

THE MODERN AEROPLANE.

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(Continued from page 451.)

We must now consider the body (Fig. 7). This is generally a tapered box girder, with wooden longitudinals and struts, and steel wire tie rods; it is generally almost totally covered with fabric. It is the member which presents the greatest of the differences which exist between the two principal types

of present-day aeroplanes—the tractor and the pusher. It is perhaps as well at this point to consider the comparative merits of the tractor and pusher types (Fig. 8). For the same conditions we can almost invariably get a better performance from a tractor than from a pusher. The shorter body of the pusher is almost necessarily of worse form for drag than the longer body of the tractor, particularly because with the engine at its rear end, it is almost impossible to get this nicely faired off. So, though the body of the tractor is in the slip stream from the air screw and that of the pusher is not, the body drag is nearly always lower in the tractor type. Further, in the pusher type, we have the additional tail carrying girder. This girder is necessarily composed of rather long lengths of tail booms, struts and tie wires, and therefore itself offers considerable drag.

The weights of the two types, for the same strength, work out much the same; possibly the pusher can be made slightly lighter. So, with the same engine and useful load, of course, the climb of a pusher will be very little worse than a tractor, the greater drag being somewhat compensated for by the slightly lower total weight; but the speed of the pusher will be considerably lower. Generally speaking, the view forwards, upwards and downwards is better in the pusher than in the tractor, for a single-seated machine. For a two-seater, however, the all-round view of pilot and passenger combined, may, by suitable placing of them and of the aerofoils, be made about equally good (or bad) in either type.

Considering the convenience for machine-guns, with which practically all modern aeroplanes must be fitted—to fire straight ahead, the gun, on a tractor, must be fitted with an "Interrupter gear," and it must be fixed, as it is impracticable to swing it about when connected to the interrupter gear. The interrupter gear itself weighs anything from 5 to 20 lbs., and is an additional complication. It is a mechanism by which the trigger of the gun is automatically pressed just as a

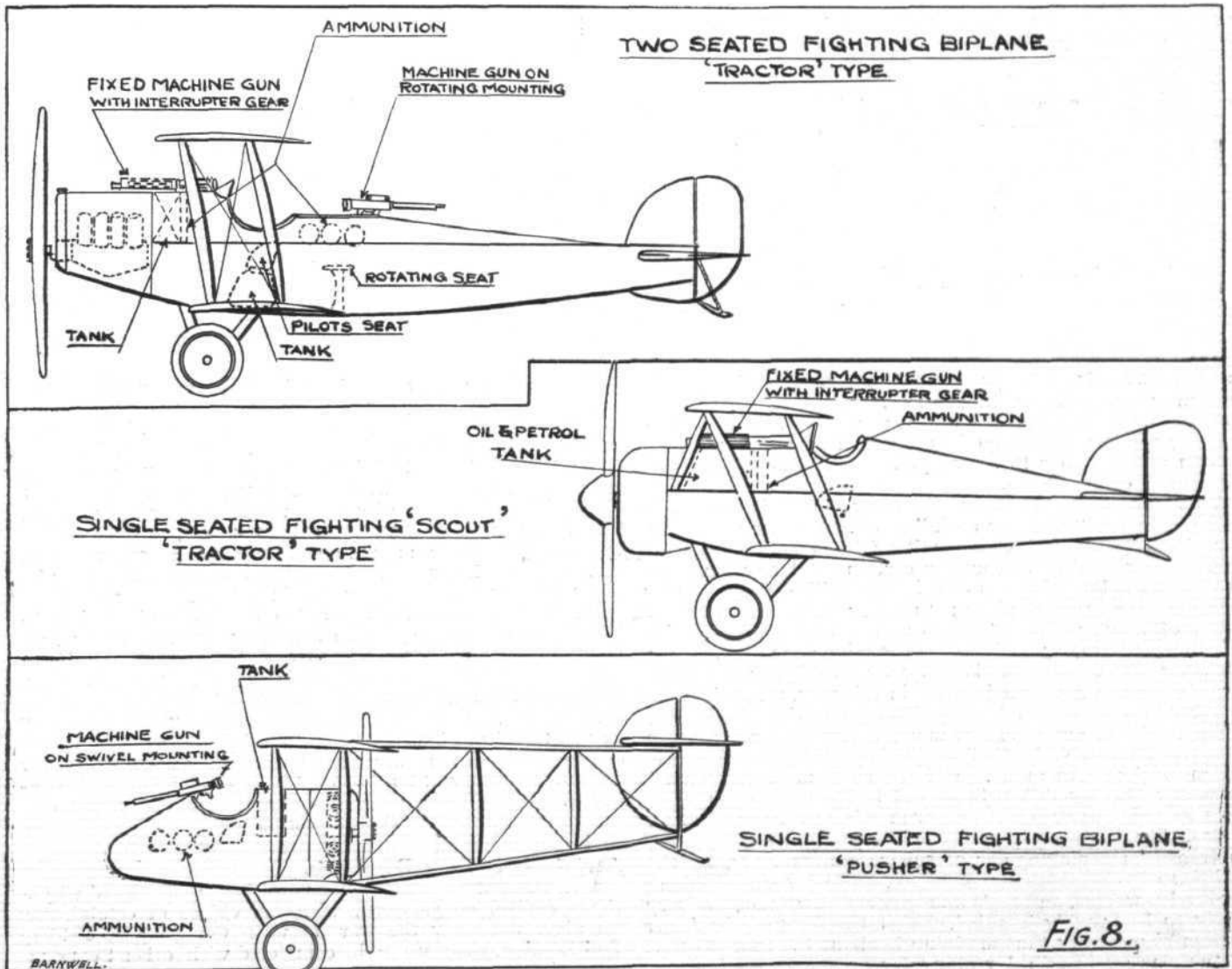
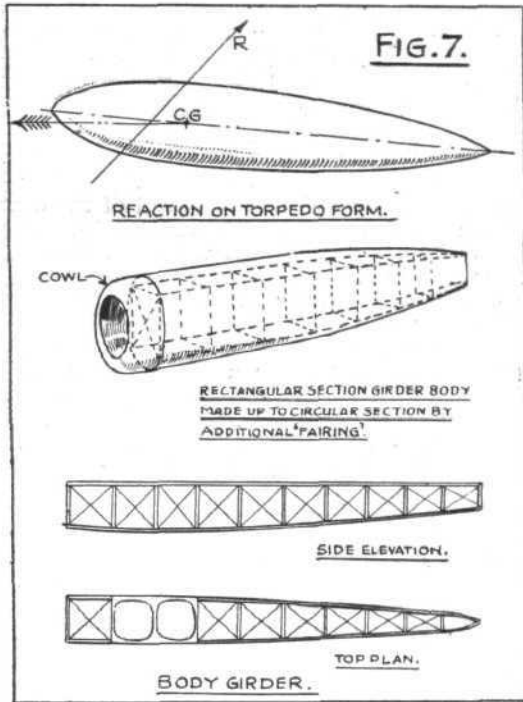


FIG. 8.

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