H. E. S. HOLT.

AERIAL ILLUMINATING DEVICE FOR USE IN CONNECTION WITH AIRCRAFT.

APPLICATION FILED AUG. 31, 1914.

1,173,515. Patented Feb. 29, 1916.

Fig. 1.

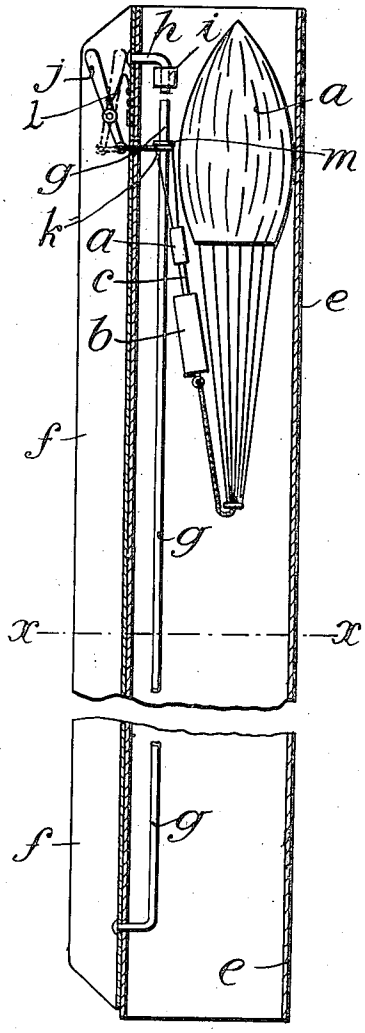


Fig. 2.

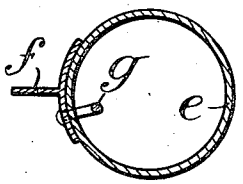
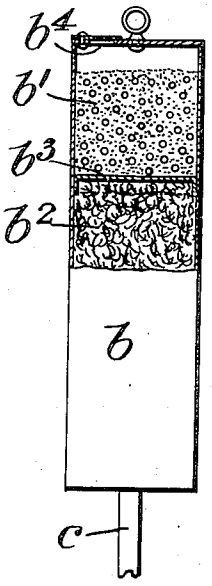


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

HAROLD EDWARD SHERWIN HOLT, OF FARNBOROUGH, COUNTY OF HANTS, ENGLAND.

AERIAL ILLUMINATING DEVICE FOR USE IN CONNECTION WITH AIRCRAFT.

1,173,515. Specification of Letters Patent. Patented Feb. 29, 1916.

Application filed August 31, 1914. Serial No. 859,568.

To all whom it may concern:

Be it known that I, HAROLD EDWARD SHERWIN HOLT, a subject of the King of Great Britain and Ireland, residing at The Grange, Farnborough, Hampshire, England, have invented certain new and useful Improvements in Aerial Illuminating Devices for Use in Connection with Aircraft, of which the following is a specification.

This invention relates to aerial illuminating devices for use in connection with air craft to enable aviators to illuminate the ground below them without rendering themselves visible and comprising a flare or illuminating body with a time fuse and weight and a parachute reflector attached to same.

One object of the present invention is to provide improved means for carrying the illuminating device on and discharging same from air craft.

Another object is to prevent the weight from doing any damage in falling to the ground, and a further object is to provide a compact combination of weight and flare.

With the above objects in view my invention consists in housing the illuminating device in a vertically arranged tube provided with means for automatically igniting the same as it is discharged from the tube, in forming the weight of materials which are capable of being easily dispersed or scattered and in inclosing the said materials in a container so arranged that they can fall out freely when the flare is consumed.

In carrying out the invention the illuminating device is normally supported in the tube by a ring or the like connected by an igniter to the flare and having a sliding engagement with a bar arranged inside the tube, the sliding ring being normally held at the upper end of the bar by a trip device which when released allows the illuminating device to fall until the ring stops at the lower end of the bar and so breaks the igniter and starts the fuse. Instead of the ring traveling on the bar, the bar may be dispensed with and a second piece of flexible cord of the desired length be attached to the igniter which determines the distance at which the igniter is pulled off.

The weight is composed of small shot, sand, iron filings or a mixture of these or similar materials which are inclosed in the top of the case containing the combustible material forming the flare, and kept in position by the said combustible material or by a partition of paper, celluloid, or other inflammable material interposed between the flare material and the weight, so that when the flare is burnt out the material forming the weight is released and is dispersed in falling so that no damage is done. If desired, a piece of cork or a hollow metal vessel can be attached to the flare so that it floats in an upright position when it reaches the water.

In the accompanying drawings: Figure 1 is a longitudinal section of the discharge tube with the illuminating device arranged therein, Fig. 2 is a transverse section through x—x Fig. 1, and Fig. 3 is an elevation partly in section showing the weight and flare on a larger scale.

As shown, the illuminating device comprises a flexible parachute a which is formed on its underside as a reflector by covering it with metal foil, a combined weight and flare b a time fuse c and an igniter d.

The discharging apparatus consists of an aluminium tube e having a strengthening rib f arranged along its length and mounted vertically on the aerial machine and extending downward about eight or ten feet therefrom. Inside the tube is provided a vertical rod g arranged parallel to the side at a small distance therefrom and secured to the tube at its lower end. The rod extends practically the length of the tube and is steadied by a short angular arm h arranged at the upper end of the tube e to meet the rod g and having a sliding collar i provided to effect a connection with the rod g.

Near the upper end of the discharge tube e I provide means for suspending the illuminating device comprising a lever j having a forked end k normally embracing the rod g but which can be withdrawn against the action of the spring l, to effect the release of a suspending ring m which slides on the rod g and is attached to the igniter d by suitable cords.

The illuminating device is normally housed within the upper end of the tube e and is supported by the ring m which is slipped over the free end of the rod g. When it is desired to make use of the illuminating

device the lever j is pressed which allows the illuminating device and its fittings to fall freely until the ring m reaches the lower end of the rod g when the weight and flare b cause the igniter to break and start the time fuse. By this arrangement the premature ignition of the flare before the device leaves the aircraft is avoided.

As illustrated in Fig. 3 the materials b' forming the weight and the materials b^2 of the flare are inclosed in the same casing b and separated by a thin partition b^3 of inflammable material which readily burns away when the flare is consumed to release the materials forming the weight. In some cases the partition b^3 is dispensed with, the materials b' of the weight resting on the flare material b^2. If the flare is burnt upside down or the flare material is arranged above the weight, a portion of the casing b is made inflammable to enable the shot, sand, or the like to fall out. For this purpose, a portion of the lower part of the casing is made of celluloid. Portions of the casing may also be made with holes covered with thin paper or strips to allow the flames to spread outward.

In order that the weight of ballast may be varied a small hole b^4 is formed in the end of the case b through which the shot, sand or the like in the case can be added to or a portion abstracted, the hole being provided with a suitable cover.

The igniter d for the time fuse c preferably consists of a friction device comprising two cardboard tubes arranged one inside the other and both coated on adjacent surfaces with fine sand and a fulminating material, so that when the tubes are pulled apart the fulminate is ignited and ignites the time fuse which is connected to the outer tube.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An aerial illuminating device having means for discharging the same from an air craft comprising a tube, an illuminating body provided with a time fuse, weight and flare and disposed in said tube, an igniter attached to the fuse and adapted to be operated by a direct pull thereon, and coöperating means connected with said tube and igniter for imparting a direct pull to the igniter when the weight and other parts are discharged from the tube.

2. An aerial illuminating device comprising a vertically arranged tube, an illuminating body provided with a time fuse, weight and parachute reflector normally housed in said tube, a stop disposed within said tube with which the time fuse, weight and illuminating body are engaged, an igniter attached to the fuse and adapted to be operated by a direct pull thereon, and means for imparting a direct pull to the igniter when the weight and other parts are discharged from the tube.

3. An aerial illuminating device comprising a vertically arranged tube, an illuminating body provided with a time fuse, weight and parachute reflector normally housed in said tube, a rod disposed within said tube and connected with the time fuse, weight and illuminating body, an igniter attached to the fuse, a ring attached to the igniter and slidably connected with said rod, means for imparting a direct pull on said igniter when the weight and other parts are discharged from the tube whereby said igniter is actuated.

4. An aerial illuminating device having means for discharging the same from an air craft comprising a tube, an illuminating body provided with a time fuse, weight and flare and supported in said tube, an igniter attached to the fuse and adapted to be operated by a direct pull thereon, means for imparting a direct pull to the igniter when the weight and other parts are discharged from the tube, and means for releasing said supporting means under the control of the operator.

5. An aerial illuminating device having means for discharging the same from an air craft comprising a tube, an illuminating body provided with a time fuse, weight and flare and disposed in said tube, an igniter attached to the fuse and adapted to be operated by a direct pull thereon, and means for imparting a direct pull to the igniter when the weight and other parts are discharged from the tube, said weight being formed of materials which are capable of being readily dispersed, said weight being so combined with the illuminating body that it is readily released by the burning of the flare.

6. An aerial illuminating device having means for discharging the same from an air craft comprising a tube, an illuminating body provided with a time fuse, weight and flare and disposed in said tube, an igniter attached to the fuse and adapted to be operated by a direct pull thereon, means for imparting a direct pull to the igniter when the weight and other parts are discharged from the tube, said weight consisting of readily dispersible material and arranged next to the flare material, being so disposed that the weight material is released when the flare is burned out.

7. An aerial illuminating device comprising a tubular member open at both ends, a guide secured to the inner face of one side wall thereof, an illuminating body mounted in said tube and provided with a time fuse, weight and flare, an igniter attached to said fuse, an element connected with said igniter and slidably engaged with said guide, a

spring pressed lever mounted on said tube and having an arm extending into the tube and engaged with said guide engaging element, said arm being movable out of engagement with said element for releasing the illuminating body, said guide having a stop disposed at a predetermined point in said body for engaging said element whereby a direct pull is exerted on the igniter for operating it.

In testimony whereof I have affixed my signature, in presence of two witnesses.

HAROLD EDWARD SHERWIN HOLT.

Witnesses:
A. NASH,
DAVID CORRY.