they have posed their subjects, how they have taken thought of every important line.

This of which I have written is a branch of photography which has been but little attempted, and it is certainly worth notice; worth entering upon, if your taste leads you in this way, with earnestness and enthusiasm. LAURA M. MARQUAND.

IMPROVEMENTS IN THE BENTLEY-KNIGHT ELECTRIC RAILWAY SYSTEM.

IN *Science* of Jan. 18 we described the electric railway on Observatory Hill, Allegheny City, Penn., equipped by the Bentley-Knight Company, and illustrated the motor trucks in use on that line. In this number we give a plan and elevation of a double-motor truck, which is considered an improvement on that previously described, and which is now in use on the West End Street Railway Company's line in Boston (see p. 374).

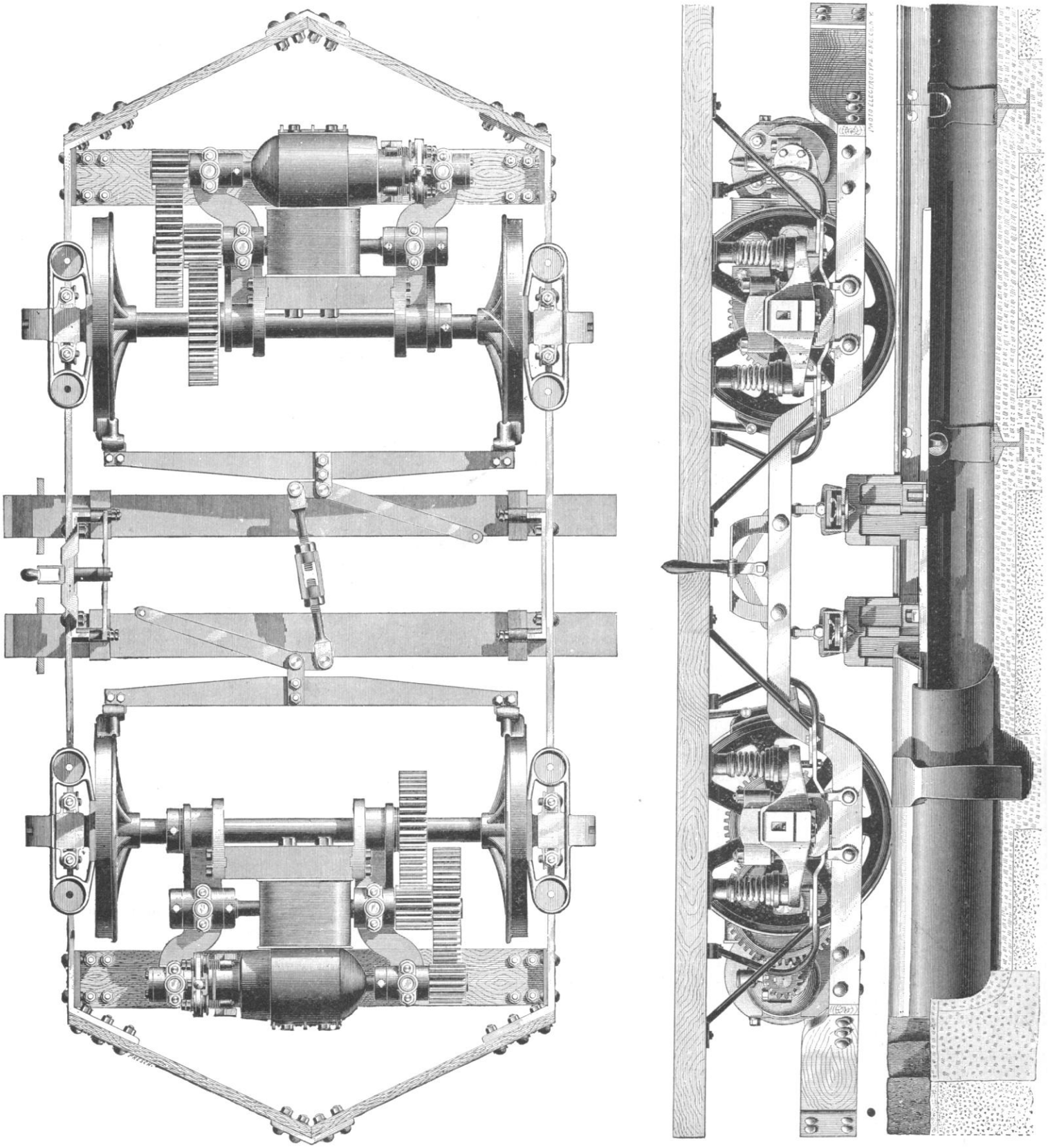
FIG. 3.

Each motor is of fifteen horse-power. The trucks are the heaviest yet built and operated for electric tramway service, and are used to pull two cars on week days, and three cars on Sundays. They are equally well adapted for use with elevated conductors or with the conduit system, although our illustration shows them as equipped for the latter. The insulation has been carried to a high point. The truck is independent of the car-body, and goes under any ordinary car without alteration and without raising a car above its ordinary height. Control is effected by a lever on the front platform. The reversal of the car may be instantly effected, and during this reversal the current is automatically cut off.

As is seen by the illustration, the motors themselves, together with all gearing, are supported outside between the spaces of the axles of the car, giving ease in getting at the wearing parts, and enabling the motors to be carried in a position where they are least in the way, and least exposed to splashes of mud and water from the wheels. The spring support makes the wear less, while allowing the motors to give a yielding impact to the load at starting. The commutator-brushes are fixed in position when the motor is first adjusted, and need no further adjustment.

While the Bentley-Knight Company has paid considerable attention to conduit construction, and has laid and operated successfully such systems, and claims to control that system by many patents, it is a mistaken idea to believe that it confines its attention to such lines; the Allegheny City line being, in part at least, an elevated-conductor road. The grades, curves, and general difficulties of that road we have already referred to. In Boston, the Bentley-Knight motors, while running over three miles of conduit, are also running over twelve miles of elevated conductors. This company has lately taken the contract for the Port Chester, White Plains, and Tarrytown Street Railway, crossing Westchester County, upon which line heavy double-motor trucks, similar to the one described in this number, will be employed.

THE June number of *The Chautauquan* presents a wide variety of topics in its table of contents. William P. Trent, M.A., of the University of the South, discusses "The Position of Women in Ancient Greece;" the ninth in the series of Greek biographical sketches by Thomas D. Seymour, M.A., of Yale University, has for its subject "Ptolemy Soter;" Russell Sturgis finishes his two-part paper on "The Archæologist in Greece;" the Rev. J. G. Wood describes some "Odd Fishes;" Albert Shaw, Ph.D., contributes an article on "European Town Life;" Professor Charles J. Little, LL.D., of Syracuse University, concludes his two-part paper on "The Paris Mob and its Achievements;" the Hon. A. B. Richmond denounces the "license curse" in "The Relation of Rum to Crime;" Mrs. Carl Barus writes entertainingly of "Oriental Legations at Washington;" and Ripley Hitchcock recounts his experiences "At the Head of the Rails" in the Black Cañon of the Gunnison.



THE BENTLEY-KNIGHT DOUBLE-MOTOR TRUCK, ELEVATION AND PLAN. [See preceding page.]