

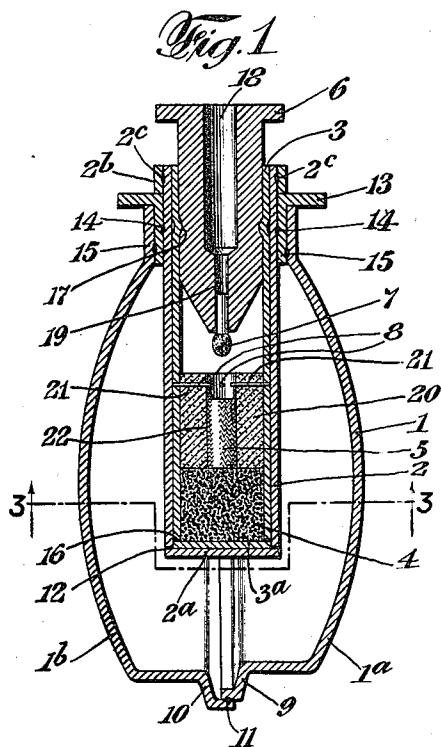
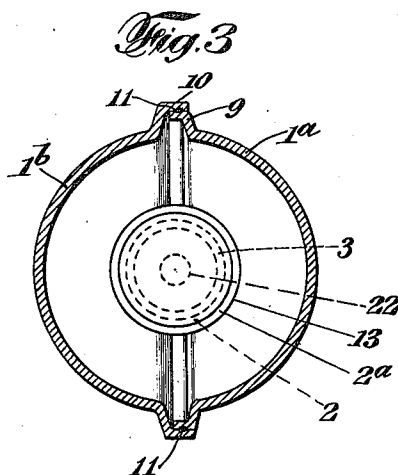
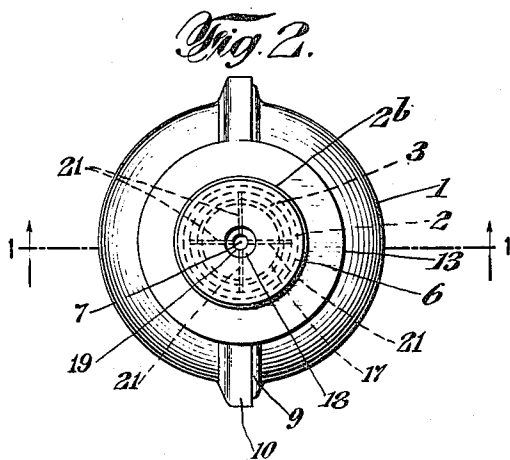
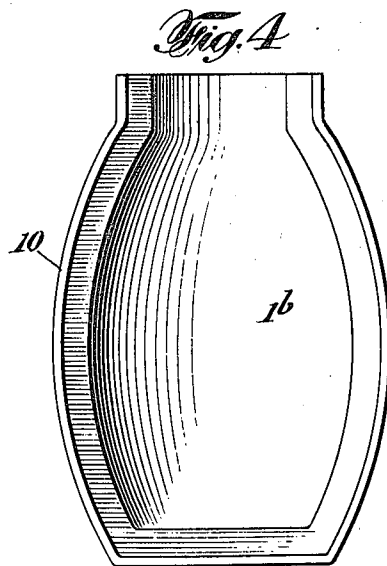
May 26, 1925.

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W. J. TAYLOR

LIFE CONSERVING GRENADE

Filed March 1, 1921



W. J. Taylor, Inventor

By *h/s* Attorney *F. Squair.*

Patented May 26, 1925.

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UNITED STATES PATENT OFFICE.

WILFRED J. TAYLOR, OF THOMPSON, CONNECTICUT, ASSIGNOR TO STEPHEN JAMES DE LANOY, OF TRENTON, NEW JERSEY.

LIFE-CONSERVING GRENADE.

Application filed March 1, 1921. Serial No. 448,808.

To all whom it may concern:

Be it known that I, WILFRED J. TAYLOR, a citizen of the United States, and a resident of Thompson, in the county of Windham and State of Connecticut, have invented a certain new and useful Life-Conserving Grenade, of which the following is a specification.

This invention is in the art of training and practice devices for use in instructing men in the carrying on of war. It has particular reference to a grenade for practice, as distinguished from standard grenades for actual use in battle, the grenade not being a substitute for, or in competition with, standard grenades as regards use in actual fighting.

The object of the invention is to provide a device which can be used and exploded without injury to the men being trained, the particular danger to be eliminated being cutting and wounding by flying and jagged-edged pieces of heavy material.

The standard grenade is made of metal and its flask is intended to shatter, thus to produce on bursting a large number of flying heavy pieces. Its purpose is the infliction of maximum injury. In practice and training, injury to the men must, so far as possible, be eliminated. Thus, qualities which make for a good grenade for battle use are the very ones which render that grenade unsuitable for practice use. The grenade of this invention is harmless, and life-conserving. Thus it is ideally adapted for practice use. Furthermore, being life-conserving, it is also adaptable for use in various other circumstances wherein the desire is to use a grenade and yet at the same time conserve life and keep bodily injury at a minimum.

I describe this practice grenade by reference to the accompanying drawings, and in these drawings:—

Figure 1 is a diametrical cross-sectional view of the device taken substantially on the line 1—1 of Figure 2;

Figure 2 is a plan view of the device illustrated in Figure 1;

Figure 3 is a cross-sectional view taken substantially on the line 3—3 of Figure 1, and

Figure 4 is an elevational view of one of the halves of the flask of the device, looking into the interior thereof.

The illustrated device comprises a flask 1, a sealing plug 2, a bursting plug 3 for containing the bursting charge 4 and the fuse 5, a firing pin 6 and a firing mechanism 7—8. The firing pin is designed to be pushed into the plug 3 to actuate the firing mechanism 7—8 and ignite the charge 4. The flask is fluid-tight for containing a suitable fluid or gas, which may be harmless in character and a substitute for poison gas or the like, the flask being intended to break upon explosion of the bursting charge.

Now, in accordance with the invention, the flask, and desirably substantially the entire device, is, wholly contrary to the teachings of standard grenade practice, composed of a material which is very light, and is also somewhat resilient. This provides that when the flask breaks and the parts fly they, being light, have their speed quickly reduced by the air resistance and they fall lightly on any man they may strike, and also provides that a flying part will yield upon impact, reducing the force of the blow. The material which I preferably use is a pyroxylin plastic such as pyralin, i. e. a solid material moldable under heat and pressure and made from pyroxylin or the lower nitrates of cellulose, and with suitable solvents, e. g. camphor and alcohol, in suitable proportions.

In further accordance with the invention, the flask 1 is preferably so made that when it bursts it does not shatter. Instead, it breaks into halves. To this end, the flask is composed of halves 1^a and 1^b provided with cooperating flanges 9 and 10 each extending throughout the periphery of its respective half (except for the rim of the neck) and one, as 9, being adapted to fit tightly within the other, as 10. If desired cement 11 can be used at the joint. The joint thus provided is so designed and assembled that it is of less tensile strength than the material itself. Therefore, when the flask bursts it breaks along the joint and into its halves, not shattering into small pieces. These halves are of relatively large area and so their speed is quickly reduced by the air resistance. Moreover, since they have the usual curved form of the standard grenade, and are thin and resilient, their blow is cushioned, particularly when they strike with their convex sides toward the object. Also, their edges are smooth and of

material thickness and therefore the halves cannot inflict injury even should they strike edgewise; so, by this construction full advantage of the lightness and resiliency of the material is taken.

Because of being of pyroxylin plastic, which is easily molded and worked, the device can be made up without the expensive machining required for metal, and so can be manufactured inexpensively. Thus devices for practice can be provided at an expense much lower than that of providing standard grenades.

Thus this practice grenade can be used and exploded without injury to the men being trained, since it eliminates the danger of cutting and wounding by flying fragments, and is of such character that it can be supplied at a cost much less than that for standard grenades.

The detailed construction of the illustrated device is as follows:

The sealing plug 2 is in the form of a tube with the bottom 2^a cemented thereto as at 12 and carries a shoulder ring 2^b fixed thereto in any desired manner, as by cement 2^c. A collar 13, against which the ring 2^b abuts, is cemented to the plug 2 as at 14, and the collar is in turn cemented to the flask as at 15. In this way the flask is sealed fluid-tight. Desirably, the cementing at 15 is sufficiently weak to provide that upon bursting of the flask one half shall separate cleanly from the collar and the other half without the breaking of either half of the flask. The bursting plug 3 is slidably received in the sealing plug and has the bottom 3^a cemented to the body proper of the plug 3 as at 16. The firing pin 6 is slidably received in the bursting plug but, to normally hold the pin in non-firing raised position, the pin is provided with a circumferential groove 17 into which the side of the plug 3 is pressed as shown. The pin is bored out at 18—19, to receive at 18 a firing stick (not shown) should it be desired to fire the device from a gun, and to receive at 19 an igniting member, or match, 7 tightly thrust therein.

The bursting plug 3 has a plug 20, of pyroxylin plastic or card-board, fixed therein above the charge 4 to carry the fuse 5 and serve as a wadding, the fixing being accomplished by the four wires 21 fixed in the wall of the plug 3 and projecting into the plug 20. The plug 20 has an axial passage 22 therethrough to receive the fuse 5. The ends 8 of the wires 21 project into the passage 22 above the fuse. The relative proportions are such that when the firing pin 6 is thrust inward, overcoming the resistance of the pressed-in material in the groove 17, the match head strikes the wire-ends 8, and lights the fuse 5. Preferably the tensile strength of the joints between

the plugs 2 and 3 and their respective bottoms is less than that of the sides of the plugs, whereby upon explosion of the charge 4, the bottoms are blown from the bodies of the plugs, leaving the bodies proper uninjured for reuse. Desirably the thickness of the walls of the various parts may be but about .05 to .06 of an inch. All the structural parts of the device, except, of course, the wires 21, are desirably of pyroxylin plastic, the fuse 5 may be of any suitable material desirable for the timing desired, and the match 7 of any common type capable of ignition upon friction between its head and the wire-ends 8.

I claim:

1. A life-conserving grenade having a flask of fluid-tight construction throughout and composed of light, substantially fluid-impervious, and somewhat resilient material.

2. A life-conserving grenade composed substantially throughout of light, substantially fluid-impervious, and somewhat resilient material and having a flask of such material and of fluid-tight construction throughout.

3. A life-conserving grenade composed substantially throughout of pyroxylin plastic.

4. A life-conserving grenade having a flask composed of pyroxylin plastic.

5. A life-conserving grenade having a flask of light and somewhat resilient material and made up of joined portions, the joint between said portions being of less strength than the material of the flask.

6. A life-conserving grenade having a flask of light and somewhat resilient material and made up of joined portions, the joint between said portions being of less strength than the material of the flask and the edges of said portions being relatively smooth and broad.

7. A life-conserving grenade comprising a flask and provisions for bursting said flask, said flask being of light and somewhat resilient material and composed of joined halves with the joint between said halves of less strength than the material of said flask.

8. A life-conserving grenade having a flask of fluid-tight construction throughout, composed of light, substantially fluid-impervious, and somewhat resilient material, and made up of joined portions, the joint between said portions being of less strength than the material of said flask.

9. A life-conserving grenade having a flask of fluid-tight construction throughout, composed of light, substantially fluid-impervious, and somewhat resilient material, and made up of joined portions, the joint between said portions being of less strength than the material of said flask, and the

edges of said portions being relatively smooth and broad.

10. A life-conserving grenade having a pyroxylin plastic flask made up of joined portions, the joint between said portions being of less strength than the material of the flask.

11. A life-conserving grenade having a pyroxylin plastic flask made up of joined portions, the joint between said portions being of less strength than the material of the flask and the edges of said portions being relatively smooth and broad.

12. A life-conserving grenade comprising a pyroxylin plastic flask and provisions for bursting said flask, said flask being com-

posed of joined halves with the joint between said halves of less strength than the material of said flask.

13. A life-conserving grenade comprising a flask and provisions for bursting said flask, said flask being composed of longitudinal halves of pyroxylin plastic with the edges of said halves contoured to fit the one within the other to provide a joint, said joint extending across the bottom of said flask and throughout the length of said flask on opposite sides thereof.

In testimony whereof I affix my signature.

WILFRED J. TAYLOR.