

CHARACTERISTIC CHASSIS DETAILS

Editor's Note: The details illustrated and described on this page and the two following are features of the cars from which they are taken. They are departures from the conventional. It is our intention to show each month a number of such details incorporated in the cars on the American market, to take up those things that show original thought on the part of the designers and tend to make their products distinctive.

The Chalmers "Forty" Engine.

The 1911 "Forty" Engine is Similar to that of 1910, but Embodies Several Detail Refinements. The Valve Springs are now Enclosed and a Plunger Oil Pump Replaces the Gear Type.

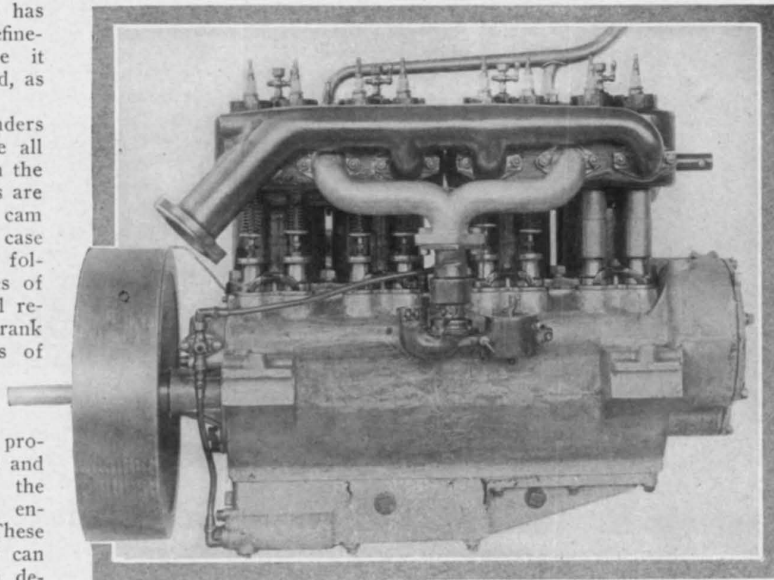
IN the 1911 Models of its "Forty" chassis, the Chalmers Motor Co., of Detroit, Mich., is fitting an engine similar in its general design to the "Forty" engine of last season; but has incorporated in it several refinements calculated to make it more efficient and long lived, as well as more silent.

As heretofore, the cylinders are cast in pairs and have all the valve pockets located on the same side. The eight valves are operated from a single cam shaft within the crank case through roller ended cam followers supported in guides of very substantial design, and retained in position on the crank case in pairs by a series of yokes. Each of the yokes, one for the valves of each cylinder, is held by a stud and its nut. For the protection of the valve springs and the wearing surfaces of the stems and cam followers, enclosing tubes are fitted. These are telescopic, so that they can be readily removed when desired, and fully enclose all that

part of the valve mechanism usually exposed between the crank case and the cylinder castings. In the present construction, the tele-

scopic tubes seat against machined surfaces on the guides for the valve stems and against the enlarged or flanged upper ends of the follower guides. The use of these guides makes possible the adequate lubrication of valve stems and cam followers.

While undue wear and noise in the valves and their operating mechanism are thus guarded against, possible trouble with either the ignition or lubricating systems is equally well obviated by refinements in these two systems. Ignition in the "Forty" engine is had by the new Bosch dual system; and lubrication is by the circulating, constant level splash system, self-contained in the sub-chamber of the crank case. In the photograph of the engine on this page will be seen the cylindrical filter chamber in the bottom of the crank case, and the tube through which oil is drawn by a compact plunger pump operated from the rear end of the cam shaft. Last season a gear pump was used, but it has given way to the present simple plunger pump design.



Valve side of the Chalmers "Forty" engine.

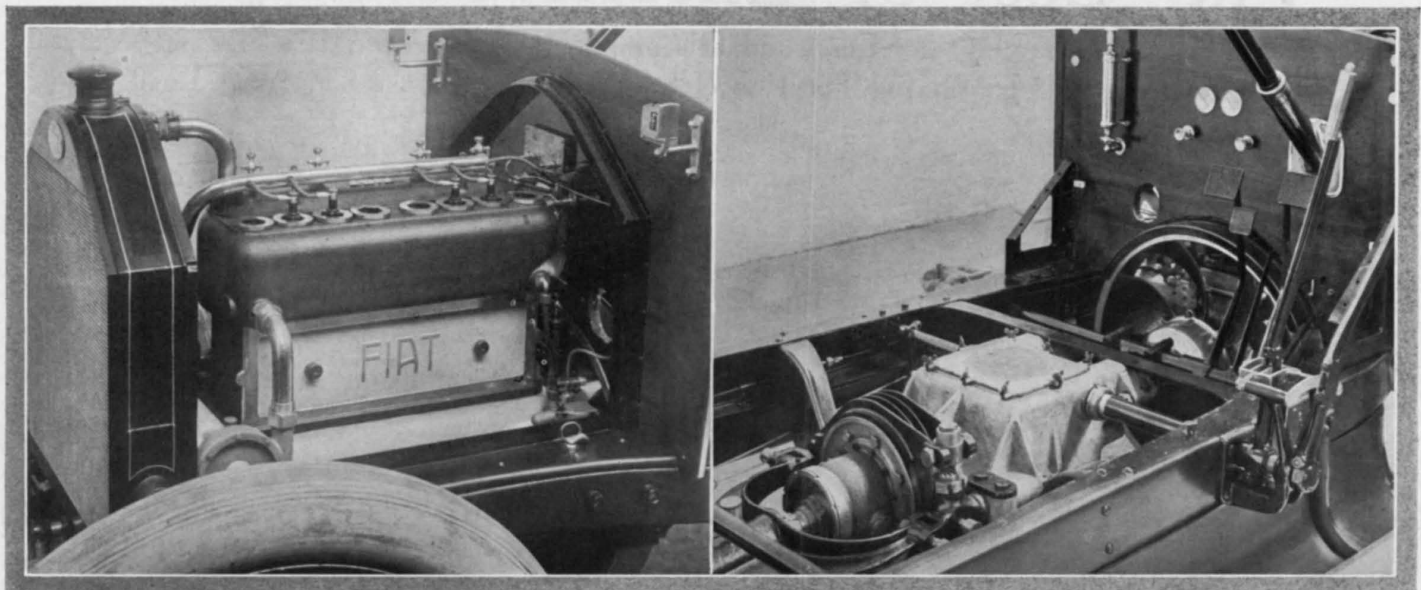
The 35 H. P. Fiat Power Plant.

A Mono-Bloc Engine of Considerable Size and of Remarkably Clean-Cut External Appearance. The Gear Set Provides Four Forward Speeds and is Driven Through a Disc Clutch.

THE power plant of the first model to be turned out by the Fiat branch factory at Poughkeepsie, N. Y., includes an engine with all four cylinders cast in a single bloc and rated at 35 horse power. The cylinders have a bore of 110 and strokes of 150

millimetres (4.4 x 6 inches), and this engine is therefore one of the largest examples of bloc cylinder casting that has been placed on the market. It will be seen from the photograph of its valve side, at the bottom of this page, that the engine is of very neat appear-

ance, due to the almost entire absence of external piping and the manner in which the valve springs, stems and cam follower ends are enclosed by a detachable aluminum plate. The valves are all located on the same side of the cylinders, and both the exhaust and



Engine and change gear of the new Fiat. Note the minimization of external engine piping, the size of the flywheel and the powerful operating mechanism of the brake.