Aug. 31, 1943. H. L. HUNT 2,328,276

LAND MINE

Filed Oct. 19, 1940

Fig. 1.

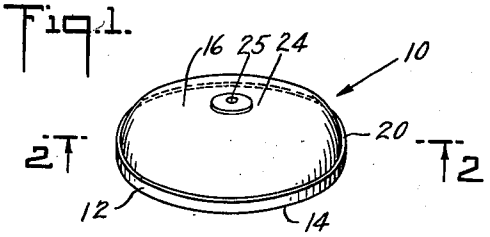


Fig. 2.

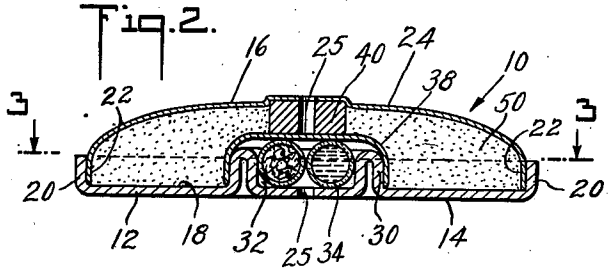
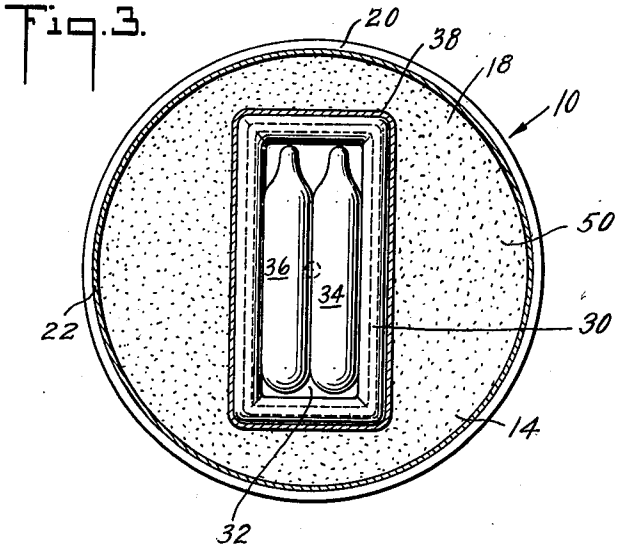


Fig. 3.



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LAND MINE

Harold Lyons Hunt, New York, N. Y.

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3 Claims. (Cl. 102—8)

My invention relates generally to priming devices, and specifically to a detonating device for use in exploding land mines. The main object of my invention is the provision of a detonating device which will function simply directly and effectively to ignite or set off a larger explosive charge.

Another object of my invention is the provision of a casing for an explosive charge, within which casing is a separate compartment for the detonating device.

Still another object of my invention is the provision of a casing for an explosive charge, withing which casing is a separate compartment for a portion of the detonating device, and means on the casing to actuate the detonating device to ignite the main charge.

Still another object of my invention is the provision of a deformable casing for an explosive charge within which casing is a separate compartment for a portion of the detonating device, and means on the casing, upon deformation thereof, to actuate the detonating device to ignite the main charge.

Still another object of my invention is the provision of a detonating device within a casing containing explosive material which detonator is actuated only upon deformation of the casing.

Still another object of my invention is the provision of a detonating device within a casing containing explosives, the component parts of which detonator are disposed within separate compartments within the casing and function to set off the main charge only upon destruction of the containers within one of the compartments permitting intermingling of the contents thereof and ignition of the main charge.

Still another object of my invention is the provision of a detonator, the component parts of which are contained within a plurality of separate individual enclosures, disposed in close proximity to each other, which detonator will function only upon the deformation of all the individual enclosures allowing contact between the enclosures' contents.

Other and further objects of my invention will in part be obvious, and in part pointed out hereinbelow in connection with the following description of an illustrative embodiment of my invention. While my invention is capable of much broader application, I will describe same in this specification in relation to a land mine, but only for purposes of convenience and ready reference. My invention is to be limited only by the scope of the claims annexed hereto.

In the drawing annexed hereto and forming a part hereof

Figure 1 is a perspective view of one form of device constructed according to and embodying my invention;

Fig. 2 is a cross-section of the form of device shown in Fig. 1, taken along line 2—2 of Fig. 1; and

Fig. 3 is a cross-sectional view along the line 3—3 of Fig. 2.

Reference numeral 10 indicates my device generally, which comprises a flat-bottomed, discus shaped casing 12. Casing 12 may be formed of two parts; a floor portion 14 and a top or cover portion 16. Floor portion 14 has a flat circular body portion 18 and an annular upstanding wall 20 at the periphery thereof. Cover portion 16 is also circular, and is provided with an annular, downwardly depending wall portion 22. Cover 16 is centrally domed upwardly, as seen at 24, Fig. 2. Both casing parts 14 and 16 may be formed of Celluloid of the nitrated type, or of other light and easily deformable material. I may desirably employ light, thin sheet metal out of which the floor and cover portion are stamped or otherwise formed, but I have found Celluloid to work well in practice, since it is by means of the deformation of the casing material that my primer is actuated. I preferably employ material for my casing of such strength and rigidity that same may be easily deformed by the weight of the average adult.

As seen in Fig. 2, the two casing components are so dimensioned, that when cover 16 is fitted over onto floor portion 14, the annular depending wall 22 fits into and is friction or otherwise locked within the upstanding circular wall 20 of the floor portion. The doming of the cover, as at 24, provides sufficient space within casing 12 to pack a considerable quantity of explosive material 50.

The detonator of my invention is disposed within casing 12, so that the device as a unit, is complete and self-contained. In the center of the floor body portion 18, I form a rectangular upstanding wall 30, substantially equal in height to, or slightly higher than, the annular wall 20. Wall 30 may be stamped up or otherwise formed, of the material of which the floor portion 14 is made, or it may be separately formed and secured onto body portion 18. However formed, I provide wall 30 to define a well or enclosure 32 within the floor portion of my casing and in the center thereof.

In this well or depression 32, I place the igniting components of my device. I provide two

long and thin ampoules **34** and **36**, preferably formed of thin and easily shattered glass, known in the trade as "onion skin" glass. These ampoules are drawn to a point at one end, and bulbed at the other end to avoid any possibility of "bridging" and to insure the shattering of the ampoules upon the application of even slight pressure. In one ampoule **34**, I place a quantity of water, and in the other ampoule **36**, I insert a piece of potassium. Both ampoules are sealed against leaking or evaporation of the water and oxidation of the metal, and they are placed side by side, close together, within well **32** and locked therein against movement by means of either the close fit of the ampoules within well **32**, or by an application of a suitable cement or shellac. After the loaded ampoules **34**, **36** are disposed within well **32**, a covering **38** of thin, easily ignitable material, such as Cellophane or Celluloid, is placed over and around wall **30** to seal well **32** against infiltration between the ampoules of explosive material **50** with which the casing **12** is then filled.

Upon the simultaneous crushing of ampoules **34**, **36**, and release of their contents, the water coming into contact with the potassium will cause the generation of heat and flame, which in turn will ignite and detonate the explosive charge **50**. It is important that both ampoules be crushed or destroyed simultaneously, for if the water-containing ampoule is broken first, the contents might be absorbed by the explosive material, rendering same harmless, and the subsequent crushing of the potassium-containing ampoule would have no effective result so far as the igniting of the main charge is concerned. If the potassium-containing ampoule is crushed first, the potassium might conceivably oxidize to such extent that the subsequent wetting thereof might prove ineffective to ignite the main charge. Unless the well contents are screened, as by means of covering **38**, particles of the explosive might work down between ampoules **34** and **36** and move same from within effective range of each other.

Ampoules **34**, **36** are shown in Fig. 3 with the thin ends thereof side by side. They may also be disposed and secured within well **32** so that the thin end of one ampoule is adjacent the bulbed end of the other ampoule.

I provide means within casing **12** and on the cover **16** whereby both ampoules **34** and **36** may be crushed at the same time. As hereinbefore stated, cover **16** is centrally domed, as at **24**. On the underside of cover **16**, and in the center thereof, I provide a plug **40**, of hard and heavy material. Plug **40** is of such size and shape as to overlie both ampoules **34** and **36** within well **32** and to be received within the confines of wall **30**. Thus, when sufficiently strong pressure is applied to cover **16**, plug **40** is forced down into destructive contact with both ampoules **34**, **36**, to cause intermingling of the water and potassium contents, with subsequent ignition of the main explosive charge. Cover **16**, plug **40** and floor **18** are vented to the atmosphere, as at **25**, to prevent air lock and insure easy deformation of the closing cover.

My invention may be used not only for land mines, such as hereindescribed, but also for flare bombs, projectiles, and conjoint uses. As an example of a land mine made in accordance with my invention, the diameter of casing **12** was 1¾", and the well was 1⅛" by ½", and the ampoules were $1\frac{1}{16}$" by ⅕".

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

1. A device of the character described comprising a casing of explosive easily deformable material, which casing comprises an upper and a lower portion, a main explosive charge in said casing, a detonator for said charge within the casing, which detonator comprises in part a plurality of individually sealed easily frangible containers disposed and secured in closely abutting side-by-side relationship on one of the casing portions, and within which containers are disposed compounds which form an explosive mixture upon the commingling thereof, and in part of means on the other portion of the casing, normally spaced from and overlying the containers, which means upon deformation of the casing, will bear against and crush the containers to cause intermingling of the contents thereof and the subsequent ignition of the main charge and of the casing itself.

2. A device as in claim 1 in which the first described part of the detonator comprises a pair of ampoules, one of which contains water, and the other of which contains potassium.

3. A device as in claim 1, in which a walled enclosure is provided on the lower portion of the casing to locate the containers therewithin, and a hard plug is provided on the underside of the upper portion of the casing in line with and overlying the enclosure, the plug being of such width as to project into the enclosure and contact both containers upon deformation of the casing.

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