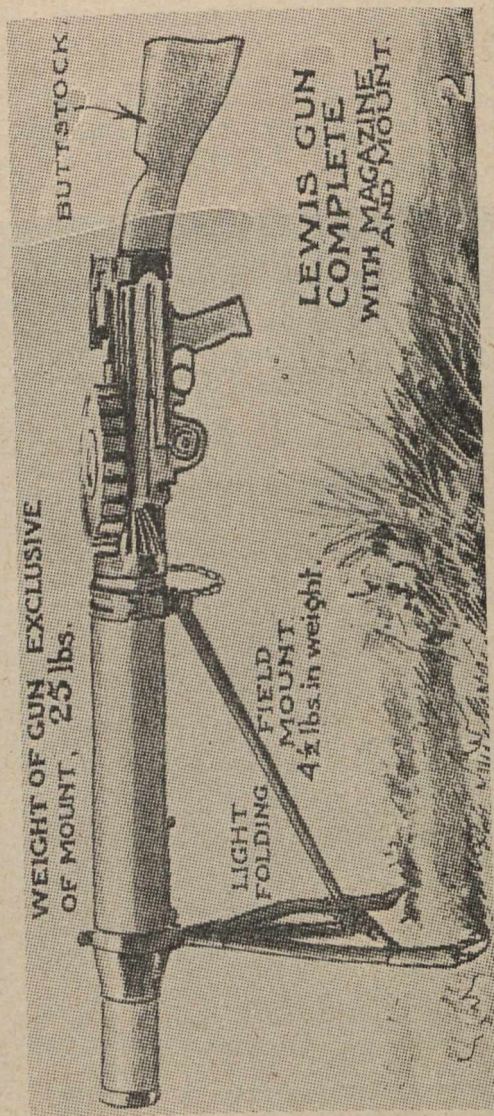


weapon continues to fire until all the cartridges are exhausted, the rate of continuous fire being as high as 440 rounds per minute, including the interval occupied by replacing empty magazines with loaded ones. The dissipation of the intense heat developed by the almost continuous combustion of explosive charges in the barrel of the machine-gun presents a somewhat difficult problem, and the failure to accomplish this efficiently causes the barrel to become red hot and prematurely explode the incoming cartridge. The barrel of the Lewis is cooled by means of ribs (L), which radiate the heat into the atmosphere, the ribs being placed longitudinally and contained in a steel casing (M), through which the cool air is drawn by the "exhausting" effect of the powder blast at the muzzle end of the casing, in the same way that the air is drawn through the fire-box of a locomotive by the blast of the exhaust steam in the chimney.



The recoil on the Lewis gun is absorbed in a very simple and ingenious manner, the gas from the discharge being directed by means of a cone (P) attached to the muzzle of the barrel proper on the inner surface of the casing (N), so that the friction between the gas and metal casing tends to carry the gun forward with the stream of gas and so counter-balance the force of the recoil acting in the opposite direction. The mainspring (K) is a spring of the type used in a watch, but of much greater power. This spring is coiled up in a circular case (O) attached to the gun just in front of the trigger, in a position sufficiently far from the barrel to be unaffected by the heat, and consequently in no danger of losing its temper from overheating.

The complete cycle of operations in the Lewis gun is as follows: The explosion of the cartridge in the chamber causes a gas pressure by way of the hole (E) on the piston (H). This pressure drives back the piston and its rod (J),

(Continued on Page 5)

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