

MODEL A-20A ATTACK BOMBER AIRPLANE

MANUFACTURED BY

DOUGLAS AIRCRAFT CO., INC.

SANTA MONICA, CALIF.



**GUNNER'S COMPARTMENT
TECH MANUAL PAGES
(PDF)**

DON'T WASTE AMMUNITION!



SECTION V REAR GUNNER'S COMPARTMENT

1. GENERAL DESCRIPTION.

a. Access to Gunner's Compartment.—Through door in the floor of the compartment. Turn latch handle and push upward.

b. Emergency Access from Outside.—Tear open a fabric patch over the access door of the upper enclosure. Unlatch, allow enclosure to drop down, then push forward. The right upper latch must never be locked unless it is desired to lock the entire compartment.

c. Emergency Exit.—May be through the lower door or upper enclosure.

(1) *Lower Door.*—Turn latch handle. Lift up on door.

(2) *Upper Enclosure.*—Unlatch upper left latch and upper right latch. Allow forward end to drop down, then slide door forward as far as it will go.

d. Armor Protection.—Armor plating is installed, affording protection for the gunner from fire from the angles as illustrated (Figure 39).

2. ARMAMENT.

a. Description.

(1) *Nacelle Guns.*

(a) *General.*—Two fixed adjustable type M-2 .30 caliber machine guns are mounted, one in each nacelle, for rearward fire. They are adjustable from one degree (1°) below the level flight path to two degrees (2°) above it, and from parallel to convergence 100 yards of the tail.

(b) *Ammunition.*—1,000 rounds per gun.

(c) *Gun Charging.*—Guns are charged manually on the ground before flight.

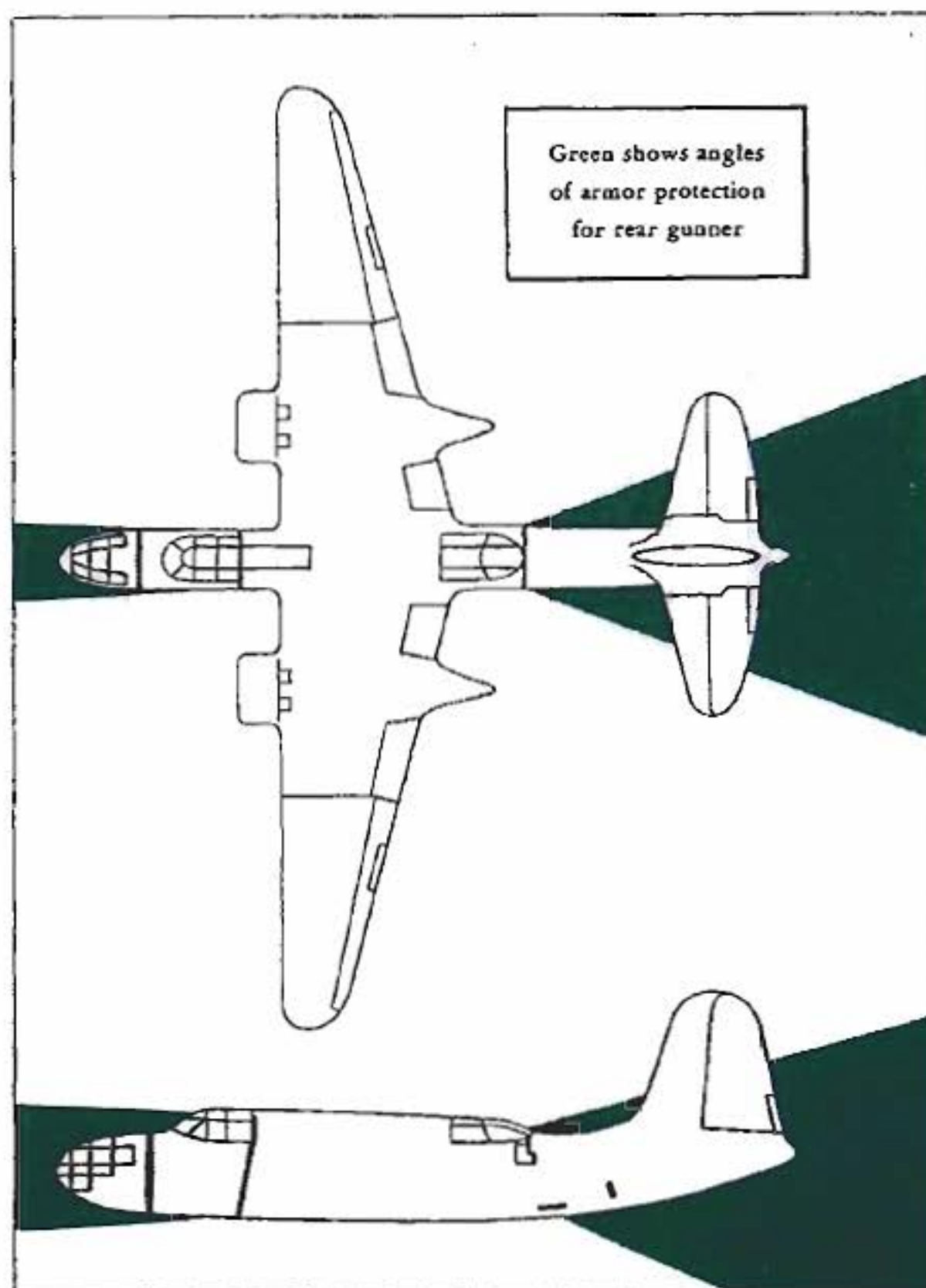


Figure 39—Rear Gunner's Armor Diagram

(d) *Firing Controls.*—The foot control (Figure 40) is used when the gunner is in the upper firing position. The hand control is used when the gunner is in the lower firing position.

(e) *Safety Switch.*—Located next to the hydraulic gun charger.

(2) Upper Flexible Gun.

(a) *General.*—Flexible type M-2 .50 caliber machine gun, mounted on an adapter for protection of the upper rear sector. The assembly operates on a straight track, around the upper aft rim of the gunner's compartment (Figure 41).

(b) Firing control is conventional.

(c) *Ammunition.*—Ammunition box holders are provided on both sides of the compartment for carrying 200 rounds as overload.

(d) *Stowage.*—The gun is stowed in a fore and aft position, in a trough along the centerline of the airplane (Figure 41). The gun stowage doors are operated by a crank (Figure 40) on the left side and attached to the gunner's step. This crank is operated by the gunner's right foot when facing aft.

(3) Lower Flexible Gun.

(a) *General.*—Type M-2 .30 caliber flexible machine gun mounted on a support arm, pivotable about a point near the floor, on the left side of the compartment. This arm, when lowered and latched, permits the gun to be fired through the gunner's access door, downward and rearward (Figure 42).

(b) Firing control is conventional.

(c) *Ammunition.*—Box holders are installed in the left side of the compartment for carrying 500 rounds.

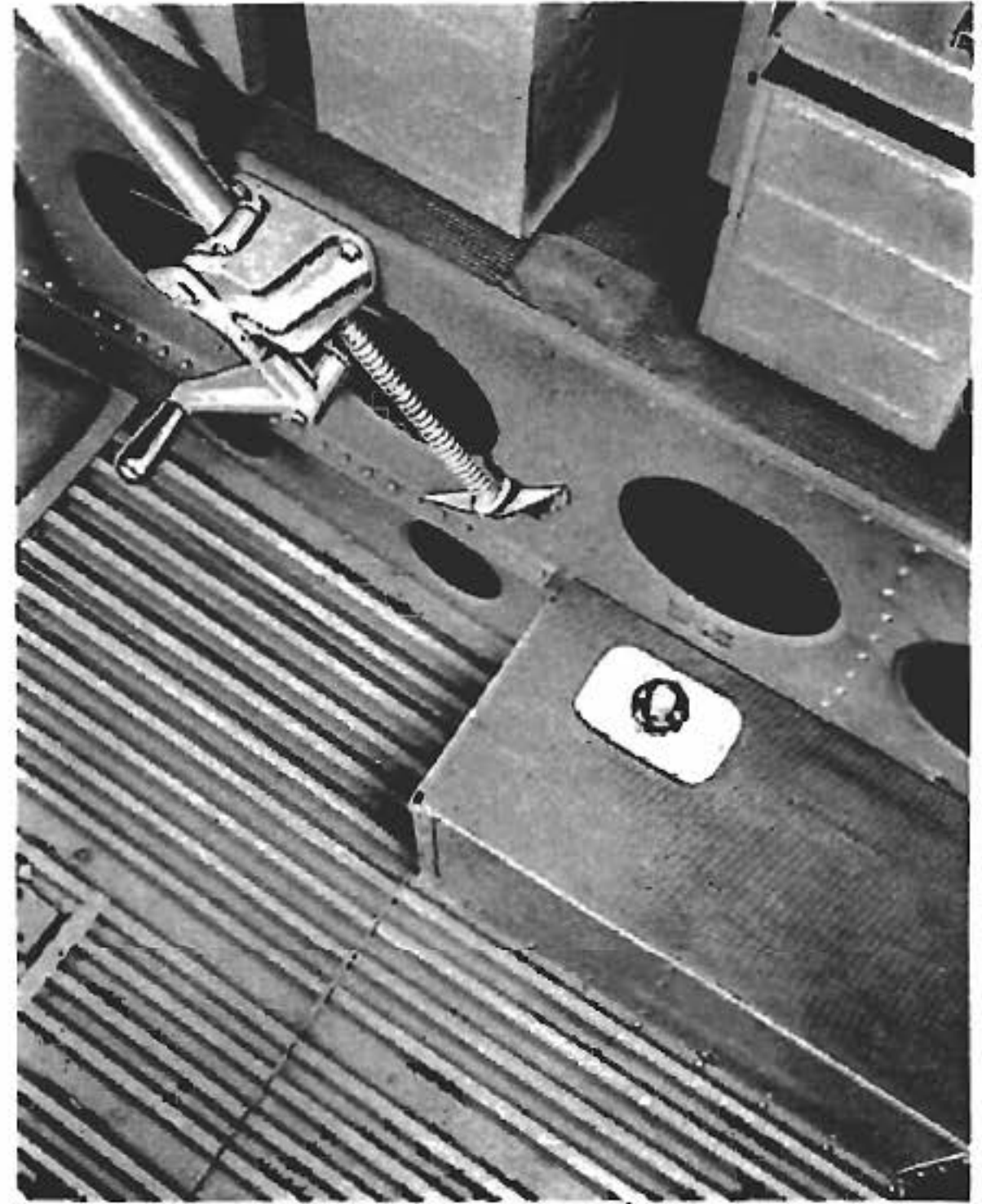


Figure 40—Foot Firing Control

(d) *Stowage.*—To stow the gun, swing support arm upward and latch to left side of compartment.

(4) Gun Cameras.

(a) *Upper Gun Camera.*—The G.S.A.P. type N-1 gun camera is mounted to a bracket which mounts on the top side of the flexible gun and operates by controls in conjunction with the gun.

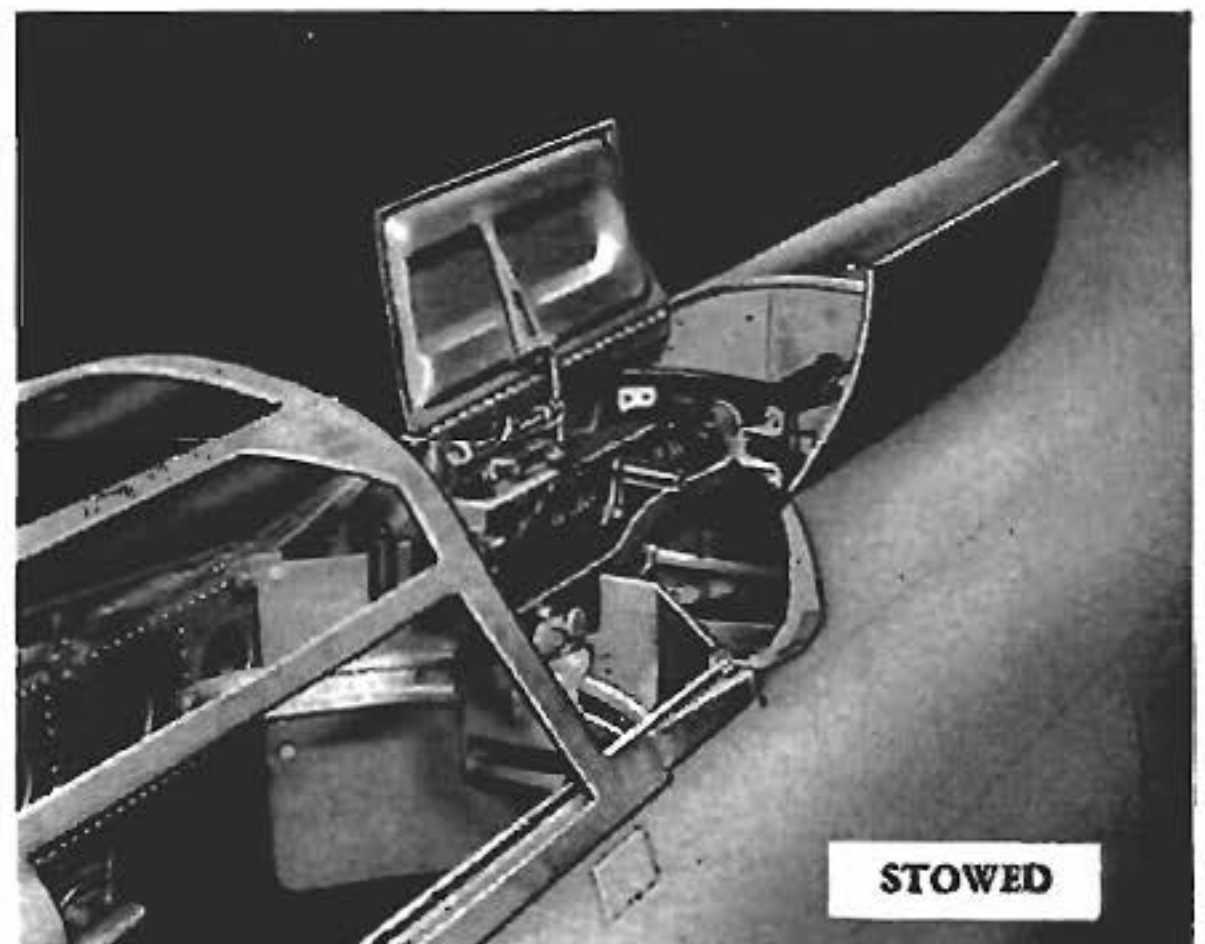


Figure 41—Upper Flexible Gun in Firing and Stowed Positions

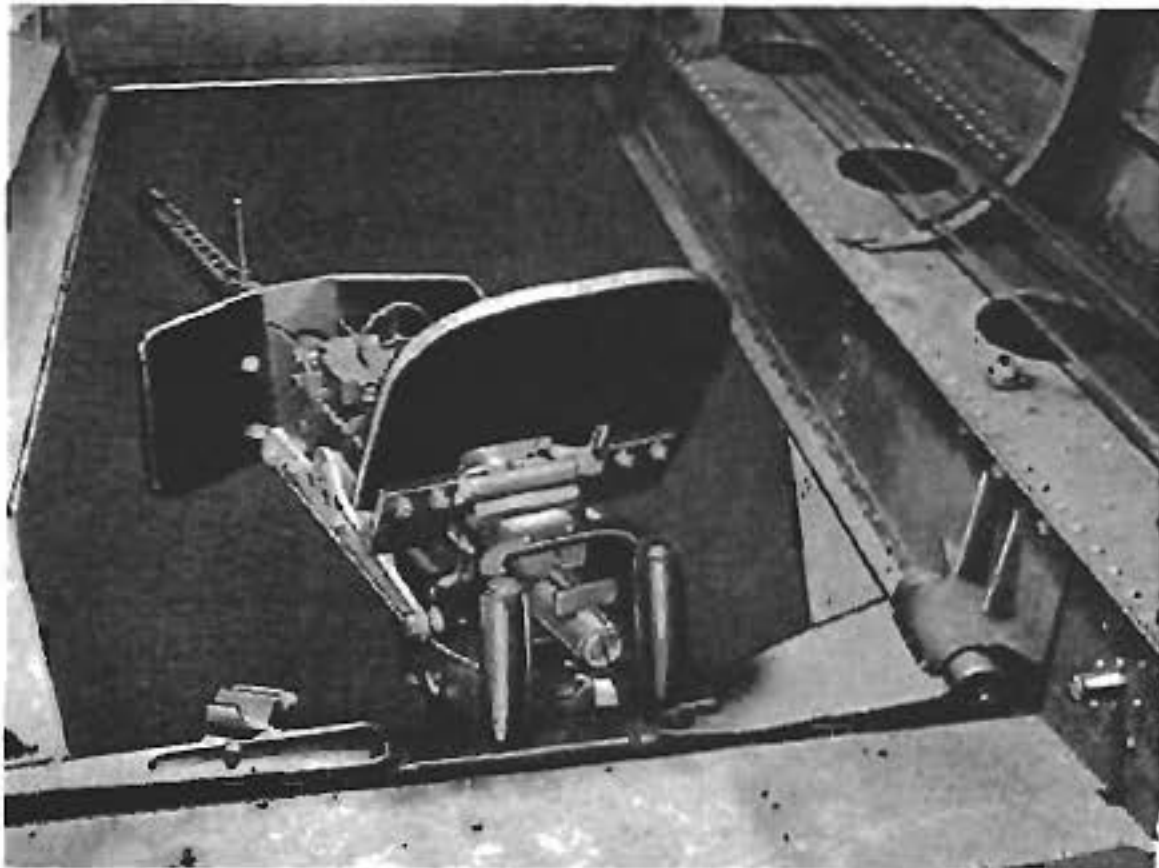


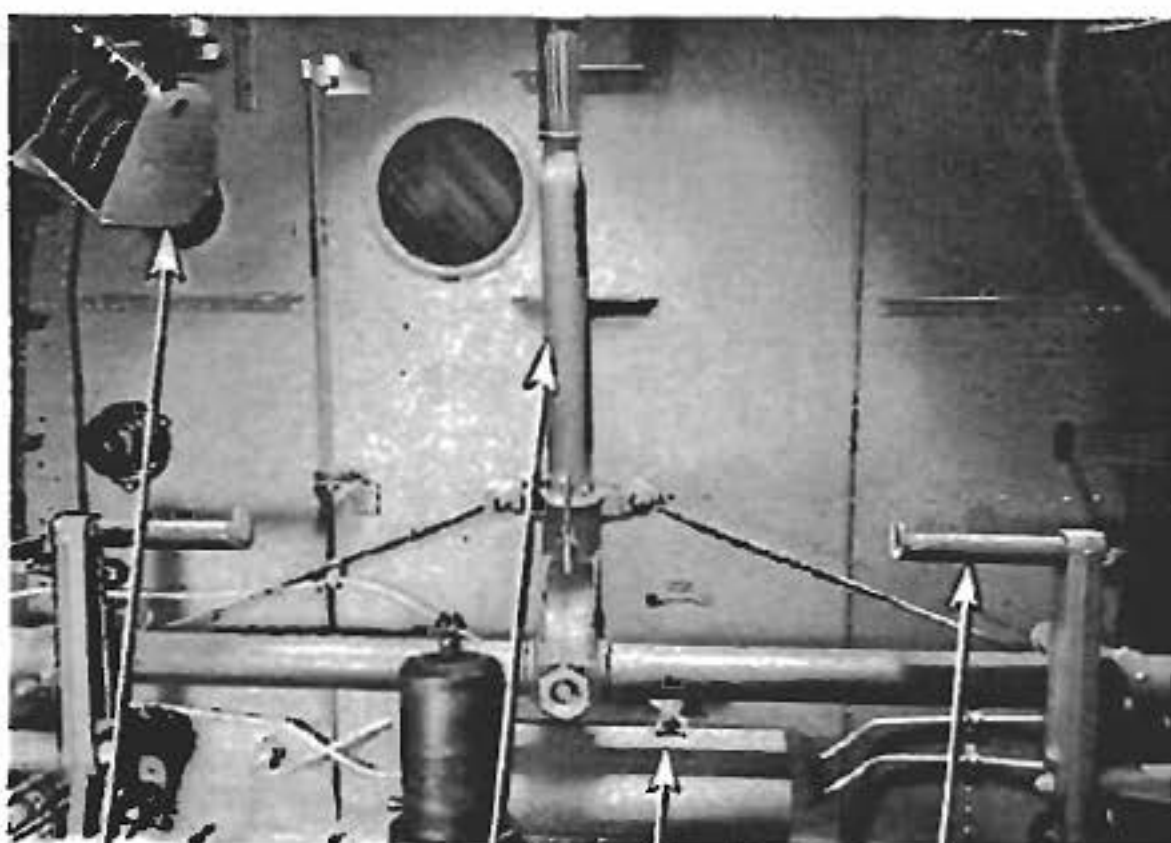
Figure 42—Lower Rear Gun in Firing Position

(b) *Lower Gun Camera.*—This G.S.A.P. type N-1 gun camera is clamped around the jacket of the lower flexible gun and operates by controls in conjunction with the gun.

3. CONTROLS AND OPERATIONAL EQUIPMENT.

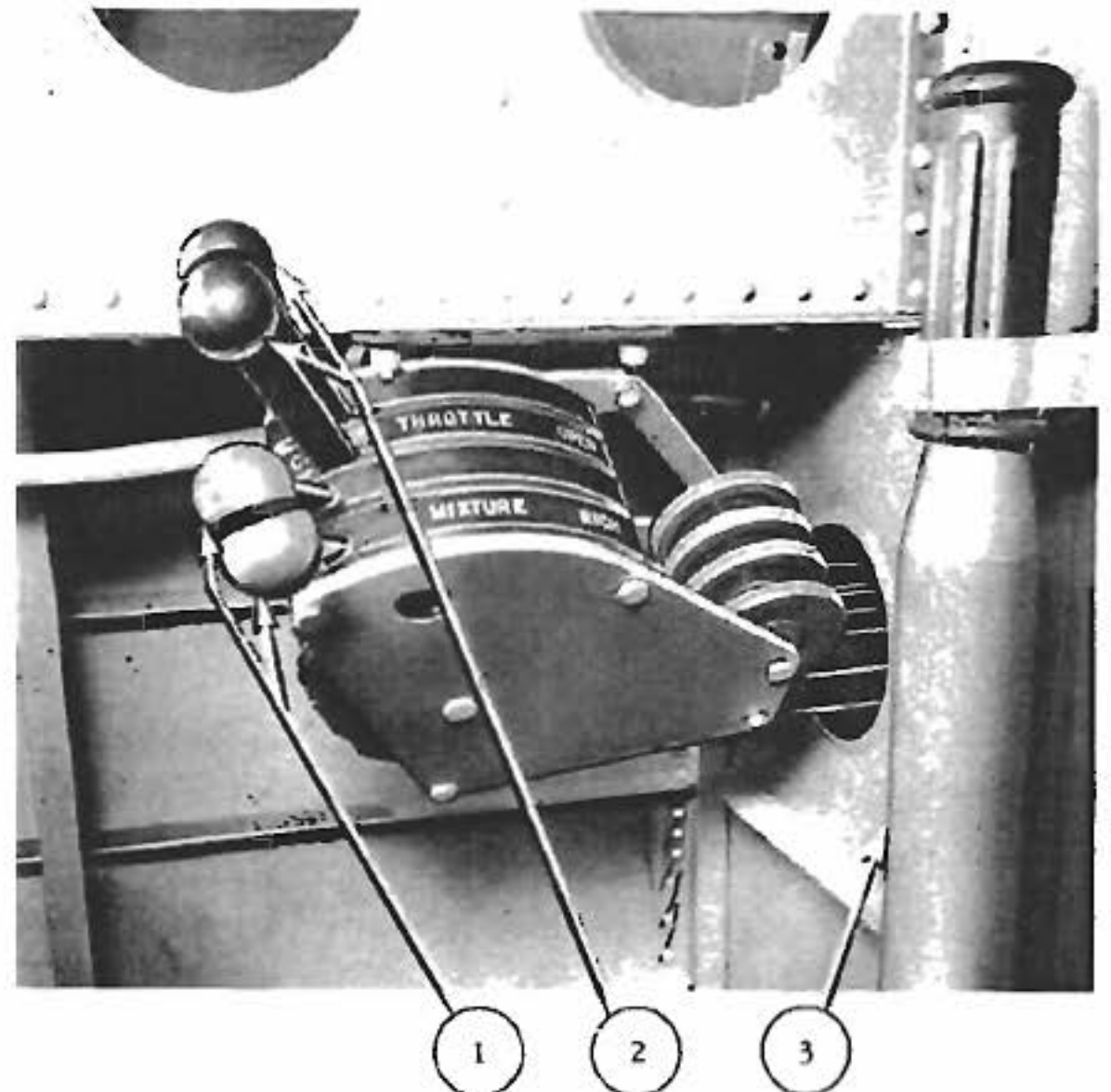
a. *Flight Controls* (Figure 43).—These are for emergency use and comprise a standard stick and rudder group, the stick remaining in a stowed position except when in use. Throttle and mixture controls also are provided for the gunners.

★ *NOTE:* Mixture control will place mixture in Auto-Rich (full forward) but will not return control to any leaner mixture.



- | | | | |
|----------------------|---|-----------------|---|
| 1 | 2 | 3 | 4 |
| 1. Throttle quadrant | | 3. Oxygen valve | |
| 2. Control stick | | 4. Rudder pedal | |

Figure 43—Rear Gunner's Flight Controls



- | | | |
|--------------------|---------------------|------------------|
| 1. Mixture control | 2. Throttle control | 3. Control stick |
|--------------------|---------------------|------------------|

Figure 44—Rear Gunner's Throttle Quadrant

b. *Seat.*—Has a vertical adjustment on left side of mounting post; swivel adjustment just below the right side of seat. Seat is provided with a life preserver cushion.

c. *Suit Heat Receptacle.*—Provision for electric suit heat (Figure 45-12).

d. *Lights.*—Panel light and dome light switches are located on the electrical panel (Figure 45).

e. *Warning Bell.*—Left-hand side of forward wall.

f. *Oxygen.*

(1) *Airplane.*—Three type F-1 low pressure oxygen cylinders are installed in gunner's compartment. Flow of oxygen to each crew member's station is controlled by a valve (Figure 43-3) which is to be turned on by gunner before flight is begun, and turned off when flight is completed.

(2) *Gunner's Compartment.*—The gunner's station is provided with a type A-9 low pressure oxygen regulator (Figure 46). The gunner shall check for proper connection of his oxygen mask before flight is made.

g. *Tow Target.*—Basic mounting provisions have been made for the installation of one Type C-5 tow target reel at approximately Sta. 265. An electric motor is installed on the left side of the reel for operation of the tow target reel. The clutch operates through a solenoid from a switch in the gunner's compartment. The reel capacity is

3000 feet of cable. The tow target is released through the gunner's access door.

b. Interphone.—On right side of compartment. The interphone jack box has four positions marked on its face:

(1) *R-1.*—This position allows gunner to receive or transmit over the command set.

(2) *R-2.*—This position allows gunner to receive over the compass equipment (if so equipped).

(3) *INT.*—This position allows gunner to communicate with any other crew member who is also set to INT.

(4) *IR.*—Gunner may call any other crew member regardless of position of their interphone jack box selector switches.

i. Command Set SCR-274-N.—Modified A-20B's use a single receiver control box in the pilot's cockpit and a

control box for two receivers in the observer's compartment, making the three receivers controlled by two different crew members. The command set is designed for short range operation and is used for communicating with nearby aircraft for tactical purposes and with ground stations for navigational and traffic control purposes. Access to the receiver channels by either pilot or observer can be had by placing the interphone jack box switch in the R-1 position.

(1) *Receiving.*

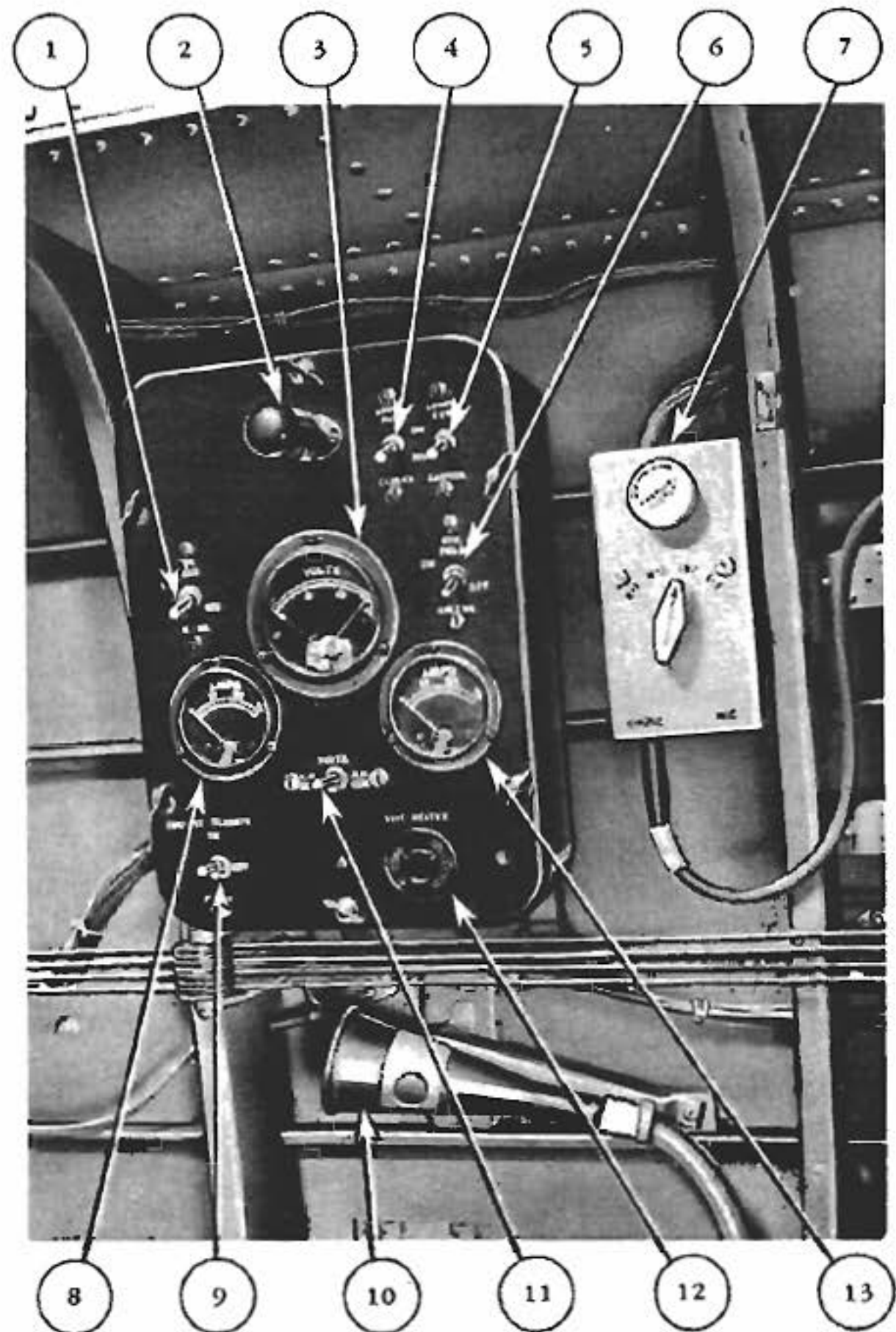
(a) Place interphone jack box selector switch (Figure 45-7) in "R-1" position.

(b) Reception of a signal of a specific frequency, as indicated on the dial, is accomplished by the use of the section of the receiver control box which controls the particular receiver involved.

(c) Turn on desired receiver by placing switch (Figure 12-6) in the "CW" or "MCW" position. These

1. Generator "OFF-ON" switches (2)
2. Panel light
3. Voltmeter
4. Upper gun camera switch
5. Lower gun camera switch
6. Generator "OFF-ON" switches (2)
7. Interphone jack box
8. Ammeters (2)
9. Panel light switch
10. Relief tube
11. Voltmeter selector switch
12. Suit heat receptacle
13. Ammeters (2)

Figure 45—Rear Gunner's Switch Panel



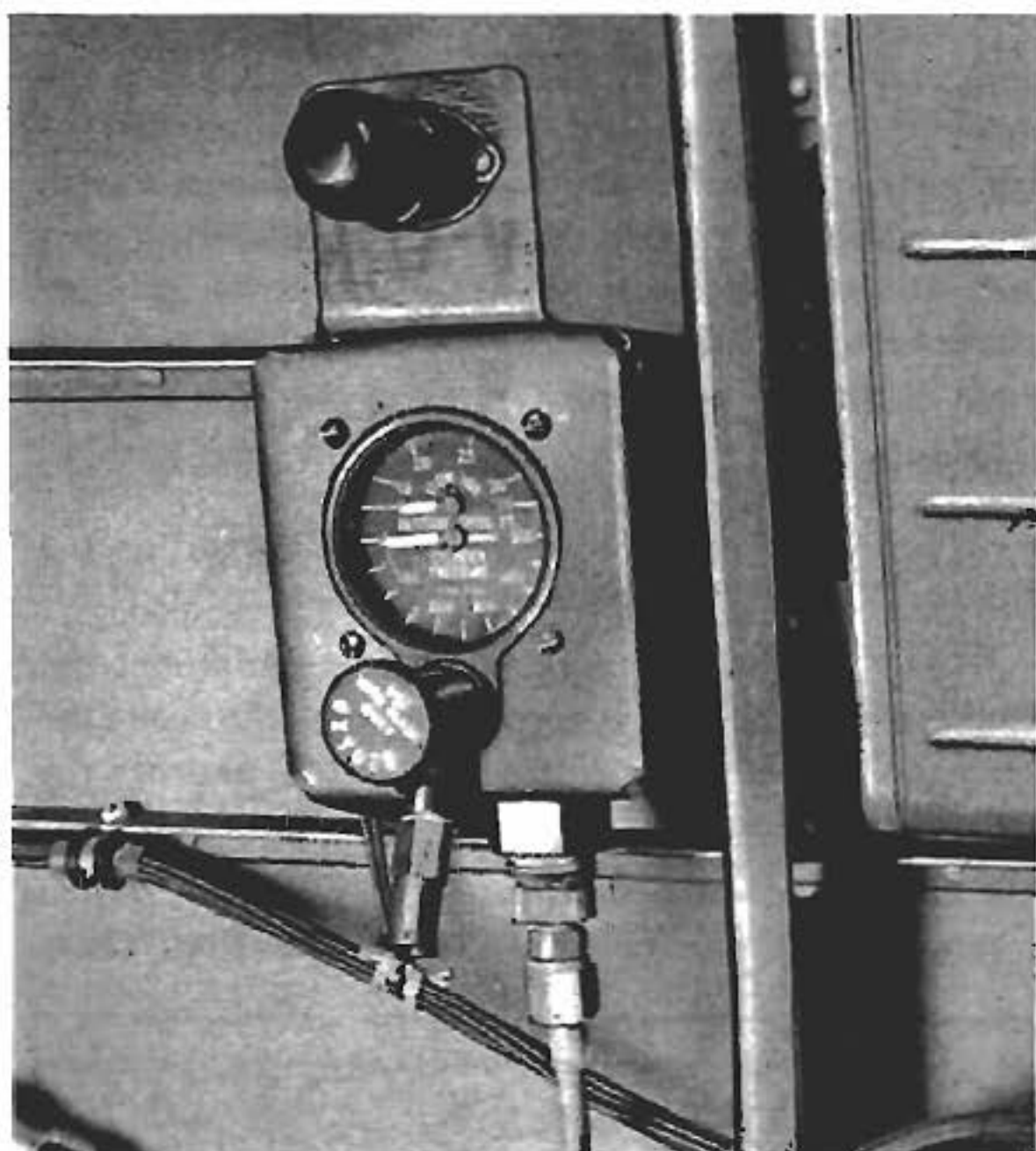


Figure 46—Rear Gunner's Oxygen Regulator

two positions are "ON" positions and indicate the type of signal which is to be received.

(d) Leave the "A-B" switch (Figure 12-4) in the "A" position at all times. It need not be turned off when the receivers are turned off.

★ **NOTE:** When tuning a receiver for a definite frequency, always turn the dial a little to each side of the frequency calibration mark to find the point where the signal is the strongest.

(2) *Transmitting.*

(a) Before transmitting, adjust receiver to the same frequency as the station with which you desire to talk and listen in to be sure that the operator is not talking to someone else. If the station is transmitting, take advantage of the opportunity to accurately set the receiver on the assigned frequency and, when the other operator is finished, proceed with your transmission.

(b) Place transmitter master switch in "ON" position.

(c) Select type of transmission desired with switch marked "TONE-CW-VOICE" (Figure 12-9).

1. With the switch in the "VOICE" position, voice will be transmitted when the push-to-talk button is pressed.

2. With the switch in the "CW" position, a continuous wave, or unmodulated signal, may be transmitted, and the microphone is inoperative.

3. With the switch in the "TONE" position, a modulated tone signal may be transmitted and the microphone is inoperative.

★ **NOTE:** Greatest effective range can be obtained on "CW." Range is most limited when operating on "VOICE." Transmitting in both the "CW" and tone positions is done by a key located on the top of the transmitter control box.

j. *Generator Controls.*—On earlier models the generator control panel is on the right wall of the gunner's compartment.

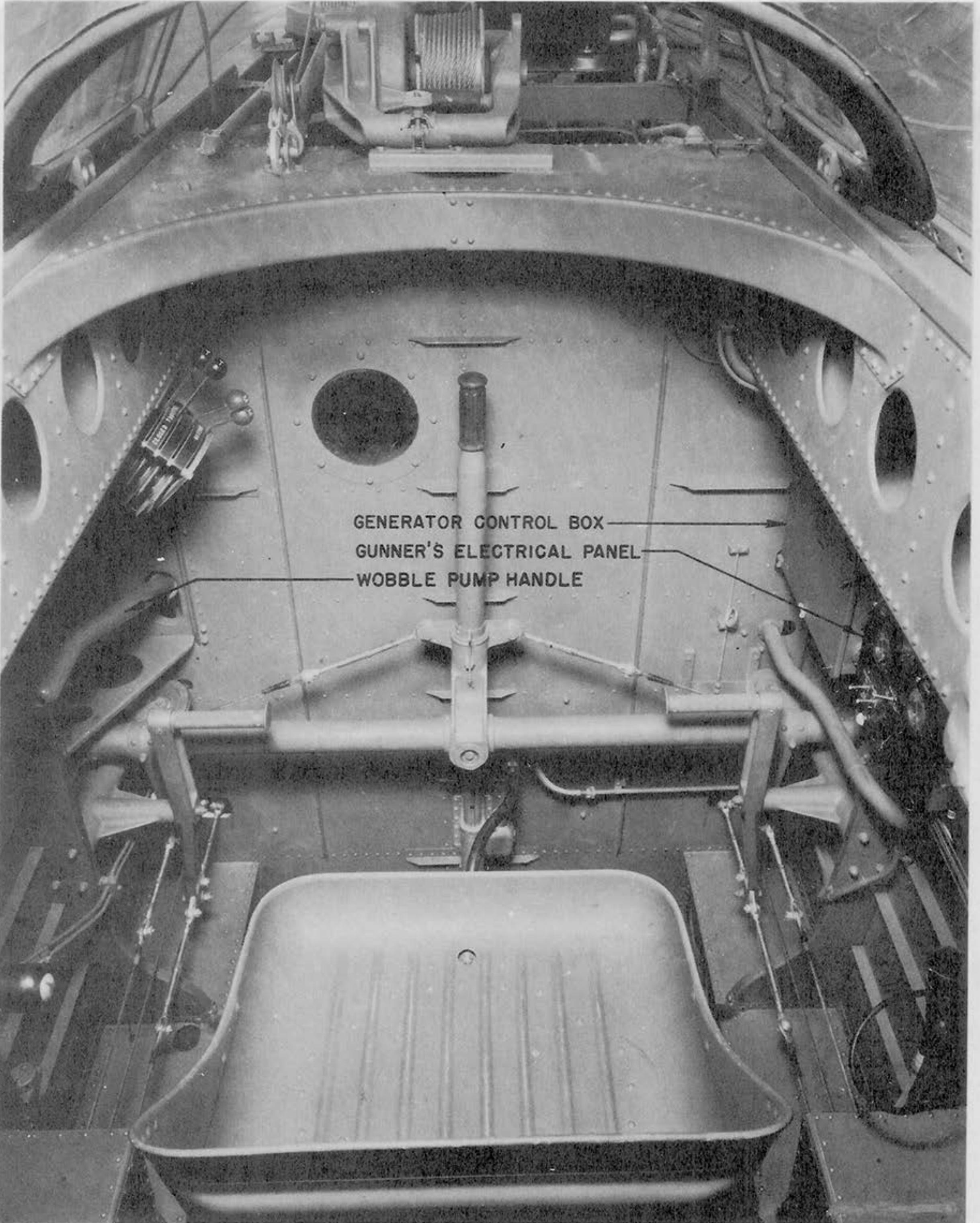
4. **OPERATION.**

a. *On Entering Gunner's Compartment.*

- (1) Check ammunition stowage.
- (2) Control stick stowed (Figure 43-2).
- (3) Oxygen cylinder valve (Figure 43-3) "ON."
- (4) Check oxygen mask fittings on regulator (Figure 46).
- (5) Check panel light (Figure 45-9).
- (6) Generator switches "ON" (Figure 6-1, 3, behind pilot's head or Figure 45-1, 6, in gunner's compartment).
- (7) Test both generators (Figure 6-1, 3), behind pilot's head or Figure 45-1, 6, in gunner's compartment).

b. *On Leaving Gunner's Compartment.*

- (1) Generator switches "OFF" (Figure 6-1, 3, behind pilot's head or Figure 45-1, 6, in gunner's compartment).
- (2) Flexible guns stowed.
- (3) Oxygen cylinder valve (Figure 43-3) "OFF."
- (4) All lights off.

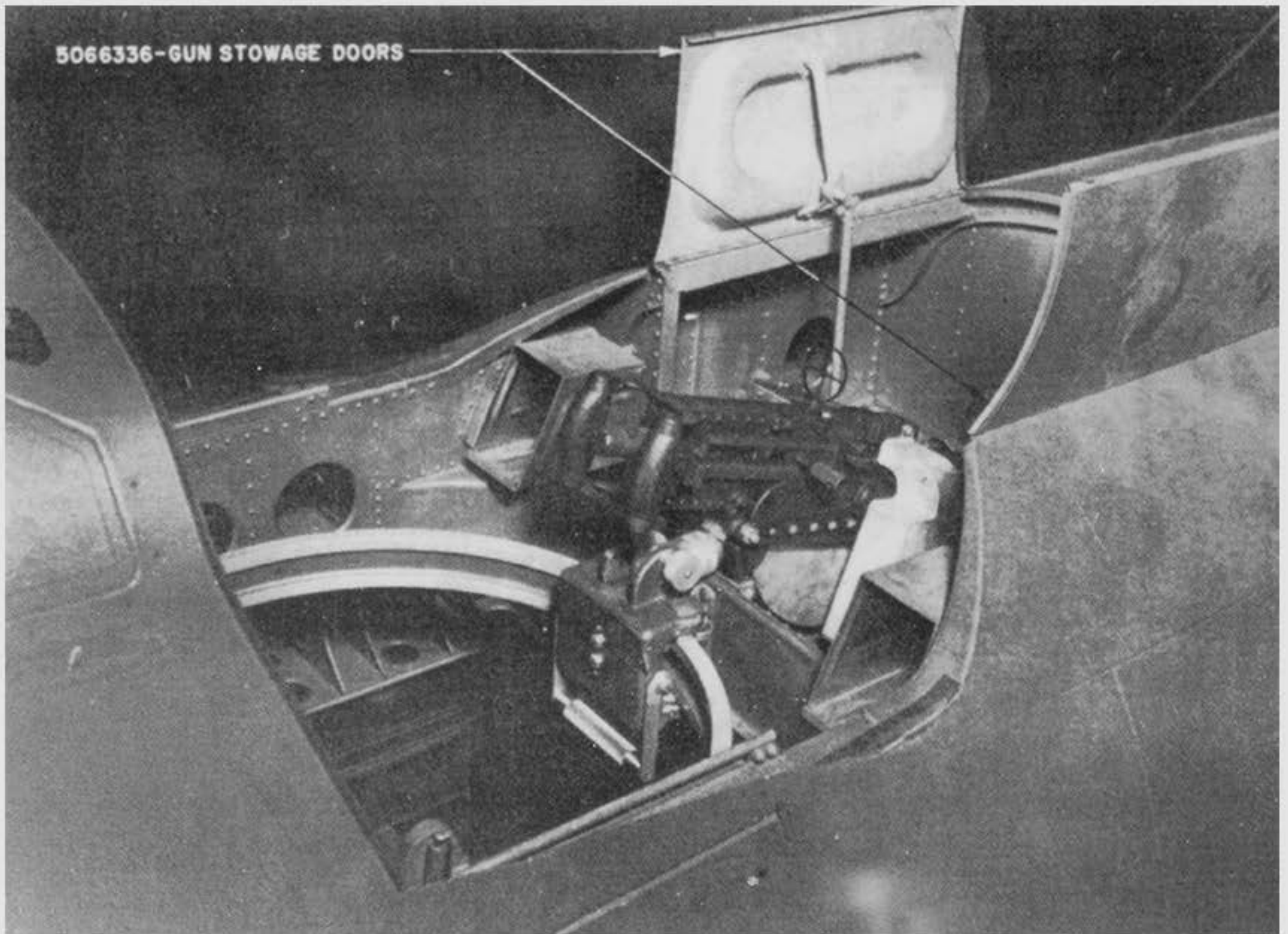


GENERATOR CONTROL BOX
GUNNER'S ELECTRICAL PANEL
WOBBLE PUMP HANDLE

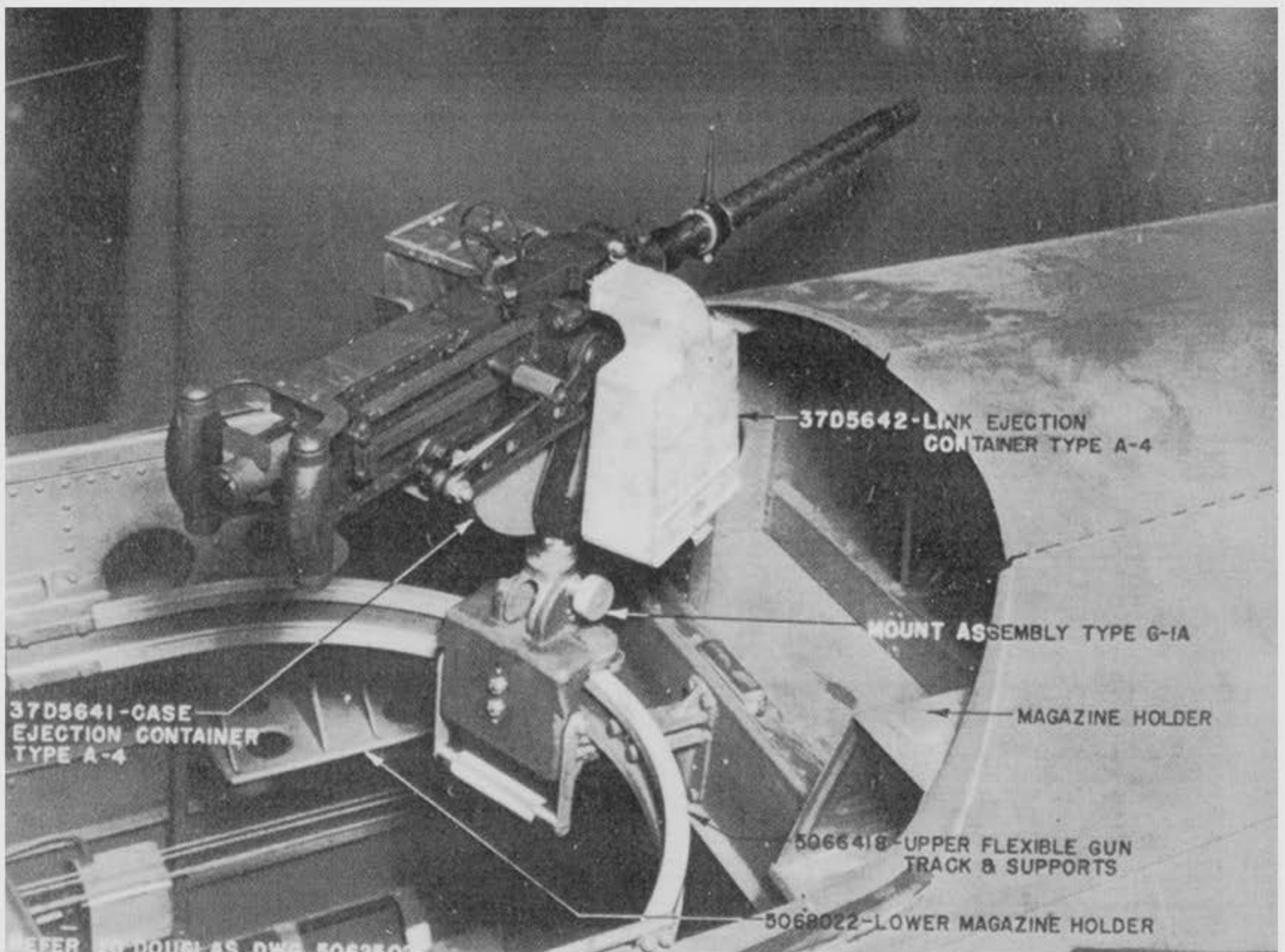
FIG. 8 - GUNNER'S EMERGENCY CONTROLS

JOINTOS-ENOS GNA JENAS TRENUNTERI. FRENIGRABNOG - 0 019

RESTRICTED



5066336-GUN STORAGE DOORS



37D5641-CASE
EJECTION CONTAINER
TYPE A-4

37D5642-LINK EJECTION
CONTAINER TYPE A-4

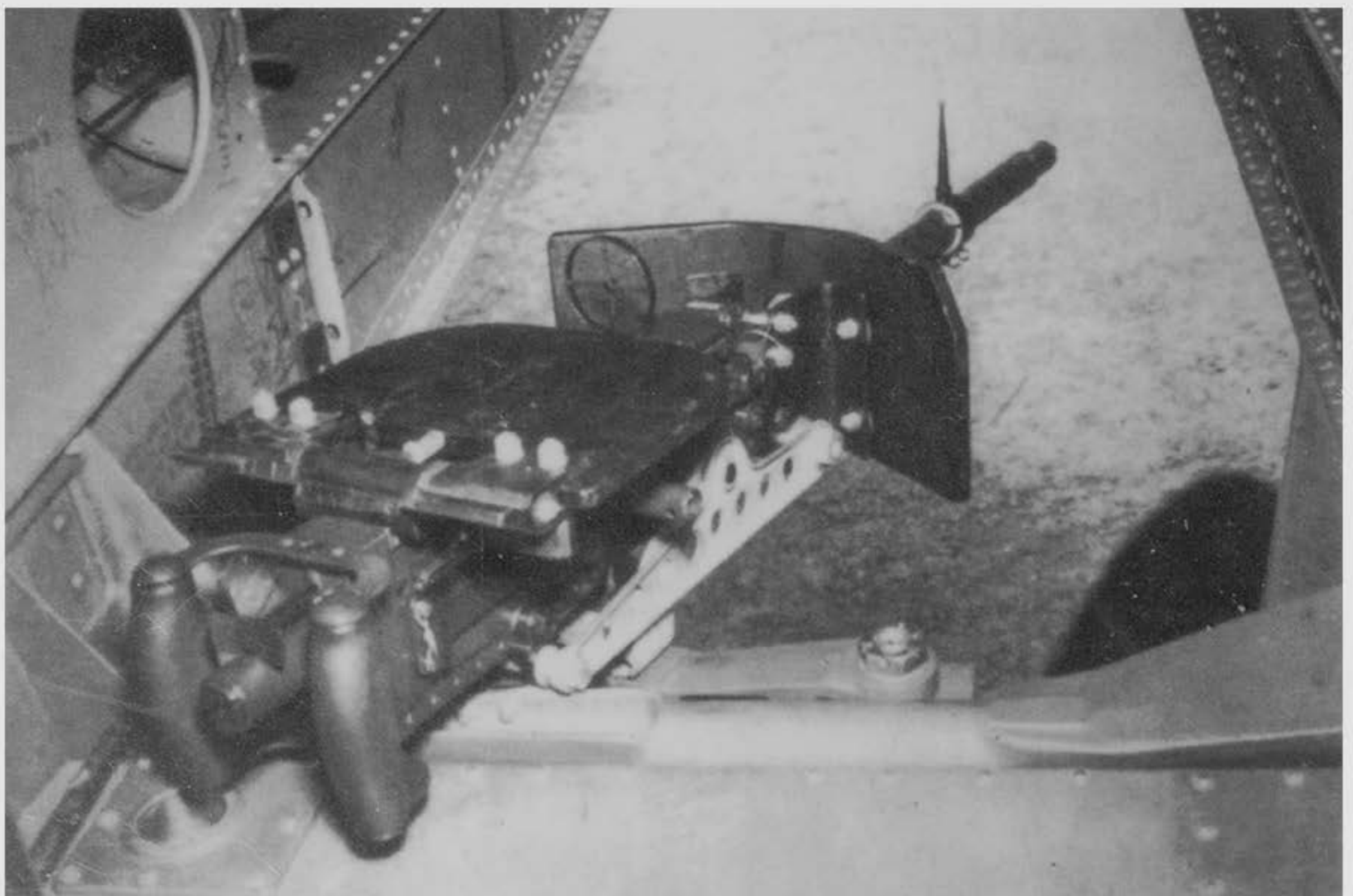
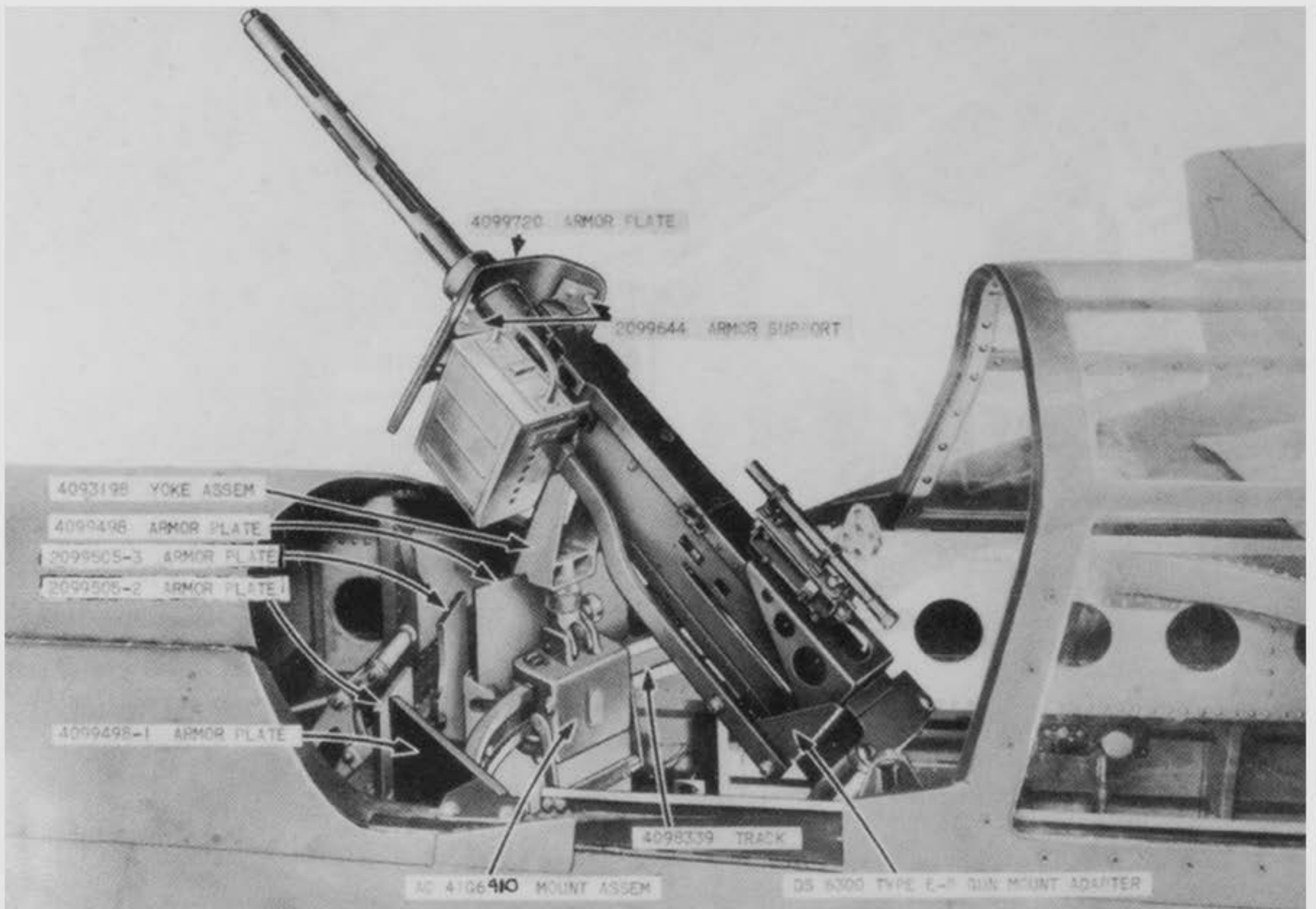
MOUNT ASSEMBLY TYPE G-1A

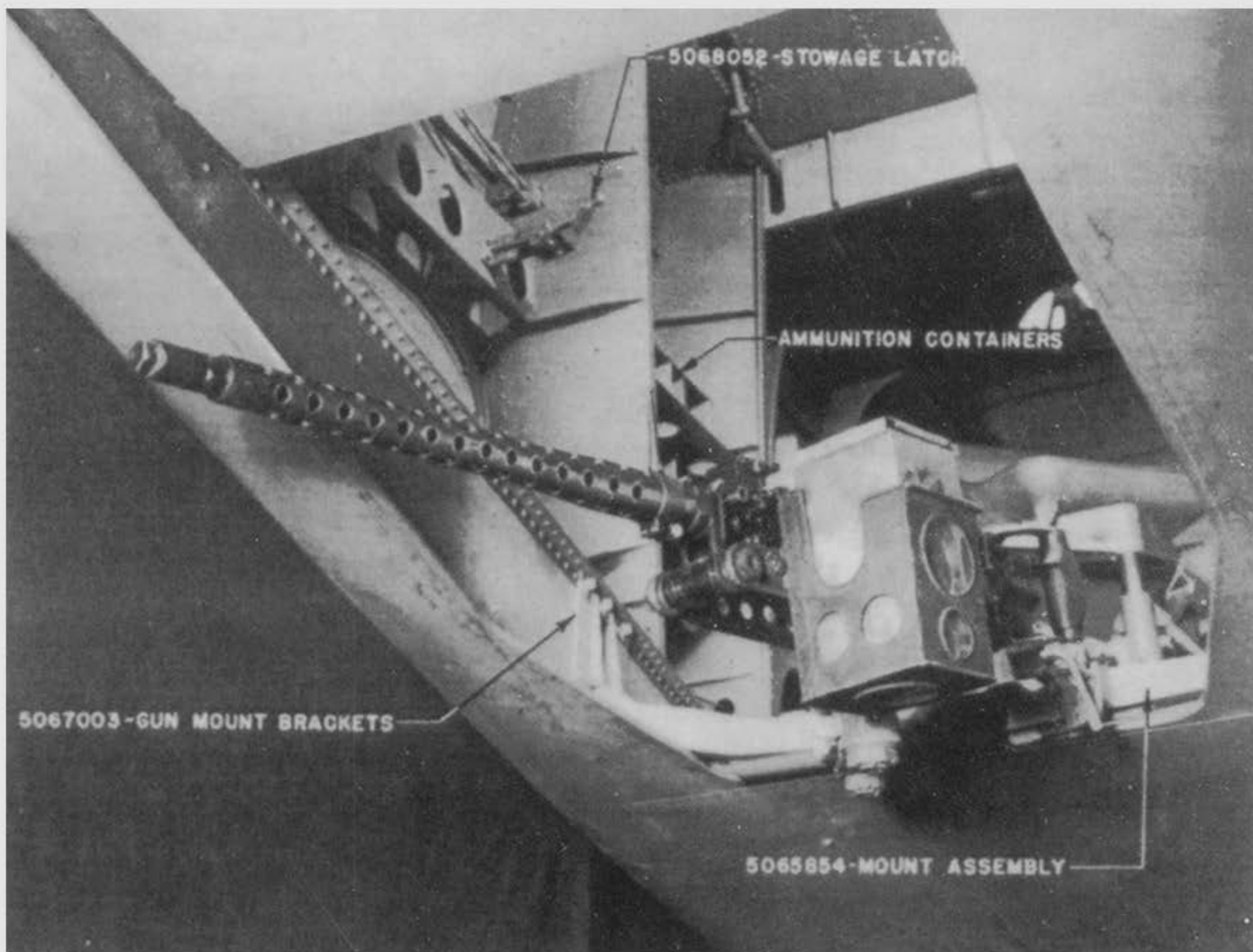
MAGAZINE HOLDER

5066418-UPPER FLEXIBLE GUN
TRACK & SUPPORTS

5068022-LOWER MAGAZINE HOLDER

REFER TO DRAWING AS DWG 5062506





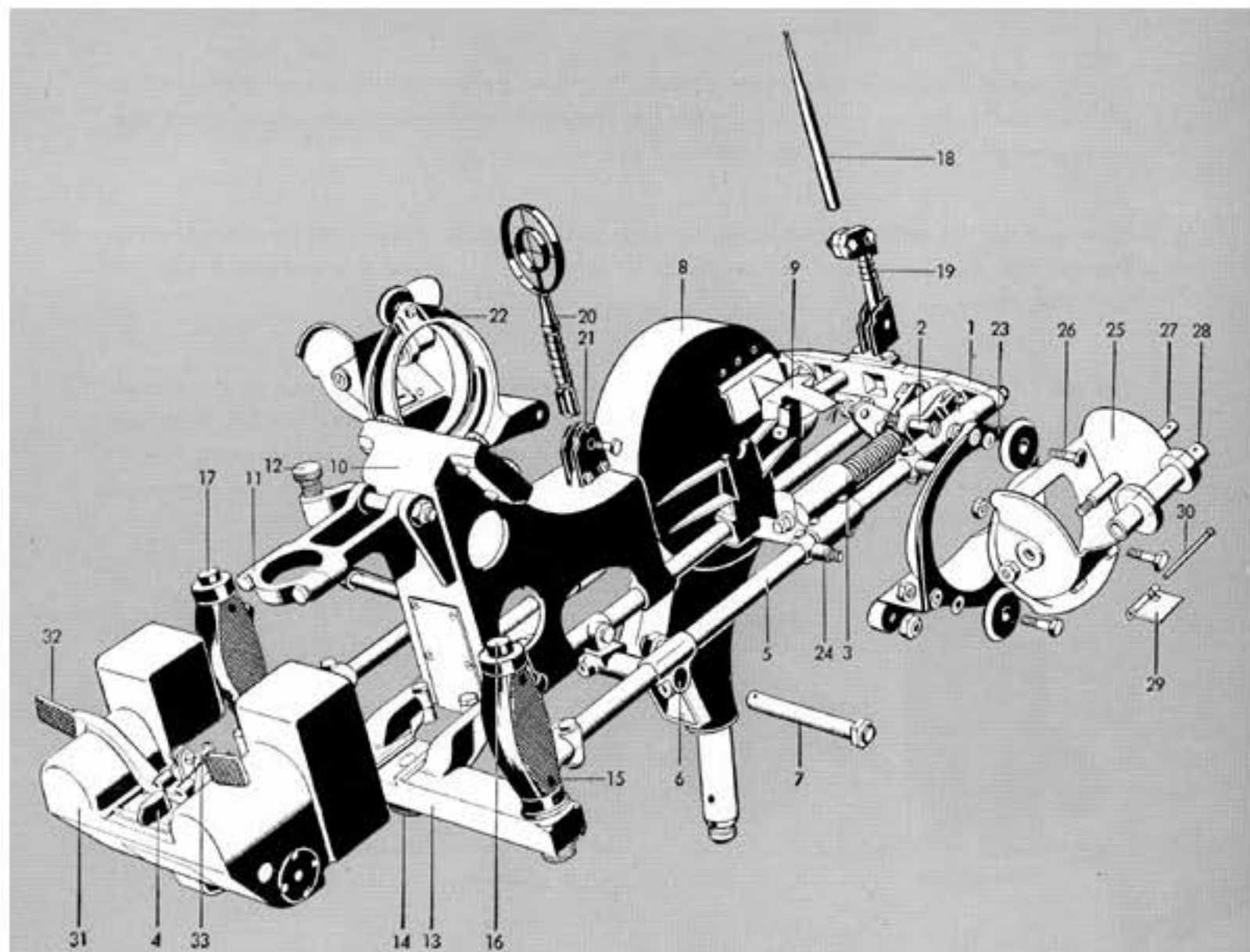


LIFE









Parts of the Mark 2 Mod 3

- | | |
|--|---------------------------------------|
| 1 FRONT SUPPORT | 18 FORE POST |
| 2 FRONT MOUNTING BOLT | 19 FORE POST BRACKET ASSEMBLY |
| 3 PNEUMATIC SHOCK ABSORBER UNITS | 20 RINGSIGHT |
| 4 PISTON RODS | 21 RINGSIGHT BRACKET ASSEMBLY |
| 5 BEARER BARS | 22 CONTINUOUS FEED UNIT |
| 6 REAR MOUNTING SLIDE | 23 CONTINUOUS FEED UNIT GUIDE |
| 7 REAR MOUNTING BOLT | 24 CONTINUOUS FEED UNIT MOUNTING STUD |
| 8 LINK EJECTION CHUTE | 25 CHUTE AND ROLLER UNIT |
| 9 LINK DEFLECTORS | 26 ECCENTRIC BOLT |
| 10 ARMOR PLATE BRACKET | 27 AMMUNITION ROLLER SHAFT |
| 11 REFLECTOR SIGHT BRACKET | 28 AMMUNITION ROLLER |
| 12 REFLECTOR SIGHT SUPPORT ADJUSTMENT ASSEMBLY | 29 CONTINUOUS FEED PAWL |
| 13 BACK GUARD SUPPORT | 30 CONTINUOUS FEED PAWL PIN |
| 14 KNURLED SET SCREW | 31 BACK GUARD |
| 15 HAND GRIPS | 32 TRIGGER |
| 16 CAMERA SWITCH | 33 TRIGGER ADJUSTING SCREW |
| 17 MICROPHONE SWITCH | 34 SAFETY |

