H. S. PECK.

AERIAL DART.

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Fig. 1.

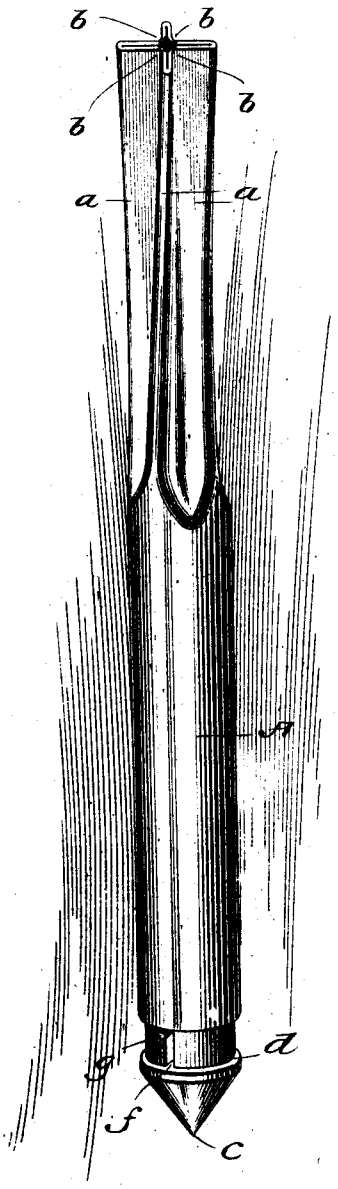


Fig. 2.

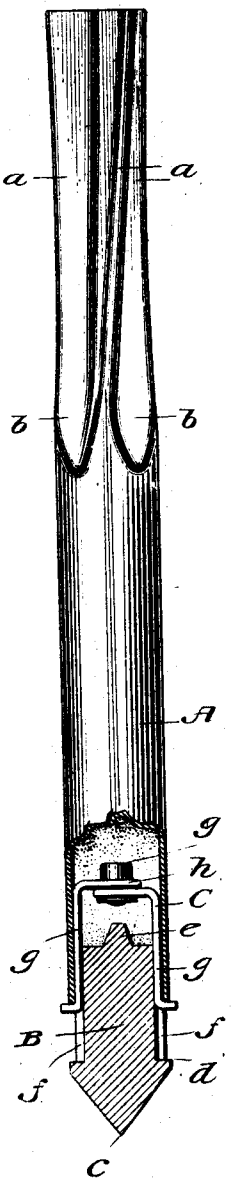
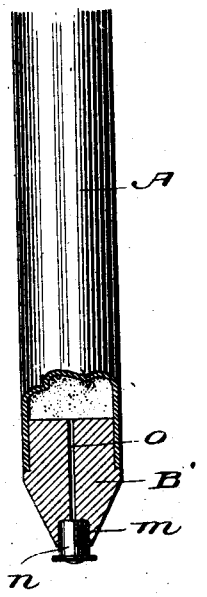


Fig. 3.



Witness

"Illegible"

Inventor

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UNITED STATES PATENT OFFICE.

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AERIAL DART.

1,189,382. Specification of Letters Patent. Patented July 4, 1916.

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To all whom it may concern:

Be it known that I, HORACE S. PECK, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Aerial Darts, of which the following is a specification.

My invention relates to that class of projectiles used in warfare and commonly known as aerial darts, and adapted to be released by aviators on the heads of an enemy over which they may be flying, or on submersible or other vessels, buildings, zeppelins, or other aerial craft, etc., and the invention consists, essentially, of a dart or like device formed of metal and preferably in the form of a tube containing an explosive and having a striking head by which it is weighted at its front end and having its opposite or tail end formed with longitudinally extending vanes or fins adapted to impart rotation to the missile during its descent and of, preferably, slightly spiral form to stabilize the device and increase its destructive power.

In the accompanying drawing forming part of this specification and in which similar reference characters indicate like parts in the several views; Figure 1 is a perspective view of a dart or like device embodying my invention. Fig. 2 is a part section and part side elevation of the same. Fig. 3 is a part elevation and part sectional view of a dart having a modified form of striking head.

In carrying out my invention I construct the dart of appropriate tubular material, as brass, iron or steel, aluminum or paper, and of any desired length and diameter. In practice, I prefer to make the body, A, of cylindrical form and of sufficient thickness that the metal will not be entirely pulverized when subjected to the destructive effect of the exploding charge with which the dart is supplied, but pieces of substantial size will remain and which will be scattered in all directions and will, accordingly, act disastrously upon bodies of men or a flying machine, etc., in the immediate vicinity of the exploded dart.

The body, A, may be made of a tube of uniform diameter and its rear end is pressed inwardly on radial lines or otherwise formed with longitudinal vanes, *a*, of substantial length, and which are, preferably, given a slight spiral or twist in the direction of their length, to cause said vanes to impart rotation to the dart in its descent, to stabilize the device in action and to increase its destructive power. The tail of the dart is, therefore, of substantially cruciform shape in cross-section, and the grooves, *b*, formed between the vanes decrease in depth from the rear extremity toward the front and gradually curve outwardly and merge into the outer sides of the tube.

The front end of the tube is finished on its inside to receive and frictionally hold a solid striking head, B. This head may be made of steel or other suitable metal and it has a body part which conforms to and is designed to fit the front end of the tube, A, and to enter the same for such distance as to insure the secure attachment of the head thereto. The head is, also, formed with a pointed end, *c*, at the base of which may be formed a shoulder, *d*, which will limit the entrance of the head into the tube.

In the drawings I illustrate two forms of my invention but in each instance the vital parts are essentially the same. If the dart is used in connection with a high explosive, say dynamite, nitro-glycerin, or the like, and which will be exploded by concussion, I prefer to use the type of striking head substantially as shown in Figs. 1 and 2, and wherein the inner end of the head is formed or provided with a firing pin, *e*, and the sides of the head are formed or provided with grooves, *f*, and which latter are designed to slidably receive the arms, *g*, of a suitable holder, C, for a cap or fulminate, *g'*.

The ordinary percussion cap may well be used for the purpose and is so illustrated, and in order that it may be properly positioned over the end of the firing-pin, *e*, I construct the holder, C with a coil, *h*, or other appropriate seat for the cap, and from which coil the arms, *g*, of the holder extend. These arms may be and preferably are made somewhat springy having a tendency to spread outwardly whereby when the head, B, with its cap-holder in place and with the arms of the holder seated in the grooves, *f*, is pushed into the front end of the tube, A, the arms will be depressed and sufficient friction will be created between the arms and the inner wall of the tube to insure the proper attachment of the head to the tube,

and yet to allow the head to slide inwardly relatively to the cap-holder, upon striking an object, to carry the firing-pin of the head into forcible contact with the cap or fulminate, thereby igniting the latter and firing the charge of explosive with which the tube, A, is provided. By this means a powder charge in the tube may be ignited or the concussion arising from the head, B, striking an object may be utilized to explode the charge which in this instance may be dynamite or a like high explosive.

It will also be noted that the outer ends of the arms of the cap-holder, C, are bent laterally beyond the plane of the sides of the striking head, and that the lower or head end of the tube rests against these lateral extensions and thereby forms a stop to hold the cap-holder so that the head, upon striking an object, may slide inwardly relatively to the cap-holder and thereby bring its firing-pin into forcible contact with the cap or primer.

In order that the striking head may operate as described, said head will normally be set slightly forward to remove the firing-pin from contact with the cap or fulminate and to provide for the inward movement of the head upon striking an object.

The head, B′, of the dart shown in Fig. 3 is somewhat different from the head, B, of the device of Fig. 1. In Fig. 3, the end of the head is more in the form of a truncated cone, the smaller end of which is bored or formed to receive a cap-holder, *m*, in which an ordinary percussion cap, *n*, is fixed with its head so exposed that upon striking an object the cap will be exploded. The flame arising from this action flares through a small hole, *o*, formed axially in the head and ignites the powder or other charge in the tube.

In either of the described instances the device is designed to be liberated in large quantities by aviators flying at a suitable distance above the heads of an enemy or above zeppelins, aeroplanes, dirigibles or other flying machines, or above submarines or other vessels, or places of the enemy which it is of advantage to destroy or damage, and when a quantity of the darts are released and fall as in a shower, it is more than probable that one or more of the darts will strike the desired object. Whatever the position of the darts when first released they immediately, because of their weighted heads and the vanes formed on their tail portions, right themselves and drop with increasing momentum and when their striking heads contact with an object, there results the instant explosion of the contained charge and the disruption or bursting of the tube and the widespread scattering of the fragments thereof to the great damage of persons or things within the zone in which the explosion takes place. The device may be made at little cost, and the tube may be first filled with explosive and the front end closed by a wad or disk of paraffin or the like to protect the charge from the admission of moisture, the opposite or tail end of the tube being also closed, by the close bending or folding of the parts to form the radial vanes and by a drop of solder, for a similar purpose. The heads being readily separable from the tubes they may be separately packaged, this insuring greater safety in the handling and transportation of the devices in bulk, and, when required, the heads may be quickly and operatively attached to the tubes to complete the article and prepare for its intended purposes.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. An aerial dart of the character described, comprising a tubular member containing an explosive charge and having its tail portion provided with longitudinally extending vanes adapted to give rotation and to accurately guide the dart in its descent, a separate striking head slidably fitted within and forming a closure for the front end of the tube, and means coöperating with said head for firing said charge.

2. An aerial dart of the character described containing an exploding charge and having a separable slidably mounted striking head of conical form at its front end, means for temporarily holding the head in fixed relation to said charge, and means for firing said charge by the impact of said head against an object.

3. An aerial dart comprising a tube having a fluted rear portion containing an exploding charge and a separable, slidably-guided striking-head of substantially conical form entering the tube and constituting the closure for the front end thereof, said tube and head having coacting means for temporarily retaining the head in extended position but yieldable on contact of the head with an object to permit the head to slide farther into the tube and explode said charge.

4. An aerial dart comprising a tubular body portion containing an explosive charge, said body having one portion provided with longitudinally extending vanes, a separable solid head having a slidable fit within the opposite portion of the tube and serving as a closure therefor, and a fulminate associated with the head adapted to explode said charge by the impact of the sliding head against an object.

5. An aerial dart comprising a tubular sheet metal body portion having its rear end folded to form a series of longitudinally extending vanes adapted to hold the dart perpendicularly in its descent, said tube con-

taining a charge of explosive, a solid detachable head slidably fitted to and closing the front end of said tube, and having its inner end provided with a firing pin, and a holder within the tube normally positioned above said firing pin and having a fulminate adapted to be exploded by the contact of said pin therewith.

6. An aerial dart comprising a tubular body portion having its rear end folded to form a series of longitudinally extending vanes adapted to hold the dart perpendicularly in its descent, said tube containing a charge of explosive, a detachable solid head slidably fitted to and forming a closure for the front end of said tube, said head having its inner end provided with a firing pin, and a holder within the tube normally positioned above said firing pin and having a fulminate adapted to be exploded by the contact of the firing pin therewith, said striking head having a pointed outer end.

7. An aerial dart comprising a tubular body portion having its rear end folded to form a series of longitudinally extending vanes adapted to hold the dart perpendicularly in its descent, said tube containing a charge of explosive, a solid head slidably fitted to the front end of said tube and having its inner end provided with a firing pin, a holder within the tube normally positioned adjacent said firing pin, and having a fulminate adapted to be exploded by the contact of the firing pin therewith, said holder having arms straddling said head and fitting in grooves in the sides thereof.

8. An aerial dart comprising a tubular body portion having its rear end folded to form a series of longitudinally extending vanes adapted to hold the dart perpendicularly in its descent, said tube containing a charge of explosive, a solid head slidably fitted to the front end of said tube, and having its inner end provided with a firing pin, and a holder within the tube normally positioned adjacent said firing pin having a fulminate adapted to be exploded by the contact of the firing pin therewith, said fulminate holder having arms straddling said head and fitting in a groove in the sides thereof, whereby said arms and head have a relative longitudinal movement.

9. An aerial dart comprising a tubular body portion having its rear end folded to form a series of longitudinally extending vanes adapted to hold the dart perpendicularly in its descent, said tube containing a charge of explosive, a solid head frictionally fitted to the front end of said tube and having its inner end provided with a firing pin, and a holder within the tube normally positioned adjacent said firing pin and having a fulminate in line with and adapted to be exploded by the contact of the firing pin therewith, said holder having arms straddling said head and fitting in grooves in the sides thereof and said arms and head having relative longitudinal movement, the extremities of said arms being bent outwardly beyond the plane of the striking head and adapted to be engaged by the front end of the tube to limit the insertion of the head into said tube.

In testimony whereof I affix my signature.

HORACE S. PECK.