

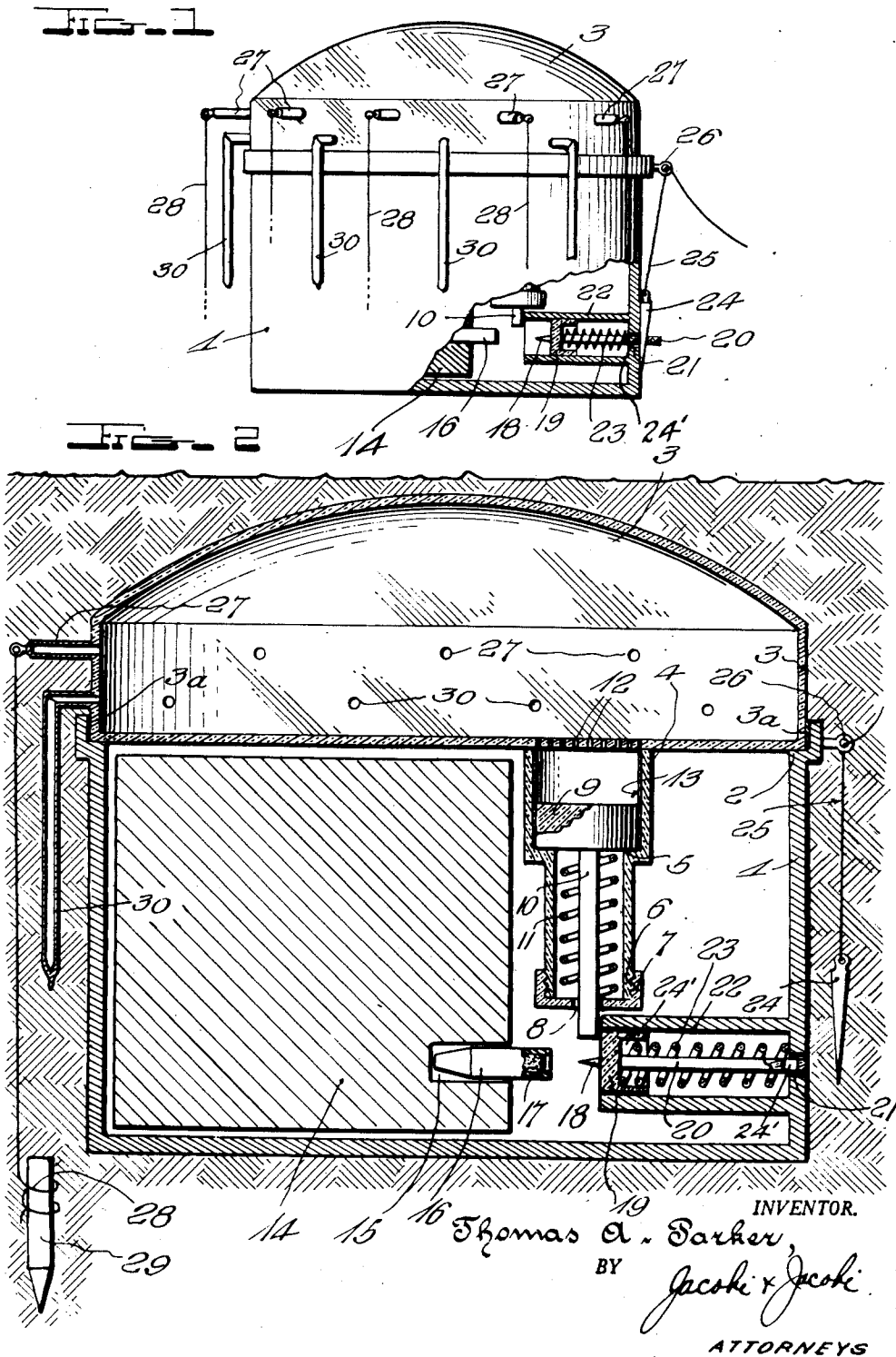
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LAND MINE

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My invention relates to new and useful improvements in land mines and more particularly to the type of mine adapted to destroy weighted vehicles or tanks, the primary object of the invention being to provide a device of this character which when concealed may not be readily discovered and which cannot be discovered by the radio detector devices now known.

A further object of the invention resides in constructing a device of the character mentioned which contains no metal whatsoever and which will withstand the weight of an ordinary person but which will explode when the weight of a heavy vehicle or tank passes thereover.

Still another object of the invention resides in so constructing the device that if attempts are made, under normal conditions, to remove the same from its buried or concealed position in the earth, the same will explode.

Still another object of the invention resides in constructing the device with various safety features so as to protect those installing the same.

A still further object of the invention resides in providing a device of the character mentioned which is comparatively simple and durable in construction, inexpensive to manufacture and one which will be very efficient in use.

With these and numerous other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts, as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawing forming a part of this application,

Figure 1 is a side elevation of a mine constructed in accordance with my invention, with the safety pin effectively applied and with parts broken away and parts in section to illustrate the position of the firing pin under such conditions, and

Figure 2 is an enlarged vertical section therethrough with the safety pin removed and the device ready for action, same being shown in buried or concealed position in the earth.

In describing the invention, I shall refer to the drawing, in which similar reference characters designate corresponding parts throughout the several views and in which the numeral 1 designates a container formed of plastic material, preferably cylindrical in design, although the same may be any desired shape in cross section, said container having a base and side walls, the latter, at their upper peripheral edges being off-set to form a shoulder 2. Supported on the shoulder

2 of the plastic container 1 is a dome-shaped glass tank 3, which is of a diameter to fit snugly within the walls of said container 1 and sealed in position as shown at 3a. This glass dome-shaped tank has depending therefrom and projecting into the interior of the casing or container 1 an integral glass cylinder 4. This cylinder is reduced intermediate of its ends to form a shoulder 5 and the lower end of the cylinder is threaded as shown at 6 to engage a threaded glass cap 7, the latter having an opening 8 in the center thereof. Movable mounted in the upper portion of the cylinder 4, between the shoulder 5 and the base of the tank 3, is a glass piston 9 with an integral rod 10 depending therefrom and extending through the reduced portion of the cylinder to project through the opening 8 in the cap 7. Surrounding the rod 10 between the cap 7 and the lower face of the piston 9 is a glass coil spring 11, having a tendency toward forcing the piston upwardly to withdraw the stem or rod 10 upwardly through the opening 8.

The glass tank 3 has the base wall thereof over the cylinder 4 perforated as shown at 12, or if desired, an opening may be formed in the base at such point covered with a screening or the like. This dome-shaped tank 3 is sealed with air under pressure sufficiently to normally force the piston 9 downwardly against the shoulder 5 of the cylinder 4, thus overcoming the tension of the spring 11 and permitting the lower end of the rod or stem 10 to project a considerable distance below the cap 8, for a purpose to be hereinafter and more particularly set forth. In order that the piston may be sealed in position in the cylinder, thus preventing the escape of air therethrough, a suitable grease or lubricant 13 is provided between the walls of the cylinder 4 and the piston 9, as clearly shown in Figure 2 of the drawing.

Mounted within the plastic container 1 is the explosive 14 which has a recess provided therein designated by the numeral 15 which has removably inserted the element 16 containing a detonator at its outer end and a primer 17 at its inner end.

The primer is, when the element 16 is properly inserted in position, in longitudinal alignment with a firing pin 18. This pin is carried at the end of a head 19 formed of glass with a stem 20 also formed of glass and adapted to project through an opening 21 in the wall of plastic container 1 near the bottom of the latter. This head 19 is guided through a tubular portion 22 formed integral with the wall of the container 1 and

projected inwardly thereof. Surrounding the stem 20 of the firing pin between the inner face of the wall of the container 1 and the head 19 of the firing pin is a second glass coil spring 23, the outer coils of which are held against the head 19 in a pocket or cup-shaped recess 24 formed in the latter. Normally, the coil spring 23 is adapted to force the firing pin forwardly toward the primer 17 of the element 16 but when the head 19 is withdrawn against the tension of said spring, it may be held in partially retracted position by the lower projected end of the stem or rod 10 of the piston 9, as shown in Figure 2 of the drawing. In assembling the device, the firing pin may be retained in its full retracted position through the medium of the safety pin 24 inserted in an opening 24' in the outer end of the stem 20, said safety pin being formed of glass or plastic, as may be desired, and suspended by a cord 25 from an eye 26 carried on the upper end of the container 1. In Figure 1, I have shown the safety pin effectively applied with the firing pin in its full retracted or "safe" position, or applied in position but after having once been set, the pin is withdrawn allowing the firing pin to return to its partially retracted or "ready" position, as shown in Figure 2 of the drawing.

It will thus be seen that once the device is set, the air pressure within the dome-shaped tank 3 will retain the piston 9 in its lowermost position so that the stem 10 will project in front of the head 19 of the firing pin, preventing the latter from moving to an effective firing position. Should air in the tank 3 be released by the breaking of the tank 3, obviously the spring 11 will force the piston 9 upwardly, retracting the stem or rod 10, thereby permitting the spring 23 to force the firing pin 18 to its effective position against the primer 17, thereby causing an explosion.

Since all the elements of the device as shown and described are non-metallic, it is apparent that this mine when buried or concealed in the earth, such as shown in Figure 2 of the drawing, may not be detected by the present day radio-detectors. The dome-shaped tank 3 is of such strength as to withstand, under normal conditions, an average weight of troops, but will be broken when the weight is increased to that of a vehicle or tank.

I have also provided means whereby this mine may be caused to explode, should attempts be made to remove same after detection. To this end I provide the glass dome-shaped tank 3 with a plurality of outwardly projecting tubular arms 27, which are sealed at their outer ends and communicate with the interior of the tank 3. Through the medium of cords or the like 28, the ends of these arms 27 are connected with stakes 29 which are buried in the ground some distance below the base of the container 1. Also, formed integral with the walls of the tank 3 are the angular tubular members 30 which project outwardly and then downwardly so as to surround the walls of the container 1 in spaced relation therefrom. These arms 30 are sealed at their outer ends and communicate with the interior of the tank 3. Thus, if an attempt is made to use a shovel to remove the mine, contact will either be made with cords 28 which will cause a breaking of the tubes 27 or contact will be made directly with the tubes 30, breaking the latter and in either event, air escaping therethrough, will permit a rising of the piston 9 which will enable the firing pin to be released to its effective firing position.

Obviously, any breakage of the glass tank 3 or its appendages will cause a firing of the mine.

This particular construction has several safety factors for the benefit of those planting the same.

The element containing the detonator and primer is capable of being removed. Likewise, the firing pin may be removed and finally the safety pin may be applied to prevent the firing pin from operating until such time as the mine has been set.

From the foregoing description of the construction of my improved land mine, the setting up of same and operation thereof will be readily understood and it will be seen that I have provided a comparatively simple, inexpensive and efficient means for carrying out the various objects of the invention.

While I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction, may be resorted to, without departing from the spirit or sacrificing any of the principles of the invention.

What I claim is:

1. A land mine formed entirely of non-metallic materials, comprising a container adapted to be buried below the surface of the ground, an explosive therein, a spring-actuated firing pin within the container adapted to operate on said explosive, a dome-shaped tank supported on said container and sealed with air under pressure therein, means in association with said tank and adapted to cooperate with said firing pin to normally retain the latter in ineffective position, said last mentioned means becoming ineffective and permitting release of said firing pin upon escape of air from said tank.

2. A mine of the class described formed entirely of non-metallic materials, comprising a non-metallic container, an explosive supported therewithin, a spring-actuated and non-metallic firing pin, a dome-shaped glass tank sealed with air under pressure therewithin, non-metallic means cooperating with said tank and actuated by the air under pressure therein to normally retain said firing pin in its retracted and ineffective position, said last mentioned means becoming ineffective upon the escape of air from said tank, and non-metallic appendages on said tank having communication with the interior of the latter.

3. In a land mine, a container formed of plastic material, an explosive mounted therewithin, a spring-actuated firing pin of non-metallic material, a glass tank supported on said plastic container and sealed with air under pressure therein, non-metallic means coacting with said tank and the air under pressure therein normally tending to retain said firing pin in retracted and ineffective position, said last mentioned means becoming ineffective upon escape of air from said tank, and tubular appendages on said glass tank having communication with the interior thereof.

4. In a land mine, a container formed of plastic material, an explosive mounted therewithin, a spring-actuated firing pin of non-metallic material, a glass tank supported on said plastic container and sealed with air under pressure therein, non-metallic means coacting with said tank and the air under pressure therein normally tending to retain said firing pin in retracted and ineffective position, tubular appendages on said glass tank having communication with the interior thereof.

rior thereof, and means for anchoring certain of said appendages to the earth.

5. A land mine formed entirely of non-metallic materials, comprising a non-metallic container, an explosive supported therewithin, a non-metallic firing pin mounted within said container, a dome-shaped tank formed of non-metallic material and sealed with air under pressure therewithin, a non-metallic means cooperating with said tank and the air under pressure therewithin and cooperating also with said firing pin to normally retain the latter in its retracted and ineffective position, said last mentioned means becoming ineffective upon the escape of air from said tank, and a plurality of appendages carried on the wall of said tank and having communication with the interior of the latter, said appendages having closed outer ends and adapted to be severed in attempts to remove the mine when buried.

6. A land mine formed entirely of non-metallic materials, comprising a container adapted to be buried below the surface of the ground, an explosive therein, the spring-actuated firing pin formed of non-metallic materials and mounted within the container adapted to operate on said explosive, a dome-shaped tank of non-metallic material supported on said container and sealed with air under pressure therewithin, means in association with said tank and the air under pressure therein and adapted to cooperate with said firing pin to normally retain the latter in its ineffective and retracted position, said last mentioned means becoming ineffective permitting release of said firing pin upon escape of air from said tank, and means for retaining said firing pin in its ineffective and retracted position when the mine is being set for operation.

7. A land mine formed entirely of non-metallic

materials, comprising a non-metallic container, an explosive supported therewithin, a spring-actuated and non-metallic firing pin within said container, a dome-shaped tank of non-metallic material sealed with air under pressure therewithin, a non-metallic means cooperating with said tank and the air pressure therewithin and also coacting with said firing pin to normally retain the latter in its retracted and ineffective position, said last mentioned means becoming ineffective upon the escape of air from said tank, and a plurality of appendages formed on the wall of said tank and having communication with the interior of the latter, said appendages being closed at their outer ends and substantially surrounding said container in spaced relation to the latter.

8. A land mine formed entirely of non-metallic materials, comprising a non-metallic container, an explosive supported therewithin, a spring-actuated and non-metallic firing pin within said container, a dome-shaped tank of non-metallic material sealed with air under pressure therewithin, a non-metallic means cooperating with said tank and the air pressure therewithin and also coacting with said firing pin to normally retain the latter in its retracted and ineffective position, said last mentioned means becoming ineffective upon the escape of air from said tank, a plurality of tubular appendages on said tank having communication with the interior of the latter, the outer ends of said appendages being closed and certain of said appendages projecting to points surrounding the container in spaced relation thereto, certain other appendages being adapted for anchoring to the earth in which the mine is concealed.

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