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JAPANESE AMMUNITION

C.I. AMN. TECHNICAL REPORT

No. 45

GRENADE, HAND, H. E., TYPE '98 (STICK TYPE)

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G E N E R A L

This grenade, in design and general appearance, closely resembles the German Stick Grenade, Model 24 (Stielhandgranate 24). The Japanese grenade is, however, considerably smaller in size and the H.E. charge is less than half that of the German grenade. The body of the Japanese grenade is made of cast iron with comparatively thick walls while the German grenade has a light-gauge steel body. This is reflected in their comparative weights, 17-oz. for the German grenade against 19-oz. for the Japanese grenade. The German grenade relies for its effect on blast while the Japanese stick grenade is a fragmentation grenade. The fragmentation effect is of a slightly lower order than the Type '97, see C.I.Amn. Technical Report No. 5 (Second Issue).

2. The only other stick grenade known to be used by the Japanese is an incendiary grenade but none has yet been received at Kirkee for detailed examination. This incendiary grenade has, however, a time percussion igniter and differs considerably from the Type '98 H.E. Stick Grenade.

3. The description of the "Grenade, Hand, H.E., Type '98 (Stick Type)" given below is based on actual examinations carried out at Kirkee.

D E S C R I P T I O N

4. The drawing in the accompanying Plate gives full details of the construction of the grenade which can, for convenience of reference, be divided into three main components:-

- (i) Body.
- (ii) Handle.
- (iii) Friction igniter assembly.

BODY

5. This is a smooth hollow cylinder of cast iron closed at one end. It is painted black both externally and internally and filled with a pressed pellet of picric acid weighing 2.65-oz. This pellet has a waxed paper wrapping and is recessed as shown in the Plate. The mouth of the grenade body is closed by a cardboard washer over the filling. A wooden handle is then fitted and secured in position by three No.4 gauge wood screws $\frac{1}{2}$ -in. in length. The screw recesses and joints are waterproofed with a bituminous compound. A paper label 1-in. wide is pasted on the body of the grenade giving instructions

for its use. On the grenades examined here, this label was wet and damaged; actual characters could not therefore be recorded.

HANDLE

6. This is made of well-seasoned, light white wood and shaped externally to present a good grip for the thrower's hand. Some samples examined were varnished externally and some were unvarnished. The handle is bored internally to its full length, as shown in the Plate, to take the friction igniter assembly. The outer end has right-handed screw threads cut in the wood to accommodate a tinned plate closing cap which closes the recess at that end of the handle. Under the cap the handle is recessed to take a steel ring to which is attached the pull friction cord. A wax impregnated cloth disc in the closing cap ensures a waterproof joint when the cap is screwed home. The other end of the handle has a circular shallow recess with a cardboard washer. This recess is to take the flange of the brass tube of the igniter set which fits over the cardboard washer and is held in place by two steel tacks. The recess is then filled with a bituminous compound to ensure that no moisture will penetrate into the interior of the handle and affect the friction igniter which is particularly susceptible to damp.

FRICTION IGNITER ASSEMBLY

7. Details of construction of the complete assembly will be clear from the Plate. It can be divided into two parts:-

- (a) A flanged brass tube which, at one end, takes a piece of white safety fuze; the time of delay being 4 to 5 seconds. Against the inner end of the safety fuze is a small perforated G.P. pellet (1.1-grs.). This pellet is prevented from moving by a light crimp in the brass tube. Immediately below the G.P. pellet are two vent holes 0.1-in. in diameter, diametrically opposite. These vent holes are covered with a strip of tin foil round the tube. The lower end of the brass tube has a paper tube containing about 1.7-grs. of friction composition (potassium chlorate and antimony sulphide) through which passes a silk cord the inner end of which is covered with a blob of red phosphorus. The sequence of assembly appears to be that the paper tube, complete with friction composition and silk cord, is inserted in the brass tube, the silk cord being threaded through the small (.06-in. diameter) hole in the base of the brass tube. The tube is then lightly crimped at the correct distance from the flange and the perforated pellet dropped into position followed by the length of safety fuze.
- (b) A detonator consisting of a brass tube containing 7.5-grs. of C.E. in the bottom, on top of which is pressed an inverted copper cup holding 8.6-grs. of fulminate of mercury. The bottom of the cup is perforated and closed by a tin foil disc. The detonator tube is lightly crimped to hold the inverted cup in position and to form a stop for the booster pellet. The latter is a perforated G.P. pellet (1.1-grs.) which is

inserted to boost up the flash from the fuze. A paper tube is then passed over the detonator the end of which is filled with a bituminous compound and finally closed by a paper disc. The intention of this bituminous compound is not quite clear. It is thought that its purpose may be to facilitate assembly of the components of the friction igniter to the correct length for insertion in the filling. This could be effected if the components were assembled when the compound was warm and therefore soft.

ACTION

8. The tinned plate cap is removed from the end of the handle by unscrewing (about two turns) and the middle finger of the throwing hand inserted in the metal ring. On throwing the grenade the ring remains on the finger and the friction cord is pulled sharply through the friction igniter to ignite the G.P. booster pellet, the flash from which ignites the fuze to burn with a delay of 4 to 5 seconds. The gases from the G.P. pellet and burning fuze are vented through the two holes in the brass tube, via the channel in the wooden handle, to the atmosphere.

P A C K I N G

9. According to information available, twenty grenades in two layers of ten each are packed in a metal-lined wooden box. The box is painted green with a yellow stripe at the end of each carrying handle. The total weight of the box is $41\frac{1}{2}$ -lbs. and the exterior dimensions are $28\frac{1}{2}$ " x $10\frac{1}{8}$ " x $7\frac{1}{2}$ ".

CHEMICAL ANALYSIS

(Chief Inspector of Military Explosives, Kirkee)

10. H.E. Filling	.. Picric acid (M.P. 122°C)
Friction Composition	.. Potassium chlorate, Antimony sulphide, Sulphur and some binding material.
G.P. Pellets (2 pellets)	.. G.P. consisting of Potassium nitrate, Sulphur and Charcoal.
Safety Fuze	.. Filling consists of Potassium nitrate, Sulphur and Charcoal.
Detonator	.. Fulminate of Mercury and C.E.

SUMMARY OF DATA

11. Grenade:

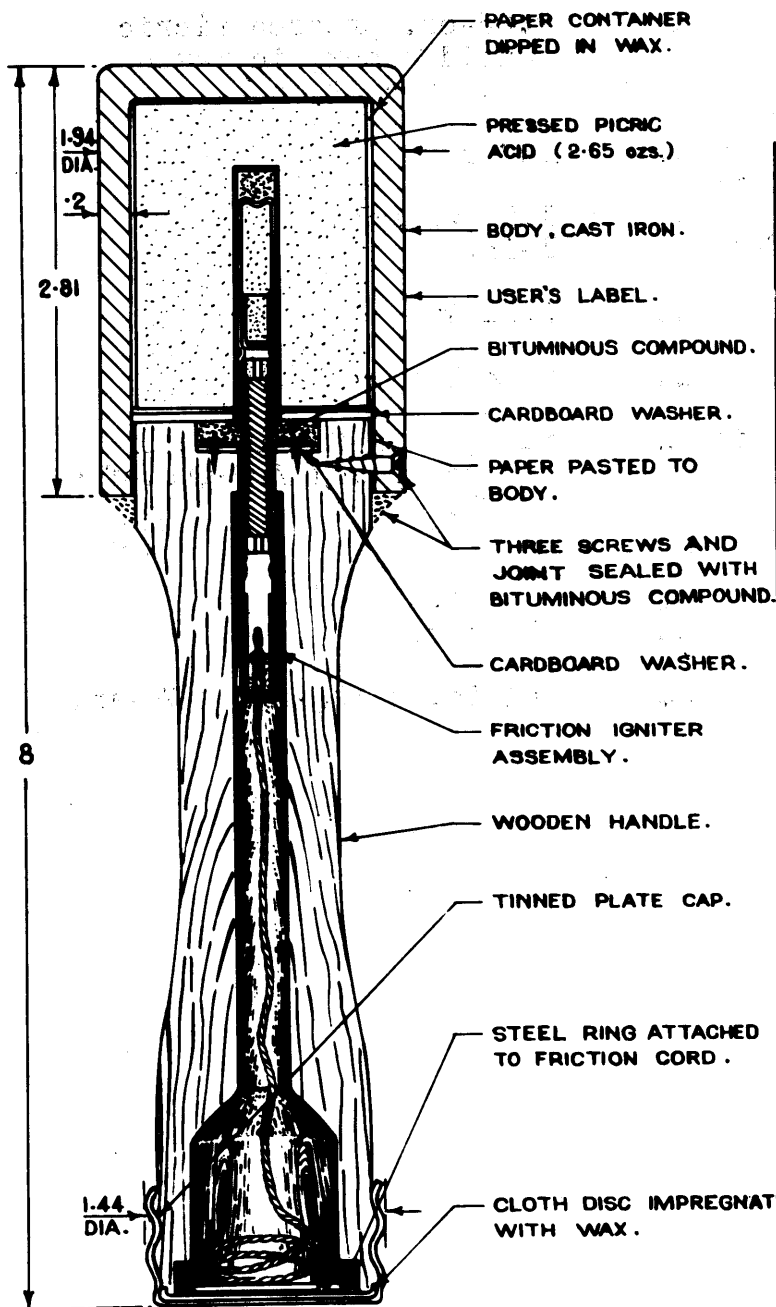
Overall length of grenade	 8-in.
Length of cast iron body	 2.81-in.
Thickness of body wall	 0.2-in.
Diameter over body	 1.94-in.
Diameter over the screw cap	 1.44-in.
Weight of filled grenade	 1-lb. 3-oz.

Weight & nature of main filling ..	2.65-oz. pressed picric acid block, in waxed paper container.
Weight of friction composition ..	1.7-grs.
Weight of G.P.pellets (2 in number) ..	1.1-gr.each.
Length of safety fuze ..	1-in.
Diameter of safety fuze ..	0.21-in.
Time of burning of fuze ..	4 to 5 seconds.
Weight and nature of detonator filling..	8.6-grs.of fulminate of mercury and 7.5-grs.of C.E.

Packing:

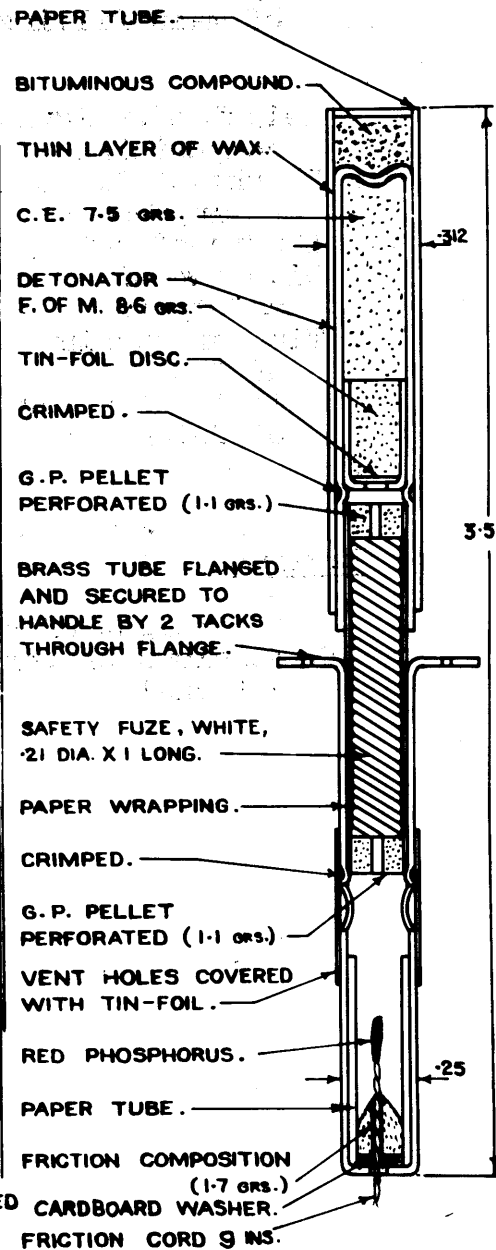
Total weight of box ..	41½-lbs.
Dimensions of box, external ..	28¾-in. x 10½-in. x 7½-in.

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WT. OF FILLED GRENADE :- 1 LB. 3 OZS.

ENLARGED VIEW



**FRICTION IGNITER
ASSEMBLY**

**JAPANESE
GRENADE, HAND, H.E., STICK, TYPE '98**

GENERAL ARRANGEMENT

DIMENSIONS IN INCHES

**C.I. Amm. S/1113
KIRKEE MAY 45**