Jan. 30, 1934. J. B. DECKER 1,945,217

TOY TORPEDO OR IMPACT SALUTE

Original Filed Feb. 5, 1932

Fig. 1.

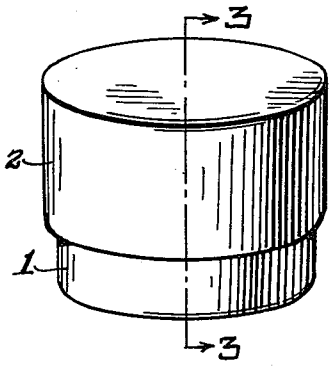


Fig. 2.

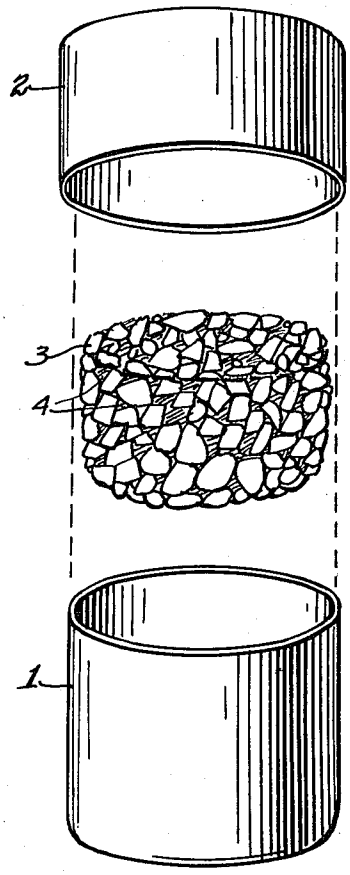


Fig. 3.

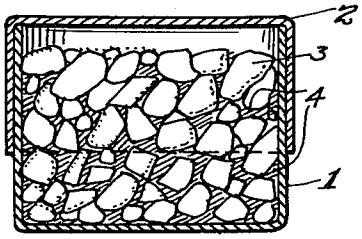
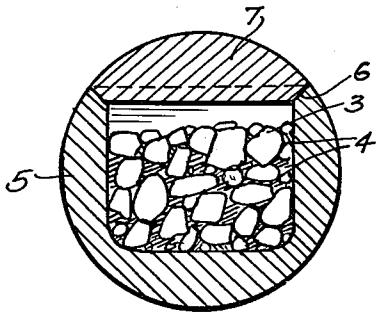


Fig. 4.



Inventor

Joseph B. Decker

By Mason Fenwick & Lawrence

Attorneys

Patented Jan. 30, 1934

1,945,217

UNITED STATES PATENT OFFICE

1,945,217

TOY TORPEDO OR IMPACT SALUTE

Joseph B. Decker, Elkton, Md., assignor to Gertrude M. Decker, Elkton, Md.

Application February 5, 1932, Serial No. 591,213
Renewed June 21, 1933

10 Claims. (Cl. 102—25)

The invention forming the subject matter of this application is a toy torpedo or impact salute rendered safe during the construction thereof by insuring relative immobility between the explosive and detonating elements during shipping, storing and handling prior to intentional explosion thereof by forcible impact against a hard surface.

The main object of the invention is to render the present type of toy torpedo or impact salute safe to handle and to prevent premature explosion by fixing the gravel or other detonating elements and the explosive elements to each other in a frangible compact mass.

A further object of the invention is to provide a toy torpedo or impact salute in which an explosive compound is used, in dry or plastic form, as a filler for the interstices formed in a cemented mass of relatively immovable granular detonating elements which substantially fills a gas tight casing such as is in common use in toys of this character.

Other objects of the invention will become apparent as the detailed description thereof proceeds.

In the drawing:

Figure 1 is a perspective view of a toy torpedo embodying the present invention;

Figure 2 is an exploded perspective of a torpedo shown in Figure 1;

Figure 3 is a vertical transverse section taken on the line 3—3 of Figure 1; and

Figure 4 is a transverse section through a modified form of the invention.

While the invention is illustrated in the drawing as embodied in cylindrical or globular form, it is not to be considered as limited to any particular shape. Regardless of its shape, the invention resides primarily in securing the detonating elements to each other so as to form a compact mass having interstices between the adherent particles thereof to receive an explosive compound or mixture; which may be either dry or plastic; and which mass will be readily broken apart by forcible impact of the torpedo on a hard surface. When broken apart the abrasive particles act as hammer and anvil to explode the explosive compound or mixture.

Whatever the type or shape of the torpedo may be, it is usual to have it embodied in a container in which are placed an explosive composition and detonating or abrasive means for setting off the explosive. The detonating means is usually formed of gravel or similar material placed with the explosive in the container sealed to make it gas tight. The container may or may not be provided with suitable reinforcing means formed about its exterior to increase its bursting impact and hence increase the intensity of the report when the mass of abrasive material is fractured by the impact of the torpedo against the hard surface.

In the present form of the invention, the cemented mass of gravel fits the container walls tightly so that its particles can not move about freely therein. The relative immobility of the particles of gravel and the friction fit with the walls of the container prevent fracture and sufficient percussion or impact between the gravel particles and the explosive in the spaces or interstices so that slight jars incident to shipping and storing and otherwise handling the torpedoes can not cause explosion of any of the torpedoes. This safety factor of the present torpedo is of enormous advantage in this art when it is considered that the explosion of a single torpedo of the old type may be transmitted to adjacent torpedoes so as to explode a whole case, or a carload, simultaneously. In the present invention the particles of gravel or abrasive material are so secured to each other and are so positioned in the container that accidental movement which occurs during the ordinary handling of the torpedo is not sufficient to break the adhesion between the abrasive particles and cause unintentional explosion of the explosive material.

Referring to the drawing, there is shown a tube 1 formed of some tenacious material such as cardboard or the like. Preferably, this tube 1 is made cylindrical to receive a cylindrical cap 2 adapted to slide over the walls of the container 1 by snug friction fit. The abrasive material 3 is thoroughly mixed with some kind of binder which will cement the particles of gravel or other abrasive material to each other. While any suitable binder may be used for this purpose, it is preferable that it be of such characteristics that it will not hold the cemented mass too tenaciously. While glue may be considered as a suitable binder, it ordinarily holds the cemented mass too tenaciously and does not allow the torpedo to explode as freely as it should. However, it is quite operable and may be considered as one of the binders suitable for use in this invention.

Collodion used as a binder glues the particles of the mass of gravel together, but not with such tenacity as conditions of manufacture demand. However, it does serve as a binder and its use in connection with the abrasive material and ex-

plosive mixture is considered as falling within the scope of the present invention.

Chemicals with a high melting point, such as sulphur, form a very good binder for use in the present invention. In one process of manufacture of these torpedoes, pebbles of gravel are coated with sulphur by heating the gravel pebbles and sulphur together at a temperature in excess of the melting point of the sulphur. While the sulphur coated gravel pebbles are at a temperature hot enough to keep the coating molten, the coated gravel or pebbles are placed in containers of the pill box type, shown in Figure 1, in a measured quantity practically sufficient to fill the container. As soon as the sulphur coated particles of the mass cools the coating adheres to the wall at points of contact therewith and also causes adhesion of the contact points of adjacent particles of gravel to form a mass having interstices traversing it in all directions and adapted to receive the explosive material.

It has been found that ordinary sealing wax forms a very good substitute for the sulphur described above.

In all forms in which the invention has been practiced, it has been found that the torpedoes are quite safe to handle during the ordinary storing, shipping and general handling incident to the sale of the same; and that explosion can not take place except by intentional forcible impact of the container wall, sufficient to break up the cemented mass of abrasive material. The hammer and anvil action of the abrasive elements causes explosion of the explosive mixture in the interstices of the mass with fracture of the torpedo casing accompanied by the usual loud report.

Another form of the invention is shown in Figure 4 of the drawing in which the combined explosive and abrasive mixtures are shown as deposited in a container 5 forming the greater part of a sphere. The part 5 is shaped so as to provide a seat 6 in the mouth thereof adapted to receive a closure 7 forming a continuation of a spherical wall of the container 5. The closure may be secured by any suitable adhesive to the container part 5.

The cap of the container shown in Figures 1, 2 and 3 fits closely over the container proper and may be secured thereto by any suitable adhesive. In this condition, the toy torpedo is complete, but it may be subjected to the treatment disclosed in the patent to Cimorosi, No. 1,467,755, September 11, 1923, to transform it from a cylindrical to a globular type, or to any other treatment to effect the same purpose. These finished cylindrcal torpedoes may be subjected to treatment with an agglutinant, such as liquid silicate of soda, glue, etc., and tumbled in a suitable machine in a plastic mass of wood flour or like comminuted material and agglutinant. The constant tumbling and rolling causes the wood flour to agglomerate and adhere to the outsides of the cups and finally form a spherical mass about the cup, which when dried, forms the outer protective casing or cover of the torpedo. In this form the torpedo assumes a form in common use, but it is rendered safe to handle, because the abrasive and explosive materials are prevented against such movement in the containers as would cause accidental explosion.

What I claim is:

1. The method of making a toy torpedo which consists in forming a container, substantially filling the container with a mass of granular material having the particles thereof cemented to each other and to the walls of the container, and explosive material substantially filling the interstices in said mass.

2. In a toy torpedo, a gas tight container, an explosive composition within said container, abrasive material in said container, and a binder securing the particles of abrasive material to each other and against movement bodily in said container.

3. In a toy torpedo of the type adapted to be exploded by impact, an explosive composition, granular percussion material, a frangible binder securing the particles of material to each other, and a gas tight container completely enclosing the bound mass of explosive composition and percussion material.

4. A toy torpedo comprising a container having a mass of granular percussion material therein, means for frangibly securing the particles of said mass to each other and to the walls of the container, and explosive material in the interstices between the particles of percussion material.

5. In a toy torpedo, a cardboard cylindrical container, a cylindrical cap for closing said container, and a mixture of explosive material and coarse gravel therein, the particles of gravel being cemented to each other at their points of contact with each other and to the walls of said container.

6. A toy torpedo comprising an open ended cylindrical container, a mixture of explosive and abrasive materials, and sulphur binding the particles of the abrasive material to each other and to said container.

7. A toy torpedo comprising an open ended cylindrical container, a mixture of explosive and granular abrasive materials, sulphur binding the particles of said abrasive material to each other and to said container, and a cap closing the open end of said container.

8. A toy torpedo comprising an open ended cylindrical container, a mixture of explosive and granular abrasive materials, sealing wax binding the particles of the abrasive material to each other and to said container.

9. In a toy torpedo, a cylindrical container, a mixture of explosive and granular abrasive materials in said container, and a frangible binder securing the particles of the abrasive material to each other and to the container with the explosive material in the interstices between said particles.

10. The method of making a toy torpedo which comprises cementing percussion materials together to form an intersticed mass, placing explosive material in the interstices of said mass, and sealing in a container a measured quantity of the cemented mass and explosive material placed therein.

JOSEPH B. DECKER.