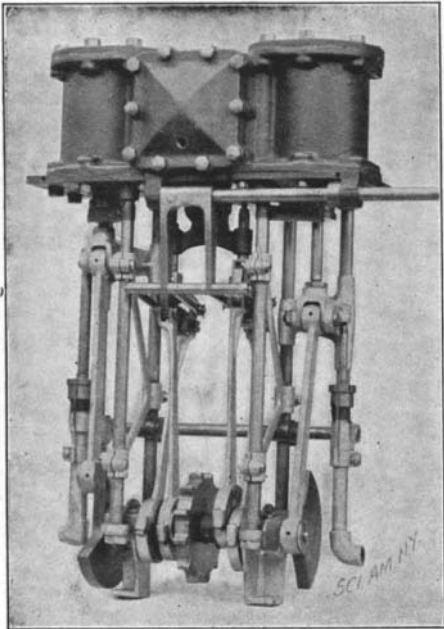


THE LANE STEAM CARRIAGE.

The New York-Buffalo endurance contest brought to light a steam carriage, the performance of which was in every way so remarkable that many a chauffeur wondered why he had never heard of the vehicle before. The carriage in question was made by the Lane Motor Vehicle Company, of Poughkeepsie, N. Y., and finished the run without any adjustment of the parts and without any injury with the exception of that sustained by one tire. It was the only carriage entered by the firm. Limited as the amount of space at our disposal is, it is impossible to devote as long a description to this carriage as might be desired. Nevertheless, there are several parts so distinctly novel in construction that they must be more or less fully described.

Doubtless the most vital part of every automobile is its motor. The Lane engine presents some peculiarities, prominent among which is a frame, made up of straight rods suitably braced. Two of the rods constitute the slides and are surrounded by the cross-heads. The engine is mounted at approximately an angle of forty-five degrees to the axis of the vehicle's body. This arrangement is certainly meritorious, for the vibration is transmitted at an angle to the vehicle-frame. The crank-shaft is a solid piece of steel from end to end, and with it the sprocket, eccentrics, cranks, and counterbalances are eccentrically formed. Instead of balls, hardened interchangeable bushings are employed for the bearings. All parts below the cylinders are inclosed in a splash-tight copper case. In accordance with the best modern practice lubrication is effected automatically. Even the cylinders are mechanically oiled, for sufficient lubricant enters with the piston-rods.

So far as the steam-generating apparatus is concerned, particular attention should be called to the burner. The vapor tubes are arranged in parallel series and are provided each with a single row of apertures

**THE LANE STEAM ENGINE.**

for the issuing gas. Extending entirely across the burner above the apertured tubes is a mixer-tube. The air rising from below is brought into contact with each side of each flame and is caught by the flames on either side. The upward pressure or force of injection in the combustion-chamber is greater than in the ordinary types of burners. The combustion is odorless. The igniting and vaporizing device is worthy of particular attention. The vaporizing tubes, *AA*, are connected with a liquid-fuel supply pipe, *B*, provided with a hand-operated valve, *C*, for starting ignition, and with a regulator, *D*, which is automatically controlled by the boiler

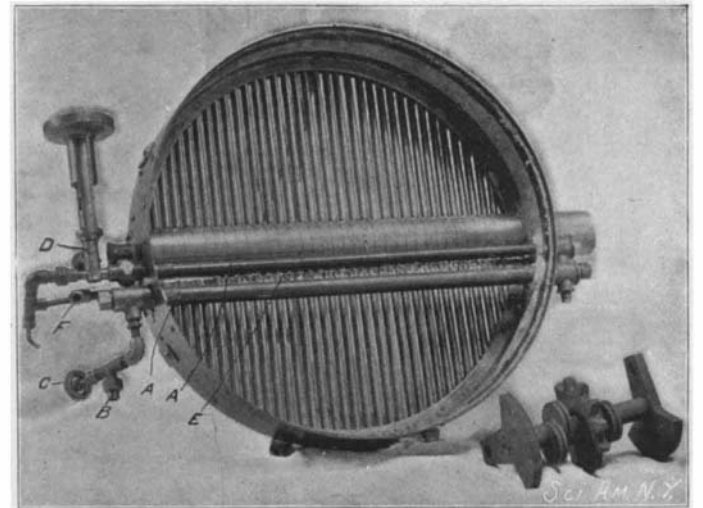
pressure, so that the consumption of fuel is nicely adjusted to the amount of steam generated. In order to heat the tubes sufficiently to start vaporization, an asbestos torch, *E*, is used, which receives a supply of wood alcohol from a cup connected by a pipe, *F*, with the torch. When the pressure in the boiler rises above a predetermined point, the fuel-regulator, *D*, cuts off the supply immediately. A blue flame pilot light within the combustion-chamber and directly below the vaporizers burns continuously independently of the main burner. With an eye to the possible necessity of making repairs the vaporizing tubes are made straight and are fitted with removable end plugs without the casing. The unfastening of a few screws permits the removal of the grate without interfering with the piping, and also of the vaporizers, torch, pilot light, and the entire burner case if necessary.

It has been found a questionable practice time and time again to leave the regulation of the water supply entirely to the mechanism itself. In the Lane steam carriage, the operator is, therefore, expected to control the water supply to the boiler. Nevertheless, a simple safeguard has been provided which renders it quite impossible for him to carry the water higher than the maximum level, and which prevents the water from sinking too low. Connected with the boiler at a definite point is a pipe carried forward and connected with a steam-gage. Back of the steam-gage is a transverse pipe discharging into the live-steam pipe between the throttle-valve and the boiler. Should the water rise to the opening of the first-named pipe, it will flow to the steam-gage, thence by the transverse pipe to the live-steam pipe, and thence through the cylinders of the engine. The exhaust-pipes carry the water back to the water tank. This simple method of maintaining a constant level has been found in practice to be extremely efficient. It is not necessary to renew a broken waterglass on the road; the pump is simply turned on, and the operator continues his journey.

In most motor vehicles, air is supplied by a hand-pump, with the result that the pressure over the fuel supply constantly decreases, and the fuel is supplied to the boiler at a gradually diminishing pressure. Hence it has been a matter of unusual difficulty to supply fuel to the burner in constant quantities. In the Lane carriage the pump and the engine are inclosed in a common casing. The piston of the air-pump is rigidly connected with the piston of the engine. Hence it follows that the pump and engine pistons have a corresponding movement, so that the amount of air supplied is absolutely dependent upon the work performed by the engine. Outside of the engine casing is a regulating valve for the air-pump. A regulating screw, likewise without the casing, is provided, in order to vary the air pressure. The screw in question merely increases or decreases the clearance space between the valves and thus regulates the pressure to a nicety. The device relieves the operator of all the necessity of hand pumping.

The feed-water for the boiler is heated by the exhaust steam from the engine, and whatever exhaust steam is not thus condensed is wholly or partially absorbed by the products of combustion. A pipe connected with the exhaust of the engine is carried under the body of the vehicle, and discharges directly into the water tank. The moisture contained in the steam is absorbed in a considerable measure by the gases. As a consequence the mingled body of exhaust steam and gases discharged will be quite invisible. The flues through which the products of com-

bustion from the burner pass are arranged in a peculiar manner. A horizontal flue over the boiler communicates with an upper and a lower downwardly-discharging flue. When the vehicle is at rest the products of combustion are carried through the upper downwardly-conducted flue; when the vehicle is in motion and aided by the injector action of the exhaust steam, the products pass through the lower-most downwardly-extending flue. All the products

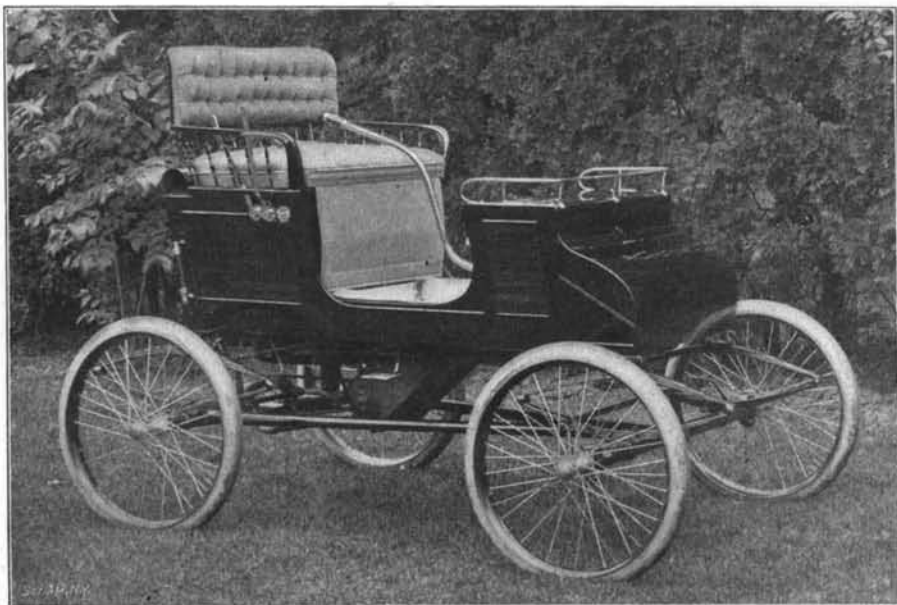
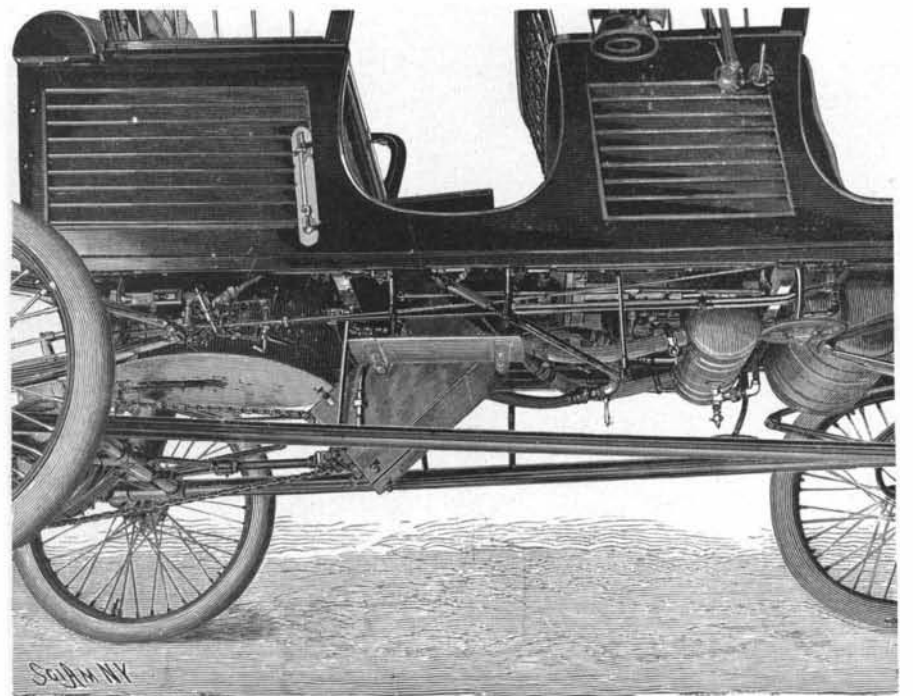
**THE LANE BURNER AND CRANKSHAFT.**

of combustion are thus caused to traverse a downward path when passing from the horizontal flue over the boiler. By reason of this downward trend of the flues, the products of combustion will not be picked up by moving air currents and driven directly upon the occupants of the vehicle.

Much could be written upon the structural novelties embodied in the running gear of the vehicle, as well as in the minor portions. There is, perhaps, not a single part of the carriage that does not, in some way, show an improvement upon previous constructions.

The demand for a strong, light and comfortable machine is growing everywhere, even in France, where the business has been given almost entirely to the construction of racers. In a recent report Thornwell Haynes, United States consul at Rouen, says that it has been estimated that the automobile industry of France supports more people, directly and indirectly, than any other industry. All the factories have tripled their product in the last three years, and all the establishments formerly given to the manufacture of bicycles are now engaged in building automobiles. It has been but a short time since all the factories were centered in Paris, but now there are large establishments at Rouen, Lyons, Bordeaux, Marseilles, Lille, St. Etienne, and Nantes. Mr. Leon Auscher in one of the Paris journals, recently enumerated a large number of trades and industries which have been materially benefited by the automobile boom, and says that at least 200,000 persons in France are maintained by that industry.

A Brooklyn (N. Y.) genius has secured a patent for a curious device for creating energy by feeding a tape of explosive caps into a chamber where they are successively exploded by a mechanically-driven hammer. The resulting gas from each explosion passes into a pressure storage chamber, whence it is drawn into an engine in a manner similar to that in which steam is taken from a boiler into a steam engine.

**THE LANE STEAM CARRIAGE.****BOTTOM VIEW OF A LANE SURREY.**