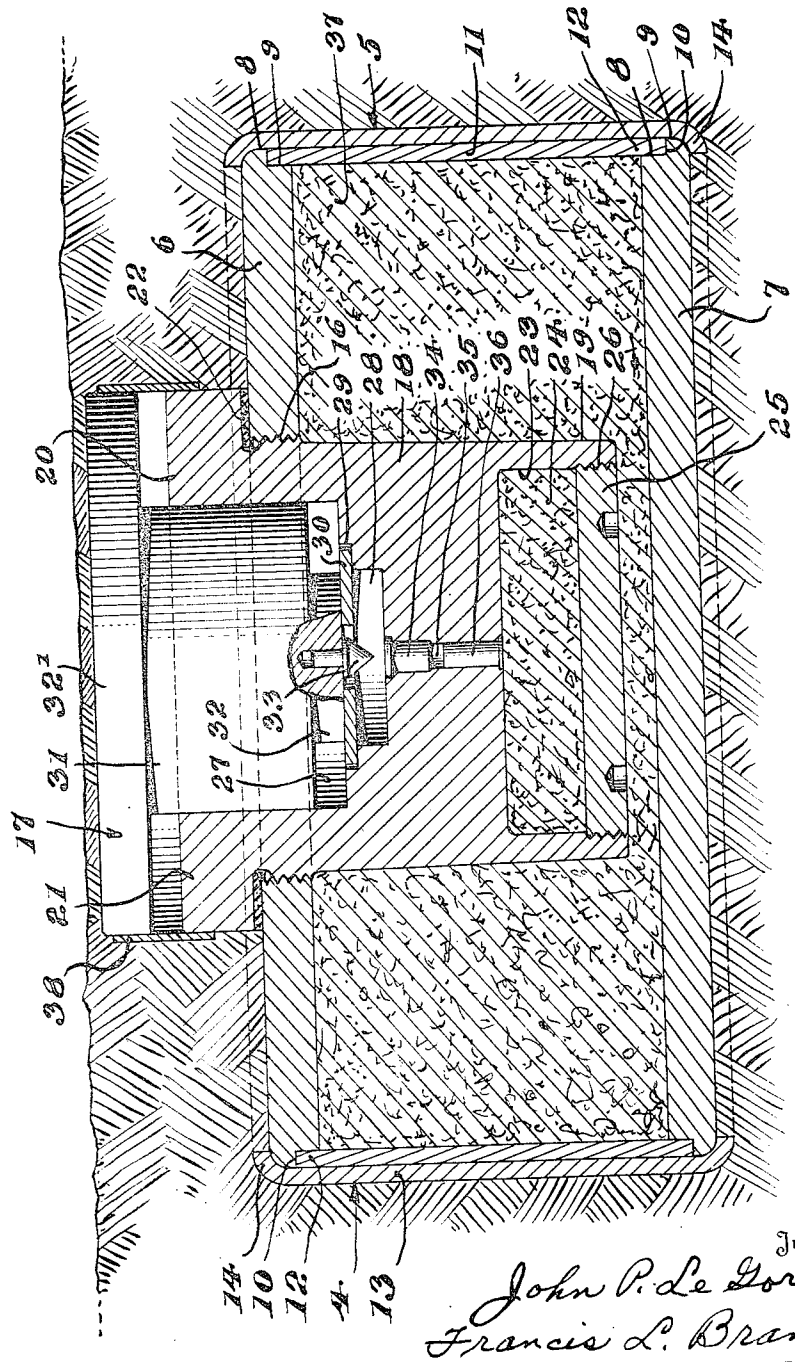
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MINE

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## MINE

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This invention relates to mines and more particularly to land mines.

One of the principal objects of this invention is to provide a land mine constructed of a metallous material for effecting conservation of metals for other war uses and to preclude detection of the mine by magnetic mine detecting devices used by enemy troops.

Another object of the invention is to provide a mine of the foregoing described character which is constructed in a manner to render it waterproof and maintain it in a sealed condition against the admission of foreign matter.

A further object of the invention is to provide a mine of the foregoing described character so constructed and arranged whereby the same is capable of being fired only upon the application of a predetermined amount of force being applied thereto.

A still further object of the present invention is to provide a mine of the foregoing described character wherein the firing device may be quickly attached thereto when desired.

An important object of the present invention is to provide a mine of the foregoing described character which is simple in construction, efficient in use, economical in manufacture, relatively safe in handling and which lends itself to high productivity.

With the above and other objects in view, as will hereinafter appear, the invention consists in the combination and arrangement of parts hereinafter set forth and illustrated in the accompanying drawing from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

As illustrated in the vertical sectional view of the drawing, the mine 4 comprises a cylindrical hollow body 5 equipped with a pair of spaced closure members or top and bottom heads 6 and 7 respectively constructed of plywood and each being of a discoidal configuration. The heads are formed with inner and outer circumferential seats 8 and 9 respectively and with the outer seat 9 being of a greater diameter than the inner seat 8 and defining therebetween a shoulder 10. Interjacent the heads 6 and 7 there is provided a fibre tube or casing 11 of waterproof material having its end sections 12 circumbinding the inner circumferential seats 8 and with the radial faces of said ends disposed in abutting relation with the shoulders 10.

Circumseated on the seats 9 and circumposing the end sections 12 is a fibre jacket or sheath 13, the latter serving to maintain said end sections in appressed and sealed relation with the inner circumferential seats 8. Adjacent the outer circumferential seats 9, the end portions or chimes 14 of the jacket 13 are disposed and extend an appreciable distance over the margins of the outer radial faces of the heads 6 and 7 to form seals therewith, whereby, said heads and jacket are maintained in a sealed condition at all times. By thus extending the end portions 14 an appreciable distance over the radial faces of the heads they serve to protect the margins of the heads against damage. The top head 6 is provided with a threaded opening 16 for attaching and securing therethrough a fuze 17.

The fuze 17 comprises a cylindrical housing 18 constructed of wood and provided with inner and outer ends 19 and 20 disposed interiorly and exteriorly respectively of the housing unit 4. The outer end 19 is formed with a circumferential flange 21 overlying the outer radial face of the top head 6 for effecting binding relation therewith, while, adjacent said flange 21, the housing is exteriorly threaded and screwed into the opening 16 whereby to secure the fuze in fixation with the body. Subjacent the flange 21, the housing 20 is provided with a gasket 22 to effect a seal with the head 6.

The inner end face of the housing is formed with a recess 23 in which is contained a booster 24, the latter being maintained in said recess by means of a closure 25 threaded therein as at 26. The outer end face of the housing is formed with a bore 27 connecting, at its lower end, with a diametrically reduced firing chamber 28 defined by a circumferential superjacent kerf 29 constituting a seat on which is disposed a shear-disc 30 normally overlying the firing chamber.

The housing is equipped with a striker assembly comprising a plunger 31 extending within the bore 27 and formed on its lower end with a punch or striker 32 for shearing the disc 30 and for actuation into the firing chamber 28. The outer or upper end of the plunger 31 is provided with a trigger of tread plate 32' for actuating the plunger downwardly within the bore when pressure is applied to said place, for instance, by means of vehicle engagement. The shear disc 30 is fashioned with a central opening through which projects a firing pin 33 normally maintained, by reposal of the striker on the shear disc, in spatiality with a primer 34 mounted in the upper end of a flash opening 35 connecting the firing chamber 28 with the recess 23. A detonator 36 is mounted in the lower end of the opening 35 and adjacent the booster 24 as clearly illustrated in the drawing.

The body 5 is provided with an explosive filler 37, for instance, tri-nitro-toluol and in which the fuze 17 extends. A pliable, removable or replaceable band 38 of adhesive tape or the like is affixed about and connects the circumferential faces of the plate and flange and thus functions to preclude accidental displacement of the plunger without the housing and admittance of

foreign matter between the plate and plunger.

The shear-disc 30 is constructed of fibre or a similar material and is of a size whereby it may be sheared by the striker upon a predeterminable amount of force being applied to the tread plate. When the disc is sheared by the striker, it will be forced into the firing chamber and permit firing of the primer by the firing pin. The primer, in turn, discharges the detonator, the latter serving to detonate the booster 24 with resultant exploding of the explosive filler contained in the body.

The end sections of the tube and jacket are provided on their faces, where they have contactual engagement with adjacent surfaces, with a suitable adhesive or cement, which when set, forms a seal between the surfaces and thus makes the structure impervious to water at the jointures. The fibre, of which the casing and jacket is constructed, is of the vulcanized type and fabricated from cotton rag absorbent paper and which fibre lends itself to a high degree of shrinkage upon being dehydrated after receiving heat treatment, for instance, application of steam to the fibre for a period to render the fibre pliable and slightly expandable, thus, when the jacket 13 is subjected to the heat treatment it may be readily applied about the heads 6 and 7 and will, upon being dehydrated, cause the end sections 12 of the casing 11 to circumbind and be maintained in locked relation with the inner seats 8 due to the shrinkage of the jacket. Furthermore, the end portions 14 of the casing upon being treated, are subject to pressure by a heated forming die to dispose said end portions 14 over and in appressed relation with the radial faces of the heads 6 and 7 as clearly illustrated in the figure, thus effecting seals with the heads 6 and 7 upon shrinkage. While the foregoing described material lends itself admirably to the application for which it is intended, it is to be understood that other suitable material for accomplishing the result may be employed if desired.

With the exception of the firing pin and the primer and detonator casings, the fuze is constructed entirely of ametallous material, for instance, maple wood, the latter being impregnated with a suitable agent for waterproofing the parts and maximizing their machinability. However, it is to be understood, that said firing pin, primer and detonating casings may be constructed of other suitable material if desired.

By constructing the mine of ametallous material as herein set forth, it will be apparent that conservation of metals for other war uses is obtained and that detection of the mine by magnetic mine detecting devices is precluded. Furthermore, by varying the size of the shear disc, the mine may be fired upon contact by ground troops as well as military vehicles, for instance, tanks, trucks and the like. It is to be further understood that the various parts of the mine may be treated with a waterproofing agent to maximize its imperviability against the admittance of moisture.

In assembling the mine, the body is filled with tri-nitro-toluol, the latter being in a molten condition and poured into the body, it being understood that a dummy or form is employed to define the opening for the fuze or the tri-nitro-toluol is drilled, after it sets, whereby to form the fuze opening. The fuze is usually attached to the body upon the field or in a nearby locality, said fuze being transported in a container and separate from the mine body as a safety precaution. When planted, the mine is deposited on the surface of the ground or buried flush with or slightly below said surface.

It is to be understood that the language used herein and in the claims is intended to cover all the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, may be said to fall therebetween. Furthermore, the terms "inner," "outer," "top" and "bottom" are used in a relative sense for the purpose of description and not by way of limitation, it being understood, in some instances, that the various parts of the invention may be arranged in a manner whereby the foregoing terms would not appropriately describe their relative positions.

Without further elaboration the foregoing will so fully explain the invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service. Moreover, it is not indispensable that all the features of the invention be used conjointly since they may be employed advantageously in various combinations and subcombinations.

It is obvious that the invention is not confined to the herein described use therefore as it may be utilized for any purpose to which it is adaptable. It is therefore to be understood that the invention is not limited to the specific construction as illustrated and described as the same is only illustrative of the principles of operation, which are capable of extended application in various forms, and the invention comprehends all construction within the scope of the appended claims.

What is claimed is:

1. In a mine construction, a body adapted to contain an explosive charge and equipped with a tubular casing and heads disposed within the ends of said casings respectively and closing said ends, one of said heads provided with a fuze opening adapted to register with a cul-de-sac formed in said charge, a fuze provided with a housing secured to said last mentioned head and extending through said opening for positioning within said cul-de-sac, said housing provided with detonating means for detonating said charge and formed with a bore and firing chamber adjacent the bore and with said chamber communicating with said detonating means, shearable disc carried by the housing and isolating said firing chamber from the bore, a plunger slidably disposed in said bore and provided with a striker normally positioned against said disc for shearing the latter, a firing pin secured to said striker and normally maintained out of engagement with said detonating means by said striker, said striker provided with a tread plate disposed without said housing for operation by exteriorly applied pressure to effect shearing of said disc and firing of said detonating means by said pin, a pliable member securing said plate to said housing to maintain said striker in operative condition within the housing, and a jacket embracing said casing and the margins of said heads for circumbinding said casing to the heads and thus maintain said heads in sealed relation with said body.

2. The structure or claim 1 as set forth and defined therein including, said jacket, heads, housing, plunger and tread plate being constructed of ametallous materials conspiring together to defy detection of said mine by electrical mine detecting means.

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