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C.I. AMN. TECHNICAL REPORT

No. 47

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DUTCH MUSHROOM-TOP LAND MINE

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C. I. AMN. TECHNICAL REPORTS

REPORT NO. 47

SEPTEMBER 1945

DUTCH MUSHROOM-TOP LAND MINE

GENERAL

A large quantity of these mines was reported to have been encountered in Guadalcanal in 1943. These were, presumably, captured mines used by the Japanese against Allied Forces. The mine, originally of Dutch manufacture, is also manufactured in the United States.

2. Only one sample of the mine has been received at this Inspectorate for examination and this was of American manufacture. Reports, however, indicate that the Dutch manufactured mine is identical with the one under report except in minor details and in the markings on the hood.

DESCRIPTION

3. The photograph at Plate A gives the general appearance of the mine while Plate B shows an external view and the details of construction. For the purposes of description the mine can be divided into three main parts:-

- (i) Hood (2);
- (ii) Body (4);
- (iii) Fuze (Plate C).

NOTE:- The numbers within brackets refer to Plate B.

HOOD

4. The hood (2) is made of steel and is fitted with a steel lifting handle which is spot-welded to it. A threaded ring (2A) is soldered to the underside of the hood and this receives a knurled brass plug (1). A conical steel spring (3) is positioned between the body (4) and the hood (2). Four slots are cut in the hood to allow it to move to a limited extent over the four hood-retaining screws (2B).

BODY

5. The body (4) is also made of steel and has a hole at the top beneath which is soldered a steel ring (4A); this is threaded internally to take the fuze. Four steel screws (2B) which pass through corresponding slots in the hood (2), are secured to the body by four soldered, threaded lugs (4B). A steel bottom plate (6) is crimped to the body, the joint being sealed with a moisture-proof compound.

6. The body is filled with 5½-lbs. of T.N.T. cast in two blocks

one above the other. Centrally, the filling is recessed to take three pre-pressed, graphited, C.E. pellets placed one above the other, the lower pellet resting on a felt disc. The upper two pellets are recessed to accommodate the steel booster cup (5).

See
of FUZE

7. Plate C gives the general appearance of the fuze and the assembly sequence of its components. The fuze consists of a brass body (1), the striker (3) with its needle (3A), the striker spring (2), the detonator holder (4), the detonator (4A) and the gaine (5).

8. The brass body (1) is bored at one end to take the striker (3), and internally threaded at the other end to receive the detonator holder (4). At the striker end of the brass body (1) is a large flange knurled on its external radius. Immediately below the flange is an undercut through which a hole is drilled to take a copper shear wire (1B). Below this the fuze body is threaded externally to screw into the body of the mine. Two holes are also drilled through the striker (3) to accommodate a brass safety pin (1A) and the shear wire (1B) respectively.

The brass striker (3) is flanged at one end and over this fits the striker spring (2) which is held in compression. A small hole is bored centrally through the lower end of the striker to receive the steel needle (3A) one end of which is split and turned over to secure it.

9. The brass detonator holder (4) is threaded externally to screw into the fuze body (1) and bored out to receive the detonator (4A), a diaphragm being left at one end. After the detonator (4A) has been inserted in the holder (4) the upper lip of the holder is rolled over to keep the detonator in position. The detonator is filled in three increments, the top two being lead azide and the lower C.E. The detonator (4A) is closed at either end by an aluminium disc, the lower one being painted red.

10. At the lower end of the detonator holder (4) a seating is formed to take the gaine (5), the edge of the seating being rolled over a lip on the gaine to secure it. The gaine (5) is filled with graphited C.E. with a felt disc at the bottom.

11. Safety Devices:-

(a) Safety pin. This is a brass pin with an eye at one end to which is attached a short length of cord.

(b) Shear wire. This is a soft copper wire which holds the striker up against its spring until a sufficient load is applied to shear the wire.

ACTION

12. When not in use the fuze cavity is probably filled with a plug as the fuze and the mine are packed separately. Before laying the mine the knurled plug is removed and the fuze inserted in the fuze cavity. The safety pin is removed and the knurled plug replaced, care being taken to see that the conical spring is in position. When pressure is applied on the hood it is transmitted by the plug to the striker. Continued pressure breaks the shear wire

and the striker spring forces the striker down on to the detonator thus initiating the detonating train.

12. The pressure required to shear the shear wire is reported to be 180--240-lbs. This could not be verified here as only one mine was received for examination. Incidentally, in the case of the Dutch manufactured mine the pressure required is reported to be only 50-lbs.

PACKING

13. According to reports five mines are packed in a wooden box, wooden partitions separating each from the other. An end compartment in the box holds five fuzes each sealed in a tin container. Dimensions and other details of the box are not available.

IDENTIFICATION

14. The mine is painted olive drab and the letters "AM-41" are painted in red on the hood. No markings are found on the mine body, knurled plug or fuze.

CHEMICAL ANALYSIS

(Chief Inspector of Military Explosives, Kirkee)

15. H.E. Filling

(i) Top .. T.N.T., Grade I.
M.P. 80°C; S.P. 80.47°C.

(ii) Bottom .. T.N.T., Grade I.
M.P. 80°C; S.P. 80.39°C.

16. Exploder Pellets

(i) Top Pellet .. C.E. 97.5%; Wax 1.5%; Graphite 1.2%.

(ii) Central Pellet .. C.E. 98.5%; Wax 0.7%; Graphite 0.8%.

(iii) Bottom Pellet .. C.E. 98.1%; Wax 0.6%; Graphite 1.3%.

17. Detonator Filling

(i) Top .. Probably Lead Azide; quantity insufficient for detailed examination.

(ii) Centre .. Lead Azide (34.3%) with C.E. contamination.

(iii) Bottom .. C.E.; quantity insufficient for quantitative determination.

18. Gain Filling

.. Graphite 0.5%; C.E. 99.5%.
M.P. 129°C.

APPRECIATION

(Economic, manufacture and development aspects)

19. Since the mine is not of Japanese manufacture there is little to be said about its economic and development aspects. The mines encountered in Guadalcanal in 1943 were of Dutch manufacture and it is presumed that these were captured by the Japanese

during their occupation of that area and used by them against Allied Forces. The American manufactured mines might also have been used by the Japanese.

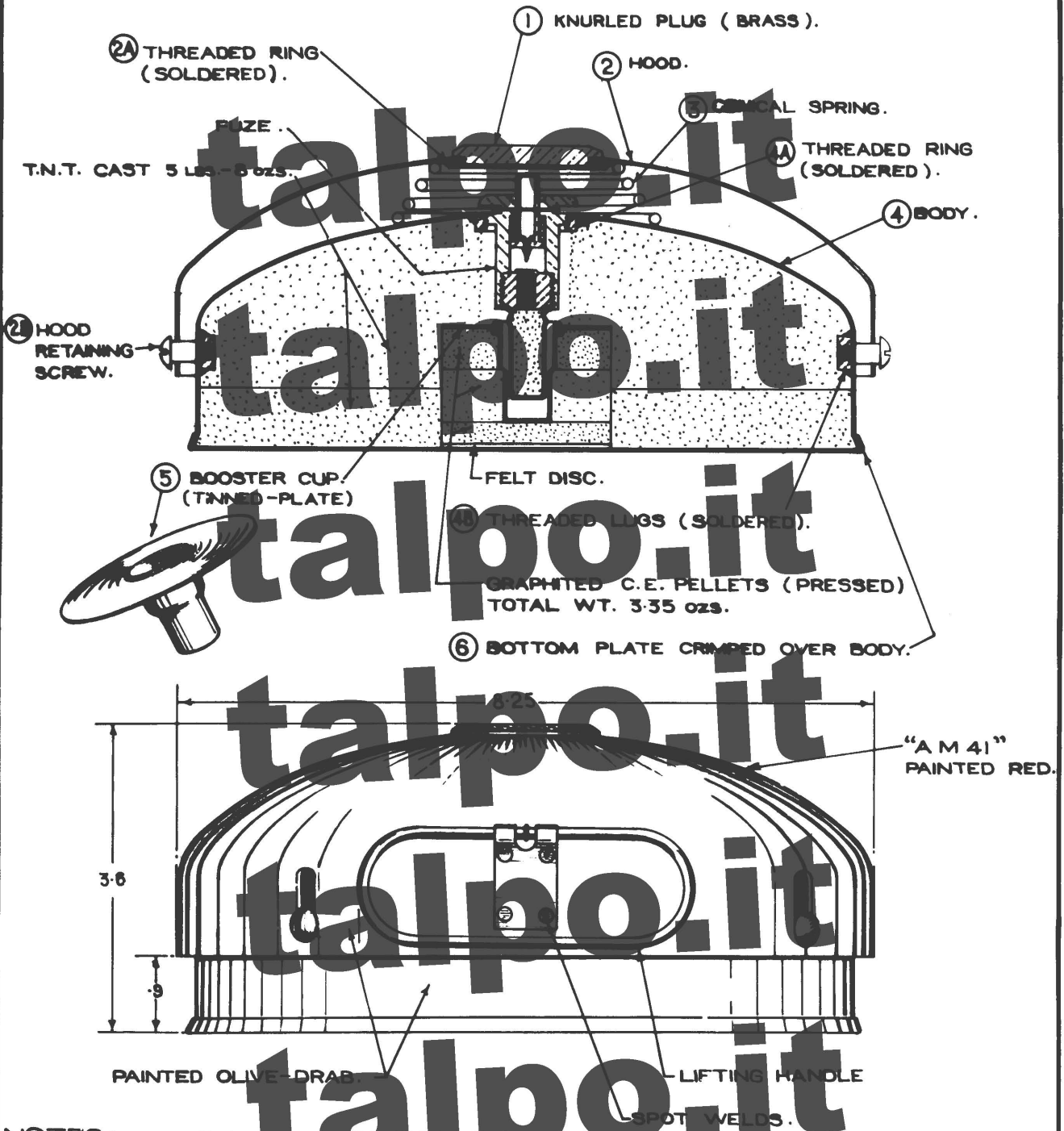
SUMMARY OF DATA

20. Overall diameter of mine	..	8.25-ins.
Overall height of mine	..	3.6-ins.
Complete weight of mine with fuze	..	9-lbs. 1.28-ozs.
Nature and weight of H.E. filling	..	Cast T.N.T., 5-lbs. 8-ozs.
Nature and weight of the 3 booster pellets	..	Pressed graphited C.E., 3.35-ozs.
Overall length of fuze	..	2.625-ins.
Weight of filled fuze	..	3.28-ozs.
Weight of detonator	..	7.1-grs.
<u>Nature and weight of detonator filling:-</u>		
(i) Top - probably Lead Azide)	..	3.4-grs.
(ii) Centre - Lead Azide	..	1-gr.
(iii) Bottom - Pressed C.E.	..	1.05-ins.
Overall length of gaine	..	0.48-ins.
Diameter of gaine	..	41.1-grs.
Nature and weight of gaine filling	..	Graphited C.E., 41.1-grs.

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DUTCH MUSHROOM-TOP LAND MINE
 — AND —
FUZE.

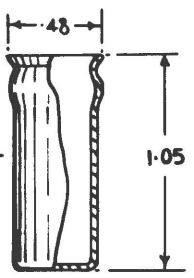
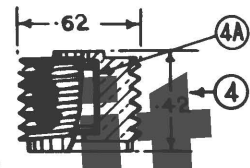
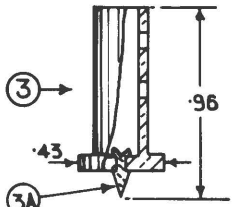
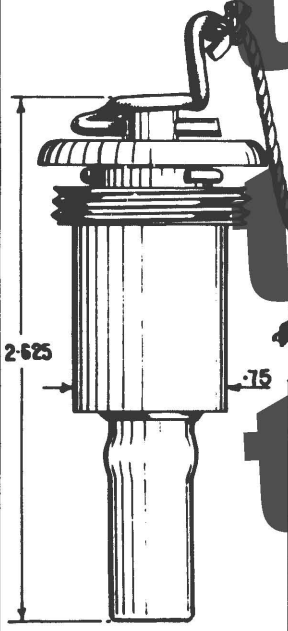


NOTES:- ALL PARTS MADE OF STEEL EXCEPT WHERE OTHERWISE STATED.
ALL THREADS ARE RIGHT HANDED.

DUTCH MUSHROOM-TOP LAND MINE
GENERAL ARRANGEMENT



NOTES:- FUZE MADE OF BRASS EXCEPT WHERE OTHERWISE STATED.
ALL THREADS ARE RIGHT HANDED.



WT. OF FILLED FUZE :- 3.28 ozs.

FUZE
FOR

DUTCH MUSHROOM-TOP LAND MINE
GENERAL ARRANGEMENT & ASSEMBLY SEQUENCE

DIMENSIONS IN INCHES.

JAPANESE FIELD ARTILLERY

MILITARY INTELLIGENCE DIVISION
WAR DEPARTMENT WASHINGTON, D. C.



United States Government Printing Office
Washington: 1944

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