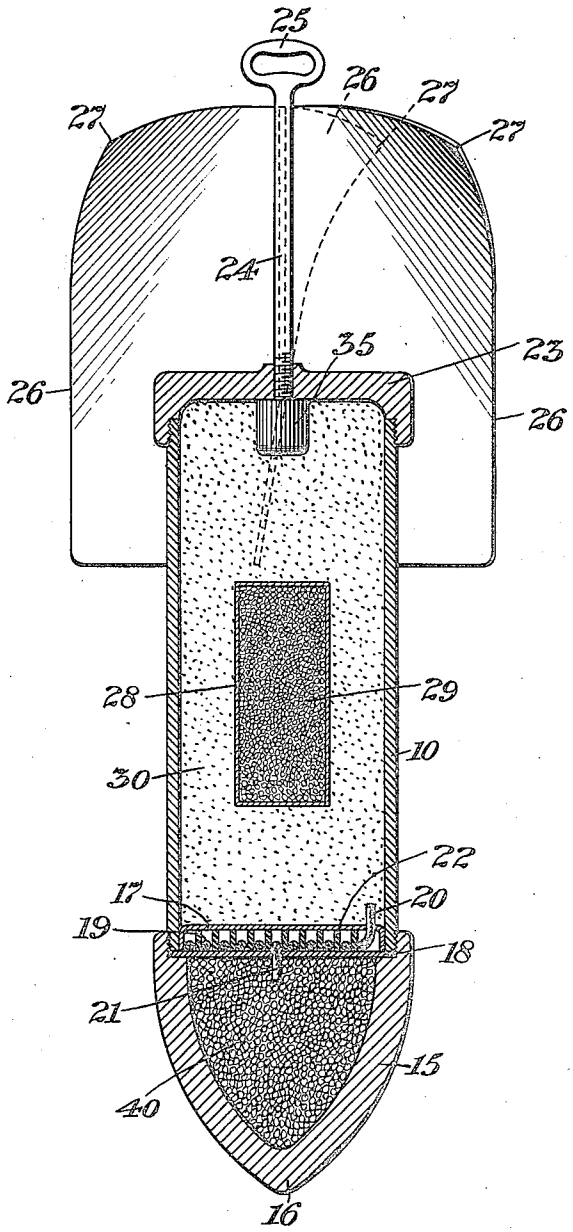
J. H. HAMMOND, JR.

INCENDIARY BOMB.

APPLICATION FILED DEC. 9, 1915. RENEWED MAR. 24, 1921.

1,436,248. Patented Nov. 21, 1922.



WITNESS

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UNITED STATES PATENT OFFICE.

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INCENDIARY BOMB.

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To all whom it may concern:

Be it known that I, JOHN HAYS HAMMOND, Jr., a citizen of the United States, and a resident of the city of Gloucester, in the county of Essex and the State of Massachusetts, have invented certain new and useful Improvements in Incendiary Bombs, of which the following is a specification.

Some of the objects of this invention are to provide an improved incendiary bomb, which will act quickly and with certainty in producing the combustion of an inflammable target; to provide an improved incendiary bomb particularly adapted to be dropped from air craft; and to provide other improvements as will appear hereinafter.

In the accompanying drawing, the figure is a longitudinal central section of an incendiary bomb, constructed in accordance with this invention.

Referring to the drawing, one embodiment of this invention comprises a bomb including a hollow cylindrical body portion or container 10, which may be of mild steel or any other suitable material. Threaded over the inner or lower end of this body portion 10 is a hollow tapering head 15 which is preferably made of tool steel and preferably hardened and then drawn to a uniform temper suitable for piercing a target, or which may be left comparatively soft throughout its main portion, but provided with a suitable hardened point 16. This end of the body portion 10 is sealed by a hollow cylindrical closure 17 preferably made of asbestos or any other heat insulating or refractory material and provided with a marginal flange 18 which is clamped between the head 15 and the body portion 10. This hollow closure 17 separates and insulates the interior of the head 15 from the interior of the body portion 10, and encloses and protects the main portion of a fuse 19 which is coiled spirally or otherwise within the hollow closure. One end 20 of this fuse 19 projects through the inner wall of the closure and into the space within the body portion 10, and the other end 21 of this fuse 19 projects through the outer wall of the hollow closure 17 and into the space within the head 15. The coils of the fuse 19 within the closure are separated and insulated by any suitable means, as for instance, by a strip 22 of asbestos or other heat insulating material. Threaded over the outer or upper end of the body portion 10, is a cap 23, which may be made of cast iron, steel, or any suitable material, and threaded centrally into the cap 23 and extending outwardly or upwardly therefrom, is a comparatively rigid metal rod or shank 24, which is provided at its outer end with a handle 25 rigid therewith, the rod 24 being preferably coaxial with the body portion 10 and the head 15 of the bomb.

To cause the bomb to fall head downwards and in a comparatively direct path when dropped from an aircraft, the upper end of the body portion 10 of the bomb, and the rod 24, is preferably surrounded by a plurality of vanes 26. In the form of the invention shown in the drawings, four vanes 26 are utilized (only three of which are shown), and these vanes radiate from and are rigidly secured to the rod 24 and to the cap 23, the upper outer corner 27 of each vane being bent away from the body portion of the vane in a clockwise direction when viewed from above, so that when the bomb is dropped from an aircraft, the bomb will be rotated about its longitudinal axis in an anticlockwise direction, as viewed from above.

For initiating the combustion of an inflammable target, the interior of the body portion 10 of the bomb is preferably charged with any suitable exothermic non-explosive reaction means, substance, or substances, together with any suitable means, substance or substances, rich in oxygen, and which will give up oxygen readily upon being heated, and with any suitable substance or substances which will ignite readily and which will act to expedite and to spread the combustion after the bomb has hit its target. For instance, the body portion 10 of the bomb may be charged with thermite (which may be a mixture of iron oxide and aluminum), together with a suitable admixture of salt peter (sodium nitrate), and a suitable admixture of resin. All of these substances might be mixed together in the body of the bomb, and if preferred, to this mixture might be added a suitable amount of some substance, or substances, such for instance, as sulphur, iodine, or other substance, which upon being heated in the presence of air or other oxygen, would give off an obnoxious, deleterious, suffocating or poisonous gas or vapor. Preferably, how-

ever, a hollow cylindrical imperforated inner container 28, made of thin copper or other metal or material which will melt or be consumed under the action of heat, and filled with a mixture 29 of salt peter and resin with or without an admixture or sulphur or iodine or other similar or suitable substance or substances, is arranged within the body portion 10 and is surrounded and held in spaced relationship to the walls of the body portion 10 by any suitable exothermic non-explosive reaction means, for instance, by thermit 30.

For initiating the exothermic reaction, a percussion fuse or other suitable fuse 35 is secured within the body portion 10 of the cap 23. This fuse 35 is preferably so constructed that when the bomb hits its target the fuse will ignite the mixture of thermit, salt peter and resin, or other mixture within the body portion 10.

For exploding the bomb and scattering the contained incendiary materials immediately after the bomb has hit its target, the interior of the head 15 is filled with any suitable explosive, but preferably with a mild explosive such as gun powder 40.

In the operation of this improved bomb, the bomb is suspended above its target by the handle 24, and is then permitted to fall, whereupon it will be rotated about its longitudinal axis by the vanes 26, as hereinbefore described, and will proceed head foremost toward its target. Upon impact with its target, the exothermic reaction mixture 30 within the body 10 will be ignited by the fuse 35 and will quickly react to ignite the inner end 20 of the coiled fuse 19 and to form within the body portion 10 a molten white hot mass, which will quickly burn through the comparatively thin container 28, and mingle with and act upon the contents of the container, whereupon oxygen will be liberated from the salt peter to expedite and intensify the exothermic reaction, the resin will be ignited, and the sulphur or iodine or other similar or suitable substances will be highly heated, and in part will probably be united with oxygen or otherwise acted upon to form a gas. The coiled fuse 19 is so proportioned that immediately after the foregoing functions have been performed, the gunpowder 40 or other explosive in the head 15 will be ignited and the bomb will be exploded, and the white hot molten contents of the body portion 10 will be scattered over the target. When this has happened, the white hot exothermic mixture will ignite the target, and by the action of the oxygen which is given up by the salt peter, and by the action of the resin which has been ignited by the action of the exothermic mixture, the combustion of the target will be facilitated. The burning of the resin throws out large volumes of dense smoke which incidentally acts to conceal the exact location of the ignited portions of the target, and thus renders it difficult to extinguish the combustion in its early stages. Moreover, when the sulphur, iodine, or other similar or suitable substance or means for generating an obnoxious, suffocating or poisonous gas, is included in the container 28 or otherwise suitably arranged in the bomb, the obnoxious, suffocating, or poisonous gas generated thereby and which is released at the time of the explosion of the bomb, acts to prevent interference with the operation of the bomb in the performance of its incendiary function, and also acts to overcome either temporarily or permanently, any animate objects within a considerable distance from the bomb at the time it explodes.

It is to be understood that in the construction of this improved bomb, one or more of the contained substances might be omitted without otherwise changing the construction, or one or more of the substances or elements might be replaced by one or more other substances or elements, and various other changes might be made without departing from the spirit of the invention or the scope of the appended claims.

Having thus fully described this invention, I claim and desire to protect by Letters Patent of the United States.

1. In a bomb, the combination with containing means, of incendiary means carried thereby including exothermic reaction means which will give up oxygen readily upon being heated, and means carried by said containing means for initiating the reaction of said reaction means upon impact.

2. In a bomb, the combination with containing means, of incendiary means carried thereby including exothermic reaction means, and means which will give up oxygen readily upon being heated, and means carried by said containing means for automatically initiating the reaction of said reaction means upon impact.

3. In a bomb, the combination with containing means of incendiary means carried thereby including exothermic reaction means, means which will give up oxygen readily upon being heated, and readily inflammable means which will produce dense smoke upon being burned, and means carried by said container for initiating the reaction of said reaction means upon impact.

4. In a bomb, the combination with containing means, of incendiary means carried thereby including exothermic reaction means, and means which will give up oxygen readily upon being heated, means for automatically initiating the reaction of said reaction means, and means for exploding said containing means.

5. In a bomb, the combination with con-

taining means, of incendiary means carried thereby including exothermic reaction means, and means which will give up oxygen readily upon being heated, means for automatically initiating the reaction of said reaction means, and means for exploding said containing means as a result of the action of said reaction means.

6. In a bomb, the combination with containing means providing two compartments, of heat insulating means separating said compartments, exothermic reaction means in one of said compartments, means carried by said containing means for automatically initiating the reaction of said reaction means, and explosive means in the other of said compartments and arranged to be exploded as a result of the action of said reaction means.

7. A bomb comprising the combination with containing means, of incendiary means carried thereby including exothermic reactions means, means for supplying oxygen and readily inflammable means, means carried by said containing means for automatically initiating the reaction of said reaction means as a result of the striking of a target by said bomb, and means for exploding said containing means.

8. A bomb comprising the combination with containing means, of incendiary means carried thereby including exothermic reaction means, means for supplying oxygen and readily inflammable means, means carried by said containing means for automatically initiating the reaction of said reaction means as a result of the striking of a target by said bomb, and means for exploding said containing means as a result of the action of said reaction means.

9. A bomb comprising the combination with containing means, comprising a hollow body portion, a hollow tapering head carried thereby, a heat insulating partition between said body portion and said head, incendiary means in said body portion including thermit, salt peter, and resin, a percussion fuse arranged to initiate the reaction of said thermit, and explosive means in said head and arranged to be exploded as a result of the reaction of said thermit.

10. A bomb comprising a container, exothermic reaction means and readily inflammable means in said container, heat conducting means separating said reaction means and said readily inflammable means, and means for initiating the reaction of said reaction means.

11. A bomb comprising a container, exothermic reaction means and readily inflammable means in said container, heat destructible means separating said reaction means and said readily inflammable means, and means for initiating the reaction of said reaction means.

12. A bomb comprising an outer container, an inner container arranged in said outer container, exothermic reaction means in said outer container and surrounding said inner container, readily inflammable material arranged in said inner container, and means for initiating the reaction of said reaction means.

13. A bomb comprising an outer container, an inner container arranged in said outer container, exothermic reaction means in said outer container and surrounding said inner container, readily inflammable material, and material for supplying oxygen arranged in said inner container, and means for initiating the reaction of said reaction means.

14. A bomb comprising an outer container, an inner container in said outer container, exothermic reaction means in said outer container and surrounding said inner container, readily inflammable material and material rich in oxygen and which will give up its oxygen readily upon being heated in said inner container, means for initiating the reaction of said reaction means, and means for exploding said bomb.

15. A bomb comprising an outer container, an inner container in said outer container, exothermic reaction means in said outer container and surrounding said inner container, readily inflammable material and material rich in oxygen and which will give up its oxygen readily upon being heated in said inner container, means for initiating the reaction of said reaction means, and means for exploding said bomb as a result of the reaction of said reaction means.

16. A bomb comprising an outer contaner, an inner heat conducting container in said outer container, thermit in said outer container and surrounding said inner container, salt peter and resin in said inner container, a hollow head carried by said outer container, explosive material in said head, heat insulating means separating said explosive material from said thermit, a fuse connecting said explosive material and said thermit, and a percussion fuse arranged to initiate the reaction of said thermit as a result of the striking of a target by said bomb.

17. In a bomb, the combination with a container comprising means providing two compartments separated by heat insulating material, of incendiary means in one of said compartments, explosive means in the other of said compartments, and a fuse connecting said incendiary means and said explosive means.

18. In a bomb, the combination with a container comprising means providing two compartments separated by heat insulating material, of incendiary means in one of said compartments, explosive means in the other of said compartments, and a time fuse con-

necting said incendiary means and said explosive means.

19. In a bomb, the combination with a container comprising means providing two compartments separated by heat insulating material, of incendiary means in one of said compartments, explosive means in the other of said compartments, and a fuse connecting said incendiary means and said explosive means, the major portion of said fuse being enclosed and protected by said heat insulating material.

20. A bomb comprising a container, exothermic reaction means and inflammable means in said container, heat destructible means separating said reaction means and said inflammable means, and a percussion fuse for initiating the reaction of said reaction means.

21. A bomb comprising an outer container, an inner container arranged in said outer container, exothermic reaction means in said outer container and surrounding said inner container, inflammable material arranged in said inner container, and means including a percussion fuse for initiating the reaction of said reaction means.

Signed at New York city in the county of New York and State of New York this 7'' day of December, A. D. 1915.

JOHN HAYS HAMMOND, Jr.

Witnesses:

Albert D. Trenor,

W. S. Orton.