

**IMPROVED LOCOMOTIVE STEAM CRANE.**

The engraving represents a general view of a 16 ton locomotive steam permanent way traveling crane constructed by Mr. T. Smith, of Rodley, near Leeds, for which we are indebted to *Industries*. The engines for operating the crane consist of a pair of the vertical type, with cylinders  $8\frac{1}{2}$  inches diameter and 12 inch stroke. These receive steam from a "Nicholson" type of boiler, 7 feet 6 inches high and 4 feet 6 inches diameter, low built, with a large combustion chamber over the fire box, and Galloway tubes. The boiler has been tested hydraulically up to 150 pounds, and by steam up to between 75 pounds and 80 pounds per square inch. The jib is constructed on the lattice principle, with a curved head to allow of heavy loads being dealt with. The crab sides are of mild steel plates, and are firmly secured to the top and bottom swivels. The latter have anti-friction rollers for running on a turned path to reduce the stress caused by the load on the central column. The hoisting motion is of double purchase spur gearing, controlled by a clutch and lever and powerful friction brake. A feed pump, injector and

The larva, he stated, was altogether entomophagous, as far as known, while the adults feed largely on vegetable material and also to some extent on soft-bodied insects, approaching more nearly in their food habits the genus *Epilachna*. He stated that the beetles are known to feed on the pollen of plants, to injure blades of corn, and also the soft kernels of corn, wheat blossoms, and the larvæ and pupæ of *Lina scripta*, the larvæ of *Diplosis tritici*, and other soft insects.

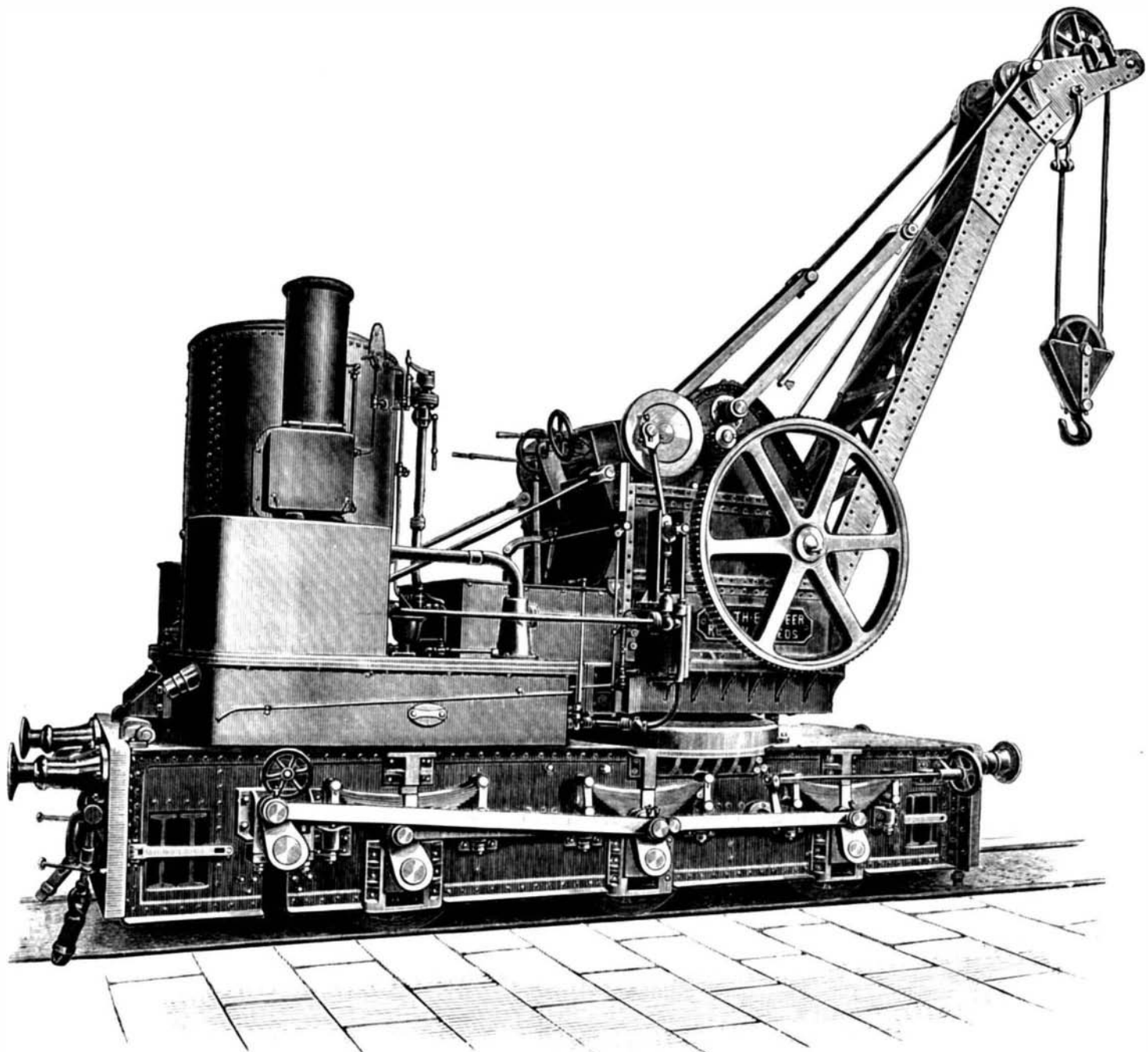
**No Right to Tax Patent Rights.**

A case has just been decided in Pittsburg which is of importance to electrical manufacturers. Although it has reference to Pennsylvania State laws, it nevertheless has some bearing in the other States as well, as it appears to be a question of interfering with rights granted by Congress. The question was whether the State had the right to tax the Westinghouse Company. The tax law exempts companies organized exclusively for manufacturing purposes, but the officers of the State claimed that the company has in its charter a great variety of powers besides those belonging

ble rights existing in the patents, and does not extend to tangible articles manufactured under patent rights. The decision in each of the cases was entirely in favor of the company.—*The Electrical World*.

**Natural Gas and Oil Fuel.**

The water works at Detroit, Mich., have for some months been using natural gas for fuel at the pumping station, the gas being furnished for the amount it would cost to do the same work with hard coal. In December, 1891, the total amount of gas consumed was 12,366,000 cubic feet, for which the city paid about 22 cents per 1,000 cubic feet. The cost of gas is, therefore, no more economical than that of coal, and while the gas is preferable for some reasons, it is objectionable for others. It has therefore been determined to use crude oil, brought by rail in tank cars to within two miles of the pumping station, a pipe line being erected for that distance. A ton of hard coal is taken as equal to 168 gallons of oil. In 1890 there were 7,616 tons of hard coal used to pump 12,121,000,000 gallons of water, or 1 ton to 1,854,130 gallons, and the cost of coal was

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tank are provided for supplying the feed water. The carriage is propelled by bevel wheels gearing with the engine shaft by means of spur and miter wheels, and driving the transverse shaft under the carriage, on which there are two cranks connected up by coupling rods and cranks to the traveling wheels of the crane. The frame of the latter is of mild steel plates and angles, and is mounted on six traveling wheels 3 feet diameter, with cast iron centers and steel tires shrunk and riveted on, and the axles are of steel. The whole superstructure radiates on a strong steel central pillar, accurately fitting a massive cast iron base plate, turned on the top to carry the roller path and internal wheel for revolving the crane. The various parts are easy of access for adjustment and similar purposes, and the whole of the movements are within easy reach and control of one attendant. The total weight of the crane is about 50 tons.

**A Plant-feeding Ladybird.**

Professor C. V. Riley, at a recent meeting of the Washington Entomological Society, gave some notes on the life-habits of our common spotted ladybird (*Megilla maculata*). He gave descriptions of the egg and larva, which have hitherto never been described or figured, and also a *resumé* of the habits of the insect.

strictly to a manufacturing corporation, and was therefore taxed upon its whole capital stock. The company claimed that its sole business was the manufacture of electrical apparatus. Regarding this point, Judge McPherson decided that the company, notwithstanding the varied powers conferred by its charter, was nevertheless organized exclusively for manufacturing purposes, which decision seems to be eminently just. The company has other powers than those of manufacturing conferred by its charter, but it does not use them. The question also came up as to the right to be taxed for stock invested in patents. A large part of the capital stock of that company is invested in this manner, and it claims that this cannot lawfully be taxed by the State in any event. The court sustained the contention of the company's counsel, and held that the right to tax patent rights does not exist in the State: "as a tax upon the right itself we think it cannot possibly be supported because it restricts and interferes with a right granted by Congress in the exercise of the power committed to the government of the United States by the Federal Constitution. The tax is not only derogatory from the dignity, but subversive of the powers of the government and repugnant to its paramount sovereignty." The court expressly states, however, that the opinion is restricted to the intangi-

\$31,763. Taking 1,279,488 gallons of oil as equal to 7,616 tons of coal, and cost \$1.20 per 100 gallons, the cost for fuel would be \$16,406, minus \$1,620 in saving of labor, and plus \$3,000 for conveying from railway to works, or \$17,786 total cost for oil, against \$31,763 for coal, a saving of \$13,977, or 44 per cent. Crude oil for fuel is also to be tried at one of the water works pumping stations at Minneapolis, Minn. The specifications for boiler plant for the World's Columbian Exposition provide for the use of oil fuel, to avoid the smoke from coal. This boiler plant is to have 100,000 square feet of heating surface, and to evaporate 450,000 pounds of water per hour at a gauge pressure of 125 pounds per square inch.

AN aluminum launch, the motor of which is a naphtha engine, has been constructed by Messrs. Escher, Wyss & Co., of Zurich. The exterior of the vessel is for the most part polished, and the consequent smoothness gives the craft a considerably greater speed than could be obtained from a steel or wooden launch of the same dimensions and engine power. The saving of weight is also important. Only the mere hull of the new craft is of aluminum, yet the utilization of this metal renders the boat 35 per cent lighter than an ordinary launch of the same size would be.