CONFIDENTIAL

Handbook
of the
Incendiary Drop Bombs

MARK I AND II

Prepared by the
ORDNANCE DEPARTMENT

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The following pamphlet entitled "Handbook of the Incendiary Drop Bombs, Mark I and II," is published for the information and guidance of all concerned.

[062.1 A. G. O.]

BY ORDER OF THE SECRETARY OF WAR,

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Major General, Acting Chief of Staff.

OFFICIAL:

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TABLE OF CONTENTS

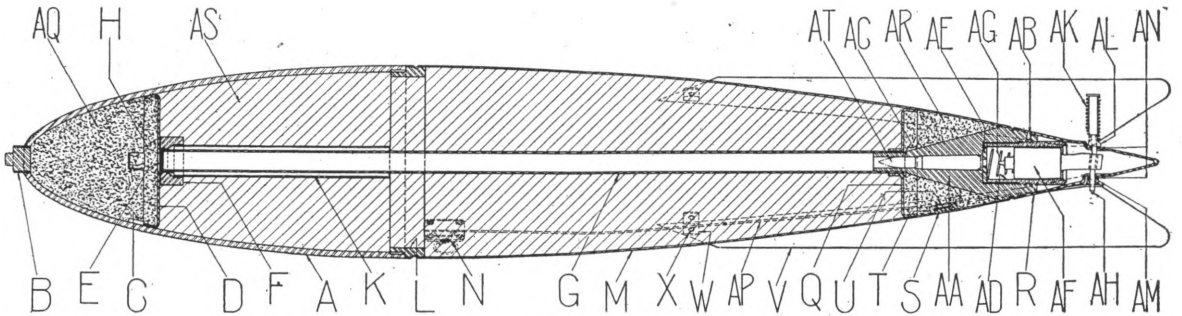

PLATE I.
Assembly Drawing.
Incendiary Drop Bomb, Mark I.

CHART I.

Nomenclature—Incendiary Drop Bomb, Mark I.

SYMBOL	*QUANTITY*	*NAME*	*MATERIAL*	*LOCATION AND PURPOSE*
		(a) The Body		
A	1	Front body	Steel	Forward portion of bomb body; contains nose powder charge (AQ) and incendiary material.
B	1	Nose filling plug	Steel	Screws into nose of bomb. Permits insertion of nose powder charge (AQ) and is replaced by auxiliary nose firing mechanism when this is used.
C	3	Stops	Sheet steel	Welded inside front body (A). Locate and support front plate (D).
D	1	Front plate	Sheet steel	Soldered in front body (A) against stops (C). Separates nose powder charge (AQ) from incendiary charge (AS); supports firing tube guide (F).
E	1	Plate sealing disk	Tin	Soldered on front plate (D). Prevents incendiary fluid from entering nose powder chamber.
F	1	Firing tube guide	Steel	Soldered on front plate (D). Locates and supports firing tube (G) and loading tube (K).
G	1	Firing tube	Steel	Extends from diaphragm (Q) to firing tube guide (F). Guides bullet and flash of discharge.

H	1	Firing tube sealing disk.	Tin	Soldered over forward end of firing tube (G). Prevents entrance of incendiary fluid into firing tube (G).
K	1	Loading tube	Tin	Placed in front body (A) around forward end of firing tube (G). Facilitates assembly of front and rear body after loading.
L	1	Connecting ring	Steel	Connects front body (A) to rear body (M).
M	1	Rear body	Sheet steel	Rear of bomb body—contains incendiary material (AS) rear powder charge (AR) and firing mechanism.
N	1	Safety wire guide	Sheet steel	Riveted on rear body (M) in line with stabilizer (V). Supports loop of safety wire and steadies bomb in trap during flight.
Q	1	Diaphragm	Sheet steel	Soldered in rear body (M). Carries firing tube and separates incendiary charge (AS) from rear powder charge (AR).
R	1	Rear cap	Sheet steel	Rear end of bomb, on rear body (M). Carries stabilizers (V) and is traversed by release pin (AH).
S	1	Rear filling plug	Sheet steel	Screws into filling hole plate (T). Permits insertion of rear powder charge (AR).
T	1	Filling hole plate	Sheet steel	Soldered in rear body (M). Receives rear filling plug (S).
U	1	Filling hole disk	Lead	Fits in filling hole plate (T) under filling hole plug (S). Acts as a washer to seal hole.

SYMBOL	QUANTITY	NAME	MATERIAL	LOCATION AND PURPOSE
V	4	Stabilizers	Sheet steel	Welded to rear cap (R) and fastened to rear body (M). Steady bomb in flight.
W	4	Stabilizer lugs	Sheet steel	Riveted and welded to rear body (M). Provide a means of fastening stabilizers to rear body (M).
X	4	Stabilizer screws and nuts.	Steel	Fasten stabilizers (V) to stabilizer lugs (W).
		(b) The Firing Mechanism		
AA	1	Cartridge chamber	Steel	Soldered in rear of bomb. Carries firing mechanism.
∞ AB	1	Locating pin	Steel	Driven in rear end of cartridge chamber (AA). Locates rear cap (R).
AC	1	Flash hole		Drilled in front end of cartridge chamber (AA). Permits entrance of flash of discharge into rear powder chamber.
AD	1	Striker tube	Brass	Screws into recess in cartridge chamber (AA). Contains striker (AF).
AE	1	Striker tube washer	Steel	Fits in recess in cartridge chamber (AA) under striker tube (AD). Holds cartridge (AT) in place.
AF	1	Striker	Steel	Slides in striker tube (AD). On contact, fires cartridge (AT).
AG	1	Striker spring	Steel wire	Set in striker tube (AD) under striker (AF) Holds striker (AF) away from cartridge (AT) until contact occurs.

AH	1	Release pin	Cold rolled steel	Passes through holes in rear cap (R). Prevents forward movement of striker (AF).
AK	1	Release pin spring	Piano wire	Placed on upper end of release pin (AH). Forces release pin (AH) out of rear cap upon withdrawal of safety wire (AP).
AL	1	Release pin spring seat.	Steel	Placed on release pin (AH). Acts as lower bearing for release pin spring (AK).
AM	1	Release pin washer	Steel	Placed on release pin (AH). Acts as bearing for release pin (AH) and support for safety wire (AP).
AN	2	Gaskets	Felt	Placed around release pin (AH) over holes in rear cap (R). Soaked in paraffin and intended to prevent the entrance of moisture.
AP	1	Safety wire	Piano wire	Extends from strap (P) to release pin (AH) Provides means of actuating release pin (AH).

INCENDIARY DROP BOMB, MARK I.

The Incendiary Drop Bomb, Mark I, is intended for use against light structures, ammunition dumps, grain fields, or like objectives where only a low degree of igniting power is required. It is of the so-called "scatter" type, due to the action of the exploding charge, which casts out the incendiary material within a radius of from 15 to 30 yards from the point of contact.

In size and shape the bomb is similar to the Mark III High Capacity Bomb. It has a maximum diameter of 6.10 inches and a length of 36.64 inches and weighs about 40 pounds. It consists of three major parts:

(a) The body.
(b) The firing mechanism.
(c) The explosive and incendiary materials.

(a) The Body.

The body consists of the *Front Body* (A), the *Nose Filling Plug* (B), the *Stops* (C), the *Front Plate* (D), the *Plate Sealing Disk* (E), the *Firing Tube Guide* (F), the *Firing Tube* (G), the *Firing Tube Sealing Disk* (H), the *Loading Tube* (K), the *Connecting Ring* (L), the *Rear Body* (M), the *Safety Wire Guide* (N), the *Diaphragm* (Q), the *Rear Cap* (R), the *Rear Filling Plug* (S), the *Filling Hole Plate* (T), the *Filling Hole Disk* (U), the *Stabilizers* (V), the *Stabilizer Lugs* (W), and the *Stabilizer Screws and Nuts* (X).

The *Front Body* (A), is a hollow steel paraboloid 6.10 inches in diameter at the base and 12.2 inches high, with walls 3/16 of an inch thick. In the rounded nose a hole has been drilled and tapped to receive the *Nose Filling Plug* (B), which is a half-inch standard pipe plug. Through this hole the nose charge of powder is inserted; it is also designed to receive an auxiliary nose-firing mechanism, when this is found desirable. For a distance of ½ of an inch, the rear end of the front body (A) is threaded on the inside to receive the connecting ring (L).

Three sheet steel *Stops* (C), ½ of an inch square and ⅛ of an inch thick, are spot welded to the inside of the front body

(A), at a point 8.3 inches from the base, to locate and support the front plate (D).

The *Front Plate* (D) is a circular piece of sheet steel 4.2 inches in diameter and 1/16 of an inch thick, with the outer edge bent upward for ½ of an inch to fit into the front body (A) against the stops (C) where it is soldered in place. A hole ¾ of an inch in diameter is bored through its center and sealed by means of the *Plate Sealing Disk* (E), a circular piece of tin .01 of an inch thick, and 1½ inches in diameter, which is soldered in place.

The *Firing Tube Guide* (F) is a steel cylinder 1½ inches in diameter and ¾ of an inch long. For a distance of ¼ of an inch from the front end it is drilled to a diameter of ¾ of an inch to receive the firing tube (G). The bore is increased to 1.05 inches for a distance of 5/16 of an inch from the rear end to receive the loading tube (K). The guide is soldered to the plate sealing disk (E) with the bore in line with the hole in the front plate (D).

The *Firing Tube* (G) is a steel cylinder 23⅝ inches long with an inside diameter of 9/16 of an inch and an outside diameter of 11/16 of an inch. The front end is sealed by means of the tin *Firing Tube Sealing Disk* (H), ⅞ of an inch in diameter and .01 of an inch thick, peened over and soldered in place, and is inserted in the firing tube guide (F). The rear end is inserted in the hole in the diaphragm (Q), and over the front end of the cartridge chamber (AA), and brazed in position.

The *Loading Tube* (K) is a tin cylinder 6.875 inches long and 1 inch in diameter, the forward end of which is inserted in the recess in the firing tube guide (F). It serves to facilitate the final assemby of the front and rear bodies after these have been loaded with the incendiary charge (AS).

The *Connecting Ring* (L) is a steel cylinder 6.038 inches in diameter and 1⅛ inches long. The front end is turned down and threaded to a diameter of 5.85 inches to fit into the front body (A). Around the center of the rear portion is cut a rounded channel 5/32 of an inch wide and 1/16 of an inch deep to provide a binding surface wherein the rear body (M) is crimped and soldered to the connecting ring (L).

The *Rear Body* (M) is made of sheet steel 1/32 of an inch thick. It is in the shape of a truncated cone with a total

length of 19.72 inches. The base of the cone is 6.038 inches in diameter to fit over the shoulder of the connecting ring (L).

Four *Stabilizer Lugs* (W) are riveted and soldered to the rear body (M) at a point 10.64 inches from the rear end to serve as a means of attaching the stabilizers (V) and rear cap (R). The lugs are sheet steel rectangles bent at the center, thus forming two sections ½ of an inch square perpendicular to each other, which receive the rivets and stabilizer screws (X).

The *Safety Wire Guide* (N) is a sheet steel rectangle with rounded corners, .92x1.31 inches; it has a raised portion ¼ of an inch high and 3/16 of an inch wide running lengthwise through its center to form a channel for the passage of the safety wire (AP). The bottom is curved to fit the rear body (M) to which it is riveted by means of four tubular rivets, at a point 13½ inches from the nose of the bomb. The raised portion fits into the frame of the release mechanism and serves to steady the bomb during flight. In the center of the upper surface a hole is punched to permit the passage of the safety wire in such a manner that the upturned edges act as a support for the loop of the safety wire (AP).

The *Diaphragm* (Q) is a sheet steel disk 1/16 of an inch thick with the outer edge turned down for ½ of an inch to conform to the shape of the rear body (M), to which it is soldered at a point 15.84 inches from the front end. A hole is punched in its center and a flange is turned up for a distance of ¼ of an inch, leaving a hole 11/16 of an inch in diameter to receive the base of the firing tube (G) to which it is soldered.

The rear portion of the body tapers down to a diameter of 2.20 inches to receive the cartridge chamber (AA). At a point 2½ inches from the rear end, and midway between the rear stabilizer lugs, a filling hole is drilled in the shell to receive the filling plug (S).

The *Rear Filling Plug* (S) is a steel cylinder ⅝ of an inch in diameter and 5/32 of an inch long, threaded to fit into the filling hole plate (T). A slot 3/32 of an inch wide and 3/32 of an inch deep is cut across the upper surface to provide a grip for a screw driver.

The *Filling Hole Plate* (T) is a sheet steel cylinder ⅞ of an inch in diameter and ¼ of an inch long. A recess 5/32 of an inch deep is cut in one surface and tapped to receive

the filling plug (S). A hole ⅜ of an inch in diameter is drilled through the center of the filling hole plate (T) to permit the insertion of the charge in the rear powder chamber. The filling hole plate (T) is soldered to the inner surface of the rear body (M) directly over the filling hole, and the lead *Filling Hole Disk* (U), ½ of an inch in diameter by 1/32 of an inch thick, is used as a washer under the plug (S) to seal the filling hole.

The *Rear Cap* (R) is a hollow steel cone 2.2 inches in diameter and 4.4 inches high, with walls 1/16 of an inch thick. At a distance of 2¼ inches from the base, the walls of the cone are flattened in two places exactly opposite each other. These surfaces are traversed by a hole ¼ of an inch in diameter to receive the safety pin. On line with these holes, a slot .2 of an inch deep is cut in the base of the cap to receive the steel locating pin (AB).

The *Stabilizers* (V) are irregularly shaped steel quadrangles .05 of an inch thick, with a maximum length of 16.27 inches and a maximum width of 3.19 inches. At a point 3.35 inches from the rear end is a lug 5/16 of an inch wide and 1.37 inches long, by means of which the stabilizer is welded to the rear cap. One inch from the front end an elliptical hole is drilled ¼ of an inch from the innner edge to receive the No. 6-32 *Stabilizer Screw and Nut* (X) which fastens the stabilizer to the stabilizer lug.

(b) The Firing Mechanism.

The firing mechanism consists of the *Cartridge Chamber* (AA) the *Locating Pin* (AB), the *Flash Hole* (AC), the *Striker Tube* (AD), the *Striker Tube Washer* (AE), the *Striker* (AF), the *Striker Spring* (AG), the *Release Pin* (AH), the *Release Pin Spring* (AK), the *Release Pin Spring Seat* (AL), the *Release Pin Washer* (AM), the *Gaskets* (AN), and the *Safety Wire* (AP).

The *Cartridge Chamber* (AA), is an irregularly shaped steel cylinder 5¼ inches long and 2⅜ inches at its largest diameter. For a distance of 1 1/16 inches from the front end it is turned to a diameter of .560 of an inch for insertion in the firing tube (G). At a point 1/16 of an inch from the rear end of this section, the *Flash Hole* (AC) is drilled into the central recess for the purpose of communicating the flash

of the cartridge to the rear powder charge (AR). From a shoulder 1 1/16 inches from the front end and 11/16 of an inch in diameter, the cartridge chamber (AA) tapers outward to its maximum diameter at a point 4⅛ inches from the same end. From this point it tapers down at a 13-degree angle for a distance of ⅝ of an inch to a diameter of 2.138 inches. A concave recess is turned in the center of the surface just described 5/32 of an inch wide and 1/16 of an inch deep, to provide a binding surface into which the base of the rear body (M) is peened at the time of assembly.

The extreme end of the cartridge chamber (AA) is offset and tapers from a diameter of 2.075 inches at a 13-degree angle for a distance of ½ of an inch. About .2 of an inch from the upper shoulder a hole is drilled with its axis perpendicular to this surface to receive the ⅛-inch steel *Locating Pin*, which locates the rear cap.

A recess is bored in the rear of the cartridge chamber (AA) 1 5/16 inches in diameter and 1¾ inches deep to receive the striker tube (AD). For a distance of ¾ of an inch from the end this recess is tapped to a diameter of 1⅜ inches to fit the threaded portion of the striker tube (AD). A hole leading from the recess to the front end of the cartridge chamber is bored out to receive a 30-caliber service cartridge (AT).

The *Striker Tube* (AD) is a brass cylinder 2 9/16 inches long with an outside diameter of 1⅜ inches and an inside diameter of 1 inch. The front end is turned down to a diameter of 1¼ inches for a distance of 1 inch to fit into the recess in the cartridge chamber (AA). The central section is threaded for a distance of ¾ of an inch to fit the threaded portion of the cartridge chamber (AA). The outer edge at the base is rounded off, while the inner shoulder at this point is cut away at a 45-degree angle to facilitate the insertion of the striker (AF).

The *Striker Tube Washer* (AE) is a steel cylinder 1¼ inches in diameter and ⅛ of an inch long, with a ¼ of an inch hole through its center. It is placed in the recess in the cartridge chamber (AA), and the striker tube (AD) is screwed down over it. Its purpose is to secure the cartridge (AT) in place.

The *Striker* (AF) is an irregularly shaped steel cylinder

with a total length of 3¼ inches and a maximum diameter of .985 of an inch. The section of largest diameter is the central portion which is 1½ inches long. At the front end a lug 5/16 of an inch long and ⅜ of an inch in diameter projects from the center, and acts as the rear bearing for the striker spring (AG). From the base of this lug a pin. ⅛ of an inch in diameter at its base and tapering to a rounded point, projects 3/16 of an inch above the face of the lug and serves as a firing pin. The rear section of the striker (AF) is 1½ inches long and ½ of an inch in diameter, with a 7/32 of an inch hole drilled ¼ of an inch from the rear end to receive the release pin (AH).

The *Striker Spring* (AG) is made of four coils of steel spring wire, approximately 3/64 of an inch thick, with an outside diameter of 15/16 of an inch at one end, tapering down to 9/16 of an inch at the other. The spring is ⅞ of an inch long before compression.

The *Release Pin* (AH) is an irregularly shaped cold rolled steel cylinder 3 5/32 inches long and 7/16 of an inch wide at its largest diameter. This section is 1/16 of an inch long and serves as the upper seat for the coiled release pin spring (AK). For a distance of 1¼ inches the pin is turned down to a diameter of 5/16 of an inch to fit into the spring (AK). The remaining section is intended for insertion through the spring seat; it has a length of 1 27/32 inches, and a diameter of 3/16 of an inch except for a distance of ⅛ of an inch from the end where it tapers to a point. A 3/32 of an inch hole is drilled through the pin 19/64 of an inch from the point to receive the safety wire.

The *Release Pin Spring* (AK) consists of about 12 coils of .052 music wire with an inside diameter of 21/64 of an inch, and a normal length of about 2½ inches.

The *Spring Seat* (AL) is a built-up cylinder of steel ⅜ of an inch long with a maximum diameter of 7/16 of an inch. For a distance of ¼ of an inch from one end it is turned down to a diameter of 5/16 of an inch to serve as the lower bearing for the spring (AK). A hole 13/64 of an inch in diameter is drilled through the spring seat (AL) to receive the release pin (AH).

Two felt *Gaskets* (AN), soaked in paraffin, are placed on the release pin (AH) to render the holes in the rear cap

(R) waterproof. The gaskets (AN) are 1/16 of an inch thick and 7/16 of an inch in diameter with a hole 3/16 of an inch in diameter.

The *Release Pin Washer* (AM) is a steel cylinder 3/16 of an inch long and 7/16 of an inch in diameter with a bore of 13/64 of an inch, which is placed over the end of the release pin (AH) to serve as a bearing for the release pin (AH), and a support for the safety wire (AP).

The spring (AK), the spring seat (AL), and a felt gasket (AN), are slipped over the end of the release pin (AH) in the order given, and the pin (AH) is then inserted through the holes in the rear cap (R), and the hole in the striker (AF) which has been placed inside the rear cap (R). Another felt gasket (AN) is then placed over the end of the release pin (AH), followed by the steel washer (AM). The end of the safety wire (AP) is passed through the hole in the release pin (AH) and is seated on the steel washer (AM).

The *Safety Wire* (AP) is a piece of 1/32 of an inch music wire with a loop ¾ of an inch in diameter 22 inches from one end; this end is passed through the safety wire guide (N) and extends through the release pin (AH), the loop resting in the groove in the safety wire guide (N). The opposite end of the wire is 16¼ inches long below the loop and extends through the safety wire guide to the nose firing mechanism. When this device is not used, the extra length of wire is cut off close to the loop.

(c) The Explosive and Incendiary Materials.

The explosive and incendiary materials consist of the *Nose Powder Charge* (AQ), the *Rear Powder Charge* (AR), the *Incendiary Charge* (AS), and the *Cartridge* (AT).

The *Nose Powder Charge* (AQ) consists of a quantity of black powder, which is inserted in the front powder chamber upon removal of the nose filling plug (B). The explosion drives the incendiary charge (AS) out of the rear of the bomb as from a mortar, and, at the same time, ignites it.

The *Rear Powder Charge* (AR), is composed, likewise, of black powder which is inserted through the rear filling hole. Upon explosion it breaks open the rear of the bomb so as to provide for the wide dispersion of the incendiary materials. It also serves to ignite the incendiary charge (AS).

The *Incendiary Charge* (AS) consists of a mass of cotton waste balls soaked in a highy inflammable fluid, and pressed into the front and rear body before these are assembled. This material has a very low flash point and will burn fiercely for about 15 minutes.

The *Cartridge* (AT) is a standard 30-caliber service cartridge.

Operation of the Bomb.

Upon release of the bomb from the plane, the safety wire (AP) is withdrawn from the release pin (AH), which is thrown off by the action of the release pin spring (AK). The striker (AF) is now free to move forward, except for the restraining action of the striker spring (AG). Upon contact, inertia drives the striker (AF) forward, overcoming the force of the spring; the firing pin strikes the primer of the cartridge (AT) and fires it. The bullet passes up the firing tube (G) and the flash of the discharge, following the path of the bullet, sets off the nose powder charge (AQ). The flash, at the same time, is communicated to the rear powder charge (AR) through the flash hole (AC). The incendiary charge (AS) is thereupon blown out to a distance of from fifteen to thirty yards from the point of impact. The radius of dispersion is, of course, dependent upon the character of the structure or terrain at the point of impact, and the depth to which the bomb has penetrated.

NOTE.—The exterior surfaces of the Mark I Incendiary Bomb are painted with an olive drab paint. A black band, 1 inch wide, is painted around the body to indicate the center of gravity; on this band are painted, in white, the designation of the bomb, the manufacturer's name, the lot number, the serial number, and the inspector's initials. At a point three inches from the tip, *a red band*, 1 inch wide, is painted around the nose to further indicate the type of bomb.

The bomb is shipped, with the powder charges in a separate tin can, held in the shipping container, to prevent any malfunction of the bomb due to saturation of the powder charge with the incendiary fluid. The powder is loaded in the nose and rear powder chambers when the bomb is made ready for use.

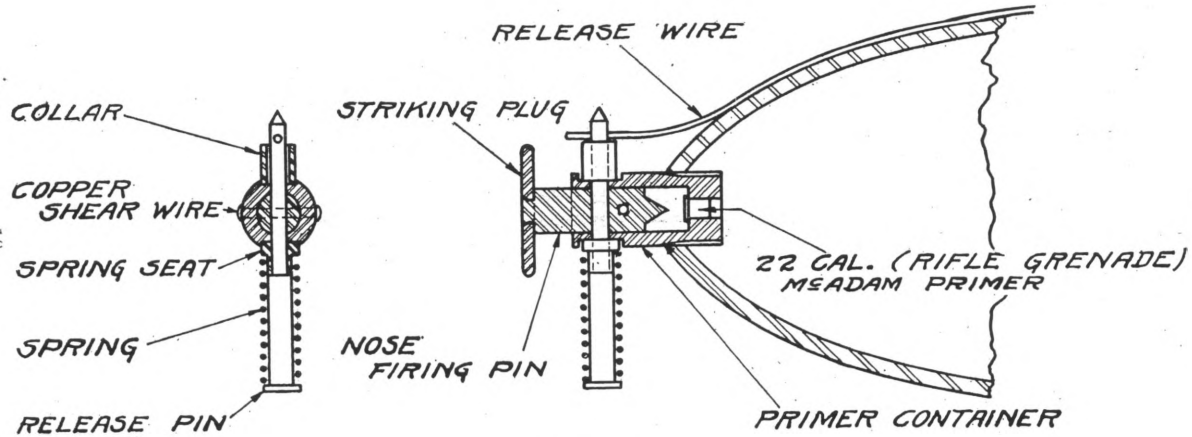

PLATE II.
Auxiliary Nose Firing Mechanism.

Auxiliary Nose Firing Mechanism.

The Auxiliary Nose Firing Mechanism is a firing device inserted in the nose of the Incendiary Drop Bomb, Mark I, to cause explosion of the nose powder charge as soon as possible after contact with the target, and before any appreciable penetration has occurred. Its use results in the more rapid functioning of the bomb, and a wider dispersion of the incendiary materials.

The auxiliary nose firing mechanism consists of: The *Primer Container*, the *Primer*, the *Striking Plug*, the *Nose Firing Pin*, the *Release Pin*, the *Release Pin Spring*, the *Spring Seat*, the *Collar*, the *Shear Wire*, and the *Safety Wire*.

The *Primer Container* is a steel cylinder, measuring 1 11/16 inches in length and .840 of an inch at the point of largest diameter. A concave recess ½ of an inch wide and 3/32 of an inch deep, at its central point, is turned 5/16 of an inch from the front end. The recess is flatted in two places exactly opposite each other, to provide a supporting surface for the spring seat and collar. A .204 of an inch hole is drilled through the center of these two surfaces to receive the release pin.

The rear end carries a ½ of an inch standard pipe thread for a distance of ⅜ of an inch to fit into the nose fillling hole.

A recess is bored in the front end of the primer container .512 of an inch in diameter and 1 5/16 inches long to receive the firing pin. From this recess a hole .222 of an inch in diameter is drilled to the rear end to receive the .22-caliber McAdam primer. At a point 9/16 of an inch from the front end, and perpendicular to the axis of the hole for the release pin, another hole 3/32 of an inch in diameter is drilled through the primer container to receive the shear wire.

The *Primer* is a .22-caliber McAdam rifle grenade primer.

The *Nose Firing Pin* is a cold rolled steel cylinder 1¼ inches long and .496 of an inch in diameter. Projecting from the rear end is a pyramidal lug measuring 5/16 of an inch at the base and ¼ of an inch high, which is intended to strike the primer. The *Striking Plug*, a steel disk 1½ inches in diameter and ⅛ of an inch thick is riveted to the

firing pin by means of a lug 7/32 of an inch long and ¼ of an inch in diameter projecting from the front end of the pin.

The *Release Pin* is a built-up cold rolled steel cylinder 3 5/32 inches long and 7/16 of an inch at its largest diameter. This section is 1/16 of an inch wide and acts as the upper seat for the spring. The pin is turned down to a diameter of 5/16 of an inch for a distance of 1¼ inches for insertion in the spring. The lower end of the pin is made 3/16 of an inch in diameter for insertion through the holes in the nose firing pin and primer container, except for a distance of ⅛ of an inch from the end, where it tapers to a point. A 3/32 of an inch hole is drilled through the pin at a point 1 35/64 inches from the lower shoulder to receive the release wire.

The *Spring Seat* is a steel cylinder ⅜ of an inch long and 7/16 of an inch in diameter. It is turned to a diameter of 5/16 of an inch for a distance of ¼ of an inch from one end for insertion in the spring. A hole 13/64 of an inch in diameter is drilled through the spring seat to receive the release pin.

The *Collar* is a steel cylinder ⅜ of an inch in diameter and 7/16 of an inch long. A hole 7/32 of an inch in diameter is drilled through the center to receive the release pin.

The *Spring* is made of about twelve coils of .052 of an inch music wire, with an outside diameter of 21/64 of an inch and a normal length of 2½ inches.

The *Shear Wire* is a 15/16 of an inch length of copper wire 3/32 of an inch in diameter. It is inserted through the holes provided for the purpose in the primer container and nose firing pin, and serves to prevent the firing pin from striking the primer until contact occurs.

The *Safety Wire* is a piece of 1/32 of an inch music wire, 16¼ inches long below the loop, and extends from the safety wire guide to the release pin in the nose firing mechanism.

Operation of the Mechanism.

Upon release of the bomb the release wire is withdrawn from the hole in the release pin, and the latter is thrown off by the action of the spring. When the striking plug comes in contact with any object, the force of the impact breaks the shear wire and drives the point of the firing pin against the primer. The flash from the primer passes through the hole in the base of the primer container and ignites the powder charge in the nose of the bomb.

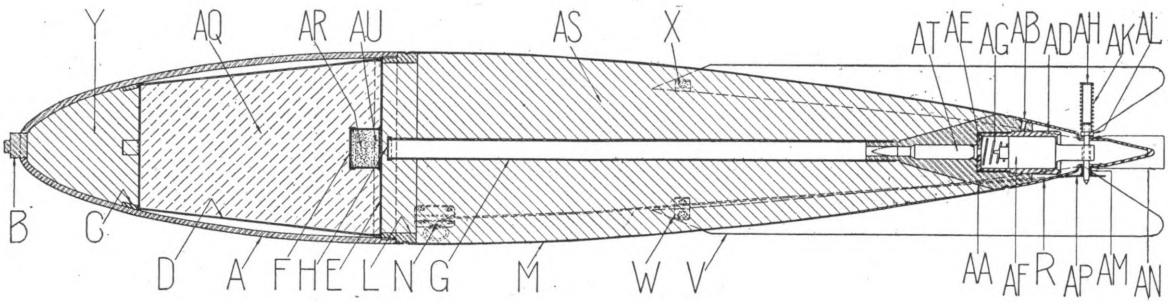

PLATE III.
Assembly Drawing.
Incendiary Drop Bomb, Mark II.

CHART II.
Nomenclature—Incendiary Drop Bomb, Mark II.

(a) The Body

SYMBOL	*QUANTITY*	*NAME*	*MATERIAL*	*LOCATION AND PURPOSE*
A	1	Front body	Steel	Forward position of bomb body. Contains thermit can (D) and supporting mass (Y).
B	1	Nose filling plug	Steel	Screws into nose of bomb. Permits insertion of supporting mass (Y).
C	3	Stops	Sheet steel	Welded inside front body. Support the thermit can (D).
D	1	Thermit can	Tin	Held in front body (A) by front stops (C) and connecting ring (L). Contains thermit and the igniter can (F).
E	1	Thermit can cover	Tin	Soldered on thermit can (D) after can has been filled. Carries thermit igniter can (F).
F	1	Igniter can	Tin	Soldered inside thermit can cover (E). Contains thermit igniter and black powder.
G	1	Firing tube	Steel	Brazed to cartridge chamber and extends almost to thermit can cover (E). Gives direction to bullet.
H	1	Firing tube sealing disk.	Tin	Soldered over front end of firing tube (G). Prevents entrance of incendiary fluid into firing tube (G).
L	1	Connecting ring	Steel	Connects front and rear bodies.

M	1	Rear body	Sheet steel	Rear portion of bomb body. Contains firing mechanism and incendiary charge (AS).
N	1	Safety wire guide	Sheet steel	Riveted to rear body (M). Supports loop of safety wire (AP) and steadies bomb in trap during flight.
R	1	Rear cap	Sheet steel	Rear end of bomb body. Carries stabilizers (V) and is traversed by release pin (AH).
V	4	Stabilizers	Sheet steel	Welded to rear cap (R) and fastened to rear body (M). Steady bomb in flight after release from the plane.
W	4	Stabilizer lugs	Sheet steel	Riveted and welded to rear body (M). Provide means of fastening stabilizer (V) to rear body (M).
X	4	Stabilizer screws and nuts.	Steel	Fit into holes on stabilizers (V) and stabilizer lugs (W), fastening them together.
Y	1	Supporting mass	Inflammable solidified mass.	Fills all space in nose of bomb under Thermit can (D). Supports thermit can (D).

(b) The Firing Mechanism

AA	1	Cartridge chamber	Steel	Soldered in rear of rear body (M). Carries firing mechanism and cartridge (AT).
AB	1	Locating pin	Steel	Set on rear of cartridge chamber AA Locates rear cap (R).
AD	1	Striker tube	Brass	Screws into recess in cartridge chamber (AA).

SYMBOL	QUANTITY	NAME	MATERIAL	LOCATION AND PURPOSE
AE	1	Striker tube washer	Steel	Fits in recess in cartridge chamber (AA) under striker tube (AD). Secures cartridge (AT) in position.
AF	1	Striker	Steel	Slides in striker tube (AD). On contact fires cartridge (AT).
AG	1	Striker spring	Steel wire	Held in striker tube (AD) under striker (AF). Holds striker (AF) away from cartridge (AT) until contact occurs.
AH	1	Release pin	Cold rolled steel	Held in holes in rear cap (R). Prevents forward movement of striker (AF).
AK	1	Release pin spring	Piano wire	Placed on upper end of release pin (AH) Forces release pin (AH) out of hole in rear cap (R) when the safety wire (AP) is withdrawn.
AL	1	Release pin spring seat.	Steel	Placed on release pin (AH); acts as lower bearing for release pin spring (AK).
AM	1	Release pin washer	Steel	Placed on release pin (AH); acts as bearing for release pin (AH) and as seat for safety wire (AP).
AN	2	Gaskets	Felt	Placed on release pin (AH) over holes in rear cap (R). Soaked in paraffin. Prevent entrance of moisture.
AP	1	Safety wire	Piano wire	Extends from release pin (AH) through safety wire guide. Provides means of actuating release pin (AH).

(c) *The Incendiary and Explosive Materials*

AQ	1	Thermit	Thermit	Held in thermit can (D). Creates intense heat on ignition; burns through rear body (M) and melts and ignites incendiary charge (AS).
AR	1	Thermit Igniter	Igniting composition	Held in thermit igniter can (F). Ignites the thermit.
AS	1	Incendiary charge	Oil emulsion	Fills rear body (M). Is melted and spreads in flames around point of impact.
AT	1	Cartridge	30 cal. U. S.	Secured in cartridge chamber (AA). Bullet opens path for igniting flash of cartridge.
AU	1	Black powder	Black powder	Placed over thermit igniter in igniter can (F). Assists in igniting thermit igniter (AR).

INCENDIARY DROP BOMB, MARK II.

The Incendiary Drop Bomb, Mark II, is intended for use against heavy permanent structures where a high degree of igniting powder is required. It is known as the "intensive" type because its object is to create and concentrate a fire of high temperature in a comparatively small area.

(a) The Body.

The shape and external dimensions of the body are the same as those of the Incendiary Drop Bomb, Mark I. The rear body (M) is made of sheet zinc, .05 of an inch thick, instead of steel; on burning the zinc produces a dense white smoke which serves to conceal the origin of the fire. The front plate (D), firing tube guide (F), the loading tube (K), diaphragm (A), and flash hole (AC), shown in Plate I have been omitted and the firing tube (G) has been shortened. No powder charge is carried in the nose or rear of the bomb.

The *Thermit Can* (D), held in the front body, is a truncated cone of 28-gauge tin plate 5.7 inches in diameter at its top, 4 inches in diameter at its bottom, and 7.8 inches high. A hole .875 of an inch in diameter is drilled in the center of the *Cover* (E), which is ¼ of an inch high, and closely fits the top of the can. Inside the cover (E), and immediately over the hole is soldered the small *Igniter Can* (F) for the thermit igniter. This tin receptacle is made 1 inch high and 1¼ inches in diameter with a cover fitting securely over the top. The bottom of the thermit can (D) rests on the three stops (C) set in the nose of the front body (A). The cover (E) of the thermit can (D) is seated on the projecting shoulder of the connecting ring (L). The nose of the bomb is filled with a solidified inflammable mass (Y) up to the level of the stops (C) to provide additional support for the thermit can (D).

(b) The Firing Mechanism.

The firing mechanism is the same as that used in the Incendiary Drop Bomb, Mark I, except that the firing tube (G) has been shortened to 16 3/16 inches.

(c) Incendiary and Explosive Materials.

The *Thermit* (AQ) is contained in the thermit can (D). The *Thermit Igniter* is contained in the igniter can (F).

On the igniting mixture is a ⅛ of an inch layer of *Black Powder* (AU). As the igniter can (F) is attached inside the cover (E) of the thermit can (D), the igniting mixture is surrounded by the thermit (AQ) when the cover of the larger can is put in place.

The *Incendiary Charge* (AS) consists of a specially prepared oil emulsion which fills the rear body.

The *Cartridge* (AT) is a 30-caliber U. S. Service Cartridge.

Operation of the Bomb.

Upon impact of the bomb, the cartridge (AT) is fired, and the bullet passes up the firing tube (G) thus opening the igniter receptacle (F) to the flash of the discharge. With the aid of the black powder (AU) this preparation (AR) is ignited, and in turn sets fire to the thermit (AQ). An intense heat is immediately produced, and the walls of the rear body (M) are burned through; the vaporized oil is forced out through these orifices and ignited. As the body is consumed the oil emulsion (AS) is melted and spreads in flames over the adjacent surfaces.

NOTE.—The exterior surfaces of the Mark II Incendiary Bomb are painted with an olive drab paint. A black band 1 inch wide, is painted around the body to indicate the center of gravity; on this band, in white, are painted the designation of the bomb, the manufacturer's name, the lot number, the serial number, and the inspector's initials. At a point three inches from the top, *two red bands*, 1 inch wide and two inches apart, are painted around the nose to further indicate the type of bomb.