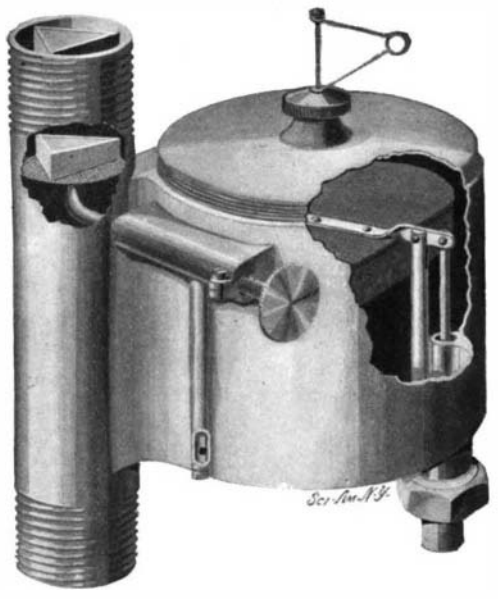
THE LOOMIS CARBURETER AND MUFFLER.

The two essentials in a gasoline vehicle are a reliable carbureter for positively feeding the engine with the gasoline and a muffler which will efficiently muffle the noise of the exhaust and at the same time avoid any back pressure on the engine piston. Our illustrations show articles of this description which have stood the test of experience perfectly, having been in use for some time on vehicles manufactured by the Loomis Automobile Company, of Westfield, Mass., and first exhibited at the 1900 New York Automobile Show. Their vehicle was considered by many as being the lightest, neatest, and most highly powered for its size of any exhibited at that time.

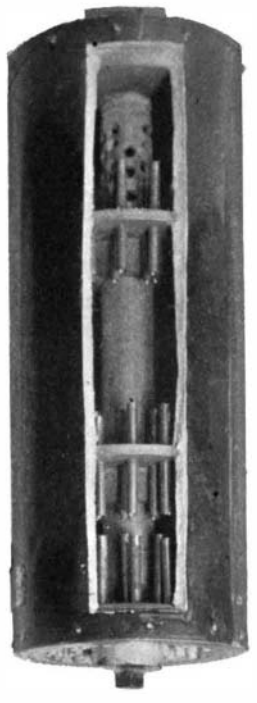
The carbureter, as improved by the inventor Mr. G. J. Loomis, is constructed on the well-known atomizing principle, having a float feed chamber in the larger portion, the inlet of gasoline to which, located on the exterior, is controlled by a needle valve attached to the underside of a cork and aluminium float.

The float maintains the level of the gasoline in the small vertical tube on the outside of the float chamber at the point where the horizontal tube crosses it. In the horizontal tube is a needle valve, which is set once for all at the proper point by rotating the thumbscrew shown to the right or left. The needle valve, when thus set, can be locked by the small set-screw. When the motor is turned over it aspirates air through the large vertical engine supply pipe, and this air, rushing upward past the small nozzle, draws up sufficient gasoline to make the explosive mixture. The gasoline thus sprayed upon the fine wire gauze directly over the nozzle is thoroughly atomized and absorbed by the air, so that it enters the motor a perfect gas and not, as in some other forms of this device, a moist spray.

In starting the motor the carbureter is "primed" by striking the small pin on top of the float chamber sharply a few times with the finger. A larger amount of gasoline is thus admitted than is necessary, flooding the chamber to such an extent as to cause an overflow into the suction pipe, where the gasoline falls on fine wire gauze located below the nozzle. To secure the most efficient results the carbureter should be located in such a position as to have warm air drawn in past the feed nozzle, and it is generally placed if possible directly over the exhaust pipe of the motor. Although the air is hot when it enters the suction pipe, the top of the latter above the carbureter will be found nearly ice cold when the apparatus is in operation, so great is the absorption of heat occasioned by the rapid evaporation.



THE LOOMIS CARBURETER.



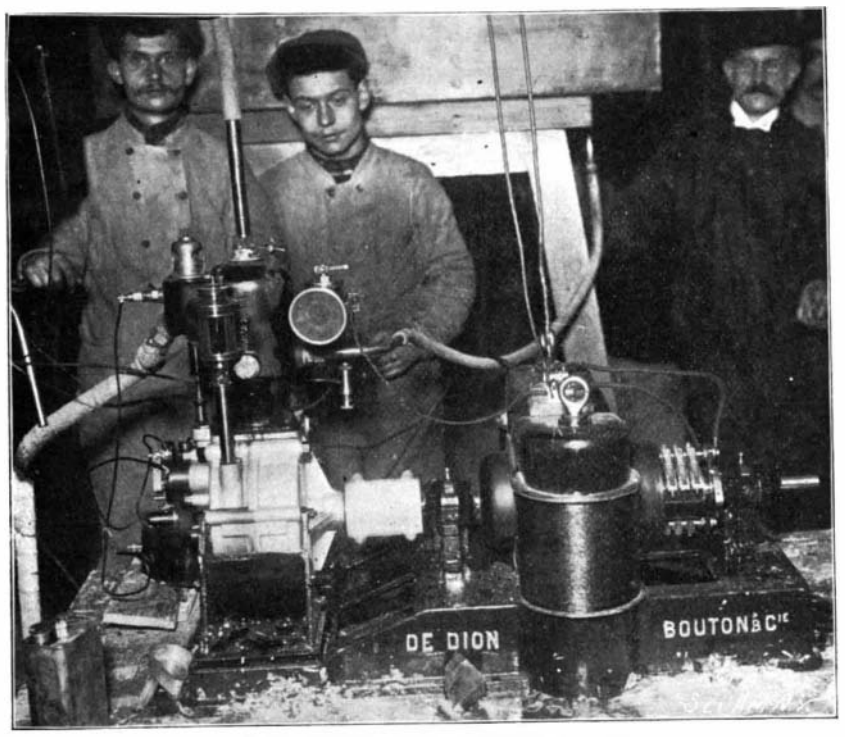
THE LOOMIS MUFFLER.

The construction of the Loomis muffler can readily be seen from the illustration also. It is planned in a special way for the purpose of breaking up the sound waves as much as possible, and yet avoiding right-angled turns in the muffler and thus preventing any back pressure or choking of the exhaust. The exhaust burnt gases enter at the lower end of the central pipe, and, cushioning themselves against the upper end, rebound and pass through holes in the pipe into the first or lower chamber. From there they are carried through numerous small pipes to the center of the second and third chambers respectively, after which they pass out into the air. By thus conducting the gases from the center of each chamber through tubes, instead of simply letting them pass through holes in the separating partitions, the gases have a chance to expand and pass through quietly, instead of with the whistling sound common to some mufflers. The area of the tubes connecting the chambers is an eighth larger than that of the exhaust pipe, while that of the holes of the exhaust pipe is twice as great as the area of the latter. The result is that there is little or no back pressure developed, while the sound of the exhaust is deadened by the outer aluminium shell and asbestos packing between it and the inner shell of sheet metal. The mufflers have been used successfully on large marine and stationary engines and have proved very effective in deadening the noise of the exhaust.

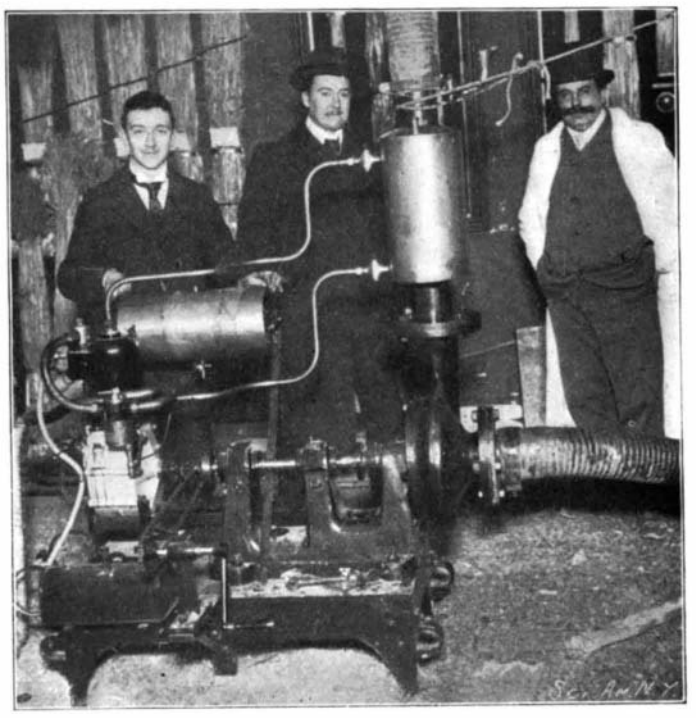
VARIOUS APPLICATIONS OF THE GASOLINE MOTOR.

BY PARIS CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

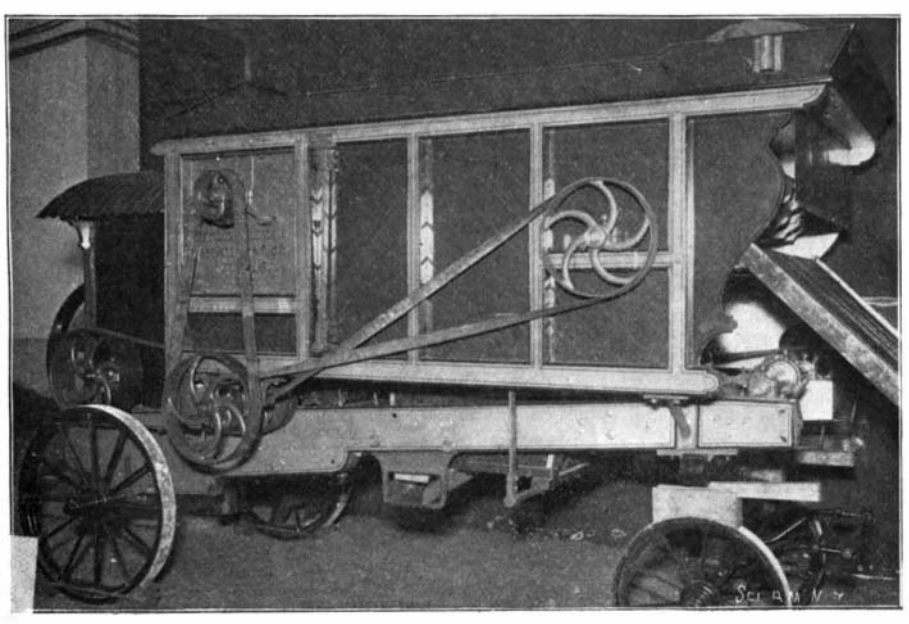
It is not difficult to foresee that the automobile motor of the gasoline type, designed as it is for lightness combined with maximum power, is soon to find its application as a fixed motor in various kinds of industrial work, especially in the form of small and compact groups in which the motor is directly coupled to dynamos, pumps and various machines. A number of newly-designed groups of this kind were brought out at the last Paris Automobile Show, and the constructors seem to be fully aware of the extensive application which the gasoline motor is likely to have, especially in plants where a fixed motor of the usual type would be too heavy and cumbersome. The De Dion Company seem to have taken the lead in the construction of light industrial groups of this kind and have especially studied the application of their motor in agricultural works. The first photograph shows a motor of this form coupled directly to a small dynamo. The motor is of the usual automobile type, except that it is water-cooled, the cylinder being surrounded by a water jacket in which there is a constant circulation by the pipes seen on the right and left. The characteristic feature of the system is the use of an electric regulator which is attached to the motor. It acts on the voltmeter principle, and when the voltage tends to rise above the proper point a simple electro-magnetic throttling device acts upon the supply pipe of the motor and thus



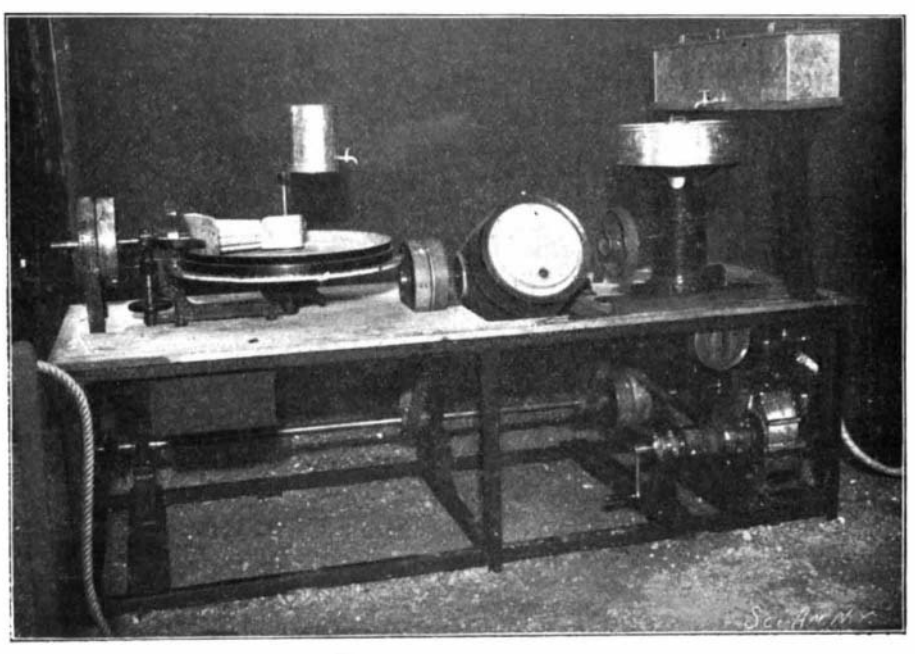
DE DION MOTOR AND DYNAMO GROUP.



DE DION MOTOR AND CENTRIFUGAL PUMP.



AN AUTO THRASHING MACHINE.



DAIRY PLANT AND GASOLINE MOTOR.