Chapter 2

EJECTION GUN AND DROGUE FIRING GUN

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LIST OF ILLUSTRATIONS

EJECTION GUN

Function

1. The ejection gun (*fig.* 1), which provides the power for ejecting the seat and occupant from the aircraft, consists of a pair of telescopic tubes with a stroke of 39 in. The outer or cylinder tube is attached at its lower end to the bottom mounting block fitted in the guide rail; the inner or piston tube is attached at its upper end to the top cross-beam of the seat frame. The explosive is contained in a cartridge (Stores Ref. 12D/1170) which is percussion fired by the action of pulling out the face screen, and is housed in the firing body at the upper end of the piston tube.

2. When the face screen has been withdrawn approximately 12 in., the firing cable attached to it pulls the wedge-shaped sear out of the firing body. The movement of the sear first compresses the firing spring and then releases the firing pin to strike the percussion cap of the cartridge.

3. The gas pressure developed by the cartridge first presses down the release piston, thus freeing the piston tube from the cylinder tube and, as the gas pressure rises, it propels the piston tube upwards. After 39 in. of travel the cylinder and piston tube separate, the cylinder tube remaining attached to the guide rail in the aircraft and the piston tube remaining attached to the ejected seat.

Cylinder tube

4. This is a thin-walled steel tube with an accurately lapped bore. When dismantled, it must be handled carefully. The release mechanism at the bottom end of the cylinder tube consists of the release piston, the cylinder head and the piston skirt. The two latter are locked together by the release piston which is retained in position by a spring below it. The external ring of the release piston expands the spring tabs of the slotted portion of the cylinder head so that they engage an internal collar in the piston skirt.

5. The initial gas pressure causes the release piston to move downwards, thus allowing the locking tabs of the cylinder head to close inwards and disengage the piston skirt. The piston skirt may be unlocked manually by pulling out the release button. Similarly the piston tube can only be returned to the locked position after the release button has been withdrawn.

6. The ejection gun is retained in the bottom mounting block by the bottom latch and can be released by a pull on the ring provided.

Piston tube

7. This is of similar construction to the cylinder tube and when dismantled it must be handled carefully. At its lower end is the piston skirt, provided with three rings, and at its upper end is the breech into which is screwed the firing body.

Firing body

8. The breech is permanently screwed into the piston tube ; it is locked by peening and should not be removed. The breech houses the cartridge spring and cartridge which are held in position by the firing body. When unscrewed, the firing body gives access to the cartridge, which is then pushed upwards by the spring to facilitate removal.

(A.L.6, May, 54)

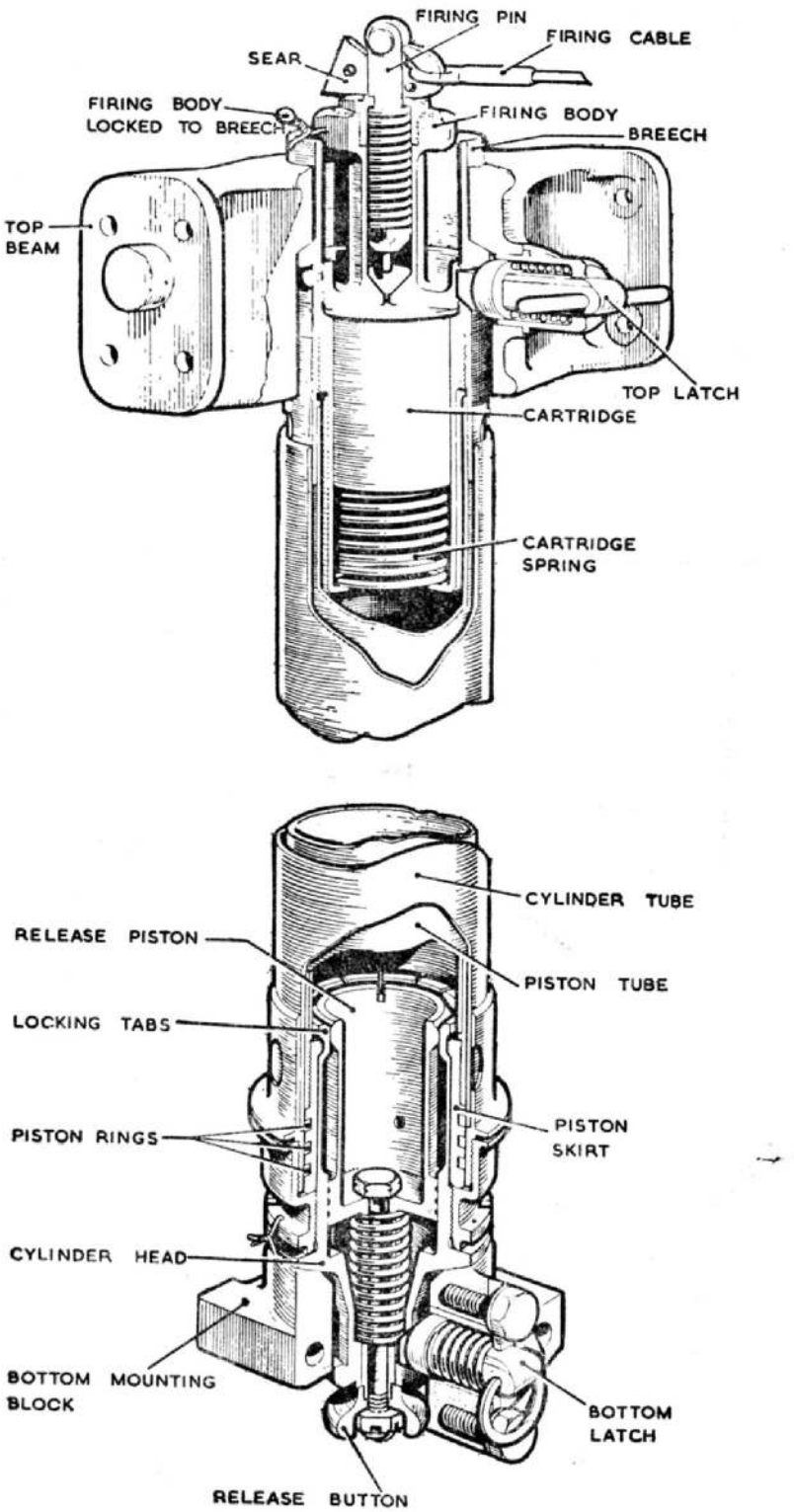

Fig. 1. Ejection gun assembly

DROGUE GUN

Function

9. The drogue gun (*fig.* 2) is attached to the port side beam of the seat structure by two quick-release clamps and, when the delay mechanism is operated by the static line, after approximately one second's delay, the gun is fired and ejects the piston; this draws the drogue out of its container and enables it to develop freely without becoming entangled with the seat. The ejection of the piston is effected by a small cartridge which is fired by the striker pin.

Firing mechanism

10. As the seat ascends the guide rail, the static line withdraws the sear from the release plunger, which allows the gear train to operate under pressure from the spring. After ~~one~~ 0.5 second's delay, a rack is disengaged from the spur wheel, thus freeing the striker pin which detonates the cartridge.

A/L. 30

Barrel and piston

11. The barrel contains the cartridge (Stores Ref. 12D/1171) which is lightly held in place for convenience by a retaining clip. The barrel, complete with cartridge, screws into the gun body and is secured by 20 S.W.G. non-corrodible steel wire.

12. The drogue piston, to which the drogue withdrawal line is attached by the quick-release pin, is retained in the barrel by a $\frac{1}{16}$ in. split pin which is sheared by the explosion of the cartridge. This shear pin is an essential part of the mechanism of the drogue gun, as the shearing force required allows a definite predetermined pressure to be built up in the gun before the piston starts to leave the barrel. If it were omitted, the drogue would not be withdrawn correctly from the container.

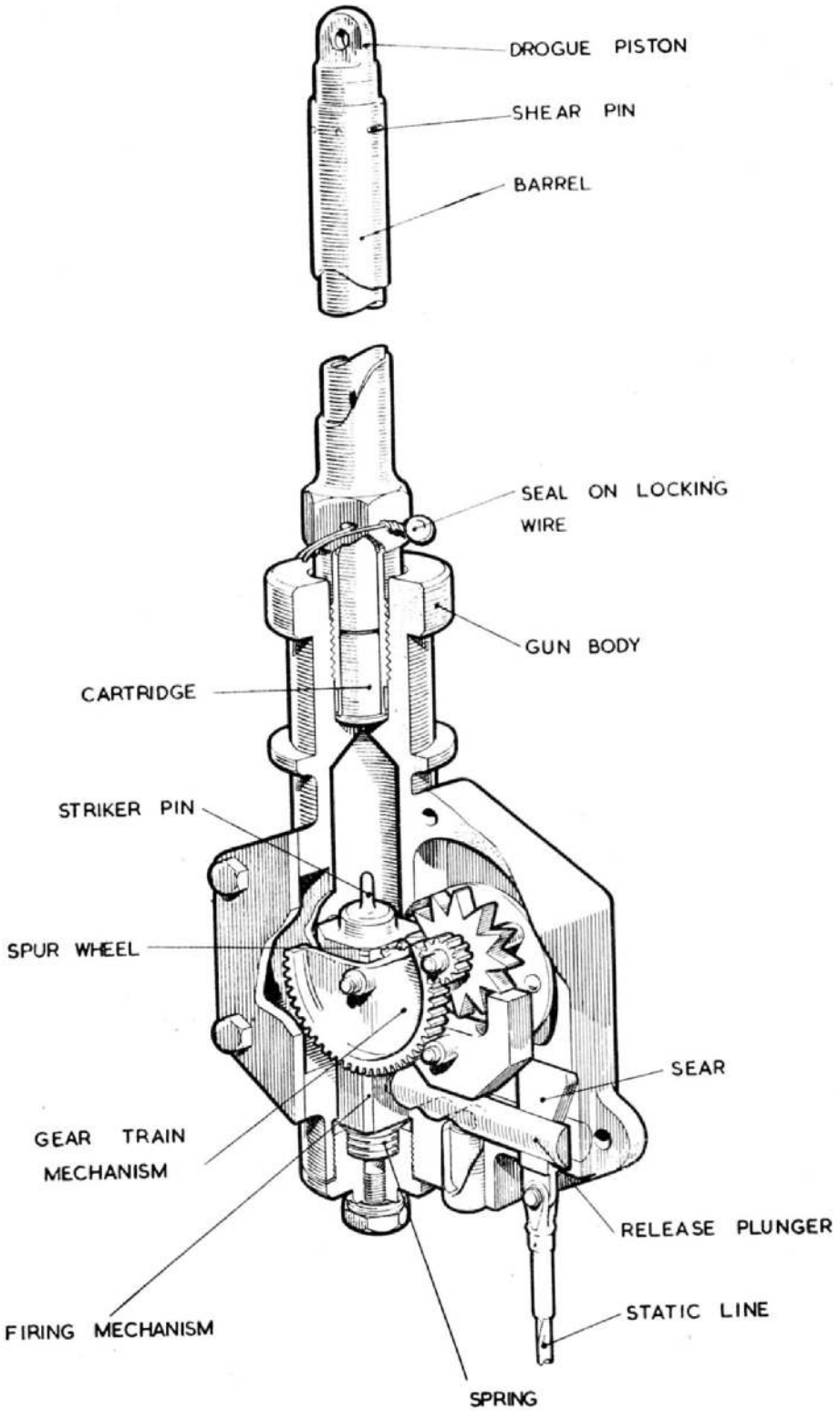

Fig. 2. Drogue gun assembly