PART 4 : SECTION 1

CHAPTER 2

GUNS AND ROCKETS

GUNS

1. Three types of aircraft gun are currently in general service: ·5-in. Browning, 20-mm. Hispano, and 30-mm. Aden.

·5-in. Browning Gun

2. The ·5-in. Browning gun (Fig. 1) is recoil operated. Its rate of fire is 650 to 750 rounds per minute with a muzzle velocity of 2,840 feet per second. Ammunition is :—

(*a*) Ball.

(*b*) Armour-Piercing/Incendiary (A.P.I.).

3. It is used both as defensive and offensive armament. Very close range shooting is required to produce lethal structural damage with ball ammunition owing to the increased toughness of aircraft construction, and the use of less volatile fuel and more efficient anti-fire methods (gas purging of fuel tanks, etc.) greatly reduce the effectiveness of incendiary ammunition.

20-mm. Hispano Gun

4. The 20-mm. Hispano gun (Fig. 2) is gas and recoil operated, Its rate of fire is 600 to 640 rounds per minute with a muzzle velocity of 2,800 feet per second. Ammunition available is :—

(*a*) Ball.

(*b*) High Explosive/Incendiary (H.E.I.).

(*c*) Semi-Armour-Piercing/Incendiary (S.A.P.I.)

5. It is used as defensive and offensive armament, but is primarily an offensive weapon. Its hitting power is greater than that of the ·5-in. Browning, but lethal damage to modern bombers can only be inflicted at short range which is well within the range of return fire. It is very effective against fighter aircraft.

6. Considerable damage can be inflicted on ground targets such as fuel dumps, lightly armoured vehicles, parked aircraft, electronic equipment, river craft, and other soft-skinned targets. Accuracy of fire and the large number of strikes make the 20-mm. Hispano an effective air-to-ground weapon.

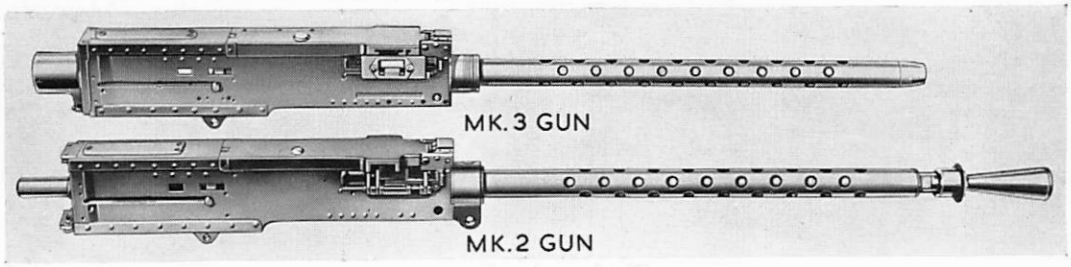

Fig. 1. ·5-in. Browning Gun.

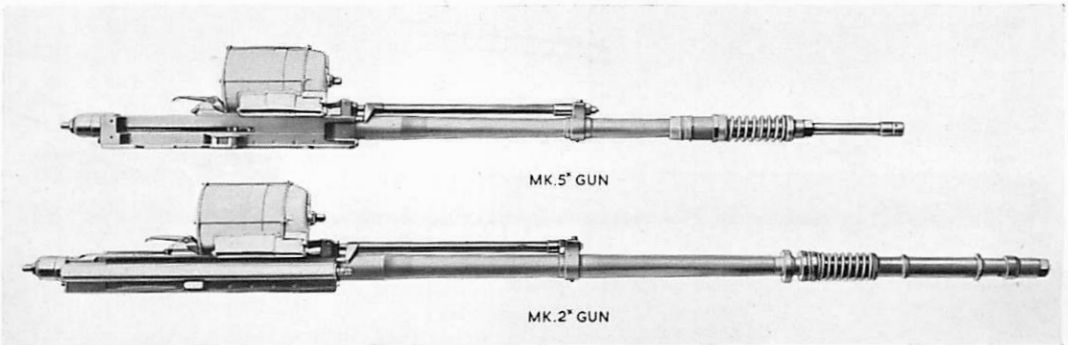

Fig. 2. 20-mm. Hispano Gun.

30-mm. Aden Gun

7. The Aden gun (Fig. 3) is gas operated. Its rate of fire is 1,200 to 1,400 rounds per minute, with a muzzle velocity of 2,000 feet per second. Ammunition available is :—

(*a*) Practice (Ball).

(*b*) High Explosive.

8. It is used mainly as an offensive weapon and, owing to the large explosive content of the shells, hits scored on the target are very damaging. However, owing to the low muzzle velocity, this damage can only be inflicted at short ranges.

9. To produce maximum effect the high explosive round is fused to explode after penetration of the target skin.

10. It is an all-purpose weapon and can inflict heavy damage on the ground targets mentioned in para. 6.

ROCKETS

11. The rocket in general use has a 3-in. diameter motor using cordite as the propulsive fuel. Warheads available are :—

(*a*) 25-lb. solid shot head (Fig. 4).

(*b*) 60-lb. High Explosive/Semi-Armour-Piercing (H.E./S.A.P.) (Fig. 5).

(*c*) 60-lb. High Explosive/Hollow Charge (H.E./H.C.).

12. The rocket accelerates to a velocity of about 1,600 feet per second in 500 to 600 yards. The strike velocity of the rocket will therefore vary with the speed of the launching aircraft and the firing range.

13. The 25-lb. shot head is used for attacking shipping. When this head is fitted the rocket has a curved underwater trajectory and it will cause underwater damage to a ship's hull. It is estimated that two hits on a submarine will sink it and that large liners and cruisers can be sunk with multiple hits (15 to 20 hits for 50 per cent. chance of sinking).

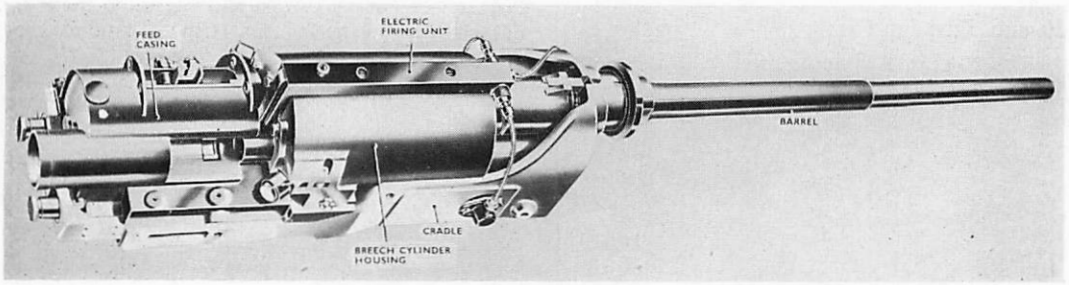

Fig. 3. 30-mm. Aden Gun.

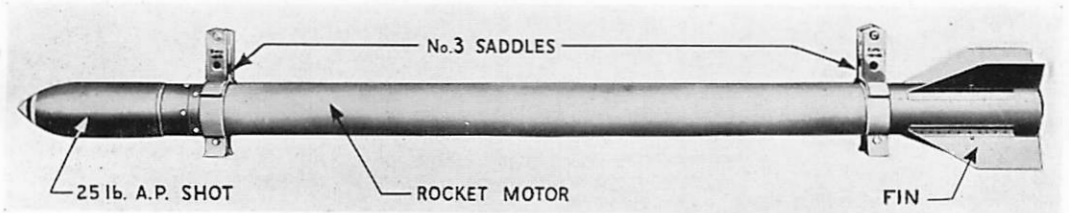

Fig. 4. 25-lb. Solid Shot Head Rocket.

14. A 60-lb. H.E./S.A.P. head can be used against a variety of targets. It was originally designed for use against shipping, and is fitted with a delay fuse for that purpose. It is also very satisfactory for attacking lightly armoured land targets, rail and road transport, buildings, light gun emplacements, and petrol, oil, and lubricants (P.O.L.) dumps. Although designed for attacking shipping it is not as effective against such targets as the 25-lb. shot head, except in the case. of small wooden vessels (river craft, barges, etc.)

15. The 60-lb. H.E./H.C. head has been designed for penetration of armoured targets. This is effected by a "jet" produced by the hollow nose of the charge and it is capable of penetrating 200 mm. of armour-plate. Damage to the inside of armoured targets may be caused by internal "scabbing" of the armour-plate, by fragments, and by fire.

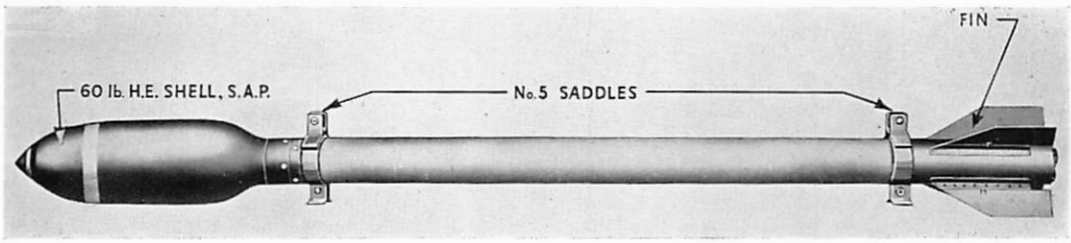

Fig. 5. 60-lb. High Explosive/Semi-Armour-Piercing (H.E./S.A.P.) Rocket.