JAPANESE HAND, RIFLE, & MORTAR GRENADES
INTRODUCTION

Japanese hand grenades are simple and effective. The common fuse action is of the time delay type. The grenadier must impinge the striker upon the primer to initiate the pyrotechnic delay before throwing the grenade. The anti-personnel grenades depend upon fragmentation for their effect, hence they are called "defensive" grenades. The Japanese have made much use of the hand grenade in booby traps.

Only one of the rifle grenades incorporates an impact fuse. The others are time delay like the hand grenades. The Japanese use both the spigot and the cup launcher attachment for the rifle.

The grenade discharger is a much used Japanese weapon. By its means hand grenades and rifled mortar shells are propelled with distance and accuracy. The mortar shells are included in this publication as part of the general grenade warfare equipment.
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JAPANESE GRENADE
USED IN 2 INCH GRENADE THROWER
TYPE 91

Legend
1. Firing pin 7. Delay pellet
2. Firing pin 8. Detonator
4. Safety fork 10. Grenade body
5. Primer 11. Propelling charge
6. Gas vents 12. Steel washer
13. Filling plug
14. Inertial weight
JAPANESE
TYPE 91 GRENADE
HAND, MORTAR, OR RIFLE

Confidential

Data

Overall length........5 inches.
Maximum diameter......2 inches.
Color..................Body, black; Fuse
cover, red; and fuse
is brass.
Total weight.........10.8 oz.
Filling................Powdered T.N.T.
Weight of filling.....65 grams.
Delay.................6 seconds.

Description

The cast iron body is cylindrical and has 50 serrated segments. A filling plug
screws into the upper end of the body, and a brass fuze screws through this plug.
The base of the grenade is threaded, but not entirely through to the charge. Into
these threads fits the propellant container.

The fuze consists of a brass inertia pellet with a steel firing pin separated
from the primer by a creep spring. The inertia weight is held in the fuze by a
light brass cap which is crimped into a cannule in the fuze body so as to prevent
the firing pin from reaching the primer. The firing pin is threaded into the inertia
weight, and, before arming, it is not screwed far enough and its point does not
protrude below the base of the inertia weight. Therefore, before using the grenade,
it is necessary to screw the firing pin into the inertia weight so that it will
protrude. In addition, a double brass safety pin fits through holes in the brass cap
and fuze body into holes in the inertia weight thus preventing the firing pin from
reaching the percussion cap.

The delay pellet screws into the base of the fuze and contains a small quantity
of granular black powder in the top and a highly pressed pellet of black powder
in the lower section. A hole drilled in the side of the fuze contains a fusible plug
which melts when the black powder burns, allowing the escape of the gases formed on
combustion of the delay train. The escape of these gases will enable the thrower
to know if the delay pellet has ignited. The tetryl detonator is contained in the
lower part of a brass tube extending from the base of the fuze to the bottom of the
bursting charge.

The steel propellant container is 1/2" long, 1.02" in diameter, and has six
perforations in its walls. It is screwed into the base of the body. A perforated
plug screws into the base of this container and in a cavity in this is a percussion
cap. Two flash holes lead through the percussion cap holder to a small quantity of
black powder. A perforated steel disc covers the plug and inside the propellant
container proper is a copper cup containing flakes of nitrocellulose propellant
powder.

When this grenade is used as a rifle grenade, a finned tail stabilizer is
screwed into the base of the grenade instead of the propellant container. This
stabilizer carries within it a Ballastite filled wooden bulleted cartridge of .65
mm caliber.

Operation

The firing pin must first be threaded down into the inertia weight. The safety
pin must then be withdrawn. If the grenade is to be thrown by hand, it is necessary
to strike the inertia weight on some hard object thus driving the firing pin into
the primer to ignite the delay train.

If the grenade is to be fired from the grenade discharger, or knee mortar as it is
sometimes called, the grenade with propellant container is dropped base first into
the discharger. When the trigger mechanism of the discharger is operated, its fir-
ing pin strikes the percussion cap igniting the propelling charge which propels
the grenade. Force or setback causes the firing pin in the grenade fuze to compress
the creep spring and hit the primer to ignite the delay train.

To fire the grenade from a rifle, the cartridge is removed from the stabilizer
and loaded into the rifle. The stabilizer is placed over the launcher and the rifle
is fired. The shock of discharge forces the striker into the primer igniting the
delay.
JAPANESE
TYPE 97 HAND GRENADE

THESE CHARACTERS INSCRIBED
ON TUBE:
"CH Ⓞ ☻ ☻ ☻ ☻ ☻ ☻ "
(CH E TOYKO ☻ MARCH 1941)
CONFIDENTIAL

Data
- Overall length: 4 inches
- Maximum diameter: 2 inches
- Color: Body black; fuze cover red; fuze brass
- Total weight: 1 lb. 3 oz.
- Filling: Powdered T.N.T.
- Delay: 4 - 5 seconds

JAPANESE

TYPE 97
HAND GRENADE

Description

The body is cylindrical with serrations to give uniform fragmentation. This grenade is identical to the Type 91 grenade except that the base of this grenade is solid and therefore cannot take a propelling charge. It can only be used as a hand grenade.

The fuse consists of a brass inertia pellet with a steel firing pin separated from the primer by a creep spring. The inertia weight is held into the fuze by a light brass cap which is crimped into a conical part in the fuze body so as to prevent the firing pin from reaching the primer. The firing pin is threaded into the inertia weight, and, before arming, it is not screwed in far enough and its point does not protrude below the base of the inertia weight. Therefore, before using the grenade, it is necessary to screw the firing pin into the inertia weight so that it will protrude. In addition, a double brass safety pin fits through holes in the brass cap and fuze body into holes in the inertia weight thus preventing the firing pin from reaching the percussion cap.

The delay pellet screws into the base of the fuze and contains a small quantity of granular black powder in the top and a highly pressed pellet of black powder in the lower section. A hole drilled in the side of the fuze contains a fusible plug which melts when the black powder burns, allowing the escape of the gases formed on combustion of the delay train. The escape of these gases will enable the thrower to know if the delay pellet has ignited. The tetryl detonator is contained in the lower part of a brass tube.

Operation

The firing pin must first be threaded down into the inertia weight. The safety pin must then be withdrawn. As the grenade is to be thrown by hand, it is necessary to strike the inertia weight on some hard object thus driving the firing pin into the primer to ignite the delay train.
Legend:
1. Fuze body
2. Striker
3. Safety fork
4. Fuze cover
5. Striker spring
6. Fuze cover retainer screw
7. Frizer cap
8. Flash guard
9. Air vent
10. Filling plug
11. Delay train
12. Grenade body
13. Explosive filler
14. Detonator

O O TYPE
JAPANESE HAND GRENADE
JAPANESE
TYPE 00
HAND GRENADE

CONFIDENTIAL

Data

Overall length . . . . 3-1/2 inches.
Maximum diameter . . . . 1-5/6 inches.
Color . . . . . . . . . . Body black with white label pasted around it. The top of the grenade is painted red, fuze cover red & the fuze is brass.
Total weight . . . . . . . . . . 0.9 lbs.
Filling . . . . . . . . . . . Cast Phoric Acid
Delay . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 4 - 5 seconds.

Description

The cast steel body has smooth surfaces. There is a shoulder projecting 1/16" from each end of the body. The inside of the body is finished with lacquer to keep the filler from reacting with the steel case. The filler is also wrapped in heavy paper.

A light metal flash deflector is fitted in the top of the grenade. This deflector is 3/8" wide and 7/8" in diameter. Two 1/8" holes are punched in the outerphery and match the spanner holes in the fuze body. This positions the gas vents in the fuze 90° from the holes in the flash deflector. The flash deflector reduces the possibility of the flash from the cap burning the hand of the thrower and the possibility of the flash being seen by the enemy at night.

The fuze is similar to that used in the Type 91 and 97 grenades with a few improvements. On the old type the striker may turn or spring clear of the grenade when the safety wire is pulled. In this fuze, a screw in the fuze body projects through a slot in the striker cover and keeps the cover in place. The slot allows the cover to move down when the striker is struck on a hard object. Also the striker and inertia weight are machined together and the striker protrudes so that it does not have to be threaded down to arm the grenade.

The inertia weight is held in the fuze by the light brass cap which is crimped into a cannula in the fuze body. A double brass safety pin fits through holes in the brass can and fuze body into holes in the inertia weight thus preventing the firing pin from reaching the percussion cap.

The delay pellet screws into the base of the fuze and contains a small quantity of granular black powder in the top and a highly pressed pellet of black powder in the lower section. A hole drilled in the side of the fuze contains a fusible plug which melts when the black powder burns, allowing the escape of the gases formed in combustion of the delay train. The escape of these gases will enable the thrower to know if the delay pellet has ignited.

The tetryl detonator is contained in the lower part of a brass tube extending from the base of the fuze to the bottom of the bursting charge.

Operation

The safety pin is withdrawn and the head of the fuze is struck on some hard object. This forces the striker down into the primer igniting the delay.
JAPANESE PULL TYPE HAND GRENADE

Legend:
1. Lead cover
2. Lead cover
3. Brass plate
4. Delay pellet
5. Detonator
6. Cover thumb release
7. Firing string
8. Friction igniter
9. Match composition
JAPANESE
PULL TYPE
HAND GRENADE

Description

The body, unlike the Type 91 or 97, has no longitudinal serrations, but does have
five transverse depressions. On one side, fitted top and bottom, are two rings
which could be used for carrying or for anchoring. The lead cover is screwed on
to the top of the grenade and is grooved to provide a grip for easy removal. The
thumb cover release holds the cover on and must be depressed before the cover can
be removed. When this is depressed, the cover can be unscrewed in one and one-half
turns, thus exposing the firing string which is attached to a friction igniter.

Operation

The thumb cover release must be depressed, and then the cover must be removed.
When the firing string is pulled, it draws a sanded string through a match composi-
tion. The ignition of the match composition will ignite the black powder delay
train.
JAPANESE STICK GRENADE

Legend

1. Screw Cap
2. Pull Ring
3. Pull String
4. Grenade Handle
5. Friction Igniter
6. Sand Containment
7. Tub
8. Grub Screw
9. Delay Filler
10. Tar
11. Explosive Filler
12. Grenade Body
13. Detonator
JAPANESE STICK GRENADE

Data

Overall length . . . . . . . . . 7-3/4 inches.
Maximum diameter . . . . . . . 1-5/16 inches.
Color . . . . . . . . . . . . Body black; handle unpainted.
Total weight . . . . . . . . . . . 1 lb, 3 oz.
Filling . . . . . . . . . . . . . Cast Picric Acid.
Weight of filling . . . . . . . . 3 oz.
Delay . . . . . . . . . . . . . . . 4 - 5 seconds.

Description

The body is cylindrical in shape and is made of cast steel 1/4" thick. The handle is turned from soft wood and slips into the steel body where it is held by three screws. This joint is sealed with a coating of tar. The screw cap at the pull end of the handle is of light tin plated steel.

The fuze consists of a friction ignition composition with a sanded string running through it. This string extends up the hollow handle and is connected to a pull ring which is exposed by removing the screw cap at the top of the handle.

Operation

The screw cap is removed from the top of the handle. The ring inside the handle is then pulled. This draws the sanded string through the ignition composition igniting the 4 or 5 second delay. The delay train detonates a cap which detonates the main charge.

This grenade has more fragmentation effect than the German H.E. Stick Grenade.
JAPANESE HAKOBAKURAI TYPE ANTI-TANK GRENADE
Confidential

Diameter ............... 4-3/4 inches.
Thickness ............... 1-1/2 inches.
Color .................. Khaki
Total weight ............ 2 lbs. 11 oz.
Length of Fuzed Assembled 5-1/4 inches.
Delay .................. 5 - 6 seconds.
Filling ................ T.N.T.

Description

This mine is of a size so that its use as a grenade is quite possible. It consists of eight separate sections of cast T.N.T. wrapped in wax paper, all held together in - khaki color canvas cover. The general shape of the mine is that of a flat disc, resembling a water bottle. It is easily recognized by four equally spaced permanent magnets attached by khaki webbing to the outer edge of the mine body.

The fuse contains two springs, a compression spring and a firing-pin spring, the latter of which is contained in a firing pin sleeve. Four steel retaining balls fit into holes in the fuse body and notches in the firing pin sleeve retaining the position of the firing pin. A fuse cap provides a base for the two springs and is grooved on the inside about 1/3 of the way up from its base. There is a safety pin which passes through the fuse body just below the base of the safety cap and between the striker and the percussion cap. The powder delay train threads into the base of the fuse body, and the detonator tube threads over the base of the delay train container.

Operation

The fuse is carried separately and is secured to the mine by a locking ring. The mine is then slapped against an armored surface, the safety pin is pulled, and the fuse cap is given a sharp rap. This forces it downward against the compression spring, compressing the firing pin spring, and presenting the groove to the retaining balls. The compression of the firing pin spring forces the balls outward into this groove and shoots the firing pin into the percussion cap.

The mines are often coupled together and when so used will penetrate 1-1/4" steel plate.

Remarks


This is of the same nature as above but is shaped like a bun with a flat base. The magnetized surface is the base. With this, increased magnetic property it can be tossed from a range of ten feet.
JAPANESE
\(\frac{1}{2}\) KG. INCENDIARY GRENADE
JAPANESE
½ Kg.
INCENDIARY
GRENADE

Overall length ........ 5.6 inches.
Maximum diameter ...... 2.0 inches.
Body (material) ........ Brass.
Weight ................. 1.1 lb.
Filling .................. White phosphorus.
Delay ................... 4 - 5 seconds.

Description

This grenade may be thrown by hand or projected with the 50 mm grenade discharger, Model 99. The incendiary filling is contained in brass body which may have a propelling charge on the base.

The fuze is similar to the one used in the Types 91 and 97 fragmentation hand grenades. The fuze consists of a brass inertia pellet with a steel firing pin separated from the primer by a creep spring. The inertia weight is held into the fuze by a light brass cap which is crimped into a cannule in the fuze body so as to prevent the firing pin from reaching the primer. The firing pin is threaded into the inertia weight, and, before arming, it is not screwed in far enough and its point does not protrude below the base of the inertia weight. Therefore, before using the grenade it is necessary to screw the firing pin into the inertia weight so that it will protrude. In addition, a double brass safety pin fits through holes in the brass cap and fuze body into holes in the inertia weight thus preventing the firing pin from reaching the percussion cap.

The delay pellet screws into the base of the fuze and contains a small quantity of granular black powder in the top and a highly pressed pellet of black powder in the lower section. A hole drilled in the side of the fuze contains a fusible plug which melts when the black powder burns, allowing the escape of the gases formed on combustion of the delay train. The escape of these gases will enable the thrower to know if the delay pellet has ignited. Beneath the primer is a 4 to 5 seconds delay pellet which will detonate a central bursting tube.

The steel propellant container is 1½" long, 1.02" in diameter, and has six perforations in its walls. It is screwed into the base of the body. A perforated plug screws into the base of this container and in a cavity in this is a percussion cap. Two flash holes lead through the percussion cap holder to a small quantity of black powder. A perforated steel disc covers the plug and inside the propellant container proper is a copper cup containing flakes of nitrocellulose propellant powder.

Operation

The firing pin must first be threaded down into the inertia weight. The safety pin must then be withdrawn. If the grenade is to be thrown by hand, it is necessary to strike the inertia weight on some hard object thus driving the firing pin into the primer to ignite the delay train.

If the grenade is to be fired from the grenade discharger, or knee mortar as it is sometimes called, the grenade with propellant container is dropped base first into the discharger. When the trigger mechanism of the discharger is operated, its firing pin strikes the percussion cap igniting the propelling charge which propels the grenade. Force of setback causes the firing pin in the grenade fuze to compress the creep spring and hit the primer to ignite the delay train.
Data

Overall length . . . . 13.2 inches.
Maximum diameter . . . 2.1 inches.
Length of handle . . . . 5.3 inches.
Filling . . . . . . . . . . . Phosphorus and carbon disulphide.
Weight of filling . . . 2 lbs. 3 ½ oz.
Delay . . . . . . . . . . . . . . 6 seconds.

Description

This grenade body is long and cylindrical with hemispherical ends. The handle is solid and has a transverse hole drilled through one end. The body is filled with 41 phosphorus-impregnated rubber pellets in carbon disulphide. These pellets are scattered by means of a small central bursting charge. It is possible that the grenade is sometimes filled with a phosphorus smoke filling. The handle protrudes from one end of the body, the fuze from the other.

The fuze consists of a brass inertia pellet with a steel firing pin separated from the primer by a creep spring. The inertia weight is held into the fuze by a light brass cap which is crimped into a cannulure in the fuze body so as to prevent the firing pin from reaching the primer. The firing pin is threaded into the inertia weight, and, before arming, it is not screwed in far enough and its point does not protrude below the base of the inertia weight. Therefore, before using the grenade it is necessary to screw the firing pin into the inertia weight so that it will protrude. In addition, a double brass safety pin fits through holes in the brass cap and fuze body into holes in the inertia weight thus preventing the firing pin from reaching the percussion cap.

The delay pellet screws into the base of the fuze and contains a small quantity of granular black powder in the top and a highly pressed pellet of black powder in the lower section. A hole drilled in the side of the fuze contains a fusible plug which melts when the black powder burns, allowing the escape of the gases formed on combustion of the delay train. The escape of these gases will enable the thrower to know if the delay pellet has ignited.

Operation

The firing pin must first be threaded down into the inertia weight. The safety pin is then withdrawn. Just before throwing, it is necessary to strike the inertia weight on a hard object, driving the striker down into the primer and igniting the delay. The detonation of the burster tube will scatter the incendiary pellets which will ignite spontaneously.
JAPANESE MOLOTOV COCKTAIL
Data

Overall length . . . . 11-1/4 inches.
Maximum diameter . . . 2-1/3 inches.
Filling . . . . . Any inflammable, benzine type liquid.
Capacity . . . . . 12 ounces.

Description

The body of this grenade consists of a Japanese beer bottle into the top of which is fitted an "all-way" action fuze. There is a rubber washer under the fuze to render it liquid tight, and the fuze fits into the neck of the bottle in the manner of a crown stopper.

The fuze consists of a firing pin contained in a housing and separated from the detonator contained in a carrier by a safety pin and a creep spring. The firing pin housing has a hemispherical weight on the top of it and bears against the underside of the nose cap which is of a similar shape. The bottom of the detonator carrier is also rounded and bears against a cam surface so that it too is free to move. The safety pin runs through the firing pin housing and rests against the top of the detonator carrier so that neither part is free to move. Beneath the detonator there is an incendiary mixture consisting of barium nitrate and magnesium.

Operation

The safety pin is pulled out and the grenade is thrown. On impact the "all-way" fuze will function and set off the detonator thus igniting the incendiary booster and inflammable filler.
HCN GRENADE
COPPER STABILIZED
TYPE

HCN GRENADE
CONTAINER

COPPER
STABILIZED
TYPE

172 B-K
or
172 C-K

SMOKE

JAPANESE: FRANGIBLE HCN
AND SMOKE GRENADES
JAPANESE
FRANGIBLE H.C.N. GRENADES
&
FRANGIBLE SMOKE GRENADE

CONFIDENTIAL
FRANGIBLE H.C.N. GRENADES
Data
Maximum diameter ........... 3.9 inches
Total weight ............ 1.2 lbs.
Filling ............ Hydrocyanic acid.
Weight of filling .... 12.2 fluid oz.
Capacity .......... 14.5 fluid oz.

Description
These grenades are recognizable mainly as round glass bowls filled with H.C.N.
They differ in minor details.

1. The copper stabilized type is round bottomed whereas the 172 B-K and 172 C-K have flat bottoms.
2. The copper gives one a yellow tint while the other two appear to be light green.
3. The copper stabilized type has one moulded ring around the outside instead of two as the others have.
4. The copper stabilized type is closed by a crown cap over a cork stopper and the other two are closed by a crown cap over a rubber washer.
5. The copper stabilized type is carried in a sheet metal container and the 172 B-K and 172 C-K are carried in cardboard containers.

The grenades contain 12.2 oz. of liquid which is about 80% hydrocyanic acid. This is a very strong systemic poison.

Operation
The grenade is thrown and on impact the glass will break releasing the H.C.N.
This gas is swift and deadly if inhaled. In such quantities the gas is exceptionally non-persistent so these grenades are designed for use in small closed spaces such as pillboxes or tanks.

FRANGIBLE SMOKE GRENADE
Data
Overall length .......... 3.3 inches.
Maximum diameter ....... 2.6 inches.
Circumference ......... 9.3 inches.
Color ........ Light yellow.
Total weight .......... 9.7 oz.
Filling ........ Titanium & silicon tetrachloride.
Weight of filling ...... 4.1 oz.

Description
This grenade is a flat bottomed spherical container made of clear glass. It has a short neck closed by a red rubber stopper held under a red rubber washer within an inner iron crown cap, this being enclosed by a heavier iron outer crown cap. The filling is a mixture of titanium and silicon tetrachloride which will be hydrolyzed by the moisture of the air, with the formation of hydroxides and hydrochloric acid.

Operation
The grenade is thrown and on impact the glass bottle breaks releasing the fluid and producing smoke. It is intended for use in screening operations. Though the filler is irritating to the skin as a liquid, in ordinary field concentrations the smoke is hardly irritating enough to cause coughing.
JAPANESE
HOLLOW-CHARGE
RIFLE
GRENADE

Data

Overall length .... 7.90 inches.
Maximum diameter .... 1.50 inches.
Color .... Black and grey.
Total weight .... 12.45 oz.
Filling .... T.N.T.
Weight of filling .... 3.01 oz.

Description

This grenade is a copy of the German Gross Gewehr Panzergranate and is fired from a cup launcher attached to the standard 6.5 mm. rifle.

The body is cylindrical with a semi-conical shaped head. It is made in two parts threaded together and fitted with a ballistic cap and cone to give the hollow-charge effect. The forward part contains the explosive charge cast around the cone. The after part which is made of aluminum has a rifled collar near the base and contains the fuse and explosive train.

The fuze is held in by a base plate with a protruding spigot which is screwed into the base of the grenade. The fuze is held in position by the spigot. The needle firing pin is secured in a housing that has four stirrup like springs protruding from the side. Around the housing is a setback spring held in by an arming sleeve which has two sets of grooves notched on the inner side. Holding the firing pin stationary is a coiled clock spring which is held in by the arming sleeve. There is also a creep spring between the firing pin and detonator.

The propelling charge consists of a special cartridge with a wooden bullet.

Operation

On firing, setback causes the arming sleeve to move down and it is held down by the stirrup springs which engage in the groove in the arming sleeve. Centrifugal force then causes the clock spring to expand and the fuse is armed. On impact the firing pin housing overcomes the creep spring and moves onto the flash cap setting off the detonator and booster.
JAPANESE RIFLE SMOKE GRENADE

- Smoke mixture
- Igniter pellet
- Smoke ports
- Flash ports
- Wooden bullet
- Propellant charge, as stowed
- Cardboard sealing disc
- Pull cord
Confidential

Data

Overall length .... 8-1/2 inches.
Maximum diameter .... 2 inches.
Fins, 2-9/16 inches.
Color ............... Silver
Total weight ......... 1.29 lbs.
Filling ............. Hexachlorethane-56.2%
Zinc, Metallic -27.6%
Zinc Chloride - 2.9%
Zinc Oxide -13.4%

Description

This grenade is used with a special adapter which fits over the end of the rifle barrel. It is painted silver and thoroughly waterproofed with coats of heavy lacquer and paraffin.

The nose is of No. 23 gage B&X tin plate with rolled threads to fit those on the body of the grenade. Soft iron wire is wrapped in the thread grooves and soldered in place, presumably to aid in sealing the joint. The body proper is rolled from No. 23 gage B&X tin plate and is soldered along one longitudinal seam. Rolled threads are provided at each end to fit the threads on the nose end base.

The base is stamped from No. 18 gage B&S sheet steel and is screwed onto the body by means of rolled threads. Soft iron wire is wrapped and soldered into these thread grooves. The base is partially filled with plastic which has a threaded hole half filled with solder. The bottom plate is held in place by a small screw imbedded in the solder. The igniter pellet is encased in a thin walled brass container which is supported by tin plate screwed and soldered onto the body.

The four smoke ports are placed at 90° intervals around the base and are covered with light sheet metal discs which are held in place by waterproof cement covered with paraffin. There are three flash ports, spaced at 120° intervals, in the bottom of the base.

The grenade tube is made of No. 18 gage B&S seamless steel tubing and the upper end is threaded to fit the small end of the base. The threaded joint is wrapped with adhesive tape. The tube is sealed with a paraffin impregnated cardboard disc attached to 1" of heavy twine. The four fins are soldered to, and are equally spaced around, the tube and are of No. 24 B&X tin plate.

The motive force and primary ignition are furnished by a standard 0.256 cal. Japanese rifle cartridge loaded with 1,927 grams of powder and fitted with a wood pellet. This cartridge is wrapped in paper and stored in the grenade tube.

Operation

The rifle cartridge is removed from the grenade tube and inserted in the rifle. The grenade is placed over the spigot adapter. When the rifle is fired, the gases from the cartridge propel the grenade and also pass through the flash ports to initiate the igniter pellet which in turn ignites the smoke mixture. Smoke is then emitted through the emission holes.
JAPANESE TYPE 89 MORTAR GRENADE
CONFIDENTIAL

Overall length......... 6-1/4 inches.
Maximum diameter....... 50 mm.
Color of body.......... Black.
Markings.............. Tip 5/16" red band,
below bourrelet 5/16" yellow band. Below
driving band 5/16" white band. Midway on
shell 5/16" yellow band is placed some-
times in lieu of the other two mentioned
white & yellow bands.

Total weight............ 1.6 lbs.
Fuse.................. Instantaneous impact.
Filling................ T.N.T.
Weight of filling....... 5.4 ozs.

Description

The body of this shell is made of three parts. The propellant base housing
is made of steel and contains the propellant container and the propellant container
cover. A 5/8" wide copper rotating band is recessed into it immediately over eight
3/16" holes. The band is held in place by 5 steel pins. The percussion primer is
contained in the base of the housing.

The main shell base cover is threaded to the top section on one end and to the
propellant base housing on the other. The top section is of steel 5/32" thick and
has an opening in the top into which the fuze fits.

All items of the fuze are constructed of brass except the firing pin, which is
steel, and the arming sleeve, which is made of tinplate. A setback spring holds
the firing pin assembly guide up off of the arming sleeve. The arming sleeve has
two centrifugal detents within it. The striker cap enters the forward end of
the striker and the upper spring. There is a spring retainer between the two
springs.

The two-pronged safety pin passes through the fuze body immediately beneath
the firing pin assembly guide. The propellant is composed of nitrocellulose
diphenylamine flakes.

Operation

This shell is fired from the Type '89 Grenade discharger. The safety pin is
removed and the shell is dropped into the open end of the discharger. When the
trigger mechanism of the discharger is operated, the firing pin of the discharger
hits the percussion cap, and the flash from this ignites the black powder and then
the propellant powder. The gases generated blow through the perforations in the
base housing, expanding the copper rotating band into the rifling of the dis-
charger giving a gas seal and imparting rotation to the shell. The shell can be
thrown from 140 to 700 yards depending upon the setting of the discharger.

Setback action on firing causes the firing pin assembly guide in the fuze to
move downward compressing the setback spring and bending the three prongs on the
arming sleeve back into the contour of the sleeve, thus allowing the firing pin
assembly guide to completely cover the arming sleeve. When setback ceases, the
setback spring forces the firing pin assembly guide and the arming sleeve forward
again. As soon as the arming sleeve is clear of the centrifugal detents they move
outward and the striker is free to hit the detonator upon impact. It has been con-
cluded that the effective radius of the shell is rather limited and the casualty
effect of nearby bursts should be small.
JAPANESE SMOKE MORTAR GRENADE
CONFIDENTIAL

Data

Overall length ........ 6-1/4 inches.
Maximum diameter ...... 50 mm.
Color .................. Black.

Total weight .......... 1.9 lbs.
Fuse ................... Type '89 small time fuse.
Filling ................. Hexachloroethane smoke mixture.
Weight of filling ...... 3.7 oz.

Description

The projectile casing is of forged steel. The nose screws onto the main body at a point just behind the bourrelet. The main body is jointed to the base with a press fit, held by four screw shear pins. The base is constructed of two sections, screwed together. The upper section fits into the main body. The lower section is fitted with a copper rotating band and contains the primer and propellant charge. The lower section has eight holes in the base to allow the gases to escape into the discharger, and eight holes beneath the rotating band so that the gases force the band into the rifling of the discharger. The smoke mixture is held in a brass cup inside the main body.

The propellant charge is of nitrocellulose diphenylamine flakes.

The fuse is of a pyrotechnic delay train type. The striker is held by a safety pin and creep spring. Settings are acquired by rotating the lower ring in relation to the graduations in the fuse body. This positions a port in the lower ring in relation to the upper pyrotechnic train. The fuse is marked in graduations of hundreds of feet, not units of time.

Operation

The safety pin is pulled out and the shell is dropped, base first, into the discharger. When the trigger mechanism of the discharger is operated, its firing pin fires the percussion cap and this ignites the black powder and in turn the propellant powder. The gases generated blow through the perforation beneath the rotating band, expanding it into the rifling and providing a gas seal. The shell can be propelled from 150 to 700 yards.

On setback, the striker overcomes the creep spring and initiates the lower powder train. This burns in a clockwise direction until it reaches the preadjusted port and then the upper train is ignited. This burns in a counter clockwise direction until it reaches the port in the fuse base leading to the explosive charge in the gaine. This charge ruptures the thin plate in the base of the fuse gaine, ignites the smoke starter mixture, and expels the smoke candle from the shell casing.
PRACTICE SHELL

JAPANESE MORTAR GRENADES

PORTS
FOIL COVER
DELAY TRAIN AND IGNITOR

PROPPELLANT
GAS PORTS
POWDER TRAIN
PRIMER

INCENDIARY SHELL
**JAPANESE**

**MOD. 89 MORTAR GRENADE**

**INCENDIARY AND PRACTICE SHELL**

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**CONFIDENTIAL**

**Data**

- Overall length: 6-1/4 inches.
- Maximum diameter: 50 mm.
- Color: Aluminum.
- Weight: 1.25 lbs.
- Filling: Potassium Nitrate, 47.7%; Aluminum, 21.7%; Sulphur, 19.8%; Antimony trisulphide, 6.1%; wax, 2.2%.
- Weight of filling: 0.67 lbs.

**Description**

This shell is a cylindrical sheet metal tube with a semi-hemispherical nose, and is covered with a clear lacquer. Around the side of the grenade are four silver foil discs, each disc covering seven ports in the grenade casing. The base is of light metal threaded to receive the propelling charge. The propelling charge is of the same type as that used with the Model 91 grenade. The charge is ignited by two black powder pyrotechnic trains that run through the base of the grenade. These are actuated by the flash of the propellant.

**Operation**

The shell is dropped into the discharger base first. When the trigger mechanism of the discharger is operated, the firing pin hits the percussion cap in the propellant charge which propels the shell out of the discharger and ignites the delay train in the base of the shell. This in turn ignites the incendiary filling.

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**PRACTICE SHELL**

**Data**

- Overall length: 6-1/4 inches.
- Maximum diameter: 50 mm.
- Weight: 1.6 lbs.

**Description**

The practice shell is of same outward shape and dimensions as the H.E. shell. It does not have the red band around the nose, however, as that is the Jap way of indicating a filled shell. The base of the practice shell is made of one part only. The propellant base housing is threaded directly on to the main shell base. The main shell base is of heavier construction than that of the H.E. shell.
JAPANESE
MODEL 89 GRENADE DISCHARGER
CONFIDENTIAL

Data

Overall length ....... 24 inches.
Length of barrel ....... 10 inches.
Weight ............... 10-1/4 lbs.

Maximum Range

Model 89 Shell ....... 770 yards.
Model 91 grenade ....... 175 yards.

Description

This 50 mm. discharger can fire either the Model 89 shell or the Model 91 grenade. It is constructed of a steel, pipe-like, rifled barrel which is attached to a small base. The base is curved so that it may be fitted over a medium-sized tree trunk or log. Between the barrel and the base is the trigger housing containing the cocking and firing mechanism and range - adjusting assembly.

The discharger has range scales on both sides of the trigger slot and the weapon can be set at the desired range by turning the elevating knob. When the knob is turned, it lengthens or shortens the distance that the trigger housing protrudes inside the barrel of the discharger thus regulating the distance the projectile travels through the barrel. Behind the firing pin housing is the main spring and mainspring housing. The trigger protrudes through a lengthwise slot in the pedestal or trigger housing.

Operation

The safety pin on the shell is removed, and the shell is placed in the barrel and allowed to drop to the firing pin housing, where it remains until fired. The trigger is then pulled and the cogs in the trigger move the main-spring housing forward by engaging the cogs in the front of the housing, thereby causing the mainspring to be compressed. As this action takes place, the rear on the trigger engages against the cocking lug on the firing pin shaft. A continued pull on the trigger allows the sear to become disengaged from the cocking lug, and the compression of the mainspring, upon being released, sends the firing pin forward and sets off the propellant.