

BOMB.

Patented Feb. 3, 1920.

2 SHEETS—SHEET 1.

Fig. 1. A perspective view of a mechanical device, possibly a pump or engine component, showing a conical body with various parts labeled with numbers 1 through 52. The device is mounted on a horizontal shaft (50) and includes a spring (53) and a lever (52).

F. M. THOMAS.

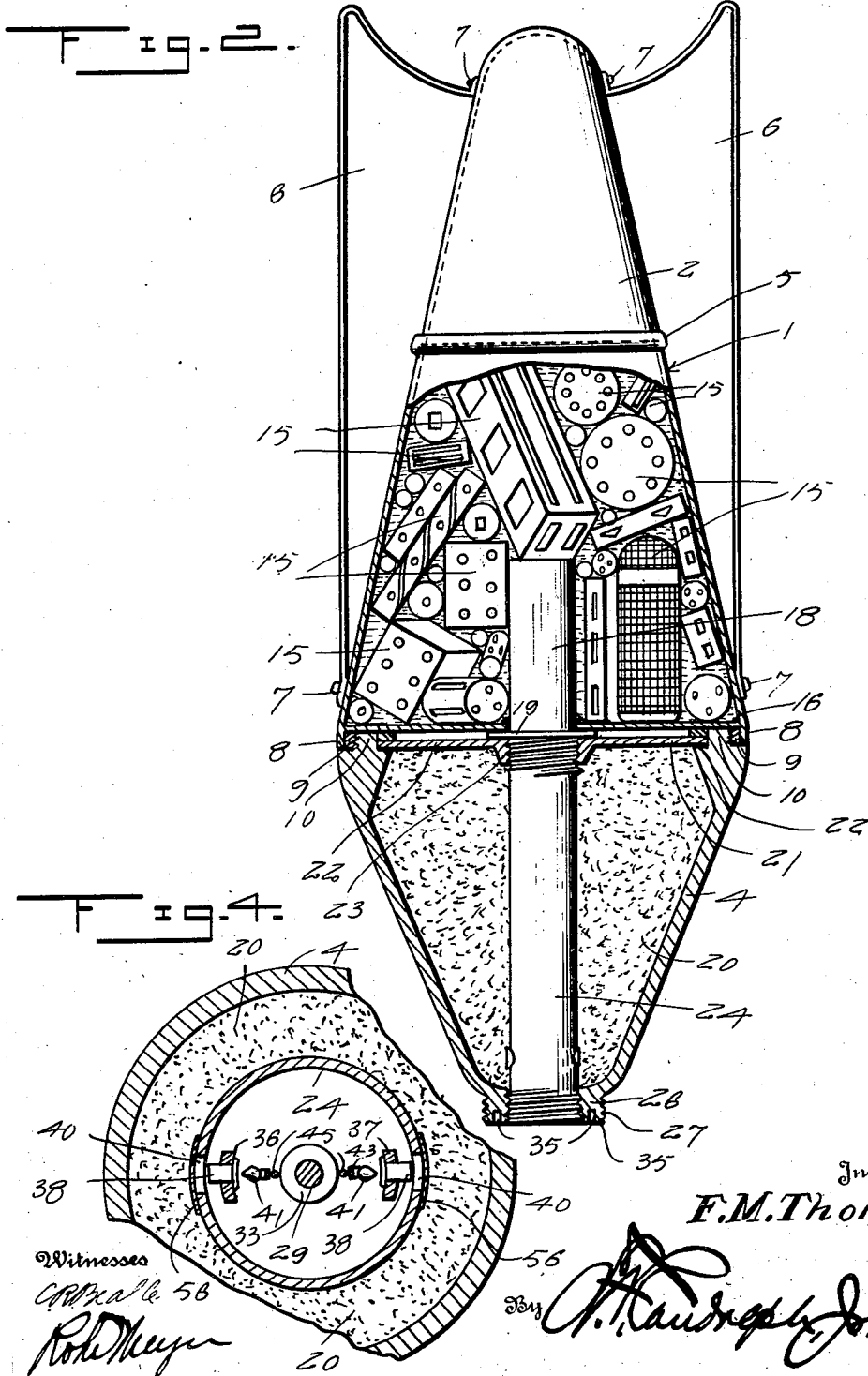
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2 SHEETS—SHEET 2.

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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK M. THOMAS, a citizen of 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 aerial bomb, and the primary object of the invention is to provide an aerial bomb which will explode above the surface of the earth, during the flight of the bomb, and scatter a combustible material which is adapted to ignite upon contact with the air, for incendiary purposes.

More specifically, the object of this invention is to provide an aerial bomb constructed of a pair of connected sections, one of which contains an explosive, adjusted to the bomb structure during the flight of the bomb, for scattering inflammable or combustible material which is contained in the second compartment, over a wide area to set fire to anything which the combustible or inflammable material strikes and also to provide means operable during the flight of the bomb to explode the explosive charge of the bomb during the flight, and a comparatively short distance above the ground, so that the bursting of the bomb will scatter the combustible material over buildings, grain fields, or any other objects desired to be burned, from above.

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 claimed.

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

Figure 1 is a side elevation of the improved aerial bomb showing the same suspended from an aeroplane.

Fig. 2 is a vertical section through the improved bomb.

Fig. 3 is an enlarged fragmentary section through the bomb showing the mechanism for automatically exploding the explosive charge of the bomb, and

Fig. 4 is a section on the line 4—4 of Fig. 3.

Referring more particularly to the drawings, 1 designates the shell or casing of the improved bomb, as an entirety, which shell or casing is composed of three sections 2, 3 and 4. The sections 2 and 3 are connected by a soft solder joint 5 and together they form a substantially conical casing having a plurality of planes or wings 6 attached thereto in any suitable manner as indicated at 7, diametrically opposite of each other for guiding the falling of the bomb.

The sections 2 and 3 are composed of relatively thin metal, while the section 4 is composed of much thicker metal, as clearly shown in Fig. 2 of the drawings.

The lower end of the section 3 is provided with a depending annular flange 8 to the inner surface of which is attached in any suitable manner, such as by soldering, an internally threaded ring 9. The ring 9 is threadably connected to an upstanding flange 10 which is formed upon the upper end of the lower section 4. The lower section 4 is shaped to form a substantially inverted frusto cone, so that its sides will form stream lines, for decreasing to an appreciable extent, the air resistance, during the fall of the bomb.

The sections 2 and 3 are filled with foraminous containers 15 which contain a combustible material, containing an ingredient which will be ignited on contact with air and a second ingredient which is preferably a slow burning combustible material which is adapted to be ignited by the burning of the first named material, which first named material is preferably phosphorus while the second named material may be of any one of a number of well known combustible materials which will burn when flame is applied thereto, such as tar, pitch, rosin, or analogous material which preferably assumes a thick liquid state when burning, so that it will pass out of the perforations in the containers 15 and upon the explosion of the bomb scatter the containers 15 and thus spread a blanket of molten burning com-

bustible material over a considerable area beneath the bomb, and set fire to everything inflammable, which the combustible material from the bomb strikes.

5 The bottom 16 of the bomb casing 3 is provided with a central opening 17 through which a cylindrical tube 18 extends. A flange 19 is formed upon the lower end of the tube 18 and it is attached to the under
10 surface of the bottom 16 of the section 3 of the casing or shell. The joints between the bottom 16 and the flange 19 are sealed to provide liquid tight joints, and the sections 2 and 3 of the casing have a suitable liquid
15 therein, for immersing the combustible material contained within the various receptacles 15, so as to prevent the accidental ignition of the phosphorus or analogous material which is inflammable upon contact
20 with air. It will be noticed in Fig. 2 of the drawings, that the containers 15 are of various sides and shapes, these sizes and shapes being provided to cause an uneven distribution thereof upon the exploding of
25 the bomb, so that the larger and heavier of the retainers 15 will fall within a comparatively small region while the lighter containers will be thrown a greater distance, the intermediate sizes being thrown intermediate
30 distances, so as to cause a general spreading of the casings containing the incendiary material of the bomb structure.

The section 4 of the bomb 1 is charged or filled with an explosive material indicated
35 at 20 and the upper end of this section, which faces the lower end of the section 3 is closed by a plate 21 which rests upon a flange 22 formed upon the upper end of the casing 4. The plate 22 is attached to the section 4 of
40 the casing in any suitable manner so as to provide a liquid tight joint to prevent any liquid which might escape from the section 3 entering the section 4 and consequently destroying the explosive properties of the
45 material 20.

The plate 22 is provided with a central opening which is surrounded by a depending flange 23 the interior of which is threaded for threaded engagement with the
50 upper threaded end of a sleeve 24 which extends centrally through the section 4 and has its upper open end alining with the lower open end of the sleeve 18.

The lower end of the sleeve 24 is externally screw threaded and is connected to the internal screw thread of a sleeve or collar 26 formed upon the apex of the section 4. The collar 26 is externally screw threaded as shown at 27, and is adapted for detachable
60 connection with a cap structure 28, as clearly shown in Fig. 3 of the drawings.

The cap structure 28 is carried by the exploding or firing apparatus which explodes the charge 20.

65 The firing apparatus for exploding the

charge 20 includes a vertically positioned feed screw 29, which has a plate 30 carried by the upper end thereof and held in place by a pair of nuts 31. A plate 32 is carried by the lower end of the feed screw 29 and
70 it is held against upward movement by a collar 33 formed upon the feed screw. The plate or disk 32 has a pair of diametrically opposed vertically extending pins 34 carried thereby which are seated in recesses 35
75 formed in the collar 26, so as to insure the proper position of the firing mechanism within the sleeves 18 and 24. The cap 28 is rotatably mounted upon the lower depending smooth end of the feed screw 29,
80 so that it may be rotated independently of rotation of the feed screw for properly connecting the firing mechanism to the bomb structure.

A pair of bars 36 and 37 are carried by the
85 plates 30 and they have their lower ends attached to the plate or disk 32. Percussion caps 38 are carried by the bars 36 and 37 and they aline with openings 40 formed in the sleeve 24 so that when the percussion
90 caps are exploded they will explode the charge 20 within the section 4 of the bomb for bursting the bomb.

A pair of hammers or percussion striking
95 pawls 41 are pivotally supported as shown at 42 upon the bars 36 and 37 and they have their striking ends positioned for striking and exploding the percussion caps 38 upon operation of the hammers or exploding
100 pawls 41. Clasp springs 43 are carried by the bars 36 and 37 and engage the hammers 41, as clearly shown in Fig. 3 of the drawings. A follower 44 is mounted upon the feed screw or rod 29 and is held against rotation thereon by a pair of rods 45. The
105 feed screw or feed rod 29 projects beyond the cap 28 and it has a propeller 46 mounted thereon.

The cap 28 is provided with an opening 47 extending diametrically therethrough,
110 which alines with an opening 48 formed in the depending smooth end of the feed screw 29 and a cotter pin or key 49 extends through the openings 47 and 48, for preventing accidental rotation of the propeller 46 and the
115 feed rod or screw 29.

In Fig. 1 of the drawings, the bomb structure is shown held in a suspended position from any portion of an aeroplane indicated at 50 by any suitable type of hangers 51.
120 Any suitable releasing means (not shown) may be provided for releasing the bomb to allow the same to fall, when desired.

A wire 52 is connected to the head of the pin or key 49 and it is coiled as shown at
125 53. The wire 52 is connected, as shown at 54 to any portion of the aeroplane 50 so that when the bomb 1 is released, the wire 52 will, since it is connected to the aeroplane draw the key 49 out of the openings 47 and
130

48, disconnecting the cap 28 and the feed rod or screw 29, so as to allow the propeller 46 to be rotated by the air current created by the falling of the bomb. The rotation of the propeller 46, will since the propeller is keyed or otherwise attached to the rod 29 rotate the rod 29. The rotation of the rod 29 will move the follower 44 downwardly along the feed rod 29 and during the downward movement of the follower 44 the beveled end 55 thereof will strike the hammers 41, moving their striking ends outwardly against the tension of the springs 43. After the follower has passed the hammers 41 and the hammers are consequently released from the action of the followers the springs 43 will act and force the striking ends of the hammers against the percussion cap 38, which will explode these percussion caps, the explosion of which will in turn explode the charge 20 for bursting the bomb and scattering the incendiary casings or retainers 15 as above specified.

It will be seen that by varying the length of the rod 29 and also varying the number of the threads per inch thereof, the speed of downward movement of the follower 44 may be regulated to regulate the distance a bomb may fall before it is exploded so that in this manner the bomb may be timed to explode just above the ground, or above buildings or in fact be timed to explode any desired distance above the ground this depending upon the regulation of the threads of the screw 29.

In the transportation of the bomb, the percussion caps 38 are generally left out of their sockets or openings, so as to prevent accidental discharge of the bomb. When it is desired to drop the bomb for incendiary purposes, the cap 28 is removed and the firing structure is withdrawn out of the tubes or sleeves 18 and 24 so that the percussion caps may be placed in their openings or sockets, after which the firing structure is inserted in the sleeves and the cap 28 reconnected to the collar 26. The pins 34 which aline with the openings 40 are provided so that when the firing structure is placed within the tubes 18 and 24, the percussion caps 38 will be positioned in alignment with the openings 40 to insure the operation of the bomb. A thin adhesive sheet indicated at 56 is placed over the openings 40 to prevent the escaping of the explosive material 20 from the interior of the bomb, through the openings 40 and also to prevent the action of the elements upon the explosive charge 20, during the time when the firing structure is removed from connection with the bomb structure proper.

If it is so desired, a limited quantity of cotton may be placed in the containers 15 and ether employed as the immersing liquid and thus the cotton which is saturated with

ether will insure the ignition of the slow burning combustible material by the material which is ignited upon contact with air.

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. In an aerial bomb, a casing, a sleeve positioned within said casing and provided with an opening, a percussion cap alining with said opening, a pivotally mounted spring controlled hammer for exploding said percussion cap, a feed screw within said sleeve, a propeller connected to said feed screw and adapted to be rotated by air currents during the flight of the bomb to rotate the feed screw, a follower for movement along said feed screw upon rotation of the same to rock said hammer to explode said percussion cap, and an explosive material positioned within said casing about said sleeve.

2. In an aerial bomb, a casing, a sleeve positioned within said casing and provided with an opening, a percussion cap alining with said opening, a pivotally mounted spring controlled hammer for exploding said percussion cap, a feed screw within said sleeve, a propeller connected to said feed screw and adapted to be rotated by air currents during the flight of the bomb to rotate the feed screw, a follower for movement along said feed screw upon rotation of the same to rock said hammer to explode said percussion cap, and an explosive material positioned within said casing about said sleeve, and means to prevent accidental rotation of said feed screw.

3. In an aerial bomb, a casing, a sleeve positioned within said casing and provided with an opening, a percussion cap alining with said opening, a pivotally mounted spring controlled hammer for exploding said percussion cap, a feed screw within said sleeve, a propeller connected to said feed screw and adapted to be rotated by air currents during the flight of the bomb to rotate the feed screw, a follower for movement along said feed screw upon rotation of the same to rock said hammer to explode said percussion cap, and an explosive material positioned within said casing about said

sleeve, and means to prevent accidental rotation of said feed screw, a plurality of containers within said casing, and a combustible material adapted to be ignited upon contact with air, carried by said containers.

4. An aerial bomb comprising a shell having a plurality of compartments, a bursting charge in one of said compartments, perforated containers in the other compartment, material combustible when exposed to the air carried by the containers, and means for igniting the bursting charge.

5. An aerial bomb comprising a shell having a plurality of compartments, a bursting charge in one of said compartments, perforated containers in the other compartment, material combustible on contact with the air carried by the containers, liquid in said other compartment to prevent the accidental combustion of said material, and means for igniting the bursting charge.

6. An aerial bomb comprising detachably

connected sections, closures for the adjacent ends of the sections, a bursting charge in one of said sections, perforated containers in the other of said sections, material combustible on contact with the air carried by the containers, and means for igniting the bursting charge.

7. An aerial bomb comprising a shell having a plurality of compartments, a bursting charge in one of said compartments, perforated containers of various sizes located in the other compartment, material combustible on contact with the air carried by the containers, and means for igniting the bursting charge.

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

FRANK M. THOMAS.

Witnesses:

KATHRYN A. CORWIN,
EDWIN S. CLARKSON.