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C. SCARDONE

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ROCKET

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Fig. 1.

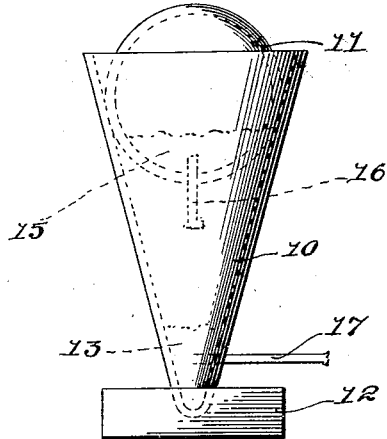


Fig. 2.

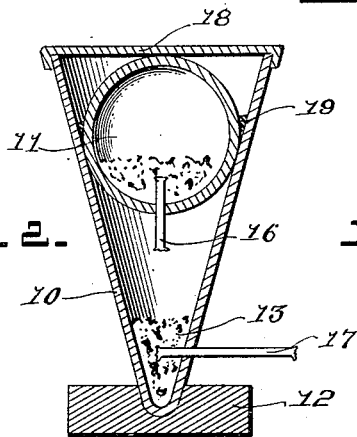


Fig. 3.

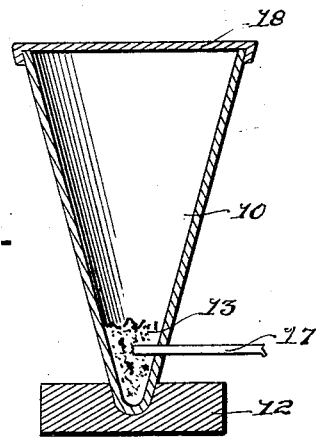
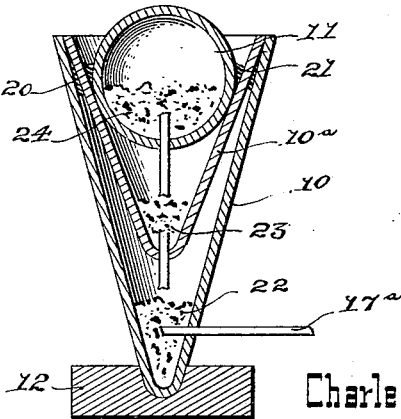


Fig. 4.



WITNESSES

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## UNITED STATES PATENT OFFICE

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## ROCKET

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The present invention relates to pyrotechnics and particularly to pyrotechnics known as rockets in which a projectile is propelled into the air by the explosion of an explosive charge.

In the present application no claim is made to the positioning of the fuse through the sidewalls of the container, the same being recognized to be old in the patent to Colgate, No. 676,979, dated June 25, 1901.

An object of the invention is to improve pyrotechnics of this character.

Another object of the invention is to provide a body or casing with which the other elements of the rocket may be facilitiously assembled.

A further object is to provide a body comprising the containing walls of a device of this character and a projectile to be assembled therewith, the walls of the body being so arranged that the projectile may be facilitiously centered relative to the body.

A still further object is to provide a body to be assembled with an explosive projectile so constructed that the projectile may be exploded without danger.

The above objects are accomplished by providing a container for an explosive and a projectile to be assembled therewith, the container being in the nature of a conical or frusto-conical hollow body.

This hollow body may be provided with a supporting member attached thereto at the apex and the projectile may be in the nature of a hollow sphere, both the body and the sphere having explosive charges therein. Where it is desired to provide a number of successive explosions, there may be provided a number of conical bodies which with the projectile are nested one within the other, each body as well as the projectile having charges of explosive material therein.

For a better understanding of the invention, reference may be had to the accompanying drawings in which,

Figure 1 represents an article made in accordance with the invention as outlined above,

Figure 2 is a vertical section through a member made in accordance with the princi-

ples of the invention in which the projectile is located entirely within the confines of the conical body and a cover is provided on the base end of the conical body,

Figure 3 is a sectional showing of the conical body having an explosive charge therein and with the projectile removed, the cover being in place, and

Figure 4 is a still further variation in the construction of a rocket of the above character, showing a projectile in connection with a plurality of conical bodies, said projectile and conical bodies being shown in nested relation to each other.

Referring to the drawings in detail by reference characters, 10 designates a hollow body having flaring walls in which is placed a projectile 11 closing the open end of the body. The body may be in the nature of a cone or the frustum of a cone and may be provided with a supporting block 12 secured to the apex end thereof.

The body 10 contains a charge 13 of explosive and the projectile may be in the nature of a hollow sphere also provided with a charge of explosive, as indicated at 15. Where the explosive is of a nature to be set off by impact, no fuse need be employed. Where, however, the explosive is in the nature of powder or other explosives that require a fuse, suitable fuses may be employed, as indicated at 16 and 17.

The charge of explosive within the container and projectile are preferably such as not to fill the entire enclosure and the fuse of the projectile may be arranged to lie in spaced relation to the charge within the container, as shown in Figures 1 and 2 of the drawings.

The walls of the container 10 are preferably of stiff material of sufficient strength to resist the force of the explosive therein and to insure against rupture of the walls thereof incident to said explosion, the flaring walls thereof tending to direct the force thereof upwardly against the projectile. The flash of the explosion within the member 10 will ignite the fuse 16 and will project the member 11 into the air where in turn it will be exploded and make a flash

and report according to the explosive used.

The projectile may be permanently assembled with the conical body in the manner as shown in Figure 1 and extending from the end of the conical body, or the projectile may be entirely housed within the conical body, as shown in Figure 2, in which case a cover may be placed over the end of the body, or the projectile may be separately housed and the charge within the conical body prevented from separation therefrom by assembling the cap 18 thereupon, as in Figure 3.

The projectile may be held in the conical body by friction or a film of glue 19 may be provided to unite the walls of the conical body to the projectile.

Where a plurality of reports with or without accompanying colored displays are desired, a plurality of conical bodies may be nested one within the other, as indicated at 10 and 10<sup>a</sup> in Figure 4 of the drawings. These bodies may be connected by a film of glue at their base ends, as indicated at 20, and the projectile 11 may be nested within the inner or upper conical body and connected therewith by a film of glue 21. Each of the conical bodies may be provided with a charge of explosive, as indicated at 22 and 23, and the projectile may also be hollow and provided with a charge of explosive, as indicated at 24.

Where fuses are used in connection with these members, each fuse may be projected downwardly toward the charge of explosive of the next succeeding receptacle and additional fuse may be extended from the lowermost cone laterally outward, as shown at 17<sup>a</sup>.

It is to be understood that any number of such conical members may be used with the corresponding number of flashes or salutes adapted to be exploded in succession as the bodies are projected upwardly. Coloring matter may be used to appeal to the taste of the public, as for instance, patriotic colors may be displayed: first red, then white and then blue.

The arrangement of the projectile in a conical body of the character described insures the direction of the force of the explosive charge in said conical body upward against the projectile in a gradually expanding manner, effective to project the same into the air and where the projectile is of such nature that the explosion thereof near the ground would be dangerous, a safety factor is thereby provided. This arrangement is of particular advantage in the assembly of the various parts inasmuch as no skill is necessary in the proper centering of the projectile relative to the charge within the conical body. When the projectile is dropped into the open end of the conical body, gravity may be depended upon to

bring the same into proper relation to the charge of explosive therein.

The article as illustrated may be changed in various ways without departing from the invention herein set forth and hereinafter claimed.

Having described my invention, what I claim is:

1. A rocket including a hollow conical body open at its base end, and a hollow projectile in the end of the conical body, said body and projectile each having explosive charges therein and means tending to maintain the projectile in its original position.

2. A rocket including a plurality of hollow conical bodies open at their base ends and nested one within the other, a projectile in the base end of the uppermost cone, and a charge of explosive in each conical body.

3. A rocket comprising a plurality of hollow conical bodies and a hollow projectile, said conical bodies and a projectile body being nested one within the other and each enclosing a charge of explosive.

4. A rocket comprising a plurality of hollow conical bodies and a hollow spherical projectile, said conical bodies and a projectile body being nested one within the other and each enclosing a charge of explosive.

5. A rocket comprising a plurality of hollow conical bodies and a hollow projectile, said conical bodies and a projectile body being nested one within the other and each enclosing a charge of explosive, each body having a fuse spaced from the charge of the body in which it is nested.

6. A rocket including a chambered body, the walls of said chamber flaring upwardly, a charge of explosive material in said body, a projectile in the end of the body, and means maintaining the stationariness of said projectile and tending to resist the departure thereof from the chamber.

7. A rocket including a hollow conical body open at its inverted base end, a hollow projectile in the end of the conical body, said body and projectile each having explosive charges therein, a support attached to the apex end of the hollow body, and means maintaining the stationariness of said projectile and functioning as an obstruction to the free exit of the projectile.

In testimony whereof I have signed my name to this specification.

CHARLES SCARDONE.