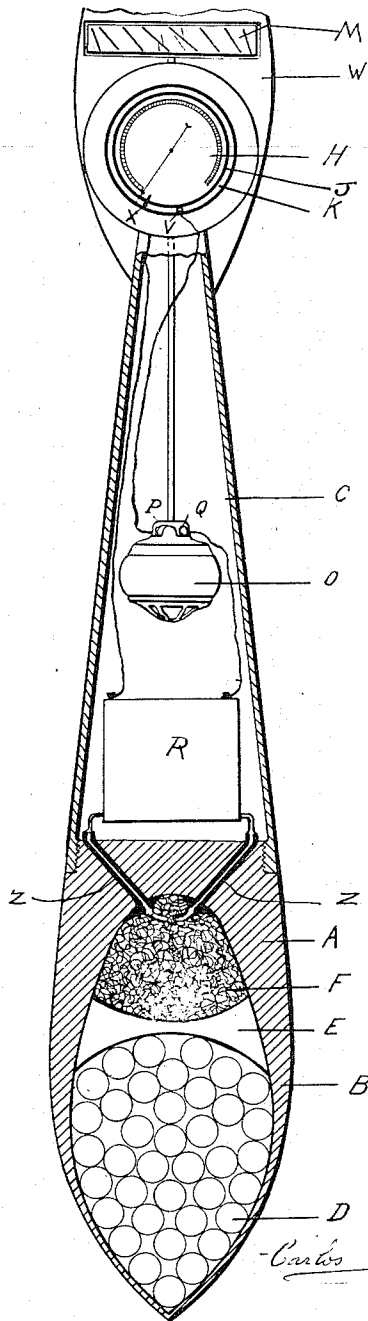


C. P. CHAGON.
EXPLOSIVE BOMB.
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EXPLOSIVE BOMB.

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To all whom it may concern:

Be it known that I, CARLOS PADILLA CHACON, a citizen of the Republic of Colombia, residing at Bogotá, in the Republic of Colombia, have invented certain new and useful Improvements in Explosive Bombs intended to be used in airships, but which may be used as a projectile with any suitable form of mortar, torpedo-tube, or other gun, of which the following is a specification.

My invention is an improvement in bombs designed to be dropped from airships and capable of being caused to explode at any predetermined height from the ground. Such bombs have been proposed wherein a device responsive to the changing pressure of the atmosphere at different elevations and capable of being set as desired fires the charge through chemical means, but in these devices there is possibility of the reagents reaching each other when not intended, to the great peril of the aviator. Furthermore, in order to prevent the bombs exploding from the mere fact of being carried while on the airship to the level for which the pressure control may be set, it is necessary to provide certain safety arrangements, which have to be adjusted before the bomb can be dropped. It is the object of the present invention to provide a pressure-controlled bomb which is perfectly safe for the aviator and requires no preparation at launching other than a simple setting of a pointer or the like controlling the height at which it is intended the bomb shall become operative. This is accomplished by the combination with an adjustable barometric or equivalent pressure control of electrical firing means deriving its energy from a generator which is driven through the fall of the missile, the circuit being completed by the barometric device when the bomb in its descent reaches the region of predetermined pressure. I am aware that fan-operated generators have been proposed for shells, but in these the explosion has been made to depend upon the action of driven mechanism constituting a sort of timing device, whereas in bombs embodying my invention the number of revolutions made by the generator and the time elapsing after release of the missile are both immaterial.

I attain these objects by the mechanism diagrammatically illustrated in the accompanying drawing.

The bomb consists of a body A, to which is attached a head B holding the charge, and a case C, containing the mechanism by which the explosion is controlled. The charge of the bomb may consist of shrapnel bullets, high explosive or any other form of missile desired. In the form shown in the illustration, the charge consists of shrapnel bullets D, gun powder or other explosive F, and packing or wadding E, separating the two.

The mechanism for exploding the charge consists of a dynamo O, contained in the case of the bomb, which dynamo is set in motion by a propeller M attached at the tail of the bomb. When the bomb is released in a downward flight, it falls with the point downward because of the greater weight of the end containing the charge. Its fall is guided by a vane W, attached to the tail of the bomb. The passage of the bomb through the air causes the propeller M on the tail of the bomb to revolve and sets in motion the dynamo O, which generates the electric current that causes the explosion of the charge. As there is no current in the bomb until the propeller is set in motion by the fall of the bomb, there is no possibility of its exploding prematurely before it is released.

The bomb is provided with a barometer H, which I have located at the tail of the bomb near the propeller, and which registers the altitude at any point in the course of the fall of the missile. At the time when the missile is released, the barometer will, of course, register the altitude at that point, and the needle of the barometer will change its position moving backward to zero, as the missile drops, indicating at any time the altitude at which the missile is at the instant. The barometer is so placed that it comes into direct contact with the air current as the missile falls, so that it will respond sensitively to the air pressure.

The barometer is inclosed in an adjustable ring K, from which it is insulated by low tension insulation J. Attached to the ring is a pin X which projects over the face of the barometer in a position where it will come in contact with the needle of the barometer as the latter revolves and reaches the point on the face of the barometer over which the pin projects.

The electric current generated by the dy-

namo O is conducted from the dynamo to the explosive charge by means of a high tension induction coil R. One pole, Q, of the dynamo is connected directly with the coil.

5 The other pole P is connected at V with the insulated ring K inclosing the barometer, the barometer being connected with the coil R. The electrical circuit is completed when the needle of the barometer comes in contact

10 with the pin X. By turning the ring K inclosing the barometer, so as to vary the position of the pin X on the face of the barometer, this pin may be set so that when the revolution of the needle of the barometer as

15 the missile falls, brings the needle into the position indicated by the number of feet at which the pin is set, the needle will come in contact with the pin X and the circuit will be completed.

20 The high tension current discharged by the coil, passes to the explosive charge by means of a spark gap Z. Thus, when the circuit is completed, the current will pass through the explosive charge and cause an

25 explosion of the bomb. For example: If the pin be set at the figure 100 upon the face of the barometer, the needle of the barometer will come in contact with the pin when the missile has fallen to an altitude of

30 100 feet, and the explosion will take place at that height above sea level.

As altitudes indicated by the barometer are from sea level, in order to time the explo-

sion of a missile so that it will take place at a predetermined distance above the ground 35 at any point, it is necessary to know the altitude of that point and to set the pin X at the point on the face of the barometer which indicates the number of feet from the surface of the ground at which the explosion 40 is desired to take place, plus the altitude above sea level of the point over which it is desired to cause the explosion.

Instead of using a barometer as ordinarily constructed, any device that would register 45 in response to pressure of the atmosphere at varying altitudes might be employed, and instead of a needle revolved by the pressure of the atmosphere upon the barometer, any other mechanical device might be employed 50 which would complete the electric circuit when the barometer or other device registers a predetermined altitude above sea level.

Having now fully described my invention, what I claim and desire to protect by Letters 55 Patent is the following:

An aerial bomb characterized by the combination of an adjustable barometric device, electrical firing means controlled thereby, and a generator operated through the fall of 60 the missile for energizing said firing means.

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Witnesses:

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