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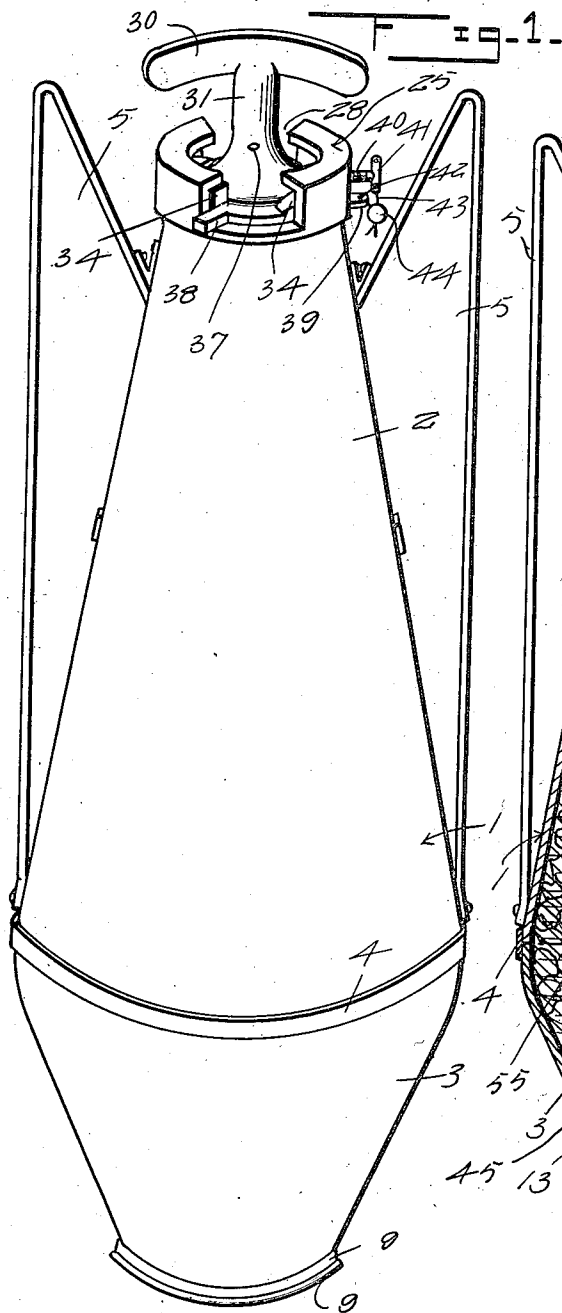
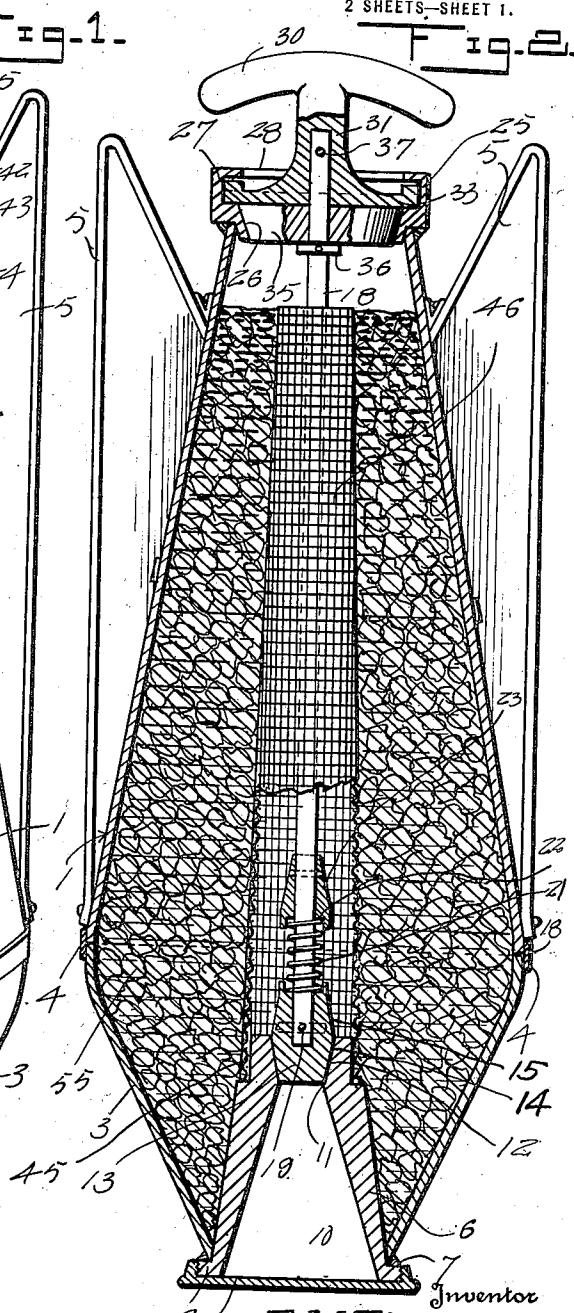
BOMB.

APPLICATION FILED JAN. 11, 1918.

1,333,786.

Patented Mar. 16, 1920.

2 SHEETS—SHEET 1.



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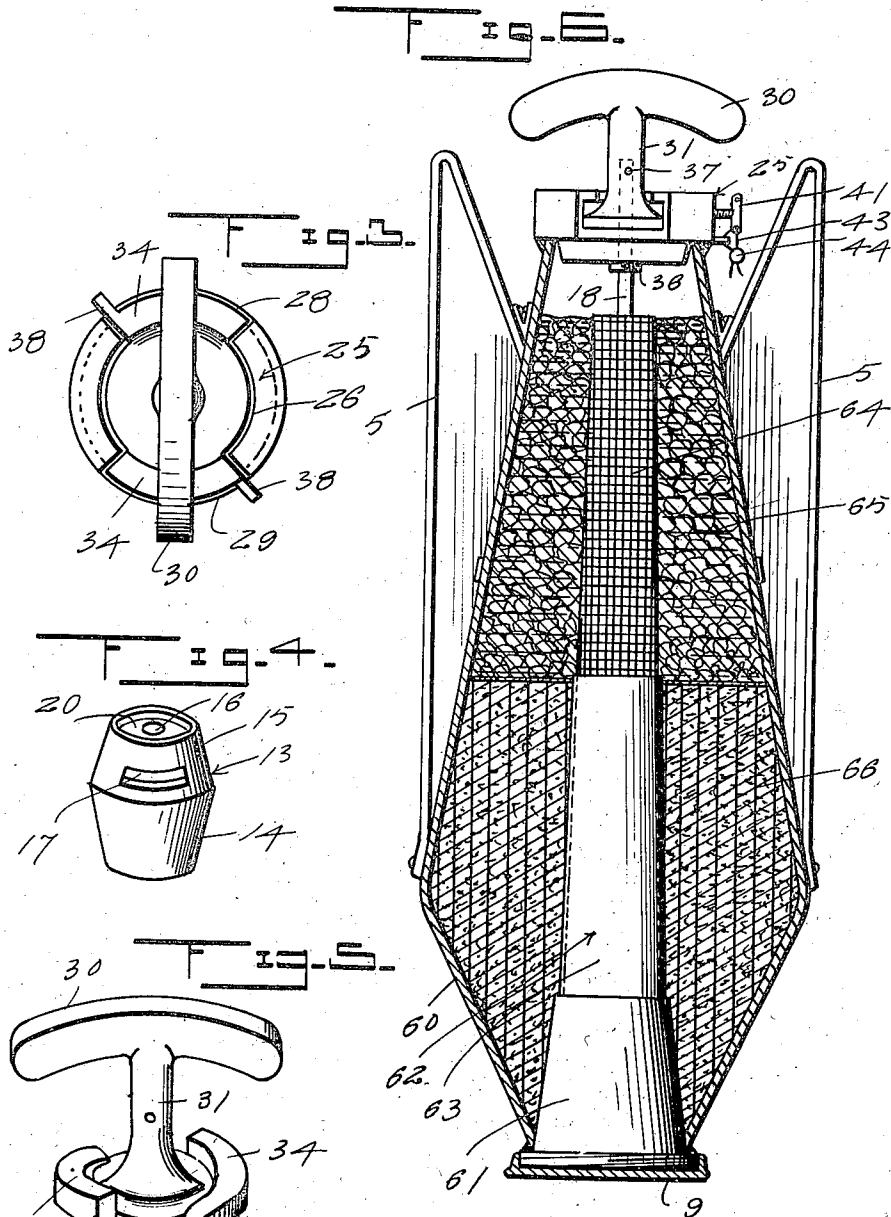
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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BOMB.

1,333,786.

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To all whom it may concern:

Be it known that I, FRANK M. THOMAS, a citizen of the United States, residing at Catskill, in the county of Greene and State of New York, have invented certain new and useful Improvements in Bombs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an incendiary bomb, and the primary object of the invention is to provide an aerial incendiary or combustible bomb embodying a self-igniting principle, which is constructed to prevent accidental operation of the bomb, and one that can be easily and quickly operated by an aviator or bomber, when dropped to permit of the self-igniting thereof.

More specifically, this invention comprehends a bomb-shell or container in which is positioned phosphorus submerged in any suitable type of liquid, such as water, gasoline or the like and through which casing extends a central foraminous flue having communication through a plug with the atmosphere below the bottom of the casing and with the atmosphere above the top of the casing through an opening in the upper end thereof and to provide suitable valves for normally closing the opening with the atmosphere, to hermetically seal the casing to prevent evaporation of the liquid contained therein and the consequent inflaming or burning of the phosphorus.

Another object of this invention is to provide means for unseating said valve which is operated by the partial rotation of a handle and a head having cam surfaces thereon so that when the person dropping the bomb holds it suspended, he can by a slight twist of the handle move the handle into a releasing position which will allow the bomb proper to fall free of the valve or closer plug for the opening in the bomb casing, permitting of an air circulation upwardly through the bomb casing, as it falls which will carry the liquid out of the bomb in the first few hundred feet of the drop of the bomb after which the air rushing through the central flue of the bomb will create sufficient friction or heat and ignite the phosphorus, causing the spreading of fire or flame in the path of the bomb and burning

anything which it strikes; for instance should the bomb be dropped upon a building, from any comparatively great height, upon penetration of the building it would set fire to the same.

A further object of this invention is to provide a bomb as specified, the lower portion of which casing may be filled with any suitable type of explosives or with shrapnel or any other munitions requiring positive ignition so that when the phosphorus within the bomb is ignited and the fire is transmitted to the munitions carried by the lower portion of the bomb, the latter will explode and scatter the burning phosphorus over a wide area.

With the foregoing and other objects in view this invention consists in such novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and claims.

In describing the invention in detail, reference will be had to the accompanying drawings, wherein like characters designate like and corresponding parts through out the several views and in which:

Figure 1 is a perspective view of the improved bomb.

Fig. 2 is a vertical section through the bomb.

Fig. 3 is a top plan of the structure for locking the valve in closed position.

Fig. 4 is a detail view of the valve for closing the opening at the lower end of the central flue.

Fig. 5 is a detail perspective view of the handle and cam locks for locking the valves in place.

Fig. 6 is a sectional view through a modified form of the bomb and

Fig. 7 is a detail perspective view of a member inserted in the lower end of bomb while the bomb is being filled.

Referring more particularly to the drawings, 1 designates the casing of the bomb as an entirety which is composed of a pair of hollow substantially frusto-conical sections, 2 and 3, which sections may be constructed of steel or any suitable material. The sections 2 and 3 have their bases or large portions positioned in engagement with each other, as clearly shown in Fig. 2 of the drawings and connected by a band 4 of soft solder.

Guiding wings or planes 5 are connected to the section 2 of the casing 1 in any suitable manner and they are provided for holding the bomb in proper position, during its flight.

The section 3 has its lower end open, and a plug 6 is inserted therein and connected to the casing section 3 by a ring 7 of soft solder which hermetically seals the joint between the plug 6 and the casing 1. The plug 6 is provided with an annular flange 8 formed upon its lower end to which is screw threadably connected a cap or closure plate 9.

The plug 6 is provided with a central opening 10 the sides of which converge as they extend upwardly, to the point 11 which is a short distance below the upper end of the plug, from which they diverge, to form a valve seat 12 in which is mounted a barrel valve 13. The barrel valve 13 is provided with a lower portion 14 for seating in the valve seat 12 to close the opening 10 through the plug 6 and with an upper section 15. The upper section 15 of the barrel valve has a vertical centrally disposed bore 16 communicating with a transversely extending opening 17. A valve stem 18 extends downwardly into the bore 16 and it has a pin 19 extending diametrically therethrough which pin seats in the opening 17, for connecting the valve stem 18 to the valve 13 to prevent vertical movement of the valve stem independently of the valve but to permit limited rotary movement of the valve stem independently of the valve. The upper end of the valve 13 is recessed, as shown at 20, and the lower end of a spring 21 rests in the recess while the upper end of the spring rests in the recess 22 formed in a member 23 which is attached to the valve stem 18. The spring 21 is provided for holding the valve 13 seated during rotary movement of the valve stem 18.

The casing 1 has a locking element 25 attached to the upper end of the same which comprises a valve seat 26 and a channeled ring 27 the latter of which projects above the upper end of the casing and is provided with a pair of diametrically opposed cut out portions 28 and 29.

A handle 30 is provided which is shaped to be conveniently gripped by the fingers of the person dropping the bomb and this handle is connected by a stem 31 with a disk 33 which rests upon the upper surface of the bottom wall or side of the channeled ring 25 and has a pair of cams 34 attached to its upper surface. The cams 34 are beveled oppositely to each other as clearly shown in Figs. 1 and 5 of the drawings and their upper surfaces inclined for engagement with the under surface of the overhanging flange of the channeled ring or collar 25 for securely connecting the handle to the bomb

casing 1 and also for firmly seating the valve 35 in the valve seat 26. The valve 35 is rotatably mounted upon the valve stem 18 and is held against downward vertical movement by a collar 36 which is mounted upon the valve stem. The valve stem 18 projects upwardly through the disk 33 and into the stem 31 being connected to the stem by a pin 37. The disk 33 has outwardly extending pins 38 formed integrally therewith and projecting radially from the periphery of disk at the thick end of the cams 34, for engagement with the end of the channeled collar 25, to limit the rotation of the disk with respect to the collar.

The channeled collar 25 has an ear 39 formed thereon and a set screw 40 extends through the collar for engagement with the outer side of one of the cams 34 to hold the cam, disk 33 and handle 30 against accidental rotation with respect to the collar 25 and consequently with respect to the bomb casing 1. The set screw 40 has a flattened head 41 which is provided with a pair of openings 42. A sealing wire 43 extends through an opening in the ear 39 and through one of the openings 42 in the flattened head 41 of the set screw 40, and has its end connected by the usual type of lead seal indicated at 44 to securely lock the set screw 40 against rotation and consequently lock the disk 33 and cam 34 carried thereby against accidental rotation with respect to the collar 25 so as to prevent the accidental disconnection of the parts of the bomb.

The plug 6 is provided with a reduced portion or annular recess 45 formed about its upper end in which is seated the lower end of a foraminous flue 46. The flue 46 is constructed of relatively heavy wire mesh and its sides taper, so that its upper end will be of smaller diameter than its lower end. The flue 46 extends centrally through the casing 1 and about the valve stem 18, as clearly shown in Fig. 2 of the drawings.

When the bomb is being charged, the device illustrated in Fig. 7 of the drawings and generically indicated by the numeral 50 is positioned so that the spring grip 51 thereof will engage the sides of the lower section 3 of the bomb casing and the substantially frusto-conical rubber or resilient plug 52 will be inserted in the opening 10 of the plug 6. After the member 50 has been properly positioned, the bomb is filled or charged with the inflammable material indicated by the numeral 55 which material is preferably phosphorus and it is immersed in a liquid, such as water, gasoline or the like to prevent the burning of the same. When the bomb has been filled the member 50 is removed and the closure 9 is applied.

When the bomb is to be dropped, the cap 9 is removed from the bottom of the bomb and the wire 43 broken after which the

screw 40 is moved outwardly to permit rotation of the disk 33. The person dropping the bomb then holds it suspended over the article upon which the bomb is to be dropped and by a slight twist, may rotate the handle 30 so as to bring the cams 34 in alinement with the openings 28 and 29 formed in the channeled collar 25. This will release the connection between the handle 30 of the bomb and the weight of the bomb will cause it to fall free from the handle 30, and also from the valve stem 18 and the valve 13, which members are connected to the handle 30. This will leave an open flue or passage way through the center of the bomb through which the air will rush, as the bomb falls. During the first of the flight of the bomb, the liquid will be forced out of the bomb casing 1 by the air after which the air will strike the phosphorus, and ignite the same. The foraminous flue 46 will, owing to the fact that its upper end is smaller than its lower end cause the branching out and swirling of the air within the casing 1, increasing the air friction and ignition of the phosphorus causing the bomb to leave a trail of fire behind it and also causing it to set fire to anything which it strikes. The heat created within the casing 1 by the burning of the phosphorus will melt the soft solder ring 4, allowing the separation of the sections 2 and 3 of the bomb casing and causing a wider scattering of the burning phosphorus.

In Fig. 6 of the drawings, a modified form of the improved bomb is illustrated. In this form, the bomb casing 60 is formed of a single piece, shaped to assume the shape of the casing 1. The casing 60 has a plug 61 mounted in the lower end of the same which is identical in construction with the plug 6 and the bomb also has a flue 62 positioned centrally therein the lower end of which flue is attached to the plug 61. The flue 62 is composed of a lower solid section 63 and an upper foraminous section 64 and the shell or casing 60 of the bomb is loaded or charged with phosphorus immersed in a liquid above the upper end of the imperforate section 63 of the flue 62 as shown at 65 and with dynamite, gun cotton, or any other suitable explosive below the upper end of the imperforate section 63 as shown in 66. In all other respects, the modified form of the bomb is identical with the construction of the preferred form heretofore described, and it is operated or dropped in the same manner as the preferred form of bomb. The operation however of the modified form of bomb is different in that the burning phosphorus will in time, explode or ignite the explosive charge 66 of the bomb, which will scatter the burning phosphorus over a wide area and have a tendency to blow up any article

which the bomb strikes as well as set fire to the same.

From the foregoing description taken in connection with the accompanying drawings the advantages of construction and the method of operation of the improved bomb will be readily apparent to those skilled in the art to which this invention appertains and, while in the foregoing description, the principle of the operation of this invention has been described together with various features of construction, it is to be understood that certain minor features of construction, combination and arrangement of parts may be altered to suit practical conditions provided such alterations are comprehended within the scope of what is claimed.

What is claimed is:

1. An incendiary bomb comprising a casing having a central longitudinal passage formed therethrough which has both ends open during the flight of the bomb, means adapted to close the passage and to be removed therefrom upon the starting of the flight of the bomb, and material held within the casing and adapted to chemically combine with the oxygen in the air for effecting a spontaneous combustion, said material being so arranged that it contacts with the air passing through the central longitudinal passage.

2. An incendiary bomb comprising a casing having a longitudinal passage formed therethrough, means adapted to close the passage and to be removed therefrom upon the starting of the flight of the bomb, means to lock the passage closing means against accidental displacement, and material held within the casing and adapted to chemically combine with the oxygen in the air for effecting a spontaneous combustion, said material being so arranged that it contacts with the air passing through the longitudinal passage.

3. An incendiary bomb comprising a casing having a longitudinal passage formed in the central portion thereof, means adapted to close the passage to exclude air therefrom and to be removed therefrom upon the starting of the flight of the bomb, a material held within the casing and surrounding the passage and adapted to chemically combine with the oxygen in the air for effecting spontaneous combustion, and a liquid held within the casing and normally having the material immersed therein to prevent the premature combustion of the same.

4. An aerial incendiary bomb comprising a casing, material held within the casing and adapted to chemically combine with the oxygen in the air for effecting spontaneous combustion, and means associated with the casing whereby air is brought into contact with said material during the flight of the bomb.

5. An aerial incendiary bomb comprising a casing, material held within the casing and adapted to chemically combine with the oxygen in the air for effecting spontaneous combustion, means associated with the casing whereby air is brought into contact with the material during the flight of the bomb, and means for preventing the accidental premature combustion of said material prior to the flight of the bomb.
6. An aerial incendiary bomb comprising a casing, material held within the casing which is adapted to chemically combine with the oxygen in the air during the flight of the bomb for effecting spontaneous combustion, and an explosive charge held within the casing and adapted to be exploded upon the combustion of said material.
7. An aerial incendiary bomb comprising a casing including a plurality of sections, means for connecting said sections and adapted to release them when subjected to a predetermined degree of heat, and material held within the casing, said material being adapted to chemically combine with the oxygen in the air for effecting spontaneous combustion.
8. An aerial incendiary bomb comprising a casing including a plurality of sections, means for connecting said sections and adapted to release them when subjected to a predetermined degree of heat, material held within the casing, said material being adapted to chemically combine with the oxygen in the air during the flight of the bomb for effecting spontaneous combustion, and means for preventing accidental combustion of said material prior to the flight of the bomb.
9. An aerial incendiary bomb comprising a casing having openings formed therein near its opposite ends, a foraminous flue extending through the casing with its opposite ends in communication with said openings, a material held within said casing and surrounding the flue, said material being adapted to chemically combine with the oxygen in the air for effecting spontaneous combustion, and means for closing said openings.
10. In an incendiary bomb, a casing having alining openings therein, a foraminous flue extending between said openings, a material combustible upon contact with air about said flue, means for normally closing said openings, means to prevent accidental movement of said closing means, and a liquid within said casing to prevent accidental ignition of said combustible material.
11. An aerial bomb, including a casing carrying a combustible material adapted to be ignited with air during the flight of the bomb, and also carrying an explosive material adapted to be exploded by the flames of the combustible material, and a liquid within said casing to prevent accidental ignition of said combustible material.
12. An incendiary bomb including a casing composed of a plurality of connected sections, said casing alining openings therein, a foraminous flue extending between said openings, means for normally closing said openings, said casing carrying a combustible material adapted to be ignited by the air during the flight of said bomb, said connected sections adapted to be disconnected by the heat of combustible material.
13. An incendiary bomb including a casing provided with alining openings, a plug extending into said casing through one of said openings, a foraminous flue carried by said plug and extending centrally through said casing to form an air passage between said alining openings, valve seats formed above said openings, valves normally seated in said valve seats for closing said openings to prevent the entrance of the air into said casing, and a material combustible upon contact with air positioned within said casing about said foraminous flue.
14. An incendiary bomb including a casing provided with alining openings, a plug extending into said casing through one of said openings, a foraminous flue carried by said plug and extending centrally through said casing to form an air passage between said alining openings, valve seats formed above said openings, valves normally seated in said valve seats for closing said openings to prevent the entrance of the air into said casing, and a material combustible upon contact with air positioned within said casing about said foraminous flue, a handle for said bomb, a rod connected to said handle and to said valve whereby said valve may be disconnected from said casing to permit the passage of air through said casing during the flight of the bomb.
15. An incendiary bomb including a casing provided with alining openings, a plug extending into said casing through one of said openings, a foraminous flue carried by said plug and extending centrally through said casing to form an air passage between said alining openings, valve seats formed above said openings, valves normally seated in said valve seats for closing said openings to prevent the entrance of the air into said casing, and a material combustible upon contact with air positioned within said casing about said foraminous flue, a handle for said bomb, a rod connected to said handle and to said valve whereby said valve may be disconnected from said casing to permit the passage of air through said casing during the flight of the bomb, and means for preventing accidental movement of said valve.
16. An incendiary bomb including a casing composed of a plurality of sections con-

5 nected by soft solder, said casing provided with alining openings in the ends thereof, a plug inserted in one of said openings and provided with a bore having its upper ends
10 shaped to form a valve seat, a valve seat inserted in the opening opposite to the one in which said plug is inserted, valves seated in said valve seats, a stem connecting said
15 valves, a handle connected to said stem, means carried by said handle for locking said valves in their seats against accidental movement, and a material combustible upon contact with air mounted in said casing, said valve adapted to be removed from said
20 valve seat at the commencement of the flight of said bomb to permit the passage of air through the bomb casing.

17. An incendiary bomb including a casing composed of a plurality of sections connected by soft solder, said casing provided with alining openings in the ends thereof, a plug inserted in one of said openings and provided with a bore having its upper ends shaped to form a valve seat, a valve seat inserted in the opening opposite to the one in which said plug is inserted, valves seated in said valve seats, a stem connecting said valves, a handle connected to said stem, means carried by said handle for locking
25 said valves in their seats against accidental movement, and a material combustible upon contact with air mounted in said casing, said valve adapted to be removed from said valve seat at the commencement of the flight of said
30 bomb to permit the passage of air through the bomb casing, and a liquid within said casing to prevent accidental ignition of said combustible material.

18. An incendiary bomb including a casing composed of a plurality of sections connected by soft solder, said casing provided with alining openings in the ends thereof, a plug inserted in one of said openings and provided with a bore having its upper ends shaped to form a valve seat, a valve seat inserted in the opening opposite to the one in which said plug is inserted, valves seated in said valve seats, a stem connecting said valves, a handle connected to said stem, means carried by said handle for locking
35 said valves in their seats against accidental movement, and a material combustible upon contact with air mounted in said casing, said valve adapted to be removed from said valve seat at the commencement of the flight of said bomb to permit the passage of air through the bomb casing, and a liquid within said casing to prevent

accidental ignition of said combustible material, said soft solder adjusted to be melted 60 by the heat of the burning combustible material to disconnect the sections of said bomb casing during the flight of the bomb.

19. An incendiary bomb including a casing having alining openings therein, valve 65 seats carried by said casing, valves seated in said valve seats and forming closures for the openings, a handle, a rod connected to said handle and connecting said valves, means connected to said handle for normally 70 holding said valves seated against accidental movement, and a combustible material adapted to be ignited by air passing through the bomb during the flight of the bomb, positioned within said casing, said handle 75 adapted to be moved for permitting removal of said valve upon the commencing of the flight of said bomb.

20. An aerial incendiary bomb comprising, a casing having a longitudinal air passage, plugs arranged within said passage 80 and having valve seats formed therein, valves to contact with the valve seats for closing said passage, positive means to prevent the accidental displacement of the 85 valves from their seats and adapted when manually operated to unseat the valves, and material held within the casing in proximity to the passage, said material being adapted to chemically combine with the oxygen in 90 the air for effecting spontaneous combustion.

21. An incendiary bomb including a casing provided with alining openings, plugs inserted in said openings, valve seats formed in said plugs, valves seated in said valve 95 seats for closing said openings, locking means to prevent accidental removal of said valves, said locking means operable upon a half-turn with relation to said casing to permit the removal of said valves. 100

22. An incendiary bomb including a casing provided with alining openings, plugs inserted in said openings, valve seats formed in said plugs, valves seated in said valve seats for closing said openings, locking 105 means to prevent accidental removal of said valves, and a foraminous flue extending through said casing in alinement with said openings.

In testimony whereof I affix my signature 110 in presence of two witnesses.

FRANK M. THOMAS.

Witnesses:

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