

Municipal Ownership of Gas Works in the United States During 1891," by Edward W. Bemis; "Description of a Transmission Dynamometer" (model exhibited), by G. W. Hough; "Measurements of Total Heats of Combustion," by D. S. Jacobus; "Negative Specific Heats," by De Volson Wood; "Use of Anemometers for Measuring Velocity of Air in Mines," by D. S. Jacobus; "Bending Tests of Timber," by J. Burkhitt Webb; "Method of Measuring Loss of Power and Drop of Pressure Between Cylinders in Multiple-Cylinder Engine," by J. E. Denton; "Steam Economy of the Engines of the Screw Ferryboat 'Bremen,'" by J. E. Denton and D. S. Jacobus; "Extensometer for Measuring Distortion of Specimens Under Test" (instrument exhibited), by J. B. Johnson; "Relative Economy of the Single Cylinder Air Compressor with Cooling by a Spray of Water and the Present Economy of the Compound Compressors at Quade la Garé, Paris," by Fred T. Gause; "Investigation of a 21-ft. Precision Screw," by W. A. Rogers; "Peculiar Visible Strain in Steel When Tested in Tension, Compression and Cross Breaking," by J. B. Johnson; "A New Window Ventilating Apparatus," by A. M. Rosebrough.

In a paper read before Section I. (economic science), on the labor problem in America, Robert H. Craft advocated

also a scheme to collect aborigines of all the tribes extant, and exhibit them in native costume and habitations, and employed in their primitive industries. This, he says, will within a few years, twenty or certainly fifty, become impossible because of the very rapid progress of civilization.

G. F. King read to the geological section a paper on the exhibit of gems and minerals, in which he says that present promises indicate that the exhibition of gems will twice surpass the combined exhibits of all recent expositions.

Committees were appointed from each section of the Association to co-operate with societies interested in similar departments of science, in the holding of joint congresses and otherwise. The secretaries of the several sections were constituted a committee to co-operate with the World's Auxiliary Congress of the exposition, and to secure, if possible, space for each section in the building most appropriate to the object of that section, as permanent headquarters for members of the same and of similar foreign and domestic organizations.

The meeting next year will be held at Madison, Wis., in order to be within convenient distance of Chicago, and yet not so near as to be lost in the Exposition. The

Improvements at the Chicago & Northwestern Station, Chicago.

Extensive improvements are being made at the Chicago & Northwestern terminal passenger station in Chicago (Wells street). The changes include a new express building and also a new boiler house and engine room placed west of the present office building on Kinzie and Market streets. The boiler house is situated 1,030 ft. west of the main depot building. In the engine and boiler house will be placed, besides the engines, four boilers 66 in. in diameter and 18 ft. long, and two Thomson-Houston and two Edison dynamos, the former for arc and the latter for incandescent lights; and the pumps for supplying the hydraulic and pneumatic service for the interlocking switches in the passenger yard adjoining. The electric plant, besides the dynamos just mentioned, will consist of 60 double carbon arc lights and 950 incandescent lamps. All the buildings will be heated by the exhaust steam from the engines and pumps in the boiler house. At present the depot and office buildings are supplied with heat and light by isolated plants in the buildings themselves. The heating system to be used will be the Williams return system. The main lead from the engine room is a 12-in. pipe and the return is a 6-in. pipe. By the Williams system the condensation

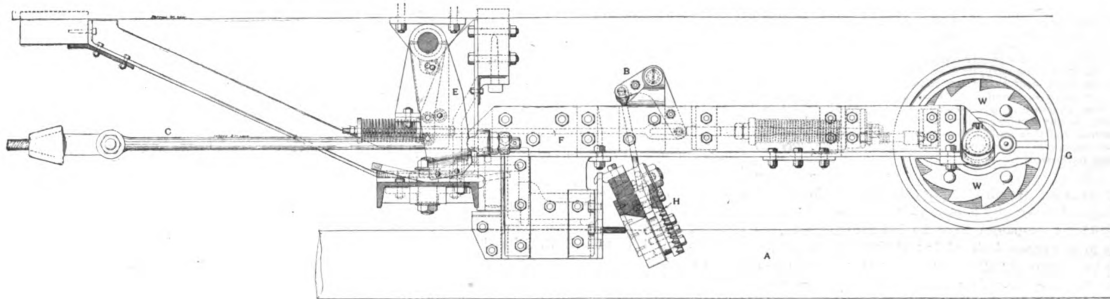


Fig. 5.—Side Elevation of Clutch on Car.

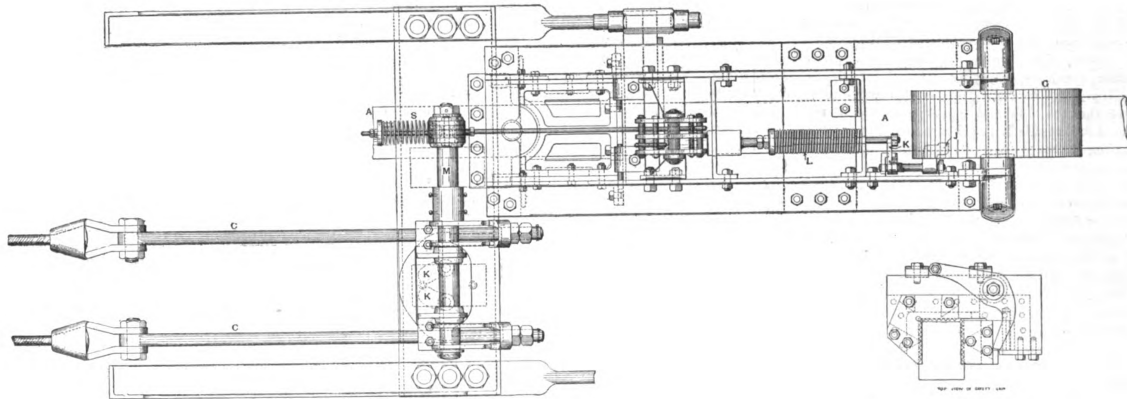


Fig. 6.—Plan of Clutch on Car.

Fig. 7.—Detail Plan of Clutch.

OTIS ELEVATING RAILROAD.

legislation for the punishment of railroad employes who shall strike or quit work without notice and by concerted action. Common carriers are bound to provide transportation for the public, and, to secure this end, they have been permitted to participate in the authority of the state by exercising the right of eminent domain. It is a wrong to society when employes impede or interrupt the continuity of traffic over these public highways, either directly by force or indirectly by capricious and sudden withdrawal from service.

Some important resolutions were passed by the Association. Congress was urged to enact legislation for protecting the forests on public lands and withdrawing them from settlement. The bill introduced by Senator Paddock received commendation. Mr. Fernow, Chief of the Forestry Bureau, in a paper before Section I, states that the annual loss by thieves is \$10,000,000 or \$15,000,000, and by fire probably twice as much. The present force of 20 to 24 watchmen is ludicrously inadequate. They barely succeed in recovering \$100,000 worth of property per annum, which is about what the service costs, whereas judicious annual expenditures of \$2,000,000 or \$3,000,000 would preserve \$20,000,000 to \$50,000,000.

The forthcoming World's Columbian Exposition received considerable attention. Prof. F. W. Putnam read to the anthropological section a paper in which he detailed comprehensive arrangements for extended anthropometrical observations to be made throughout the continent on all the different nationalities now found;

date will be the third Thursday in August unless changed by the Council—Thursday being selected for the opening instead of Wednesday, as heretofore, in compliance with the request of affiliated societies which meet before the general association.

It has long been a cherished project to hold a meeting on the Pacific Slope. Earnest invitations to meet at San Francisco in 1895, signed by the city authorities, the California Academy of Sciences, and both the great universities, namely, that of California and the Leland Stanford, Jr., render it probable that this will occur at the date named.

However other sections fare, the biological section has always been crowded, and with increasing specialization of work. Zoologists and botanists are growing farther apart and less disposed to listen to matters outside their own specialty. As a result of this condition, the section of biology was this year divided into two, making the whole number now in the association nine, namely: A, astronomy and mathematics; B, physics; C, chemistry; D, mechanical science and engineering; E, geology and geography; F, zoology; G, botany; H, anthropology; I, economic science and statistics.

The President-elect, William Harkness, of Washington, is well known as an astronomer. He was born at Ecclefechan, Scotland, Dec. 17, 1837. He was graduated from the University of Rochester in 1858, and received from his *alma mater* the degree of LL. D. in 1874. The names of the other officers chosen are given in another column.

in the heater pipes is brought back to the boiler-house by a steam pump, which creates a vacuum that practically eliminates any back pressure on the engines exhausting into the heating main. No change will be made in the heating apparatus in the office and depot buildings except to make the necessary connections to accommodate the change made in the steam supply system. The condensation from the return pipe will be pumped into a receiving tank and from there fed to the boilers through a feed water heater. The building formerly used by the express company will be used for an emigrant waiting room, and a new express building has been built between Market and Kingsbury streets.

Car Heating in Maine.

The Maine railroad commissioners have approved for use on the several railroads the following car heating systems: Portland & Rochester, Sewall and Kimball steam-heating systems; Canadian Pacific, Sewall steam and Edwards; Maine Central, Sewall steam and Edwards; St. Croix & Penobscot, the Edwards; Portland & Rumford Falls, Sewall steam and Edwards; Monson, Edwards heater; Grand Trunk, the Martin, Sewall and McElroy.

Turntable for a Cable Road.

The Geary Stet Cable railroad, San Francisco, has recently placed a new steel turntable at the junction of Geary, Kearny and Market streets. The table is 30 ft. in diameter, 33 in. thick and weighs 15 tons. It was built at the shops of the Pacific Rolling Mills and transported to its location on a special truck.