Traversing

The turret is provided with six traversing rollers of conical contour, the larger diameter being on the outside and tapering towards the centre of the turret, thus facilitating the contact with the roller race.

The *traversing gear* (Fig. 1) is fitted to the left side of the turret

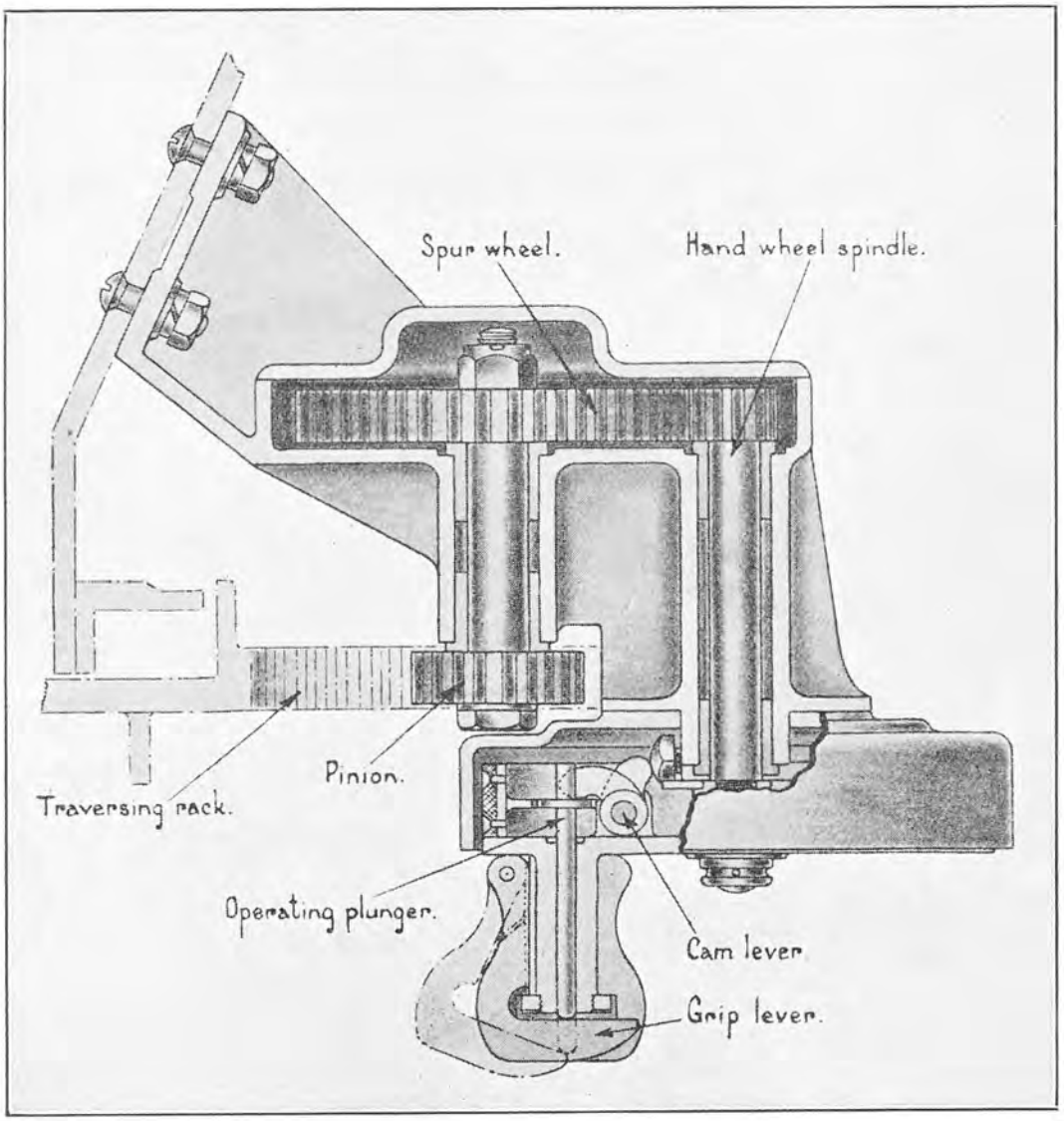

FIG. 1

and is geared to the traversing rack of the hull. The gear has a ratio of 72 to 1, so that one turn of the hand wheel traverses the turret 5 degrees. A brake gear is incorporated in the hand wheel to stop the traverse of the turret when desired.

The *brake* is of the internal expanding type.

The principal parts of the gear are shown in Fig. 2.

CHAPTER II

ENGINE

MARKS II, IIA, IIB AND III TANKS

(Plates 6 and 7)

A Rolls-Royce engine is installed. It is of the straight six type, i.e. having six cylinders arranged behind one another on the same centre line.

The crankshaft is fitted with a number of subsidiary driving gears at the front end.

NOTE.—As the engine in these vehicles is reversed as compared with normal practice, owing to the drive being at the front of the vehicle, the expressions " front of the sump," etc., have reference to that end of the engine containing the timing gear, auxiliary drive, etc., though this is actually towards the rear of the machine.

The dry sump principle is adopted for lubrication, the lubricant being pressure fed to the crankshaft and big end bearings, timing and camshaft gearings, cylinders and rocker shaft pedestal. Other moving parts are lubricated through non-pressure ducts and splash.

The cooling is effected by the assisted thermo-syphon system, a fan delivering air on to the radiator.

Overhead valves are fitted, two to each cylinder; these are actuated by rockers and push rods driven by a single camshaft.

The ignition is effected by the coil system, the contact breaker being operated by the governor drive at the top of the vertical shaft of the drive unit.

For starting the engine, a hand starting gear and a R.R. motor are fitted, the latter operating through a Bijur pinion meshing with a pinion on the flywheel.

A Rolls-Royce dynamo is mounted on the left side of the engine (right side with *Mark III*) and driven by gear meshing with the timing system. The dynamo charges the battery which provides the necessary power for lighting, starting and ignition.

The various parts of the engine and its controls, fuel system, etc., are described in the following order :—

Crankcase
Cylinders
Pistons
Connecting rods
Valves

CHAPTER III

TRANSMISSION AND BRAKES

(Plates 10 and 11)

The engine power is transmitted by suitable means to the driving sprockets, steering clutches and brakes being fitted to the cross-shaft. The controls are arranged in convenient positions in the driver's compartment.

In the *Marks IV*, *V* and *VI* tanks the power is transmitted through a clash type five-speed gear box which is coupled direct to the bevel drive, whilst in the *Marks II* to *III* tanks a self-changing gear box is installed, the bevel drive being connected through a coupling shaft.

The main parts of the transmission are as follows :—

Marks IV, *V* and *VI* tanks—

Engine clutch
Clutch control
Change speed gear
Change speed control
Bevel drive
Steering clutches
Reduction gear
Steering clutch control
Hand and foot brake control.

Marks II to *III* tanks—

Self-changing gear box
Coupling shaft
Bevel drive
Steering clutches
Reduction gear
Steering clutch control
Foot brake control
Hand brake control (*Mark III* only).

MARKS IV, V AND VI TANKS

Engine Clutch

The clutch (Fig. 56) is of the single plate dry type. It is enclosed in a casing which is secured direct to the engine by means of screws. The friction plate of the clutch is housed in the

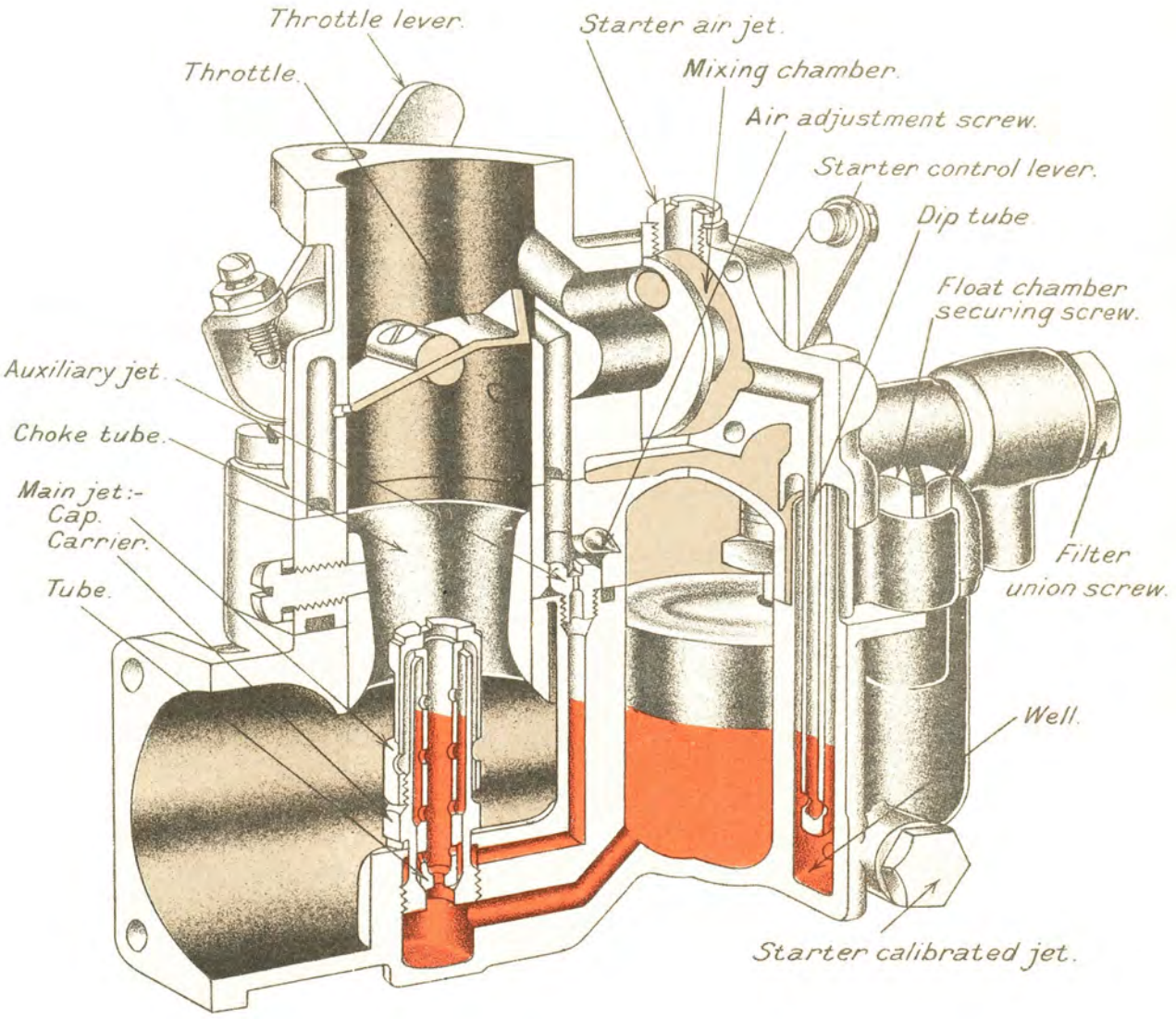
Throttle lever.
Starter air jet.
Throttle.
Mixing chamber.
Air adjustment screw.
Starter control lever.
Dip tube.
Float chamber securing screw.
Auxiliary jet.
Choke tube.
Main jet:-
Cap.
Carrier.
Tube.
Filter union screw.
Well.
Starter calibrated jet.

Fig. 53.