 6, so mounted and longitudinally aligned with respect to ports 11' as to accommodate an extension of firing-pin impact ends 23' therethrough from a retracted position adjacent the housing 12 to an extended position for impacting against percussion caps normally provided for each round of ammunition A, for thus initiating a firing of the rounds.

For mounting the firing-pins 23, a plurality of radially extending chambers 24 are drilled, or otherwise machined, within the body of the firing-pin housing 12. Each chamber 24 is provided with a diameter slightly larger than that of a selected firing-pin 23 and is of a depth sufficient to receive a suitable compression spring 25 at the firing-pin's innermost or inboard end. Each of the springs 25 may be compressed by forcing an associated firing-pin 23 inwardly toward the center of the housing 12 against the forces exerted by the spring 25.

When the firing-pins are retracted, or forced inwardly, they are retained against the recovery forces of the spring 25 by a detent mechanism 26, FIG. 6, which serves to maintain the firing-pins 23 in an armed or retracted disposition until such time as a firing of the munition is desired. When the munition or device 10 is to be fired, the detent mechanism 26 is actuated for simultaneously releasing all of the firing-pins 23, whereby the springs 25 simultaneously act with force sufficient for driving the impact ends 23' of the firing-pins 23 against the percussion caps of the rounds and thus function to initiate a simultaneous firing of all of the rounds of ammunition A.

The detent mechanism 26, FIG. 6, comprises a slot 26a, milled transversely across the firing-pins 23, and is provided with a shoulder for engaging a stationary retaining lip 26b, whereby as the lip 26b is caused to engage a shoulder of the slot 26a the pin 23 is retained against displacement. The lip 26b is formed as a downturned portion of a disk-like, flat plate 27 and extends into the body of the housing 12 through an appropriately formed circular slot 28. The plate 27 is disposed along the outermost surface of the housing 12 and is normally retained in operative position by a frictional engagement established between the surfaces of the lip 26b and the surfaces of slots 26a and 28. Where found desirable, additional suitable means, such as detent means, not shown, may be employed to maintain the plate 27 in an operative position with respect to the housing 12.

In operation the plate 27 is to be expelled, or displaced from the housing 12, for withdrawing the lip 26b from engagement with the slots 26a through gas pressures developed within a plenum chamber 29, formed as a cavity in the body of the housing 12 beneath the plate 27. A gas admitting port or passageway 31 serves to direct gases generated within the actuator casing 15 into the chamber 29 so that as the generated gases develop to a predetermined pressure within chamber 29, the plate 27 is "blown" upwardly, or outwardly, from the housing 12 for thus simultaneously releasing the firing-pins 23, by extracting the lip 26b from each of the grooves 26a, whereby the recovery forces of the springs may act against and extend the firing-pins 23 to impact on the percussion caps of the rounds A.

Within the casing 15, FIG. 5, there is arranged a pyrotechnic device E. The pyrotechnic device is to be fired by detonation of a primer cap arranged within an adjacent

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and communicating conventional fuze F including a spin-arming mechanism. The device E may comprise a quantity of any suitable pyrotechnic material selected from a well-known group of such materials, which when fired will rapidly generate a quantity of gas sufficient for initiating operation of the device. The spin-armed fuze F is of well-known design, therefore, it suffices to understand that the fuze F is of a type which may be activated for detonating a primer cap through impact shock, only after the fuze has been rotated a predetermined number of revolutions per minute.

The casing 15 is formed of any suitable material and is provided with a generally tubular configuration having hollow center portion with one end thereof being closed by a spacer member 15' releasably secured then by resilient right-angled tabs 15a. Formed within the casing 15, about the wall thereof, is a shoulder 32 upon which is seated the fuze F. A sponge-like spacer member 33 is positioned to rest on the housing of the fuze and serves to space the fuze F from the pyrotechnic device E. The spacer member 33 is provided with an opening 33' through which a detonation of a fuze primer cap is communicated to the pyrotechnic device E for initiating a firing thereof.

As heretofore mentioned, the munition or device 10 is to be "bounced" upwardly from the ground, after target-area impact and prior to the firing of the rounds A. To accomplish this result, the casing 15 is fastened or secured to the housing 12 so that gases generated within the casing 15, by a firing of the pyrotechnic device E, serve to drive or expel the portion 15' of the casing downwardly toward the ground, while driving the firing-pin housing 12 and the associated tubes 11 upwardly. The time-delay encountered in releasing and driving the firing-pins 23 to impact against the caps of the rounds A is sufficient to accommodate an upward displacement of the device 10 prior to the firing of the rounds.

The actuator casing 15 is secured to a mounting block 34, by means of a detent groove 35 formed externally about the block 34 for receiving and inwardly directed lip 36 formed about one end of the casing 15. The lip 36 may be formed by inwardly crimping end portions of the tubular wall of the casing 15 so that the lip 36 may be forced into a fitting relationship with the groove 35. It is to be understood that various techniques may be employed for mating the casing 15 with the mounting block 34, such as, for example, telescoping the mounting block 34 within the casing and then performing a crimping operation to force the lip 36 into the groove 35. Tension forces are actively applied between the casing 15 and the mounting block 34 by the recovery forces acting within the sponge-like spacer 33 for thus insuring that a "snug" engagement is maintained between the lip 36 and groove 35.

The mounting block 34 is drilled through near its center portion to provide a segment for the gas port 31 so that gases generated within the casing 15 may be directed through the block 34 to communicate with the plenum chamber 29. Screw holes 37 are tapped in the block 34 to receive mounting screws 38, which extend downwardly through the body portion of the firing-pin housing 12 so that the mounting block may be secured to the housing 12 to establish a unitary member formed by the housing 12 and the casing 15. Hence, it is to be understood that in assembling the actuator mechanism, the fuze F is first seated on the shoulder 32 within the casing 15, the spacer 33 is next seated on the housing of fuze F, the pyrotechnic device E is seated on spacer 33, then the mounting block is inserted into the end of the casing 15 with force sufficient to partially collapse the spacer 33, whereupon the lip 36 is forced into the groove 35. The assembled actuator may now be mated with the firing-pin housing 12 through the use of screws 38.

Once the casing 15 is mated with the firing-pin housing 12, the firing-pins 23 are retracted, through any suitable technique, and the plate 27 seated so that the lip 26b is

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inserted in the transverse of the slots 26a. The tubes are now folded about their pivot pins 13, against the action of torsion springs 16, so that the strap 18 may now be secured through a coupling of the ends thereof by the coupling pin 19. If desired, the rounds A and retainers R may be inserted into the open ends of tubes 11 and secured therein by retainer rings R'. After the rounds A are secured in place, the cap 21 is telescoped over the open ends of the tubes. The munition or device 10 is now in a "safe" condition and may be transferred to be received in the tubes of pods P, at which time, the caps 21 are removed. The devices may now be ejected from the pods P over a target area to operate in the following manner:

Once the high-density folded munition 10 is mass-ejected, from the tubes of a pod P, the airstream lifts the coupling pin 19 of each device affording a release of the straps 18, whereupon the springs 16 force the tubes 11 into a common plane, FIGS. 3A and 3B, whereby they are caused to extend radially from the housing 12 to establish an open configuration for each device. As the tubes 11 of each device are displaced under the influences of the springs 16, the associated web 22 is drawn taut between the tubes. Each device 10 is thus transformed into a device having a low-density, high-drag characteristic. The web 22 further serves to impart a rate of rotation to each device so that it is caused to undergo extensive "drift" and the spin-armed fuze F is caused to become armed. Where the strips 22a are utilized, in lieu of the web 22, an increased rate of rotation may be experienced to thus initiate a drag effect.

Once a device 10 impacts the target area, a detonator is fired within the fuze F for initiating an ignition of the pyrotechnic device E, which in turn generates a quantity of gas of sufficient pressures to flex tabs 15a and to discharge the fuze F, and spacer 15' from the casing 15, and to expel the plate 27 from the housing 12 for releasing the firing-pins 23. As the fuze F and the spacer 15' are discharged from the casing 15, the firing-pin housing 12 and casing 15' are driven upwardly. During the period of time allotted for releasing the firing-pins 23, and for forcing the impact ends 23' thereof through the ports 11' to impact for simultaneously firing the rounds A, the casing 15, the housing 12, and the tubes 11 are "bounced" upwardly with the tubes 11 extending horizontally, whereby as the rounds A are fired they are directed in a generally horizontal direction at a determinable point above ground level, so that they tend to cover a 360 degree field-of-fire at a point substantially above ground level.

In view of the foregoing description, it is to be understood that the instant invention provides a simplified, economical and effective device capable of being mass-ejected from low-flying, high-speed aircraft, making a single high-speed pass for effectively "saturating" a relatively large target area with effectively directed fire.

What is claimed is:

1. A folding munition, comprising in combination:

- a housing;
- a plurality of hinge members extending radially from said housing in an equi-spaced relationship with respect to each other;
- a plurality of elongated tubular members each having a discharge end and a closed end;
- means defining a firing-pin port extending through the closed end of each tubular member;
- means for retaining within each of said members a round of ammunition having percussion means associated therewith;
- means pivotally connecting each of said tubular members to said housing through said hinge members;
- a tubular member activating means including a spring and a stop shoulder associated with the closed end of each of said tubular members for pivotally urging the tubular members into a common plane, and for

operatively maintaining said members in said common plane;

a plurality of elongated firing pins, each being radially disposed and slidably mounted in said housing and being so aligned with a firing-pin port of a given tubular member as to permit each pin of said plurality to be slidably displaced through said port to impinge against a percussion means associated with a round of ammunition retained within the given tubular member;

a plurality of compression springs, each being disposed to abut a given firing-pin for continuously urging the given firing-pin toward a firing-pin port of a given tubular member;

locking means including a detent locking device for lockingly engaging each of said firing-pins and retaining the pins against the action of the compression springs;

a gas operated detent actuating means for releasing said locking means to release said pins from a retained condition;

means defining a first gas port terminating adjacent said detent actuating means for directing gas to said actuating means;

a flexible web extending between said tubular members and connected thereto in a manner such as to substantially span the space defined by the spacing of the tubular members when the members are disposed in a common plane extending radially from said housing for imparting an aerodynamic drag and a rate of rotation to said munition;

an actuator casing mounted adjacent said housing;

a pyrotechnic gas generating means disposed in said casing for generating a pressurized gas;

conduit means for directing generated gas from said gas generating means to said gas port;

a spin-armed fused arranged within said casing adjacent said pyrotechnic means adapted to be armed by said rotation and actuated by impact for firing said pyrotechnic means; and

releasable sealing means sealing said casing in a manner such that gases generated by said pyrotechnic means may be forced through said conduit means and said gas port to impinge on said detent actuating means for initiating an operation of said detent actuating means to initiate a release of said firing pins and impart selected displacement to said munition.

2. In a folding munition, means comprising:

a firing-pin housing;

a plurality of elongated tubular barrel members;

means pivotally connecting each of the barrel members about the firing-pin housing so that the members are adapted to initially be disposed in a first position, wherein the tubular members are disposed in parallel relationship with respect to each other, and subsequently be displaced through ninety degrees to be disposed in a second position, wherein the members radially extend from said housing in a common plane;

means defining a firing-pin port within each of said barrel members being so arranged as to be disposed adjacent said housing;

a plurality of spring-loaded firing-pins;

means mounting said firing-pins within said housing in a manner such that the firing-pins are adapted to be activated and forced from said housing through said firing-pin ports, when the barrel members are disposed in said second position;

means adapted to be armed for selectively activating said firing-pins; and

a flexible web member connected to each of the barrel members normally disposed in said common plane and spanning the space defined therebetween when said barrel members are disposed in said second position.

3. In a free-fall folding munition, means comprising:

a firing-pin housing;

a plurality of radially disposed firing-pins each being reciprocally mounted in said housing in a manner such as to accommodate a sliding extension thereof from said housing;

a plurality of compression springs mounted within said housing, with each spring of said plurality being adapted to force a given firing-pin from said housing;

releasable detent means mounted in said housing for retaining said firing-pins in a fixed relationship with respect to said housing including,

a detent release means having a flat central portion disposed adjacent said housing so as to extend between the radially disposed firing-pins and having peripheral portion extending normally with respect to said central portion and toward said firing-pins to provide a lip normally engaging each of said firing-pins for selectively retaining the firing-pins in a retracted disposition against forces exerted by said compression springs;

a plenum chamber formed in said housing disposed so as to communicate with a surface of the central portion of said detent release means;

means defining a gas port communicating with said plenum chamber;

a gas generating means selectively operable for generating a pressurized gas; and

means for directing generated gas from said generating means through said gas port for pressurizing said plenum chamber so that said detent release means may be forceably displaced from said housing in response to a pressurization of said chamber for simultaneously disengaging and releasing said firing-pins.

4. The device defined in claim 3 wherein the generating means comprises:

a pyrotechnic device; and

a selectively operable fuze device for firing said pyrotechnic device.

5. The device as defined in claim 4, further including:

a plurality of tubes, each being adapted to receive and retain a pre-loaded round of ammunition;

means mounting each of said tubes on said housing in a manner such that the tubes are caused to extend radially from the housing; and

means defining a firing-pin port formed adjacent each tube near its mounting means being so adapted and arranged as to be aligned with a given firing-pin, whereby the firing-pins may be driven under influence of the compression springs to impact against percussion means of said pre-loaded rounds of ammunition.

6. In a free-fall folding munition, means comprising:

a firing-pin housing;

a plurality of radially disposed firing-pins, each being reciprocally mounted within said housing in a manner such as to accommodate a sliding extension thereof from said housing;

a plurality of compression springs mounted within said housing, with each spring of said plurality being adapted to force a given firing-pin from said housing;

releasable detent means mounted within said housing adapted for retaining said firing-pins in a fixed relationship with respect to said housing including,

a detent release means having a flat central portion disposed adjacent said housing so as to extend between the radially disposed firing-pins and having a peripheral portion extending normally with respect to said central portion and toward said firing-pins to provide a lip normally engaging each of said firing pins for

selectively retaining the firing-pins in a retracted disposition against forces exerted by said compression springs;

a plenum chamber formed in said housing disposed so as to communicate with a surface of the central portion of said detent release means;

means defining a gas port communicating with said plenum chamber;

a gas generating means including,

a pyrotechnic device;

a selectively operable fuze device adapted for firing said pyrotechnic device for generating a pressurized gas;

means for directing generated gas from said generating means through said gas port for pressurizing said plenum chamber so that said detent release means may be forceably displaced from said housing for simultaneously disengaging and releasing said firing pins;

a plurality of tubes, each being adapted to receive and retain a preloaded round of ammunition;

means mounting each of said tubes on said housing in a manner such that the tubes are caused to extend radially from the housing;

means defining a firing-pin port formed adjacent each tube near its mounting means being so adapted and arranged as to be aligned with a given firing-pin, whereby the firing-pins may be driven under influence of the compression springs to impact against percussion means of said preloaded rounds of ammunition;

an aerodynamic drag member disposed between each of said tubes for decreasing rate descent and imparting a rate of rotation thereto; and

a spin-arming mechanism connected with said fuze device for initiating a firing of said pyrotechnic device, whereby the rounds of ammunition may be fired only after the munition has been sufficiently rotated under the influences of said drag member.

7. The device of claim 6 further including:

a casing for retaining said pyrotechnic device and said fuze; and

releasable means for releasably sealing said casing so that reversed direction of displacement may be imparted to the casing and housing under influence of gas generated by the pyrotechnic device, subsequent to the firing of said pyrotechnic device by said fuze and prior to the occurrence of a release of said firing-pins.

8. The device as defined in claim 7 further including:

spring and pivot means for selectively imparting a pivotal displacement of said tubes from a first position, wherein the tubes are aligned in a parallel relationship, to a second position, wherein the tubes extend radially from said housing.

9. A free-fall device comprising in combination:

a housing containing a plurality of firing pins;

a plurality of ejection tubes each retaining a preselected material responsive to a firing pin;

securing means pivotally mounting said tubes on said housing in a manner such that the tubes are initially

disposed side-by-side around the housing and later caused to extend radially in a common plane;

actuating means mounted in said housing for actuating said firing pins and initiating a simultaneous ejection of said material from the tubes;

an aerodynamic drag member extending between said tubes adapted to impart an aerodynamic drag effect to said device, as it descends in a free-fall manner, for impeding descent and for causing the device to rotate about an axis of rotation which extends normal to the longitudinal axes of the tubes, whereby lateral translation is caused to be imparted to the device as the device is caused to descend; and

means for activating the actuating means at a preselected altitude.

10. In a free-fall, folding munition means comprising:

a mechanism housing;

a plurality of elongated ejection tubes, each retaining a preselected payload;

means pivotally securing said tubes to said housing whereby the tubes may be disposed in a first side-by-side relationship and subsequently disposed in a second radially extending disposition;

an initiating mechanism arranged within said housing including means for initiating an ejection of said payloads from said tubes;

an airstream responsive means initially retaining said ejection tubes in a first side-by-side relationship and subsequently releasing said tubes when the device is subjected to an airstream;

tube actuating means including means for pivotally displacing said tubes to said second disposition upon a release thereof subsequent to a subjection of said munition to an airstream;

a flexible aerodynamic drag means operatively supported between said tubes for imparting both a rate of rotation and an aerodynamic drag to said munition; and

means responsive to said rate of rotation for arming said initiating mechanism, whereby the initiating mechanism, may be selectively activated.

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