WAR DEPARTMENT TECHNICAL MANUAL

TM 9-395

This Technical Manual supersedes TM 9-395, 4.5" Rocket Materiel, dated 13 September 1943, and TB 9-395-1 dated 13 May 1944.

4.5" AIRCRAFT ROCKET MATERIEL

WAR DEPARTMENT • *12 SEPTEMBER 1944*

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WAR DEPARTMENT

Washington 25, D. C., 12 September 1944

TM 9-395, 4.5" Aircraft Rocket Materiel, is published for the information and guidance of all concerned.

[A.G. 300.7 (4 Sep 44)
O.O. 300.7/2001]

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IC 9—T/O 9-17; 9-57; 9-257; 9-417.

(For explanation of symbols, see FM 21-6.)

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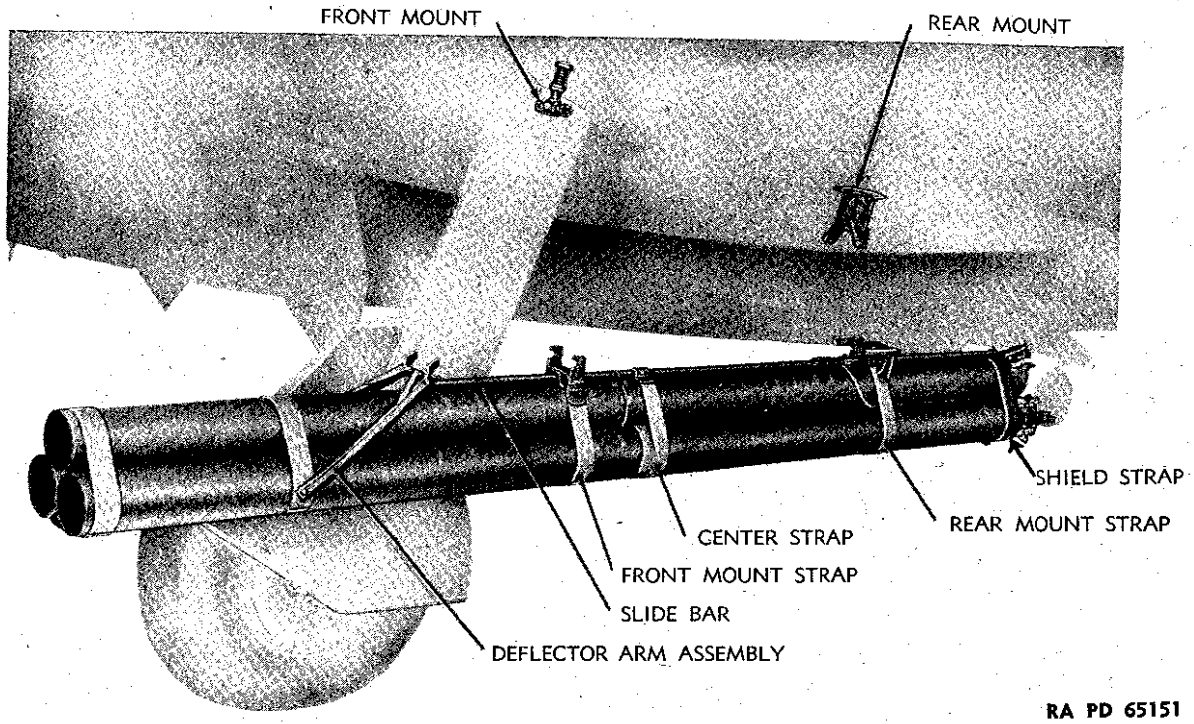

Figure 1—4.5" Rocket Launcher M10—Dismounted

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This Technical Manual supersedes TM 9-395, 4.5" Rocket Materiel, dated 13 September 1943, and TB 9-395-1, dated 13 May 1944.

Section I

LAUNCHERS

1. SCOPE.

a. This manual contains a description of the 4.5" Rocket Launchers M10, M14, and M15. In addition, it contains technical information required for the identification, use, and care of the launcher and ammunition. This manual does not cover electrical wiring or switches in the plane, or the firing selector mechanism. The procurement and installation of such accessories is the responsibility of AAF.

2. REPORTS.

a. **Field Report of Accidents.** When an accident involving ammunition occurs during practice, the incident will be reported as prescribed in AR 750-10 by the Ordnance officer under whose supervision the ammunition is maintained or issued. Where practicable, reports covering malfunctions of ammunition in combat will be made to the Chief of Ordnance, giving the type of malfunction, type of ammunition, the lot number of the complete rounds or separate-loading components, and condition under which fired.

b. **Unsatisfactory Equipment Report.** Suggestions for improvement in design, maintenance, safety, and efficiency of operation prompted by chronic failure or malfunction of the weapon, spare parts, or equipment should be reported on WDAGO Form No. 468, Unsatisfactory Equipment Report, with all pertinent information necessary to initiate corrective action. The report should be forwarded to the Office of Chief of Ordnance, Field Service Maintenance Division, through command channels in accordance with instruction number 7 on the form. Such suggestions are encouraged in order that other organizations may benefit.

3. TABULATED DATA.

a. **Launchers.**

Model	M10	M14	M15
Material of tubes	Plastic	Steel	Magnesium alloy
Weight of launcher	80 lb	190 lb	86 lb
Length of tubes	10 ft	10 ft	10 ft.
Thickness of tubes	¼ in.	⅛ in.	$\frac{3}{16}$ in.

b. Rockets.

Length fuzed	33 in.
Weight fuzed	40 lb
Muzzle velocity	850 ft per sec
Range, maximum	4,600 yd

4. 4.5" ROCKET LAUNCHER M10.

a. The Launcher M10 consists of a cluster of three 10-foot tubes of ¼-inch plastic which are attached by steel strapping to a slide bar, and by two mounts to the under side of the wing of the plane (figs. 1 to 3). The straps are tightened around the tube by turnbuckle screws tightened and wired in place.

b. The front mount consists of a T-shaped hanger attached to the plane, a front mount strap on which are mounted two hooks, and a deflector assembly (fig. 4). Two set screws are provided to fasten the strap in position on the slide bar. The deflector assembly consists of two 18-inch arms attached to a deflector strap and bearing on the front hanger. When the launcher is dropped, the arms serve to direct the nose of the launcher downward as air pressure pushes the tubes to the rear.

c. The rear mount (figs. 5 and 6) consists of a hanger containing the release mechanism and a socket for electrical connections, and a V-shaped sway brace. The rear mount strap has a suspension lug and two L-shaped detainer supports. When the launcher is dropped, the detainer supports engage the arms of the sway brace and prevent the rear end dropping until the deflector pushes the front end downward. The rear mount strap is positioned on the slide bar by a clevis pin.

d. In addition to the front and rear mount straps, there is a center strap riveted to the slide bar and tightened to proper tension by the manufacturer. One inch ahead of the rear end there is a deflector strap to protect the release and contact mechanisms from flying links and fired cases from the plane's guns.

5. 4.5" ROCKET LAUNCHER M14.

a. This model differs from the M10 in that the material of the tubes is ⅛-inch steel. The tube assembly has sufficient weight to insure its dropping when released and, as a consequence, the deflector arms and strap are omitted. In addition, the center strap is welded to the tubes.

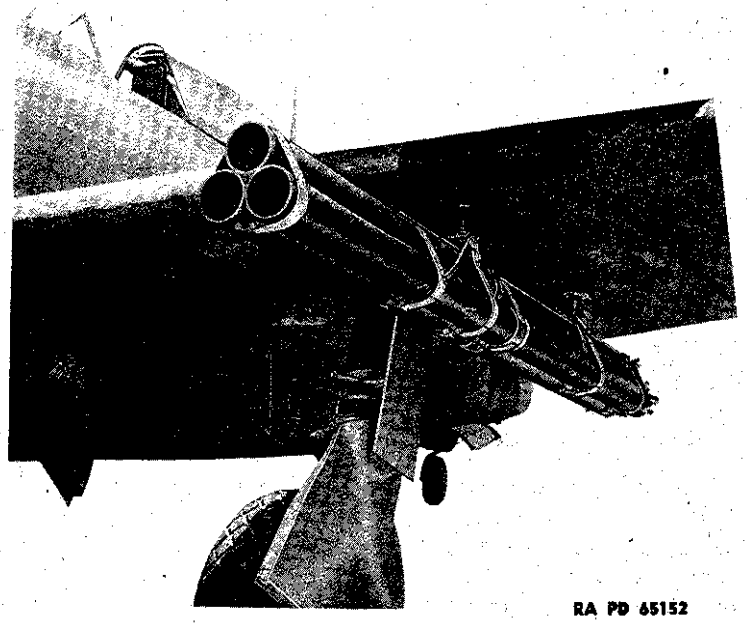

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Figure 2—Launcher, Mounted—Front View

6. 4.5″ ROCKET LAUNCHER M15.

a. This model differs from the M10 in that the material of the tubes is $\frac{3}{16}$-inch magnesium alloy.

7. INSTALLATION.

a. **General.** The center strap, front and rear mount straps, and deflector arm strap are held in position by a turnbuckle screw which is tightened with a $\frac{5}{16}$-inch wrench to prevent the strap slipping.

b. **Tools.** The only tools required for this operation are AAF wrench 44A906 or a 6-inch adjustable wrench (or equivalent) and combination pliers.

c. **Procedure.**

(1) Inspect the launcher for obstructions inside the tubes and cracks near the muzzle or rear end. Minor flakes or blisters on the inside of the tubes will not affect operation of the launcher.

(2) Check the center strap to see that it is tight and safety-wired. Do not tamper with this strap unless it has not been safety-wired because it has been properly adjusted for tension at the factory. Changes

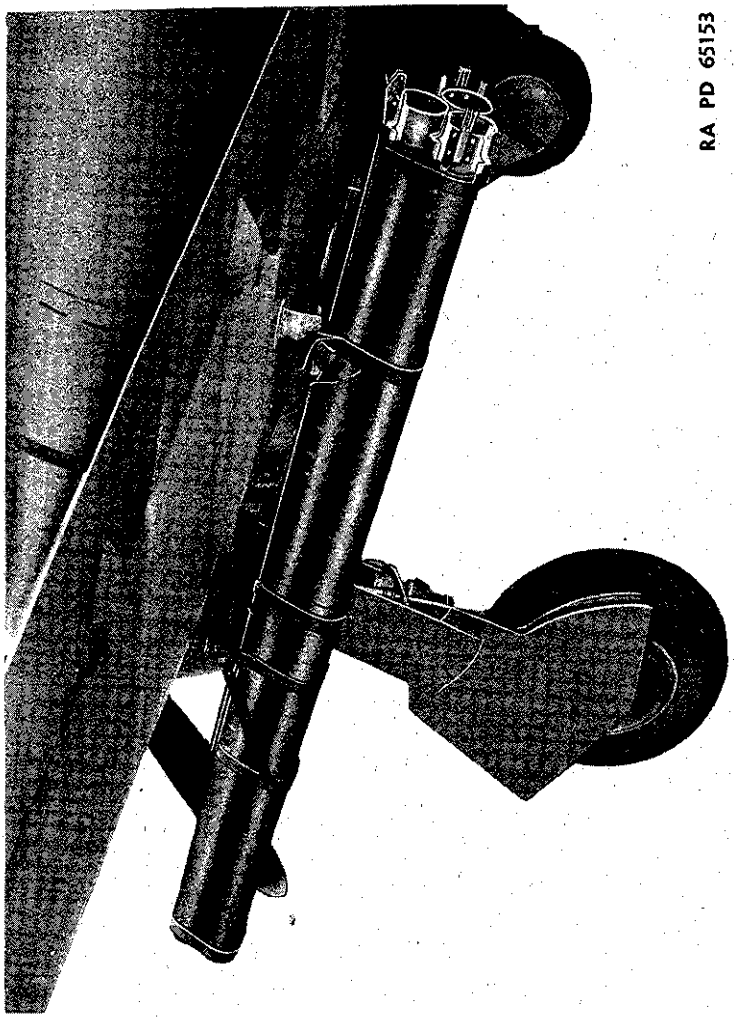

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Figure 3—Launcher, Mounted—Rear View

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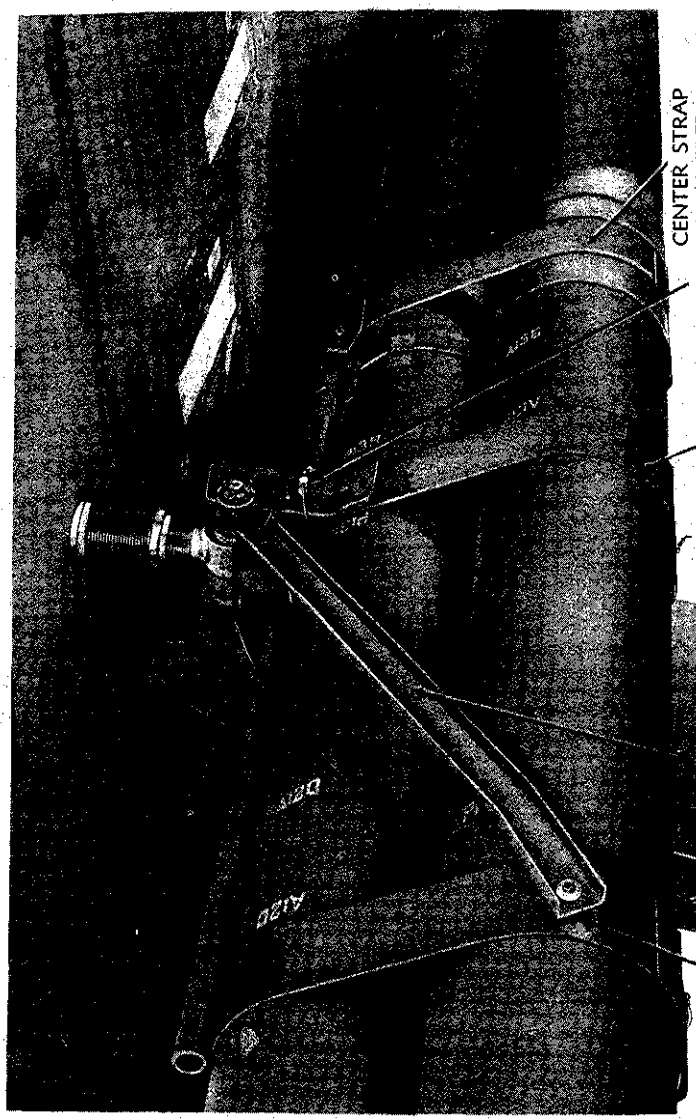

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Figure 4—Front Mount

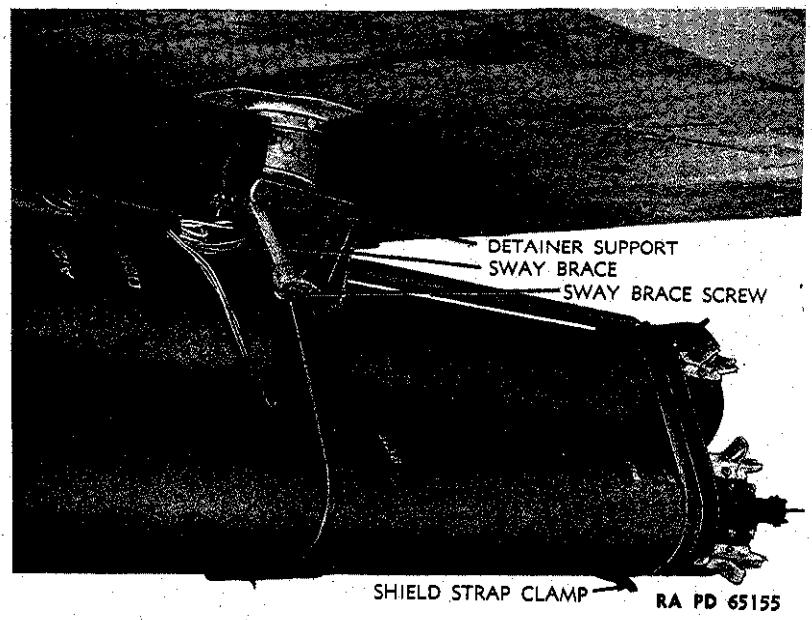

Figure 5—Rear Mount—Front View

in tension may result in tube deformation or in excessive looseness after use.

(3) Loosen front and rear mount straps and the deflector arm strap so that each strap can easily be slid to the proper location. In loosening the rear mount strap, the cotter pin and clevis pin must be removed to permit adjustment.

(4) Locate the rear mount strap between the markings on the tube for the particular airplane. These positions have been selected to best meet the following requirements:

(a) The launcher must clear the flaps or ailerons under all circumstances.

(b) The airplane center of gravity must be kept within proper limits.

(c) The blast escaping from the front and back of the tubes must be sufficiently far from the airplane skin to avoid damaging it.

(5) The positions stenciled on the launcher correspond to the values in the table below.

LAUNCHERS

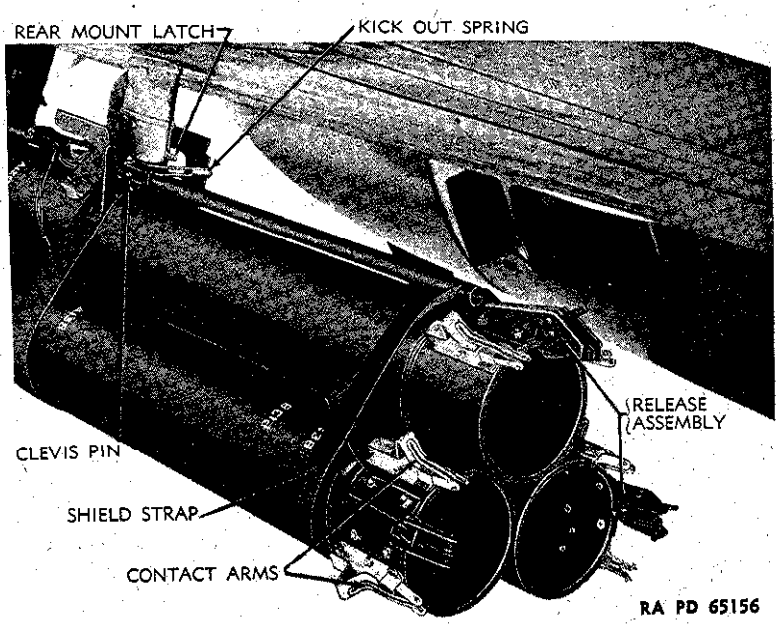

Figure 6—Rear Mount—Rear View

Airplane	Distance From Rear of Tube to Center Line of Rear Strap (inches)
P-38	8
P-39	41
P-40	33
P-47	30
P-51	25
A-20	35
A-36	25

(6) Fasten the rear mount strap by inserting the clevis pin into the proper hole in the slide bar and secure it with the cotter pin. Tighten the turnbuckle screw in the rear mount strap. Safety-wire the screw.

(7) Lift the launcher to the wing, fit the rear mount strap into the rear mount, and lock it there by using the release lever once (fig. 7). The detainer supports are automatically positioned above the sway braces when the rear strap is attached to the mount. A leaf spring is attached to the top of the rear strap. It is necessary to compress this spring so that it will lie between the top of the rear strap and the bottom of the rear mount.

(8) Raise the front of the launcher and position the front mount strap so that the hooks on the front strap fit snugly (but are not jammed) against the front mount. Be sure that the hooks are parallel to the axis of the tubes. Tighten the set screws on both sides of the strap until they penetrate into the slide bar, to prevent the strap from slipping. Be sure that the conical points of the set screws penetrate the slide bar. Tie with safety wire. Tighten the turnbuckle screw to keep the strap from slipping and secure it with safety wire.

(9) Fasten the sway brace screws at the rear post until they press lightly against the cluster.

(10) Slide the deflector arm strap rearward until the hooks on the deflector arm fit snugly against the front of the front mount without jamming. Be sure that the hooks are in a position to slide freely into the front post as the front strap leaves it. Tighten turnbuckle screw and secure with a safety wire.

(11) The shield strap is in its proper position when the launcher is received. If it is necessary to move it during installations, unlatch the buckle at the bottom of the strap. Be sure to set the shield strap about 1 inch forward of the contact arms. Latch the buckle and safety-wire it to prevent accidental opening.

(12) Examine the straps to be sure that all the screws have been correctly tightened and safety-wired. No screw should be so tightened that all of it enters the trunnion blocks or damages the launcher. Tension for the mount straps is controlled by a stop sleeve mounted on the trunnion screw. The proper tension is obtained when trunnion screw has been tightened until lock nut comes in contact with trunnion.

d. Gaging. When the installation is complete, slide a rocket, tail first, through each tube to insure that it does not bind.

8. LOADING.

a. Preparation.

(1) Test circuits as described in paragraph 9 **b**.

(2) Be sure all switches are off.

(3) Unpack rockets and fuzes and assemble as described in paragraph 17.

(4) If using Rocket M8 or M9, be sure propelling charge is adjusted for anticipated firing temperature.

(5) Set the fuze for the desired action, super-quick or delay.

b. Loading.

(1) Remove safety wire or pin from fuze.

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Figure 7—Installation of Launcher

(2) Place nose of rocket in breech of launcher tube and push forward. Engage tail flange of rocket in groove in retainer mechanism. Be sure retainer is firmly engaged.

(3) Remove fin retainer from tail of rocket.

(4) If necessary, bend contact arms so that each one will make contact with one contact ring on igniter.

CAUTION: *If rocket is equipped with combination percussion-electric igniter (fig. 12), be sure that contact arm does not strike percussion primer. Leave contact arms in open position until plane is ready for take-off.*

(5) Load other tubes of launcher (no particular sequence is necessary).

(6) Snap contact arms into place.

(7) Turn master switch on.

c. Unloading. If any of the rockets are not fired on the mission they will be removed as follows:

(1) Turn switch off.

(2) Open contact arms.

(3) Replace fin retainer.

(4) Disengage retainer mechanism, grasp tail flange, and withdraw rocket.

(5) Replace fuze safety wire or pin.

(6) Return rocket and fuze to original condition and packings.

9. PRECAUTIONS.

a. Always Make Sure Switches Are *Off* Before Loading.

b. In order to make sure that each tube is connected to the aircraft battery when the switches are in position to fire the tube, and that no tube is energized when any other tube is fired, always check the circuits before beginning loading operations. (A convenient circuit tester is supplied with each aircraft installation. If the circuit tester is missing or broken, a good substitute can be made by attaching two short wires to a 24-volt bulb. There is no excuse for failing to check circuits.)

c. Never stand directly behind the launcher when inserting projectiles or lowering the firing arms.

d. If rocket is equipped with percussion-electric igniter, be careful not to strike the percussion element.

LAUNCHERS

10. FAILURE TO FIRE.

a. A rocket may fail to fire because of the following:

(1) Electrical open circuit or short circuit.

(2) The round is defective. If tests show nothing wrong with the electrical system, the round will be considered defective and will be turned over to Ordnance personnel for disposition.

11. MAINTENANCE.

a. Materials.

BURLAP, jute
CLOTH, wiping, cotton
COMPOUND, rust-preventive, light
OIL, lubricating, preservative, special
SOAP, castile, white
SODA ASH
SOLVENT, dry-cleaning

b. During Storage and Shipment. The tubes and metal parts should be protected by observing normal precautions, such as covering the launchers with tarpaulins while stowed, or storing them under a roof where possible. When stored for 30 days or less or before shipping, the launchers should be treated as follows except when already prepared by the manufacturer. Coat the inside of the steel and magnesium tubes and the outside unpainted surfaces with light rust-preventive compound. The plastic launchers need not be treated. Rust-preventive compound will be removed by scrubbing with dry-cleaning solvent and the launcher wiped thoroughly dry before oiling.

c. After Firing.

(1) STEEL TUBES. After firing, swab the inside of the steel tubes to insure complete removal of powder residue and primer salts. Under no circumstances will the launcher remain without cleaning after return from a flight in which it has been fired. Swab the tubes with a cleaning solution of one-half pound of soda ash to each gallon of water. Rinse with clean warm water. After drying thoroughly with jute burlap, apply a film of special preservative lubricating oil. If soda ash is not available, a soap sponging solution may be prepared by dissolving 1 pound of castile soap in 4 gallons of water. If castile soap is not available, government issue soap may be used as a substitute. The soap should be shaved from the bar to facilitate dissolving. It should then be added to water and the water heated until the soap is dissolved. The water should be stirred as quietly as possible to prevent foaming. To avoid the necessity of handling large receptacles, as much soap as is required for all the water to be used can be dissolved in one pail of water. This concentrated soap solution

a then be added to water in other receptacles to make up the pre-ibed proportions. Special precautions must be taken to rinse the ıes thoroughly before drying if government issue soap is used in the ution, because of the possibility of soap leaving a gummy residue, d of corrosion from the presence of free caustic in the soap. In an ıergency, water alone, preferably hot, may be used for cleaning. peat this procedure on 3 consecutive days there after or until there no longer evidence of sweating.

(2) MAGNESIUM TUBES. Clear hot water *only* will be used to ab the inside of magnesium tubes.

d. **Before Firing.** Before loading, wipe the tubes with clean, dry rlap or wiping cloths, to insure that the tubes are clean and dry.

e. **Daily.** When the launcher is not being fired, clean out the bes daily by thoroughly wiping with clean burlap, and apply a thin m of oil.

2. **CONSERVATION.**

a. Plastic tubes and accessories will withstand a minimum of five cket launchings without rupture and, therefore, each cluster is to jettisoned or discarded after the fifth launching. However, efforts ould be made to conserve and use other parts as long as possible. ny wire which makes dependable contact is usable. Although they ust be bent or adjusted to make electrical contact, firing arms can used repeatedly. Holding latches have sometimes become so worn battered that the projectile would slip out of the tube when a arby rocket was fired (this battering is never found in the first be of a launcher to fire, and is worse in the third tube, because gas ters the muzzle and jolts the projectile backward in the breech) at the latches may be repaired or replaced and in an emergency, the ojectile can be held in place with wire.

Section II

ROCKETS

3. **DESCRIPTION.**

a. **Data.** The 4.5-inch rocket (fig. 8) is a fin-stabilized projec-le approximately 33 inches in length and weighing 40.0 pounds as red. Maximum velocity is approximately 850 feet per second at 70 et from the launcher. Maximum range is approximately 4,600 ards, but a large inherent dispersion limits effective aimed fire to uch shorter ranges. The effect of the high-explosive rocket is

similar to that of a 105-mm Shell M1. The impact fuze authorized for air use is P.D. Rocket Fuze M4, SQ-0.015 sec. delay, with Auxiliary Booster M1, and modifications of this model.

b. **Components.** The rocket consists of a fuze, shell, and motor body. The shell is loaded with high explosive for service rounds, or inert material for practice rounds. A dummy fuze is used with practice rounds. Otherwise, the service and practice rounds have identical components.

c. **Fuze and Booster.** Fuze and booster are described below (par. 15).

d. **Shell.** The rocket shell (sometimes referred to as the "Head") consists of a body and a burster tube (fig. 9). The body is approximately 1.6 calibers in length, and has an ogive of 2 calibers radius. The burster tube extends about 15 inches from the base of the body into the motor. In addition to increasing the explosive capacity of the shell, the burster tube has the advantage of using the motor as an additional source of fragments. The shell body contains a fuze well which is closed in storage and transit by a plug screwed into the nose of the shell and held by a set screw. The bursting charge consists of 4.3 pounds of cast TNT.

e. **Motor.** The basic components of the motor are the body, the propellant, the trap, and the igniter. The motor body is a steel tube which is constricted near the tail end to form a nozzle. The forward end is threaded for assembly to the rocket shell, and the rear end is adapted for attachment of the fin assembly. The fin assembly consists of a fin ring holding a circle of six fins which are held folded into the constriction of the motor tube by a fin retainer. When the rocket leaves the launcher, the fins are opened by set-back to a 12-inch spread. A safety groove is formed in the motor body to permit it to separate at a definite point, should an excessive pressure be generated within the motor body on firing. Such occurrences are very rare, but can be expected if the rocket is fired when its temperature is above that given as its safe operating temperature, or if the nozzle should become blocked. When separations occur, the shell and the propellent charge will travel forward with low velocity and have a range of from 100 to 1,000 yards. The motor body will be blown backward from the launcher tube for some distance.

f. **Propelling Charge.** The propelling charge (fig. 10) consists of 30 sticks of double-base powder mounted on the wires of a cage-like trap. The trap consists of ten wires attached to a base ring and an annular trap plate which is slotted to receive the top ends of the wires. The trap plate rests on a trap seat formed by a shoulder in the forward end of the motor tube. The weight of powder used varies

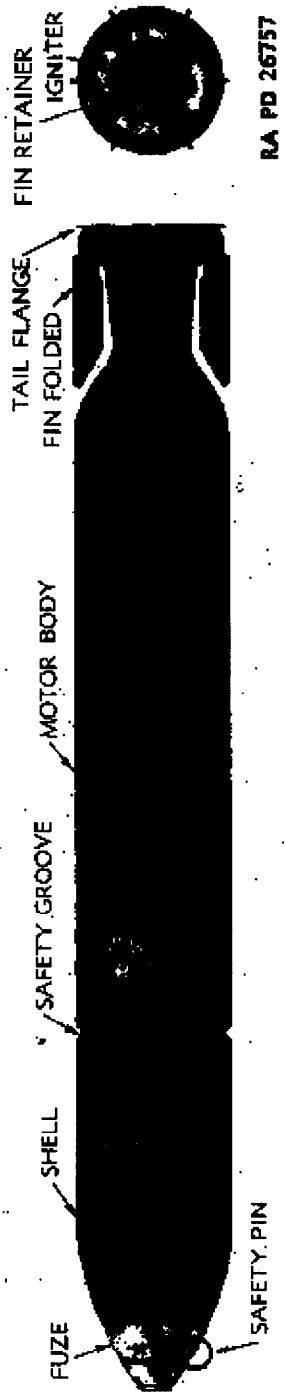

Figure 8—4.5" High-explosive Rocket M8

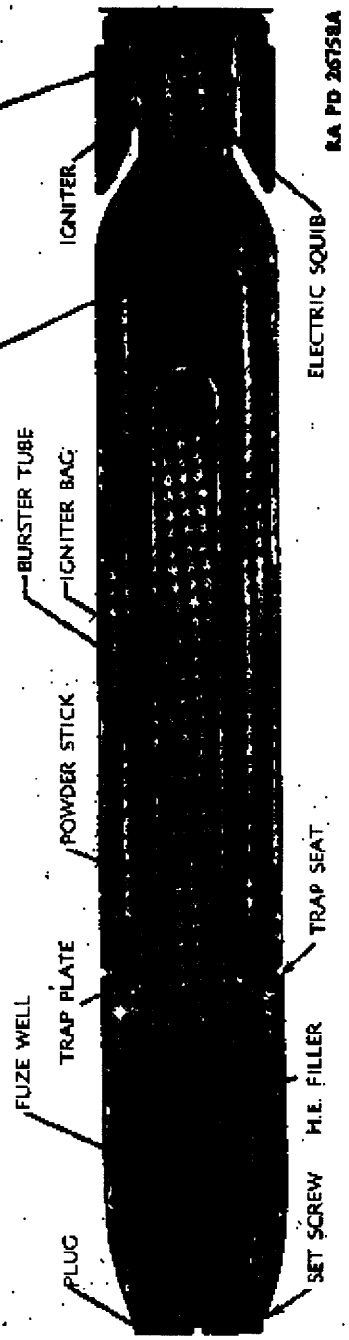

Figure 9—Rocket—Sectional View

with each lot. Since the burning rate of smokeless powder varies with the initial temperature, the weight of each charge is adjusted so that, when fired within the temperature range specified for the rocket, excessive and dangerous pressures will not be produced.

g. **Igniter.** The igniter (figs. 9 and 12) consists essentially of a charge of black powder and an electric squib. In earlier models, the squib and black powder are contained in a plastic cup which is cemented in the nozzle opening. The leads of the squib are connected to a contact disk and a contact ring on the base of the cup (fig. 9). In combination igniters, a percussion primer is assembled in the base. In later models, the igniter is assembled in a long tube attached to the trap with the igniter wires leading to a contact plate in the nozzle. This plate has, in addition to the contact rings, a cord and plug attachment for electrical connection. When this igniter is used in the launchers equipped with spring contact arms, the plug wires should be cut close to the contact rings.

h. **Painting.** High-explosive rockets are painted olive drab and marked in yellow. Practice rocket shell are painted blue and marked in white, and the motor is painted olive drab and marked in yellow.

i. **Marking.** Rocket shell are marked with the lot number of the metal parts stamped in the metal in small figures and the loading lot number stenciled in larger figures. Practice shell have the word "INERT" stenciled on the shell. Rocket motors are marked with the metal parts lot number stamped in small figures, and the ammunition lot number stenciled in larger figures. The type and model of the rocket and the temperature limits are stenciled on the motor body.

14. MODIFICATIONS.

a. The various models and modifications of 4.5" rockets are described below (fig. 11).

b. **High-explosive Rocket M8 and Practice Rocket M9.**

(1) The original model of the 4.5" rocket has a comparatively light shell and motor. As a consequence, safe temperature ranges are narrow, and it is necessary to change the propelling charge to provide for full coverage of the temperature range. As issued, the charge is adjusted for firing at temperatures between 20°F and 90°F. The charge may be modified as described below for firing at temperatures between 50°F and 130°F. The temperature at the time of firing governs the selection of the charge. Under no circumstances should a rocket be fired at a temperature outside the range for which the charge is adjusted.

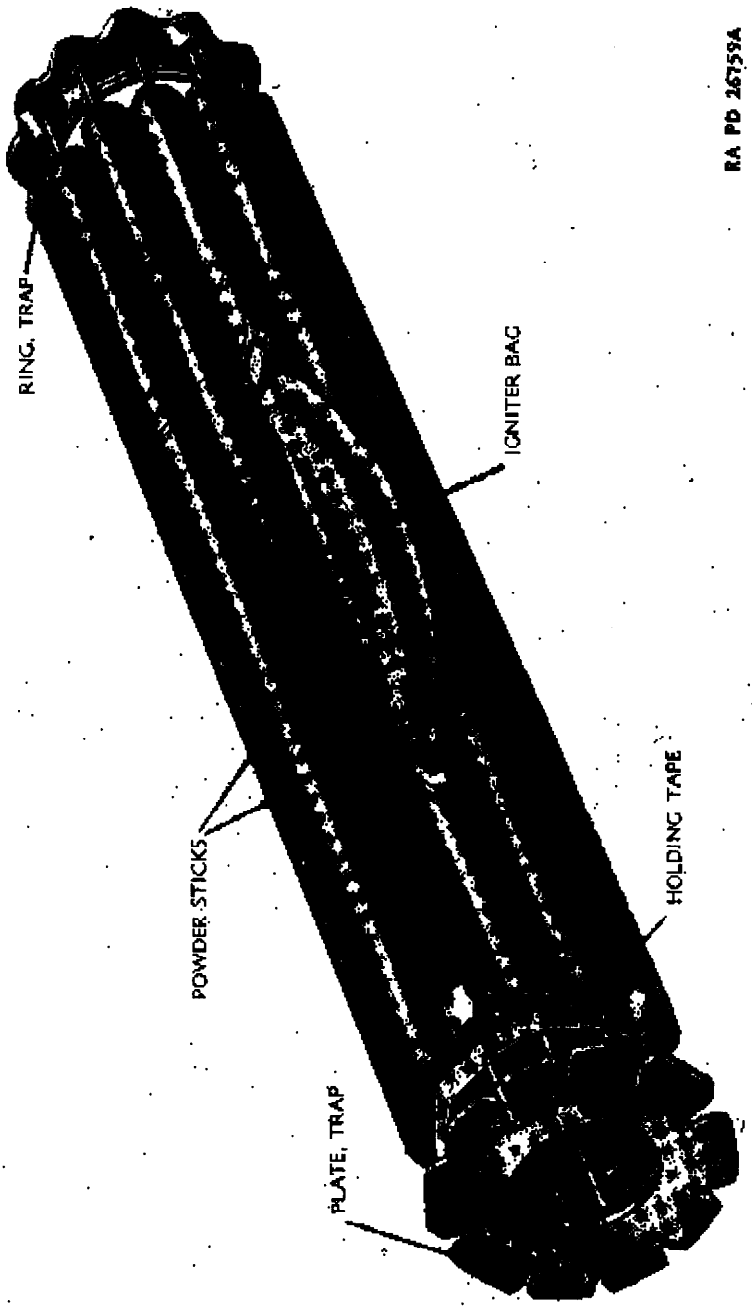

Figure 10—Trap Assembly and Propelling Charge

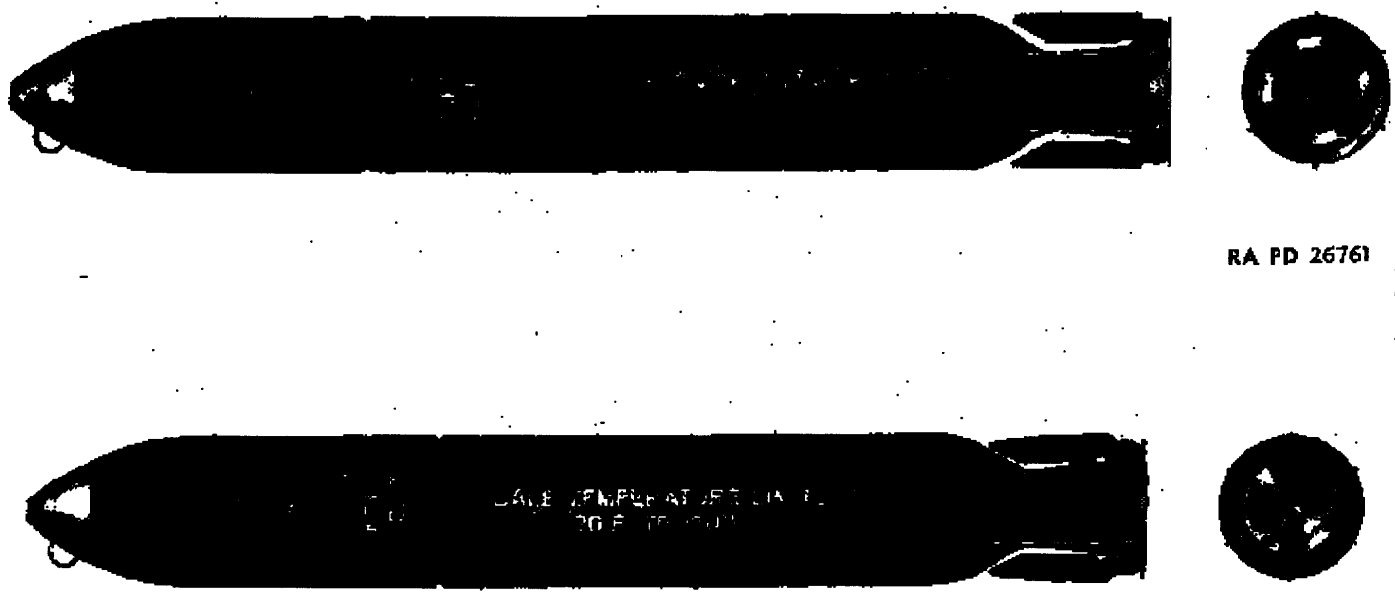

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Figure 11—Rockets M8A1 and T22

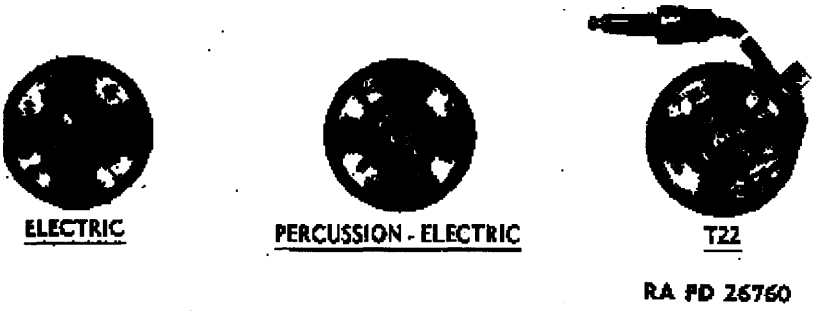

Figure 12—Igniters

(2) The propelling charge may be adjusted for high temperatures as follows:

(a) Unscrew the shell from the body, using two strap wrenches.

(b) Place the rocket on its tail on a clean level surface, and lift the shell out of the body.

(c) Lift the powder trap out of the body. Be careful not to rub the igniter bags against the wall of the body.

(d) Remove tape holding wires in place in trap plate.

(e) Push trap wires outward and remove the three silver-painted sticks of powder.

(f) Return trap wires to slots, and replace tape to hold wires in place.

(g) Lower trap assembly into the motor body. Be careful that the powder bags are on the outside of the powder sticks, and that they are not damaged by rubbing against the body when the trap is lowered into place.

(h) Replace the shell in the rocket body, using the strap wrenches to insure a tight joint.

(i) Mark the rocket body to indicate the change in the charge. If rocket is repacked, mark packings as well.

(j) If there is a probability that the low temperature charge will need to be restored, mark the rocket body and the removed sticks so that the same three sticks may be returned to that rocket. It is mandatory that the same sticks be replaced because the weight of the stick varies with each powder lot and is adjusted for each rocket.

c. **High-explosive Rocket M8A1 and Practice Rocket M9A1.** This modification has a strengthened motor body and may be fired at temperatures between —10°F and +105°F. No modification of the propelling charge is necessary.

d. **High-explosive Rocket M8A2 and Practice Rocket M9A2.** This modification, in addition to the heavier motor body, has a smaller, heavier-walled shell. Its temperature limits are the same, —10°F to + 105°F, and its velocity is slightly higher than the —A1 modification.

e. **High-explosive Rocket M8A3 and Practice Rocket M9A3.** In this modification, each fin has a slight bur or crimp to insure a tight fit in the fin ring when the fin opens. The rockets are otherwise the same as the —A2 modifications. Temperature ranges are the same as the —A2 rockets.

f. **High-explosive Rocket T22 and Practice Rocket T46.** This modification retains the heavier shell of the —rockets A2. The motor body is further strengthened, the fin assembly is modified. The igniter is assembled in a tube attached to the trap and extending the length of the propelling charge. Its temperature limits are —20°F to +120°F.

15. ROCKET FUZE AND MODIFICATIONS M4.

a. **Description.** The Point-detonating Rocket Fuze M4 (fig. 13), is a point-detonating, selective, superquick-delay type. The time of delay is indicated in the nomenclature and is marked on the fuze. It is 0.1 second for ground use and 0.015 second for aircraft use. Auxiliary Booster M1 (fig. 14) is an essential part of the fuze and is packed in the same can. The fuze is detonator safe, that is, the detonator is held out of line until after the rocket is fired. Accidental arming of the fuze is prevented by a safety cotter pin and ring in earlier models, and by a safety wire in later modifications. The safety pin or wire must be removed just prior to loading the rocket into the launcher and at no other time. The striker of the fuze is held in place by a shear wire which passes through the striker and the fuze body and appears in the groove just behind the point of the fuze. The shear wire must not be disturbed, and if it is missing, the fuze should be handled, point down, with extreme care, until it can be destroyed.

b. **Fuze Setting.** The action of the fuze is selected by means of a setting pin which appears at the side of the fuze. The head of the pin is slotted and is marked with an indicator dot. The fuze body is marked on either side of the setting pin with "SQ" and "0.015 SEC. DELAY" (or "0.1 SEC. DELAY"). The action of the fuze is selected by turning the pin so that the dot indicates the desired action. Note that the pin slot should always be parallel to the axis of the fuze. The fuze may be reset at any time prior to firing.

c. **Arming.** This type of fuze arms in three steps: the first step is the removal of the safety pin or wire; the second, the forces of set-

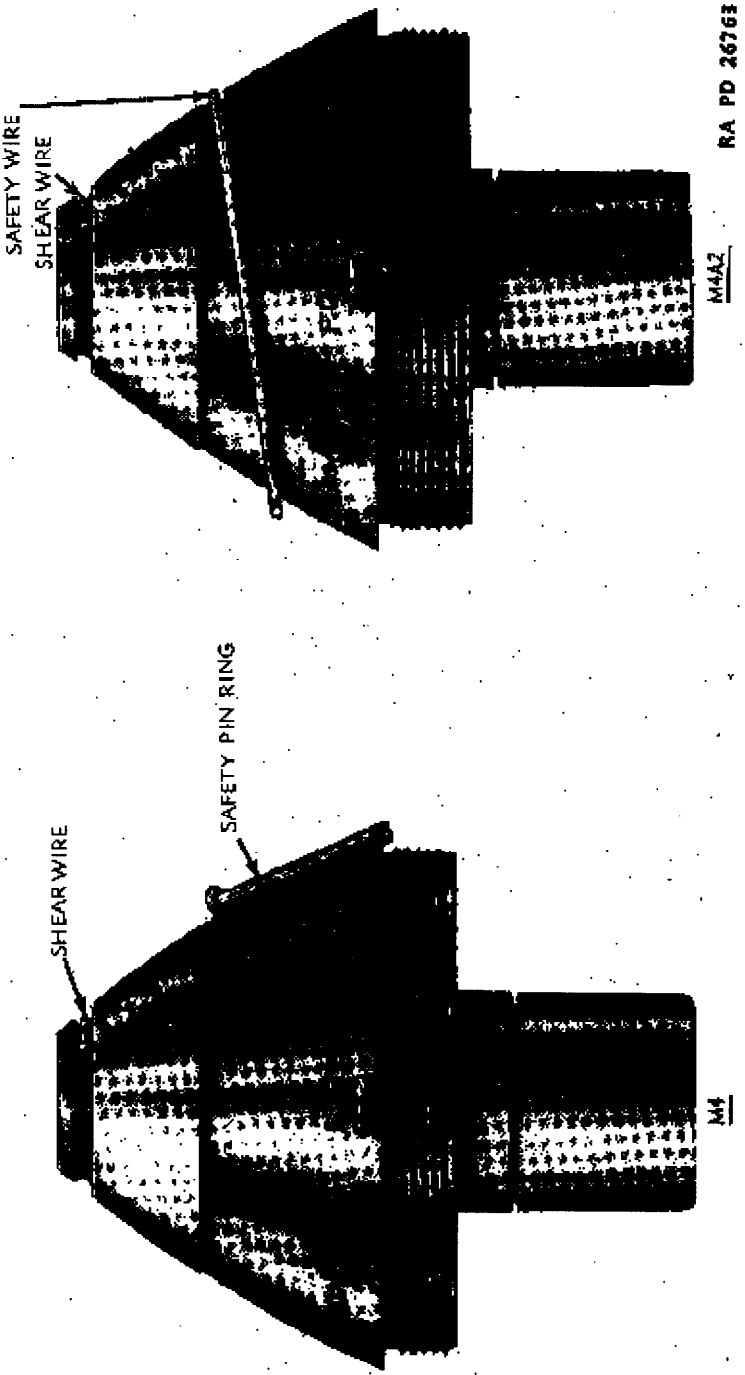

Figure 13—Fuzes

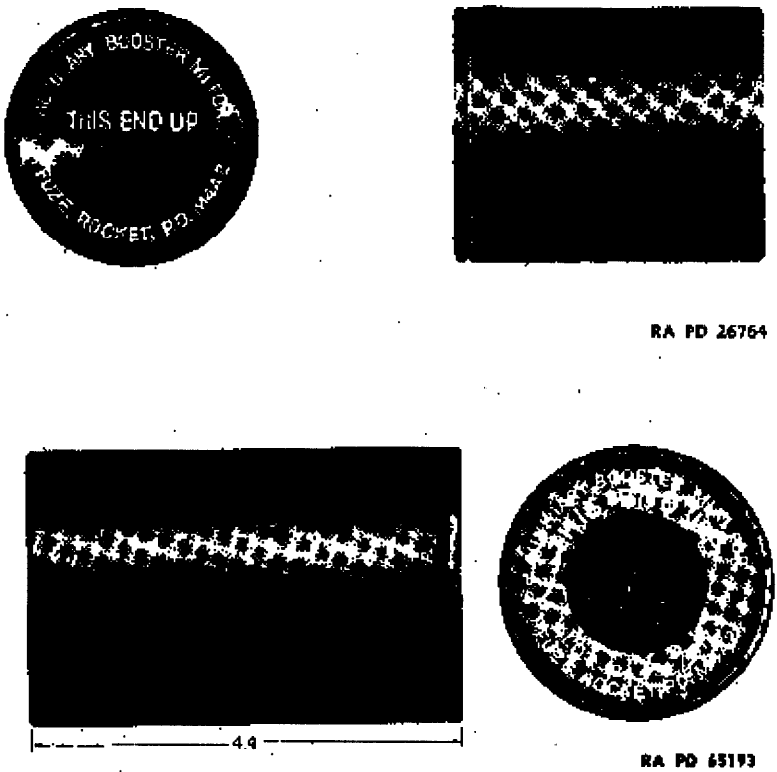

Figure 14—Auxiliary Boosters M1 and M1A1

back initiate arming when the rocket is fired; the third, when set-back ceases, spring action unlocks the detonator slider and moves the detonator into line in the explosive train. Note that the fuze cannot function unless the safety pin or wire is removed before firing. The Fuze M4 will arm on the set-back force resulting from 165 G acceleration. Later modifications require only 100 G. Compared with artillery and trench-mortar fuzes, this force is extremely small. The set-back force in artillery ammunition will be produced by an acceleration as great as 20,000 G and in trench-mortar ammunition by an acceleration as great as 4,000 G. Consequently, once the safety pin has been removed, rockets should be handled with extreme care.

d. Fuze M4A1. This fuze differs from the M4 in that a lighter set-back is required to arm the fuze. The setting pin is recessed, and a piece of scotch tape covers the nose. The setting pin is recessed in order to prevent its partial turning upon impact, as a partial turn

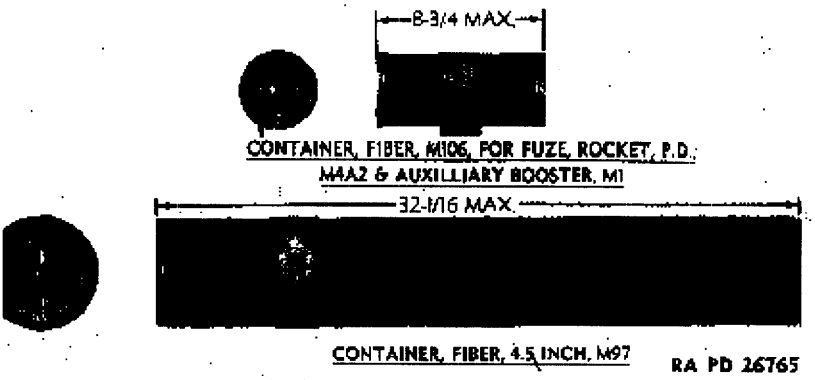

Figure 15—Fiber Containers

would result in a dud. The tape should not be removed prior to firing, as it is required to prevent quenching of the delay element upon water impact.

e. **Fuze M4A2.** In this modification, the design of the setting pin is slightly changed so that the delay train will always function. In the earlier modifications, if the setting pin slot is not parallel with the axis of the fuze, the fuze will be a dud. This model is supplied with the Auxiliary Booster M1A1.

f. **Auxiliary Booster.** This component is required to insure high-order detonation of the bursting charge. It consists primarily of a chip-board and metal container filled with approximately 1 pound of TNT. The M1 is in the form of a cylinder with flat ends. The M1A1 contains a cup in the top to nest over the booster cup of the fuze.

6. FUZE M6.

a. The dummy fuze has the same weight and contour as the service fuze. It is issued for use in the practice rocket.

7. PREPARATION FOR FIRING.

a. To prepare the rocket for firing, the following steps will be carried out:

(1) Remove the rocket from its packing and inspect for serviceability. Be sure that the igniter and fin retainer are firmly in place, that fins are straight, and the rocket body is not seriously dented. Make certain that the temperature range specified for the charge covers the expected temperature at firing. If necessary, adjust the propelling charge of Rockets M8 and M9 as described in paragraph 14 b.

(2) Fuze the rocket as follows:

(a) Unpack fuze and inspect for corrosion and other evidence of unserviceability. Be sure safety pin and shear wire are in place.

(b) Set the fuze for the desired action (par. 15 b).

(c) Loosen set screw in nose of rocket and unscrew closing plug. Examine fuze well to be sure that it is free of foreign material.

(d) Insert auxiliary booster into the fuze well with the end marked "THIS END UP" toward the nose of the rocket.

(e) Screw the fuze into the rocket and tighten with fuze wrench.

(f) Tighten set screw.

(3) Remove the safety pin or wire from the fuze.

(4) Load the rocket into the launcher in accordance with directions in paragraph 8.

(5) If the rocket is not used it will be unfuzed and returned to storage, reversing the above steps.

18. PRECAUTIONS.

a. The propellent powder used in rockets is very sensitive to temperature. It is important that rockets are not fired at temperatures outside the stated limits, and that rockets in storage and transit be protected against sources of high temperature.

b. When a rocket is fired, the blast of flame extends to the rear approximately 75 feet. Personnel and materiel should be kept clear of this area from the time the launcher is loaded until after the rocket is fired.

c. When propelling charge of Rocket M8 or M9 is changed to high temperature range, rockets must be marked to indicate change. If rockets are repacked, containers also must be marked. The charge may be restored to low temperature range only if sticks removed can be identified and returned to the same rocket.

d. Igniter must be securely in place. If an igniter is loose, it should be pressed firmly and evenly into the rocket nozzle. If necessary, the igniter should be recemented in place.

e. Fuzes with broken or missing shear wires should be destroyed as ammunition in dangerous condition.

f. Rockets with dented bodies, or like defects should not be used.

19. PACKING.

a. Rockets of this caliber are packed unfuzed, but otherwise complete, one per fiber container, two containers per wooden box. Fuzes are packed one fuze and one booster per container, 14 or 15 such containers per box (fig. 15).

Section III

REFERENCES

20. PUBLICATIONS INDEXES.

The following publications indexes should be consulted frequently for latest changes or revisions of references given in this section and for new publications relating to materiel covered in this manual:

a. Introduction to Ordnance Catalog (explaining SNL system) ..... ASF Cat. ORD 1 IOC

b. Index (index to SNL'S) ..... ASF Cat. ORD 2 OPSI

c. Index to Ordnance Publications (listing FM's, TM's, TC's and TB's of interest to Ordnance personnel, OPSR, FSMWO's, BSD, S of SR's, OSSC's, and OFSB's and including alphabetical listing of Ordnance major items with publications pertaining thereto) OFSB 1-1

d. List of Publications for Training (listing MR's, MTP's, FM's, TM's, TR's, TB's, MWO's, SB's, WDLO's, and FT's) ..... FM 21-6

e. List of Training Films, Film Strips, and Film Bulletins (listing TF's, FS's, and FB's by serial number and subject) ..... FM 21-7

f. Military Training Aids (listing graphic training aids, models, devices, and displays) ..... FM 21-8

g. Index to Bombing Tables (listing current bombing tables for bombs, clusters, and flares and firing tables for aircraft rockets)

21. STANDARD NOMENCLATURE LISTS.

Cleaning, preserving, and lubricating materials; recoil fluids, special oils, and miscellaneous related items ..... ORD 5 SNL K-1

REFERENCES

Rockets, all types, and components	ORD 11 SNL S-9

22. **EXPLANATORY PUBLICATIONS.**

Ammunition, general	TM 9-1900
Ammunition: net prices	SB 9-AMM 3
Ammunition identification code (A.I.C.)	SB 9-AMM 5
Cleaning, preserving, lubricating, and welding materials, and similar items issued by the Ordnance Department	TM 9-850

23. **FIRING TABLES** (see index to bombing tables) ..... RT 4.5AC-A-1
RT 4.5AC-B-1

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