C. H. KINDLE.

GRENADE.

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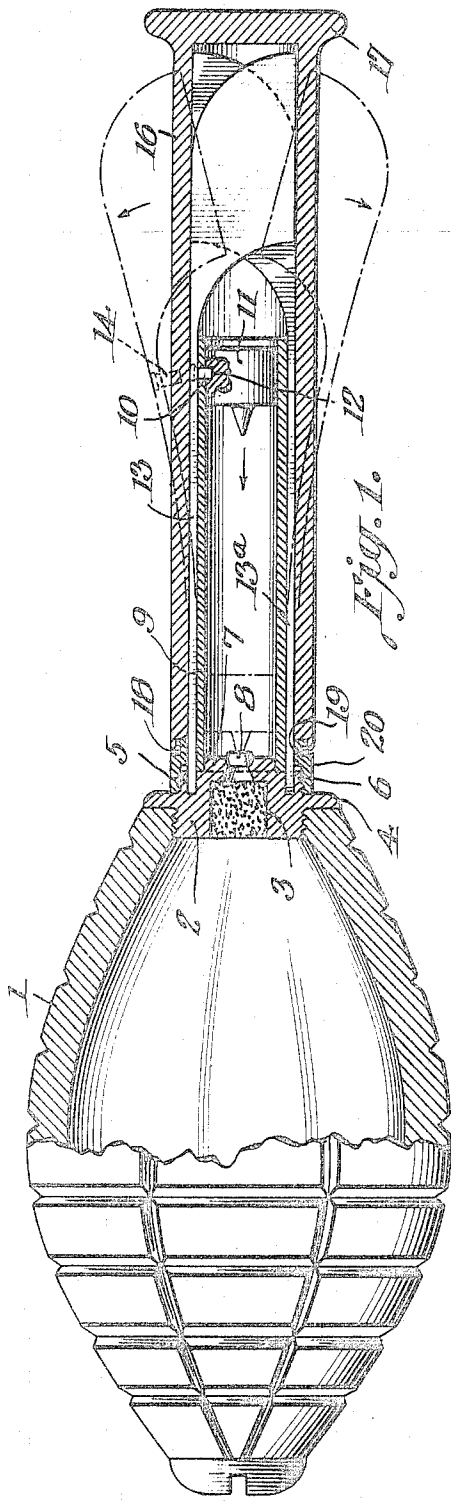


Fig. 1.

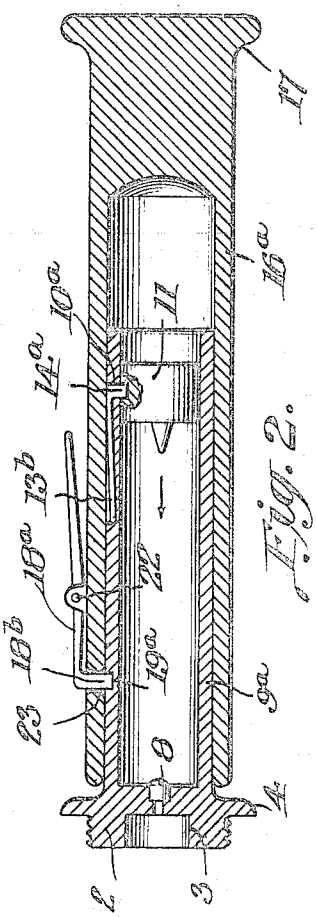


Fig. 2.

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# UNITED STATES PATENT OFFICE.

CHARLES H. KINDLE, OF WASHINGTON, DISTRICT OF COLUMBIA.

## GRENADE.

1,296,403. Specification of Letters Patent. Patented Mar. 4, 1919.

Application filed March 27, 1917. Serial No. 157,728.

*To all whom it may concern:*

Be it known that I, CHARLES H. KINDLE, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Grenades, of which the following is a specification.

My present invention pertains to projectiles and more particularly to projectiles of the grenade type.

One of the objects of the invention is the provision of a grenade or analogous projectile which while safe to handle and efficient in practice is so constructed that it may be manufactured with facility without the employment of high-priced machinery or highly-skilled labor, and consequently at low cost.

Another object of the invention is the provision of a grenade or analogous projectile embodying simple and reliable means for locking the firing element against movement until the projectile leaves the tube from which it is impelled and then releasing the said element so as to positively assure the explosion of the grenade when it brings up against an object.

Another object is the provision of a projectile in the form of a hand grenade, embodying an aerial projectile having a shank, a tubular handle in which said shank is disposed, a movable firing element carried in the shank and opposed to a percussion cap or equivalent device, and coöperating means on the shank and tubular handle, constructed and arranged to normally hold the shank in the handle and the firing element against movement toward the percussion cap or the like, and to enable the thrower while retaining the tubular handle in his hand to release the shank from the handle and thereby bring about the unfastening of the firing element so as to enable said element to strike the cap or the like and explode the grenade when it brings up against an object.

Another object is the provision of a grenade embodying an aerial projectile having a shank, a firing element carried thereby, a tubular handle in which the shank is disposed, and a connection between the handle and the aerial projectile for preventing separation of the two incidental to the handling of the grenade as a unit; the said connection being so constructed and arranged that it is broken when the aerial projectile is impelled from the handle by the grenade thrower, and means whereby the firing element is automatically released for action when the shank is released from the handle, being provided.

Another object is the provision of a grenade embodying an aerial projectile, a tubular handle in which a portion of the projectile is disposed, and a connection between the handle and the aerial projectile; the said connection being designed to prevent separation of the two when the grenade is handled as a unit, and being so constructed and arranged that it is broken when the aerial projectile is impelled from the tubular handle.

Another object is the provision of a grenade or like projectile comprising an aerial projectile having a movable firing element opposed to a percussion cap or the like and also having a vane adapted when released to fly outwardly, and means on the vane for holding the firing element against movement toward the cap until the vane flies outwardly, in combination with tubular means from which the aerial projectile is impelled, which tubular means serves normally to hold the vane against outward movement and the firing element against movement relative to the cap so that explosion of the projectile will be precluded until after it leaves the tubular means.

Inasmuch as one portion of my invention contemplates the retention of the handle in the hand of the grenade thrower it follows that the handle may be repeatedly used which is manifestly an important factor in contributing to the inexpensiveness of the grenades.

Other objects and advantages of the invention will be fully understood from the following description and claims when the same are read in connection with the drawings, accompanying and forming part of this specification, in which;

Figure 1 is a view, partly in elevation and partly in longitudinal-central section, of a projectile of the hand grenade type constructed in accordance with my invention.

Fig. 2 is a longitudinal-central section illustrative of a shank and handle constituting a modification of my invention.

Referring by numeral to the said drawings, and first to Fig. 1 thereof;

1 is the body of the aerial projectile, which body is designed to contain explosive and missiles, and may be of any construc-

tion and configuration compatible with the purpose of my invention without involving departure from the scope of the same as claimed.

Suitably affixed in the rear portion of the body 1 is a nipple 2, chambered at 3 and flanged at 4 and provided with an outer exteriorly-threaded portion 5 in which is a recess 6 and on which is a rearwardly projection portion 7, designed to hold a percussion cap or fulminate cap 8, as illustrated.

Surrounding the nipple portion 7 and extending rearwardly therefrom is a tubular shank 9 which is apertured at 10 and is designed to hold and permit of forward movement of the firing element 11 which is preferably provided as shown with a pin that is alined with the cap 8. It will also be noticed by reference to Fig. 1 that the element 11 is provided in its periphery with a socket 12, designed to be registered with the aperture 10 as shown. The forward end of the tubular shank 9 is preferably, though not necessarily, made integral with a collar 20 in which is a circumferential groove 19, and it will also be noticed that the said collar is provided with recesses in registration with the before-mentioned recesses 6 in the nipple 2. At this point I would have it definitely understood that when deemed expedient the collar 20 may be fabricated separately from the shank 9, without affecting my invention or departure from my claims.

Disposed and secured at their forward ends in the recess or recesses 6 of the nipple 2 are vanes 13, of general concavo-convex form in cross section. These vanes are resilient and hence are adapted to be confined in the tubular handle 16, hereinafter described, and are also adapted when they leave the handle, or other tubular means employed, to spring outwardly into the dotted line position illustrated so as to assist in guiding the grenade in a true course. On one of the vanes 13 is a projection 14 which is normally designed to rest in the aperture 10 and seat in the socket 12 of the element 11, with a view to holding the element 11 against forward movement until the shank 9 and vanes 13 $13^a$ leave the handle 16. This feature is important inasmuch as it contributes to safety in handling and transporting the device, the firing element 11 being effectually locked against movement toward the cap 8. When. however the shank 9 and the vanes leave the handle 16, the firing element 11 is freed and consequently is adapted to move suddenly forward in the shank 9 and strike the cap 8 when the progress of the body 1 is impeded by any object that it strikes.

At its rear end the tubular handle 16 is flanged, as indicated by 17, to prevent it from slipping out of the hand of the grenade thrower, and at its forward end it is provided with an inwardly extending weak li 18 which may be either soft or fragile i the discretion of the manufacturer of th projectile. The said lip 18 is initially di posed in a circumferential groove 19 whe the handle is placed over the vanes 13 1 and the shank 9.

In the practical use of the embodimen shown in Fig. 1, the grenade thrower grasp the handle 16 and when he whips the sam through the air in the act of throwing th grenade the lip 18 is broken whereupon th inertia of the aerial projectile portion of th device carries it on its way through the ai toward the point aimed at. When the shan 9 and the vanes 13, $13^a$ pull out of the tu bular handle 16, the vanes spring laterall outward into the dotted line position, wit the result that the firing element 11 is re leased from the vane 13. Then when th body is checked by any object in its path the firing element moves forwardly in th shank 9 and strikes the cap 8 and explode the grenade.

While I have shown and described th embodiment in Fig. 1 as comprising th aerial projectile portion in combination wit a tubular handle, I would have it under stood that any tubular means may be em ployed for impelling the said projectile por tion, such for instance as a gun, mortar o analogous fire arm or piece of ordnance.

The embodiment shown in Fig. 2 is a simplification of that shown in Fig. 1 i that it lacks vanes and depends on manuall operated latching means for preventing cas ual movement of the firing element an effecting the release of said means at th proper time. It comprises a tubular shan $9^a$, having an aperture $10^a$, a spring latc $13^b$ carried by the shank and having a hea $14^a$ adapted to occupy the aperture in th shank and a seat in the firing element 11 and a latch lever $18^a$, fulcrumed at 22 o the handle and having a head $18^b$ disposed in the aperture 23 of the handle and th seat $19^a$ of the shank.

In the operation of the modification, th grenade thrower at the proper time de presses the rear arm of the latch lever 18 whereupon the shank $9^a$ pulls out of th handle $16^a$ and travels through the air wit the body of the aerial projectile portion o the grenade. When the shank leaves th handle the latch $13^b$ springs outwardly an releases the firing element 11 so that th latter is in readiness at the proper time t move forwardly in the shank and strike th cap 8.

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

1. A grenade comprising a body, a shank thereon, a firing element movable when released relative to the shank, and a combined

vane and latch possessed of resiliency and adapted when confined to hold the firing element against said movement and when unconfined to assume a working position as a vane and incidentally release the firing element.

2. A grenade comprising a body, a shank thereon, a firing element movable when released relative to the shank, a combined vane and latch possessed of resiliency and adapted when unconfined to spring outwardly and release the firing element, and tubular means from which the grenade is impelled, said means normally holding the combined vane and latch in engagement with the firing element.

3. A grenade comprising a body, a shank thereon, a firing element movable relative to the shank, a tubular handle adapted to receive the shank and from which the grenade is impelled, means for holding the firing element against movement while the shank is in the handle, and for releasing the firing element when the grenade is impelled, and coöperating means of the grenade and the handle for normally holding the same together for handling as a unit and for releasing the grenade from the handle precedent to the impelling of the grenade through the medium of the handle.

4. A grenade comprising a body, a shank thereon, a tubular handle adapted to receive the shank and from which the grenade is impelled, and coöperating means of the grenade and the handle for normally holding the same together for handling as a unit and for releasing the grenade from the handle precedent to the impelling of the grenade through the medium of the handle.

5. A grenade comprising a body having a shank and a groove at the side of the shank, and a tubular handle having a weak lip normally disposed in said groove and adapted to normally hold the two together and also adapted to be broken by forcible movement of the grenade through the medium of the handle.

6. A grenade comprising a body, a shank thereon, a firing element movable when released relative to the shank, and a combined vane and latch constructed and arranged when confined to hold the firing element against said movement and when unconfined to move laterally outward and release the firing element.

7. A grenade comprising a body having a shank and a seat, and a tubular handle having a weak portion normally disposed in said seat, for the purpose set forth.

8. A grenade comprising a body having a seat, and a handle having a weak portion normally disposed in said seat.

9. A grenade comprising a body having a shank and a seat, a tubular handle having a weak portion normally disposed in said seat, a firing element guided by the shank, and means normally confined by the handle, for holding the firing element against movement; said means being constructed and arranged to be released and to release the firing element when the body is impelled from the handle.

10. A grenade comprising a body having a shank and a seat, a tubular handle having a weak portion normally disposed in said seat, a firing element guided by the shank, and a combined vane and latch constructed and arranged to normally hold the firing element against movement and to fly outwardly and release the firing element when the body is impelled.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES H. KINDLE.

Witnesses:
R. H. HENDERSON,
HOWARD B. KRAMER.