Oct. 26, 1943. W. F. ROUSE 2,332,670

AERIAL BOMB

Filed Dec. 8, 1939

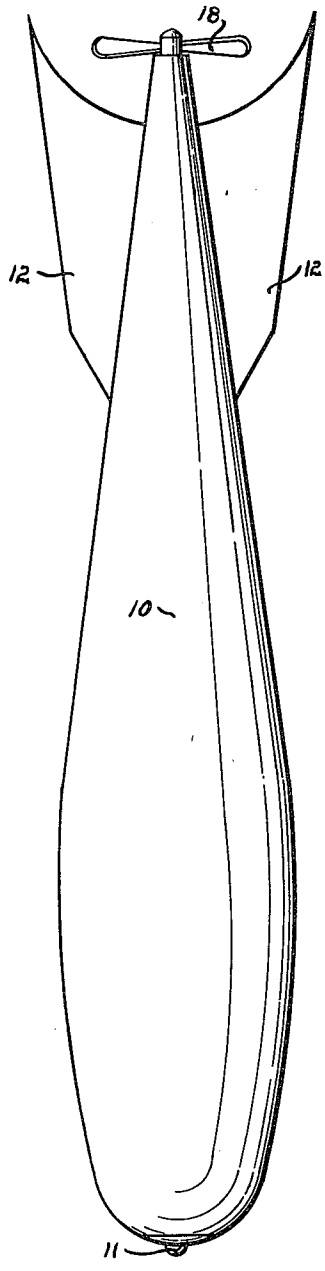


Fig. 1.

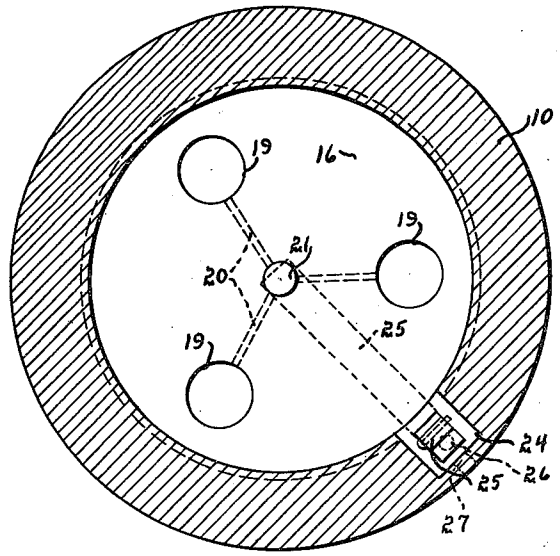


Fig. 2.

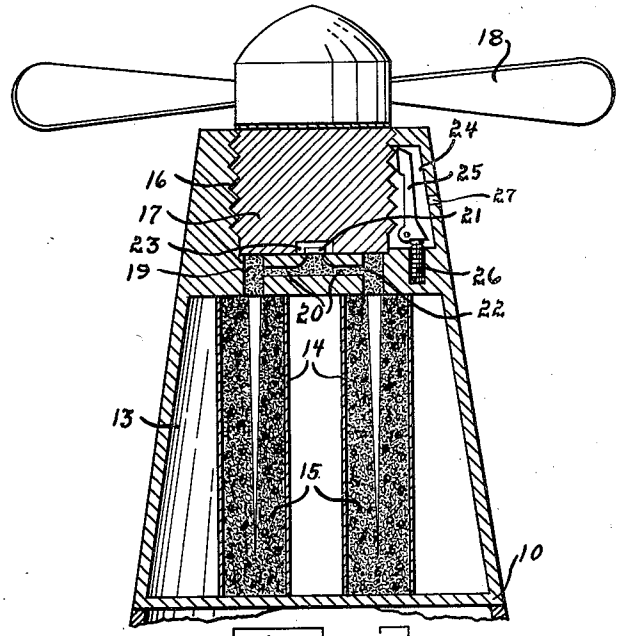


Fig. 3.

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AERIAL BOMB

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1 Claim. (Cl. 102—2)

The principal object of this invention is to provide an aerial bomb which will, after being released, be propelled through the air in addition to its normal fall by gravity to assure penetration and destruction of heavy armaments such as concrete forts and the armored decks of vessels.

A further object of my invention is to provide an aerial bomb which may be released from an airplane or like and whose propelling force will be set in motion after the bomb is safely clear of the airplane or like from which it is dropped.

A still further object of this invention is to provide a self-propelling aerial bomb which will propel itself at great velocity and in excess of the normal falling rate of the bomb for increasing accuracy on moving targets and for increasing the destructive force of the aerial bomb.

A still further object of this invention is to provide such a bomb wherein the propelling mechanism is economical in manufacture, durable, efficient and reliable in use.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claim and illustrated in the accompanying drawing, in which:

Fig. 1 is a side elevational view of my complete bomb.

Fig. 2 is an enlarged top cross-sectional view of a portion of the rearward end of the bomb with the plug or cap removed.

Fig. 3 is an enlarged side sectional view of the rearward end of the bomb more fully showing its structure.

One of the greatest phases of warfare is aerial bombardment of military objectives, but to be effective, the bombs must have great penetrating qualities in addition to high explosive force. This has not heretofore been found in such aerial bombs or torpedos and a great deal of the effectiveness of the bomb is lost by its failure to penetrate heavy armor, such as the deck armor of a battleship or the concrete and steel structure of ground emplacements. These bombs heretofore used relied merely upon the force of gravity and after a certain terminal of velocity of the bomb has been reached, it will not go much faster. This speed has been found ineffective for adequate penetration of modern armaments. Furthermore, this slow speed makes the bomb more susceptible to varying wind velocities and harder to accurately place due to the great length of time it takes for the bomb to drop from the releasing mechanism to its intended target. I have overcome such disadvantages as will be appreciated and as will be more fully set forth.

Referring to the drawing, I have used the numeral 10 to designate the bomb case having in its nose the usual detonator 11 and which case, as is generally known, is filled with high explosives. The numeral 12 indicates the usual fins secured to the bomb shell adjacent the tail and for maintaining direct flight of the bomb. It is to such a bomb that I add my propulsion means as I will now describe. The numeral 13 indicates a chamber formed in the rearward end of the bomb shell into which is placed a plurality of tubes 14. These tubes 14 contain a combustible composition 15 such as is generally employed in rocket propelled mechanisms. At the rearward end of the bomb is a threaded cup receptacle 16 into which is threaded a plug or cap 17.

The numeral 18 indicates a propeller rigidly secured to the plug or cap member 17. In such a manner that when the bomb has attained certain velocity, the force of the air acting upon the propeller 18 will turn the plug 17, unscrewing it and detaching it from the receptacle 16. The numerals 19 indicate a plurality of holes, each registering with one of the tubes 14 and filled with a combustible powder train for igniting the rocket composition or powder 15. These holes 19 are connected in the center through the medium of the veins or passageways 20, as shown in the drawing. The numeral 21 indicates a detonating cap placed over the junction of the passageways 20 as shown in the drawings. The numeral 22 indicates the powder train positioned within the holes 19, the veins 20 and adjacent the percussion cap or detonator 21. I have used the numeral 23 to indicate a receiving opening in the bottom portion of the plug 17 for receiving the cap 21, positioned to one side of the cup member 16 and in communication therewith is a chamber 24. The numeral 25 indicates an elongated mechanism having its lower end pivotally secured to the case 10 in a suitable manner. The numeral 26 indicates a compression spring acting on a portion of the hammer member 25 and capable of forcing the hammer member 25 to strike the percussion cap 21 after the plug 17 has become detached from the housing. It will here be noted that the hammer 25 rides on the threads of the plug 17 and is prevented from striking the cap 21 until the plug 17 has cleared the chamber 16. It will here be noted that the bottom portion of the plug 17 is free of threads so that the plug 17

will clear the end of the chamber 16 rapidly, thereby releasing the hammer and assuring the ignition of the rocket composition only after the plug 17 has cleared the chamber 16.

I have used the numeral 27 to designate a hole through the casing 10 and entering into the chamber 24 to the rear of the hammer 25. This hole is for the purpose of permitting the hammer to be held in its cocked position while placing the plug 17 into the rear of the bomb during the fabrication of this portion of the bomb.

In most modern bombing planes or aircraft, the bombs are kept within the fuselage of the aircraft and it is therefore not necessary to take precautions against the propeller turning accidentally, however should the bomb be carried on the outside of the aircraft, the rearward release can be so turned as to prevent the propeller 18 from turning while the aircraft is in flight.

Obviously any type of timed mechanism for removing the plug 17 may be used such as a delayed fuse or the like and the chamber 13 may obviously be filled with any type of propelling charge such as high compressed gases, liquid air or other compositions which may be released either by an ignition means or merely by the release of the plug from the chamber 16.

The practical operation of my device is as follows:

The rearward end of the bomb case 10 having the rocket tubes 14 therein and the rocket composition or combustible 15 within the tubes is placed for use as follows:

The holes 19 and the veins 20 are filled with the ignition charge or powder train 22 and the detonating cap or primer 21 is placed over the central junction of the veins 20. Obviously as many of the rocket tubes as is deemed necessary may be placed within this rearward end of the bomb, dependent upon the size of the bomb and the velocity it is desired to atttain. The hammer 25 is placed in a cocked position and held there by placing a suitable hook, string or like through the hole 27, and the plug 17 is then threaded into the receptacle 16 to the position shown in Fig. 3 of the drawing. The means for holding the hammer in a cocked position is then removed and the propelling mechanism is in a position ready for use. When the bomb is released from the carrier of a plane or like onto its objective, the bomb will drop, nose first, and after a certain velocity of the bomb has been reached, the air acting against the propeller blades 18 will cause the plug 17 to unscrew from the chamber 16. As this plug 17 unscrews and is released from the chamber or cup portion 16, the hammer 25 will be released and the spring 26 will force this hammer to the position shown by dotted lines in Fig. 2, thereby detonating the primer 21 igniting the powder train in the veins 20, which in turn will ignite the powder in the holes 19 and thence will ignite the rocket composition 15 within the tubes 14. The impelling force of the escaping gas will be forced out through the holes 19 with great rapidity, thereby impelling the bomb in its already attained direction of flight. This will increase the speed of the bomb even when that bomb is dropped by a diving bomber and will give it such force as to drive it deeply into armor plate before the bomb explodes. This will also make possible the use of timed detonator fuses in the nose of the bomb for delaying the explosion of the bomb until penetration has been attained. Thus it will be seen that I have provided a bomb which fulfills all of my objects and presents many more obvious advantages.

Some changes may be made in the construction and arrangement of my improved aerial bomb without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claim any modified forms of structure or use of mechanical equivalents which may be reasonably included within its scope.

I claim:

In a device of the class described, a bomb housing having an open chamber in its rear portion, a rocket tube in said chamber designed to contain a combustible material, a means for holding ignition material adjacent said rocket tube, a percussion cap adjacent said last mentioned means, a plug element threaded into the open chamber of said housing, a propeller on said plug element; said bomb housing having a compartment in its open chamber portion side wall and adjacent to and communicating with said plug element, a hammer in said compartment capable of striking said percussion cap when said plug element is removed from the chamber of said housing, and a spring means for yieldingly forcing said hammer toward said percussion cap.

WALLACE F. ROUSE.