ing ring in the cylinder head. Water is admitted by the valve near the operator's hand. The tubes as tested are placed upon the skeleton truck, which will be seen immediately behind the workman. This holds a large number of tubes and is of such form and weight as to be easily moved about with a full load of tubes. It is one of a number of very handy appliances for handling work of various kinds about different departments in this plant.

The foregoing article is reproduced from the American Machinist, to which we are indebted for the photographs from which the illustrations were made.

Standardization of Locomotives for United States Railways.

Under authority from the U.S. Director General of Railroads, a committee of 11 railway officials and representatives of the three principal locomotive builders in the U.S., has prepared standard specifications and drawings for 12 types of locomotives to be used in ordering for all U.S. railways. They are as follows:—

Two sizes of the mikado type, 2-8-2, based respectively on 55,000 and 60,000 lb. per axle; the lighter of these has a weight in working order of 290,000 lb., and the heavier 325,000 lb.

Two sizes of the mountain type, 4-8-2, based respectively on 55,000 and 60,000 lb. per axle, the lighter having a total weight in working order of 320,000 and the heavier of 350,000 lb.

Two sizes of the Pacific type, 4-6-2, based respectively on 55,000 and 60,000 lb. per axle, the former having a weight of 270,000 lb. and the latter 300,000 lb. in working order.

Two sizes of the Santa Fe type, 2-10-2, based respectively on 55,000 and 60,000 lb. per axle, the lighter having a weight of 360,000 lb. and the heavier 390,000 lb. in working order.

A 6-wheel locomotive, 0-6-0, with tender, 55,000 lb. per axle; weight in working order, 165,000 lb.

An 8-wheel switching, or hump, locomotive, 0-8-0, with tender, 55,000 lb. per axle; 220,000 lb. in working order.

A 6-couple Mallet locomotive, with trucks, 2-6-6-2, based on 60,000 lb. per axle, weighing in working order 540,000 lb.

The tenders have been standardized with tanks of 8,000, 10,000 and 12,000 gal. respectively.

No one railway will be compelled to order all of the 12 standards, and it is probable that even the large trunk lines will find that half of this number is sufficient for their needs. It will, however, greatly simplify the building of locomotives for the rehabilitation of the railway motive power, which is so badly needed, and also greatly reduce the cost of carrying spare parts by the different roads.

A Washington correspondent writes:—"As is always the case when any kind of standardization is proposed, there are those who fear that it will prevent improvements and discourage new ideas. That such fear is unfounded may be seen from the automobile industry, which, perhaps, has standardized more of its products than any other branch of manufacture. It is probable that for the duration ture. It is probable that for the duration of the war at least we can well afford to omit special new locomotive development; but when we return to normal conditions an experimenting department should be established for the purpose of trying out new devices for all the railways instead of a dozen or more railways spending money on the same experiments. The money that has been needlessly spent on experiments during the past 25 years would go a long way toward paying the war debt. When we consider that on the Santa Fe Ry. alone there have been at times over 300 different types of locomotives to keep in repair, the advantage of confining all experimental work of this kind to one department can easily be estimated."

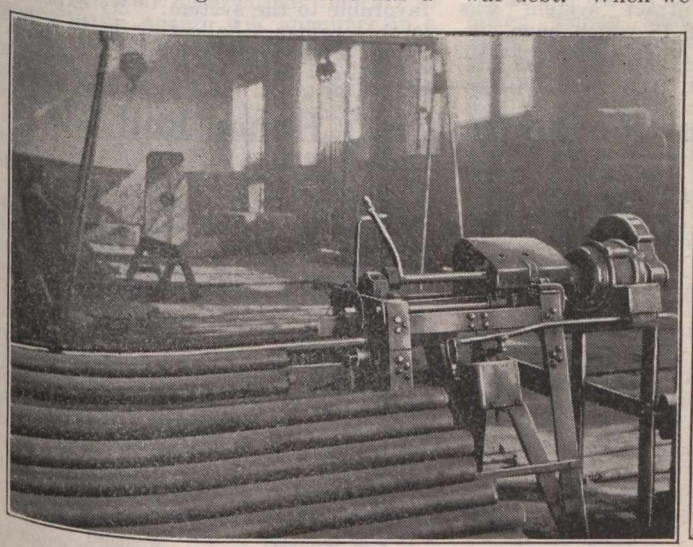

Fig. 6. Trimming machine.

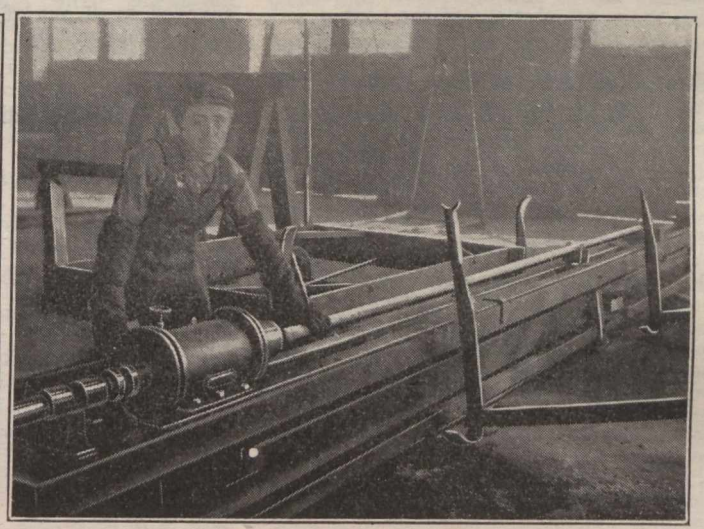

Fig. 7. Testing apparatus.

Locomotives Ordered for United States Railways.

The Director General of U.S. Railroads announced, on May 1, that he had awarded contracts for the immediate construction of 1,025 locomotives. Deliveries are to begin in July and continue monthly during the remainder of the year.

The locomotives are to be of six standard types—one heavy and one light of each type—covering both freight and passenger service, and vary in weight from 290,000 lb. to 540,000 lb. The order involves an expenditure of approximately $60,000,000. The locomotives will be allotted, upon completion, to the various railway systems where they are most needed.

The awarding of this contract marks the establishment by the government of the standard type of locomotives, specifications for which have been developed and perfected by committees of experts, who for many weeks have devoted much time and study to the subject, particulars of which are given in another article in this issue.

The six standard types of locomotives, two sizes of each class, are expected eventually to supersede the many miscellaneous types and varieties of locomotives now in service, embracing ones built according to 500 or more varying specifications. This is the first time that any real forward step has been taken looking to the wide standardization of locomotives.

The contracts were awarded on terms much more favorable to the railways than the bids originally submitted by the builders. The order was distributed approximately evenly between the Ameri-Can. Locomotive Co. and the Baldwin Locomotive Works.

Orders for Freight Cars Placed by United States Government.

The Director General of U.S. Railroads announced, early in May, the allotment of orders for the construction of 70,000 additional steel underframe freight cars to various car building concerns on the same basis on which the order was placed a short time previously for 30,000 cars. These 70,000 cars include 15,000 40-ton double-sheathed box cars, 16,000 50-ton single-sheathed box cars, 15,000 50-ton composite gondola coal cars, 5,000 70-ton low-side gondola cars, 19,000 55-ton hopper coal cars.

The 70,000 cars have been apportioned among the following builders: Bettendorf Co., Bettendorf, Iowa, 3,000; Cambria Steel Co., Johnstown, Pa., 3,000; Haskell & Barker Works, Michigan City., Ind., 8,000; Keith Car Manufacturing Co., Sagamore, Mass., 1,000; Laconia Car Co., Laconia, N.H., 1,000; Lenoir Car Works, Lenoir, Tenn., 2,000; Liberty Car & Equipment Co., Chicago, Ill., 1,000; Magor Car Corporation, Passaic, N.J., 1,000; Mount Vernor Car Manufacturing Co., Mount Vernon, Ill., 4,000; Pacific Car & Foundry Co., Seattle, Wash., 2,000; Pressed Steel Car Co., Pittsburgh, Pa., 14,000; Pullman Co., Chicago, Ill., 8,000; Ralston Steel Car Co., Columbus, Ohio. 4,000; St. Louis Car Co., St. Louis, Mo., 1,000; Standard Steel Car Co., iPttsburgh, Pa., 15,000. Also, pending, to Barney & Smith Car Co., Dayton, Ohio, 2,000. It is possible that there may be some modi-